

Stories of Resilience

Lessons from Local Adaptation Practice

2025



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Preface

Prof. Patrick Verkooijen

This year, I had the privilege of visiting Ringiti, a small island in Lake Victoria and home to 1453 fisherfolk families, that is part of Kenya's Homa Bay County. With support from our local partner, Akiba Mashinani Trust, the community is developing a detailed map of the island and surveying households to better understand how climate change is deepening their vulnerabilities, and how they can strengthen their resilience for the future.

Among those I met was Dolrose Adhiambo, who earns a modest living selling smoked fish. She spoke of the fragile balance required to keep her household finances afloat, and her family's deep dependence on the lake, now under growing strain from pollution, overfishing, and the impacts of climate change. Her story illustrates a truth we at GCA witness time and again: effective adaptation begins with a clear understanding of how climate risks touch people's everyday lives—in their homes, markets, and natural environments

It is precisely this level of insight that the People's Adaptation Plans seek to bring into the broader landscape of adaptation and development finance. These plans do more than inform investments by international financial institutions and national governments; they empower communities to understand the risks they face, define their priorities, and become stronger advocates for the support they need.

In this year's edition of *Stories of Resilience: Lessons from Local Adaptation Practice*, we explore both the micro and the macro dimensions of this challenge—from households and small enterprises such as Dolrose's, to the policies, processes, and financial systems shaping national and international responses to local needs.

The scale of the challenge before us is immense. Meeting it will require collaboration across borders, sectors, and institutions—to correct longstanding imbalances, rethink entrenched practices, and reimagine global, national, and local policies, frameworks, and modalities. Yet we are working against global currents that often flow in the opposite direction: rising nationalism, shrinking budgets, and a waning multilateral commitment to climate justice, equity, and inclusion. These trends threaten to stifle local voices and leadership precisely when they are most needed.



Dolrose Adhiambo, who sells smoked fish on Ringiti island in Kenya's Homa Bay County, described the threats to her livelihood from pollution, overfishing, and climate change.

Still, we must push back, to safeguard the lessons learned from decades of practice. We know what works—and we know that communities must be at the heart of it.

The stories captured in this report remind us who we fight for, and what is at stake: for Dolrose in Kenya; the livestock farmers of Leliefontein, South Africa; the smallholder farmers in Doka, Nigeria; the water champions of Kumbharwadi, India; for those regularly at the frontline of deadly cyclones in Malawi; and for millions of others. For their sake, we must continue to press for systems that deliver climate finance to them, in forms that truly reduce their climate vulnerability.

The building blocks of such a system are starting to take shape. Philanthropies, multilateral funds, and global and national institutions are beginning to reform approaches—to listen more closely, act more flexibly, and collaborate more effectively. We must accelerate our cycles of learning, to keep what works, acknowledge what does not, and reform what must change.

At GCA, we remain steadfast in our commitment to equip communities with the data, skills, and evidence they need to define their priorities and connect with the larger sources of support required to realize them. Through our Global Hub on Locally Led Adaptation, we will also continue to tell their stories and amplify their lessons—to ensure their voices guide the global response to the climate crisis.

Patrick Verkooijen

Prof. Patrick Verkooijen
Chief Executive Officer
Global Center on Adaptation



Introduction

Anju Sharma

Advocates of Locally Led Adaptation (LLA) often assume its benefits are self-evident. Of this, I must admit, I am guilty. So I was surprised to learn, at a recent meeting, that even institutions that have long championed locally led action—and generated extensive evidence for it—expressed the need for more evidence that LLA can work at scale, cost-effectively.

I am not convinced that a lack of sufficient evidence is the main barrier to scaling LLA. More often, entrenched power structures—global, national, and local—stand in the way. Still, this conversation took me back to my own journey, from sceptic to firm believer that communities are essential custodians of their environment, and architects of their own development and future.

That shift came from witnessing community-led efforts that succeeded, and centralized systems that failed. Among many such examples, stories of community-led natural resource management efforts—water management, in particular—have deeply shaped how I think about adaptation. Among them, the story of Ralegan Siddhi in India has entered the realm of legend.

Ralegan Siddhi, a small village in Maharashtra, was once emblematic of India's dryland challenges: erratic rainfall, soil degradation, indebted farmers, recurring migration, and widespread poverty. When Anna Hazare returned there in 1975 after his army service, he found a community fractured by environmental decline and a social order weakened by alcoholism, weak governance, elite capture, and institutional neglect. Government initiatives to mitigate the impacts of a severe drought in 1972—for instance, by building a water storage tank—had ended in failure.

Watershed management, the integrated care of land, water, forests, and pastures to sustain both livelihoods and ecosystems, had been a cornerstone of Indian policy since before Independence. Ministries of water, agriculture, rural development, and environment invested heavily in it. Yet, despite good intentions, the results were disappointing.

Projects were fragmented across ministries, implemented through one-size-fits-all blueprints that ignored local hydrology, and lacked community ownership and engagement. The “beneficiaries” saw little reason to maintain assets once projects ended. Benefits were skewed toward landed farmers, leaving the poor and landless excluded.

Although NGOs had demonstrated that participatory, tailored watershed management could deliver better results, especially for the poor, these were small-scale and considered too expensive to replicate widely.

Anna mobilized the villagers to transform the destiny of Ralegan Siddhi through voluntary labor and structured systems to ensure accountability and fairness. The villagers built check dams, contour bunds, and percolation tanks to slow runoff and recharge groundwater. Failed infrastructure (like the tank supported by the government) was redesigned and rebuilt. Cooperative wells and shared irrigation systems were built to give smallholders access to water. The users decided water quotas, penalties for overuse, and governance rules for cooperatives. The villagers also agreed to bans on tree felling and overgrazing and worked to reforest hillsides to support ecological resilience.

The results were truly transformative. Over a decade, the per capita income of the village increased eight-fold; net agricultural income rose nine-fold, through a five-fold increase in agricultural productivity and double cropping; groundwater levels rose from 20 meters to 6.5 meters; and milk production increased four-fold. Villagers who had migrated in search of wage labor returned to a village that was now a net food exporter, not importer.

Studies have since shown that because villagers themselves executed and monitored the works, costs were lower, misuse was minimized, and maintenance was internalized. The rules they agreed on were equitable, ensuring that access to water and benefits were shared fairly so poorer households were not excluded—and this inclusion amplified overall gains.¹

Similar gains are recorded in other locally led watershed management pilots in India. In Pimpalgaon Wagha, one of the first villages supported by the Watershed Organisation Trust (Chapter 3), community efforts in watershed management in the 1980s doubled crop production; increased milk production ten-fold; secured drinking water year-round; and diversified the local economy beyond agriculture. Social gains included a locally owned development fund and reduced out-migration.²

From the outset, Pimpalgaon Wagha was designed with scaling in mind. Government, NGOs, and communities each had defined, complementary roles from the start, grounded in true partnership. Local capacity needs were prioritized alongside infrastructure, social equity was embedded in project design, and rigorous monitoring created the evidence needed for political and financial support.

Pilots such as these led to the creation of the world's largest and best funded watershed management program in India. Now called the Pradhan Mantri Krishi Sinchai Yojana, the program, which was revised to include climate resilience in 2021, has supported locally managed efforts in tens of millions of hectares of degraded land across thousands of watersheds in India. While technical, financial, and institutional challenges continue to limit how "locally led" the implementation is in practice, the story offers multiple lessons for LLA.

Ralegan's story illustrates why centralized interventions often falter because of information asymmetry—the gap between what policymakers know from a distance and what local actors experience on the ground. This disconnect leads to poorly targeted actions, indifferent community engagement, and ultimately, a waste of scarce resources. By contrast, locally led responses can be more cost-effective and adaptive because they draw on context-specific

knowledge, align incentives among stakeholders, and improve allocative efficiency, directing resources to where they generate the greatest marginal gains in resilience, wellbeing, and impact.

The two examples also showed that rigorous monitoring, evaluation, and learning is essential—to demonstrate economic, social, and environmental (and in the case of adaptation, resilience) results in terms that speak to national policymakers, but also to build a credible evidence base, inform policy, and support continuous learning and innovation.

Scaling LLA ultimately requires shared ownership. Communities must feel empowered to act, but equally, local governments, national institutions, and technical partners need to see themselves as integral to the process. In Pimpalgaon, this inclusive coalition was key: policymakers and technocrats were brought into the fold, and capacity gaps at the community level were addressed in ways that were both sustainable and empowering.

From Projects to Power

In a top-down world where decisions on what to fund and how to fund are taken by external stakeholders (national governments, multilateral, or bilateral funders), success and scale are measured in service outputs and numbers: number of beneficiaries, number of trainees, number of sea walls, length of roads, or number of schools.³

These outputs are easy to count and report, to satisfy funders—but less substantial to the kind of systemic, transformational change that LLA seeks to achieve. The most significant outcomes for LLA are related to governance: better responsiveness to local needs and circumstances, especially in the face of climate uncertainty; stronger voice and agency for the vulnerable; enhanced public accountability; and stronger local institutions. Scale and success are measured by the extent to which entire ecosystems of governance, finance and knowledge are transformed for long-term and sustainable change.⁴



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LLA strengthens governance from the ground up, ensuring decisions respond to local realities and amplify the voices of the most vulnerable.

Decades of research, from Elinor Ostrom’s work on common-pool resource management to contemporary studies on climate governance, show that polycentric systems of decision-making, where local institutions operate autonomously within broader frameworks, are more adaptive and resilient. LLA operationalizes this principle: it aims to connect the micro-level (community action and local knowledge) with the macro-level (policy, finance, and systems) through mutual accountability and trust.

In practice, this means creating bridging systems—mechanisms that translate community priorities into policy language and integrate local data into national planning. Examples include the People’s Adaptation Plans (Chapter 1) which link evidence-based locally led planning to national planning and investments; initiatives such as LIFE-AR and LoCAL (Chapter 2) and modalities such as Enhanced Direct Access (Chapter 10), which channel flexible and patient funding to local governments and communities. It means fostering inclusive governance, ensuring that adaptation is not just about surviving climate shocks, but reshaping the structures that determine vulnerability in the first place.

Governance reforms in Nepal and Kenya (Chapter 7) illustrate how macro-level policies and institutions are important to enable and scale LLA. National frameworks must enable, rather than constrain, local agency through predictable climate finance, subsidiarity in governance, and inclusive institutional design. Without such enabling environments, local adaptation initiatives remain isolated successes rather than the foundation for more fundamental change.

Coordination for Efficiency

In an era of constrained resources, embedding adaptation within existing national systems of decentralization and devolution (including fiscal devolution) is vital. This approach strengthens efficiency, while supporting these systems to overcome existing shortcomings and capacity constraints.

Integrating adaptation into existing development plans—such as local development plans or urban masterplans, as the GCA People’s Adaptation Planning process aims to do—helps avoid fragmentation and projectization. Efforts to coordinate across models, for instance between LIFE-AR and LoCAL (Chapter 2), can help governments merge best practices and lessons to reinforce national systems.

Importantly, new pilots may not be necessary for adaptation, if evidence of their success already exists from learning and practice from the development sector. Chapter 4 highlights lessons from “localization” efforts in humanitarian action, that empowering local responders improves quality, equity, and timeliness of disaster management efforts because they possess the contextual knowledge, cultural familiarity, and community trust that can make responses more relevant, cost-effective, and sustainable. It also indicates that lack of evidence is not the main barrier to scaling LLA or localization: despite strong evidence of cost efficiency and local capacity, only 0.8% of UN-tracked humanitarian funding goes directly to local and national responders.

Another example of adaptation responses riding on the success of the development sector is discussed in Chapter 5. Climate change became an urgent concern for the Self-Employed Women's Association (SEWA) in India when it found that climate-related illness was the leading cause of loan defaults among its 3.2 million members (all women working in the informal sector). SEWA's response built on the intimate knowledge of its members' needs, to design and deliver responses that went beyond simply cure or even prevention, to include financial support during key periods of vulnerability.

Chapter 6 explores how international scientific institutions can better coordinate with local needs, combining Indigenous knowledge with modern climate risk management tools to bridge the gap between global science and community realities.



Women working in the informal economy, such as waste pickers, face the intersecting pressures of climate stress, economic insecurity, and exclusion.

Funding LLA

While public sector finance—national and global—is critical to help the poor adapt, not all scalable LLA responses lie within the public sector. As Chapter 9 shows, vulnerable households and micro and small enterprises rely heavily on Inclusive Financial Service Providers (IFSPs)—microfinance institutions, cooperatives, banks, and mobile money providers—to adapt to, and recover from, climate shocks. They lend around US\$ 1.5 trillion annually to low-income communities and small enterprises and have deep reach into vulnerable areas. Yet, most remain climate-agnostic.

More worryingly, this trusted source of funding for vulnerable communities is in danger of collapsing under the weight of the demand generated by climate shocks. In Pakistan, for instance, 40% of IFSPs have reduced lending to certain sectors (mainly agriculture and livestock/poultry), and 20% halted it entirely, because of climate-related challenges.

Concessional funding is urgently needed to derisk their operations and sustain this vital financial lifeline.

Chapter 11 further explores how private sector finance can be leveraged for LLA. Many commodity-based multinationals have a vested interest in helping the smallholders they depend on to adapt and in protecting shared natural assets. Adaptation is also an emerging market—some estimate it could become the next trillion-dollar sector. But meaningful private investment must respect community rights and resource sovereignty. Governance again becomes critical to ensure equitable platforms where community voices are not secondary to economic interests.

In this edition we look at the important role of philanthropy, particularly in shifting practice among funders. Chapter 8 describes the remarkable efforts of the Climate Justice Resilience Fund which has pioneered participatory grant-making and internal governance aligned with LLA principles—transferring decision-making power to activists and community leaders. Similarly, the Quadrature Climate Foundation recognizes that addressing institutional weakness and inequality is fundamental to long-term resilience.

Even before the LLA Principles were developed by the Global Commission on Adaptation in 2018, the Green Climate Fund’s Enhanced Direct Access (EDA) modality sought to devolve flexible climate finance to local actors. The modality, since operationalized by the GCF Board, has had limited uptake due to multiple reasons explored in Chapter 10. Efforts to rescue it are now recasting it as a mechanism to provide small grants to communities through non-government entities. However, this misses the incredibly important opportunity of using EDA to scale LLA through national systems of local governance, while reinforcing fragmentation and projectization of adaptation.

Moral Imperative

Beyond the evidence, beyond the arguments of efficiency and effectiveness, LLA represents climate justice in practice. It is a moral imperative because it restores fairness in a world where those least responsible for the climate crisis suffer its harshest consequences. By shifting power, finance, and decision-making to local actors, LLA enacts distributive justice: it ensures that communities disproportionately burdened by global emissions gain the agency and resources to shape their own resilience.

Justice is not only about outcomes—it is also about who decides. LLA advances procedural justice by allowing those most affected by climate impacts to participate meaningfully in the choices that determine their futures. It challenges the paternalism of external planning and reframes adaptation as self-determination, not charity.

LLA also delivers epistemic and equity justice. For too long, local and Indigenous knowledge has been dismissed as informal or secondary. By recognizing it as legitimate and essential, LLA restores dignity to lived expertise and gives people the freedom to act on what they value. It also addresses structural inequities between the Global North and South, and within societies, by redistributing power, finance, and voice.

At its heart, LLA calls for transformative rather than project-level fairness. It seeks to dismantle historical patterns of exclusion and extraction, replacing them with systems that enable local sovereignty, dignity, and long-term resilience. Investing in local institutions and ecosystems ensures that future generations inherit not degradation, but opportunity.

Finally, LLA embodies relational and restorative justice. It rebuilds trust and respect between communities, governments, and donors, turning relationships of control into partnerships of reciprocity. And because it centers inclusion—especially for women, youth, and Indigenous peoples—it advances intersectional justice, addressing the overlapping inequalities that deepen vulnerability.

Supporting LLA is therefore not just a practice that needs proof of effectiveness; it is a moral and ethical necessity. It transforms adaptation from an act of assistance into an act of justice.

Anju Sharma

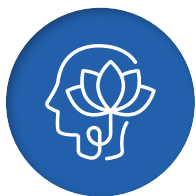
Global Lead, Locally Led Adaptation

Global Center on Adaptation

Principles for Locally Led Adaptation

The eight Principles for Locally Led Adaptation (LLA) were developed by the [Global Commission on Adaptation](#) and launched at the 2021 Climate Adaptation Summit to guide efforts to promote LLA.

- 1 Devolving decision-making to the lowest appropriate level:** Giving local institutions and communities more direct access to finance and decision-making power over how adaptation actions are defined, prioritized, designed, and implemented; how progress is monitored; and how success is evaluated.
- 2 Addressing structural inequalities faced by women, youth, children, disabled, displaced, Indigenous peoples, and marginalized ethnic groups:** Integrating gender-based, economic, and political inequalities that are root causes of vulnerability into the core of adaptation action and encouraging vulnerable and marginalized individuals to meaningfully participate in and lead adaptation decisions.
- 3 Providing patient and predictable funding that can be accessed more easily:** Supporting long-term development of local governance processes, capacity, and institutions through simpler access modalities, and longer term and more predictable funding horizons, to ensure that communities can effectively implement adaptation actions.
- 4 Investing in local capabilities to leave an institutional legacy:** Improving the capabilities of local institutions to ensure they can understand climate risks and uncertainties, generate solutions, and facilitate and manage adaptation initiatives over the long term without being dependent on project-based financier funding.
- 5 Building a robust understanding of climate risk and uncertainty:** Informing adaptation decisions through a combination of local, traditional, Indigenous, generational, and scientific knowledge that can enable resilience under a range of future climate scenarios.
- 6 Flexible programming and learning:** Enabling adaptive management to address the inherent uncertainty in adaptation, especially through robust monitoring and learning systems, flexible finance, and flexible programming.
- 7 Ensuring transparency and accountability:** Making processes of financing, designing, and delivering programs more transparent and accountable downward to local stakeholders.
- 8 Collaborative action and investment:** Collaboration across sectors, initiatives, and levels to ensure that different initiatives and different sources of funding (humanitarian assistance, development, disaster risk reduction, green recovery funds, etc.) support each other, and their activities avoid duplication, to enhance efficiencies and good practice.



CHAPTER 1

PEOPLE'S ADAPTATION PLANNING: PUTTING THE POOREST FIRST

KEY MESSAGES

- The Global Center on Adaptation is supporting vulnerable communities across eight African countries and 13 urban municipalities and villages in Bangladesh to map and understand local climate threats, assess local resources and capacities, and develop People's Adaptation Plans. These Plans aim to unlock larger and more sustainable financing streams, including from international financial institutions and national development budgets.
- Building on decades of local experience, the process enables communities to produce locally led, evidence-based, inclusive, and multisectoral plans that are aligned with government systems. Planning draws on locally generated, disaggregated data and integrates climate risk information from communities and experts.
- Community mobilizers are trained in both technical skills (such as data collection and mapping) and leadership skills (such as communicating about climate change, facilitating groups, and resolving conflicts).
- The data generated through household surveys seeks to make the invisible visible. It is owned by the communities, empowering them to negotiate priorities among themselves and with national and global funding partners.
- Key challenges include balancing the need for speed, scale, and long-term sustainability—particularly in integrating locally led adaptation processes into national systems, and strengthening local capacities to analyze data and design solutions.

Devolving Decision Making

Addressing Structural Inequalities

Investing in Local Capacities

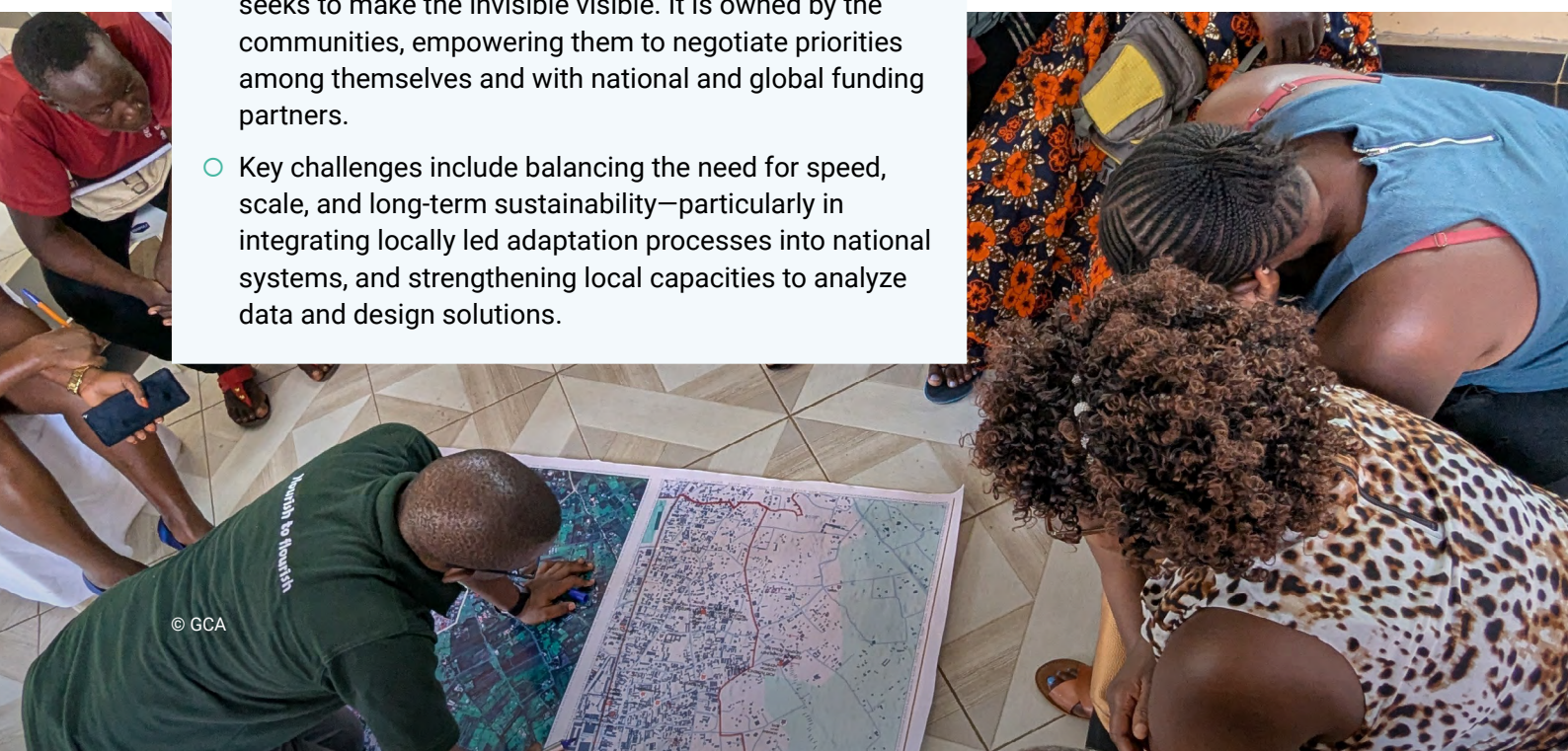
Building Understanding

Transparency and Accountability

Collaborative Action and Investment

IN THIS CHAPTER

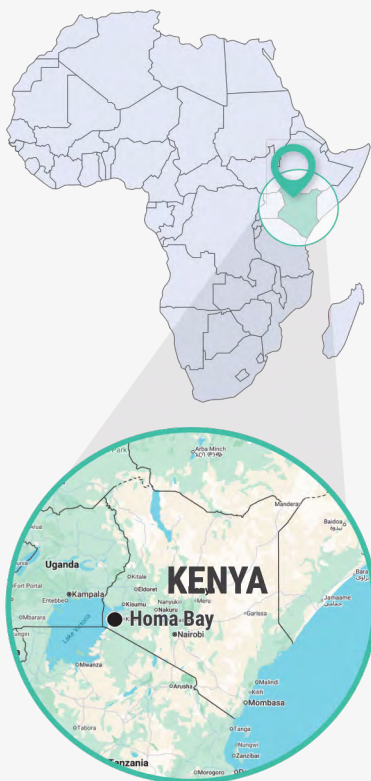
- Grounded in Evidence and Empathy
- The People's Adaptation Planning Process
- The Power of the Process
- Challenges and Lessons





Many of our communities were invisible before this process. Now we've mapped over 21,000 households across Homa Bay. That's not just data, that's power.

Mercy Lukio, a young resident of Sofia, an informal settlement in Homa Bay, Kenya



GROUNDING IN EVIDENCE AND EMPATHY

Life in Homa Bay County, on the shores of Lake Victoria in Kenya, unfolds in a paradox of water abundance and scarcity. Frequent floods that destroy property and livelihoods are punctuated by prolonged dry spells that disrupt water availability and devastate incomes.

The poorest residents—nearly 30% of the County's population, living in informal settlements without access to basic services or risk-reducing infrastructure—are the hardest hit.⁵

"Only 14% of the residents of Homa Bay Municipality have access to piped water, even though we live on the edge of Lake Victoria, one of Africa's largest freshwater sources," says Mercy Lukio, a young resident of Sofia, an informal settlement in Homa Bay municipality. "People in informal settlements like mine pay KSh 600 to 1,200 (approximately €4–8) per month for water—five times more than what piped water users pay. That's the poverty penalty: we pay more for less, while at the same time suffering the consequences of floods, disease, lost income, and time poverty."

The African Development Bank's (AfDB) Kenya National Urban Water Supply and Sanitation Program aims to improve water and sanitation services across 21 urban areas in Kenya, including Homa Bay. At the behest of Homa Bay Governor, Gladys Wanga, and through the Africa Adaptation Acceleration Program (AAP), the Global Center on Adaptation (GCA) is working to make the project's investments more climate responsive and better aligned with the needs of vulnerable communities.

GCA is supporting residents of Homa Bay's informal settlements, in partnership with the County Government, to map and understand how climate change is affecting their lives and livelihoods; prioritize adaptation needs; and secure funding (including from the AfDB project) to implement solutions to reduce climate vulnerability.

Informal settlements are rarely included in formal urban planning, despite their high vulnerability to climate change and other risks.⁶ Governments seldom collect data on population size, service access, or exposure to risks, leaving residents largely invisible in official records. These gaps fuel climate vulnerability.



To close this gap in Homa Bay, GCA's local partner [Akiba Mashinani Trust](#) (AMT), a pioneer in locally led planning, supported residents of the three informal settlements in the Municipality (Shauri Yako, Sofia, and Makongeni) to collect their own data and map their communities on paper and Geographic Information Systems (GIS).

Household surveys and mapping were conducted by 382 community members who were trained in surveying, mapping, numbering, and data collection using GIS-enabled tools. These "community mobilizers" covered a total of 21,317 households across 12 sublocations, involving 50,655 residents. While gathering data on socioeconomic conditions and climate vulnerabilities through a purpose-built questionnaire on KoboToolbox, they explained climate change to each household and invited them to join the planning process.

Support in using the GIS tools and analyzing the data was provided by 20 county officials and 40 students from the local Tom Mboya University, who were trained in using digital and geospatial tools and data analysis. An additional 23 students were embedded in county offices as interns to support the planning process.

"Many of our communities were invisible before this process. Now we've mapped over 21,000 households across Homa Bay. That's not just data, that's power," said Mercy, one of the trained community co-researchers, at a high-level gathering in Nairobi.

"We went door-to-door in underserved settlements like Sofia and Makongeni collecting real data on flood exposure, drainage problems, waste buildup, and lack of services. We combined mobile tools, local knowledge, and lived experience of climate change. We worked with university students to translate field data into digital maps and risk layers using GIS. This partnership between community youth and student mappers created an ecosystem of innovation that turned the informal settlements into visible, mappable, and plannable spaces. This is locally led adaptation in action. It's community-owned. Youth-driven. And it's deeply grounded in both evidence and empathy."



Homa Bay Governor Gladys Wanga visits constituents, alongside GCA President and CEO Professor Patrick V. Verkooijen, in Shauri Yako Informal Settlement, Homa Bay Municipality, Kenya.



What makes this process truly groundbreaking is that it put the poorest and most vulnerable communities, including youth and women, at the center.

Gladys Wanga, Homa Bay Governor, Kenya

Recognizing that Homa Bay Municipality does not have a land-use plan, Governor Wanga requested that the planning process inform the development of an integrated climate change and development plan. A formal notice of intention to plan was issued at the start of the process, as required by Kenya's Physical and Land Use Planning Act of 2021, ensuring a formal status for the plan, and enabling access to national funding sources for implementation.

The outcome, *The People's Adaptation—Local Physical and Land Use Development Plan for Homa Bay Municipality 2025-2035*, was released for public comment during Kenya's Devolution Conference in August 2025. This landmark Plan—the first integrated, climate-resilient Local Physical and Land Use Development Plan in Kenya—will:

- Guide AfDB's climate-resilient water and sanitation investments in Homa Bay.
- Steer other development spending towards climate resilience.
- Put the needs of the poor and vulnerable at the center of decision-making.

"What makes this process truly groundbreaking is that it put the poorest and most vulnerable communities, including youth and women, at the center," said Governor Wanga, during an [event](#) in Nairobi. "We did not speak for the people. We worked with them to define their vision of a climate resilient future."

The costs of adapting to climate change are soaring, while adaptation finance flows are shrinking. The stakes could not be higher: scarce resources must now deliver maximum impact to those who need them most.

Leaving No One Behind

To direct adaptation finance to those who need it most and ensure it delivers maximum impact at the community level, however, multiple questions must first be tackled:

- Who needs adaptation support most urgently?
How can the most climate-vulnerable households or individuals within a community be identified, particularly in data-poor environments where they may be rendered invisible?
- Which actions or solutions should take priority, in the face of extremely limited resources?



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Community consultation meeting held in Kowili, Homa Bay Municipality, Kenya.

- How can existing resources—not just funds, but also institutions, processes, and capacities—be leveraged for timely, effective, and scaled-up adaptation?
- How can capacity and institutional gaps at the frontlines of climate impacts be plugged so responses can be urgent and truly responsive to local needs?
- How can existing funding sources be channeled to locally identified adaptation priorities, and be used efficiently and effectively?
- How can the effectiveness and efficiency of adaptation interventions be tracked? And how can progress on resilience be measured meaningfully, in ways that also inform course-correction by local actors if adaptation efforts fall short?

The [Principles for Locally Led Adaptation](#) (LLA) offer a powerful answer. Developed under the guidance of the Global Commission on Adaptation, and based on the well-established principle of subsidiarity and decades of development experience, they call for these decisions to be made at the lowest effective level of governance, closest to those directly affected. They provide a practical, actionable roadmap to ensure that resources reach the frontlines, and the most affected determine how they are used, within a fairer framework of mutual accountability.

A deeply contextualized understanding of climate change impacts by those affected is a first step for local determination of adaptation needs, priorities, and solutions. How will climate impacts be experienced by an individual, a household, or a community? Which individual or household within a community is more vulnerable to these impacts? What does resilience to climate change look like for this individual, household or community? What resources, capacities, or institutions exist locally to achieve resilience, and what more is necessary? What has already been tried, that can be built upon? How does this inform what works and what doesn't?

These are questions that individuals, households, and communities, together with their local governments, are best placed to answer.

GCA is currently supporting poor communities in eight countries in Africa and 13 urban municipalities and villages in Bangladesh to map and understand local climate threats; take stock of local resources and capacities; and develop People's Adaptation Plans. The

Plans aim to unlock larger and more sustainable funding streams—including from national development budgets and investments from international financial institutions such as AfDB, the World Bank, Asian Development Bank (ADB), and Asian Infrastructure Investment Bank (AIIB).

This “retrofitting” of a locally led planning process into traditional funding channels seeks to overcome multiple challenges in the current adaptation funding landscape:

- Its predominantly top-down nature, which often misses the mark.
- Difficulties in channeling climate finance to the local level.
- Fragmentation of adaptation and development funding through multiple channels and through projectization and sectorization, resulting in inefficiencies in spending.
- Additional demands on already limited technical and financial capacities at the local level to meet complex funder requirements.

The People’s Adaptation Planning process focuses on equipping climate-vulnerable communities with the knowledge, data, and skills they need to understand local risks; and to work with governments and technical experts to develop contextualized solutions. The responsibility to fund these evidence-based adaptation plans in a coordinated way must then rest with governments and, critically, with those most responsible for driving climate change.

THE PEOPLE’S ADAPTATION PLANNING PROCESS

The People’s Adaptation Planning process builds on decades of experience from the Muungano wa Wanavijiji federation, an affiliate of Slum Dwellers International (SDI) and AMT. Documented in the GCA guide *Locally Led Planning: A Guide for Building Climate Resilience in Urban Informal Settlements*, the process is defined by three core features:

- **Locally led, evidence-based, and inclusive:** Planning is driven by community members, in partnership with government and non-government organizations. The process is inclusive down to the household level, with each household consulted on vulnerabilities and priorities. The planning relies on locally generated, disaggregated data (gender, age, disability) and is complemented by climate risk information from meteorological, research, and scientific institutions.
- **Multisectoral:** The community identifies key sectors of importance to them, and then the planning process ensures coordination across those sectors and institutions (government, non-government, and research) for coordinated rather than fragmented decision-making and investments. For example, infrastructure planning for roads, sewers, water pipes, and waste management must be coordinated for effective flood control.
- **Aligned with government systems:** Local government engagement is central, along with existing formal and informal governance structures and institutions. Where possible, Plans are aligned or integrated with national and local strategies, including development plans, land use plans, and urban masterplans.

GCA initiates the process by identifying suitable early-stage projects from International Financial Institutions (IFIs)—such as the World Bank, AfDB and ADB—or from bilateral



agencies like Agence Française de Développement. These projects must have potential to invest in building resilience in poor communities. Starting here helps ensure financing for priority adaptation actions identified in People's Adaptation Plans. Projects may have a broad focus (e.g., social inclusion, urban, or coastal resilience) or a sector-specific focus (e.g., water and sanitation services for the poor).

Next, GCA engages IFI project teams and target country governments to ensure the Plans add value—by piloting the approach for scaling across a project or by focusing on particularly climate-vulnerable settlements. Where scaling is pursued, GCA also develops training manuals and capacity-building for implementation teams.

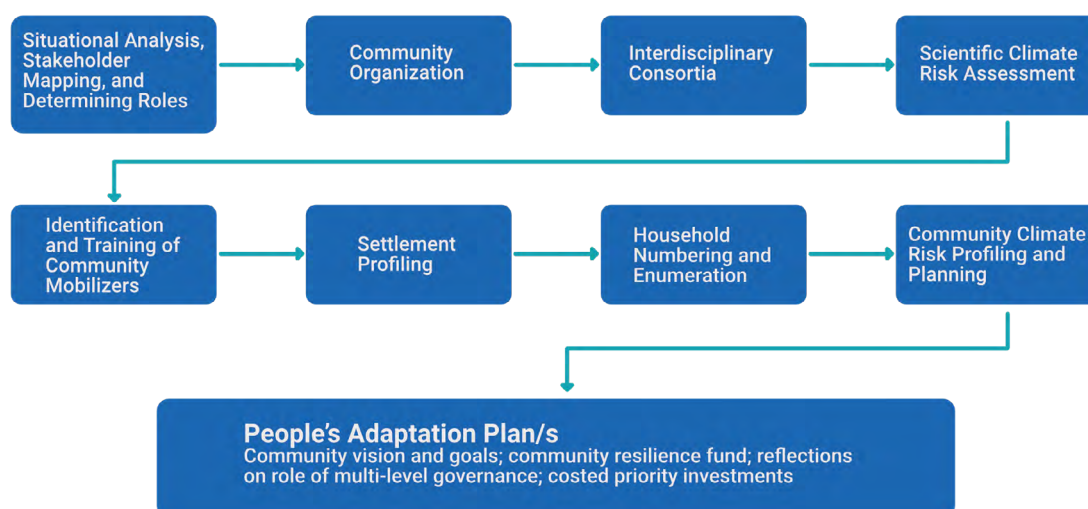
Local partners—national or grassroots organizations with community trust and presence—are then identified through a public call. Once onboarded, they adapt the process to local contexts with community input, while upholding the three core features outlined above. The key steps proposed for the planning process are described below.

Situational Analysis, Stakeholder Mapping, and Determining Roles

The situational analysis includes a review of national and local legal, institutional, and social (formal and informal) frameworks, to ensure synergies and compliance. In Homa Bay, the Senegal River Valley, and in Zambia, a policy and institutional analysis first identified opportunities to integrate LLA into existing frameworks, including local development plans and National Adaptation Plans.

In addition to seeking the buy-in and engagement of relevant stakeholders in the planning process, this step convenes expertise and leadership to drive the planning process and defines roles and responsibilities. Key actors are identified (from within communities, local government, civil society, academia, and the private sector) to provide leadership, sector knowledge, and technical expertise. Leadership by vulnerable groups is prioritized.

FIGURE 1. The People's Adaptation Planning Process





Young people play a key role in supporting their communities to understand climate risks, including in Mirsarai, Bangladesh, where their plans will inform investments in an AIIB project on Smart Cities.

Community Organization

This step establishes reliable and inclusive platforms for community participation, if not already in existence. The exact nature of community organization is decided by the local partner in consultation with the communities and local government, building on existing community organization frameworks (such as self-help groups, cooperatives, and sectoral committees).

Community organization is important to multiple phases of the process, including planning, implementation, and maintenance of new infrastructure and services. This representation system is useful for several activities, including:

- Mobilizing residents to participate in the planning process, and coordinating mobilization, educational, and planning meetings.
- Communicating about planning activities with residents within their subgroups, and with local government.
- Discussing key challenges, relative priorities, and preferred solutions.
- Forming and validating plans across sectors.
- Creating local changemakers and empowering residents, in particular women and youth, to engage in mobilization efforts, data collection activities, and horizontal learning exchanges with other communities.
- Building new local expertise so that residents can plan for themselves instead of relying on outside experts.

In Zambia, for instance, a People's Adaptation Planning process, launched to inform investments by a World Bank project, first sought to engage local leaders (including traditional chiefs and elders) and conducted a Free, Prior, and Informed Consent (FPIC) process for Indigenous Peoples and communities to grant or deny consent to initiate a planning process that includes discussions on rights to land and resources.



Interdisciplinary Consortia

The formation of consortia on key thematic areas identified by the community allows sector experts to contribute their specialized knowledge and provide additional capacity for local government departments. Each sectoral consortium (for instance, on climate resilience, agriculture, water management, or land tenure) includes government, civil society, and private sector experts, ideally led by staff from a corresponding local government department. Core tasks for consortia include:

- Filling sectoral data gaps with community co-researchers.
- Preparing sector plans that reflect the needs and aspirations of residents, and their negotiations in community planning forums.
- Harmonizing across sectors for an integrated final plan.

Scientific Climate Risk Assessment

GCA's local partner engages a local or national university, institution or expert to identify, assess and map climate exposure, sensitivity, and adaptive capacity of a specific area, population, or sector to climate-related hazards. In addition to building local capacity to conduct scientific climate risk assessments, this step seeks to establish a working relationship between local governments, communities, and local or national research institutions, including meteorological services, to inform and complement community-led climate risk profiling.

Where this capacity does not exist locally, national or global technical experts support local experts to develop the climate risk assessments. In Homa Bay, for instance, GCA contracted an international consulting firm to build the capacity of the county government and the local Tom Mboya University to conduct such assessments, through learning-by-doing and capacity-building workshops.



Key stakeholders—including representatives from climate-vulnerable communities, Chattogram City Corporation, and Chattogram Water Supply and Sewerage Authority—endorsed the locally led planning process during the inception meeting held in June 2024 in Chattogram.

Identification and Training of Community Mobilizers

Community mobilizers are recruited from all stakeholder groups, in particular the most marginalized groups (tenants, women, youth, people living with disability) but also groups with vested business interests in the status quo (slum owners and informal service providers). They are trained in technical skills such as data collection and mapping, and in leadership skills such as communicating climate change, group facilitation, and conflict resolution.

The training of community mobilizers builds capacity within the community for iterative adaptation planning and implementation and is an investment in their capacities so that they can become its champions, working together to steward the process through challenges. It also builds on the trust that exists within the community; provides opportunities for marginalized stakeholders to take on leadership roles; and is more cost effective than relying on more expensive outsiders and experts.

Settlement Profiling

An initial broad profiling of settlements by the community mobilizers provides a broad understanding of different climate-related risks and challenges faced by residents. This step is particularly helpful in identifying settlements that are more vulnerable to climate change, when limited funding necessitates such prioritization.

For instance in Chattogram, Bangladesh, where GCA is supporting a World Bank water and sanitation project, GCA's local partners, WaterAid Bangladesh and Dushtha Shasthya Kendra, first profiled all the low income communities (LICs) in the 17 wards of the city. Secondary data gathered during the situational analysis had indicated 125 LICs, but the profiling revealed that only 106 remained—the others had been evicted or relocated. Trained community mobilizers then engaged with the residents of the 106 LICs—particularly women, youth, and marginalized groups—collecting spatial and socioeconomic data on climate vulnerabilities, land tenure challenges, and local adaptation practices. Researchers from the Chattogram University of Engineering and Technology then developed climate vulnerability and risk indices from the data. The outcome of this process guided the World Bank towards prioritizing investments in climate-vulnerable LICs.

Household Numbering and Enumeration

This step is the core of the People's Adaptation Plan process. Informal settlements, both urban and rural, are generally data-poor environments. Even data that exists is not always up to date, or reflective of community experience. During this step, therefore, the trained community mobilizers use a purpose-built questionnaire to gather data related to climate vulnerability from the community. They use software like KoboToolbox for data collection, which allows geotagging of the data. They also number and record each structure in the settlement, including houses and public infrastructure like water points, toilets, roads, and drains.

This data is analyzed, usually by the local university or expert collaborating on the climate risk assessment, and brought back to the community and local government. There, it serves as the foundation for evidence-based decision-making by the community, targeting of scarce investments to those most in need, and accuracy in service delivery planning and policy formulation. Critically, it supports the community and local government in identifying the



most vulnerable households and at-risk populations, such as women-headed households and informal workers with livelihoods at risk, and in prioritizing their needs.

In Homa Bay and in Feni, Bangladesh, where GCA is working with AIIB to ensure the inclusion of poor citizens in the design of smart cities, this process unveiled disparities between existing sources, as families had relocated in or out of the settlements.



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Community members participate in a sensitization meeting in Masaiti District, Copperbelt Province, Zambia, where the Plan will inform investments in a World Bank forest management project.

Community Climate Risk Profiling and Planning

The analyzed data from the enumeration process is brought back to the community for validation, and, along with the scientific climate risk assessment, guides the next step of iterative community climate risk profiling. This information supports diverse community groups to rank climate risks, diagnose impacts, evaluate potential solutions, and assess opportunities and barriers. The diverse community groups reflect the full range of experiences within the community, including diversity in age, gender, social, cultural, economic, and ethnic backgrounds, geographic locations, and levels of vulnerability.

Iterative sessions, informed also by inputs from the sectoral consortia, support a process of community visioning of climate resilience and setting of immediate and future goals. The result of this process is a list of costed priority interventions for investment, identified and validated by the community, together with their local government.

THE POWER OF THE PROCESS

The People's Adaptation Planning process generates the evidence and information a community needs to explore and understand local impacts of climate change on aspects of their lives that are important to them. This evidence supports them to negotiate—within the



Climate change is intensifying the competition for access to the Senegal River between pastoralists and fisherfolk, as inland ponds used by livestock dry up earlier in the year. A new jetty planned for fisherfolk will reduce access for livestock to just one point in the River. The planning process was the first opportunity for us to sit together to discuss solutions that will work for both.

Abdoulaye Sow, Pastoralists representative and Member of Council in Bakel, Senegal, where the planning process was piloted for the World Bank's *Projet de Développement et de Résilience Communautaire dans la Vallée du Fleuve Sénégal* (Community Resilience and Development Project in the Senegal River Valley).

community and with providers of finance—which needs, and whose needs, should be prioritized.

Integrated Plan

Many of the climate vulnerabilities of the informal settlements of the poor, urban, and rural stem from either the lack of spatial, socioeconomic, and environmental planning, or from exclusion from planning. Unplanned, fragmentary, project- and sector-based responses to these vulnerabilities tend to be insufficient, inefficient, and ineffective. The opportunity to plan is essential for communities, leaders, and governments to make decisions on the use of resources, capital, and land. After all, that is why planned approaches are legally mandated by governments.

Planned approaches become even more important when difficult decisions need to be made, for instance on how scarce resources can address the development needs of today, but also the climate-resilience needs of the future. Should a sewer or drainage system cater only for current population and rainfall data, or should additional investments be made, to cater for a higher population and more rainfall?

For members of the community, the opportunity for locally led adaptation planning is also an opportunity to truly understand and internalize how climate change will impact their lives, and who will be the worst impacted. It is an opportunity for them to negotiate with each other on whose needs or which needs should be prioritized, and why.

A planned approach to adaptation in each community also ensures that there are long-term goals and a vision of climate resilience, defined by the community on their own terms, that can continue to guide investments from fragmented sources, towards a more integrated path. It offers an opportunity to take stock of, and record, the resources, infrastructure, and capacities that already exist, so investments build on them, rather than duplicate previous efforts.

Locally Grounded, Evidence-Based

The process ensures that planning starts with accurate, locally generated data and information. The data collected by community mobilizers, through enumerations, participatory mapping, and risk profiling aims to ensure



that no person or household remains unseen. Communities own the data and therefore trust that it reflects their current up-to-date local realities better than infrequent national censuses. It ensures that community prioritization of action is based on evidence, reducing the risk of wasted or misdirected investments, and that new efforts build on existing infrastructure. For instance, in Homa Bay, it ensured that trunk infrastructure for water or sewage is not underutilized because no record of it exists.

The data also becomes an important baseline to track progress on reducing climate vulnerability and building resilience in future. It offers a more meaningful and locally grounded way of tracking progress on local, national, or global goals on adaptation, and reduces the risk of obfuscation through aggregation. It could make the [Global Goal on Adaptation](#) more meaningful, for instance by supporting robust baselines, clear priorities, and measurable outcomes at the local level.

Where communities consent (for instance in Narayanganj, Bangladesh, where GCA is supporting People's Adaptation Plans to inform city masterplans, or in other locations where GCA is supporting the development of pro-poor "climate-smart cities" for an AIIB project) the data they generate is integrated into government databases to create a more up-to-date and comprehensive resource for formal planners, which includes the previously invisible.

Inclusive Decision-Making

The house-to-house enumeration ensures that every household within a community is informed of the planning process, made aware of the risks of climate change, and given the opportunity to engage.



© GCA

Community mobilizers map Ringiti Island, Homa Bay County, Kenya

It ensures that the data collected is disaggregated, reflecting and confronting household and individual vulnerability (for instance, of gender or age groups, or low-income or marginalized households). This brings to life the core principle of “leaving no one behind” within the community.

Marginalized groups like women and youth play a central role in the process as data collectors, mobilizers, and facilitators. They are trained, including in leadership skills, to create a cadre of local champions who can continue to act as advocates and watchdogs.

Embedded in National and Local Systems

The buy-in and engagement of national and local government agencies, and the use of existing governance systems and institutions, is a prerequisite for the planning process. The situational analysis and stakeholder mapping identifies existing formal and informal groups and committees including for instance statutory groups like disaster management committees or resource management committees, and informal self-help groups, for engagement in the process.

Where possible (for instance in Homa Bay) the planning process goes beyond its mandate of supporting an IFI project, to support the integration of locally led approaches into formal planning processes. Following national legal guidelines, like the notification of an intention to plan in Homa Bay, gives the planning process greater legitimacy and more access to funding.

In several municipalities in Bangladesh, for instance, the Plans empowered community members to negotiate with their local governments to fund implementation through Annual Development Plan (ADP) budgets. In Mongla in Bangladesh, for instance, the communities secured €2,56,354 from the ADP budget, while in Chattogram, communities raised €17,52,394. In Narayanganj, the People’s Adaptation Plans are set to influence investments into urban Masterplans.

In Rwanda and in Zambia, meanwhile, the planning process is informing guidelines for the integration of adaptation into local development planning processes—District Development Strategies in Rwanda, and Integrated Development Plans for districts in Zambia.

Empowering Communities to Negotiate

Equipped with robust data and collectively agreed priorities, communities are also better able to negotiate with local and national governments, donors, and IFIs for more robust infrastructure that can withstand climate shocks. In Patuakhali, Bangladesh, for instance, communities used the Plan to convince the local government to invest in a road to mitigate some of the impacts of flooding on the community. The road is elevated and has wider drainage, to deal better with flooding due to storms and cyclones.

Over time, the Plans have the potential to shift the dynamic from fund providers dictating priorities to communities actively shaping and securing investments.

Building Institutional Capacity and Sustainability

At every level and stage of the planning process, opportunities to institutionalize capacity and to support peer-to-peer learning for locally led adaptation are supported, either through direct



support to the IFI projects (for instance in Ghana, Cameroon, and Central African Republic) or the activities of the [Global Hub on LLA](#). The approach recognizes that capacity-building on LLA is necessary for all actors, from IFI staff to national and local governments, and academic and research institutions. Meanwhile, communities (and local governments) are more likely to benefit from learning exchanges with their peers.

The local climate risk assessments that supplement community data collection as part of the planning process are conducted by local universities—many of which have not conducted such assessments before. The capacity of such local and national institutions to respond to local information needs is supported. Where possible (for instance in Zambia and in Homa Bay) local governments and partners are encouraged to sign MoU's with local universities to institutionalize the process of universities supporting adaptation planning by local governments and communities.

Capacity-building initiatives for project implementation teams (including national and local government staff) are also supported by GCA. These include an online [Masterclass on Locally Led Adaptation](#) and in-person, nationally contextualized training on LLA. In Senegal, for instance, GCA developed a sub-project manual laying out the methodologies for locally led planning, and subsequently trained project management units (including regional and local governments, and civil society organizations) in its implementation.

Meanwhile, the Global Hub on LLA delivers targeted and institutionalized capacity-building for national and local government staff outside of direct project support, building on the learning from the People's Adaptation Planning processes. For instance, GCA is supporting the faculty of the Bangladesh Public Administration Training Center (BPATC) to develop LLA training modules for national and local public administrators, drawing on GCA's experience in locally led adaptation planning in Bangladesh. Both senior and junior public administrators from all sectors and ministries, mandated to go back to BPATC at various stages of their career, will receive this training.



Community enumerators conducting the household mapping and survey exercise, Ringiti Island, Homa Bay County, Kenya



© Abu Nayeem Md. Shakib, BRAC

A woman collects vegetables from her garden beside the community pond in Narikeltola, Bangladesh, where GCA is supporting a People's Adaptation Plan to inform investments in a coastal resilience project.

Communities are also supported to learn from each other, to foster adaptation innovation and solidarity across cities and regions. The community from Mongla in Bangladesh [visited](#) Patuakhali, for example, and inspired the creation of a community operations and maintenance fund. Residents of informal settlements in Mumbai, India, advised the residents of Mongla to target local government budgets, and to organize in federations, for collective advocacy and learning. Communities also share information on specific adaptation responses, such as the maintenance of roadside vegetation to reduce flood risk and recharge aquifers.

Critically, women and youth from within the community are trained as enumerators, mappers, facilitators, and leaders. In some cases, as in Mirsarai in Bangladesh, governments have expressed their intention to formalize the role of the trained community mobilizers in supporting locally led efforts. Such initiatives could, in the future, translate to adaptation job opportunities for women and young people in supporting the climate resilience of their communities.

Finally, GCA supports peer-to-peer learning [between the local partner organizations](#) who facilitate the planning process, with the intention of supporting collaboration instead of the multiplication of methodologies that all seek to achieve the same end (such as methodologies for community engagement or organization, or for community-led climate vulnerability risk assessments). "By aligning GCA's locally led planning process with WaterAid's Participatory Ward Vulnerability Assessment (PWVA) guidelines, we co-created a process that strengthened community leadership and bridged science and local knowledge," says Partha Hefaz Shaikh, Director of Program and Policy Advocacy, WaterAid Bangladesh. "The emphasis on inclusivity, evidence, and shared learning has been invaluable, and we're already carrying these lessons into our broader policy and advocacy work."

CHALLENGES AND LESSONS



CHAPTER

1

Over the past four years, GCA's support for People's Adaptation Plans in Africa and Bangladesh has revealed a number of challenges and generated valuable insights.

Balancing Speed, Scale, and Sustainability

A major challenge lies in navigating the tension between speed, scale, and long-term sustainability. Building genuine community understanding and ownership, and ensuring alignment with national and local systems, is a time-intensive process. However, this process often faces time constraints—either due to limited planning budgets or the tight timelines of IFI projects that these plans aim to influence.

These constraints can restrict activities, such as house-to-house surveys, which are crucial for understanding climate threats; enabling evidence-based, multisectoral planning; identifying the most vulnerable; empowering communities; and establishing resilience baselines to monitor progress.

Ideally, locally led adaptation planning should be mainstreamed in countries with established governance, legal, institutional, and fiduciary systems that support decentralization. Rather than being driven by individual projects, communities and local governments should be supported to undertake locally led adaptation planning as part of a continuous development planning cycle. These Plans could then inform national and local government investments and attract funding from external adaptation finance sources.

As an initial step, the People's Adaptation Plans developed with GCA's support will be made available through the [Global Hub on Locally Led Adaptation](#). This will help adaptation finance providers align their investments with community-identified priorities. Anonymized data collected through the process will also be shared—with community consent—to ensure future adaptation efforts can build on existing plans, data, and community capacity.

Need for Technical Support

While communities are central to identifying adaptation priorities, not all solutions lie within their immediate control. Some require collaboration with technical experts—for example, designing climate-resilient, affordable housing—while others depend on systemic action at sub-national or national levels, such as infrastructure development or policy reform.

To bridge this gap, GCA is piloting Women's Adaptation Labs, inspired by the [Roof Over Our Heads](#) (ROOH) campaign. These Labs bring in technical expertise to co-develop solutions with communities. One such initiative involves supporting women in Bangladesh to design “green roads for water” under a World Bank rural roads project. These roads are designed to facilitate water flow, benefiting agriculture and households, while also reducing flood-related damage to infrastructure.

At the same time, situational analyses within the planning process are being strengthened to better identify drivers of climate vulnerability that require government intervention.

Enhancing Data Use and Local Capacity

The planning process continues to evolve, shaped by local contexts, previous experiences, and learning from other initiatives shared via the Global Hub on LLA. For example, GCA works with local partners to adapt household survey questionnaires to capture context-specific vulnerabilities, including those related to migration, social protection, and access to finance.

However, longer surveys produce more complex, disaggregated data that require enhanced analytical capacity. Many local partners, including collaborating universities, may lack the resources or skills to analyze this data effectively or translate it into meaningful narratives for communities. To address this, GCA is promoting peer learning as a strategy to strengthen local analytical capabilities.

Integrating with National Systems Requires Sustained Support

There is strong interest from governments in embedding this planning approach into national systems. However, meaningful integration demands sustained support beyond individual project cycles. For instance, Rwanda's Local Administrative Entities Development Agency (LODA) is actively exploring how to scale up this approach through the national District Development Planning process. While pilot efforts in two districts are complete, further support is needed for policy review, institutionalization, and capacity-building of LODA staff. Traditional project-based models do not provide the long-term engagement necessary for systemic change. In response, GCA is redesigning its next phase—AAP 2.0—to better support strategic opportunities for influencing national systems and enabling lasting transformation.



CHAPTER 2

RESILIENCE, MADE LOCAL: LIFE-AR AND LoCAL

KEY MESSAGES

- Uganda, Malawi, and The Gambia are implementing both the Least Developed Countries Initiative for Effective Adaptation and Resilience (LIFE-AR) and Local Climate Adaptive Living Facility (LoCAL) approaches to Locally Led Adaptation (LLA), but in different ways. While The Gambia opted to modify LoCAL to take on board LIFE-AR elements, Malawi and Uganda chose to have both approaches co-exist, relying on formal and informal channels to facilitate learning between the two.
- In The Gambia, LIFE-AR is supporting modifications to LoCAL to support community and village-level decision-making, ensure 70% of funds reach communities, establish bottom-up transparency and accountability mechanisms, and strengthen local capacity to plan and implement adaptation solutions.
- In Malawi, an emerging question for LIFE-AR, however, is how to interpret and respond to the results of the performance assessments for district councils, without penalizing communities for the inability of their councils to adhere to externally determined rules.
- Uganda is working to establish formal links between LIFE-AR and LoCAL. LIFE-AR uses the national-level Climate Risk and Vulnerability Assessment (CRVA) undertaken by LoCAL to direct investments to the most impacted districts and local governments. The CRVA has been customized by LIFE-AR to be more inclusive of people at the most local level. LoCAL, in turn, has refined its assessments, engaging communities earlier and longer in the planning process.
- Implementing LIFE-AR has provided six key lessons for LLA, including the need for dedicated champions; constant vigilance to avoid elite capture; time to build local expertise; managing complexity in planning and budgeting; strengthening financial management systems; and tailoring the LLA Principles to political realities.

Devolving Decision Making

Addressing Structural Inequalities

Patient, Predictable, Accessible Funding

Investing in Local Capacities

Building Understanding

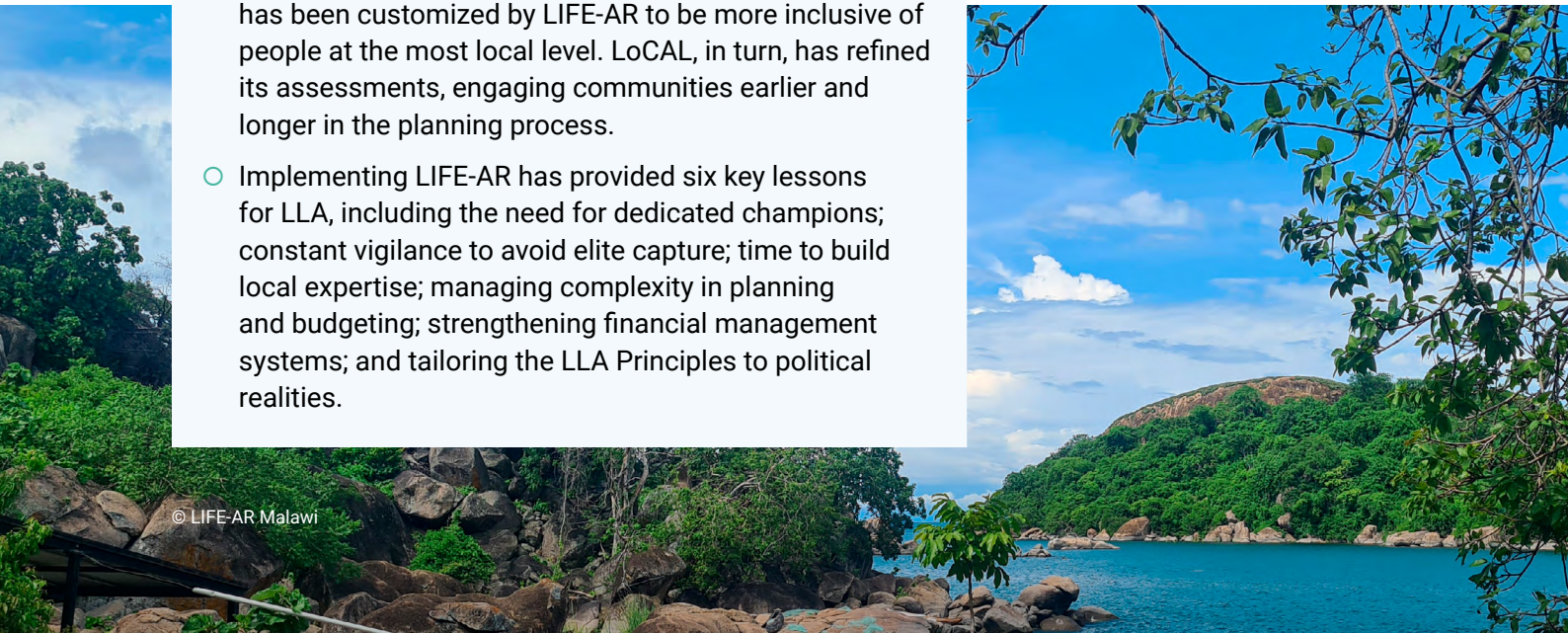
Flexible Programming and Learning

Transparency and Accountability

Collaborative Action and Investment

IN THIS CHAPTER

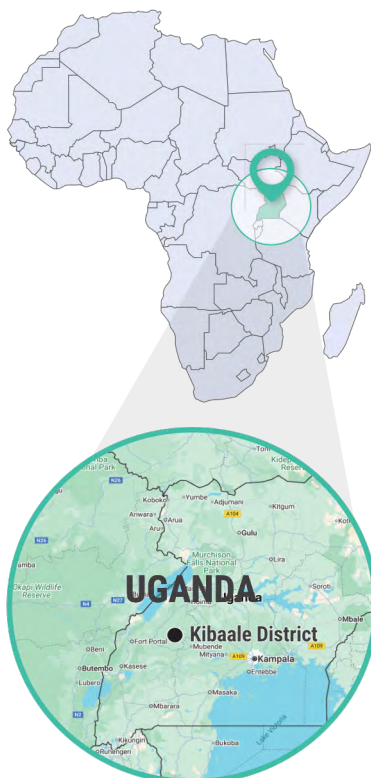
- Devolving Climate Finance to Communities in Uganda
- Getting Money Where It Matters
- Three Countries, Three Approaches
- Informing Implementation of the LLA Principles
- Six Lessons From LIFE-AR
- Learning and Sharing While Sustaining Impact





The thing we are happy with and we are benefiting from is that the funds are going direct to the location of the investment, which has never happened before.

Catherine Animate, Natural Resources Officer of Kibaale District in western Uganda



DEVOLVING CLIMATE FINANCE TO COMMUNITIES IN UGANDA

Natural Resources Officer Catherine Animate knows the lands of Kibaale District in western Uganda intimately—the soil, the seasons, and the fragile balance that sustains her community through small-scale farming and animal husbandry.

Having worked there for more than 25 years, she has witnessed many changes. The land before her now is not the same as it was decades ago. Droughts last longer, rains arrive later—and when they do, they often come with torrential floods and fierce winds that destroy homes, wash away crops, and tear through public infrastructure. Catherine has watched families lose their livelihoods overnight, struggle to rebuild, and face repeated disasters.

The impacts ripple through the community, but do not affect everyone equally. In Kibaale, traditional gender roles shape how climate change is felt. Men usually prepare land for cultivation and rear livestock, while women are responsible for raising children, collecting water, and cooking. These roles leave women and children particularly vulnerable when resources become scarce.

In the parish of Rusenke, for instance, water sources first become inaccessible because of flooding during the rainy season and then dry up due to drought. Women must walk further to collect water, often from unsafe ponds and stagnant pools that threaten the health of their families. Sometimes, they must pull their children out of school to help carry water home—a painful trade-off that deepens poverty and limits opportunities for the next generation.

For Catherine, these are not just bare facts. These are the struggles written on the faces of her neighbors and friends, and the daily reality of a community she has spent her life serving. She has also witnessed the limited impact of solutions that arrive ready-made, blind to community needs and to the different needs of women and men. In recent years, she is convinced that the solutions must begin with the people who not only feel the pain, but know the remedy.

Recently, however, she has begun to sense a shift—and this time, it feels different.



© LIFE-AR Uganda

Boreholes, such as this one in Kibaale district, Uganda, reduce the burden of fetching water for women and children.

For the first time, her community is being given a voice in deciding how funds should be used to help them adapt to these changes. The Least Developed Countries Initiative for Effective Adaptation and Resilience (LIFE-AR) is channeling funds directly to parishes through a Devolved Climate Finance (DCF) mechanism.

“The thing we are happy with and we are benefiting from is that the funds are going direct to the location of the investment, which has never happened before,” she says. “With LIFE-AR, the parishes are also much more involved. Each parish was able to identify their climate needs and solutions and participate in planning for the resources allocated.”

Catherine and her colleagues provide technical support and facilitate planning sessions where men, women, and children share their priorities. Funds go directly to elected parish climate change committees, who are mandated by the community to lead decision-making, community engagement, and project monitoring.

With the first tranche of funding, the people of Rusenke parish installed boreholes to reduce the burden of fetching water for women and children. The lessons learned from this first round will inform the next round of decisions by the community and their local governments. The community is now more trusting of a local government that is willing to listen and respond to their needs, and more willing to work with them, shoulder to shoulder, to confront the shocks of a changing climate.



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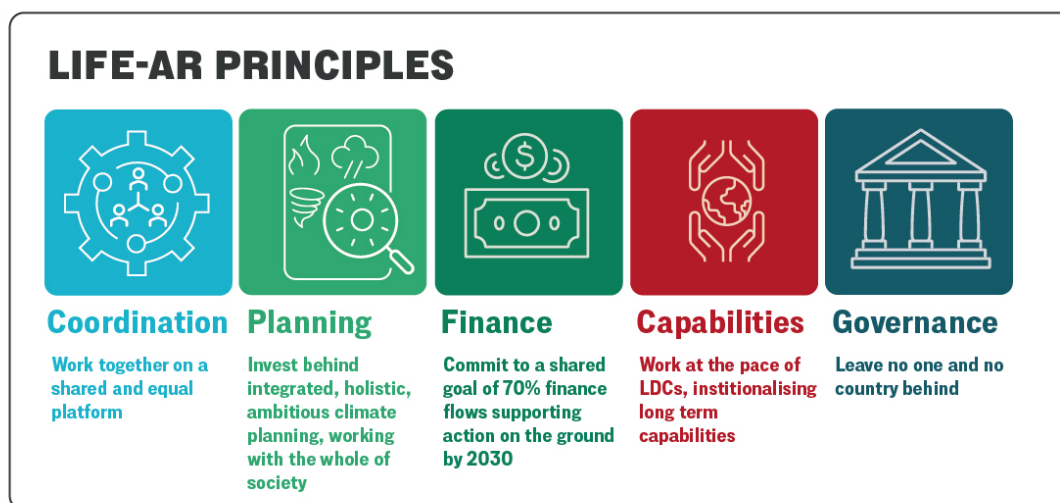
GETTING MONEY WHERE IT MATTERS

Channeling devolved and flexible funding directly to affected communities is a central tenet of locally led adaptation (LLA), but also perhaps the most difficult to achieve. At every step of the way, from international fund providers and institutions to national and local governments, ceding the power to decide how the funds should be used is arguably one of the biggest challenges to effective LLA. This is the challenge that LIFE-AR set out to overcome, as described in Chapter 2 of the *2024 Stories of Resilience* report.

Least Developed Countries (LDCs) designed the LIFE-AR initiative to transform how climate action is prioritized, financed, coordinated, and evaluated. At the heart of LIFE-AR is the **LDC Compact**, which includes a set of principles, a set of offers from the LDCs, and a set of asks for development partners. Recognizing that climate finance is currently ineffective because it relies on short-term projects and funding that is delivered top-down through expensive intermediaries and consultants, the Compact calls for:

- Long-term, predictable climate finance
- Locally driven decision-making
- Stronger integration of local knowledge
- Reduced reliance on expensive intermediaries

As of 2024, this Compact has been **signed** by 10 LDCs and 11 development partners.



Six pilot countries (Uganda, Malawi, The Gambia, Bhutan, Ethiopia, and Burkina Faso) are creating **national platforms** and **delivery mechanisms** to channel funds directly to communities, building on existing processes and institutions. These homegrown systems oversee investments, ensure accountability, and integrate the LLA Principles into domestic governance. New tools, funding procedures, and responsibilities are introduced to shift people's understanding of how governments can or should operate.

Building on the detailed description of the LIFE-AR process provided in last year's report, this chapter describes how implementation is progressing in Uganda, Malawi, and The Gambia. It goes a step further to explore how LIFE-AR leverages the lessons of the earlier work by the UN Capital Development Fund's Local Climate Adaptive Living Facility (LoCAL), which was described in Chapter 7 of the *2022 Stories of Resilience* report.



© LIFE-AR Uganda

Community members in Pader district, Uganda, take part in a training session on tree planting.

Tested in over 30 countries, LoCAL provides performance-based climate resilience grants as a top-up to the regular development budget transfers from national to local governments. These additional funds can be used to either climate-proof ongoing development investments or support standalone resilience-building projects. Local adaptation plans and programs, informed by participatory climate risk assessments, identify community needs and capacities, and are integrated into local development planning and budgeting processes. Grants are then disbursed as part of the local governments' development budgets. After implementation, performance is assessed to determine how effectively the top-up funds have been used to build resilience and adapt to climate change. The findings from these assessments directly inform future grant allocations, rewarding stronger performance and promoting continuous improvement.⁷

The experience of LoCAL gave LIFE-AR's early adopters valuable insights and opportunities for innovation in establishing systems supported by LIFE-AR. For example, LoCAL demonstrated the feasibility of channeling climate finance to local governments through existing public financial management systems. LoCAL also introduced innovative minimum conditions and performance tracking to encourage stronger financial management and better responses to climate risks.

THREE COUNTRIES, THREE APPROACHES

Uganda, Malawi, and The Gambia are implementing both LIFE-AR and LoCAL, but in different ways. While The Gambia chose to modify LoCAL to take on board LIFE-AR elements, Malawi and Uganda chose to have both approaches co-exist, relying on formal and informal channels to facilitate learning between the two.



CHAPTER

2



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LoCAL has invested US\$ 4 million in various projects in The Gambia, from poultry and horticulture to boreholes and culverts.

The Gambia: A Little Bit of Both

LoCAL has been operating in The Gambia since 2018, investing US\$ 4 million in 10 projects, including boreholes, culverts, poultry, and horticulture. Grants were allocated to Ward Development Committees responsible for several villages. Participatory climate risk assessments were conducted by local expert teams, incorporating the needs of women and people with disabilities. Members of the Committees and the expert teams were trained in participatory planning for adaptation and resilience building and on financial management.

Recognizing LoCAL's strengths in community empowerment, The Gambia's LIFE-AR team hired a Gambian consultant to critically explore how LoCAL could be aligned with the LIFE-AR Principles. Overall, the findings show LoCAL's commitment and approach to community empowerment successfully delivered over 70% of funds to communities and created tangible adaptation and economic benefits.⁸ However, some gaps, relevant to the LIFE-AR Principles and the LDC 2050 Vision for a climate-resilient development pathway, were identified:

- Limited community involvement and participation. The assessment found that LoCAL did not operate at village level directly, including during project implementation.
- Insufficient integration of local meteorological data, climate information services, and sustainable capacity strengthening for the decentralized structure for more meaningful empowerment.
- Weak gender equality and social inclusion (GESI) consideration and measures.
- Delays in fund transfers and restricted choices for community investment in terms of meeting their specific needs.
- Limited application of a whole-of-society approach.
- Limited knowledge sharing, particularly with communities and government agencies.



“The finance must flow direct to the local level,” explained Modou Cham, from the Ministry of Environment Climate Change and Natural Resources of The Gambia. “Previously, there were delays, with reductions in the amount of money reaching the community. The best approach is to reduce the intermediaries.”

Following national workshops to find ways to address these gaps, an assessment of the preparedness of village-level committees and other roles to directly receive funding was undertaken. These committees then received training in planning and financial management.

LIFE-AR is now supporting modifications to LoCAL, as shown in Table 1, to:

- Use domestic climate data.
- Empower community/village-level decision-making.
- Establish bottom-up transparency/accountability methods using monitoring, evaluation, and learning methodologies and communications.
- Ensure at least 70% of funds reach communities directly.
- Mainstream gender equality and social inclusion policies.
- Conduct capacity needs assessments and develop a curriculum for strengthening the capabilities of local governments, councils, ward and village development committees to plan and implement adaptation actions.

TABLE 1: Examples of Modifications to LoCAL through LIFE-AR in The Gambia

LoCAL	ADAPTED LoCAL	LLA PRINCIPLE
Climate information from outside The Gambia	Climate information from the Gambia National Meteorological Agency	5
Investment menu covering six thematic areas	Open menu enabling community innovation	1
Allocation formula based on ward size and population	Flexible formula with larger initial sums and 70% of funds reaching the local level	6
Wards report to technical and steering committees for donors	Village leadership reports to communities on progress as well as to ward development committees and donors	7
Capacity-building by external consultants	Academic and training institutions from The Gambia provide capacity-building	4
Governance structure focuses on equality of representation of women	Governance structure includes a GESI working group to ensure mainstreaming at all levels	2

Malawi: Parallel Systems, Shared Learning

Malawi is implementing LoCAL in three districts—Nkhotakota, Mulanje, and Mwanza—and LIFE-AR in three districts—Salima, Mangochi, and Rumphi. The two programs take different approaches to planning and finance delivery, providing an opportunity for those involved to share experiences and learn from each other.

The strength of LoCAL is the use of existing government systems for planning, budgeting, and channeling funds. While communities are consulted during the participatory climate resilience and vulnerability assessments that identify adaptation priorities, district councils make the final decision on what to fund. Accountability of the councils to the communities is assessed during annual performance assessments.

LIFE-AR uses a more granular, participatory, and grassroots approach, focusing heavily on gender equality and social inclusion. Participatory assessments are conducted at village level, with particular efforts to articulate the differing priorities of men and women in relation to climate risks. The adaptation priorities identified in these community meetings then become the core focus of LIFE-AR funding.

LIFE-AR has relied on Malawi's own institutions to develop a mechanism based on their understanding of conditions in-country. One emerging question for LIFE-AR, however, is how to interpret and respond to the results of the performance assessments for district councils, without penalizing communities for the inability of their councils to adhere to externally determined rules.

"People feel more included under LIFE-AR," says Yamikani Idriss, LIFE-AR's National Technical Lead. "It's easier to make progress when villagers see their views taken seriously."



Signing of the grant agreement with communes selected for LIFE-AR investments in Malawi.



© LIFE-AR Uganda

Queuing for the election of the Parish Climate Change Committees in Kaabong, Uganda.



CHAPTER

2

Uganda: Parallel Systems, Integrated Leadership

LoCAL has been implemented in Uganda as of 2016, and LIFE-AR as of 2020. LoCAL decides allocations based on the national poverty index and population, with grants to each district ranging between UGX 300,000,000–800,000,000 (approximately €70,000–90,000). LIFE-AR offers UGX 170,000,000 (€40,000) to each parish, with three or four parishes currently targeted in each district (approximately UGX 500,000,000 or €120,000 for each district), with more parishes to be added in the future. LoCAL uses standardized performance measures, which are used by the Prime Minister's Office to assess progress. LIFE-AR intends to develop performance measures with the communities.

Both LoCAL and LIFE-AR are managed by the Ministry of Water and Environment, so mutual learning flows through informal channels. For instance, experience with LoCAL informed the design of Uganda's DCF mechanism, and LIFE-AR used the national-level Climate Risk and Vulnerability Assessment (CRVA) undertaken by LoCAL, together with the Prime Minister's Office's National Disaster Risk and Vulnerability Atlas, to direct investments to the most impacted districts and local governments. LIFE-AR now uses a version of LoCAL's participatory, which has been customized by LIFE-AR to be more inclusive of people at the most local level. LoCAL, in turn, has refined its assessments, engaging communities earlier and longer in the planning process.

Uganda is working to establish more formal links between officials in the two initiatives. This could include scheduling Steering Committee (highest level of governance) meetings for both initiatives on the same day, chaired by the Permanent Secretaries of the Ministries of Environment and Local Government. Joint monitoring processes are being discussed, where the same team will monitor both programs. LIFE-AR has also established a new Community of Practice (CoP) in Uganda, initiated with virtual webinars, and intended for LIFE-AR to share lessons with the wider LLA community in the country and beyond. As the CoP is coordinated by same key line ministry that supports both LIFE-AR and LoCAL, the intention is to broaden the CoP to foster wider learning on LLA initiatives across the country.

INFORMING IMPLEMENTATION OF THE LLA PRINCIPLES

The experience of implementing LIFE-AR and LoCAL in the same countries provides valuable insights into putting the LLA Principles into practice.

The first principle of devolving decision-making to the lowest appropriate level is interpreted differently by the two delivery mechanisms, leading to distinct approaches with their own advantages and trade-offs. Delivery mechanisms supported by LIFE-AR are designed in-country and focus on financing grassroots decision-making at the village or parish level. LoCAL, meanwhile, integrates community perspectives into decision-making but channels them through higher-level local government institutions—the district councils. Both approaches have clear merits.

Enabling decision-making at the most local levels, as LIFE-AR does, requires a longer set-up period. Interviewees from Uganda and The Gambia explained how they worked hard to support strengthening of capabilities to manage funds and make informed decisions. LoCAL, on the other hand, has been able to bed in more quickly and deliver funding by working with institutions that already have established and trusted systems for managing financial risk.

Interviewees from all three countries noted that LoCAL's approach remains more top-down, as final decisions are made by government authorities with input from communities.⁹ LIFE-AR places greater responsibility on community-led institutions to make decisions. This approach also helps address structural inequalities.

In The Gambia, efforts to integrate LIFE-AR and LoCAL are focused on ensuring that decision-making bodies are both legally constituted and inclusive by design. As Annet Nakyeyune from the International Institute for Environment and Development explains, this includes representation of women, young people, people with disabilities, and other marginalized groups, ensuring that adaptation plans reflect diverse perspectives.

Another key insight relates to the fifth LLA Principle, which emphasizes the need to base adaptation on reliable climate information. LIFE-AR has worked to integrate domestic meteorological services with local and Indigenous knowledge, helping ensure that adaptation measures are both evidence-based and rooted in community realities.

The two mechanisms also differ in how they establish institutional legacies—systems that allow countries to retain administrative and financial skills over the long term. Both LIFE-AR and LoCAL promote participatory planning, monitoring, and the integration of climate information, but LIFE-AR is challenging the norm and going further by strengthening grassroots institutions to manage funds directly. It also relies on domestic expertise, involving national meteorologists, academics, and financial managers rather than outsourcing to international consultants.

On one hand, this approach demands a greater upfront investment of time and resources to build funder confidence that local systems can manage funds safely. On the other hand,

it creates long-term value, as local people gain skills and experience with each funding cycle, gradually reducing dependency on external actors.

In Uganda, LIFE-AR collaborates with institutions like the Makerere University Centre for Climate Change Research and Innovations (MUCCRI). Similarly, in The Gambia, it partners with the University of The Gambia and The Gambia Rural Development Institute to support planning processes. These partnerships are building a cohort of national experts capable of leading future adaptation planning, ensuring quality assurance, training, and innovation.

LIFE-AR's deliberate avoidance of international consultants reinforces this approach. It encourages governments to rely on local staff, academics, civil society organizations, and training institutions, creating a pool of domestic expertise that will continue to deliver benefits for years to come. However, this process is slow and resource-intensive, especially since local institutions often face limited staffing and financial constraints.

Establishing the systems that make LLA work requires time and patience, particularly when the goal is to ensure that the process is fully owned by the host country. It requires predictable, long-term funding that allows governments and communities the space to experiment, learn, and adapt over time.

Flexibility is also critical when monitoring LLA initiatives. While involving communities in deciding what to measure and how to measure it can make monitoring more meaningful and inclusive, it also demands significant resources in the short term. Over time, however, these participatory approaches strengthen local ownership, improve accountability, and lead to more sustainable outcomes.



Community consultations, such as this one in Malawi, are essential to implementing LLA.



SIX LESSONS FROM LIFE-AR

Reforming climate finance was never going to be straightforward. The old system carries significant inertia, and shifting towards new ways of getting resources where they are most needed requires both innovation and persistence. Implementing LIFE-AR has provided six key lessons on implementing the LLA Principles.

1. LLA needs dedicated champions

LIFE-AR's way of working represents a fundamental departure from how development programs are usually designed and delivered. Its strong emphasis on government leadership places greater demands on public officials, requiring them to take on new roles in research, oversight, and implementation.

While this approach delivers long-term benefits, it has required dedicated champions within governments to build momentum. These individuals have played a key role in convincing stakeholders that LIFE-AR supports their priorities and aligns with national objectives. Progress has also depended on working at the pace of national governments, ensuring ownership and alignment rather than forcing externally driven timelines.

2. Constant vigilance is necessary to avoid elite capture and external control

The LLA Principle on shifting decision-making closer to communities comes with risks. LIFE-AR recognizes the danger of local elites capturing planning processes to divert investments toward their own locations or economic sectors, leaving historically marginalized communities behind.¹⁰ In some contexts, powerful individuals have been known to influence the decisions of parish climate change committees to serve their interests. Interviewees stressed that constant vigilance is required to prevent such scenarios.

A related challenge arises when non-local actors—such as government agencies, international development organizations, or donors—dominate the conversation about what counts as acceptable climate adaptation.¹¹ In response, LIFE-AR insists that host countries and local level actors/communities retain control of programs and that delivery mechanisms be co-designed with the whole of society, ensuring diverse voices at the local level are meaningfully included.

3. Building domestic expertise takes time

LIFE-AR deliberately chooses to work within existing national structures and prioritize local consultants over international ones, reflecting its goal of building long-term domestic expertise. However, this approach can be slow and resource-intensive due to limited institutional experience and constrained capacity in many countries. For instance, just designing LIFE-AR's delivery mechanisms took over a year in Uganda, Malawi, and The Gambia.

While the LLA Principles emphasize the importance of patient and predictable funding, this slow pace can be challenging for funders, who often face pressure to demonstrate quick, tangible results to their taxpayers. LIFE-AR is committed to showing donors that its approach leads to more sustainable, long-lasting impacts and better value for money compared to traditional short-term projects.



A meeting of the LIFE-AR steering committee in The Gambia.



4. Managing complexity in planning and budgeting

LIFE-AR's whole-of-society approach makes planning more inclusive but also more complex. Involving a wider range of actors—from local communities to national authorities—creates more responsibilities to manage, and extra steps in decision-making processes.

This complexity can cause tensions with annual budget cycles, particularly when national systems are not well aligned with evolving community needs. For example, in The Gambia, national budgets are tied to five-year development plans that reflect the priorities of foreign aid donors rather than local realities.

Additionally, short-term project funding has historically shaped local planning processes, making it harder to build sustained participatory decision-making systems. A key challenge for LIFE-AR is to reconcile community-led priorities with existing budgetary frameworks.

5. Financial management systems need strengthening

In Uganda, LIFE-AR has had to rely temporarily on the International Union for Conservation of Nature to manage and hold funds on behalf of government institutions. This interim measure was designed to reassure donors while Uganda works to strengthen its own financial systems and improve its capacity to handle international climate finance.

6. No “right way” to implement the LLA Principles

There is also no single “right way” to implement LIFE-AR or indeed the LLA Principles. Experiences from participating countries demonstrate that approaches to learning vary and should be tailored to political realities. Clear objectives, combined with a solid understanding of what is politically feasible, are essential to designing effective programs.



© LIFE-AR Uganda

Inspection of the investment site is undertaken in Pader district, Uganda.

LEARNING AND SHARING WHILE SUSTAINING IMPACT

Development programs are often shaped by those who finance them, unintentionally limiting local ownership. When funder priorities dominate, programs can overlook the knowledge and capabilities of communities to understand climate impacts and develop solutions.

A climate finance system driven by local actors and priorities requires greater collaboration at every level of decision-making. Bringing together civil society, academia, and local and national governments not only broadens the range of perspectives but also enables more holistic, context-specific solutions.

LIFE-AR's country-led and inclusive approach is designed to build on existing systems, like LoCAL's, while also developing homegrown capabilities and innovating new mechanisms where needed.

There is no need to reinvent the wheel for every program; learning should be encouraged across efforts to implement LLA. Structures for recording successes and challenges are emerging organically in countries such as Malawi, but there is a need to formalize these learning processes, such as the Community of Practice initiated in Uganda, so that insights are shared widely, rather than lost when key individuals move on.

To ensure LLA is implemented most effectively, the creation of systems for continuous learning should be prioritized, ensuring that experiences inform future decisions and enable innovation across programs. A collaborative, collegial atmosphere fosters learning more effectively than competition between initiatives—a lesson underscored by the experiences of both Malawi and Uganda.



CHAPTER 3

EMPOWERING SMALLHOLDER FARMERS TO CONTINUE TO FEED THE WORLD

KEY MESSAGES

- Smallholder farmers in developing countries, who produce nearly a third of the world's food, stand at the frontlines of the climate crisis. With limited resources, small landholdings, and heavy dependence on rainfall, their livelihoods are increasingly vulnerable to rising temperatures, shifting weather patterns, and extreme climate events.
- A combination of responses are required to support smallholders, including enabling them to manage watersheds; practice climate-resilient agriculture approaches adapted to local context; establish self-help and support groups to strengthen agency; and access information to support decision-making.
- Watershed management led by communities has the potential to transform the economy of rural areas by increasing agricultural production, reviving soils and aquifers, harvesting rainfall, and restoring the balance of nature.
- Digital tools must allow reciprocal communication, so farmers can communicate directly with experts for information that is tailored to their needs, and co-create solutions.
- Women farmers are central to adaptation. Self-help groups and Farmer-Producer Organizations can support them in taking leadership roles in decision-making and shaping markets.

Developing Decision Making

Addressing Structural Inequalities

Investing in Local Capacities

Building Understanding

IN THIS CHAPTER

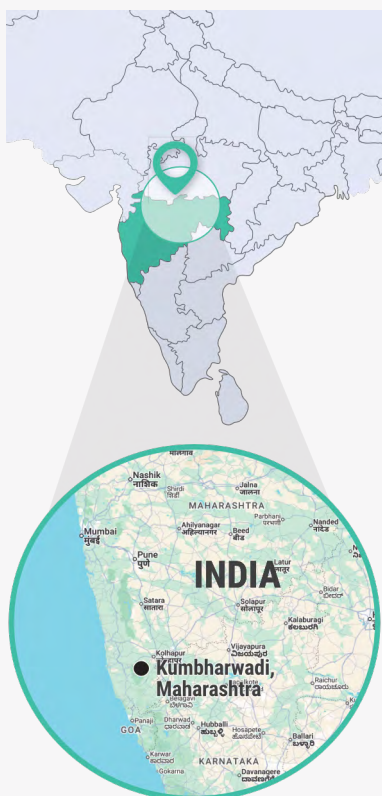
- From Collapse to Renewal
- Smallholder Farmers at Risk
- A Nationwide Movement for Managing Water
- Communities as Water Stewards
- Climate-Resilient Agriculture
- Institutionalizing Solidarity and Support
- Information to Deal with a Changing World
- Scaling Up and Shaping Policy
- The Road Ahead





Most villagers migrated seasonally to brick kilns or nearby cities to earn enough to eat.

Vanita Ugale, a resident of Kumbharwadi



FROM COLLAPSE TO RENEWAL

In the late 1990s, Kumbharwadi, a drought-prone village in Maharashtra, India, was on the brink of ecological collapse. Called the village of potters, it was a place where residents struggled to earn enough to survive. Rain was scarce. The village was served by a single well, which ran dry every summer, leaving residents dependent on water tankers. “Most villagers migrated seasonally to brick kilns or nearby cities to earn enough to eat,” recalls Vanita Ugale, a resident of Kumbharwadi.

Then came inspiration. Kumbharwadi’s neighboring village, Darewadi, used to be in a similar situation, facing severe water scarcity, infertile lands, and limited cropping capacity. Like Kumbharwadi, Darewadi received only about 450 millimeters of annual rainfall, enough to support agriculture for just three to four months a year. But it had transformed itself through something called watershed development.

Watershed development restores watershed ecosystems to direct, harvest, and store rain, while improving soil health and ecosystem function, and ultimately increasing agricultural income and livelihoods. The residents of Darewadi had built contour trenches, check dams, bunds, and gully plugs with support from the Watershed Organisation Trust (WOTR), resulting in dramatic changes. Cultivable land increased, and cropping months expanded from three to four months to nine to ten months per year, supporting year-round employment. Village Development Committees and the Village Water Management Team emerged as community stewards, overseeing resource use, banning borewell drilling, and managing collective decisions.

It gave Kumbharwadi’s residents hope. If Darewadi could reclaim its fields and dignity, why couldn’t they?

Over the next 14 years, they worked to transform their dying village into one that is thriving. The transformation was remarkable. The village created a water storage capacity of 100 million liters. Kumbharwadi now has 330 hectares of cultivated land, of which 210 hectares are irrigated. From 1998 to 2012, US\$ 2.7–3.9 million in investments yielded US\$ 9–10 million in benefits—a net present value estimated at US\$ 5–7.4 million. Groundwater levels rebounded from 6.5 meters below ground to just 3 meters. Lands once considered wastelands have been transformed into productive fields.



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Kumbharwadi residents transformed their village and benefited from increased crop and livestock production.

Planting trees, banning livestock grazing, and other strategies produced US\$ 30,000–43,000 in benefits for each household over 15 years in increased crop and livestock production, avoided costs of water storage tanks, and more.¹² Households gained health, nutrition, biodiversity, and gender empowerment dividends—including improved school attendance, reduced migration, and expanded women’s agency through self-help groups. They were able to withstand droughts better. Farmers took a risk and opted to cultivate a larger number (24) of crops in smaller areas, rather than cultivate a few crops over larger areas as they did during years of normal rainfall. This paid off as a climate adaptation strategy.¹³

Sanskar Panlot Samiti, the committee set up to maintain and manage water-harvesting structures, remains active to this day, with rotating members ensuring that water self-sufficiency is sustained.

The journey that began in Darewadi and Kumbharwadi has ripples far beyond, reshaping farming and water management across India and offering important lessons for supporting smallholder farmers across the world to deal with the impacts of climate change.

SMALLHOLDER FARMERS AT RISK

Across developing countries, smallholder farmers—who produce nearly a third of the world’s food—stand at the frontlines of the climate crisis. With limited resources, small landholdings, and heavy dependence on rainfall, their livelihoods are increasingly vulnerable to rising temperatures, shifting weather patterns, and extreme climate events.

Rising Temperatures and Unpredictable Rainfall: Average global temperatures have risen by 1.1°C since pre-industrial levels, but developing countries are experiencing disproportionate warming. In South Asia, heatwaves now arrive earlier and last longer, reducing crop yields and increasing heat stress on both farmers and livestock. Sub-Saharan Africa faces erratic rainfall and prolonged dry spells, affecting the timing and success of sowing seasons. A 2025 study warns that for every 1°C of warming, maize yields would decline by 4.03% on average globally. For rice, the decline would be 1.1% initially, accelerating to 7.1% per 1°C after 3.13°C of warming. Wheat yields would initially drop by 6.1% per 1°C, with losses increasing to 8.2% after 2.38°C of warming.¹⁴

Increased Frequency of Extreme Events: Climate change is also intensifying droughts, floods, and cyclones, disproportionately affecting farming communities in regions least equipped to cope. In South Asia, recurring floods destroy crops, homes, and seed reserves, forcing families to migrate temporarily or permanently. In East Africa, multi-season droughts have left millions facing acute food insecurity. In Latin America, hurricanes increasingly damage irrigation systems and transport networks, cutting off farmers from markets. These shocks erode farmers' savings, deepen debt cycles, and reduce their ability to invest in climate-resilient practices.

Water Scarcity: Water scarcity driven by climate change is increasingly undermining the livelihoods of smallholder farmers in developing countries. In Vietnam's Central Highlands and South Central Coast, for example, hotter dry seasons and more irregular rainfall have reduced both surface and groundwater availability, causing significant drops in crop yields—particularly for those relying on one or two rainfed crops per year, and among women and ethnic minority farmers with plots under one hectare.¹⁵

In parts of Sub-Saharan Africa, smallholders who depend almost entirely on rainwater face frequent droughts and longer dry spells, pushing them to overuse limited irrigation infrastructure or resort to expensive groundwater pumping where possible, depleting aquifers, leading to long-term water insecurity.¹⁶

Soil Degradation: Soil degradation—loss of fertility, structure, organic matter, and moisture-holding capacity—poses a major threat to smallholder farmers, especially as climate change intensifies. Changes in rainfall patterns, more frequent droughts, heavier downpours, and higher temperatures accelerate processes such as erosion, nutrient depletion, organic matter breakdown, and reduced soil water retention. In Ethiopia, for instance, a large share of smallholder farmers report soil nutrient depletion, increased erosion hazards, and declining soil texture, all associated with climate variability. These soil changes are correlated with observable losses in crop yield.¹⁷

Pest Outbreaks and Crop Diseases: Warming temperatures and changing precipitation patterns have altered pest dynamics, causing unprecedented infestations. In East Africa, the 2020 desert locust invasion—driven partly by climate anomalies in the Indian Ocean—devastated millions of hectares of cropland. In South Asia, rising humidity has increased outbreaks of fungal diseases like rice blast and wheat rust, further threatening food production.



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WOTR's integrated model places communities at the heart of climate action.

Gendered Impacts and Social Inequities: Climate change disproportionately affects women farmers, who make up nearly 43% of the agricultural workforce in developing countries, on average.¹⁸ Limited land ownership, restricted access to credit, and unpaid care burdens make it harder for women to adopt climate-smart practices or recover from climate shocks.

Youth and male migration from rural to urban areas—triggered by declining farm incomes—is reshaping community structures and leaving female and older farmers with fewer hands to work the land.

Health Implications: Beyond livelihoods, climate change is affecting farmer health. Heat stress, vector-borne diseases, and contaminated water sources are increasingly common in rural areas. Combined with food insecurity, this creates a vicious cycle where malnutrition, illness, and reduced labor capacity reinforce vulnerability.

The impacts of climate change on smallholder farmers in developing countries are multidimensional—affecting water, soil, crops, health, and social systems simultaneously. These impacts not only reduce agricultural productivity and income, and affect health and well-being, they also force difficult tradeoffs. Farmers may abandon land, shift to less profitable crops, reduce planting frequency, or invest in costly adaptation measures which many cannot afford. Over time, this contributes to increased food insecurity, greater vulnerability, and a widening gap between well-resourced farmers and the poorest smallholders.

Locally driven adaptation strategies—like those championed by WOTR—offer pathways forward for smallholder farmers to strengthen their ability to adapt, recover, and thrive despite mounting climate pressures.

A NATIONWIDE MOVEMENT FOR MANAGING WATER

Smallholder farmers in India are heavily reliant on rainfall, like farmers in other parts of the developing world. Rainfed agriculture accounts for 68% of India's cropped area, provides livelihoods to 480 million people, and accounts for nearly 40% of the total food production.¹⁹ Managing rainwater for both irrigation and domestic use is therefore critical for food and water security.

India's initial efforts in watershed management were focused on the technical aspects of land and water management, mainly led by experts, but the results proved short-term as people sought to maximize individual gains, straining limited resources. Watershed management approaches then evolved to focus on community leadership, gender equity, and capacity-building of local institutions for watershed management. Local communities became informed water stewards, working together to collect and harvest rainwater through water harvesting structures; and to regulate water flow, groundwater recharge, soil erosion, and water quality by planting trees and sustaining forests.

Watershed development was scaled up nationally in 2009, through an Integrated Watershed Management Program implemented by the Ministry of Rural Development's Department of Land Resources. Since 2015, the Program is implemented as a watershed component of the [Pradhan Mantri Krishi Sinchayee Yojana](#), through a decentralized structure that includes community watershed management committees. Between 2014 and 2022, 764,000 water harvesting structures have been created or rejuvenated, covering 1.64 million hectares for rainfed agriculture.²⁰ The Program aims to cover 55 million hectares of rainfed land by 2027.²¹

Community-led watershed management practices in dryland areas have led to significant results in India, improving soil moisture retention by 20–25%, soil loss by 25–50%, runoff by 50–60%, agricultural productivity by 30–45%, and water use efficiency by 15–25%.²²



© Amol Satpute/WOTR

Modern water-saving technologies like drip irrigation and sprinkler systems are introduced in the WSI approach to help farmers make the most of every drop.

COMMUNITIES AS WATER STEWARDS

In 2015, WOTR and the WOTR Centre for Resilience Studies (W-CReS) launched the Water Stewardship Initiative (WSI)—an approach for climate-smart and locally led water governance, aiming to transform water users into active custodians of this precious resource.

Under the WSI approach, villagers come together to understand their water realities through a participatory water assessment.²³ WOTR's experts capacitate the villagers to understand the water cycle, including geology and aquifer recharge. They then learn to assess the water requirements of humans and farm animals, and the irrigation requirements of each crop, to create a village water budget—a practical plan that balances domestic and agricultural needs while encouraging efficient water use. Modern water-saving technologies like drip irrigation and sprinkler systems are introduced to help farmers make the most of every drop.

To ensure collective responsibility, under the Gram Panchayat (basic governing institution in an Indian village), the Jal Sevak²⁴ (trained youth who provide technical guidance and are responsible for motivating and mobilizing the villagers) and Village Water Management Team monitor and manage water usage. Villagers are trained to grasp vital concepts—from the water cycle and local geology to aquifer recharge zones and groundwater percolation. They learn how to calculate water requirements for households, livestock, and crops and are encouraged to adopt efficient irrigation methods.

CLIMATE-RESILIENT AGRICULTURE

Building on the fundamentals of community-led watershed development and water governance, WOTR has initiated efforts focused on climate-resilient agriculture (CRA) to deal with climate variabilities like consecutive droughts and variation in rainfall.

WOTR's model of CRA goes beyond improving crop yields, focusing also on restoring ecosystems and empowering farmers to lead change. In addition to efficient water management through watershed development and climate-smart irrigation, the approach integrates methods such as sustainable organic farming to revive soil health; farming techniques such as multilayer farming to maximize productivity on limited land; institutionalizing solidarity among smallholder farmers for shared learning and collective growth; and technology-driven solutions to support informed decision-making.

Techniques like multilayer farming²⁵ (growing crops of varying heights on the same plot) support smallholders to make the most of their land while protecting natural resources. Multilayering helps farmers harvest seasonal fruits and vegetables year-round, improving food security; earn additional income by selling surplus produce; enrich the soil with leaf litter and organic mulch, improving moisture retention; and naturally control pests, as some crops act as trap crops.

Rather than a uniform approach to CRA, responses had to be contextualized. In some cases, support was necessary to continue sustainable traditional practices. In others, the damage caused by years of unsustainable agricultural practices had to be reversed.





© Ajeya Behara

Abedan has never abandoned the organic farming methods passed down through generations.

In Madaul village, in the tribal heartlands of Odisha, India, for instance, 70-year-old Abedan never abandoned the organic farming methods passed down through generations. While most neighbors shifted to using chemicals in search of higher yields, Abedan continued cultivating millet, pulses, and vegetables the traditional way.

But farming in Madaul was far from easy. Situated on higher ground, the village suffered from rapid water runoff, leaving soils dry despite 1,200 mm of annual rainfall. Irregular monsoons and rising heat made things worse, forcing many farmers to abandon traditional crops.

WOTR introduced soil and water conservation techniques like bunding, continuous contour trenches, and loose boulder structures in 2021. A check dam was built on Abedan's land, benefiting 10 farmers with year-round water access. Villagers were trained in using tools like sprinkler irrigation systems and learned how to prepare organic formulations.

Today, Abedan grows groundnut, sweet corn, cowpeas, paddy, and cashew alongside his traditional crops. His income has steadily risen, but for him, farming is still about nurturing the soil and producing pure, healthy food. "For me, farming is more than livelihood—it's about caring for the land," he says. "Now, even the younger generation is returning to organic practices."

Meanwhile, in Khaparkheda, a small village in Maharashtra, India, years of chemical farming had hardened the soil in Gulabrao's small farm into rock. Even tractors struggled to till the land.

Farmers like Gulabrao once relied on cattle for ploughing and manure. But as tractors became cheaper and more accessible, livestock numbers dwindled—reducing the natural

supply of organic manure. The increasing dependence on chemical fertilizers and pesticides promised higher yields but, over time, pests grew resistant, input costs skyrocketed, and soils degraded.

Gulabrao knew something had to change. In 2021, he trained in CRA, and with support from WOTR, established a Bio-Input Resource Centre (BRC) in his village to produce organic fertilizers and pesticides locally.

At first, fellow farmers were hesitant. But when they tested Gulabrao's organic inputs on one-acre plots, the results were undeniable: high-quality chili yields at half the cost. Word spread quickly, and more farmers adopted organic methods.

"We realized our soils were alive," Gulabrao says. "Organic practices restored fertility, reduced costs, and gave us confidence in the future."

Today, his BRC supports hundreds of farmers across Jalna district, proving how local leadership, learning, and community action can revive entire farming systems.

WOTR also supports farmers to conduct their own experiments in CRA and share results with peers. In Morwal village, in the desert state of Rajasthan, India, for instance, declining soil fertility is pushing families toward chemical dependence. Here, three farmers—Kusava, her mother-in-law Dhapubai, and Ambalal, a WOTR-trained community change agent—decided to challenge the status quo.

They planted maize using organic methods on one half of their 1.25 acre plot, and chemical inputs on the other.

The results were astonishing. The organic maize was larger, sweeter, and higher yielding, producing 1.5 quintals compared to just one quintal the previous year. Inspired by the success, Ambalal applied organic formulations to his ridge gourd farm, producing 100 kilograms in one season from his two-acre farm. Soon, neighboring farmers began visiting Morwal to witness the transformation. What started as a small experiment is now reshaping farming practices across Udaipur.



We realized our soils were alive. Organic practices restored fertility, reduced costs, and gave us confidence in the future.

Gulabrao, a farmer from Khaparkheda village, Maharashtra, India



Ambalal applied organic formulations to his ridge gourd farm, producing 100 kilograms in one season.



CHAPTER

3



Climate-Resilient Agriculture approaches must be adapted to local contexts.

INSTITUTIONALIZING SOLIDARITY AND SUPPORT

Smallholder farmers often struggle to adopt climate-adaptive practices and technologies due to a combination of factors, including a lack of training, the high cost of these new methods, limited access to resources, and the uncertainty of their benefits, especially under normal weather conditions, which can make them appear less worthwhile to invest in. These come on top of their everyday challenges such as high input costs, limited market access, lack of information on the support available, and lack of bargaining power.

WOTR addresses these challenges through Farmer-Producer Organizations (FPOs)—farmer-owned enterprises that:

- Facilitate collective branding and direct market linkages.
- Reduce costs through bulk input procurement.
- Provide shared equipment and training through Farmer Field Schools.
- Educate farmers on government schemes and financial inclusion.
- Promote gender equity, offering lower membership fees, leadership training, and control over collection centers and BRCs.

FPOs also encourage farmers to reflect on environmental changes through Transformative Scenario Planning workshops, a process developed by Reos Partners,²⁶ where they are encouraged to reflect on how their landscape has changed over the past decade and envision future landscapes, and adopt ecosystem-based adaptation strategies.

The participation of women farmers in the FPOs is facilitated through lower membership fees for women, the provision of subsidized inputs, and leadership training. Women manage collection centers that handle produce from multiple farmers, operate BRCs, and become directors of FPOs.

INFORMATION TO DEAL WITH A CHANGING WORLD

Resilience to climate change isn't just about soil and water—it's also about information, especially in a world where traditional farming wisdom is being challenged by unpredictable climate systems. Smallholder farmers often struggle without timely, hyperlocal weather forecasts or insights into market trends.

To bridge this gap, WOTR developed [the FarmPrecise](#) app in collaboration with the Indian Meteorological Department (IMD) and the Indian Council of Agricultural Research (ICAR), supported by Qualcomm Wireless Reach. The app provides farmers with:

- Five-day hyperlocal weather forecasts.
- AI-powered crop and nutrient advisories in regional languages.
- Real-time price tracking and market insights.
- A fertilizer calculator to optimize soil nutrition.
- A digital resource library for pest and disease management.

The app enables farmers to communicate directly with experts at WOTR and W-CreS, and also with other farmers, ensuring that the information provided is tailored to local needs and allowing co-created solutions. The app also includes a multilingual AI chatbot offering expert-proofed responses on farming practices.

For farmers, FarmPrecise has transformed decision-making—from sowing schedules to harvest planning—making agriculture smarter and more resilient.



Resilience to climate change isn't just about soil and water—it's also about information.





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WOTR will continue to deliver cutting-edge technologies to India's smallholder farmers.

SCALING UP AND SHAPING POLICY

Beyond simply piloting community-led responses to climate change, WOTR's work is increasingly shaping state, national, and global policies. WOTR is represented on a national committee that is preparing a framework for village-level climate change adaptation plans under India's National Mission for Sustainable Agriculture. WOTR and W-CReS co-developed India's first state-level policy for ecosystem-based adaptation in Maharashtra, India, and Maharashtra's Mahavistar app for farmers incorporates Application Programming Interfaces from FarmPrecise.



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WOTR's work empowers farmers with actionable insights and resources that enhance resilience and sustainable agriculture.



As one of 30 global nonprofits chosen for Google's AI for Changemakers Accelerator Program, WOTR will continue to deliver cutting-edge technologies to India's smallholder farmers, including real-time farm advisories and pest outbreak forecasts. The organization is already working with the Indian Institute of Tropical Meteorology to integrate climate science with community-level advisory systems, to monitor soil moisture, temperature, and other meteorological variables necessary for adaptive decision-making.

These efforts demonstrate the role of local resilience strategies in driving national climate policies and inspiring global solutions.

THE ROAD AHEAD

For WOTR, climate resilience is an ongoing journey. Across eight Indian states, thousands of smallholder farmers that they work with are proving that sustainable farming is economically viable; that communities thrive when knowledge, resources, and decisions are shared; and that climate-resilient agriculture can restore ecosystems while securing food and income.

WOTR's integrated model places communities at the heart of climate action, enabling them to become self-reliant, adaptive, and resilient while upholding the core LLA Principles:

- **Decentralized decision-making:** Through FPOs, farmers collectively decide what to grow, when to sow, and where to sell, strengthening local ownership and sustainable practices.
- **Inclusive participation:** Lower membership fees, leadership training, and Self-Help Groups empower women to manage collection centers and BRCs, ensuring equity in decision-making.
- **Stronger local institutions:** Representatives from existing local institutions are equipped through regular training in CRA practices, water management, and farmer-led learning.



WOTR's approach shows how combining local knowledge, capacity-building, and adaptive technologies can turn rural communities into innovators of climate-smart, resilient agriculture.

- **Risk-aware planning:** Smallholder farmers are provided with the tools and information they need to understand climate risks and co-create solutions.

This approach turns farmers into leaders, ensuring climate solutions are designed, owned, and driven by the community itself.

As countries in the Global South grapple with climate uncertainty, WOTR's model offers a replicable framework: one that blends community leadership, technological innovation, and ecosystem restoration to build a future where farming and nature coexist in harmony.



CHAPTER 4

LESSONS IN LOCALIZATION FROM THE HUMANITARIAN SECTOR

KEY MESSAGES

- In the aftermath of Cyclone Freddy, the Malawi Red Cross Society (MRCS) recognized that disaster response alone was not enough. The crisis catalyzed a shift toward proactive, locally led adaptation, which accelerates systemic change.
- By revising its participatory risk assessment tool, MRCS enabled communities to identify climate risks, design solutions, and take ownership of adaptation plans. Resilience proved most effective when driven by local voices and capacities.
- The evolution of global frameworks has aligned disaster risk reduction and climate adaptation. Yet, financing and implementation remain uneven, with many governments struggling to integrate long-term resilience into short-term disaster management.
- Localization is central to humanitarian reform. But while the Grand Bargain pledged more resources for local actors, less than 5% of humanitarian funding reaches them—highlighting the urgent need to match commitments with action.
- Case studies from Bangladesh, Ukraine, and the Philippines show that when local responders are empowered with resources, knowledge, and authority, they deliver faster, more relevant, and more sustainable results than international actors working alone.
- The International Federation of Red Cross and Red Crescent Societies (IFRC) has embraced this shift through the Climate Action Journey, strengthening climate knowledge, building partnerships, and improving access to finance in more than 40 National Societies.

Devolving Decision Making

Addressing Structural Inequalities

Investing in Local Capacities

Building Understanding

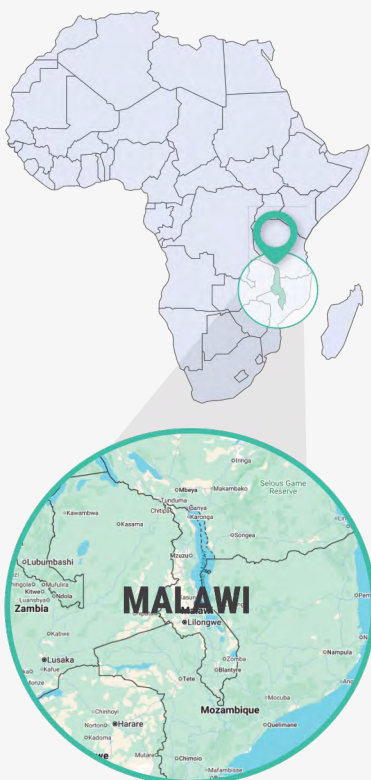
Transparency and Accountability

Collaborative Action and Investment

IN THIS CHAPTER

- Cyclone Freddy Spurs Locally Led Resilience
- Two Sides of the Same Coin
- Localizing DRR and Adaptation
- IFRC: Localization in Practice
- Lessons and Challenges from IFRC's LLA Journey





CYCLONE FREDDY SPURS LOCALLY LED RESILIENCE

When the exceptionally long-lived and powerful Cyclone Freddy tore through Malawi with devastating force in March 2023, trauma reverberated through the country. President Lazarus Chakwera declared it the worst disaster in Malawi's history—with reason. Freddy was the longest lasting tropical cyclone ever recorded worldwide and it produced the most accumulated cyclone energy of any storm in history.²⁷

Scientists warn that climate change is fueling stronger and more destructive tropical cyclones, and Freddy proved them right. Projections indicate that the proportion of storms reaching very high intensity will only grow in the years ahead.²⁸ For Malawi, which sits in the path of cyclones originating from the Indian Ocean, the stakes have risen sharply.

Freddy's devastation was followed closely by Cyclone Filipo in 2024 and Cyclone Jude in 2025, each hammering Malawi's southern districts—particularly Phalombe, Nsanje, and Mulanje. Here, vulnerabilities run deep: communities already endure seasonal droughts, strong winds, floods, and waves of disease outbreaks, making recovery after each disaster harder than before.²⁹



© Anne Wanjiru, MRCS, 2023

Malawi Red Cross Society strengthens community capacity to cope with food insecurity.



© MRCS, 2020

A Malawi Red Cross Society volunteer makes a sanitation house call in Mangochi, Malawi.

Recognizing the strong links between climate change and recurring disasters, MRCS broadened its mission in the aftermath of Freddy. Beyond responding to emergencies, it now further accelerates its support to communities in anticipating, adapting to, and recovering from the impacts of climate change.

In the wake of the 2023 disaster, MRCS established a cross-disciplinary Climate Action Taskforce, bringing together their experts from disaster management, health, water and sanitation, livelihoods, and emergency response. One of its first actions was to conduct a national climate risk assessment, mapping vulnerabilities and exposure across regions and sectors. The risks and vulnerabilities were heavily localized, necessitating both a local climate risk assessment and a locally led approach to adaptation.

To make this shift to locally led adaptation (LLA), MRCS had to break from business as usual. IFRC's participatory risk assessment tool—called the [Enhanced Vulnerability and Capacity Assessment](#) (EVCA)—was revised to better integrate climate risks and LLA Principles. New partnerships were forged, including with the Department of Climate Change and Meteorological Services, the Ministry of Health, and the Malawi University of Science and Technology.

This revised approach emphasized local leadership in developing community adaptation plans. Communities were invited to share their own climate knowledge, perceptions, and solutions (see Box 1). New discussions focused on local views of climate change, the resilience of proposed interventions, and the interconnectedness of risks, including through an IFRC tool called the [Resilience Star](#).

As one local leader from Phalombe explained, “Many vulnerabilities we face are often because we fail to see how our risks are connected. Once we understand these links, we see that if we don't address one issue, we make no progress on the others.”



Many vulnerabilities we face are often because we fail to see how our risks are connected. Once we understand these links, we see that if we don't address one issue, we make no progress on the others.

Local leader from Phalombe, Malawi

Local knowledge and practice proved invaluable, though tensions sometimes arose. For example, some community members resisted changes that threatened short-term livelihoods, such as limiting charcoal production—a key income source but also a driver of deforestation and poor health. These conversations were delicate but essential.

The EVCA process was also modified to incorporate LLA Principle 3, emphasizing patient, predictable, and accessible funding, and Principle 7, promoting transparency and accountability. Project budgets were managed locally by MRCS, and information on available funding was openly shared with communities to guide collective decisions on adaptation priorities.

The resulting community adaptation plans reflect a diverse set of locally defined solutions: resilient housing, climate-smart agriculture, sustainable water management, alternative livelihoods, improved early warning systems, tree planting along riverbanks and hillsides, and the creation of forest bylaws.



© Saara Mansikkamäki, Finnish Red Cross, 2019

MRCS distributes relief items to households affected by the 2019 floods in the Mulanje district, Malawi.

Communities also explored the impacts of their solutions, for instance the effects of water pumps on groundwater levels. They embraced nature-based solutions like agroforestry, drip irrigation, organic manure, water harvesting, and crop diversification to reduce these impacts—all informed by technical discussions with agricultural, irrigation, and land resource officers.

Crucially, the process elevated local knowledge. “It is interesting how locally led adaptation seems to have more respect for local knowledge in relation to forecasts and warnings,” noted Samuel Mhango, Acting Disaster Risk Management Officer for Mulanje District. “That is often dismissed as superstition.”

MRCS adopted a training-of-trainers model to build local capacity and expertise. Farmers were trained in climate-smart agriculture and sustainable livelihoods, while Village Natural Resource Committees were trained in community-led natural resource management. Further training on disaster risk management, sustainable water management and irrigation techniques, and first aid is still to come.

For many communities, this shift has been transformative. “We are seeing something different happening now,” said the Village Headman of Nthondo in Nsanje District. “Before, we just received a project. Now, the Red Cross asks us what we need and what we think the solutions are.”

The impact of MRCS’s efforts has extended beyond Malawi’s borders. Insights gained from understanding local vulnerabilities and climate impacts have informed the design of the global Fund for Responding to Loss and Damage—particularly regarding lessons learned from Cyclone Freddy.

TWO SIDES OF THE SAME COIN

The 1990s marked a turning point for how the humanitarian sector approached disaster and climate risks. It was the era of the International Decade for Natural Disaster Reduction and the release of the first Intergovernmental Panel on Climate Change (IPCC) Assessment Report, both of which reshaped thinking about risks and resilience.³⁰



It is interesting how locally led adaptation seems to have more respect for local knowledge in relation to forecasts and warnings.

Samuel Mhango, Acting Disaster Risk Management Officer for Mulanje District, Malawi



CHAPTER

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BOX 1: COMMUNITY PERCEPTIONS OF CLIMATE CHANGE IN MALAWI

- Climate change is widely recognized but often misunderstood. Many do not attribute climate change to human activity. Some see it as divine punishment, while others confuse it with unrelated environmental issues.
- Awareness of adaptation initiatives remains limited, and responses to early warnings are slow.
- Communities report key impacts such as loss of livelihoods, declining agricultural productivity, infrastructure damage, and health challenges, with varying effects on different groups.
- Barriers to adaptation include poverty, lack of knowledge and resources, inconsistent participation, weak preparedness, and limited political commitment.
- Community-driven solutions to reduce charcoal-related deforestation include awareness campaigns, stricter enforcement of environmental bylaws, support for clean charcoal licensing, vocational training, and improved access to savings and loan groups.

In the 1990s, the humanitarian sector started a transition from a disaster response-focused model to one centered on disaster risk reduction. This move was solidified in the wake of the 2004 Indian Ocean Tsunami, which brought to prominence the possibility of reducing the impact of disasters through a more proactive approach before a disaster strikes. The transition was formalized as global policy direction through the [2005 Hyogo Framework for Action](#), which detailed the work needed from different sectors and actors before a disaster, to reduce disaster risk.

At the same time, the growing understanding of climate change and its influence on weather extremes encouraged humanitarian actors to integrate climate information more systematically into their programs. Advocacy efforts also grew for Disaster Risk Reduction (DRR) to be embedded within broader climate adaptation frameworks.³¹

A milestone came with the 2012 IPCC Special Report on [Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation](#), widely known as SREX. It underscored that the impacts of extreme weather events depend as much on exposure and vulnerability of socio-ecological systems as they do on the events themselves—echoing core DRR principles.³²

In 2015, a defining year for global governance on climate and risk management, three landmark agreements were adopted: the [2015 Sendai Framework for Disaster Risk Reduction](#), the [Sustainable Development Goals](#) (SDGs), and the [Paris Agreement](#) under the UN Framework Convention on Climate Change. Each agreement reinforced the idea of comprehensive risk reduction, creating unprecedented alignment across global frameworks.

The Sendai Framework, which set the global agenda for DRR from 2015 to 2030, provided a renewed and detailed roadmap to prevent new risks, reduce existing ones, and manage residual risks, further solidifying the humanitarian shift from solely responding to disasters to proactively reducing their causes and impact. The Paris Agreement, in Article 8, explicitly



recognizes the need to avert, minimize, and address loss and damage. Many SDGs are directly linked to disaster risks, climate resilience, and reducing human vulnerability.

At COP28 in 2023, the [UAE Framework for Global Climate Resilience](#) built further on these connections, explicitly acknowledging the role of LLA and multi-hazard early warning systems in strengthening resilience. Meanwhile, the ongoing process to define indicators for the [Global Goal on Adaptation](#) is closely tied to both the Sendai Framework and the SDGs, promoting coherence across agendas.

Despite the complexity of addressing siloed perceptions, including in planning and financing DRR and climate change adaptation, promising examples are emerging at the national level. For instance, island nations in the Pacific have developed Joint National Action Plans for Disaster Risk Management (DRM) and Climate Change Adaptation (CCA) that combine climate change adaptation and DRM to create a coherent and comprehensive strategy for managing risks, rather than treating them as separate issues. The plans foster collaboration between previously siloed departments, improve stakeholder coordination, and enhance efficiency in managing aid and resources.

However, in many contexts, DRR and CCA are still viewed as separate fields—with DRR focused on short-term response and recovery, and adaptation on long-term transformation—making it harder for governments to deliver comprehensive, integrated risk management strategies.

LOCALIZING DRR AND ADAPTATION

Localization has become a central pillar of humanitarian reform, reshaping how aid is planned, funded, and delivered. Traditionally, the international aid system has been dominated by centralized decision-making, with funding and strategies often directed from global



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The 2004 Indian Ocean Tsunami highlighted the need to reduce the impact of disasters before they strike.

headquarters. However, practitioners increasingly recognize that incremental adjustments are insufficient. Achieving meaningful change requires shifting power, resources, and decision-making authority closer to the people and communities most directly affected by crises.

Localization also aligns closely with the principles of inclusion and accountability to crisis-affected populations. Within the context of DRR, localization improves the quality, equity, and timeliness of aid by centering humanitarian action on local realities. By empowering local responders—who possess contextual knowledge, cultural familiarity, and long-term community trust—responses become more relevant, cost-effective, and sustainable.³³

The Sendai Framework underscores the importance of empowering local and regional authorities to lead DRR efforts. It calls for governments to allocate resources, strengthen local institutions, and develop community-driven solutions tailored to local needs and vulnerabilities.

Key humanitarian milestones, such as the [2016 World Humanitarian Summit](#) and the [Grand Bargain](#), set ambitious targets—like directing at least 25% of aid funding to local and national responders by 2020—but progress has been uneven and often disappointing.³⁴ In many places, funding to local actors remains below 5%, underscoring the gap between rhetoric and reality.³⁵

More recent frameworks, including [Grand Bargain 2.0](#) (2021–2023) and its successor for 2023–2026, recalibrate efforts around three interlinked pillars: localization, quality funding, and participation of affected communities. Additionally, standards like the [Core Humanitarian Standard on Quality and Accountability](#) emphasize people-centered action, using simplified, accessible language to ensure communities shape responses themselves.



MRCS volunteers ferry relief items across the river during the 2024 floods in Nkhotakota, Malawi.



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Local administration, volunteers, and NGOs are a crucial part of evacuation, early warning, and first-line relief when cyclones hit in Bangladesh.

Multiple case studies point to the successes of localization, including in response to climate disasters. Cyclone relief in Bangladesh, for instance, relies heavily on local administration, volunteers, and Bangladeshi NGOs for evacuation, early warning, and first-line relief. Investments in capacity-building enabled rapid action during Cyclone Mocha in May 2023, facilitating mass evacuations and fast debris clearance by coordinated efforts between local authorities, police, armed forces, and community volunteers.³⁶

In Ukraine, volunteer networks and local civil society organizations, including the Ukraine Red Cross Society (URCS), delivered aid at speed, reaching areas international agencies could not. Every day URCS receives, sorts, and disseminates hundreds of tons of cargo containing food, hygienic products, medicines, water, and more to their regions. Despite strong local civil capacity and evidence of cost efficiency, however, only 0.8% of UN-tracked humanitarian funding went directly to local and national NGOs.³⁷

Countries are increasingly investing in national and subnational DRR strategies aligned with the Sendai Framework. As of 2023, 131 countries—representing 67% of nations globally—had adopted national DRR strategies, and 110 countries have operational local strategies.³⁸

The Philippines serves as a strong example. Under the Philippine Disaster Risk Reduction and Management Act (2010), local governments are legally mandated to develop localized DRR plans and maintain dedicated funds to mitigate, prepare for, and respond to disasters. These funds often integrate climate change adaptation, ensuring that future risks—such as droughts, floods, and typhoons—are systematically addressed.

Such national frameworks represent an opportunity to leverage existing local systems in responding to climate impacts. For example, local DRR planning in the Philippines now incorporates climate change risk assessments, guiding investments in drought-resistant seeds, improved early warning systems, and community-driven adaptation practices.





© Jacqueline Nhlema, MRCS, 2016

Residents of Phalombe, Malawi, a district affected by a severe drought, harvest water from a pump.

IFRC: LOCALIZATION IN PRACTICE

IFRC is the world's largest humanitarian network, representing 191 Red Cross and Red Crescent National Societies— independent organizations embedded in their communities.

The Federation recognized early on that local actors are often the first to respond when crises strike. Since its inception in 1919, IFRC has promoted the creation and strengthening of National Societies that are empowered to lead humanitarian action within their own countries.

In 2016, during the World Humanitarian Summit, the IFRC played a significant role in shaping the Grand Bargain, a landmark commitment by humanitarian actors to localize aid. The Federation championed the principle that humanitarian response should be “as local as possible, as international as necessary”.

In 2018, the IFRC's approach was outlined in [Strategy 2030](#), with transformation areas for thematic priorities such as climate and environmental crises, including:

- Supporting and developing National Societies as strong and effective local actors, including through building operational, financial, and technical skills, models, and approaches to better anticipate and adapt to disaster and crises.
- Ensuring trust and accountability to put communities in the lead in designing, driving, and evaluating programs.
- Financing the future by supporting National Societies to invest in innovative financing models, with a focus on addressing vulnerabilities.

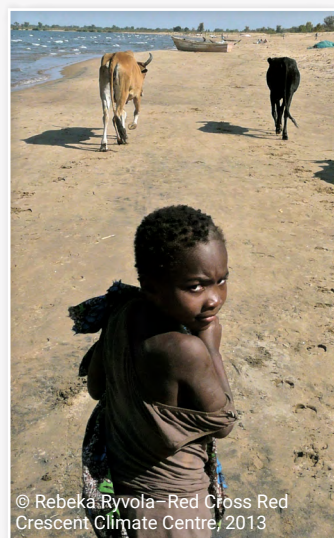
Baking in Climate Adaptation

Recognizing the growing climate crisis as a humanitarian crisis, IFRC launched the [Global Climate Resilience Platform](#) (GCRP) in 2022, to fund locally led climate action. The GCRP mobilizes resources, partnerships, and technical support to enable National Societies and

local communities to design and implement risk-informed, sustainable, and locally led adaptation solutions. The GCRP funds a range of pre-approved adaptation actions, based on climate risk assessments and prioritization by communities. This includes a new **Pooled Fund**, designed to channel multi-donor, multi-year, non-projectized finance to the local level.

In 2023, the IFRC launched a **Climate Action Journey** (CAJ), a dedicated approach designed to help National Societies initiate, deepen, and scale up climate action and locally led adaptation. The CAJ focuses on strengthening climate-risk knowledge and capacity, building partnerships for action, and improving access to climate finance. Currently being rolled out across more than 40 National Societies worldwide, the CAJ builds on existing community-based disaster risk reduction practices while shifting the network toward LLA, empowering the communities most at risk to lead the development of climate-resilient solutions.

This shift involves several key actions. National Societies are investing in enhanced climate assessments and knowledge-sharing, from community perceptions of climate change to national hydrometeorological institutes. They are forging new partnerships, from local agricultural extension workers to national climate ministries. They are building stronger capacities for financial and project management at the most local levels, supported by the national and global IFRC network for planning and financing.



© Rebeka Ryvola - Red Cross Red Crescent Climate Centre, 2013

A child from Mphunga, Malawi, an area affected by floods and droughts, walks along the lake.



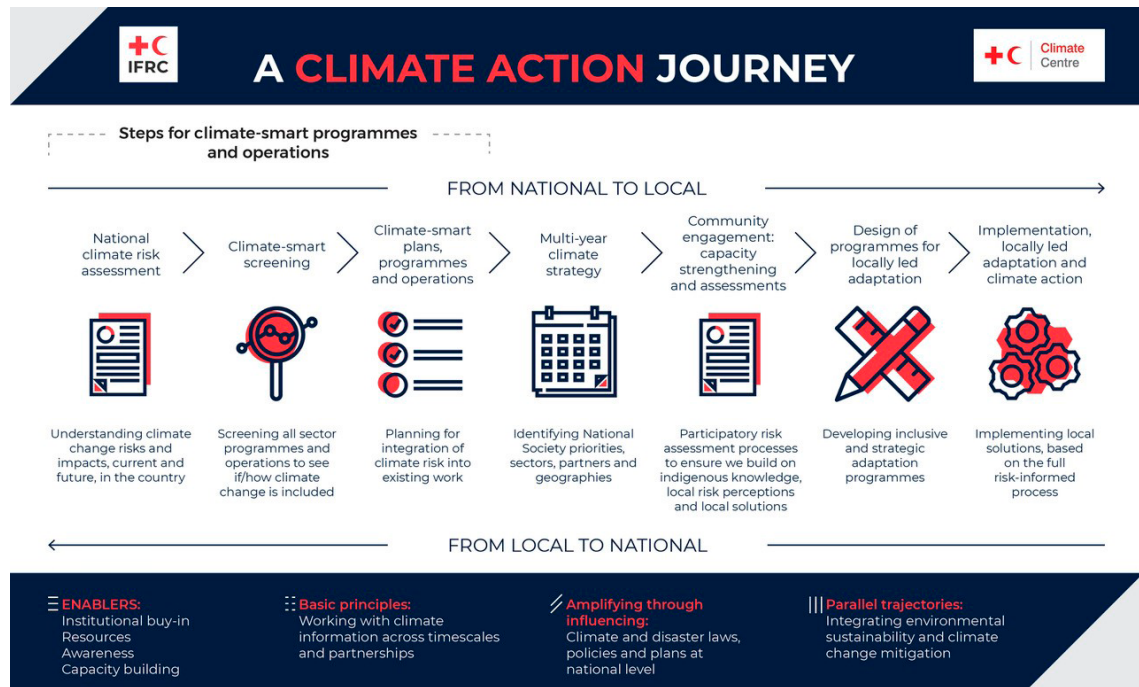
© Jacqueline Nhlema, MRCS

Members of Mzati GCT in Ndirande, Malawi cover a house with plastic to protect it from strong winds.



CHAPTER

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FIGURE 1. IFRC's Climate Action Journey

Source: IFRC and Red Cross Red Crescent Climate Centre, 2023

The first LLA pilot projects under CAJ were launched in Malawi, Nigeria, and Pakistan. CAJ provided a collaborative and flexible framework to integrate climate risk considerations into existing humanitarian programs, strategies, and emergency operations, and empower at-risk communities to design, lead, and scale up LLA.

In 2024, the LLA projects expanded to 11 new countries, but funding constraints led to the suspension of some activities in early 2025. Critical aspects will, however, continue in eight countries with new funding, and the overall approach has been integrated into multiple projects under the GCRP.

The CAJ is currently undergoing evaluation, incorporating early lessons and refining the process to better center LLA from the start and engage communities from the outset (see Table 1, listing how DRR practices are being adapted to reflect LLA).

The Red Cross was also a founding member of [Partners for Resilience](#) (PfR), a global network of 50 civil society organizations working in hazard-prone areas to strengthen community resilience through integrated risk management. PfR supported the integration of DRR into over 50 Gram Panchayat Development Plans (local development plans) in India. District disaster management plans were drafted for seven districts, and over €8 million was leveraged for their implementation.³⁹

LESSONS AND CHALLENGES FROM IFRC'S LLA JOURNEY

Preliminary insights from the IFRC on the application of each LLA Principle are summarized in Box 2. Several key challenges have emerged so far, including aligning national climate risk information with local knowledge and community perceptions, managing expectations

around climate finance and adaptation options, and strengthening financial and project management systems across the entire chain, from the community level to donors.

TABLE 1. Revised DRR Practices to Operationalize LLA Principles

COMMUNITY-BASED DRR PRACTICES	NEW PRACTICE TO INTEGRATE LLA IN 2025	LLA PRINCIPLES
Participatory Risk Assessment: Vulnerability and Capacity Assessment (VCA)	Participatory Risk Assessment: Enhanced Vulnerability and Capacity Assessment (EVCA), with climate change considerations strengthened and integrated	Principle 2 address structural inequalities Principle 4 invest in local capabilities Principle 5 build a robust understanding of climate risk and uncertainty
No separate trainings or sessions on climate change	Dedicated discussions on climate impacts and LLA with communities at the start of the EVCA	Principle 4 invest in local capabilities Principle 5 build a robust understanding of climate risk and uncertainty
Knowledge, attitude, and practice surveys conducted in some DRR projects	Community perception surveys conducted to provide insights into power relations, cultural behaviors, and risk perceptions	Principle 2 address structural inequalities
Stakeholder mapping conducted to identify partners	National and local stakeholder mapping conducted to inform collaborations to design, implement, and plan, including across sectors (agricultural, climate, environmental etc.)	Principle 4 invest in local capabilities Principle 8 collaborative action and investment
Additional stakeholder dialogs on the outcomes of the EVCA are not always organized	Additional dialogs and consultations after the EVCA with national experts (for instance, on agricultural extension services) to ensure proposed activities are climate resilient and sustainable, and to support innovation	Principle 5 build a robust understanding of climate risk and uncertainty Principle 8 collaborative action and investment
Additional discussions on the complexity of trade-offs between immediate needs and long-term needs are not always facilitated	Discussions on trade-offs between immediate humanitarian needs, and long-term, sustainable options	Principle 5 build a robust understanding of climate risk and uncertainty
Transparency on available funding not standard practice	Transparency on available funding for community-led interventions	Principle 7 ensure transparency and accountability
Flexible funding (with some boundaries) provided by headquarters, with activity log frames and budgets	Flexible funding provided by local Red Cross/Red Crescent branches with donor pre-approved menu of options. Plans, timelines, and budgets decided locally	Principle 1 devolve decision-making to the lowest appropriate level Principle 3 patient, predictable, accessible funding



One of the most persistent challenges for National Societies has been encouraging national and local partners to look beyond current risks and actively plan for future climate impacts. To address this, minimum standards for local climate-smart DRR were developed as part of the [Guide to Climate-Smart Programmes and Humanitarian Operations](#). This guide supports programs and operations in integrating short-term weather and seasonal forecasts with long-term climate projections when designing and implementing activities.⁴⁰

BOX 2: REFLECTIONS ON IFRC'S LLA JOURNEY

Devolving decision-making to the lowest appropriate level

National Societies are empowered to facilitate LLA, and, while headquarters remain involved in analyzing assessment findings, decisions are made as close to the community as possible. Branches support discussions, plan consolidation, and financing, ensuring communities understand funding eligibility and constraints.

Addressing structural inequalities

Vulnerabilities are assessed across different groups through the EVCA process, including women, youth, people with disabilities, displaced populations, Indigenous Peoples, and marginalized ethnic groups. The tools ensure diverse perspectives inform prioritization and planning, although broader inequalities still require more targeted action.

Providing patient, predictable, accessible funding

New IFRC GCRP projects give communities greater control over designing and implementing adaptation solutions. Agreements with donors include clear guidelines on funding limitations, and in-country expertise is engaged to ensure proposed measures are sustainable and avoid maladaptation.

Investing in local capabilities

Capacity building efforts focus on improving climate risk-informed planning, implementation, and local-level financial and project management, ensuring communities are equipped to lead climate action beyond the life of individual projects.

Building robust understanding of climate risks

National climate risk assessments deepen understanding of climate impacts across regions and groups. Training local facilitators to interpret these findings and lead community climate risk assessments and discussions has begun but requires further investment to ensure meaningful participation.

Flexible programming and continuous learning

Donor flexibility has been critical to adaptive programming and ongoing learning. Continued advocacy aims to secure similar flexibility from future donors.

Transparency and accountability

Community budgets and the sustainability of proposed solutions are openly discussed with all stakeholders, ensuring informed decision-making and mutual trust.

Collaborative action and investment

Stakeholder mapping at both local and national levels has strengthened partnerships, while communities are encouraged to identify their own collaborators. While ownership of these collaborations rests with the communities, it remains to be seen how sustainable they are beyond project timelines.



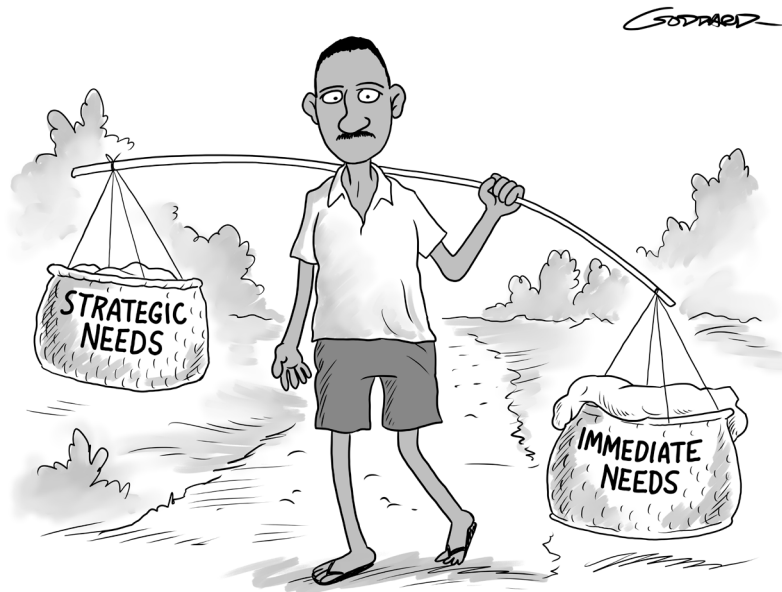
Members of Chitsanzo Group Cash Transfer in Malawi clear drainage for waterways.

Despite these advances, communicating the complexities of climate change remains an ongoing challenge. Capacity building continues to be a central focus, with innovative approaches such as [climate risk storylines](#) helping communities make sense of multiple possible climate scenarios. These storylines provide plural and conditional explanations rather than single, definitive projections, making it easier to translate complex scientific data into actionable local strategies and triangulate climate information with community knowledge.⁴¹

Embedding deeper reflections on power dynamics, decision-making, and cultural norms also remains difficult, particularly given IFRC's neutrality and impartiality principles. Nevertheless, participatory risk assessments and community risk perception surveys have proven valuable in facilitating inclusive discussions and ensuring that diverse community needs are represented in adaptation planning.

Another key insight is that not all locally proposed solutions automatically lead to long-term resilience. For example, some communities prioritized boreholes or water pumps in arid regions, which risk depleting groundwater supplies over time. These situations highlight the need for stronger collaboration between communities and local experts—such as water authorities, land-use planners, and agricultural specialists—to balance immediate needs with long-term sustainability.





Clive Goddard / CartoonStock.com

Finally, LLA must also support difficult conversations on the limits of adaptation. Solutions that are effective today may not remain viable in the future or in different contexts. Ongoing monitoring, evaluation, and joint learning among communities, experts, and donors are crucial to ensure that adaptation strategies remain relevant, flexible, and effective over time.



CHAPTER 5

CLIMATE CHANGE, HEALTH, AND INFORMALITY

KEY MESSAGES

- Climate change disproportionately affects those living in informal settlements and working in the informal sector. Houses in informal settlements regularly exceed the 35°C threshold of human survivability.
- In addition to impacts on mortality and health, the economic fallout of heatwaves is projected to be staggering—equivalent to the loss of 80 million full-time jobs and US\$ 2.4 trillion annually by 2030.
- Floods deepen health inequalities and psychological trauma, significantly increasing hospitalizations across a wide range of diseases—cardiovascular, respiratory, digestive, renal, and more. The loss of homes and livelihoods pushes already vulnerable workers into prolonged stress, anxiety, and mental health decline.
- Droughts worsen crises like malnutrition, infectious disease, mental distress, and chronic respiratory issues due to wildfires and dust storms, particularly in poor, exposed communities.
- Climate-induced health risks are expected to add US\$ 1.1 trillion in costs to already strained global health systems.
- For informal workers, who often lack access to affordable or quality care, responses must go beyond curative treatment. Effective solutions must integrate preventive care, mental health support, and social protection to address the full spectrum of vulnerability.
- The Self-Employed Women's Association (SEWA) provides preventive and curative care; promotes early health-seeking behavior; builds women's capacity to make informed health decisions; and provides insurance products for climate-related health emergencies. This holistic model demonstrates how locally led, gender-responsive interventions can protect health and livelihoods in the face of climate threats.

Addressing Structural Inequalities

Patient, Predictable, Accessible Funding

Investing in Local Capacities

Building Understanding

Flexible Programming and Learning

IN THIS CHAPTER

- No Safe Season
- Additional Burden of Disease
- Chronic Illness, Mental Strain, and Economic Loss
- Health as a Foundation for Livelihoods
- Community-Led Responses





My health is my only asset and the most important determinant of my ability to support my family. On days I work, I earn. When I am sick, I cannot earn. My *chula* (stove) does not burn and I cannot cook. There is nothing else I have to fall back on.

Jignashaben, construction worker, Gujarat, India

NO SAFE SEASON

The increasing frequency and intensity of heatwaves, floods, droughts, and other climate-driven events are threatening not only the health but also the livelihoods and food security of millions across Africa, Asia, and Latin America. While the impacts are deeply personal for people like Jignashaben, a construction worker from Gujarat, they affect entire economies.

According to the World Economic Forum (WEF), climate change is projected to cause an additional 14.5 million deaths by 2050. Climate-induced health impacts are expected to impose an extra US\$ 1.1 trillion burden on global healthcare systems, straining already fragile infrastructure and overburdened medical and human resources.⁴²

While climate change affects populations across the globe—including those in wealthier countries—the risks are greatest for urban and rural poor, those living in informal settlements, and working in the informal economy. For millions of low-income households, where breadwinners often rely on unstable daily wages, even a brief illness or injury can destabilize an entire family's livelihood. The growing frequency and intensity of climate-related shocks—heatwaves, floods, water scarcity, and disease outbreaks—amplify these risks, pushing families into cycles of debt, deprivation, and long-term poverty.

Poor health outcomes are both a cause and consequence of climate vulnerability. Climate change exacerbates deeply rooted health inequities: lack of access to affordable medical care, high out-of-pocket costs for hospitalization, diagnostics, medicines, and transportation, as well as the complete absence of social safety nets for most informal workers. When a family member falls ill, households often face impossible trade-offs—between food, medicine, education, or rent. Lost income during recovery, especially when the breadwinner is affected, deepens the economic strain.

For the most vulnerable—women, young people, older adults, and those in hard-to-reach areas—the impacts are especially severe. Without formal savings or access to financial services, many are forced to borrow from informal lenders at exorbitant interest rates, locking them into a cycle of debt and vulnerability (see Chapter 10).



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While informal workers, such as waste pickers, play an important role in keeping cities running, they are excluded from labor protections, health insurance, and social assistance.

This crisis affects a massive share of the global population. Nearly one in four urban residents—about 1.12 billion people—live in informal settlements, predominantly in Asia and Sub-Saharan Africa. These numbers are expected to rise dramatically, with projections indicating that over three billion people could be living in informal housing by 2050.⁴³

At the same time, globally, three billion people work informally—as street vendors, waste pickers, domestic workers, agricultural laborers, and construction workers. These are the workers who keep cities running, but are excluded from labor protections, health insurance, and social assistance. In Asia, 84% of the workforce is informally employed. In Sub-Saharan Africa, it is 88%. Women are disproportionately represented: 91% of working women in Sub-Saharan Africa are in informal jobs, compared to 86% of men.⁴⁴

The compounding effects of climate stress, poor living conditions, and economic insecurity create a feedback loop of vulnerability. Without targeted adaptation policies and inclusive urban planning, climate change will continue to widen the gap between formal and informal communities, deepening inequality and undermining resilience for billions of people around the world.

Lived Reality

This chapter draws on the lived experiences of members of the Self-Employed Women's Association (SEWA), a trade union founded in 1972 to organize the informal economy of poor women in India. It explores the health-related impacts of climate change for those who live and work in informality, and how that translates directly into lost income, worsening health, and compromised dignity.



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Prolonged heatwaves result in fewer working hours, reduced earnings, and increased exposure to dehydration and illness for informal workers in India and globally.

For SEWA's 3.2 million informal women workers and others like them around the world, a prolonged heatwave means fewer working hours, reduced earnings, and increased exposure to dehydration and illness. A flood can destroy tools, homes, and savings overnight. A drought can push food prices beyond reach. Yet, within these stories of hardship are also stories of resilience.

Working through cooperatives and advocating for social justice, SEWA aims to achieve full employment, self-reliance, and social security (healthcare, nutrition, shelter) for its members. The organization provides financial assistance and training, and supports women-owned enterprises, including through a cooperative bank owned and run by the members.

ADDITIONAL BURDEN OF DISEASE

Climate change is worsening both the first and second burdens of disease on the world's poor. The first burden of disease refers to communicable diseases, maternal and child health conditions, and nutritional deficiencies. The second burden of disease refers to non-communicable diseases—long-term, often chronic conditions caused by a combination of genetics, environmental factors, and lifestyle patterns, including cardiovascular and respiratory diseases, and mental health issues.

Heat Stress

Heat has earned its reputation as a silent but deadly killer. Every year, nearly half a million people die from heat stress—30 times more than from tropical cyclones.⁴⁵

As temperature records are shattered year after year (2024 was the hottest year in 175 years), heat stress is already a major global health concern. In India alone, over 100 heat-



related deaths were recorded during the summer of 2024, and the India Meteorological Department reports a 34% increase in heat-stress fatalities over the past decade.⁴⁶

For millions living in informal settlements, the danger is amplified. Temperatures inside their cramped, poorly ventilated homes are often 2°C to 4°C higher than in “formal” planned areas, due to dense housing, lack of greenery, and urban heat island effects.⁴⁷

In Makassar, Indonesia, wet-bulb temperatures inside informal homes frequently approach the critical 35°C threshold—the upper limit of human survivability.⁴⁸ In Nigeria, indoor temperatures in informal settlements often soar to 35–40°C during hot seasons. As the heat intensifies, hospital admissions rise by 15–25%, and cases of heatstroke, dehydration, and cardiovascular complications increase by 10–20%.⁴⁹

Heat exhaustion, heatstroke, and death are on the rise among the world’s two billion informal workers—both in already hot climates and but also in regions previously unaccustomed to extreme heat. A report by the International Labour Organization (ILO) estimates that in 2020 alone, 4,200 workers lost their lives to heatwaves.⁵⁰

BOX 1: “THE HEAT STEALS OUR DAYLIGHT”

“The sun felt like fire burning into my skin, my body trembled, and I fainted. Going to a doctor means losing three or four days of wages, so I kept working.”

During the 2025 heatwave in India, Jyotsnaben, a head-loader in Ahmedabad, Gujarat, collapsed while carrying a 60 kilogram sack on her head through Ahmedabad’s crowded markets. Yet, she kept working, because she could not afford to lose her wages, pay a doctor, and compensate the contractor for a delayed delivery.

In Bikaner, Rajasthan, Sunitaben has spent 25 years making *papads* (Indian snacks). When an extreme heatwave scorched Bikaner in 2024, water sources dried up, forcing her to walk several kilometers each day to fetch water. Dehydrated and exhausted, she still worked to feed her children because her husband, a construction worker, had lost his job. Some days, she skipped meals so her family could eat. She had to withdraw her daughter from school to help the family cope with mounting expenses.

Ninety percent of SEWA members—street vendors, construction laborers, farmers, artisans, salt-pan workers—report that their livelihoods are severely affected by heatwaves. Reduced working hours, falling productivity, fewer customers, and spoiled produce translate into earnings dropping by as much as 50%.⁵¹

“The heat steals our daylight and forces us to toil until nine at night,” says Savitaben Patni, a street vendor in Ahmedabad. “I used to make ₹400 (€4) a day. Now, I barely earn ₹200 (€2). The sun beats down on our heads, the ground burns beneath our feet. There’s no water, no shade, no relief. This isn’t just about lost income—it’s about survival.”

In 2023, a SEWA survey found that 92% of its members suffered from heat-related illnesses during prolonged heatwaves. Dehydration was the most pressing issue, compounded by limited access to clean drinking water and cool spaces. It increased risks of heat cramps, heat exhaustion, and heatstroke, leading to symptoms like dizziness, nausea, muscle cramps, fainting, and fungal infections. Chronic respiratory disorders worsened under extreme heat.

In rural areas, potable water shortages further complicate health risks. Without proper storage and drinking facilities, SEWA members report high rates of urinary tract infections, fungal infections, and genitourinary diseases. Poor access to clean water forces families to compromise on hygiene, increasing exposure to water-borne illnesses and skin disorders.

"Whether home-based artisans or salt-pan workers, all of us suffer," says Gauriben Darji, another SEWA member from Gujarat. "Lack of drinking water causes urinary infections, food spoils without cooling facilities, and more of us get diarrhea, vomiting, and rashes. Heat destroys our health—and our work."

Nutrition is compromised. "On days when we don't earn, we eat only one meal a day," says Pushpaben, an agricultural worker from Gujarat. "The food I pack spoils before noon, but we have no choice but to eat it."

Over 95% of SEWA members also report sleep disruptions during periods of extreme heat—an often-overlooked impact that reduces productivity and worsens overall wellbeing.

"We are forced to bear huge medical expenses, and all of our savings get drained," says Reshmaben, a SEWA grassroots leader, reporting several cases of home-based workers hospitalized for heat-related illnesses.



Heat stress poses a significant threat around the world: over 100 heat-related deaths were recorded in India alone in the summer of 2024.

CHRONIC ILLNESS, MENTAL STRAIN, AND ECONOMIC LOSS



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The long-term impacts of heat exposure are only just emerging, and are profound, causing serious and debilitating chronic diseases, impacting mental health, cardiovascular and respiratory systems, as well as the kidneys.

Over 26 million people globally live with chronic kidney disease attributable to heat stress, according to the ILO. Chronic Kidney Disease of Non-traditional origin (CKDnt) is now recognized as an occupational disease, tied to rising global temperatures and prolonged exposure to high heat among outdoor laborers in tropical regions. Combined with a shortage of potable water, kidney diseases such as kidney stones, urinary tract infections, and urogenital schistosomiasis are also on the rise, made worse by limited diagnostic capacity, low public awareness, inadequate funding, and a shortage of specialists.⁵²

The impact of heat on mental health is a dimension often missing from national and local heat action plans. Studies show that extreme heat impairs cognitive functioning, with declines of up to 10% when temperatures exceed 26–28°C. Sleep deprivation due to high nighttime temperatures compounds the problem, causing increased anxiety, irritability, and depressive symptoms, as well as reduced cognitive performance and emotional regulation.⁵³

Research links rising temperatures to higher aggression and interpersonal conflict.⁵⁴ Heat drives frustration and impulsivity, contributing to global increases in crime rates.⁵⁵

For people already living with mental health conditions, risks are amplified. Each 1°C rise in ambient temperature is linked to a 2.2% rise in mental health-related mortality and a 0.9% increase in morbidity for people living with mental health disorders compared to those without.⁵⁶ Conditions such as anxiety, mood disorders, schizophrenia, substance use disorders, self-harm, and childhood behavioral disorders can be worsened at higher temperatures.

Rising temperatures and shifting rainfall patterns are expanding the reach of vector-borne diseases. By 2050, dengue transmission is expected to rise by 25%, particularly in Southeast Asia, Sub-Saharan Africa, and South America.⁵⁷ Warmer temperatures also shorten the incubation periods for malaria parasites *Plasmodium falciparum* and *Plasmodium vivax*, multiplying their transmission potential.⁵⁸

The economic costs are staggering. Heat-related productivity losses are projected to equal 80 million full-time jobs by 2030, costing the global economy US\$ 2.4 trillion annually.⁵⁹ In India alone, 181 billion labor hours were lost in 2023, translating into US\$ 141 billion in income losses—in just one year.⁶⁰ These statistics hide personal stories of daily wage earners in the informal sector, for whom heat means a relentless erosion of dignity and survival with empty plates, mounting debts, and failing health. A study of nearly 400 informal workers in India found:

- For every 1°C increase in wet-bulb temperature, net earnings dropped by 19%.
- Medical expenses rose by up to 25%.
- Income losses surged to 40% during extreme heatwaves.⁶¹



Floods pose far-reaching health risks that go well beyond what current data captures—especially in poorer countries and informal settlements where reliable health information is scarce.

Floods

The health impacts of floods are far greater than commonly understood—especially in poorer countries and informal settlements where reliable data is still scarce. A recent study found that floods create multiple health risks that go far beyond what current epidemiological evidence typically captures. These include direct physical injuries, psychological trauma, and reduced access to healthcare services when facilities are damaged or overwhelmed.⁶²

Flooding contaminates water sources, making clean drinking water scarce, and increasing the risk of water-borne infections. But the health threats go deeper. When rising temperatures combine with stagnant floodwaters, they create ideal breeding conditions for fungi, bacteria, viruses, and disease vectors such as mice, mosquitoes, flies, and other insects. This deadly mix accelerates outbreaks of cholera, leptospirosis, dengue, malaria, and a range of respiratory and skin infections—with informal settlements and informal workers hit hardest.

In informal settlements, floods don't just damage homes and belongings—they disrupt income, nutrition, education, and long-term health. In the absence of timely social safety nets, poor households cope by selling productive assets, reducing meals, or withdrawing children from school to send them to work.

Flooding is often caused by tropical storms and cyclones, when accessing healthcare becomes extremely challenging due to fierce winds, heavy rains, flooding, and waterlogging. Flooding also frequently drives displacement. When families are forced into temporary shelters, lack of nutrition, clean water, and adequate sanitation leads to rapid outbreaks of respiratory, digestive, and infectious diseases. SEWA members also report higher risks of insect and reptile bites.



A study across eight flood-prone countries found that floods increased the risk of all diseases requiring hospitalization by 26%. In these countries, flooding led to increases in hospitalization for cardiovascular diseases (35%), respiratory diseases (30%), infectious diseases (26%), digestive disease, such as gastroenteritis (30%), mental health disorders (11%), diabetes (61%), cancer (34%), nervous system disorders (34%), and renal diseases (40%).⁶³

Floods also worsen malnutrition, particularly among children. In flood-affected areas of Bangladesh, India, and Nepal, rates of wasting and stunting linked to flooding are on the rise. One study in India found that 21.6% of children in flood-prone zones were wasted, compared to 13.7% in unaffected areas.⁶⁴

Beyond physical health, floods leave deep psychological scars. Property damage, loss of livelihoods, and mounting debts cause prolonged stress, which weakens the immune system, disrupts sleep, and can trigger substance abuse and poor self-care.

In Indonesia's informal settlements, a study found that flood exposure led to severe declines in physical and mental health, increased medical expenses, reduced household wealth, and heightened reliance on borrowing. Among children, the impact was particularly severe: their emotional functioning scores worsened by 78%, as they struggled with fear, helplessness, and the trauma of displacement. Lacking the coping mechanisms of adults, children in these communities face a heightened risk of long-term psychological harm.⁶⁵

BOX 2: CLIMATE CHANGE HAS STOLEN OUR HARVEST, AND OUR STRENGTH

"The rains no longer come on time. Sometimes we face floods that wash away our crops; sometimes heat so strong that even standing in the field is unbearable. I cannot feed my family with dried, shriveled crops. My health suffers—I fall ill more often, but medicines cost too much. Climate change has stolen not only our harvest but also our strength."

For Kantiben, a farmer in Gujarat, erratic rains and scorching heat have destroyed crops and stripped her of energy, leaving her unable to feed her family. She is not alone.

"It starts with the water washing away our crops," says Champaben from Anand, Gujarat. "This causes food insecurity and leads to nutritional deficiencies. The unhygienic environment around our homes causes fungal skin infections. The risks don't end there. This year, two of our SEWA members died from snake bites, as snakes were forced out of their burrows by the flooding. One member's husband died of electrocution. Covid-19 damaged our health and incomes, but climate change is becoming a never-ending toll."

SEWA members face direct and indirect impacts from floods. Direct impacts include:

- Damage to property and livelihoods
- Injuries from submerged debris and unsafe structures
- Electrocution risks in waterlogged areas
- Vector-borne and water-borne diseases

Indirect impacts arise from damaged infrastructure, disrupted food and water supplies, and weakened social support systems. Floods frequently contaminate scarce drinking water, leaving families without safe supplies for days.

Menstrual health suffers, too. Bhavnaben, a SEWA member from Chhota Udepur, Gujarat, recalls, "Availability and disposal of pads became one of the biggest issues. The floods also damaged our toilets, making things even worse."

Droughts

Since 2000, the frequency and duration of droughts globally has increased by approximately 29%—a stark escalation in just one generation. Between 2000 and 2023, over 1.6 billion people worldwide were directly affected by drought, resulting in more than 24,000 deaths, with South Asia and Sub-Saharan Africa shouldering the greatest burden.⁶⁶

Drought triggers a deadly cascade of health threats—malnutrition, infectious diseases, and mental health challenges—which are especially dire in regions with inadequate healthcare infrastructure. These crises arise as droughts severely disrupt access to safe water, nutritious food, and essential healthcare, and fuel outbreaks of diseases such as dengue and malaria.

The World Health Organization (WHO) underscores that drought significantly heightens the risk of malnutrition, including micronutrient deficiencies like iron-deficiency anemia, and raises the incidence of cholera, diarrhea, pneumonia, and other infectious illnesses—largely due to water scarcity and compromised sanitation systems. Additionally, drought-related migration can facilitate disease transmission in crowded or poorly serviced areas.

The health consequences extend beyond dehydration and infection. Drought-associated phenomena such as wildfires, dust storms, and degraded air quality exacerbate chronic respiratory conditions like asthma and Chronic Obstructive Pulmonary Disease (COPD), while also increasing vulnerability to bronchitis and pneumonia.

The psychological toll is equally profound. Drought-induced food insecurity, economic collapse, displacement, and spiraling debt foster psychosocial stress, anxiety, and depression, undermining both physical and mental wellbeing. In rural Maharashtra, India, regions hit hardest by drought have seen spikes in farmer suicides, and local communities report increased depression, alcoholism, and domestic violence—all worsened by limited mental health support.⁶⁷



Around the world, over 1.6 billion people were affected by drought—leading to 24,000 deaths—from 2000 to 2023.

In addition to heat, floods, and drought, SEWA members also report impacts from snowstorms. Members from Ladakh and Kashmir share that severe cold affects their menstrual cycles often, leading to dysmenorrhea. Mothers find it difficult to exclusively breastfeed infants during severely cold periods, which is contrary to WHO guidelines that call for exclusive breastfeeding until the age of six months. Excessive snowfall frequently cuts off SEWA members from supply chains, causing food scarcity, resulting in several cases of malnutrition, and disrupting vaccination schedules for pregnant mothers.

HEALTH AS A FOUNDATION FOR LIVELIHOODS

In 1977, SEWA discovered an important truth that continues to shape its work: illness was the leading cause of loan defaults among women workers. Health, therefore, became central to all their efforts. Without good health, women could not work; without work, they could not earn, eat, or educate their children. For SEWA's informal workers, health remains their most valuable asset.

When women are healthy, their productivity increases, strengthening their families and communities. Good health forms the foundation for reducing poverty, improving social equity, and creating resilient, thriving households.

In recent years, however, climate change has emerged as a serious threat to this foundation.

Mental Health

Extreme heat and frequent climate shocks deeply affect the mental health of poor women workers, worsening their existing vulnerabilities. Constant disruptions to daily life—including loss of livelihoods, food insecurity, health risks, and displacement—create heightened stress, anxiety, and helplessness.

“My hands ache from sewing from morning until night,” says Foziyaben, a garment worker from Ahmedabad. “But it is not the pain that keeps me awake. It is the worry—how will I pay my children’s school fees? Will they have books, uniforms, a chance to learn? I stitch and stitch, earning a little each day, but by the time I buy food and pay rent, there is hardly anything left. The stress makes my body tired, my mind restless. For me, health is about peace of mind, about knowing my children can have a future.”



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Extreme heat and recurring climate shocks take a heavy toll on the mental health of poor women workers, compounding their vulnerabilities.



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Women often bear a double burden: earning an income for the household while caring for children, elderly family members, and sick relatives. The elderly and young children are particularly vulnerable to heat-related illnesses, requiring constant supervision. These additional responsibilities result in emotional exhaustion and mental strain.

Financial pressures compound these challenges. Many women are forced to borrow money at high interest rates to meet basic needs or recover from climate-related losses, leading to debt-related anxiety. High night temperatures worsen the situation by making it difficult to sleep, resulting in irritability, fatigue, and poor concentration, which further reduce their ability to cope with daily stress.

Gender-Based Violence

Climate-related stress has also contributed to a rise in gender-based violence among SEWA families. Displacement, loss of livelihoods, and shifting family dynamics have intensified existing gender inequalities, leaving women more vulnerable to domestic violence, sexual assault, and exploitation.

Grassroots leaders report that, in many cases, women are pressured to hand over their earnings to husbands, who often spend the money on alcohol or substance abuse. When women refuse, they may face verbal and physical abuse, leading to fear, hopelessness, and emotional distress.

"My husband and I were facing a severe financial crunch and trying to make ends meet," says Mausinaben, a SEWA worker from Uttar Pradesh. "He started hitting me and venting his frustration on me. He verbally abused me in front of neighbors, and other women stopped visiting my house because of his violent behavior. I wanted to speak out, but stigma kept me silent. I started working with SEWA to help, but he took away all my earnings. Many times, I thought of escaping but stayed for my children. I am filled with rage and pain—nothing can make it disappear."

Substance Abuse

Climate shocks and related mental health struggles have contributed to rising substance abuse among men, women, and even children, according to SEWA's grassroots leaders. Loss of income, combined with the high cost of addictive substances, pushes families deeper into poverty, forcing them to take loans at high interest rates from local lenders. In extreme cases, when families cannot repay these loans, suicides have been reported.

"We are often forced to work longer hours to make up for lost livelihoods due to sudden climate shocks," says Ashaben, a construction worker from Ahmedabad. "Chewing tobacco has now spread like wildfire across all age groups. Many members use it to kill hunger and stay awake during long work hours. Sometimes, we only eat onions and roti because we cannot afford proper food, and pre-cooked meals spoil quickly."

COMMUNITY-LED RESPONSES

SEWA's members view health as not just the absence of illness, but also as a function of economic security, social dignity, and emotional resilience. Responses are therefore designed to go beyond simply curative medicine, to include preventive and holistic wellness strategies that address economic, social, and emotional vulnerabilities simultaneously. SEWA's climate-health interventions combine preventive and curative care, promote early care-seeking behavior, and empower women to make informed health decisions for themselves and their families.

Evidence-Based Responses

SEWA collects data through surveys and focus group discussions (FGDs) to inform evidence-based solutions. The surveys capture quantitative data on climate impacts, coping mechanisms, and health outcomes, ensuring diverse representation across geographies and occupations. FGDs in over 30 communities document lived experiences and identify challenges during climate shocks. This data informs SEWA's policies, interventions, and resource allocation.

Health Ambassadors

At the core of SEWA's strategy are more than 400 SEWA Health Ambassadors (SHAs), trained by doctors to educate, screen, and guide community members. These trusted women lead awareness campaigns on climate-sensitive health risks, promote preventive practices, and connect members to appropriate care.

"When we began, many doubted us," says Poojaben Thakor, a grassroots leader from Mehsana. "They would say, these women cannot do anything. Learning about health was like learning a new language, but today, we're leading health initiatives in our community."

Preventive Care

Preventive care focuses on early health education, checkups, and advice on lifestyle changes to address climate-related illnesses.

Local-language posters, WhatsApp campaigns, and household visits are used to spread knowledge on climate-related illnesses and preventive practices.



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When we began, many doubted us. They would say, these women cannot do anything. Learning about health was like learning a new language, but today, we're leading health initiatives in our community.

Poojaben Thakor, a grassroots leader from Mehsana

Regular follow-ups ensure adherence to care plans. “I felt dizzy every afternoon during summer,” said Radhaben, a construction worker. “A SHA visited my home, checked my blood pressure, and explained that heat and dehydration could be dangerous. She taught me simple steps—drink water, use a wet cloth on my neck, rest in shade. Now I can work safely and share these tips with neighbors.”

Equipment such as solar lights, fans, insulated jugs, energy-efficient kits, tarpaulin sheets, cool roofs, and umbrellas are distributed to members, to help them adapt to extreme conditions.

“During the heatwave, we had to buy cold water daily, spending ₹600–900 (€6–9 approximately) a month,” says Lalitaben, a construction worker from Gujarat. “The insulated water jug we got from SEWA helped us save that money and use it for our children’s education.”

Health Camps, Telemedicine, and Point-of-Care Testing

SEWA organizes community health camps during and after climate shocks, providing doorstep clinical care, medicines, and Oral Rehydration Salts (ORS). These camps reduce travel costs, save time, and ensure timely treatment. SHAs use portable diagnostic equipment and dispense basic medicine during household visits, for timely diagnosis and treatment.



© Self-Employed Women's Association

The Self-Employed Women's Association launched telemedicine services in remote areas like salt pans and dumpsites, where extreme heat often forces local medical centers to close.



“After the last flood, the entire village was cut off,” says Shantaben, an agricultural worker from Gujarat. “My son fell ill, but we couldn’t afford ₹200–300 (€2–3) for transport. SEWA’s camp came to our doorstep—the doctor treated him, gave medicines, and taught us how to make ORS. My child recovered quickly, and we saved both time and money.”

Extreme heat often forces local medical centers to close, especially in remote areas like salt pans and dumpsites. To bridge this gap, SEWA launched telemedicine services in April 2020, providing free consultations to over 25,000 members.

Parametric Insurance

SEWA has introduced parametric insurance, including a Climate Welfare Facility (CWF) and a Livelihood Risk Reduction Fund (LRRF), to help women recover from climate shocks without falling into debt. Parametric insurance provides quick payouts based on weather data, allowing women to afford medical care, food, and essentials immediately after a shock. The CWF pools savings, insurance, and grants to fund healthcare, climate-health campaigns, and adaptation tools, while the LRRF offers low-cost advances and uses blended finance mechanisms to reduce interest rates and restart livelihoods after crises.



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SEWA’s Climate Welfare Facility and Risk Reduction Fund help women recover from climate shocks with quick payouts and low-cost support.

“Working in the salt pans, we couldn’t afford treatment during peak heat,” says Salmaben, a salt pan worker in Gujarat. “Insurance helped us buy medicines and groceries, protecting our health and livelihood.”

Strengthening Health Systems

SEWA's next phase focuses on building resilient, inclusive, and data-driven health systems by:

- Expanding community-based care, telemedicine, and household testing.
- Prioritizing mental health through counseling, mindfulness, and peer support.
- Strengthening early warning systems to deliver climate alerts to marginalized workers.
- Scaling climate-adaptive health infrastructure and financial protection tools.
- Embedding data and research to influence policy and create design-responsive interventions.

By integrating preventive health, financial security, and climate adaptation, SEWA's efforts strengthen the collective resilience of SEWA's 3.2 million women members in the face of an increasingly unpredictable climate.



CHAPTER 6

THE CRITICAL ROLE OF LLA IN DROUGHT RESILIENCE

KEY MESSAGES

- Drought is among the world's costliest and most widespread climate threats. It causes damage exceeding US\$ 300 billion every year and affects more than 1.8 billion people annually, impacting the poorest communities in particular.
- Local communities are already on the frontlines of drought resilience. In Nigeria's Doka community, farmers combine sandbagging, soil-rebuilding grasses, and scarecrows to protect crops, while similar practices across Africa demonstrate ingenuity and persistence.
- Social inequalities amplify vulnerability to drought. Women-headed households, pastoralists, and marginalized groups often face barriers to resources, decision-making, and recovery.
- Traditional knowledge is a critical resource, but climate change is testing its limits. While generational practices are vital, they increasingly need to be combined with scientific forecasts, climate data, and participatory research to remain effective in altered conditions.
- Anticipatory, adaptive, and absorptive capacities must all be strengthened. Drought resilience requires investments in early warning systems, flexible finance and insurance, community-based coping strategies, and sub-national, national, and regional policies and water management decisions that are led by the need of those affected.
- Scaling locally led drought resilience requires systemic support. For community innovations to endure, they must be backed by predictable funding, investment in local institutions, and accountability mechanisms that ensure national and global actors support local priorities.

Addressing Structural Inequalities

Investing in Local Capacities

Building Understanding

Collaborative Action and Investment

IN THIS CHAPTER

- Dealing with Extremes in Doka
- Why Drought Resilience Strategies Must be Locally Led
- GRIN: Crop Insurance that Prioritizes Women
- PASSAGE: Knowledge Learning Hubs to Empower Communities
- PALM-TREES: Addressing the Multifaceted Impacts of Drought
- BASIN: Systemic, Structural, and Psychological Impacts of Drought
- Equity, Access, and Sustainability





Communities working with PALM-TREES researchers described psychological and social consequences as a result of drought.



The rain is supposed to bring us succor, but when it eventually does come, it only brings pain.

Alhaji Abubakar, farming group leader in Doka, Nigeria

DEALING WITH EXTREMES IN DOKA

In the farming community of Doka, Nigeria, smallholder farmers have long relied on tradition to navigate the challenges of each planting season. In recent years, however, their familiar coping strategies are being tested like never before.

At the start of each season, the farmers plant groundnuts and sorghum seedlings, and hope that the rain will arrive on time. Because if the rains are delayed, nature turns against them. Farmers must spring into action to save the precious seeds they have planted from swarms of hungry quelea birds. They set up *mutum-mutum*—handmade scarecrows—and must pay guards to scare off the birds.

Day and night, the guards kick up a cacophony with tin cans and plastic bottles filled with gravel to keep the birds at bay. They are powerless against the kadandoniya—millipedes in Hausa—that join the opportunistic quelea in devouring seeds, leaving the farmers with little to show for their hard work.

When the rains finally arrive, they bring another crisis. Sudden, heavy downpours trigger flooding, washing away topsoil and threatening fragile seedlings that have survived the drought. “The rain is supposed to bring us succor, but when it eventually does come, it only brings pain,” says Alhaji Abubakar, a farming group leader in Doka.

The farmers respond as best they can: they stack sandbags, dig run-off gutters, and plant soil-rebuilding grasses along the borders of their fields to prevent erosion. These strategies have served Doka for generations, but the changing climate is making it harder for smallholder farmers to protect their crops and livelihoods.

Increasingly erratic rainfall patterns are undermining food security in the savannah regions of Nigeria and Ghana. The impact of weather-related crop failure is particularly severe for households headed by widowed, divorced, separated, or single women, who often lack the resources to recover from repeated losses.⁶⁸

WHY DROUGHT RESILIENCE STRATEGIES MUST BE LOCALLY LED

A recent study estimates that droughts cost the world more than US\$ 300 billion each year, making it one of the costliest and most pressing threats to societies and economies around the globe, particularly in the world's drylands. Over 1.8 billion people are affected annually, especially women and children, and the world's poorest and most vulnerable. The impact is long term and not limited to national economies—droughts also spur cross-border migration and heighten global security risks.⁶⁹

Local Social Inequities as a Multiplier of Vulnerability

At the local level as well, the implications of droughts extend far beyond seasonal harvest shortages and immediate impacts on village economies. They affect local food security, gender equality, health, economic stability, education, and social and cultural practices.

The role of anthropogenic factors in worsening or improving the local impacts of drought are well documented. These include not only factors such as climate change, deforestation, agricultural practices and poor water management, but also social inequities, which determine whose water needs are prioritized.

Social inequities at the national and local level act as a multiplier of drought impacts by restricting access to increasingly scarce resources, reducing coping and adaptive capacities, and intensifying economic, health, and social hardships for marginalized populations. Poorer communities often face greater exposure to water scarcity due to limited access and infrastructure, and have more limited coping strategies. Poor farmers and pastoralists like Alhaji Abubakar, for instance, rely heavily on rain, and are more susceptible to drought-related crop failures, loss of pasture lands and livestock, and income disruptions.



Local knowledge combined with scientific seasonal forecasts is crucial to addressing drought risks.

Drought also erodes social cohesion and support systems in vulnerable communities, reducing their ability to respond effectively. Health impacts worsen for disadvantaged groups, with gendered burdens especially affecting women who must travel farther for water and face higher risks during crises.

Race, ethnicity, gender, and other social factors can therefore intersect with economic status to amplify drought impacts, with historically marginalized communities experiencing compounded disadvantages during drought events. Additionally, political and historical inequalities force marginalized people to live in more drought-prone areas with fewer adaptive resources. These

marginalized groups may also lack political influence or social connections needed for accessing aid or information, compounding their vulnerability.

These social inequities are often very local, and demand focused equity-driven drought resilience solutions that are specifically tailored to local context.

Traditional Wisdom to Deal with Drought

Drought, however, is not a new phenomenon. While its frequency is on the rise due to climate change, communities in many parts of the world have dealt with it in the past and have developed multiple and complex local systems and coping mechanisms.

This traditional local knowledge, developed over generations, includes strategies to manage local water resources sustainably, predict drought conditions, and implement effective coping strategies. It encompasses understanding natural drought early warning signs, agricultural practices adapted to local ecosystems (such as mixed cropping and soil conservation), as well as community-based resource management techniques. These practices often rely on affordable, locally available materials and are culturally appropriate, enabling communities to reduce vulnerability and build resilience, even in resource-constrained settings.

However, climate change now impacts the reliability and applicability of traditional knowledge by altering weather patterns, disrupting natural drought signals, and challenging historical coping strategies, reducing their accuracy and effectiveness. This necessitates integration of modern scientific and local indigenous knowledge for adaptive drought management.

Climate Adaptation and Resilience (CLARE), a flagship research program on climate adaptation and resilience for Africa and Asia-Pacific, supports this integration of modern and traditional knowledge through needs-driven, action-focused research. CLARE is funded mostly (about 90%) by UK Aid through the Foreign Commonwealth and Development Office, and co-funded by the International Development Research Centre, Canada. The program bridges critical gaps between science and action by championing Southern leadership to enable socially inclusive and sustainable action to build resilience to climate change and natural hazards.

CLARE supports locally led approaches to strengthen drought resilience through early warning, insurance mechanisms, local co-creation, behavioral change strategies, and inclusive planning. The Program's work on drought resilience focuses on addressing social inequities and combining traditional knowledge with climate research through six projects:

- **Decision support for climate risk preparedness—towards gender-responsive crop insurance in West Africa.** Also known as [GRIN](#), this project works with households in the savannah regions of Nigeria and Ghana to understand drought exposure, attitudes toward crop failure, and explore crop insurance solutions.
- **Strengthening Pastoralist Livelihoods in the African Greater Horn through Effective Anticipatory Action.** Also known as [PASSAGE](#), this project aims to enhance early warning systems and encourage anticipatory action to protect pastoralist communities in the Greater Horn of Africa from worsening droughts.



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While their effects and frequency are increasing due to climate change, communities in many regions of the world have long dealt with droughts and have developed a multitude of coping mechanisms.

- **Pan-African and Transdisciplinary Lens on the Margins: Tackling the Risks of Extreme Events.** Also known as **PALM-TREEs**, this project supports marginalized communities in Africa to respond to extreme events like droughts (as well as floods and heatwaves) and their socioeconomic impacts.
- **Behavioral Adaptation for Water Security and Inclusion.** Also called **BASIN**, this project promotes water security among vulnerable communities in Africa by studying and encouraging behavior change at multiple levels, from individuals to political institutions.
- **Building Insurance Mechanisms Adaptation.** Also called **BIMA**, this project builds gender-responsive livestock insurance mechanisms for agro-pastoral communities in Kenya, offering financial protection when drought strikes that is tailored to the needs of different groups, and different types of livestock, and that is effective for both users and insurance providers.
- **Climate Adaptation and Resilience in Tropical Drylands.** This project, also called **CLARITY**, operates in India, Niger, Nigeria, and Tanzania, using “transformational” labs’, where communities co-develop equitable, sustainable plans for water and drought resilience.



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Women and children are worst affected by the impacts of drought, floods, and extreme heat.

GRIN: CROP INSURANCE THAT PRIORITIZES WOMEN

The Decision Support for Climate Risk Preparedness Towards Gender-Responsive Crop Insurance in West Africa (GRIN) project was launched in March 2024, to design and implement gender-responsive drought index crop insurance informed by reliable weather forecasts and climate risk assessments. GRIN works directly with farmers and local leaders to understand context-specific risks—from droughts and floods to pest invasions—and supports better decision-making on crop insurance and payout options. Importantly, the project tackles structural inequalities faced by women, who carry the brunt of both domestic and small commercial farming activities, ensuring they have a voice in shaping solutions and accessing protection against climate-related losses.

GRIN works alongside existing insurance companies and meteorological agencies to pilot insurance products with incentives that acknowledge the limited financial resources of these communities. The incentives include elements such as flexible monthly or yearly subscriptions; a 10% rebate on premiums paid in advance; the option to pay premiums in the form of training; cash-back payments if there are no severe droughts; and best practices for storage post-harvest. Compensation for injuries sustained while farming is also included.

Meteorological agencies, for their part, provide reliable weather information to guide insurance decisions for women, offering content specific to different plant growth stages and harvest, as well as local climate trends.

PASSAGE: KNOWLEDGE LEARNING HUBS TO EMPOWER COMMUNITIES

In 2022, the Horn of Africa faced one of the most severe droughts in decades, leaving over 36.1 million people across the region struggling with water scarcity, food insecurity, and loss of livelihoods. The crisis hit hardest and affected the most people in Ethiopia (24.1 million

people), Somalia (7.8 million), and Kenya (4.2 million). For pastoralist families, the drought's impact was devastating, as more than 8.9 million livestock—their primary source of food, income, and cultural identity—perished.⁷⁰

In a region where pastoral communities rely heavily on livestock mobility and healthy rangelands to access forage and water for survival, drought and extreme heat are the two most pressing climate change threats. To address these challenges, CLARE's PASSAGE project brings together academic institutions, practitioners, policymakers, and local communities to strengthen anticipatory action and early warning systems for cross-border areas in Kenya, Ethiopia, Somalia, and Uganda.

The project leverages predictive, multi-hazard, impact-based forecasts to help pastoral communities better prepare for climate-related shocks. Climate forecasts provided by national meteorological agencies are further enriched through research contributions on vegetation, temperature, and rainfall, such as the Vegetation Condition Index produced by the University of Sussex. They are then presented and discussed at regional forums such as the Greater Horn of Africa Climate Outlook Forums (GHACOF), and downscaled and tailored more locally through Sub Regional Climate Outlook Forums and at local Knowledge and Learning Hubs. At these forums, stakeholders discuss the potential impacts of forecasts for the upcoming season on various sectors.

PASSAGE works directly with pastoral communities through the local Knowledge and Learning Hubs using a novel framework called Forecast to Local Action (FOLA). FOLA brings together community members, local development organizations, and project teams to co-develop risk assessments based on local and scientific seasonal forecasts, community-developed vulnerability maps, and anticipatory action plans.



Collaboration with pastoral communities is key to PASSAGE's work in risk assessment.

This process of co-production allows for communities to be included and actively shape the early warning and preparedness processes, ensuring trust, relevance, and a direct link to protecting livelihoods.

For example, in Moyale, between Kenya and Ethiopia, communities combine forecasts from GHACOF with indigenous indicators like animal behavior, wind shifts, and star alignments to create a combined forecast. These are then linked to impact-based forecasts leveraged by PASSAGE, showing what a medium or strong drought would mean for different vulnerable groups like lactating mothers, children, or people with disabilities. Communities then agree on anticipatory actions such as pre-positioning nutrition support, organizing livestock destocking, and setting up cash or grain banks.



Before, when drought or floods were coming, we only knew after the damage started. With the support of Knowledge and Learning Hubs, now we know we can receive early warnings and prepare our people.

Halkano Roba, resident of Moyale, on the border between Kenya and Ethiopia

PASSAGE bridges the gap between scientific forecasts and community realities, enabling the development of locally led anticipatory action plans that are inclusive, context-specific, and equitable. “Before, when drought or floods were coming, we only knew after the damage started,” says Halkano Roba, a resident of Moyale. “With the support of Knowledge and Learning Hubs, now we know we can receive early warnings and prepare our people.”

The deliberately inclusive and participatory activities within the Knowledge and Learning Hubs have proven especially transformative for women in pastoralist communities, who are historically excluded from decision-making processes. “For women, the Learning Hub is a bridge to knowledge,” says Buke Kalicha, a female farmer from Moyale. “We are now part of the discussions on how to act before disaster, and our voices are heard in the planning.”

By fostering collaboration, inclusivity, and knowledge exchange, PASSAGE helps communities to move from reactive crisis response to proactive risk management. The project empowers pastoralists to anticipate hazards, play a role in protecting livelihoods, and build long-term resilience against a changing climate.

PALM-TREES: ADDRESSING THE MULTIFACETED IMPACTS OF DROUGHT



When drought and water scarcity strike, water for farming becomes secondary as we struggle to secure drinking and household supplies—and women and children are worst affected.

Salimat Musa, resident of Aladere-Ode village, Central Nigeria

In Aladere-Ode village, Central Nigeria, Salimat Musa has witnessed seasonal shifts before, but today climate extremes are harsher and increasingly unpredictable, stretching her community’s resilience. “When drought and water scarcity strike, water for farming becomes secondary as we struggle to secure drinking and household supplies—and women and children are worst affected,” she explains.

Her words reflect a wider truth: drought inflicts profound psychological and social pressures on rural communities. Beyond threatening livelihoods, it undermines mental health, wellbeing, cognitive ability, and social cohesion—deepening inequalities in places already underserved by essential services and aid. For many, resilience is pushed to its limits.



Women welcoming PALM-TREES team members.

Launched in 2023, PALM-TREES brings together physical and social sciences to confront climate extremes across six African countries—Nigeria, Ghana, Kenya, Cameroon, the Democratic Republic of Congo, and South Africa. The project not only measures the impacts of extreme events but also examines how and why communities interpret certain conditions as extreme, and how those perceptions amplify vulnerability.

To co-create adaptation strategies rooted in local realities, PALM-TREES employs diverse methods, including interviews, vulnerability assessments, hazard metrics, climate modeling, and participatory workshops. Communities themselves decide which climate risks to prioritize and help design practical, transformative interventions that address both immediate needs and structural inequalities.

In Ghana, for example, research explores how droughts, floods, and water management affect vulnerable groups. Findings show women face higher sensitivity to heat due to their dual responsibilities in farming and caregiving. By combining these lived experiences with data, PALM-TREES develops gender-sensitive adaptation strategies.

The project is anchored in African and international institutions, including the University of Cape Town, University of Lagos, and the University of Oxford. Its mixed-methods research feeds into Open Access Data Repositories and is disseminated through a cross-sectoral partner network to policymakers and stakeholders, strengthening inclusive planning, resilience, and equity.

PALM-TREES also builds capacity at multiple levels. For researchers, particularly early-career scientists, it provides training and open data to deepen understanding of climate extremes and vulnerability. For stakeholders, including communities, practitioners, and policymakers, it fosters skills to integrate climate knowledge into policy and practice.



Participants of the BASIN National Stakeholders Workshop in Dowa, Malawi.

On the ground, the project strengthens local capacity in drought-resilient agriculture, climate information use, and cooperative market access through workshops, policy dialogs, and training events. In western Nigeria, for instance, PALM-TREES raises awareness on using boreholes, tubewells, and pumps for dry-season vegetable farming.

It also promotes agroforestry as a sustainable drought-mitigation strategy. Marginalized men's groups receive seedlings of endemic tree species such as locust bean, shea butter, and cashew—the latter is now one of the region's most valuable agricultural commodities.⁷¹

BASIN: SYSTEMIC, STRUCTURAL, AND PSYCHOLOGICAL IMPACTS OF DROUGHT

The BASIN project applies concepts and methods from behavioral science and psychology to uncover the systemic, structural, and psychological factors shaping behaviors around water security in Malawi, Burkina Faso, and Tanzania. This includes exploring both individual behavioral determinants (such as perceptions of vulnerability and hazard awareness) and collective influences (such as social norms, community capacities, and intersectional identities).

Farmers are supported to conduct Climate Vulnerability and Capacity Assessments (CVCAs), using participatory tools like historical timelines, hazard mapping, and vulnerability matrices to analyze climate risks. Based on this process—and with guidance from BASIN researchers—they develop adaptation plans. These plans include drought-proofing measures such as building erosion-prevention channels, introducing environmental protection bylaws, strengthening village savings and loans groups, establishing tree nurseries, and installing new boreholes.

The CVCAs are facilitated by BASIN's NGO partners, including WaterAid, Shahidi wa Maji, and Water Witness International. They ensure adaptation strategies are rooted in community experience, fostering greater understanding, ownership, and trust. Each adaptation plan has clear timelines and designated leaders or committees responsible for implementation, reinforcing accountability and sustained engagement. The outputs also inform broader village action plans.

As one local leader in Malawi told Water Witness International, "This is the first time we have seen an organization return to us with results and ask for our input on what should be done next. For once, we feel included and are assured that our voice matters."

EQUITY, ACCESS, AND SUSTAINABILITY

CLARE's drought resilience projects demonstrate that equity, access, and sustainability cannot be realized without rooting adaptation in the lived experiences of those most affected. Research in fragile and climate-stressed contexts must contend with persistent barriers: limited and uneven access to reliable data, the exclusion of marginalized voices, and the challenge of translating scientific insights into policies and practices that are trusted and usable at the community level.

By applying the LLA Principles, CLARE ensures that communities are not passive recipients of external knowledge but active co-creators of solutions. Its drought-related initiatives bridge the gap between research and action by combining scientific tools—such as impact-based forecasts, vulnerability mapping, and innovative insurance mechanisms—with indigenous knowledge, lived experiences, and locally grounded governance systems. This co-production validates community expertise while strengthening the uptake, sustainability, and effectiveness of adaptation measures.

A defining strength of CLARE is its commitment to Southern leadership, long-term partnerships, and action-oriented research explicitly designed to foster equitable resilience. By convening diverse actors—including farmers, women's groups, local governments, insurance providers, and meteorological agencies—CLARE ensures that research outputs are accessible, relevant, and embedded



The Malawian community group of GVH Robeni works with BASIN to co-develop adaptation plans.



This is the first time we have seen an organization return to us with results and ask for our input on what should be done next. For once, we feel included and are assured that our voice matters.

Local leader, Malawi

within local systems. Impact is measured not only through technical capacity and policy influence but also through community ownership, gender-responsive innovation, and strengthened trust between science and society.

Through these approaches, resilience strategies become more inclusive, more enduring beyond project cycles, and better equipped to anticipate and absorb the shocks of a changing climate. By championing and operationalizing locally led adaptation principles, CLARE is helping communities move from vulnerability to agency—reshaping how resilience to drought is built, measured, and sustained.



CHAPTER 7

HOW GOVERNANCE SHAPES LLA

KEY MESSAGES

- Governance reforms are central to effective locally led adaptation (LLA). Devolving power, resources, and accountability enables communities to plan and act on climate risks, as seen in Nepal and Kenya where constitutional change and decentralization brought climate finance closer to those most affected.
- Nepal's Local Adaptation Plans of Action demonstrate both progress and challenges. While constitutional and policy backing helped embed adaptation into local planning, a lack of financing, limited capacity, and elite capture show that true impact depends on adequate resources and genuine devolution of power.
- Kenya's County Climate Change Funds provides a durable model of participatory climate governance. County-level legislation and budget allocations have institutionalized adaptation, built trust, attracted co-financing, and supported transparent, accountable planning.
- Bangladesh now stands at a crossroads: political reforms and a new LLA framework create opportunities to devolve authority, strengthen local capacity, and channel predictable finance, drawing lessons from Nepal and Kenya.
- Effective LLA depends on six governance pillars: clear legal frameworks, strong technical capacity, predictable finance, participatory planning, robust accountability, and political commitment.
- From principles to practice, a realist approach is required: LLA will only succeed if governance reforms deliver finance, capacity, and accountability on the ground, while ensuring vulnerable communities are heard and inequalities addressed.

Devolving Decision Making

Patient, Predictable, Accessible Funding

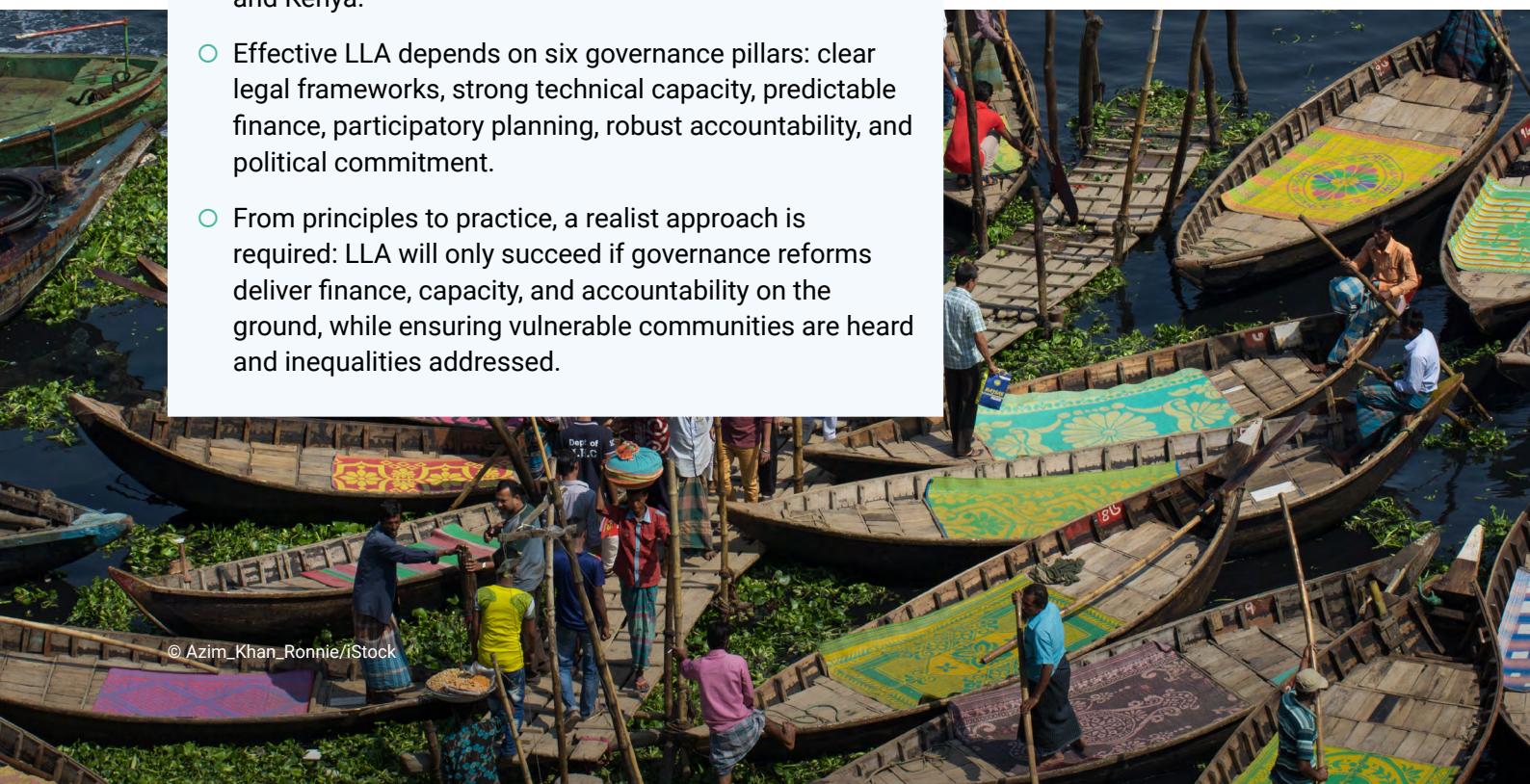
Investing in Local Capacities

Transparency and Accountability

Collaborative Action and Investment

IN THIS CHAPTER

- When Governance Shifts, Adaptation Thrives
- Why Governance Matters
- Nepal: Federalism and the LAPA Experiment
- Kenya: Devolution and the County Climate Change Funds
- Bangladesh: At a Crossroads
- Lessons for Bangladesh
- From Principles to Practice



Locally led adaptation is not just about climate responses; it is about changing governance itself.

WHEN GOVERNANCE SHIFTS, ADAPTATION THRIVES

Around the world, climate change is forcing governments to rethink how climate adaptation investment decisions are made, who makes them, and at what level. As floods, droughts, and storms intensify, climate action at all levels, including local, is important for resilience.

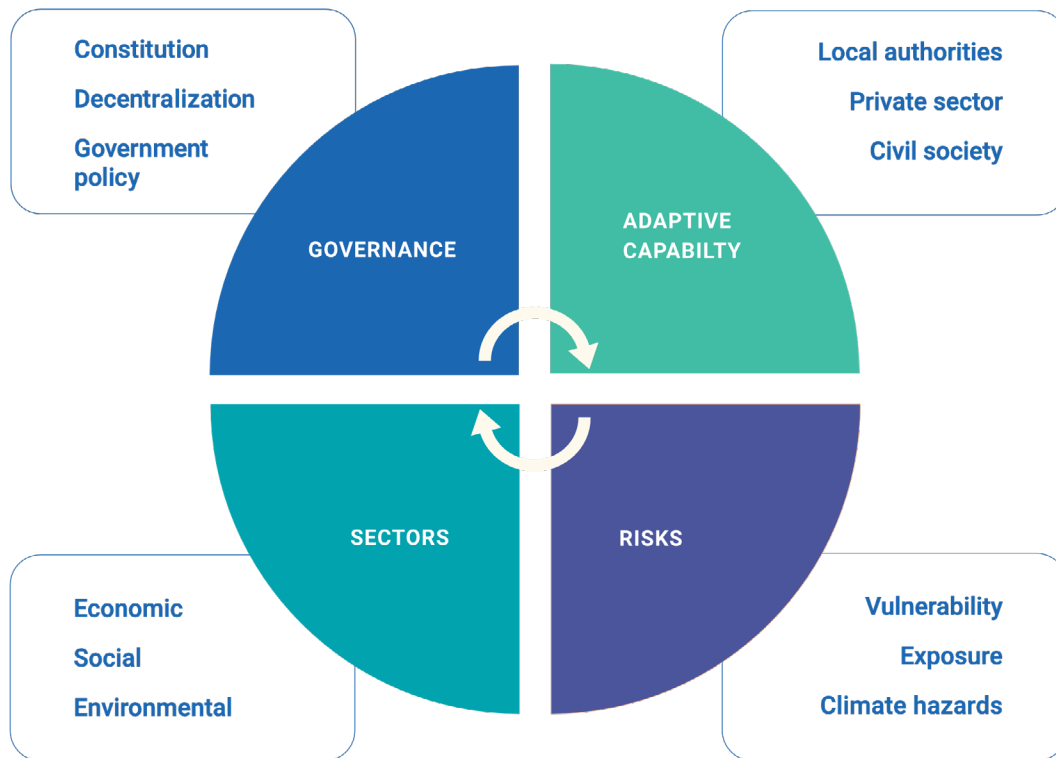
But for local action to work, power must shift. Local governments, communities, and civil society need the authority, resources, and knowledge to plan and implement solutions that make sense for their unique environments. This process—described as locally led adaptation (LLA)—is not just about climate responses; it is about changing—often decentralizing—governance itself.

Governance is therefore a key determinant of the effectiveness of local adaptation action, a category that includes decentralization, constitutional frameworks and government development policies (see Figure 1). Other key determinant categories include: the adaptive capacity of local authorities, private sector actors, and civil society; climate risk factors such as vulnerability, exposure, and specific climate hazards; and sector-specific characteristics that shape adaptation outcomes.



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Local governments, communities, and civil society need to be empowered to create solutions for their unique environments.

**FIGURE 1.** Determinants of Local Climate Change Adaptation Effectiveness

Source: Chapter Authors

Over the past decade, two countries, Nepal and Kenya, have undergone profound constitutional reforms, moving away from centralized control toward devolved systems of governance that allow local institutions to take charge of climate adaptation.

Today, Bangladesh stands at a similar crossroads. With political reforms underway and a new national LLA framework emerging, the country faces both opportunities and risks.

This chapter explores what Nepal and Kenya’s experiences can teach Bangladesh—and the world—about how constitutional and governance reforms can unlock locally led climate adaptation.

WHY GOVERNANCE MATTERS

For years, decentralization has been championed as a tool to challenge authoritarian governance. It has also been advocated as a better way to address rural poverty through cooperative development that can draw upon the knowledge of local people. Yet, despite its democratic promise, decentralization has at times been co-opted by autocratic regimes—not to deepen democracy, but to divert attention from demands for national-level reform and democratization.⁷²

Three broad types of decentralizations have been identified:

- **De-concentration** or administrative decentralization, whereby agency for development planning and implementation is devolved to local governments.
- **Fiscal decentralization**, where local levels of government receive and manage development budget from central government.
- **Devolution** or democratic decentralization, where regional governments are elected locally and have authority to define and operate legislation, regulation, and in some cases, raise taxes.

In some places, decentralization principles—particularly those related to fiscal governance—have been introduced and implemented to advance climate action. When viewed through the analytical framework of the LLA Principles, these decentralization approaches offer a pathway for integrating locally led adaptation into local development planning and service delivery, while also strengthening their effectiveness and reach, as outlined below:

- **Correspondence Principle:** Climate action should be managed by the level of government whose geographic jurisdiction aligns with the area benefiting from those actions.
- **Subsidiarity Principle:** Responsibilities for climate initiatives should be delegated to the lowest level of government that can effectively manage the services, based on the scale of the benefit area.
- **Benefit Principle:** Where feasible, adaptation services should be funded through progressive fee structures, ensuring that those with the capacity to pay contribute accordingly.
- **Affordability Principle:** Local and regional governments must be equipped with sufficient financial resources to fulfil their climate-related mandates and expenditures.
- **Capacity Principle:** Subnational authorities should possess the necessary administrative and technical capabilities to carry out their assigned climate action responsibilities effectively.



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Decentralization addresses rural poverty through cooperative development, drawing on local knowledge.

As climate impacts intensify and mitigation efforts are sidelined by hydrocarbon-fueled national agendas, experiential and social learning about the diverse factors shaping effective local adaptation become increasingly vital. A realist approach is both necessary and appropriate—one that investigates the underlying causal mechanisms to understand how local adaptation functions and under what conditions it succeeds.

Crucially, the effectiveness of local adaptation must be assessed by its impact on the most vulnerable populations. This demands an analytical lens that not only captures their lived experiences but also ensures their voices are recognized and valued—a framework that enables “the subaltern to speak and be heard”.⁷³

The following sections are written by individuals directly engaged in advancing and implementing LLA. Their insights stem from lived experience, participant observation, and close collaboration with the communities at the heart of these climate resilience efforts.

NEPAL: FEDERALISM AND THE LAPA EXPERIMENT

Nepal’s LLA journey started in 2010, when the government launched its National Adaptation Programme of Action (NAPA)—a US\$ 350 million plan prioritizing nine adaptation sectors. Importantly, it committed 80% of resources to the local level, a bold promise that gave birth to the Local Adaptation Plans of Action (LAPAs).

The need for LAPAs arose from the acute sense of importance of village of origin in Nepal, and the huge social, cultural, and ecological diversity across the country. They were proposed to empower local communities to lead implementation of their own adaptation priorities. The Government of Nepal adopted the National Framework on LAPA in 2011, and the LAPA approach was formally recognized in the 2011 National Climate Change Policy.

By 2015, Nepal had developed over 700 LAPAs and 2,500 Community Adaptation Plans, covering sectors such as agriculture, forestry, water, health, and disaster risk reduction.⁷⁴



Local adaptation must be assessed by its impact on the most vulnerable populations.



CHAPTER

7



Women in Bethanchowk, Nepal, discussing their local adaptation priorities.

The Constitutional Turning Point

Climate adaptation was not happening in isolation however—it was unfolding alongside Nepal's historic constitutional transformation.

From 2006 to 2015, Nepal transitioned from a unitary monarchy to a federal democratic republic. This transition to federalism was complex and marked by political contestation, institutional challenges, and delayed implementation. The journey began with the 2006 Interim Constitution, which declared Nepal a federal republic and mandated a Constituent Assembly to draft a permanent constitution. However, the first Constituent Assembly was dissolved in 2012 without delivering—a reflection of the deep political divisions and elite power struggles at the time.

A second Constituent Assembly was elected in 2013 and eventually promulgated the Constitution of Nepal in September 2015, formally institutionalizing a federal democratic republic.⁷⁵ Delays in agreeing on federalism stemmed from the interplay of competing political parties, ruling elites, and civil society, coupled with resistance to devolution of power.

The new 2015 Constitution established three tiers of government—federal, provincial, and 753 local governments—with significant authority devolved to the local level.

The 2017 Local Government Operation Act empowered rural communities and urban municipalities in Nepal to develop annual and periodic plans that integrate cross-cutting themes such as climate change, disaster management, gender equality, social inclusion, and good governance.

Nepal's National Climate Change Policy and LAPA Framework were revised in 2019, to align with federalism and define the roles of local, provincial, and federal governments in adaptation planning and implementation.



Opportunities and Obstacles

Initially piloted by NGOs and funded by development partners, LAPAs were integrated into local government planning and budgeting processes through the updated LAPA Framework. The 2019 National Climate Change Policy (NCCP) gives local governments the responsibility for implementing the LAPAs. Local governments and communities are required, under this Policy, to formulate short- and long-term adaptation strategies; facilitate community-based adaptation; foster multi-stakeholder dialogue; and ensure consensus on climate adaptation, disaster risk reduction, and sustainable development.⁷⁶

By 2024, nearly 250 local governments had developed and begun implementing LAPAs. This process served to increase public awareness of climate risks and enhance the capacity of community-based organizations, civil society groups, and public institutions. Close collaboration among development agencies, government bodies, and local stakeholders enabled the successful piloting, iteration, and scaling of LAPA initiatives.⁷⁷



Communities in Nepal are developing plans that integrate cross-cutting themes such as climate change and disaster management.

In the context of climate finance localization, the NCCP provides 80% of external resources received for adaptation, which must be mobilized at the local level. The projects funded by development agencies, such as Nepal Climate Change Support Programme, Adapting to climate induced threats to food production and food security in the Karnali Region of Nepal, and Building Climate Resilience of Watersheds in Mountain Eco-Regions, have largely adhered to this policy, investing between two-thirds and nine-tenths of their project budget in supporting implementation of priorities identified in LAPAs. More specifically, these project initiatives invested 61.7%, 90%, and 66% respectively of the total climate funds at the local level.⁷⁸

Despite these advances, significant challenges persist in the implementation of both federalism and the application of LAPAs.



Women in Humla, Nepal, using traditional methods of grinding grains.

The transition to federalism heralded the potential for more decentralized, accountable, and inclusive governance, but also posed daunting challenges. Overlapping jurisdictions, incoherent policies, duplication of efforts, limited government capacity, unclear division of powers, intragovernmental fiscal complexities, and persistent central control continue to obstruct effective federalism.⁷⁹

Although the Constitution formally devolved power across three tiers of government, authority often remains concentrated among political elites and entrenched bureaucracies.⁸⁰ Electoral politics, identity-based divisions, and competing political interests further hinder genuine power-sharing and welfare-oriented governance.

The federal framework was designed to foster coexistence, coordination, and cooperation between government tiers. However, tensions persist due to fiscal dependency, vertical and horizontal imbalances, and bureaucratic resistance to decentralization. Local governments face a persistent gap between the authority granted to them and their actual institutional capacity to design and implement climate-related policies and actions.⁸¹

Moreover, a recentralization of decision-making power and financial control undermines the promise of federalism.⁸² It restricts the flow of both knowledge and financial resources to the local level, reducing the effectiveness of local adaptation. While Nepal demonstrates a polycentric governance model at the national and provincial levels, local governments are often constrained by ineffective leadership and entrenched bureaucratic practices.⁸³

LAPA implementation, meanwhile, continues to be externally funded, projectized, and inadequately resourced, resulting in limited local ownership.⁸⁴ Climate change remains a low priority in national and local planning: of the 5–6% of the national budget allocated to climate-relevant programs, less than 2% supports locally led adaptation initiatives. Wider uptake remains constrained by weak political will at both federal and local levels.



Multiple structural challenges hinder LAPA implementation, including lack of operational clarity and genuine devolution of authority, financial constraints, weak institutional capacity, insufficient recognition of local knowledge, and entrenched power asymmetries.⁸⁵ Further, institutional fragmentation, competing authority, and resource inequalities limit the effectiveness of LLA, while many responses focus narrowly on biophysical risks rather than addressing deeper social and structural vulnerabilities.⁸⁶

In some contexts, elite capture and weak community participation have led to maladaptive outcomes, reinforcing existing inequalities and deepening marginalized groups' dependence on local elites.⁸⁷ Additionally, tensions have emerged between traditional community-based practices and externally imposed adaptation programs that, despite offering short-term benefits, have often disrupted social cohesion and exacerbated local vulnerabilities.⁸⁸



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Local governments in Nepal are driving community-led climate adaptation, fostering resilience, dialogue, and sustainable development.

Lessons from Nepal

Constitutional backing gave LAPAs legitimacy and longevity and supported the integration of adaptation into the plans and budgets of local governments.⁸⁹ Nepal's federal system, combined with decentralized climate policies, provides critical entry points for scaling up and mainstreaming the LAPAs. Without devolved funding and a stronger commitment to devolving decision-making in practice, however, effective LAPAs will remain aspirations.



Devolution promotes equitable development, enhances public participation, and addresses marginalization.

KENYA: DEVOLUTION AND THE COUNTY CLIMATE CHANGE FUNDS

Kenya's arid and semi-arid lands (ASALs) are both ecologically and economically significant. Covering over 80% of the country's land area, they are home to 40% of the population, three-quarters of the national livestock herd, and nearly 90% of Kenya's wildlife that supports the country's tourism industry.⁹⁰ Despite this importance, ASALs remain highly vulnerable to droughts and floods and have long suffered from inadequate, inappropriate investment and systematic marginalization.

Like Nepal, Kenya has experienced a historical constitutional transformation in favor of devolution in recent decades. A new Constitution, adopted in 2010, introduced one of the most ambitious devolution frameworks in Africa, fundamentally transforming governance, resource allocation, and service delivery.

Devolution established a two-tier governance system, comprising the national government and 47 county governments, each with distinct political, administrative, and fiscal powers. The reform aimed to bring government closer to the people, promote equitable development, enhance public participation, and address long-standing marginalization, particularly in ASALs.

Counties were granted significant financial autonomy through direct transfers from the national equitable share, guaranteed at a minimum of 15% of national revenue, alongside powers to raise local revenue. The Constitution also mandated citizen participation in planning and budgeting processes, creating mechanisms for inclusive and accountable governance at the subnational level.

Following the adoption of the new Constitution, Kenya's 2013 devolution framework was operationalized through the 2012 County Governments Act, which transferred significant political, administrative, and fiscal powers from the national government to the 47 county governments. Counties were given autonomy to prepare County

Integrated Development Plans (CIDPs), manage local resources, and directly receive a guaranteed minimum of 15% of national revenue. The framework also institutionalized public participation in planning and budgeting, empowering communities to influence development priorities.

Two ASAL-specific policies were adopted in 2012: the National Policy for the Sustainable Development of Northern Kenya and Other Arid Lands; and Vision 2030 Development Strategy for Northern Kenya and Other Arid Lands. Concurrently, growing recognition of climate risks spurred development of three key national climate frameworks:

- The 2010 National Climate Change Response Strategy
- The 2013–2017 National Climate Change Action Plan
- The 2016 Climate Change Act

These instruments created opportunities to embed climate resilience into county-level planning and budgeting systems.



Reform in Kenya aimed to bring government closer to the people, particularly in ASALs.

Piloting Fiscal Devolution for Adaptation

In anticipation of devolved governance under the new Constitution, the Ministry of State for Development of Northern Kenya and Other Arid Lands (MDNKOAL) launched a pilot initiative to address climate and development challenges in Kenya's ASALs. Driven by then-Minister Mohammed Ibrahim Elmi, the pilot aimed to address climate vulnerabilities head-on, so that local development budgets would not be routinely diverted to drought and flood response.⁹¹

MDNKOAL, along with its partners, conducted a diagnostic assessment of governance factors that influence local development effectiveness. The assessment revealed several systemic weaknesses:

- **Disconnect between government and community planning:** Traditional community institutions were rarely consulted and often excluded from formal processes.
- **Mutual misunderstanding:** Government planners and customary leaders lacked familiarity with each other's systems.
- **Limited community capacity:** Community groups struggled to engage with government budgeting and planning mechanisms.
- **Rigid budgeting processes:** Centrally determined budget guidelines prioritized national service delivery criteria (e.g., population size, poverty levels) over local economic realities and livelihood priorities.
- **Inefficient procurement:** Government procurement and investment delivery were slow, lacked community oversight, and rarely aligned with urgent local needs.
- **Climate blindness in planning:** Despite escalating climate risks, annual budgets assumed "normal" conditions and rarely integrated climate risk information into planning.

This assessment contributed to the design of a pilot County Climate Change Fund (CCCCF) in three arid districts, which later became Isiolo County. The pilot aimed to mainstream climate change into county planning; channel climate finance to vulnerable communities through existing government systems; enable counties to access and manage climate finance directly; and strengthen existing planning institutions while establishing inclusive, accountable governance structures.

Operationalizing the devolved governance principles of the Constitution and the 2012 County Governments Bill, the pilot comprised four interlinked components:

1. **A county-managed fund** to finance community-prioritized climate actions.
2. **Climate change planning committees** at county and ward levels to facilitate participation.
3. **Climate information services** and resilience planning tools to inform decision-making.
4. **A monitoring, learning, and evaluation** framework to track progress and improve governance.

By adopting a participatory action-research approach, the pilot County Climate Change Fund (CCCCF) strengthened institutional capacity, improved community engagement in decision-making, and tested devolved climate governance principles. Its success in Isiolo provided a model for scaling up the CCCC mechanism to other counties across Kenya.

Piloting CCCFs Within National Systems

In 2013, Kenya's newly formed National Drought Management Authority (NDMA) established an Adaptation Consortium—a partnership between national government institutions and non-state actors—to support scaling up of the CCCFs to four other counties: Kitui, Garissa, Makueni, and Wajir. Together, these counties cover nearly one-third of Kenya's land area and serve a population of about 3.3 million.



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Community planning session in Kinna, Isiolo, Kenya, in 2012.

The scaling up, which took place between 2013 and 2018, in close collaboration with county governments, focused on:

- Integrating climate priorities into CIDPs.
- Enacting county-level legislation to formalize CCCF governance.
- Developing County Climate Information Service (CIS) plans.
- Testing resilience planning tools, such as participatory Geographic Information Systems (GIS) mapping, vulnerability assessments, and inclusive targeting methods.⁹²

County governments played a central role by enacting climate-specific legislation, which required counties to allocate at least 1.5% of their development budgets to climate-related actions. This commitment, though modest, enabled predictable annual financing for climate adaptation, and leveraging of co-financing from national government and development partners. It also ensured that planning was realistic and aligned with known budgets, instead of generating unrealistic wish lists.

The CCCF governance structure operated at both ward and county levels:

- **Ward Climate Change Planning Committees (WCCPCs):** Elected community representatives who mobilize and prioritize local adaptation needs.
- **County Climate Change Planning Committees (CCCPCs):** County technical experts, national agencies (such as the National Environment Management Authority (NDMA) and the Kenya Meteorological Department), and WCCPC representatives. The CCCPCs helped refine proposals from WCCPCs and ensure alignment with broader county and national strategies.

While the process created opportunities to influence planning, it also revealed capacity gaps, such as frequent transfers of technical officers and weak interdepartmental coordination in institutionalizing CCCF within county governance systems. Power dynamics between county executive and county assembly, and between counties and national government, contributed to delays in implementation.



Locally led climate resilience action is needed to strengthen capacities for managing climate risks, such as the threat to food security.

National Scale-Up

After successfully piloting the CCCFs in five counties, the next step involved scaling up to all 47 counties. The Government of Kenya, through the National Treasury, and with support from the World Bank and development partners, launched the Financing Locally Led Climate Action (FLLoCA) program in 2020 (see also page 57 in Chapter 3 of the [2024 Stories of Resilience](#)).

The FLLoCA program aims to deliver locally led climate resilience actions, strengthen both county and national capacities for climate risk management and bridge the policy-financing gap at subnational levels. It uses two key financing instruments:

- **Readiness Grants** as initial seed funds to help counties prepare for effective climate action (including strengthening the capacity of county-level institutions; development of County Climate Change Investment Plans; formation of County Climate Change Committees and other local coordination bodies; and training and awareness).
- **Climate Resilience Investment Grants**, which become available to counties once they meet certain performance benchmarks, to support actual implementation of climate projects.

Since its launch in 2021, FLLoCA has supported 609 climate projects nationwide at approximately US\$ 59.2 million with readiness grants of US\$ 11 million, fostering inclusive planning, strengthening county-level climate governance, and enhancing transparency and accountability in public expenditure.

Lessons from Kenya

Institutionalizing the CCCF through county climate change policies and legislation in Kenya has anchored the mechanism within formal governance systems, ensuring its continuity beyond individual leadership transitions, and reducing reliance on political goodwill. Counties enacted climate-specific laws to institutionalize adaptation, which will drive continuity.

By providing a small proportion of finance from their own budgets, counties were able to unlock co-financing from national and international partners.

Inclusive governance structures that included representatives from government, NGOs, the private sector, and local communities enhanced political buy-in, improved coordination, reduced duplication, and helped limit adaptation costs. Collaborations with credible local organizations built trust between communities and government institutions, easing CCCF establishment.

Training in governance, financial management, and reporting was essential to enhance the ability of communities to access and manage funds transparently.



Communities in Kenya are now backed by the FLLoCA program—channeling local voices and national financing into climate resilience projects across all 47 counties.

BANGLADESH: AT A CROSSROADS

Bangladesh's National Adaptation Plan (NAP) mandates the creation of a framework for climate action that is participatory, locally led, and gender, disability, youth and socially inclusive. In alignment with this, the Asian Development Bank (ADB) provided technical assistance to the Ministry of Environment, Forests and Climate Change in Bangladesh to undertake an assessment to develop a national LLA framework and action plan. The World Bank and United Nations Development Program also provided technical support to the LLA framework development process. The initial vision and leadership of this initiative was provided by Dr Saleemul Huq, who sadly passed away in 2024. The LLA Framework was completed in 2025 and was approved by the Government Cabinet Division in July that year. The Bangladesh Local Government Division approved a climate vulnerability index that supports allocation of resources to localities and subregions.⁹³

Bangladesh is currently governed by an interim administration that has conducted 11 reform commissions. These areas of reform could lay the ground for the future development of Bangladesh, and importantly from the perspective of this analysis, could shift the determinants of local adaptation effectiveness from a centralized context to one that empowers local people.

To prepare the LLA Framework, a diagnostic approach was used, and feasibility assessment undertaken, to examine:

- How well climate adaptation actions are supported by local and national governments.
- Availability, access, and management of finance and other resources for climate adaptation.
- Current practices and alternatives for climate action at local levels.
- Local capacity for planning, implementation, monitoring, and scaling climate adaptation activities, interventions, and projects.

The key findings by an ADB technical assistance team and a technical assessment team commissioned by the World Bank are summarized in Table 1.

TABLE 1. Findings from a Diagnostic Assessment of Decentralization and Governance for LLA in Bangladesh

DECENTRALIZATION PRINCIPLES	FINDINGS FROM LOCAL (UNION PARISHAD) AND LOWER TIERS (UPAZILA PARISHAD) OF GOVERNMENT
Correspondence	The various scales of prevalent climate risks indicate that different levels of government should coordinate different types of climate action. For example, vulnerability assessments should be coordinated by the Union Parishad, while <i>bamdha</i> (embankment) establishment and maintenance should be an Upazila Parishad responsibility.
Subsidiarity	Local government authorities do not have subsidiarity from central government for climate action.
Benefit	Local government does recognize the potential for local tax raising to fund climate action; however, careful design and testing are required.
Affordability	No designated budget so far is available to local governments for climate action.
Capacity	All local government officials recognize the need for greater technical and administrative capacity to be able to deliver climate action.
Vertical and Horizontal Coordination	At the national level, the Bangladesh Climate Development Partnership is a coordination mechanism among government and development partners. However, there is little to no evidence of coordination with subnational actors for climate action. Good communications between departments at local government level on climate need to be established.

Source: ADB (2025). *Draft National Locally Led Adaptation Framework and Action Plan*. Asian Development Bank, Manila.

The assessment reveals, among other issues, the need for LLA that implements a bottom-up approach that can capitalize upon improvements in local democracy and more locally

accountable government. The reviews showed that it is necessary to avoid the risk of adaptation happening through small, fragmented investments that may not solve the wider problems or aggregate into effective adaptation. While interactive participatory climate risk assessments and resilience planning processes should be used at the local level to support communities in identifying climate risks and resilience priorities, technical specialists and local government should go back to the communities to explain which risks will need to be dealt with at a higher level (across upazila, district or national level for example). This will ensure that the decentralization principles of correspondence and subsidiarity are emulated through the move to LLA.

LESSONS FOR BANGLADESH

The experiences of Nepal and Kenya over the past 10 to 15 years highlight the critical role of constitutional change and decentralization in fostering local climate adaptation.

In Nepal, the process of constitutional reform was lengthy and faced significant contestation in its early stages. Experience since has shown that a critical governance condition for mainstreaming local adaptation is inclusive devolution that empowers local institutions and communities to make independent decisions. Mandatory legal provisions for citizen-centric, participatory, and bottom-up policymaking are needed to ensure that adaptation directly benefits vulnerable households and communities.⁹⁴ Also, the sustainability of adaptation practices in Nepal will be ensured only if robust institutional mechanisms are in place for implementing and monitoring local adaptation activities.⁹⁵



Climate action in Bangladesh faces gaps in funding, coordination, and local government capacity, despite urgent risks.



Bangladesh's reform process is opening doors for more locally driven adaptation and community empowerment.

Decentralization without improvements in local democracy is insufficient. Community or local institution focused adaptation led by local government and community organizations often benefits only selected institutions and individuals, sidelining the most vulnerable.⁹⁶ To ensure equitable and effective LLA, there must be:

- Clearly defined roles and responsibilities.
- Strong institutional capacity.
- Devolved financial resources.
- A dedicated focus on social and climate vulnerability.

In contrast, Kenya implemented its new Constitution more swiftly, enabling the decentralization of climate finance to reach local communities and support adaptation efforts. The devolution process in Kenya enabled counties to address service delivery deficits in ASALs and to tailor investments to local climate adaptation needs. It also introduced potential governance mechanisms for the development of adaptation strategies to confront future climate extremes. The transfer of discretionary authority and financial resources empowered counties to drive their own development agendas within a participatory constitutional framework.

Six Ways Bangladesh Can Strengthen LLA

As shown in this analysis, improvements in governance and the mandates and allocation of business are needed to bring about the advent of governance structures and mechanisms that are capable of fostering locally led adaptation.

Drawing from the experiences of Nepal and Kenya, Bangladesh's success in implementing LLA hinges on six areas:

- **Clear coherent legal framework.** Bangladesh already has a National Adaptation Plan, Nationally Determined Contribution and other national policy frameworks that support local adaptation. The national LLA framework is now in place. Policy guidance and legal instruments for local authorities to develop LLA will be necessary, along with clearly defined roles and responsibilities across government levels. The elected members of local government need technical support and financial resources to plan and implement local adaptation plans.
- **Subsidiarity and technical capacity across governance levels.** This can help ensure that adaptation decisions of different scales are taken at the right level of devolved governance. Political willingness is important at higher levels of government to acknowledge and empower lower levels of government to become the main coordinators of LLA. Hence, the technical and administrative capacity of local governments needs to be in place to take up the duties that subsidiarity brings.
- **Finance flows.** National and international finance for climate action, including for LLA, is available. The recently established Bangladesh Climate Development Partnership represents a route for the government's Economic Relations Division to negotiate and leverage international financial and technical support to advance LLA in Bangladesh. Direct, predictable channels for local adaptation funding to middle and local tiers of government need to be established. Climate budget codes for local action and allocation of dedicated funding is a priority. Performance-based grants to get finance to middle and local tiers fit uncomfortably with the LLA principle of patient and predictable funding.



Lessons from Nepal show that true impact depends on devolved finance, capacity, and accountability.



LLA requires power shifts and accumulation of agency at local levels. This includes access to flexible funding, so that the empowerment of local authorities is genuine, they can innovate in response to local needs, and the criteria for performance assessment derive from their downward accountability to the climate-vulnerable population and not to some fund holder at a central level.

So, set out in the decentralization principles of benefits and affordability, local and regional governments must be equipped with sufficient financial resources to fulfil their climate-related mandates and expenditures. In addition, progressive fee structures and local tax revenue from those with the capacity to pay can fund local adaptation.

- **Institutional capacity.** Technical and administrative skills will need to be strengthened at the local level. While awareness of LLA and systematized experiences in implementation are emerging, the current knowledge and capacity is very shallow in the local authorities where it is needed. Despite the reform changes, there is likely to be significant inertia in the ways that local authorities operate. The scale of changes required for LLA to be effectively implemented across the country means that the incoming central government needs to set out clear expectations of local government in terms of delivering LLA.
- **Participatory planning.** Inclusive planning processes to identify climate risks and solutions will be necessary. Bangladesh already has some good practice cases to draw from and scale. Climate risk management in public bodies will need strengthening. Protocols for mandatory consultation of local people in local project design are necessary. As illustrated in Kenya, it is possible to use climate change as a lever to enhance local development planning.
- **Accountability systems.** Robust monitoring, learning, and grievance mechanisms will be necessary to strengthen social learning and improve practice, and engender transparency and accountability. LLA advocates will need to invest in “learning by doing”, on adaptation monitoring, evaluation, and learning. For LLA processes to gain public support, local authorities will need to use existing, or establish new, mechanisms for local people to be able to express their grievances.

FROM PRINCIPLES TO PRACTICE

LLA thrives when constitutional reform, decentralization, and predictable finance come together. But this is not automatic. The solution lies in:

- Linking policy aspirations with practical governance reforms.
- Strengthening local institutions to manage climate finance transparently.
- Ensuring that the most vulnerable voices are heard in decision-making.

Kenya and Nepal’s stories demonstrate that constitutional change can trigger governance structures and mechanisms that are capable of fostering LLA—but only when local governments are trusted, resourced, and accountable.



CHAPTER 8

THE ROLE OF PHILANTHROPY IN ADVANCING LLA

KEY MESSAGES

- Philanthropies can support broader, deeper systems transformation towards locally led adaptation (LLA) through long-term, flexible and risk-tolerant funding that reaches local actors faster and with fewer barriers than traditional aid.
- Shifting power is central to impact: the Climate Justice Resilience Fund (CJRF) has redesigned its internal governance and introduced participatory grant-making models to place decision-making directly in the hands of local leaders.
- Quadrature Climate Foundation has learnt that supporting LLA requires a fundamental shift in how funders work: embracing the complexity of intersecting systems of climate, poverty, inequality, and power; understanding how weak institutions and structural inequities amplify vulnerability, and impede effective climate action; and recognizing that these dynamics play out differently across contexts, timeframes, and scales.
- The Rockefeller Foundation finds that unlike multilateral institutions or governments, philanthropy can act with urgency and flexibility: piloting solutions before they are politically feasible, taking risks where others cannot, putting resources and decision-making in the hands of trusted local leaders and institutions, and adapting innovative models from one place to other local contexts.
- Collaboration between philanthropies, like the Adaptation and Resilience (A&R) Fund led by ClimateWorks Foundation, can amplify impact.
- Philanthropies are learning that while LLA is not easy, it is essential. It challenges entrenched power structures, tests donor habits, demands humility, and requires patience. Supporting LLA is not just about what philanthropy funds, but how it operates. It requires shifting relationships, sharing power, and embracing uncertainty.

Devolving Decision Making

Patient, Predictable, Accessible Funding

Investing in Local Capacities

Flexible Programming and Learning

Transparency and Accountability

Collaborative Action and Investment

IN THIS CHAPTER

- Unlocking Flexible Finance through Philanthropy
- CJRF's Story: Participatory Philanthropy
- QCF: What We're Learning
- The Rockefeller Foundation's Story: Pioneer, then Scale
- Collaborating for Impact
- Shifting Practice, Sharing Power



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UNLOCKING FLEXIBLE FINANCE THROUGH PHILANTHROPY

The climate crisis is escalating at the very moment when many traditional sources of international support are under strain. Fiscal space in climate-vulnerable countries is shrinking due to rising debt burdens, overlapping crises, and economic instability. Global aid budgets face competing demands, from conflict to public health emergencies, while political shifts in donor countries have weakened the foundations of multilateral cooperation. Multilateral climate finance remains slow to disburse, difficult to access, and often disconnected from local realities.

Against this backdrop of growing needs and constrained resources, locally led adaptation (LLA) offers not only a more just approach but a more efficient and effective one. By putting decision-making power in the hands of those who understand the risks, assets, and needs of their communities, LLA ensures that scarce resources are targeted where they can have the greatest impact. It reduces waste, duplication, and top-down inefficiencies, helping funding reach those most vulnerable, faster, and in ways that are relevant, trusted, and sustainable.

Philanthropy has a critical role to play in enabling this shift. With greater flexibility, risk appetite, and proximity to grassroots actors, philanthropic funders are uniquely positioned to support the conditions under which LLA can thrive: long-term, flexible finance; systemic change, including through investments in local capacity and institutions; and a willingness to rethink accountability around trust and outcomes, not just transactions.

This chapter explores how philanthropy can go beyond project-based funding to become a strategic enabler of LLA. It draws on the experience of front runners, such as the Climate Justice Resilience Fund (CJRF), Quadrature Climate Foundation (QCF), The Rockefeller Foundation, and collaborations such as the Adaptation and Resilience Fund led by ClimateWorks Foundation, to explore the institutional changes and mindset shifts needed to align philanthropic practice with locally led approaches. These philanthropies are learning that at its core, LLA is not only about funding local projects—it is about shifting power, building trust, and creating the systems and relationships that allow local solutions to form, take root, and scale.



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Philanthropy is evolving to share power and build trust, placing decision-making in the hands of those who best understand local risks and resources.



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Mahabub Sheikh checks his net in an excavated pond in Kultali village, Shyamnagar subdistrict, Bangladesh.

CJRF'S STORY: PARTICIPATORY PHILANTHROPY

The [Climate Justice Resilience Fund](#) (CJRF) is one of the first major philanthropic initiatives framed explicitly around climate justice, and among the few working internationally on climate resilience. CJRF places people, their rights, and their lived experiences at the center of climate action. The organization envisions a thriving planet built on participation, equity, human rights, and justice, where people disproportionately affected by climate change are recognized, resourced, and empowered to lead solutions and act at the emerging frontiers of climate justice.

CJRF pools funds from private foundations. Since it launched in 2016, the Fund has deployed over US\$ 27 million through more than 65 major grant partnerships globally. Several initiatives have also been hosted to promote funder learning and collaboration on climate justice, and a unique [re-granting partnership on climate-induced loss and damage](#) (L&D) was launched in 2021.

Since its inception, CJRF has supported communities and groups on the frontlines of the climate crisis to implement, share, advocate for, and scale their own climate justice solutions. The Fund's theory of change is that grantmaking should support initiatives that deliver tangible, on-the-ground results, but always on a path to broader, deeper systems transformation. CJRF's partners link local projects with advocacy, movement-building, or leadership development, to build voice and power at national and global levels. The Fund aims for catalytic outcomes that center those already impacted by the climate crisis.

Over the years, CJRF has observed that meaningful climate action requires significant shifts in economic systems, women's empowerment, intergenerational equity, and addressing long-standing racial and colonial injustices. Experience has shown that building resilience is most successful when communities and partners are empowered with resources, knowledge of their rights, and the capacity to advocate for themselves (see Box 1).

BOX 1: WATER RIGHTS FOR CLIMATE RESILIENCE

In Shyamnagar, a water-stressed region in coastal Bangladesh, communities faced food insecurity and water stress caused by climate-induced flooding and saltwater intrusion. Traditionally, freshwater canals in Bangladesh have been public resources, accessible to all neighboring communities. However, in Shyamnagar, weak local governance enabled local strongmen to illegally privatize canals for commercial fish farming or fill them in to create land, disrupting access to freshwater.

In 2017, the Center for Natural Resource Studies, the Center for Climate Justice–Bangladesh, and the International Center for Climate Change and Development formed a coalition for the Governance for Climate Resilience (G4CR) project. The project worked with Shyamnagar communities through a multifaceted approach focused on community empowerment and resilience, aiming to restore and safeguard freshwater canals by building links among communities, advocacy groups, and local government.

From the outset, the G4CR project worked closely with community members to help them understand their rights over a freshwater canal that was being used by local elites. The project strengthened community knowledge of their legal rights with trainings and resources, empowering communities to assert those rights through advocacy and legal action.

Once their rights were established, communities worked with project partners to rehabilitate sections of state-owned canals and small ponds, restoring flows of freshwater that now support fish habitats, irrigation, and flood protection. With reliable access to freshwater, the project facilitated access to climate-resilient rice varieties, crop diversification, and integrated farming techniques designed to maximize agricultural value. These interventions enabled year-round, multicrop productivity, improving incomes and food security, and reducing seasonal labor migration.

In 2019, after completing canal rehabilitation, an influential individual attempted to illegally seize and lease the canal for commercial aquaculture. Because the community had already been organized and trained through the G4CR process and knew their rights, residents successfully challenged the seizure and advocated to the subdistrict administration, which intervened, arrested the illegal leaseholder, and declared the canal free and open for public use.

The G4CR consortium effectively combines technical interventions on water and agriculture with activities that build community capacity to demand rights and hold local authorities accountable. Previous interventions in the region that lacked governance and justice components failed to achieve similar long-term benefits. By integrating biophysical and political strategies, G4CR has fostered an empowered community that understands its rights and acts collectively to defend them. This success has inspired neighboring communities to advocate for the return of additional canals to the public domain, and the approach is now spreading rapidly.



Transitioning to practitioner- and activist-led boards shifts power to those leading the fight for climate justice worldwide.

Being the Change

While CJRF has invested in funding systemic change and rights-based activities through projects like G4CR, the organization has also undertaken an internal transformation to embody these values—not just in what they fund, but also in how they do their work.

In 2022, CJRF took a major step toward “being the change we want to see in the world” and transitioned from a funder-led governance model to a **practitioner- and activist-led board**. Departing from traditional philanthropy, the previous funder-led Board dissolved itself to transfer decision-making power to climate justice leaders, activists, and practitioners from across the globe. This transition was facilitated through a global open call for applications, resulting in more than 100 applicants. A diverse selection committee appointed a new board representing eight countries across more than 20 time zones.

This shift reflects a growing ethos of participation in philanthropy, where funders cede power over funding decisions to those directly affected by them. This power shift leverages the expertise of local actors, often leading to more effective, innovative, and sustainable solutions, while also enhancing legitimacy and transparency.

In February 2024, the CJRF Governing Board deepened the Fund’s commitment to participation by launching a set of participatory grantmaking pilots, with a diverse set of stakeholders in making grant decisions—not just staff and board. The pilots enabled a learning-by-doing approach that allows CJRF to try several methods of participation and explore the appetite of various stakeholders for engagement in grant decisions.

While making this shift, CJRF was able to draw upon the experience of several leading participatory grant makers close to their work, including CJRF Board members Maria Alejandra Escalante, previously with **FRIDA: The Young Feminist Fund**, and Diana Samarasan, previously with the Disability Rights Fund. CJRF also funds participatory re-granters as of 2019, including FRIDA: The Young Feminist Fund; **The Pawanka Fund**; and **Global Greengrants Fund**.

Current pilots include the following:

- **Global:** One global pilot involves a broad open call using an [applicant collective process](#), where applicants review each other's proposals and vote to select awardees. Another global pilot supports youth-led grantmaking, in partnership with the [L&D Youth Coalition](#).
- **Bay of Bengal region:** The CJRF L&D Program tested a [network-based grantmaking process](#), where a cohort of current and former CJRF grantee partners drove the grantmaking.
- **Mara-Serengeti region:** A [systems mapping methodology](#) supported movement actors to co-create a grantmaking strategy across the Kenya-Tanzania border (see Box 2).
- **East Africa:** CJRF's L&D team developed a fast-paced, [trust-based model](#) that empowered individual changemakers in the region to each make a grant.
- **Arctic region:** CJRF plans to convene a participatory grantmaking council or panel with Indigenous members from Alaska, Canada, and Greenland.
- **Small grants:** A special grantmaking round is under development, to test much smaller grants than CJRF has typically made in the past.

By experimenting with these diverse models, CJRF is developing a learning framework to capture lessons in four major areas:

- **Climate justice needs:** What do community-led groups working on climate justice need for their sustainability, resilience, and success?
- **Power and participation:** How can CJRF share power with partners and those most impacted by climate issues?
- **Impact of participatory grantmaking:** How can participatory grantmaking contribute to more equitable and sustainable initiatives for climate justice and resilience?
- **Operationalizing participatory grantmaking:** What should participatory grantmaking look like for CJRF in future?



CJRF's approach to mapping systemic change prioritizes key stakeholders including Maasai community representatives, activists, and researchers.



BOX 2: MAPPING SYSTEMIC CHANGE

The evaluation of CJRF's first phase made several recommendations on how the Fund could support transformative change by addressing intersecting social, political, cultural, and economic systems that perpetuate climate injustice. In response, one of the 2024 participatory grantmaking pilots in the Mara-Serengeti region focused on participatory systems mapping.

Mapping of the socio-ecological systems across the Kenya-Tanzania border was initiated in September 2024. The mapping process involved previous CJRF grant recipients and others identified by them: local NGOs, women's groups, youth activists, researchers, and community representatives from Maasai areas on both sides of the border. Decisions on the design of the process and participation were led by a CJRF Board member from the region.

Local experts mapped systemic challenges, identified leverage points, and built cross-border collaboration. The resulting systems map captured land and conservation dynamics, power imbalances, and opportunities for community-led solutions. For example, while conservation policies have historically justified forcible dispossession of Indigenous Peoples, participants highlighted emerging community-driven models that integrate Indigenous knowledge, biodiversity protection, and pastoralist cultural and land rights.

Using this systems map, participants identified priority grantmaking areas, target organizations for support, and strategic collaboration opportunities. Based on these recommendations, CJRF made 13 grants totaling US\$ 1,242,000 in early 2025. A US\$ 450,000 partnership grant was also awarded to 12 local groups, who are now working together to distribute the money.

CJRF's Lessons on Business Unusual

CJRF continues to learn by doing as it shifts governance and grantmaking systems toward participatory models, departing from traditional philanthropy. While this is an ongoing process, several emerging lessons could guide other funders:

- **Participation takes time.** This is well-known and well-documented among experts in participation, but it bears repeating: inclusive processes generally require more time than traditional models. For example, CJRF's participatory grantmaking pilots, initially planned as an 18-month experiment, are now scheduled to span at least two years. Extra time is needed, especially when the work expands across time zones and contexts. Funders should allocate sufficient time for shared understanding, decision-making, and unexpected developments.
- **Strategy should evolve.** CJRF's iterative approach has allowed strategy to emerge organically through the participatory grantmaking pilots. Funders are encouraged to embrace flexibility rather than rely on overly prescriptive frameworks.
- **Participation has many forms.** Participatory grantmaking encompasses a spectrum of practices, from co-creation of strategies and diverse review panels to crowdsourced funding decisions. Funders should design approaches that genuinely shift power, avoiding extractive participation.
- **Building power is critical.** Even funders without fully participatory models can support transformational projects that build community power and secure rights. Technical interventions, such as canal rehabilitation in Bangladesh, succeed only when paired with efforts that strengthen community capacity to advocate and organize.



Climate shocks, such as drought and erratic rainfall, increase and exacerbate vulnerabilities around the world.

QCF: WHAT WE'RE LEARNING

Quadrature Climate Foundation (QCF) was established in 2019, rooted in the understanding that persistent poverty, inequality, and human suffering are increasingly intertwined with climate change. Initially focused on climate mitigation, QCF expanded its lens as the impacts of climate change became more visible and interconnected with broader social and humanitarian challenges.

Whether in Sudan—where erratic rainfall and drought fuel conflict and displacement—or in the UK, where low-income communities face heightened exposure to heatwaves and flooding, QCF saw how climate shocks exacerbate vulnerability. Even efforts to reduce emissions are hindered by these realities. In India, for example, rising heat drives electricity demand while water scarcity hampers thermal power production.

These compounding crises led QCF in 2023 to adopt resilience as its guiding principle—connecting its climate and social justice work under a single, unifying objective.

Resilience Means Building from the Local

QCF understands resilience as the capacity of systems—people, ecosystems, institutions—to absorb shocks, adapt, and regenerate. This requires strengthening the foundational assets (social, economic, political, environmental, and knowledge-based) that allow people to shape secure, dignified futures. Resilience must also be dynamic—capable of renewal and transformation—so communities can thrive in the face of disruption.

True resilience is inherently local. The same storm, flood, or heatwave impacts communities differently depending on geography, governance, politics, social ties, culture, and inequality including of gender and income. In one place resilience may rest on strong community



networks and social cohesion. In others, access to land or water resources may be critical—or robust infrastructure or inclusive political institutions. QCF therefore prioritizes shifting power, funding, and decision-making to local actors who understand the risks and realities first-hand.

Along with other funders, QCF is collaborating under the [Adaptation and Resilience Collaborative](#) (ARC) to invest in four pillars:

1. Funding grassroots adaptation work.
2. Supporting mechanisms that amplify local priorities.
3. Engaging in global philanthropic alignment on LLA.
4. Influencing policy to create an enabling environment for local approaches.

Stories of this work are beginning to emerge, informing how we can expand LLA in the future (see Boxes 3 and 4).

BOX 3: WOMEN'S CLIMATE SHOCK INSURANCE AND LIVELIHOODS INITIATIVE

In India, extreme heat is an immediate crisis for women in the informal economy, with many earning under US\$ 3 a day (see Chapter 5). Women report blisters, rashes, headaches, miscarriage, domestic violence, and UTIs because of the extended, hot conditions in which they live and work. With QCF support, Climate Resilience for All (CRA) launched the Women's Climate Shock Insurance and Livelihoods Initiative (WCSI) in partnership with the Self-Employed Women's Association (SEWA) and Swiss Re.

Women co-designed the program with WCSI, combining three layers of support:

- **Parametric insurance:** First, quick, and transparent, parametric insurance payouts are triggered when temperatures exceed regional thresholds (around 42°C).
- **Cash transfers:** Cash transfers of US\$ 5 are triggered when temperatures hit 40°C, deposited directly into women's bank accounts (not father, husband, or son's), to help cover reduced earnings and health costs.
- **Non-financial support:** Investments in heat-health literacy, mobile alerts, shaded workspaces, and cool storage for food vendors reduces risks and creates safer working conditions.

By the end of 2024:

- Over 50,000 women enrolled.
- 92% received payouts.
- Disbursements topped US\$ 590,000.
- Thousands gained first-time access to banking.

The number of women enrolled in 2025 has risen to 225,000, across six Indian states. WCSI also spurred collective agency and broader advocacy: SEWA members demanded improved market infrastructure and public services. The initiative reportedly shook up insurance markets in India, sparking interest from the National Disaster Management Agency, and replication efforts across India and beyond by NGOs, multilateral banks, and insurance companies.



By 2025, 225,000 women across six Indian states enrolled in the Women's Climate Shock Insurance and Livelihoods Initiative.

BOX 4: LOCALLY LED CLIMATE FINANCE THROUGH LIFE-AR

QCF also supports the Least Developed Countries Initiative for Effective Adaptation and Resilience (LIFE-AR), which aims for 70% of adaptation finance to reach the local level by 2030 (see Chapter 2). While few donors are accustomed to providing long-term finance that is predictable and flexible, under LIFE-AR governments and donors negotiated pooled funds, common standards, and operating procedures that allow flexibility.

LIFE-AR is a rare example of systemic adaptation finance—focusing not just on disbursement, but also on shifting governance, aligning institutions, and building long-term capacity. For instance, Ethiopia, a LIFE-AR front runner, has embedded the initiative in its Climate Resilient Green Economy strategy, with planning committees at district and subdistrict levels aligning local needs with government budgets. Other countries are adapting the model:

- **Malawi** is integrating climate risks into five-year district plans.
- **The Gambia** is creating national platforms for joint climate decision-making.
- **Uganda** is testing flexible budgeting to allow real-time responses, usually challenging with rigid donor funding.
- **Burkina Faso and Bhutan** are enhancing inclusivity, integrating Indigenous knowledge, and demonstrating how formal and informal governance can work together.



QCF's Lessons and Recommendations

QCF has learnt that supporting LLA is as much about internal transformation among funders as it is about resourcing others. It requires a fundamental shift in how funders work: embracing the complexity of intersecting systems of climate, poverty, inequality, and power; understanding how weak institutions and structural inequities amplify vulnerability, and impede effective climate action; and recognizing that these dynamics play out differently across contexts, timeframes, and scales. This has had implications for QCF's work.

1. Shifting How Programs Are Designed

Predefined, top-down programs rarely match the realities of communities most affected by climate change. QCF has moved towards an iterative, collaborative approach to program design—starting small, listening deeply, and scaling responsively.

For example, support to Climate Resilience for All began with flexible seed funding, enabling the organization to engage with its partners and adapt its model in real time. Similarly, LIFE-AR's phased implementation demonstrates the value of learning by doing. This approach has required internal shifts: QCF has committed to faster testing, meaningful consultation, adaptive reporting timelines, and building staff capacity to engage in more open-ended, less directive ways.

2. Rethinking How Impact Is Measured

Traditional metrics—such as hectares restored or payouts disbursed—capture activity but often miss the deeper, more transformative impacts of adaptation work. QCF is shifting towards a learning-oriented model of impact, grounded in questions that reveal how systems are changing:

- What enables women to feel less vulnerable to extreme heat?
- How are community voices influencing national systems?

By focusing on evidence and inquiry, rather than fixed indicators, funders can generate richer, more transferable insights and support more meaningful change.



In Burkina Faso and Bhutan, communities are blending Indigenous knowledge with formal systems to promote inclusive, cooperative climate governance.

3. Rethinking Funding Cycles and Embracing Flexibility

LLA requires time, trust, and institutional patience. Embedding LIFE-AR into Ethiopia's national systems, for instance, is a multi-year process. Climate Resilience for All's heat insurance initiative also required extended outreach to build trust with women workers before implementation.

Short-term, rigid funding cycles are misaligned with these realities. QCF is therefore committing to longer-term, more flexible funding structures that allow for adaptation over time. Flexibility also enables risk-taking—a critical value philanthropy can offer, particularly when public or multilateral donors face stricter constraints. By providing stable, adaptive support, QCF enables partners to pursue bold, locally rooted solutions that might otherwise go unfunded.

4. Investing in Institutions, Not Just Projects

The most enduring lesson is that resilience cannot be built on temporary projects alone—it requires strong, enduring institutions. LIFE-AR illustrates this through its investment in national platforms, local governance structures, and technical capacity, creating the scaffolding for long-term adaptation.

At the same time, many grassroots organizations benefit from partnerships with regional or global actors who can provide scientific, technical, and strategic support. CRA is one such partner—offering research on extreme heat and women's health, aggregating community knowledge, regranting, and shaping narratives to influence broader systems.

The message for funders is clear: invest not only in outcomes, but in the architecture of adaptation—the people, platforms, and processes that enable resilience to take root and scale over time.



Understanding the complexity of intersecting systems of climate, poverty, inequality, and power is key to effective implementation of LLA.



THE ROCKEFELLER FOUNDATION'S STORY: PIONEER, THEN SCALE

As climate change accelerates while funding to address its impacts is being slashed, philanthropy has a unique opportunity—not to resuscitate a dying model, but to help reimagine a smarter, bolder, more sustainable future. That means finding new ways to cooperate and investing in community-led solutions that tackle problems at their root, something philanthropy is uniquely positioned to do.

Unlike multilateral institutions or governments, philanthropy can act with urgency and flexibility. It can pilot solutions before they are politically feasible, take risks where others cannot, and put communities at the center of adaptation. By demonstrating what is possible, philanthropy can catalyze action and forge partnerships with broader coalitions of funders to scale solutions that work.

For example, [in Rio de Janeiro, a tragic heat-related death](#) after a Taylor Swift concert when the heat index reached nearly 60°C revealed the need to integrate climate and health planning. With support from The Rockefeller Foundation, climate scientists and health practitioners co-designed a citywide heat warning and response protocol. Now, when forecasts flag dangerous heat in Rio, alerts trigger a citywide response: guidance to outdoor workers; hydration stations; expanded clinic hours' cooling centers; and proactive outreach to older adults, people who are bed-bound, and families with small children.

To help other cities protect against deadly heat, The Rockefeller Foundation supports C40 Cities, which helps cities implement local solutions like response training, community outreach, and vulnerability mapping. Cities in the C40 network also have the chance to connect and learn from each other and receive direct technical assistance to scale projects.

Listen to Frontline Voices

Philanthropy also has a role to play in elevating the voices of communities on the frontlines and investing in locally led solutions. [In North Carolina in the US, after Hurricane Matthew](#) cut power and trapped people in stifling homes in 2016, leaders from the Coharie Tribe began organizing their local gymnasium as an emergency hub, serving residents across the county.

With support from The Rockefeller Foundation through the Duke University's Heat Policy Innovation Hub, the Coharie is expanding emergency services toward the goal of becoming a Community Lighthouse—an approach pioneered in New Orleans that equips trusted places like churches, clinics, and community centers with solar power, battery storage, and other practical tools. That means they can keep medicines cold, phones charged, information flowing, and doors open to neighbors who need a cool, safe place to go when a heatwave hits.



Neil Bernard is the Pastor at New Wine Christian Fellowship—the largest Community Lighthouse in New Orleans—a project that equips trusted places such as churches with practical tools for use during emergencies.

By putting resources and decision-making in the hands of trusted local leaders and institutions, philanthropy can support solutions that meet the needs of communities, adapting innovative models from one place to other local contexts.

Shift from Aid to Investment

Seismic changes in global health financing have opened space to rethink how we fund climate and health. With support from The Rockefeller Foundation, the Climate Vulnerable Forum—a partnership of 74 nations facing outsized climate risks—is supporting countries to develop [Climate Prosperity Plans](#) that mobilize investment for health and climate goals together.

Historically, Climate Prosperity Plans rarely included health systems. Today, all 74 Forum members have endorsed climate and health as a 2025 priority, and health investments are now being embedded in plans across 16 countries—to strengthen adaptation, safeguard livelihoods, and keep clinics and communities operating during heat waves, floods, and storms. With initial funding from philanthropy, the aim is to help countries attract investment from public and private sector funders as well, allowing them to integrate health into climate adaptation projects.

Working Together Toward Climate Health Resilience

2025 has tested the global health architecture. Programs built over decades have been dismantled, exposing millions to avoidable risk. Even so, the public appetite for cooperation endures. In a [recent survey](#) of 36,000 people across 34 countries, most agreed their nation should work with others on shared threats—even when it requires compromise.



Philanthropy is not a replacement for public finance. No one actor can address this generation-defining challenge alone—each sector must play their part. That means rejecting business-as-usual approaches and embracing new ways of working—centering the needs of communities and scaling innovative solutions to maximize impact. By collaborating across sectors and challenging the status quo, we can reimagine the field of global health to deliver quality care sustainably and equitably, protecting communities in a warming world.



In Nigeria, local entrepreneurs are developing market-driven tools and heat insurance solutions to help communities and small businesses adapt to extreme heat.

COLLABORATING FOR IMPACT

Global foundations are also collaborating to amplify impact. QCF, The Rockefeller Foundation, Howden Foundation, and Laudes Foundation have partnered on an Adaptation and Resilience (A&R) Fund led by ClimateWorks Foundation, to directly support people facing climate hazards such as extreme heat, floods, and droughts in urban areas in South and Southeast Asia and Sub-Saharan Africa.

The A&R Fund focuses on evidence building, institutional capacity, innovative finance, and strengthening the civil society ecosystem. The first phase of the A&R Fund's support is focused on extreme heat in urban areas. Early examples of work supported by the A&R Fund include the [TECA Heat Action Wave](#), an initiative in Nigeria to tackle the growing threat of extreme heat, and a new Adaptation Finance Window for Africa.

In Nigeria, [BFA Global](#) and [FSD Africa](#) are supporting 12 locally led ventures in Nigeria to develop market-driven early warning tools, parametric heat insurance, and services that help individuals and small businesses operate more safely and efficiently in extreme heat. Local entrepreneurs are supported by technical specialists, female-focused mentorship, and local consultants to support prototyping and market testing.

The Adaptation Finance Window for Africa is implemented through the [World Climate Foundation](#) and the [Investment Mobilisation Collaboration Alliance](#) to support high-impact solutions such as climate-smart farming, coastal resilience, and community-based adaptation to extreme heat.

Peer-to-peer learning is supported by ClimateWorks through the A&R Fund, to support its network of grantees to maximize and compound each other's impact and success, and to build capabilities that will last long after the projects end.



The Adaptation Finance Window for Africa is unlocking capital to scale adaptation solutions across the continent, mobilizing private investment to drive climate-resilient growth.

SHIFTING PRACTICE, SHARING POWER

Responding to the urgency of directing resources efficiently and effectively to those most affected by climate change, philanthropies are increasingly shifting their efforts to question not just what they fund, but also how funding decisions are made, by whom, and how results are monitored. While philanthropy cannot replace public finance, it can show the way—by moving faster, being more flexible, and testing approaches that can inform and influence larger-scale, longer-term investments. The experience of the philanthropies described in this chapter throws up lesson not only for other foundations, but also for public funders and bilateral and multilateral climate finance providers, as they seek to improve the effectiveness of scarce resources to respond to the climate emergency.



A starting point is perhaps an interrogation of internal power structures and their own governance. The CJRF took a bold step by disbanding its traditional Board of Directors and creating a new governance structure led by climate justice leaders, activists, and practitioners from around the world. This internal shift enabled them to experiment with participatory grantmaking, and shift decision-making power to other stakeholders, not just staff or Board members.

Second, inclusive and equitable processes don't fit neatly into conventional funding cycles. They require time for building trust, shared understanding, and navigating complexity—particularly across geographies and contexts. Funders must adjust expectations and build in time for meaningful engagement.

Third, LLA depends on flexibility. Effective strategies often emerge through iteration, not prescription. Funders need to hold their goals lightly and focus on learning as they go.

Fourth, there are many ways to center local voices—from co-creating strategies and forming community-led decision panels, to more inclusive feedback mechanisms. What matters is that participation leads to a real shift in power, not tokenism. Funders must move beyond extractive consultation and embrace meaningful participation as a practice of shared governance.



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Philanthropies are shifting toward flexible funding that puts local voices and meaningful participation at the center of decision-making.

And fifth, building power is as critical as building infrastructure. Technical solutions—from flood defences to climate-smart agriculture—are more likely to succeed and sustain impact when communities have the knowledge, networks, and confidence to influence decisions. Philanthropy can support this by funding organizing, advocacy, leadership development, and rights-based work that strengthens local agency.

Philanthropies are learning that while LLA is not easy, it is essential. It challenges entrenched power structures, tests donor habits, demands humility, and requires patience. But the future resilience of many—especially those hit first and hardest by climate impacts—depends on putting power and resources in the hands of the people most affected. Ultimately, these lessons converge on a core insight: supporting LLA is not just about what philanthropy funds, but how it operates. It requires shifting relationships, sharing power, and embracing uncertainty. For those willing to make this shift, the reward is profound—the chance to help build more resilient, just, and locally rooted systems that can withstand the climate shocks ahead.



CHAPTER 9

UNLOCKING US\$ 1.5 TRILLION FOR LLA

KEY MESSAGES

- Public finance cannot close the US\$ 187–359 billion annual adaptation gap. Private capital, including from local markets, is essential.
- Micro, small, and medium enterprises (MSMEs) employ 70% of the workforce in low-income countries. As critical drivers of livelihoods and local economic growth, they are essential for adaptation—but receive just 2% of global climate finance.
- A vast ecosystem of Inclusive Financial Service Providers (IFSPs) already lend US\$ 1.5 trillion annually to low-income communities and MSMEs, with deep reach and trusted community presence. Although 75% of adults in low- and middle-income countries access their financial services, IFSP financing remains largely climate-agnostic.
- This essential channel of funding for vulnerable communities is itself at risk. Nearly half the IFSPs in some regions of Pakistan scaled back lending in the last decade, with 20% halting lending entirely, because of climate-related challenges.
- A study found that while the savings and credit services provided by IFSPs remains essential, new financial products such as flexible loans and climate-responsive microinsurance are urgently needed.
- Blended finance—deploying multilateral climate funds to de-risk IFSP portfolios and attract private investment—can unlock IFSP financing for Locally Led Adaptation (LLA).

Patient, Predictable, Accessible Finance

Investment in Local Capacities

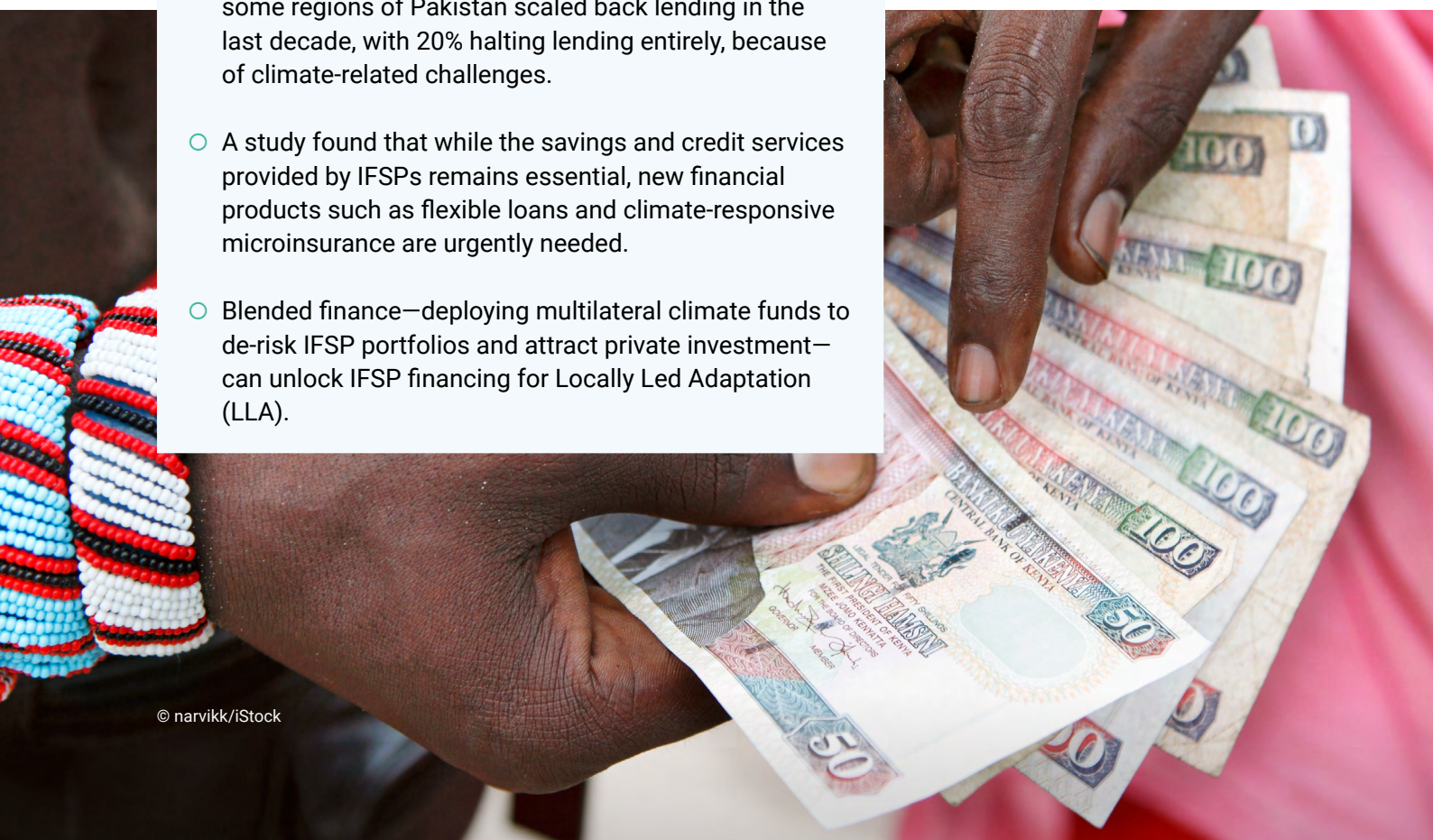
Building Understanding

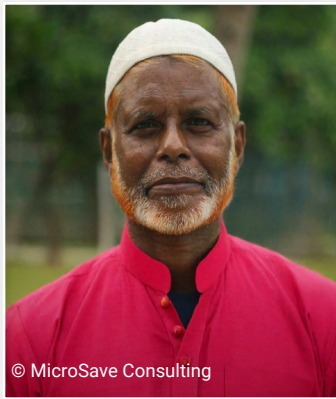
Transparency and Accountability

Collaborative Action and Investment

IN THIS CHAPTER

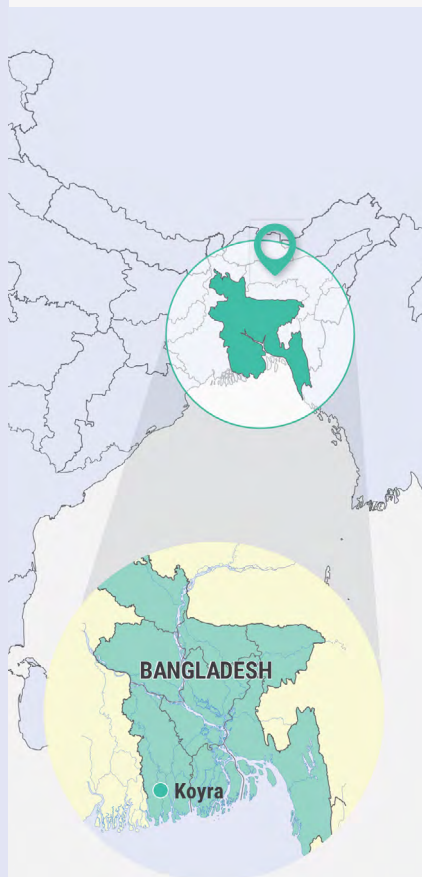
- Resilience Through Inclusive Finance
- Understanding Adaptation Finance Needs
- The Hidden US\$ 1.5 Trillion Opportunity
- Unlocking the Potential of IFSPs





I heard the warnings, but the shelter was too far. We stayed home and prayed the embankments would hold.

Masum Sheikh, farmer from Koyra, Bangladesh



RESILIENCE THROUGH INCLUSIVE FINANCE

Masum Sheikh waits patiently for customers at his sugarcane juice stall on a hot and humid afternoon in Khulna, Bangladesh. His smile is warm, but his story carries the weight of a lifelong struggle against climate disasters.

Masum grew up in Koyra village, in Khulna district, where he farmed rice and raised fish on a modest scale, “enough to get by and send the children to school”. Life was simple and predictable, until Cyclone Aila struck in May 2009. “I heard the warnings,” Masum recalls, “but the shelter was too far. We stayed home and prayed the embankments would hold.”

They did not. Tidal waves overran the barriers for the first time in living memory, destroying his house, salinizing his fields, and washing away his fish.

And so, his epic journey of survival began: a journey that mirrors the experience of millions facing climate-induced loss and damage worldwide.

Masum withdrew his small savings from an informal group to buy food and firewood. With his fields now unusable, he took a loan from a microfinance institution (MFI) to rebuild his home and move his family to Chittagong. There, his wife and eldest daughter found work in a garment factory while he sold sugarcane juice at the factory gate.

Four years later, longing for home, Masum and his family withdrew their savings again and took another loan to move to Khulna city, where he restarted his juice business. He sold juice there for five years, until the municipal council started constructing a bridge exactly where his business stood. He was forced into hard day labor—back-breaking work for a relatively old man.

Masum eventually built up enough savings to move back to his village, Koyra, in 2020 and start a fishpond. A few short months later, Cyclone Amphan devastated Koyra again. The embankments, damaged during Aila and never repaired, failed catastrophically. Masum’s home and fishpond were destroyed once more.



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Bangladesh is one of the top ten most vulnerable countries on the planet, with the danger of its southern parts vanishing into the ocean in the next few decades.

Through the Covid-19 lockdown, Masum and his family worked hard to restore and partially restock the fishpond—until a particularly harsh monsoon flooded Koyra and washed away all the fingerlings. Masum was heartbroken and destitute.

He turned again to an MFI for support to restock his pond. As soon as he had repaid that loan, he took another, this time to set up a sugarcane juice stand in Khulna city. “My wife manages the fishpond,” Masum says with a quiet determination. “But we need other sources of income. That’s why I’m here again.”

Masum’s story, provided by [CGAP](#), is not unique—it is the reality for millions across climate-vulnerable regions. It is a story of juggling a multitude of financial instruments—informal and formal—to respond to climate events and rebuild and diversify livelihoods.⁹⁷ Thirty-five percent of adults in low-income countries personally suffered a natural disaster or weather event in the last three years and two thirds of them lost income or assets as a result.⁹⁸

IFSPs—MFIs, cooperatives, and banks that have emerged over the last five decades—are already central to how vulnerable communities survive, adapt, and rebuild.

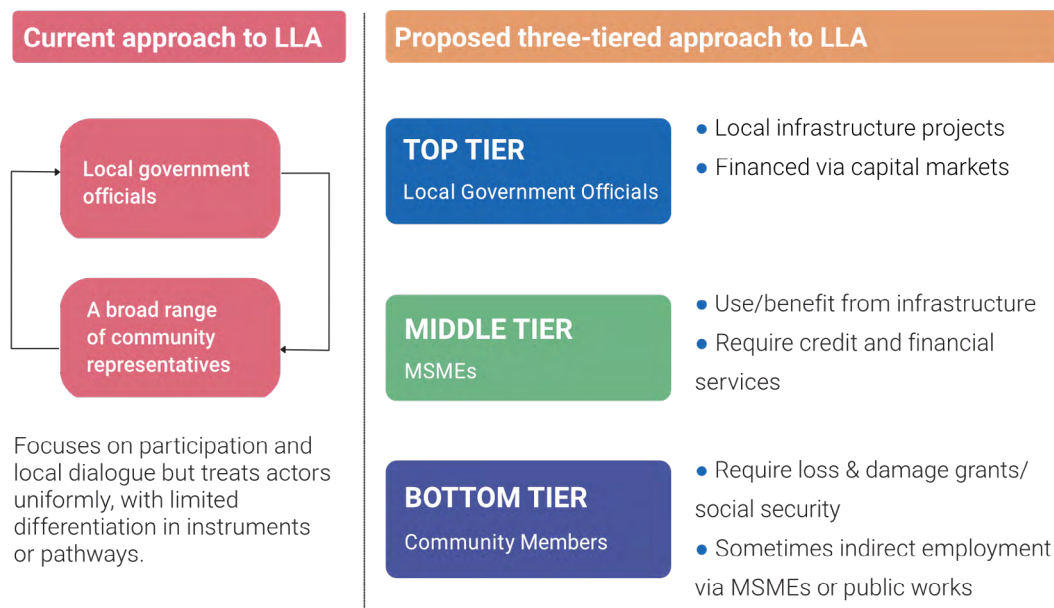
UNDERSTANDING ADAPTATION FINANCE NEEDS

Broadly, there are three categories of finance necessary for adaptation at the local level: finance for local governments to build resilient infrastructure; finance for micro, small, and medium enterprises (MSMEs) and agriculture; and social security payments for particularly vulnerable communities not served by inclusive financial service providers.⁹⁹

Currently, discussions on local adaptation finance do not distinguish between these three very distinct categories, and often depend on grants rather than the credit which is essential to crowd in additional funding. As a result, the critical role of inclusive finance is often

overlooked. Inclusive finance refers to affordable, accessible, and appropriate financial services, especially for low-income individuals, smallholder farmers, and MSMEs that are traditionally underserved or excluded from formal financial systems. It goes beyond the basic provision of financial access, and focuses on equity, participation, and empowerment—ensuring that people and communities can use financial services effectively to improve their livelihoods, manage risks, and build resilience.

FIGURE 1. Refining Categories of Adaptation Finance Needs at the Local Level



Local Governments: Building Large Infrastructure

Local governments lead large-scale adaptation projects—flood barriers, irrigation systems, resilient roads—that need long-term financing and public oversight. This makes them ideal recipients of institutional funds from international financial institutions and climate funds.



Large-scale adaptation projects such as irrigation systems are ideal recipients of institutional funds.



A growing range of options are becoming available for local governments, although limitations in local government budgets and technical capabilities often present challenges. These include innovative solutions, such as green municipal bonds, that allow local governments to tap into capital markets. Cape Town's US\$ 83 million green bond in 2017, for instance, was four times oversubscribed, financing critical water storage and flood defenses.¹⁰⁰

BOX 1. MOBILIZING PRIVATE FINANCE FOR LOCAL GOVERNMENTS: KENYA'S COUNTY GREEN PREPARATION FACILITY

County governments are stepping up as critical actors in climate adaptation in Kenya. For years, they have faced a major obstacle: limited access to structured, long-term financing to implement locally led climate solutions. The County Green Preparation Facility—an initiative launched by [Financial Sector Deepening Kenya](#) in 2024 and managed by PricewaterhouseCoopers (PwC)—was created to close this financing gap. The Facility provides a dedicated platform to:

- Mobilize capital for locally led climate adaptation projects.
- Prepare and structure projects to meet investor requirements.
- Connect counties with private and public sector partners.

In its first year, the Facility has worked with 10 diverse counties to identify, prepare, and package high-priority, climate-smart initiatives across key sectors, including water and sanitation, renewable energy, and waste management. Notable examples include the US\$ 50 million Nanyuki Bulk Water Project in Laikipia County, set to benefit over 85,000 residents; the Mwea Makutano Water Project in Kirinyaga County; and innovative waste-to-value and solarization pilots across multiple counties.

A central innovation of the Facility is its project aggregation approach, which bundles multiple small, standalone projects into robust investment pipelines. This strategy makes county-led initiatives far more attractive to institutional investors and development partners by improving economies of scale; reducing transaction costs; and increasing the bankability of climate-smart projects.

With technical support from PwC and other partners, several projects have already moved from early concepts into detailed feasibility studies—an essential step toward investment readiness.

The Facility has sparked significant market interest, including engagement with the Nairobi Securities Exchange to explore green bond issuances; and a growing appetite from Development Finance Institutions for blended finance solutions that leverage both public and private capital. Momentum continues to build, with several projects now entering early-stage due diligence for capital market entry.

The Facility demonstrates the transformative potential of inclusive finance to connect local adaptation priorities with global investment flows. By preparing county-led projects for institutional funding, Kenya is unlocking new pathways for climate adaptation; attracting private capital into traditionally underfunded sectors; and translating local resilience goals into scalable, impactful solutions.

MSMEs as Engines of Local Resilience

MSMEs, including smallholder farmers, employ 70% of the workforce in low-income countries.¹⁰¹ As critical drivers of livelihoods and local economic growth in climate-vulnerable regions, they are essential for adaptation—but receive just 2% of global climate finance.¹⁰²

As climate change intensifies, MSMEs require comprehensive financial services—including credit, savings, insurance, and digital payments—to withstand shocks and seize emerging opportunities. Access to credit, insurance, and savings can transform the ability of MSMEs to invest in climate-smart solutions: drought-resistant seeds, solar-powered pumps, raised homesteads, and diversified livelihoods.

However, as [CGAP](#) notes, IFSPs that lend to them often lack access to public climate funds. Blended finance tools—like concessional credit, loan guarantees, and insurance—can help mobilize private capital. For instance, the [Boosting Green Employment and Enterprise Opportunities](#) program in Ghana unlocked private loans for 1,200 MSMEs, 40% of which secured follow-on investments, by offering blended finance with first loss guarantees. A toolkit to help IFSPs tailor financial services for adaptation needs has been developed by [MicroSave Consulting](#) (MSC).

Vulnerable Communities—Leveraging Social Protection

The poorest, including subsistence farmers and informal workers, often lack access to credit or repayment capacity. They need grant-based support to build and recover resilience. Effective mechanisms include disaster compensation, social protection grants, and community-based adaptation funds for localized challenges. Governments will need to continue and deepen efforts to digitize social protection payments to enhance the efficiency and timeliness of payments to climate affected people. Programs like the [KALIA initiative](#) in Odisha, India, deliver cash transfers, insurance, and interest-free loans, helping farmers invest in adaptive seeds and technologies while diversifying livelihoods.

THE HIDDEN US\$ 1.5 TRILLION OPPORTUNITY

The current adaptation finance architecture is failing to deliver support where it is needed most.

First, the overall volume of adaptation financing remains critically low, with the current annual adaptation finance gap estimated at US\$ 187–359 billion.¹⁰³ Public funds alone cannot bridge this gap. Mobilizing significant private sector capital for adaptation must become an urgent priority.

Second, the limited funds that do exist often fail to reach the grassroots. In the 2017 to 2021 period, less than 17% of commitments were dedicated to projects with a specific focus on local communities, leaving them without the resources they need to build resilience.¹⁰⁴ Local capital markets must play a catalytic role.



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Most IFSPs currently lack climate-specific financial products tailored to the realities faced by MSMEs, smallholder farmers, and vulnerable households.

The global network of IFSPs represents a critical yet underutilized channel for addressing both challenges. They offer a tested, transparent, and scalable conduit for channeling catalytic finance from global climate funders directly to vulnerable communities. This vast ecosystem—comprising thousands of banks, cooperatives, mobile money providers, MFIs, and other local lenders—already extends over US\$ 1.5 trillion annually in loans to low-income communities and small businesses.¹⁰⁵ IFSPs also have deep reach and trusted community presence—75% of adults in low- and middle-income countries now have access to financial services through these institutions.¹⁰⁶ Yet, most of this capital remains climate agnostic.

By unlocking private capital at the grassroots level, IFSPs can amplify scarce public funds and bridge the gap between global commitments and local adaptation action. However, most IFSPs currently lack climate-specific financial products tailored to the realities faced by MSMEs, smallholder farmers, and vulnerable households. Emerging toolkits, like the one developed by MSC, are now helping IFSPs design innovative loan structures, insurance solutions, and blended finance models to better serve adaptation needs.

How MSMEs Navigate Climate Risks

A deeper dive into the impact of climate events on IFSP clients provides valuable insights for strengthening the role of inclusive finance in supporting locally led adaptation. In 2025, MSC conducted a study on the impact of climate change on the agriculture clients of [BURO-Bangladesh](#), the country's third-largest NGO-MFI. Agriculture is the mainstay for two thirds of BURO's three million clients.



During severe floods, many of us are forced to sell cattle at very low prices to meet immediate needs. We give up valuable long-term assets for short-term relief, which affects recovery.

Tangail Sadar, Farmer, Bangladesh

The **BRACED framework** defines three core resilience capacities to manage climate-related shocks:

1. **Anticipatory capacity:** The ability of social systems to anticipate and reduce the impact of climate extremes before they occur. These include investments, for instance, to change traditional practices, adopt climate-resilient seeds and livestock breeds, and make capital upgrades.
2. **Adaptive capacity:** The ability to adjust actions or characteristics to moderate long-term climate risks or exploit new opportunities. These include investments, for instance, in shifting production techniques, diversifying income sources, and improving climate risk management, while overcoming strong attachment to traditional methods.
3. **Absorptive capacity:** The ability to cope with and recover from immediate shock, using tangible assets, such as savings and food stocks, and intangible resources, such as social networks. These require savings, emergency credit, and community-based coping mechanisms to manage recurrent shocks, especially flooding and cyclones. (Bangladesh has long-term experience with flooding and cyclones, so absorptive strategies are more commonly adopted amongst BURO's members.)



Government grants do not reach many fisherfolk. I also notice that farmers with crops and animals get more relief or grants than we do in fisheries. We have to depend on microfinance institutions.

Fisher, Cox's Bazar, Bangladesh

The study found that BURO's customers adopt a range of strategies to anticipate, absorb, and adapt to the impacts of climate change (see Figure 2). While savings and credit remain essential, many households would greatly benefit from flexible loans and climate-responsive insurance products. BURO already offers a broad suite of products that align with the anticipatory, adaptive, and absorptive needs of its clients (see Table 1).



Fisherfolk are less able to access grants than others, and so depend on microfinance institutions.



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Communities rely on savings, credit, and social networks to recover from shocks.

FIGURE 2. How BURO's Clients Respond to Climate Change

Anticipatory strategies

- Harvest rainwater for livestock use
- Use climate-resilient livestock breeds
- Use crop varieties resistant to flood drought, and salinity
- Establish fodder banks and improve storage practices
- Shift sowing and harvesting times based on climate patterns
- Borrow/use savings for some/all above

Percentage of respondents who adopt these strategies

40%

Adaptive strategies

- Practice agroforestry
- Diversify crops and use intercropping techniques
- Adopt direct seeded rice (DSR) and alternate wetting and drying (AWD) methods
- Implement rotational grazing and better pasture management
- Use biofertilizers and vermicompost
- Follow sustainable livestock feed practices
- Strengthen disease prevention and management systems
- Raise the plinths of houses and toilets
- Borrow/use savings for some/all above

60%

Absorptive strategies

- Borrow from informal sources
- Shift occupation or livelihood
- Rely on community support
- Access loans from NGOs or MFIs
- Sell productive assets and reduce food consumption
- Use personal savings
- Organize community-based livestock health camps
- Migrate for work or safety

70%

TABLE 1. How BURO Products Support Local Climate Resilience

PRODUCT	PURPOSE	ANTICIPATORY	ADAPTIVE	ABSORPTIVE
General Loan	Group-based, joint-liability loans providing working capital to disadvantaged households			
Microenterprise Loan	Based on household cash flow, business projections, and the borrower's reputation in the community			
Agriculture Loan	Supports landless and marginal farmers in organized groups			
Hand/ Emergency Loan	Protects household economies and assets, financing festivals, marriages, healthcare, and education			
Disaster Loan	Provides immediate cash to help households recover from natural disasters and protect assets			
Water & Sanitation Loan	For access to safe water, and to fund bathroom installations			
General savings	Like a current account, where customers can save or withdraw on demand			
Contractual savings	A recurring deposit account for customers to use to build up lump sums for investments or to fulfil social obligations, such as weddings, funerals, or children's education			

The study generated critical insights for strengthening the role of inclusive finance to support LLA:

- **Localized climate impacts require tailored solutions:** Climate risks affect livelihoods differently within MSMEs and agriculture, requiring LLA techniques to assess hazards, risks, impacts, responses, and needs.
- **New financial products are urgently needed:** Flexible loans, microinsurance, and hybrid savings-credit tools are essential to help vulnerable communities anticipate, adapt, and absorb climate shocks. BURO is now working on more flexible loans and new insurance products to respond to the findings of the study.



© MicroSave Consulting

BURO's customers adopt a range of strategies to anticipate, absorb, and adapt to the impacts of climate change.

- **Climate change threatens IFSP sustainability:** MSC's work shows that the portfolio-at-risk for one African MFI may double within three years due to climate-related defaults. In Pakistan, MFIs devastated by flooding withdrew from several regions, cutting off financial access where it was needed most (see Box 2).
- **De-risking IFSP operations is critical:** Without support, IFSPs may exit climate-vulnerable geographies, further marginalizing at-risk communities. Blended finance solutions from multilateral funds can mitigate risks while mobilizing private capital for adaptation.

BOX 2. CLIMATE IMPACTS ARE FORCING INCLUSIVE FINANCE INSTITUTIONS TO SCALE BACK LENDING

Nearly half of the inclusive finance institutions in Pakistan scaled back lending in specific districts or provinces in the last decade, with 20% halting lending entirely, because of climate-related challenges.

CGAP, a global partnership of more than 40 leading development organizations, collaborated with the Pakistan Microfinance Network (PMN) to survey the impact of climate change on inclusive finance institutions. The most affected regions are Punjab and Sindh, which together accounted for 90% of PMN members' gross loan portfolio in 2022.

The survey found that 40% of inclusive finance institutions have reduced lending to certain sectors, with agriculture and livestock/poultry being the hardest hit. This has notable gender implications: while women in Pakistan have significantly lower overall labor force participation, those who are employed are more than twice as likely to work in agriculture compared to men.

Additionally, 27% of respondents reported that climate risks have had a significant impact on their branch networks. Among these, half have permanently closed branches in climate-affected areas, while the other half abandoned plans to expand into these regions.

UNLOCKING THE POTENTIAL OF IFSPs

IFSPs are already embedded in climate-vulnerable communities and uniquely positioned to deliver finance where it's needed most. They know their clients, understand local risks, and deliver trusted, transparent, and accountable services. They could be strategically repurposed to accelerate locally led adaptation. However, they face rising exposure to climate-driven defaults and portfolio risks. Without support, they may withdraw from the very communities that need them most.

The solution lies in blended finance: deploying multilateral climate funds to de-risk IFSP portfolios and attract private investment. The [Green Climate Fund](#), for instance, reports a 1:5.5 leverage ratio—demonstrating how modest public dollars can unlock significant private flows. By leveraging multilateral and bilateral climate funds through blended finance instruments, it is possible to de-risk IFSP operations in high-vulnerability regions; crowd in private investment via local capital markets; and ensure climate finance reaches the most affected communities.

In an age where money for adaptation is alarmingly scarce, the path forward is clear: leverage IFSPs to channel funds where they are needed most, and blend public and private capital to stretch scarce adaptation dollars. Strengthening IFSPs directly supports five core LLA principles:

- **Patient, Predictable Finance:** Leveraging trusted, local financial institutions to deliver adaptation funding efficiently.
- **Investing in Local Capabilities:** Building IFSP capacity to expand services rather than retreat from high-risk areas.
- **Deepening Climate Risk Understanding:** Using IFSPs' extensive community networks to gather data on hazards, impacts, and indigenous adaptation strategies.
- **Transparency and Accountability:** Capitalizing on proven systems developed by the inclusive finance industry over decades.
- **Collaborative Investment:** Channeling multilateral funds into blended finance instruments to crowd in private capital and maximize impact.

We stand at an inflection point. Inclusive finance offers us a chance to unlock US\$ 1.5 trillion in private capital to build resilience where it matters most. With the right investments, millions like Masum won't just survive climate shocks—they'll thrive.



CHAPTER 10

UNLEASHING THE TRUE POTENTIAL OF EDA

KEY MESSAGES

- The Enhanced Direct Access (EDA) modality of the Green Climate Fund and Adaptation Fund aims to channel flexible and programmatic adaptation funding to the local level. However, challenges such as complex accreditation processes, fragmented national governance, short project cycles, weak integration into national policies, and a limited role for national governments and the private sector have limited its potential.
- So far, EDA projects have used small grants, micro-loans, and performance-based grants to fund local adaptation. These instruments vary in the extent to which they can support long-term change.
- EDA is being recast as LLA, but with the danger of being painted into a small grants and small projects corner; supporting fragmented projects rather than achieving its potential to embed LLA approaches in national systems.
- At the national level, EDA approaches should support coordinated, inter-sectoral, and institutional approaches to efficiently channel flexible resources for adaptation to the local level in ways that increase local agency to expedite adaptation. Investments in capacity development and learning across the system are essential.
- At the global level, the climate funds should simplify appraisal procedures; provide clearer step-by-step guidance; widen the range of organizations that can access EDA funding; and enhance support for the preparation of EDA projects. Patience and flexibility in the use of funds should be a priority, along with incentives for proposals that seek to influence change in national governance, institutions, and systems.

Devolving Decision Making

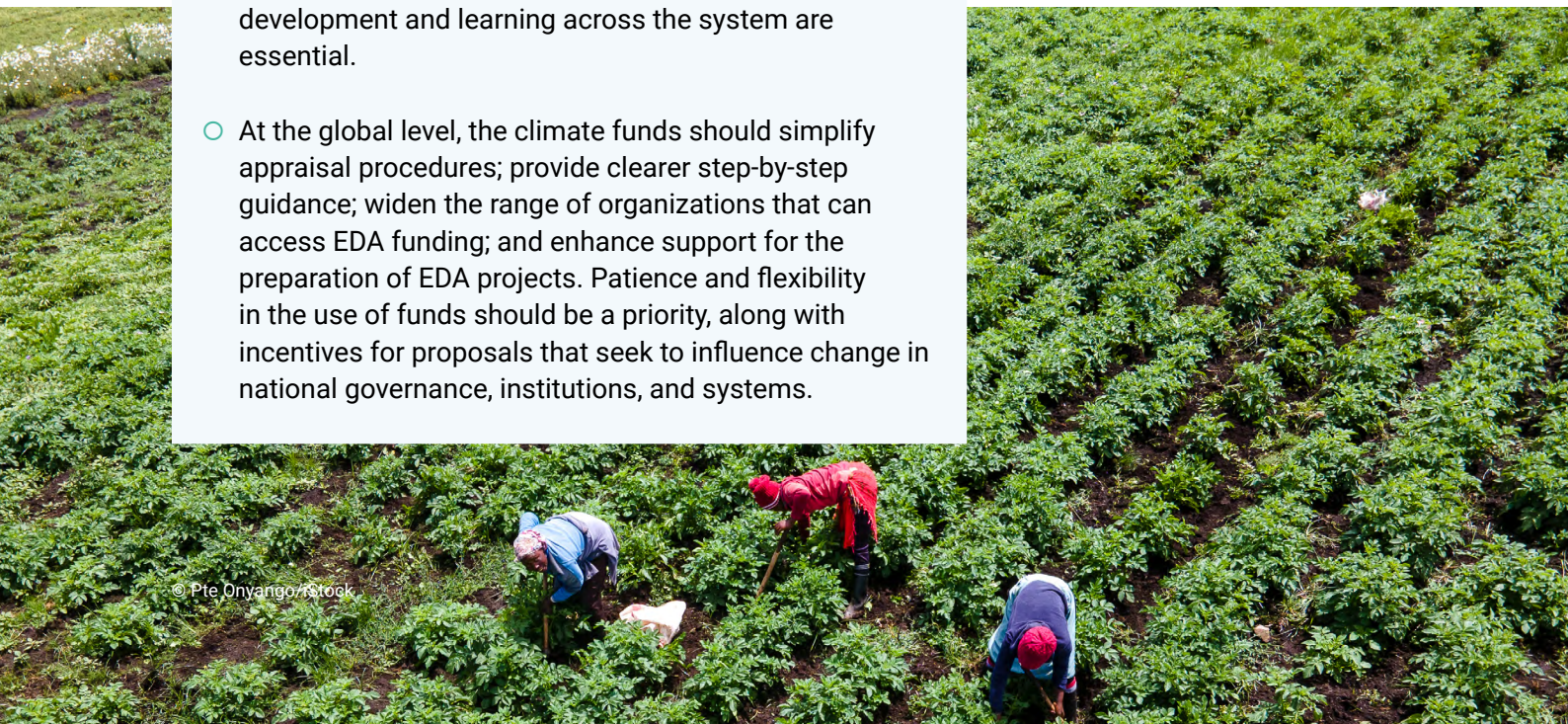
Patient, Predictable, Accessible Funding

Investing in Local Capacities

Transparency and Accountability

IN THIS CHAPTER

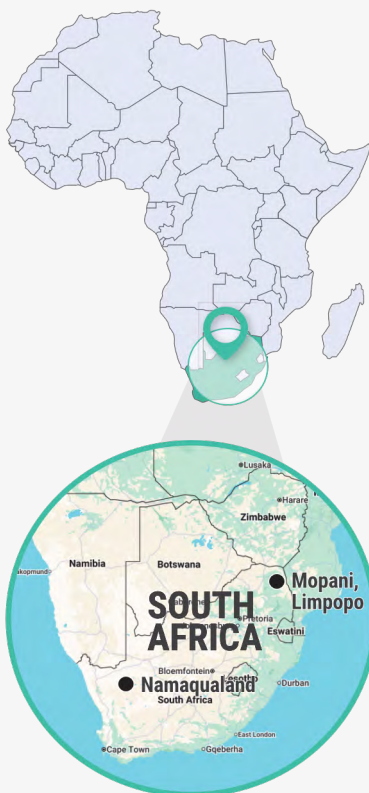
- The Ladies of Limpopo Redefine Direct Access
- What is Enhanced Direct Access?
- EDA Under the Green Climate Fund and Adaptation Fund
- A New Model for Climate Finance





What do you mean by direct access if it's millions of dollars going to government? Direct access is when you fund us on the ground to do what we need to do.

Resident of Limpopo



THE LADIES OF LIMPOPO REDEFINE DIRECT ACCESS

The South African National Biodiversity Institute (SANBI) became accredited with the Adaptation Fund as a National Implementing Entity in 2011. It was a big step for South Africa, signaling that the country could now receive climate finance through “direct access”—without going through international agencies. But their local stakeholders challenged this milestone.

“What do you mean by direct access if it's millions of dollars going to government?” asked rural women from Limpopo, with whom SANBI was consulting for an ecosystem-based adaptation project. “Direct access is when you fund us on the ground to do what we need to do.”

This set SANBI on the path to design something new—the first ever Enhanced Direct Access (EDA) project, where communities themselves would define priorities, control resources, and shape solutions.

EDA was a global experiment in the making at that stage. The Governing Instrument of the Green Climate Fund (GCF), adopted in December 2011, called for the Board of the Fund to “consider additional modalities that further enhanced direct access, including through funding entities with a view to enhancing country ownership of projects and programmes”.¹⁰⁷ While the intention of these “additional modalities” was very much along the lines of what SANBI's local stakeholders were demanding, what exactly this would look like still remained to be decided by the GCF Board.

Working with local stakeholders, SANBI designed a Community Adaptation Small Grants Facility (SGF) where small grants—about US\$ 100,000 each—would be given directly to community groups. Proposals were intentionally open-ended, and monitoring frameworks were co-created during implementation.

The gamble paid off. The Adaptation Fund approved the project in 2013, and two pilot sites were chosen: Mopani in Limpopo and Namaqualand in the Northern Cape. Instead of arriving with ready-made solutions, SANBI brought climate projections in plain language and asked farmers, women's groups, faith-based leaders, and municipalities, “How do you want to respond?”



© Thabang Phago—Conservation South Africa (CSA)

Climate-resilient rams were introduced in Leliefontein, South Africa.

Leliefontein: A Compelling Story

In Namaqualand's Kamiesberg mountains, the village of Leliefontein became one of the SGF's most compelling stories. For over 2,000 years, local people had practiced small scale livestock farming here, and for 300 years private farmers carried on the practice. Today, livestock farming makes up 80% of the local economy and remains the heart of community culture.

But climate change was tearing at that foundation: empty rivers, sheep forced to eat toxic plants, devastating droughts, and extreme heat and cold snaps that wiped out entire lambing seasons. In 2015, a prolonged drought weakened herds, and 80% of lambs and 10% of productive ewes died during a relatively mild cold spell.¹⁰⁸ Overgrazing, predators like caracal, and the threat of disease added to the pressure. Even when animals survived, smallholder farmers struggled to access markets dominated by commercial producers, who set quality benchmarks that were difficult for smaller cooperatives to meet.

This resulted in a cycle of vulnerability: weaker livestock, poor market access, and shrinking incomes left both the livelihood and the culture of the community exposed to increasingly frequent and severe climate hazards.

The Biodiversity and Red Meat Cooperative (BRC) Land and Livestock Adaptation project was designed by the community against this backdrop, with support from Conservation South Africa (CSA). The BRC was a cooperative of 53 members (80% women), chaired by Auntie Katrina Schwartz, a farmer and community leader, working in partnership with Gondwana Alive, an organization that served as the project's local implementing agency.¹⁰⁹

To address the challenges that the climate was throwing at them, the community chose to introduce indigenous and semi-indigenous sheep and goats that were hardier than commercial breeds and better suited to extreme heat, cold, and disease, while still holding market value. Farmers adopted rotational grazing and improved veld management to restore soils and reduce overgrazing, ensuring water and grazing for livestock in changing



CHAPTER

10

conditions.¹¹⁰ The project also invested in youth training, livestock health, and grading standards. Auntie Katrina's leadership ensured every decision reflected community priorities.

The BRC evolved into the Conservation Stewardship Program after project funding ended, expanding to include farmers from surrounding villages. To sustain the impacts of the project, CSA and Meat Naturally pioneered mobile auctions, bringing buyers directly to rural communities to cut crippling transport costs and level the playing field against larger commercial producers. "These mobile auctions—they can go to the people and bring markets to these particular farmers who historically would have not had this chance," says Thabang Phago, then-Deputy Director for Project and Proposal Development at SANBI.



In South Africa, farmers were able to access markets through mobile auctions that reduced costs.

From Leliefontein and the other projects designed by communities under the grant from the Adaptation Fund, SANBI learned that EDA was a powerful idea, but not simple to implement.

In particular:

- **Timelines** were long, and moving from concept to approval took years.
- **Capacity gaps** meant many local groups needed Facilitating Agencies or an Executing Entity to manage six-figure grants (see Chapter 8 in the [2022 Stories of Resilience](#) report).
- **Planning costs** for training and institution-building were high, but essential.
- **Governance layers** and compliance with Adaptation Fund requirements slowed things down but also forced deeper engagement with the community.
- **Local government buy-in** was uneven; once funding ended, there was confusion over who was to oversee maintenance of infrastructure.



- **Trust** was easier to establish when working with organizations like CSA, which had a long-standing relationship with the community, and had been building the foundation for just such a project for years.

The biggest lesson, however, was in building something that endures. “If you want small projects to last, you have to embed them in bigger systems that endure,” says Mandy Barnett, who was the Implementing Entity Coordinator at SANBI. She highlights the value of starting small to experiment and test assumptions—and then scale. A project proposal for US\$ 5 million is being prepared for the Adaptation Fund, to scale up the SGF to four new provinces. The goal: a permanent, national system for community-led adaptation finance.

WHAT IS ENHANCED DIRECT ACCESS?

EDA is a funding approach pioneered by the GCF in 2015 and formally adopted by the Adaptation Fund in 2018, based on earlier Adaptation Fund projects that already applied EDA principles. It builds on Direct Access, which enabled national and sub-national accredited entities to bypass multilateral intermediaries and receive funds directly. EDA goes further, devolving funds to local governments and communities, making them agents of change instead of passive beneficiaries.¹¹¹

Under EDA, accredited entities receive a grant and establish national mechanisms for on-lending or on-granting climate funds to support multiple smaller subprojects that are implemented locally. This flexible programmatic approach allows funding decisions to be made locally, based on pre-agreed criteria.¹¹² As local entities manage and execute projects, they build capacity and systems that enable their access to finance over the long term.

Key advantages of EDA include:

- Enhanced country and local ownership.
- More effective use of financial resources.
- Stronger involvement of local organizations and other stakeholders.
- Flexible and context-specific approach.¹¹³



If you want small projects to last, you have to embed them in bigger systems that endure.

Mandy Barnett, Implementing Entity Coordinator at SANBI



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EDA means increased local and country ownership and greater flexibility for funding decisions to be made locally.

The modality is closely aligned with locally led adaptation (LLA) as its key goal is to provide patient, predictable funding that is easier for local actors to access. Its decentralized programmatic design lets accredited national entities direct resources to the local level through subprojects—without listing each one in the initial funding proposal or going back to the climate fund for approval. Instead, decisions can be made in-country, using pre-approved selection criteria.¹¹⁴

This flexibility was aimed at closing the gap between global funds and national and subnational actors. The goal was to shift decision-making closer to those directly affected, and make climate finance more agile, responsive, and better able to deliver results where they are needed most.¹¹⁵

In practice, some actors have come to view EDA as a tool to empower national institutions, with decision-making retained at the institutional or government level; and LLA as a more explicit approach to devolve power and resources further down to the community level. However, defining EDA and LLA in this way limits the potential of both. EDA was explicitly created to give agency to local actors (including, but not only, national and local governments) in decision-making, while LLA needs an institutional and government-led approach to achieve scale. Defining LLA as functioning outside of national and institutional systems runs the risk of restricting it to fragmented and project-based silos. Defining EDA as functioning only at the government or institutional level, meanwhile, limits its potential to influence systemic change to support scaled up LLA.

Ideally, EDA should be the funding modality for governments and communities to pilot and embed LLA approaches into national systems. However, most EDA initiatives remain relatively small, without the deeper institutional backing needed for long-term growth.

The tools used by EDA projects to deliver the funds locally, such as small grants, micro-loans, and performance-based payments (see Table 1), vary in the extent to which they support long-term change. Small grants give communities the means to act, but too often the support ends when the money runs out. By contrast, revolving loan funds recycle resources, allowing more people to benefit over time without depending on fresh injections of donor funding, while supporting those who cannot access larger loans but still need financing for resilience measures.


TABLE 1. How the GCF and Adaptation Fund Channel Funds to the Local Level under EDA

INSTRUMENT	HOW IT WORKS AND PROJECT EXAMPLES
Small grants	One-time financial support given directly to communities, civil society organizations, cooperatives, or small and medium-sized enterprises that does not need to be repaid. Typically ranging from US\$ 50,000 to US\$ 500,000. Most common finance instrument used in EDA. - Adaptation Fund's Building Community Resilience via Transformative Adaptation - GCF's Climate change adaptation solutions for Local Authorities in the Federated States of Micronesia - GCF's Empower to Adapt: Creating Climate-Change Resilient Livelihoods through Community-Based Natural Resource Management in Namibia - Adaptation Fund's Practical Solutions for Reducing Community Vulnerability to Climate Change in the Federated States of Micronesia
Micro-loans	Very small (often under US\$ 5,000) short-term loans. Repayment schedules usually short and affordable. - GCF's Integrated physical adaptation and community resilience through an enhanced direct access pilot in the public, private, and civil society sectors of three Eastern Caribbean small island developing states - Adaptation Fund's Enhancing Climate Resilience of Rural Communities Living in Protected Areas of Cambodia
Revolving loan fund	Pool of money lent to beneficiaries (for instance, a group, or households) at low or zero interest for adaptation measures. When borrowers repay the loan, the money goes back into the revolving fund and is re-lent to others. - GCF's Integrated physical adaptation and community resilience through an enhanced direct access pilot in the public, private, and civil society sectors of three Eastern Caribbean small island developing states - Adaptation Fund's Integrated approach to physical adaptation and community resilience in Antigua and Barbuda's northwest McKinnon's watershed - Adaptation Fund's Reducing the Vulnerability by Focusing on Critical Sectors (Agriculture, Water Resources and Coastlines) in Order to Reduce the Negative Impacts of Climate Change and Improve the Resilience of These Sectors - Adaptation Fund's Enhancing resilience of communities to climate change through catchment-based integrated management of water and related resources in Uganda
Performance-based payments	Payments are made only when pre-agreed results are achieved. For example, hectares restored or number of households with resilient housing. Payments flow through existing country financial systems to local governments. - GCF's Local Climate Adaptive Living Facility in Benin - GCF's Local Climate Adaptive Living Facility Plus in West Africa (Burkina Faso, Ivory Coast, Mali, and Niger)

Performance-based grants use existing financial systems and institutions, thus strengthening them. Results so far have been strong. But these grants carry a risk: organizations with more resources and capacity to demonstrate “performance” may continue to capture funding, while the most vulnerable—who need support most—remain excluded.

Where EDA can show its true strength is in embedding climate finance within national and local governance systems. Done well, this approach could do more than expand access for local actors—it can become a lasting framework for resilience; one that continues to support vulnerable communities long after individual grants and pilots have ended, and one that builds the efficiency and effectiveness of national institutions to support adaptation.

At the same time, it can provide a pathway to translate the LLA Principles into practice, ensuring that adaptation efforts reflect the realities and priorities of the people they serve.

EDA UNDER THE GCF AND ADAPTATION FUND

The GCF launched a US\$ 200 million EDA pilot in 2015. As of July 2025, seven projects had been approved and were underway, using about US\$ 125 million. The GCF’s EDA funding window is open to accredited Direct Access Entities (DAEs) with the right systems in place for awarding grants or managing funds through mechanisms like on-lending.

GCF is formalizing its approach to locally led climate action (LLCA) to scale high-quality, locally focused investments, with a strong emphasis on devolved decision-making and finance. LLCA is being built into the GCF’s funding processes through: supporting countries and partners to integrate LLCA upstream via the Readiness Programme; shaping the pipeline by identifying LLCA opportunities and advising on design for locally led impact; and fostering innovative, programmatic approaches in partnership with the global LLCA community. GCF plans to finalize and publish the framework by the end of 2025.



GCF’s approach focuses heavily on devolved decision-making and finance to support locally led climate action.



The Adaptation Fund adopted the EDA modality under its [2018–2022 strategy](#), setting an annual allocation of US\$ 20 million and US\$ 5 million per project or program for EDA projects, with substantial stakeholder engagement and capacity-building components in the project design. In 2025, under its 2023–2027 mid-term strategy (MTS-II), the Adaptation Fund Board decided to merge the window for enhanced direct access into an expanded and enhanced window for single-country LLA projects/programs,¹¹⁶ with six projects, totaling nearly US\$ 28.9 million in climate finance, approved by the middle of 2025. EDA funding through the Adaptation Fund now flows in three main streams:

- **Single-Country LLA Window:** Up to US\$ 5 million per project/program, available to accredited national, regional, and multilateral implementing entities (NIEs, RIEs, MIEs). Project formulation grants (PFGs) up to US\$ 150,000 help with early-stage work like risk assessments and gender studies, plus an optional extra US\$ 100,000 for upfront support for effective involvement of local actors in the design of the project.¹¹⁷
- **Regional LLA Window:** Up to US\$ 30 million for projects involving at least three countries, with PFGs of up to US\$ 265,000 for projects over US\$ 5 million, plus US\$ 15,000 per additional country, up to a maximum of US\$ 350,000.¹¹⁸
- **LLA Aggregator Window:** The Global MIE/RIE Aggregator program was launched for channeling grants for LLA to non-accredited entities through MIE/RIE programs. Program size is decided by the Board based on expressions of interest (EOI) received following a call issued by the Fund. Following the most recent launch for EOIs, four implementing entities were invited by the Board to submit LLA Aggregator fully developed proposals.

While the EDA modality is a significant vehicle to drive adaptation action and impact at the local level, several challenges have hindered its growth in developing countries over the last decade.

Complex Accreditation

For an organization to qualify as a direct access entity with the Adaptation Fund or GCF, it must go through a long and complex process—often taking years. This usually requires major organizational changes and policy development to strengthen institutional governance. And even after they get accredited, many entities struggle with the heavy reporting requirements and complicated fiduciary standards.¹¹⁹

Both Funds have attempted to address this challenge. Non-accredited entities that can meet GCF's standards for delivering one climate project can also access funding through the EDA window, under the Project-Specific Assessment Approach (PSAA).¹²⁰ The GCF also offers a Simplified Approval Process—a fast-track for small-scale projects needing US\$ 25 million or less and posing minimal environmental and social risks.¹²¹ In 2005, a revised accreditation framework was adopted, aiming to streamline accreditation for efficiency and fairness, inclusivity, country ownership, accountability, and risk management.¹²²

The Adaptation Fund, meanwhile, has offered a Streamlined Accreditation Process since 2015 for smaller entities that find the accreditation process challenging. They can submit alternative documentation for each standard that shows how it mitigates risk, while still respecting the Fund's policies, to access amounts less than US\$ 10 million, which is the usual limit for all Adaptation Fund projects. After the entity feels it can handle larger amounts, it can have such conditions re-evaluated and possibly lifted by the Fund.¹²³

Fragmented Governance

EDA projects typically involve many players—ministries, agencies, funds—all working at different levels. This can create fragmentation, overlaps, competing authority, and confusion.



Facilitating Agencies ensure that communities are heard and also play a central role in bringing all players together in multi-actor projects to support their effectiveness.

Language barriers and jargon add another layer of complexity.¹²⁴ Facilitating Agencies, like the ones used in the SANBI project described above, can play an essential role in bridging gaps, ensuring communities are heard, and helping projects run smoothly.¹²⁵

Short Project Cycles

Building skills and capacity of local actors—whether communities, governments, or institutions—to effectively access and manage climate finance takes time. Project timelines need to accommodate upfront capacity-building and project development, as well as continued skill development over the long term so that actors can learn from experience as well as training.¹²⁶

Limited Role for Subnational Governments

While EDA has shown promise in connecting international funds to local adaptation priorities, the role of subnational governments remains underutilized. These governments are close enough to communities to understand real needs but also have the authority and mandate to act at scale.¹²⁷ However, limited integration of climate adaptation into subnational planning processes and overreliance on international funds create barriers. Without mobilizing domestic resources alongside external support, EDA's potential impact is constrained.



Weak Integration into National Policies

For EDA to be sustainable, it must be institutionalized within national policies and aligned with country-level climate strategies such as National Adaptation Plans and Nationally Determined Contributions.¹²⁸ Currently, misalignment reduces coherence and weakens long-term impact. Without stronger integration into national plans and budgets, EDA risks being treated as a stand-alone initiative rather than a systemic approach to adaptation.

Limited Private Sector Involvement

Although EDA emphasizes inclusivity, the private sector—especially micro, small and medium-sized enterprises (MSMEs)—is still underrepresented. Small and medium firms face barriers to accessing climate finance, while investors often lack incentives to take on higher risk, smaller projects. This gap reduces opportunities to scale adaptation. Aligning financial incentives with climate resilience goals, simplifying access through results-based mechanisms, and providing targeted support and training for MSMEs could help unlock significant private sector engagement.¹²⁹

A NEW MODEL FOR CLIMATE FINANCE

In December 2024, GCA, in partnership, with the GCF and Adaptation Fund, hosted a [workshop](#) to explore opportunities for enhanced direct access in Africa. It brought together participants from 23 African countries representing key EDA and LLA experts and practitioners, including DAEs and NIEs, who shared stories, ideas, and lessons learned.

Participants agreed that EDA could be a powerful tool for putting more decision-making power in the hands of local governments and community leaders. They also highlighted, however, the many challenges that have hindered its growth and application in developing countries. Participants discussed some of the key challenges and opportunities they face in accessing and deploying climate finance—covering topics like strengthening government systems, stakeholder involvement, and capacity-building. They highlighted valuable lessons learned from existing EDA projects.

The workshop itself became a valuable space for collaboration between the GCA, GCF and Adaptation Fund—bringing people together to tackle big, systemic issues in climate finance. Taking on what was learned and building on the partnerships formed at the workshop, GCA is integrating a strategic work program dedicated to enhancing the delivery of EDA.¹³⁰ The following key lessons were highlighted for the climate funds, and for practitioners implementing EDA.

Recommendations for Climate Funds

- **Simplify and streamline proposal preparation requirements and processes for increased accessibility to EDA finance.** Firstly, climate funds could simplify their appraisal procedures by prioritizing the level of compliance of subproject origination and assessment frameworks over predetermining the specific activities these subprojects will undertake on the ground. Secondly, funds could provide clearer, step-by-step guidance on funding proposal requirements tailored to the capacities of smaller DAEs. GCF's Simplified Approval Process and the Adaptation Fund's Streamlined Accreditation



Participants at the EDA workshop identify key barriers and opportunities for countries to access climate finance through the GCF and Adaptation Fund.

Process are promising avenues which should be leveraged, though even they could be further simplified. Thirdly, GCF could widen the range of organizations that can receive climate finance for EDA projects and capitalize on the PSAA, which provides relevant non-accredited organizations the opportunity to submit an EDA proposal.

- Enhance provision of technical support mechanisms and increase collaboration and coordination between funds.** Technical assistance programs such as the [Adaptation Fund](#) and [GCF Readiness Programmes](#) should consider enhancing support provided for the preparation of EDA projects that meet fund requirements and standards. Increased coordination between funds is especially relevant considering the number of DAEs and NIEs common to both funds. Further, this aligns with both the GCF and Adaptation Fund's respective mandates to ensure complementarity and coherence among the UNFCCC financial mechanisms.
- Explore mechanisms to incentivize the involvement of the private sector in EDA.** This includes offering non-grant instruments like concessional loans, equity, and guarantees to support MSMEs that invest in climate adaptation and social inclusion (See Chapter 9). Blended finance structures can be leveraged for de-risking and scaling private sector investment, for example, by using public funds as first-loss capital. These models can establish self-sustaining financing streams while reinforcing the Principles of LLA and creating pathways for scalable, long-term climate resilience. The GCF, in particular, which can operate at a larger scale with non-grant instruments, could encourage local private sector actors to meaningfully involve themselves in developing and commercializing climate solutions and technologies by applying for EDA subprojects. This could enhance their access to credit, ultimately allowing them to scale up their markets and offerings.

Recommendations for Practitioners Implementing EDA

The following recommendations draw on SANBI's experience in implementing EDA.¹³¹

- **Devolve decision-making to local actors to increase agency and expedite adaptive management.** EDA should devolve decision-making to local actors to the extent that is possible, and support those impacted by climate change to directly make decisions about and during the implementation of adaptation responses.
- **Enable responses that integrate local and Indigenous knowledge and gender mainstreaming.** Together with climate science, local and Indigenous knowledge must inform vulnerability assessments and adaptive responses. A particular focus must be given to the role of women in governance and gender mainstreaming in project design and implementation.



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Incorporating Indigenous knowledge in adaptation decisions strengthens local agency and ensures solutions are culturally grounded, practical, and resilient.

- **Vary grant sizes, introduce flexible grantmaking and risk management mechanisms.** Grant making mechanisms must be responsive to the requirements and capabilities of grant recipients and allow recipients to graduate to larger grant sizes and greater risks as they strengthen their financial and project management capacity. Allowance must be made for protracted proposal development and implementation time frames that allow for iterative processes. Reporting and compliance systems should use a segmented risk management perspective that does not cascade risk downwards. A one-size-fits-all approach will not work.



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- **Sufficiently resource capacity development and learning as a continuous process, and across the entire system.** Capacity-building takes time and needs to be sufficiently resourced from start to finish. It must support efforts to create an understanding of climate change adaptation, as well as develop institutional, financial, and administrative competence. Reflection and learning must be supported through structured processes, and supportive environments, and lessons should inform adaptive management. Partnerships between grantees, community members, technical experts, and government can support capacity-building and learning processes and facilitate long-term project sustainability.
- **Empower sub-national government to support and sustain the mainstreaming of climate change adaptation into an ongoing social and economic development program of work.** EDA must mainstream climate change adaptation responses into social and economic development processes at the local level and empower sub-national government to support and sustain the conceptualization and implementation of local level responses.
- **Anchor LLA in EDA for long-term impact, but don't limit its potential.** Currently, LLA (which is replacing the terminology of EDA in some cases) is in danger of being interpreted as a way of channeling small grants to non-government organizations. While such projects may empower communities to drive adaptation action in the short term, projects often struggle to be sustained once funding ends. Both EDA and LLA should focus instead on redefining how climate finance is governed, from the global to the local. The strongest approach is for EDA to support countries to embed LLA in national planning, financing, and governance systems—ensuring that local adaptation is not just community-driven, but also sustainable, scalable, and aligned with national priorities.



HOW THE PRIVATE SECTOR CAN SUPPORT LLA

KEY MESSAGES

- Climate change poses an existential threat to smallholder farmers—and to global giants that rely on them through value chains. In 2024 alone, companies reported revenue exposure of US\$ 1.16 trillion to physical climate-related risks.
- The resilience of private sector actors depends heavily on the health of the socioecological systems in which they operate. Strategies that discount these systemic interdependencies ultimately undermine long-term financial resilience.
- Emerging frameworks defining resilience alignment call for private sector action that goes beyond managing internal risks to also strengthening socioecological systems. Aligning with national plans while avoiding activities that undermine resilience is increasingly understood to be a key component of responsible business activities and investments.
- The private sector could help meet up to a third of developing countries' adaptation needs. However, long-term, systemic, and public good measures that best embody locally led adaptation are typically not financed by the private sector due to low or no revenue generation potential. Public policy and finance play catalytic roles in unlocking private capital towards Locally Led Adaptation (LLA).
- Despite these challenges, private sector actors can embed the LLA Principles into their activities. They can strengthen community engagement within their risk assessment and management approaches, including through participation in multi-stakeholder initiatives, and ensure that adaptation products and services are shaped by local realities and aligned with national transition processes.

Devolving Decision Making

Building Understanding

Flexible Programming and Learning

Transparency and Accountability

Collaborative Action and Investment

IN THIS CHAPTER

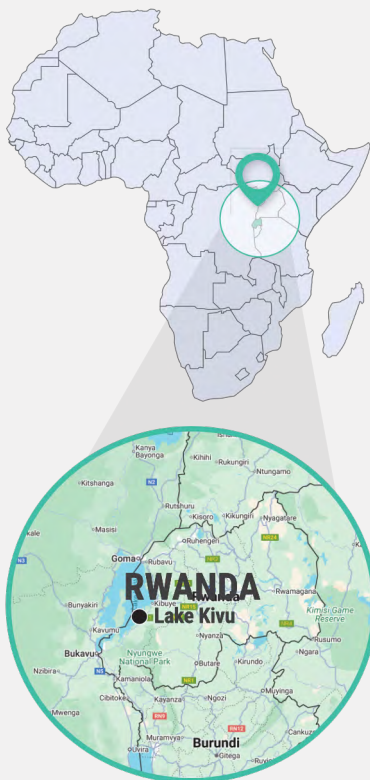
- A Coffee Collaboration
- Confronting a Common Threat
- Private Sector Frameworks That Can Support LLA
- Private Sector Mechanisms to Support LLA
- How Much Can the Private Sector Contribute to Systemic Resilience?





I have big hopes that, thanks to coffee, I will be able to pay for my children's education until they all finish their studies.

Dorotee Uwimbabazi,
Coffee farmer from Kiguri,
Rwanda



A COFFEE COLLABORATION

Coffee is one of the world's most traded commodities, with an estimated 25 million smallholder farmers in 50 developing countries reliant on wealthy consumer markets such as the United States, the European Union, and Japan.¹³²

This includes millions of farmers like Dorotee Uwimbabazi, a coffee farmer in Kiguri, a village in the mountains near Lake Kivu, Rwanda. Smallholder farmers like her produce around 70-80% of the world's coffee, typically on farms smaller than five hectares, but receive a very small share of the final retail price (sometimes less than 10 cents from a US\$ 3 cup of coffee).¹³³ Many face challenges such as volatile market prices, limited access to credit, outdated farming practices—and now, climate change.

Rising temperatures, erratic rainfall, prolonged droughts, and increased incidence of pests and diseases (such as coffee leaf rust) are already affecting yields and reducing the quality of coffee beans, especially in regions that grow Arabica, the more climate-sensitive species. Many traditional coffee-growing areas are becoming less suitable for cultivation, forcing farmers to either move to higher altitudes or switch crops altogether. It is estimated that up to 50% of current coffee-growing land could become unsuitable by 2050 if climate change goes unchecked.¹³⁴

This poses an existential threat to smallholder farmers like Dorotee, but also to global giants like Nestlé, which controls over a third of the global instant coffee retail market, and generated CHF 23.7 billion (about €25 billion) from coffee sales in 2023.¹³⁵

Recognizing the common threat, Nescafé (a brand of Nestlé) launched a multiyear **Nescafé Plan 2030** in 2022, committing CHF 1 billion (approximately €1 billion, or 4% of their annual profit in 2023) partly to help smallholder coffee farmers build resilience. Key interventions under the Plan include:

- **Regenerative Agriculture Practices:** The Plan supports the scale-up of practices such as cover cropping, optimized fertilization, mulching, composting, agroforestry, and soil-conserving techniques. These are designed to improve soil health, reduce vulnerability to droughts and heavy rain, and help sequester carbon.



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Smallholder farmers produce 70-80% of the world's coffee, but receive a small fraction of the profits of this billion-dollar industry.

- **Financial Incentives and Risk Mitigation:** To help farmers bear the short-term costs of transitioning to more climate-resilient methods, Nestlé is piloting conditional cash incentives for adopting regenerative practices, improving access to credit, and exploring insurance tools to buffer the impact of climate shocks.
- **Capacity-Building and Agronomic Support:** The company invests in training programs for smallholders: teaching good agricultural practices, farm planning, business skills, and an understanding of global market trends..
- **Project Coffee++:** Nestlé, in partnership with German Development Cooperation (GIZ), expanded Project Coffee+ into Project Coffee++, to support smallholder farmers in the Philippines, Indonesia, and other countries.

By 2024, 200,000 coffee farmers were trained under the [initiative](#) by over 1,400 agronomists across 16 countries, and regenerative practices were adopted in over 400,000 hectares of farmland.

In Rwanda, for instance, Dorotee benefited from Nestlé's Farmer Training Program, delivered in partnership with the Kahawatu Foundation. She received training in good agricultural practices—such as pruning, mulching, and harvesting—and in financial literacy and understanding global coffee prices. "Before working with Kahawatu, I was producing 500 kilograms or less from 700 coffee trees," she says. "Now I'm expecting to produce around 600 kilograms." The training also helped Dorotee invest in the sustainability of her farm through careful planning and reinvestment.

The most important results for Dorotee, however, are personal. "The Kahawatu Foundation is helping to make us better farmers. But the real benefits of partnering with them is that it has enabled me to take care of my children's wellbeing," she says. "I've been able to buy them school uniforms and pay for them to go to school. I have big hopes that, thanks to coffee, I will be able to pay for their education until they all finish their studies. I am a happy woman in a happy home because of coffee."



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Nestlé's Nescafé Plan 2030 combines regenerative farming, financial incentives, and farmer training to help smallholders build resilience to climate shocks.

The Plan enabled Nescafé to source 32% of its coffee from farmers implementing regenerative agriculture practices in 2024, surpassing its earlier target of 20%. In the Philippines, many farmers have seen income increases and poverty thresholds being surpassed, thanks to yield improvements and diversified farming approaches supported by Coffee++. In Bukidnon in the Philippines, for example, yields have increased from about 235 kilograms per hectare in 2018 to roughly 886 kilograms per hectare in 2023 among participating farmers. A weather index insurance scheme that provides compensation based on rainfall patterns measured via satellite was piloted in Indonesia, benefiting around 800 farmers.

However, challenges remain. Transitioning to regenerative systems often requires upfront labor and investment, with returns that may take years to materialize. Farmers remain exposed to global market volatility, which can offset gains made through adaptation practices. Financial incentives and insurance schemes are still at pilot stage, raising questions about long-term sustainability if external support is phased out. Robust monitoring to verify adoption and outcomes is also resource-intensive, and practices need to be adapted to local ecological and social contexts to avoid one-size-fits-all solutions.

CONFRONTING A COMMON THREAT

Climate change is already affecting businesses of all sizes—from micro, small, and medium enterprises (MSMEs) to large multinational corporations (MNCs).¹³⁶ A 2024 survey by CDP, a global nonprofit that provides a platform for environmental disclosures, found that 67% of nearly 25,000 reporting organizations, including small and medium enterprises (SMEs), identified climate and nature-related risks with significant financial impacts.

Among the top risks cited were acute physical risks such as extreme weather events (19%) and chronic physical risks like sea level rise (14%). In 2024 alone, companies reported trillions



in revenue exposure to physical risks—US\$ 1.16 trillion to climate-related, US\$ 182 billion to forest-related, and US\$395 billion to water-related risks.¹³⁷

These risks are increasingly seen as financially material by regulatory bodies such as the UK's Financial Conduct Authority¹³⁸ and the Network for Greening the Financial System, a coalition of central banks and financial supervisors.¹³⁹ Governments are also moving to treat environmental performance and climate risk management as core financial information.¹⁴⁰ More than 30 jurisdictions have either adopted or are in the process of adopting sustainability-related disclosure standards developed by the International Sustainability Standards Board.

Corporate reporting is beginning to reflect this shift. Data from the London Stock Exchange Group shows that 34% of companies in the FTSE All-World Index now reference climate adaptation in their disclosures.¹⁴¹ Similarly, under the new European Sustainability Reporting Standards, 67% of 363 reporting companies and 85% of 94 financial institutions identified climate change adaptation as a material issue.¹⁴²

While risk avoidance remains a key motivator, a growing body of analysis points to climate adaptation as a major market opportunity. Companies are increasingly recognizing both the risks of ignoring adaptation and the benefits of investing in it, with Standard Chartered estimating that every dollar spent on adaptation could generate up to US\$ 12 in economic benefits.¹⁴³ Some experts suggest that adaptation could become the next trillion-dollar market, driven by demand for goods, services, and solutions that help businesses and communities adapt to a changing climate.¹⁴⁴

Private sector actors, which include SMEs, MNCs, private financial institutions, and private investors, could therefore play multiple roles in climate adaptation, which can be broadly grouped into three categories that often interact with each other:¹⁴⁵

- **Adapt to manage own risk**, adapting assets, activities, and supply chains to climate change.
- **Finance adaptation**, including public sector adaptation (for instance, through government-issue sovereign green bonds) and private sector adaptation (for instance, through loans, equity, and private bonds).
- **Provide adaptation goods and services** through the expanding market for such goods and services and through public-private partnerships to deliver adaptation outcomes (for instance, through government procurement for seawalls).

Most private sector adaptation efforts currently focus on protecting internal assets, operations, and supply chains from the physical impacts of climate change. While such measures can incidentally benefit ecosystems or communities, they are rarely designed with broader ecological or social resilience in mind. In some cases, they may lead to maladaptation—for instance, seawalls that shield urban infrastructure can exacerbate flooding in poorer downstream areas, or large-scale irrigation may reduce drought risk while depleting groundwater reserves.

There is growing recognition, however, that financial, ecological, and social resilience are deeply interconnected. The Taskforce on Nature-Related Financial Disclosures (TNFD) defines “systemic risks” as those arising from the collapse of an entire system,

rather than the failure of individual components.¹⁴⁶ To manage these risks, adaptation must support systemic resilience—the capacity of integrated socio-ecological systems to absorb shocks and avoid cascading failures over time.¹⁴⁷

Adaptation strategies that focus only on individual entities without considering systemic interdependencies may ultimately undermine the long-term financial resilience of those very entities, as businesses rely on healthy communities, functioning ecosystems, and stable governance systems.¹⁴⁸



The future sustainability of businesses relies on financial, ecological, and social resilience.

PRIVATE SECTOR FRAMEWORKS THAT CAN SUPPORT LLA

There is an urgent need for clearer definitions of climate resilience-aligned activities and investments—those that not only build financial resilience of individual entities but also adopt a longer term perspective by supporting the policy goal of building climate-resilient economies and societies.¹⁴⁹ This means aligning innovation and investment towards increasing adaptive capacity, but also away from actions that erode resilience.

While there is no universally agreed standard for defining what qualifies as a resilience-aligned activity, several frameworks offer guiding principles, including:

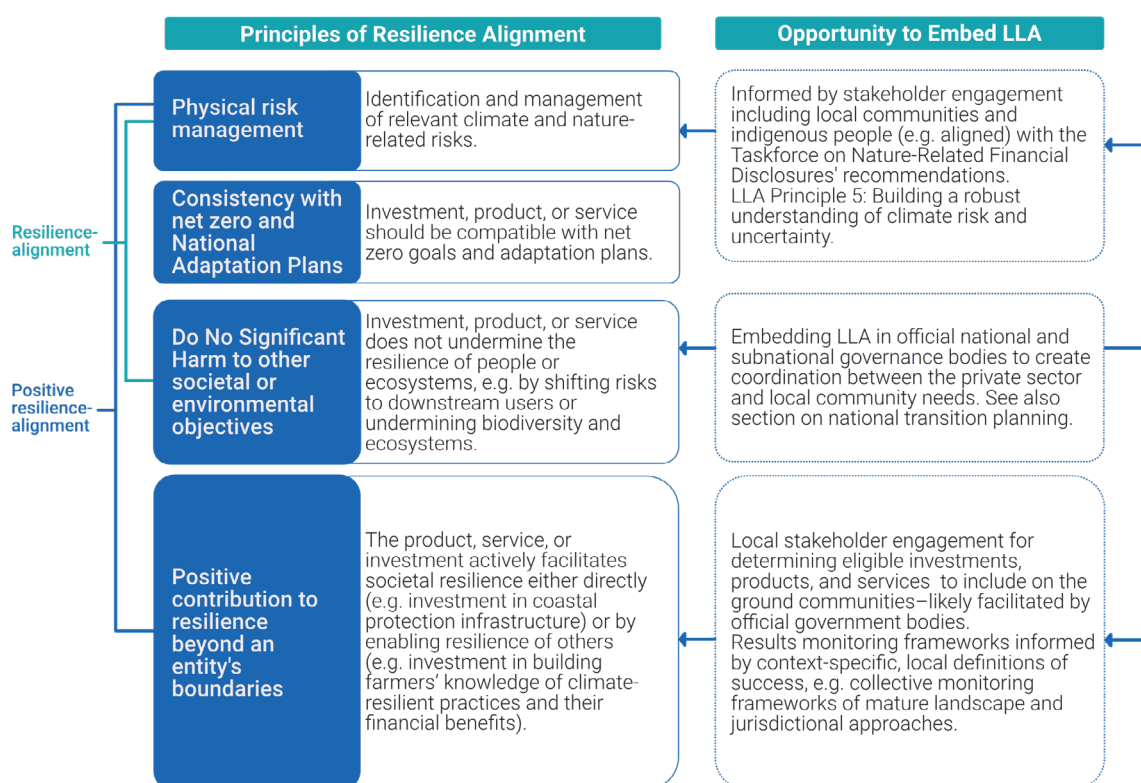
- The [Sustainable Finance Taxonomy](#) developed by the European Union.



- The blueprint for a [climate resilience classification framework](#) by the UN Office for Disaster Risk Reduction (UNDRR) and the Climate Bonds Initiative (CBI), which includes [core resilience principles](#) developed by CBI.
- The [framework for defining positive resilience alignment](#) by the Organisation for Economic Co-operation and Development (OECD) and the University of Oxford.

Integrating relevant principles of Locally Led Adaptation (LLA) into some of these existing frameworks can facilitate the contribution of private sector adaptation activities towards systemic resilience. However, the private sector often depends on local and national public institutions to implement adaptation actions on the ground. As such, existing power dynamics, inequalities, and governance challenges may limit the effectiveness and equity of private sector-led adaptation. Figure 1 highlights pathways to embed LLA within private sector adaptation action, building on OECD's framework for resilience alignment.

FIGURE 1. Opportunities to Embed the LLA Principles in Principles for Assessing Resilience Alignment of Investments



Source: Adapted from Mullan, M. & Ranger, N. (2022). *Climate-resilient Finance and Investment Framing Paper*. Organization for Economic Co-operation and Development and University of Oxford.

The opportunities to align with the LLA Principles lie in community engagement in risk assessments; adaptation design and delivery; and definitions of success.

Community Engagement in Risk Assessment

The TNFD framework offers private sector actors a pathway for embedding community engagement throughout risk assessment, strategy development, and resource allocation. Organizations claiming alignment must disclose how they include Indigenous Peoples, local communities, and other stakeholders in identifying nature-related risks and impacts.¹⁵⁰ The Taskforce’s [guidance](#) on engaging communities draws upon international standards—including the UN Guiding Principles on Business and Human Rights, the UN Declaration on the Rights of Indigenous Peoples, and the OECD Guidelines for Multinational Enterprises—creating a foundation for LLA Principle 5, which emphasizes understanding climate risk and dealing with uncertainty. Engagement doesn’t always lead to local leadership, but it is a necessary step.

Community Engagement in Adaptation Design and Delivery

Frameworks such as the OECD’s, CBI Climate Resilience Principles, and the [Guide for Adaptation and Resilience Finance](#) from Standard Chartered, KPMG, and UNDRR all emphasize that selecting suitable resilience investments requires understanding local climate risk contexts. These resources argue for engagement with local stakeholders to identify priorities and align with national adaptation strategies. However, “local” in many of these frameworks tends to mean subnational governments or other administrative bodies—not always directly the communities themselves. Incorporating local community voices into formal governance structures is essential to ensure their perspectives shape adaptation planning.



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Collaboration with communities helps ensure monitoring frameworks capture what is locally relevant.



Local Definitions of Success for Results Monitoring Frameworks

Metrics and targets for adaptation are evolving. Output and outcome metrics, needed to understand effectiveness, are difficult to standardize because what constitutes “success” can vary greatly by context. Local actors can play a critical role in determining which outcomes matter, and in improving data collection and reporting. Collaboration with communities helps ensure monitoring frameworks capture what is locally relevant.

PRIVATE SECTOR MECHANISMS TO SUPPORT LLA

In practice, private sector actors can support implementation of LLA through the design and delivery set-up of their adaptation activities (for instance, through participation in multi-stakeholder approaches for adaptation) or through aligning their adaptation investments and products to local realities as part of a nationally led transition.

Landscape and Jurisdictional Approaches

Landscape and jurisdictional (LA/JA) initiatives, examples of multi-stakeholder approaches, are on-the-ground collaborative programs to take collective action for improving social, environmental, and economic outcomes while reconciling different interests. In the 2024 CDP disclosures, 235 companies reported participating in 309 LA/JA initiatives across 70 countries—up from just 27 companies in 2020, showing growing private sector interest.¹⁵¹

The core criteria for a mature landscape initiative are complementary to the LLA Principles:¹⁵²

- **Scale:** Working at ecological or jurisdictional scale ensures interventions strengthen resilience on a systemic scale, not just individual sites, making the interventions much more likely to support the LLA Principles.
- **Multi-stakeholder governance:** Shared decision-making supports LLA Principle 1 (devolve decision-making to the lowest appropriate level) by embedding local actors in governance and giving them real influence over priorities and outcomes.
- **Collective goals and actions:** These are informed through context analysis of current landscape conditions and stakeholder needs, supporting LLA Principle 5 (build local understanding).
- **Collective monitoring:** Participatory monitoring and feedback mechanisms advance LLA Principle 7 (ensure transparency and accountability) by enabling shared learning and adaptive management rooted in local experience. This also includes regular review and revision of goals to reflect changing context, which supports LLA Principle 6 (flexible programming and learning).

The increase in private sector interest in these approaches and their complementarity with LLA is an encouraging signal of the possibility for corporations to address root causes of nature loss; drive context-based and sustained collaboration and investments; and drive socio-ecological resilience by aligning plans and investments with community needs. However, only 50% of the 309 LA/JA engagements reported in 2023 met the core criteria, highlighting that more work is needed to guide these approaches toward effectively addressing local challenges and strengthening systemic resilience.

BOX 1: MUSIM MAS'S LANDSCAPE SCALE ACTION

The palm oil industry is both a major source of emissions and highly exposed to climate risks, such as drought, erratic rainfall, and soil degradation. In Indonesia, the sector supports 16.2 million jobs and 4.5% of the nation's GDP. Meeting global demand for vegetable oils sustainably requires a shift to deforestation-free, climate-resilient practices. With 42–43% of production coming from smallholders, who often lack the resources to adapt, supporting them to implement sustainable and resilient practices is essential to ensure a successful transition while safeguarding their livelihoods.

Musim Mas, one of the world's largest integrated palm oil companies, recognizes the need to support smallholder farmers and small plantation companies in transforming land use practices and improving producer livelihoods. The Group has developed a comprehensive **landscape strategy** that serves as a declaration to convene and collaborate with local communities, businesses, NGOs, and governments to achieve its No Deforestation, No Peat and No Exploitation (NDPE) commitment through inclusive landscape management. The strategy outlines an integrated approach for addressing environmental and social outcomes in key sourcing areas, including particularly smallholder farmers' livelihoods.

The Group has implemented various programs to integrate independent smallholders into the palm oil supply chain. These programs cover agronomic training, access to financial support and global markets as well as education on legal requirements. In 2021, Musim Mas launched the Biodiverse and Inclusive Palm Oil Supply Chain (BIPOSC) project in Labuhanbatu, North Sumatra, partnering with the Livelihoods Funds, SNV, and a consortium of other brand partners. The project works with 2,900 smallholders across 13 villages to strengthen knowledge of regenerative agriculture. Village facilitators trained under BIPOSC provide peer-to-peer learning, while demonstration plots in seven villages act as hands-on hubs where farmers can test and adapt new practices before scaling them. Practices such as mulching, cover cropping, and bio-inputs improve soil health, reduce erosion, and increase resilience to drought and heavy rainfall. As part of the Regenerative Agriculture implementation, the program also supports smallholders in adopting an agroforestry model, which has been implemented by 91 farmers covering a total of 130 hectares, helping them diversify their income through additional crops and livestock.

While not designed primarily as a climate adaptation initiative, BIPOSC shows how private sector investment can empower smallholders, strengthen local institutions, and embed sustainable practices that build climate resilience. It illustrates how a corporation can support adaptation that is locally grounded.



Smallholder palm oil farmers in Indonesia are supported by Musim Mas to improve sustainability.



Transition Planning

CDP defines transition plans as time-bound action plans that communicate how organizations adjust their business models and investments to align with science-based environmental goals.¹⁵³ They are a strategic tool to turn targets into action, and to align finance flows with transition goals to give investors the confidence to commit capital.¹⁵⁴

The adoption of transition plans is becoming mainstream, particularly among private sector actors. The UK Government's ongoing consultation on transition plans for corporates and financial institutions underscores their growing importance. In 2023, CDP reported a nearly 50% year-on-year increase in the number of companies disclosing that they have a 1.5°C-aligned transition plan. Originally developed for mitigation, these plans are now evolving to integrate adaptation objectives, reflecting the need for private sector strategies to identify and manage material physical climate risks. As private sector entities broaden their transition plans to include adaptation, more data will become available on the sector's adaptation contributions and alignment with National Adaptation Plans.¹⁵⁵

Building on the private sector transition plan framework developed by the Transition Plan Taskforce, the Centre for Economic Transition and Expertise (CETEx) has developed a framework outlining how national and private sector transition planning can be aligned. The CETEx framework proposes approaches to ensure national transition planning is informed by local communities through approaches such as participatory budgeting, citizens' assemblies, and place-based community-owned and community-led initiatives.¹⁵⁶ It suggests that national transition planning can function as a coordination mechanism between state and non-state actors, including local stakeholders. In other words, it can serve as a tool for public policy leadership, sending the signals needed to catalyze private sector action and direct adaptation efforts toward solutions that are better aligned with local realities.

The degree to which these approaches are utilized and successful depends on national contexts though an assessment by UNEP indicates that most countries are still in the early stages.¹⁵⁷ Governments will need to prioritize local leadership and guide the private sector towards investing in locally led adaptation.

HOW MUCH CAN THE PRIVATE SECTOR CONTRIBUTE TO SYSTEMIC RESILIENCE?

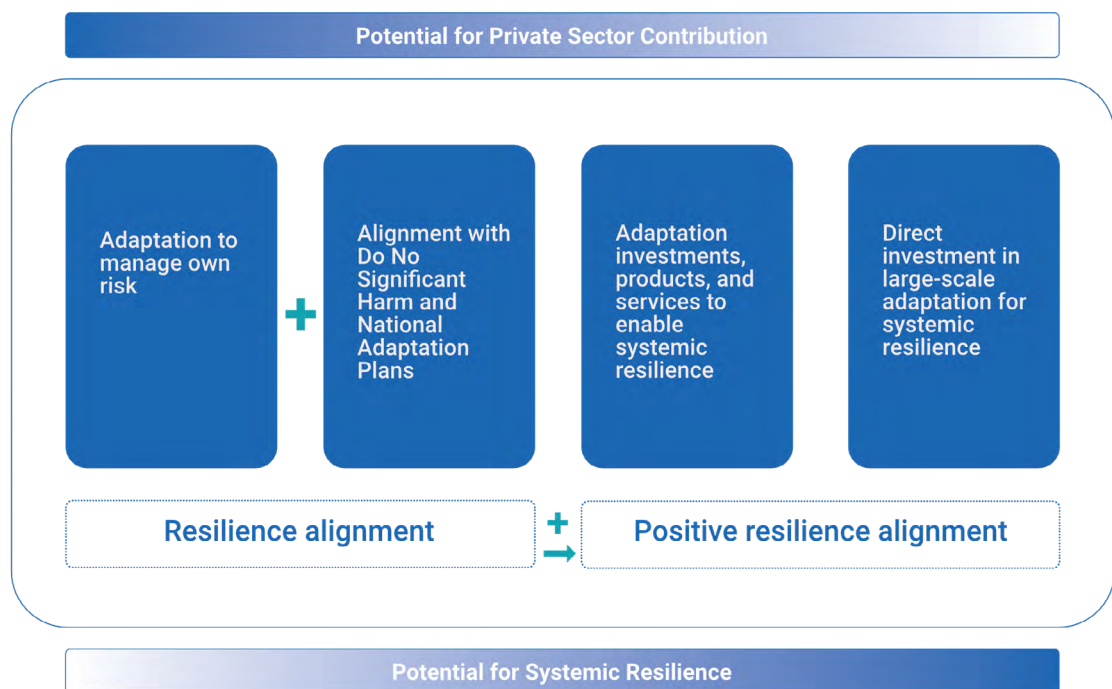
Analyses by the [Zurich Climate Resilience Alliance](#) and the [UN Environment Programme](#) show that two-thirds of adaptation finance needs in developing countries are for public or quasi-public goods (such as coastal and river protection, roads, and adaptive social protection) which need public funding because they lack direct financial returns.¹⁵⁸ About a third of adaptation needs are in areas where private investment has potential (such as climate-smart agriculture or climate-resilient infrastructure) although, even in these areas, public finance is typically needed to de-risk private investment.

The Zurich Climate Resilience Alliance further estimates that under current policies only about 15% of adaptation needs in developing countries can be realistically met by the private sector, though this varies by country. The distinction between financing (upfront capital) and funding (covering long-term costs) is important—the potential for private sector financing is

higher when accounting for private financing of public investment (government budget debt financing) which is ultimately paid for by domestic public budgets. Beyond this 15% potential, private sector contributions can also play a role through public procurement of adaptation goods and services.

LLA focuses on transformational change: anticipating climate impacts, prioritizing the most vulnerable, and acting at system level, which is critical for meeting the scale of the climate crisis.¹⁵⁹ Interventions with such characteristics are difficult for private sector actors to contribute to because revenue generation may be limited, benefit quantification is tough, and interventions must be highly adapted to local conditions. The private sector does have a role to play in enabling systemic resilience through upfront financing and provision of products and services (see Figure 2) and some principles of LLA can be embedded within the decision-making and progress-tracking frameworks. However, this contribution will largely be towards actions where a financial case can be made. Ultimately, strong leadership from governments and public policy is needed to unlock a bigger role of the private sector for context-specific and systemic resilience, with newer narratives for value creation. For systemic interventions, strong government leadership and public policy are needed, with newer narratives for value creation.¹⁶⁰

FIGURE 2. Private Sector Potential to Support Systemic Resilience



Conclusion

The resilience of private sector actors depends heavily on the health of the socio-ecological systems in which they operate. Aligning adaptation efforts so that they strengthen these systems is more than just risk management; it is a source of opportunity, unlocking new markets and innovation. That said, the kinds of systemic, transformational adaptation that embody the principles of LLA are often the hardest for private capital to fund due to low returns, complexity, and greater risk. Despite these challenges, private sector actors can still implement LLA. By engaging communities meaningfully in risk assessments, participating in multistakeholder processes, and aligning products, services, and investment with local realities—supported by strong policy leadership and public finance—companies can embed LLA approaches while also securing their own resilience.



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