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# Locally-led Climate Action in the Global South

Learning from Communities

Authors

Ishita Gupta  
Lalitha Ramalingan  
Taveri Rajkhowa  
Aryan Bajpai  
Vanya Pandey  
Shreya Wadhawan





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**Council on Energy, Environment and Water**

ISID Campus, 4 Vasant Kunj Institutional Area,  
New Delhi-110070, India

T: +91 (0) 11 4073 3300

[info@ceew.in](mailto:info@ceew.in) | [ceew.in](http://ceew.in) | [X @CEEWIndia](https://www.linkedin.com/company/ceewindia) | [ceewindia](https://www.instagram.com/ceewindia)



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The Council on Energy, Environment and Water (CEEW)—a **homegrown institution** with headquarters in New Delhi—is **among the world's leading climate think tanks**. We use **data, integrated analysis, and strategic outreach** to support public policy, transform markets, shape technology, and nudge behaviour. CEEW seeks to explain—and change—the use, reuse and misuse of resources. CEEW addresses pressing global challenges through an **integrated and internationally focused** approach. It prides itself on the **independence** of its high-quality research and strives to **impact sustainable development at scale**.

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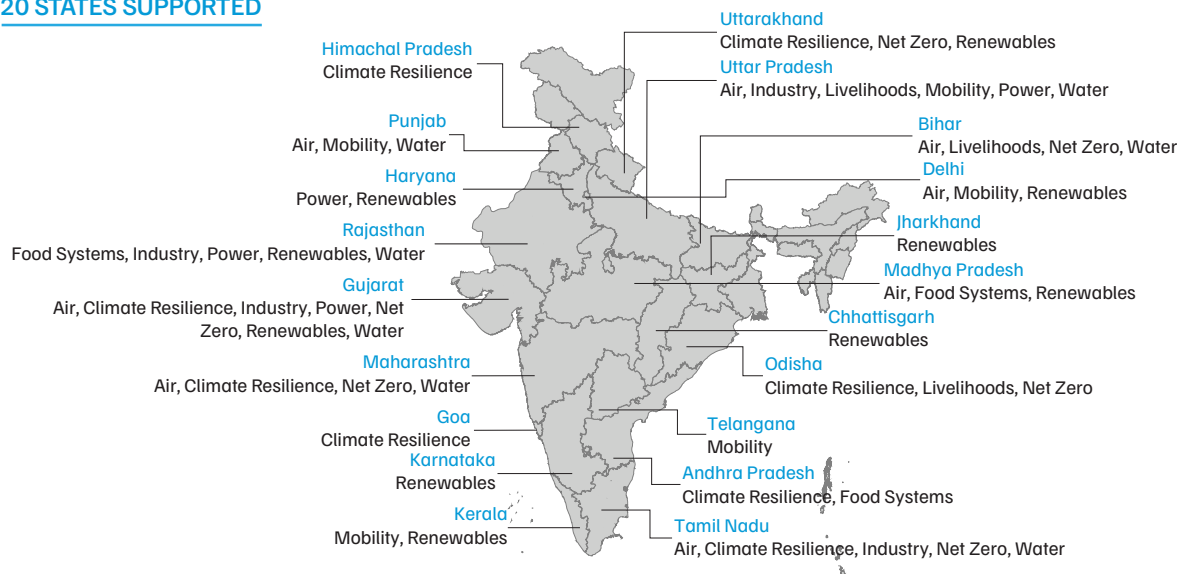
### NATIONAL/INTERNATIONAL

- 2011 | National Water Resources Framework
- 2014 | 175 GW renewables target
- 2015 | International Solar Alliance
- 2016 | PM *Ujjwala Yojana*
- 2017 | *Saubhagya* Schemes
- 2019 | Climate Vulnerability Index
- 2021 | Net Zero by 2070
- 2022 | Mission LiFE
- 2022 | National Bioenergy Programme
- 2022 | E-waste (Management) Rules
- 2023 | G20 Green Development Pact
- 2023 | National Green Hydrogen Mission
- 2024 | Green Steel Taxonomy
- 2024 | PM *Surya Ghar Yojana*
- 2025 | National Critical Mineral Mission
- 2025 | Rajya Sabha guidelines on crop residue burning
- 2025 | National Adaptation Plan

### STATE

- 2022 | Rajasthan Organic Farming Mission
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- 2023 | Rajasthan Green Hydrogen Policy
- 2023 | Uttarakhand Solar Policy
- 2024 | Net-zero roadmaps for Bihar & Tamil Nadu
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- 2025 | 50 Heat Action Plans (GJ, OD, MH, TN)
- 2025 | Delhi Clean Air Action Plan
- 2025 | Delhi EV Policy 2.0

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# Executive summary

As climate impacts intensify across the Global South, the need to shift from centralised adaptation planning to locally driven climate action has become even more critical. Although global frameworks have advanced adaptation agendas, implementation remains fragmented, underfinanced, and insufficiently rooted in the lived realities of climate-vulnerable populations. **This compendium on locally-led climate action (LLCA) consolidates global experience, identifies best practices, and outlines operational pathways for India and other developing countries to institutionalise community-led resilience within governance, finance, and planning systems.**

Climate change impacts manifest locally, yet most adaptation efforts continue to be driven through centralised, top-down systems. Traditional community-based adaptation (CBA) initiatives enabled local participation but largely positioned communities as beneficiaries. As a result, these interventions only yielded sporadic, short-lived success, and humanitarian and project-based support rarely evolved into lasting capacity or institutional resilience.

Locally-led adaptation (LLA) marked a pivotal transition by embedding decentralisation and long-term capacity building into adaptation practice. Guided by the eight LLA principles, this approach sought to strengthen policy and institutional frameworks to enable sustained local-level interventions. However, challenges in scaling and replication limited its impact.



The **LLCA framework** builds on LLA by connecting disaggregated local efforts and operationalising adaptation at national and sub-national scales. It provides a practical pathway to design, plan, and implement local adaptation through three core features:

1. **Subsidiarity in finance:** placing funds and authority in the hands of local actors<sup>1</sup>
2. **Inclusive governance and participation:** ensuring that marginalised communities are central to decision-making
3. **Climate-informed local planning:** combining scientific data with indigenous and traditional knowledge

Figure ES1. Systemic changes to drive locally-led climate action



Source: World Bank. 2024. *Locally-Led Climate Action: A World Bank Operational Approach*.

1. 'Local actors' include individuals or entities below the national level that are "composed of or directly accountable to local people, making them better placed to give local people agency over their adaptation" (Soanes et al. 2021, 10).

## A. Purpose and audience of the compendium

This compendium consolidates lessons from over 75 LLCA-aligned initiatives across the Global South, offering a practical reference for policymakers, practitioners, funders, and community leaders.

- For **policymakers**, it identifies reforms and integration pathways for existing schemes such as *Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGS)*<sup>2</sup>, *National Rural Livelihood Mission (NRLM)*, *Compensatory Afforestation Fund Management and Planning Authority (CAMPA)*, and *Atal Bhujal Yojana (ABY)*.
- For **funders and donors**, it demonstrates credible and scalable approaches to channel finance directly to local actors.
- For **practitioners and civil society**, it outlines tested models to strengthen leadership, partnerships, and resilience measurement at the grassroots level.

Overall, the compendium positions LLCA as the next frontier for advancing India's climate resilience and highlights viable strategies for translating global best practices into India's policy and institutional contexts.

## B. Research approach and methodology

To ensure credibility and rigour, the study reviewed over 75 projects from the Global Environment Facility (GEF), Green Climate Fund (GCF), United Nations Development Programme (UNDP), and other multilateral development banks (MDBs) across 16 countries in Africa, Asia, Latin America and Oceania.

Projects were evaluated against indicators derived from the eight LLA principles and assessed using criteria such as community engagement, on-ground implementation, and scalability.

The analysis also highlights structural bottlenecks that constrain LLCA implementation in India, including rigid financing channels, participation that remains more symbolic than substantive, and limited use of localised climate information.

## C. Emerging good practices from the Global South

Global experiences demonstrate how LLCA principles translate into measurable resilience outcomes:

- **Brazil:** Community-led mangrove conservation has strengthened coastal protection and safeguarded livelihoods.
- **Zimbabwe:** Climate risk management initiatives have improved food security for vulnerable households.

These examples illustrate the tangible benefits of subsidiarity, inclusivity, and locally grounded planning. The compendium distils such insights across the three LLCA design features, offering a consolidated set of good practices that can inform national- and state-level adaptation strategies.

2. *Mahatma Gandhi National Rural Employment Guarantee Scheme, 2005* provides guaranteed wage work to every rural household. This scheme is replaced by *Viksit Bharat—Guarantee for Rozgar and Ajeevika Mission (Gramin)(VB—GRAM G)*, 2025.

## D. Lessons, recommendations, and call to action

The analysis yields actionable recommendations for embedding LLCA within India's adaptation ecosystem:

### Finance reforms

- Simplify access to sectoral and scheme-based funds for adaptation.
- Institutionalise participatory budget planning and social audits to ensure transparency and accountability.

### Governance reforms

- Ensure meaningful representation of marginalised groups beyond formal compliance.
- Strengthen local leadership through gram panchayats, self-help groups (SHGs), and user collectives to support inclusive participation.

### Robust data systems

- Develop granular, vernacular, and locally accessible climate datasets.
- Ensure timely data dissemination to enable risk-informed decision-making at the community level.

The compendium calls for a systemic shift from small-scale pilots to mainstreamed LLCA, and from communities as **beneficiaries to co-leaders** of India's climate transition. Achieving this requires reimagining how local interventions can be aggregated and adapted to scale while preserving their local character.

It serves as an actionable reference for national and state governments, development agencies, and grassroots organisations to reform policies, scale up proven LLCA models, and embed local climate resilience in India's governance, financing, and planning systems. The insights will feed into a broader study on operationalising LLCA in India and ultimately contribute to a framework for institutionalising local resilience in national policy and practice.



# 1. Introduction

India is among the most vulnerable countries to both sudden and slow-onset impacts of climate change globally. The Climate Risk Index 2025, published by Germanwatch, identifies India as the sixth-most-affected country due to extreme weather events (Adil et al. 2025). Over the past five decades, the subcontinent has experienced a significant increase in the frequency, intensity, and geographical spread of extreme weather events. Between 1970 and 2019, the incidence of such events rose sharply, with the trend accelerating after 2005 (Mohanty 2020).

A study by the Council on Energy, Environment and Water (CEEW) highlights that over 75 per cent of Indian districts, which are home to more than 638 million people, are highly vulnerable to the impacts of extreme weather events (Mohanty and Wadhawan 2021). Floods, landslides, hailstorms, and cloudbursts have increased 20-fold since the 1970s (Mohanty 2020). In 2022 alone, floods caused economic damages totalling USD 4.2 billion (WMO 2023). Droughts have also intensified, with 68 per cent of Indian districts experiencing drought or drought-like conditions, severely affecting agricultural productivity, water access, and triggering distress migration (Mohanty 2020). Cyclonic activity along India's coastline has also intensified, increasingly exposing coastal states to cyclones, extreme rainfall, and storm surges that threaten infrastructure and livelihoods.

Given the geographical diversity of the Indian subcontinent, it is essential to map and consider the regional variability observed across different extreme events. Eastern states, such as Bihar and West Bengal, face recurrent flooding (NRSC and ISRO 2023), while Andhra Pradesh, Odisha, and Tamil Nadu are increasingly exposed to cyclonic events (Kantamaneni et al. 2022). In the Himalayan and north-eastern states, including Assam, Meghalaya, and Uttarakhand, declining southwest monsoons are altering water and agricultural systems (Prabhu and Chitale 2024).

In recent years, climate change has also severely impacted urban centres. Coastal cities, such as Chennai and Mumbai, are experiencing more frequent flooding (Hagare 2024), while inland cities, including New Delhi, are witnessing more frequent and intense heat events (Lakhera and Kaul 2024). These spatially differentiated risks underscore the need for region-specific resilience strategies that account for local vulnerabilities and adaptive capacities.

Climate change disproportionately affects already marginalised communities, such as women, children, Scheduled Castes and Tribes, the elderly, and those living in poverty or informal settlements (UNFCCC 2022; UN Women 2025). This vulnerability is compounded by their concentration in regions with heightened exposure to climate-related hazards and limited adaptive capacity due to scarce resources for effectively responding to both acute climate shocks and gradual environmental changes (ADB 2023). These communities often face restricted access to resources, insecure land tenure, limited representation in decision-making processes, and heightened exposure to disaster risks (Sorensen et al. 2018; Adeoya et al. 2022; Beach et al. 2024; Tulsyan 2025).

## Box 1. Climate-vulnerable groups

The consequences of climate change are most acutely felt at the local level, where individuals from marginalised socio-economic backgrounds are among the worst affected.

### Women

Women, who comprise a significant proportion of India's agrarian workforce, often face compounded burdens during extreme weather events, including increased caregiving responsibilities, reduced access to sanitation, and heightened exposure to gender-based violence in post-disaster settings (Sorensen et al. 2018; UNFCCC 2022; Beach et al. 2024).

### Children and the elderly

Children experience nutritional deficiencies and educational disruptions when schools are closed or converted into emergency shelters (UNICEF 2021; Adeoya et al. 2022; Tulsyan 2025; Sekhar 2025). Evidence from India indicates that rainfall anomalies increase the risk of stunting, particularly among children from disadvantaged households (Dimitrova et al. 2020). Health risks for both children and the elderly are exacerbated during heatwaves, floods, and disease outbreaks (Gopal et al. 2024; Tulsyan 2025). Climate shocks are also associated with acute illnesses in children, including diarrhoea and respiratory infections (Datar et al. 2012).

### Schedules Castes and Tribes

Marginalised communities, such as Scheduled Castes and Scheduled Tribes, are disproportionately impacted by climate-induced stresses due to limited access to resources, conflicted land rights, lack of social protection, and minimal representation in decision-making processes that shape climate adaptation.

### **Persons with disabilities**

Persons with disabilities face severe challenges evacuating, accessing relief, and maintaining mobility during natural disasters such as floods. Barriers to health and sanitation facilities are further amplified during climate shocks. Climate vulnerabilities exacerbate existing social, economic, and health-related disadvantages, thereby heightening the risks of exploitation (UN 2018).

### **Migrants and displaced populations**

Migrant and displaced communities are highly exposed to climate impacts due to a lack of stable housing, exclusion from social safety nets, and poor and/or exploitative working conditions. Sudden extreme weather events can potentially push these groups into debt traps, exacerbate health risks, and impede access to healthcare services (Harun et al. 2025).

The impacts of climate change on these groups are rarely one-dimensional. A single climate shock often triggers cascading risks, for example, heat stress leading to health emergencies, floods destroying livelihoods, or droughts accelerating distress migration. These overlapping pressures deepen poverty traps and widen existing inequalities, particularly when intersected by intersectional vulnerabilities, such as those involving women from marginalised communities (McMichael et al. 2012; UNFCCC 2022; Das 2025).

*Source: Authors' analysis*

Additionally, critical infrastructure, such as roads, electricity grids, hospitals, and water supply systems, suffers repeated damage, compounding the cost and effort of post-disaster recovery (Lopes 2022). In Himachal Pradesh, for instance, the State Bank of India estimates that critical infrastructure, such as roads, transformers, electric sub-stations, and water supply schemes, has suffered extensive flood-related damage since 1900, with losses amounting to INR 3,000–4,000 crore (Ghosh 2023).

## Box 2. Understanding cascading risks and compounding risks

### Cascading risks and impacts

Cascading risks and impacts often begin with a single extreme climate event that triggers a series of interrelated disruptions across systems (Cissé et al. 2024).

A clear example is the 2013 Kedarnath disaster in Uttarakhand. Unusually heavy rainfall in June triggered glacial lake outbursts and flash floods that washed away roads, bridges, and communication lines. This delayed emergency response and led to a long-term decline in tourism, which is a primary source of income in the region (The Economic Times 2013).



*View of the devastated Kedarnath temple surroundings following extreme rainfall in Rudraprayag, India, 18 June, 2013.*

### Compounding risks and impacts

Compounding risks and impacts arise when multiple concurrent stressors amplify the overall effects of climate-related disasters (Cissé et al. 2024).

For instance, Cyclone Amphan struck during the COVID-19 pandemic, when the country was under a strict nationwide lockdown. This complicated evacuation efforts, disrupted relief logistics, and overwhelmed healthcare infrastructure already burdened by the pandemic (Ober 2023; Pramanik et al. 2021).



*Kolkata suffered extensive damage during Cyclone Amphan, 20 May, 2020.*

Source: Authors' analysis

Despite growing efforts, several grassroots and civil society-led initiatives remain fragmented, often reliant on individual champions, and constrained by limited institutional continuity and scaling potential (Singh et al. 2017). It is increasingly evident that top-down approaches alone are insufficient, and climate resilience must be co-created and embedded within local governance systems, prioritising community agency, traditional knowledge, and regional adaptation priorities. This necessitates a shift from community-based interventions to a more structured, empowered, and systemically integrated framework that defines and supports locally-led climate action (LLCA). The following sections trace this evolution and examine how India can better institutionalise and scale such efforts.

# 1.1 From climate adaptation to resilience: Introducing locally-led climate action

Over the last two decades, climate action<sup>3</sup> at the community level has evolved from fragmented pilot projects to more deliberate frameworks centred on local knowledge, leadership, and decision-making (Sterrett 2015). Initially characterised by project-based interventions with limited community input, these efforts have progressively shifted towards approaches that prioritise the lived experiences, knowledge systems, and adaptive capacities of those most affected. This reflects the growing recognition that the most effective resilience-building efforts are those that emerge from, and are sustained by, local actors who understand their contexts best.

Community-based adaptation (CBA), a term introduced in the early 2000s, marked a shift in climate response paradigms by advocating for grassroots involvement in adaptation planning and implementation. Rooted in participatory development traditions, CBA prioritised the inclusion of local knowledge, values, and needs, and positioned communities as the primary decision-makers in shaping adaptation strategies. The International Centre for Climate Change and Development (ICCCAD) played an instrumental role in formalising the conceptual and operational aspects of CBA.

While CBA provided an essential foundation for localised action, its operationalisation often fell short of its transformative intent. As CBA initiatives were implemented across various geographies, several limitations emerged. Despite its emphasis on community ownership, many interventions remained externally led in project design, monitoring, and evaluation. Short donor funding cycles constrained the continuity and depth of community engagement, and project timelines rarely aligned with the iterative nature of adaptive capacity-building (Dodman and Mitlin 2011). Decision-making authority frequently rested with non-governmental organisations (NGOs) or international agencies rather than with community members, contradicting the participatory principles of the model (Dodman and Mitlin 2011; Selje et al. 2024). These shortcomings raised concerns that CBA, although well-intentioned, did not sufficiently shift control or resources to the local level. Continued reliance on external actors for technical expertise and financial decision-making limited the autonomy and long-term resilience of community actors, particularly in resource-constrained and politically marginalised areas. As a result, many CBA efforts lacked long-term sustainability and reinforced existing power asymmetries rooted in social identities and power inequities. These limitations underscore the need for a more robust and equity-driven framework, one that not only engages communities but also positions them as central architects of climate action.

## **Emergence of locally-led adaptation (LLA)**

In response to these limitations, the LLA framework began to take shape, gaining global traction around 2020–21. Developed by prominent organisations, such as the Global Commission on Adaptation (GCA), International Institute for Environment and Development (IIED), World Resources Institute (WRI), and ICCCAD, LLA placed greater emphasis on the meaningful inclusion of marginalised and vulnerable groups within local contexts. Locally-led adaptation addressed several structural issues observed in CBA by calling for systemic changes, including the promotion of longer-term engagement, iterative learning, and greater transparency between different levels of governance, from national to sub-national actors. These priorities are articulated through eight distinct principles, as highlighted in Figure 1. It also recognised that adaptation is a dynamic process, requiring flexible institutional arrangements, sustained financing, and the building of adaptive capacity across scales.

3. Climate action lacks a universally defined definition; however, prominent global taxonomies, including the European Union, define climate action as efforts taken to combat climate change and its impacts. These efforts involve reducing greenhouse gas emissions and simultaneously taking action to prepare for and adjust to both the current effects of climate change and the predicted impacts in the future (EUR-Lex n.d.).

Figure 2. Principles for locally-led adaptation

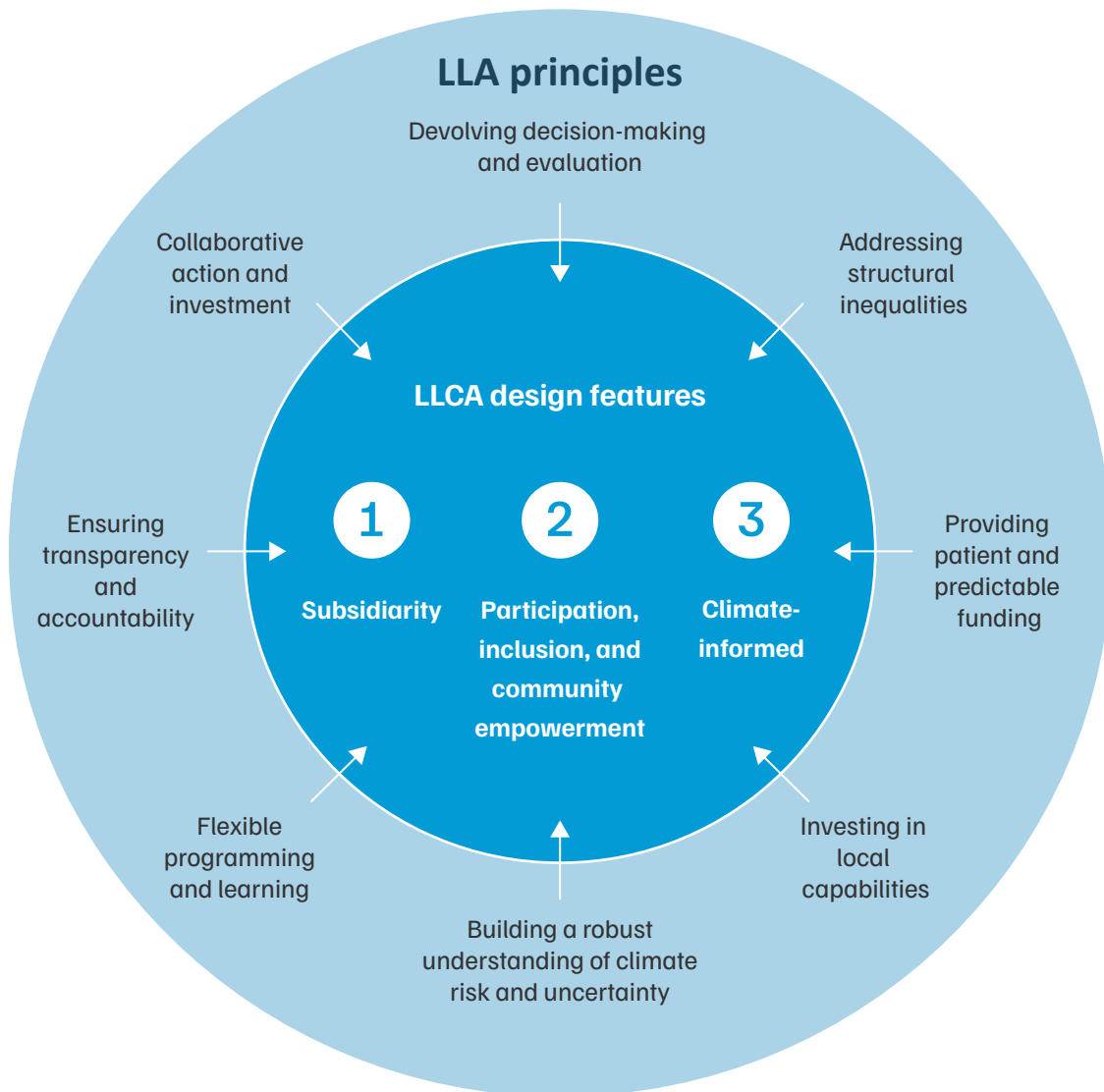


Source: IIED.2021. *Principles for Locally-Led Adaptation: A Call for Action*.

**LLCA: broadening the lens**

Building on the foundations of both CBA and LLA, the World Bank and the GCF introduced the framework for LLCA, incorporating lessons learned from the operational challenges of earlier models (World Bank et al. 2024, GCF n.d.). Unlike its predecessors, LLCA extends the scope beyond adaptation to include mitigation co-benefits and seeks to align community-led efforts with national and global climate objectives. Locally-led climate action recognises that climate responses at the local level can yield both adaptation and mitigation outcomes when designed using systems thinking and supported by enabling institutional conditions. Figure 2 illustrates how LLCA builds on the eight principles of LLA and introduces design features by embedding them within programmatic structures, fiscal architecture, and capacity-building frameworks.

Figure 3. Locally-led climate action design features, informed by the locally-led adaptation principles



Source: World Bank. 2024. *Locally-Led Climate Action: A World Bank Operational Approach*.

The design features include:

- **Design Feature #1: Strengthening subsidiarity for climate finance**

This feature emphasises that climate action must be embedded within systems that devolve authority and resources to the lowest appropriate levels of governance. It also calls for the development of institutional mechanisms that ensure predictable, long-term, and flexible financing to support local leadership. Rather than treating local participation as a consultative add-on, this feature positions local actors as central decision-makers and implementers, with corresponding autonomy over financial and administrative processes.

- **Design Feature #2: Supporting participation, inclusion, and community empowerment around climate action**

This feature aims to ensure that climate interventions reflect the priorities and experiences of the most vulnerable and marginalised groups, particularly women, indigenous peoples, and marginalised social communities. It goes beyond generic participatory models by calling for equity-centred design processes that challenge traditional power structures and ensure representation in decision-making.

- **Design Feature #3: Investments informed by climate data and strategies**

This feature addresses the operational dimension of climate action. It requires that both scientific and local knowledge systems inform investments, and that planning, monitoring, and learning processes remain iterative and responsive to changing conditions. This includes building local capacity to interpret and apply climate data, as well as embedding feedback loops into project cycles to support adaptive learning.

Collectively, these three features make LLCAs both ethically imperative and economically sound. By devolving financial authority, centring affected voices, and grounding investments in climate intelligence, LLCAs create a virtuous cycle in which resources flow to communities with intimate local knowledge, decision-making rests with those who have the most substantial incentives for sustained impact, and interventions are continuously refined through adaptive learning. This reduces implementation failures, eliminates top-down inefficiencies, and unlocks local innovation and economic multipliers that centralised models cannot achieve. They demonstrate that community-centric climate resilience delivers both equity and effectiveness, generating measurable climate outcomes while strengthening local economic capacity and social cohesion.

## 1.2 Community-based climate action in India: Existing efforts and challenges

For a country as large and diverse as India, the LLCA framework offers a unique opportunity to connect local action with national ambitions. A structured evaluation of community-based climate initiatives in India through the lens of the three LLCA design features provides a clearer understanding of existing challenges and helps shift from fragmented pilots to institutionalised, scalable models of resilience-building. More importantly, LLCA provides a framework that advances India's climate and development goals by linking local resilience with national priorities. India's Nationally Determined Contributions (NDCs) emphasise investment in climate-vulnerable sectors, such as agriculture and water, where local knowledge and community participation are essential. This aligns closely with LLCA's focus on subsidiarity in finance and locally attuned planning. The constitutional mandate of Panchayati Raj Institutions (PRIs) provides a ready platform for inclusive governance, participation, and bottom-up decision-making, reflecting LLCA's design principles within India's decentralised governance framework.

By embedding climate-informed local planning that integrates scientific and traditional knowledge, LLCA can accelerate progress on the Sustainable Development Goals (SDGs), particularly SDG 13 (climate action), SDG 6 (water), SDG 2 (food security), and SDG 5 (gender equality). The co-benefits of LLCA interventions allow climate investments to simultaneously advance poverty reduction, social inclusion, and ecological restoration. This section highlights the Government of India's existing efforts and applies the LLCA framework to its schemes and programmes to assess alignment and identify opportunities for reform.

### Mapping India's efforts through the LLCA lens

The Government of India has undertaken a wide range of initiatives to address climate change adaptation and mitigation across key sectors, including water resources, agriculture, forestry, energy, disaster risk reduction, and urban development. Many of these schemes incorporate elements of community participation and decentralised delivery, particularly through PRIs, self-help groups (SHGs), and local user committees (Karunaratne 2025). However, the extent to which these schemes align with the LLCA design features—subsidiarity in finance, inclusive governance, and climate-informed investments—remains highly uneven.

At the sub-national level, efforts have been made to improve convergence across sectoral departments so that budgets and programmes can be aligned more strategically with climate and development outcomes (Curry et al. 2024). To enable bottom-up planning and implementation, the institutional structure of the *Green India Mission* (GIM) positions the gram sabha as the lowest decision-making body for planning, managing, and implementing GIM activities. Various committees, such as joint forest management committees, forest management committees, and van panchayats, operate under the gram sabha to support planning and implementation. At the cluster level, federations of these village-level committees are formed and represent themselves in district-level forest development agencies meetings and forums. The FDAs are further linked to district planning committees to ensure alignment between GIM activities and overall district development plans (MoEFCC 2014). The Ministry of Panchayati Raj (MoPR) has also taken steps to embed the SDGs in local-level planning, giving state governments a more substantive role in shaping development priorities. Similarly, India's NDC reinforces this shift towards subsidiarity and locally attuned planning by prioritising climate-vulnerable sectors, such as agriculture, water resources, and the Himalayan ecosystem. These priorities echo LLCA's emphasis on directing investments towards local vulnerabilities and generating co-benefits for adaptation, livelihoods, and equity.

Taken together, these initiatives suggest that India already has some enabling conditions envisaged under LLCA, including subsidiarity in finance and planning, platforms for local participation, and mechanisms for cross-departmental alignment. However, these remain underutilised or unevenly activated. The challenge now is not only to recognise these entry points but also to operationalise and strengthen them so that they function as effective channels for mainstreaming locally-led climate action.

To develop an in-depth understanding of India's efforts to localise climate action, we conducted a review of flagship national programmes based on India's Third National Communication to the UNFCCC (2023). This review shows that while several schemes contain components supporting local action, only a few embody the full spirit of LLCA. Table 1 provides an overview of the various national schemes implemented for climate adaptation and mitigation and their alignment with the LLCA design features. A detailed list of policies and a review of their alignment with the LLCA design features is provided in Annexure A.

Table 1. Alignment of national schemes with LLCA design features

S. Name of Scheme/ Programme/Mission launched by no. the Government of India	Design Feature #1: Strengthening subsidiarity for climate finance	Design Feature #2: Supporting participation, inclusion, and community empowerment around climate action	Design Feature #3: Investments informed by climate data and strategies
<b>Schemes/Programmes/Missions related to climate mitigation in India</b>			
1. Deen Dayal Upadhyaya Gram Jyoti Yojana			
2. Integrated Power Development Scheme	✓		
3. Smart Meter National Programme			✓
4. Perform, Achieve, and Trade (PAT) Scheme			✓
5. National Programme on Energy Efficiency and Technology Upgradation in Small and Medium Enterprises	✓		✓
6. Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyaan (PM-KUSUM)	✓		✓
<b>Schemes/Programmes/Missions related to climate adaptation in India</b>			
1. National Water Mission (NWM)		✓	✓
2. The Dam Rehabilitation and Improvement Programme			✓
3. Jal Jeevan Mission		✓	✓
4. Namami Gange Programme		✓	✓
5. National River Conservation Plan			✓
6. National Plan for Conservation of Aquatic Ecosystems			✓
7. Atal Bhujal Yojana (ABY)		✓	✓
8. National Mission for Sustainable Agriculture		✓	✓
9. National Innovations in Climate Resilient Agriculture	✓	✓	✓
10. Rashtriya Krishi Vikas Yojana	✓	✓	✓
11. Deendayal Antyodaya Yojana -National Rural Livelihoods Mission	✓	✓	✓

<b>Schemes/Programmes/Missions related to climate adaptation in India</b>			
12.	<i>National Mission on Agricultural Extension and Technology</i>		✓
13.	<i>Pradhan Mantri Fasal Bima Yojana (PMFBY)</i>	✓	✓
14.	<i>Pradhan Mantri Kisan Samman Nidhi</i>		
15.	<i>Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)</i>		✓
16.	<i>Mission for Integrated Development of Horticulture</i>		✓
17.	<i>National Livestock Mission</i>		✓
18.	<i>Pradhan Mantri Matsya Sampada Yojana</i>	✓	✓
19.	<i>Compensatory Afforestation Fund Management and Planning Authority (CAMPA)</i>	✓	
20.	<i>Green India Mission (GIM)</i>		✓
21.	<i>Nagar Van Yojana</i>		✓
22.	<i>Intensification of Forest Management Scheme</i>		✓
23.	<i>Pradhan Mantri Van Dhan Yojana</i>	✓	✓
24.	<i>Green Skill Development Programme</i>		✓
25.	<i>National Coastal Mission</i>		✓
26.	<i>National Mission for Sustaining the Himalayan Ecosystem</i>		✓
27.	<i>National Mission on Himalayan Studies</i>		✓
28.	<i>Aapda Mitra</i>		✓
29.	<i>National Vector Borne Disease Control Programme</i>		✓
30.	<i>National Cyclone Risk Mitigation Project</i>		✓
31.	<i>Atal Mission for Rejuvenation and Urban Transformation (AMRUT)</i>	✓	✓
32.	<i>Swachh Bharat Mission (rural and urban)</i>		✓
33.	<i>Mahatma Gandhi National Rural Employment Guarantee Scheme</i>	✓	✓

Source: Authors' analysis as highlighted in Annexure A

Schemes such as **ABY**, **NRLM**, the **National Innovations in Climate Resilient Agriculture (NICRA)**, and components of **PMKSY** reflect strong convergence with LLCA principles. These programmes integrate decentralised financial management, support participatory planning structures, and draw on both scientific and local data for implementation. However, many other schemes retain centralised control, offer only tokenistic community engagement, or rely on generic national-level climate information. For instance:

- Urban missions such as AMRUT and *Swachh Bharat* involve municipal bodies in planning, but the scope for deeper participation of community structures in shaping design and tracking progress remains limited.
- Agricultural support schemes such as PM-KISAN and PMFBY provide direct benefits to farmers, yet these are primarily routed to individuals and leave limited room for collective decision-making or locally driven planning.
- Forestry programmes such as CAMPA and GIM operate through Joint Forest Management Committees, but these committees often function within predefined fund flows and project designs, leaving limited space for locally tailored approaches.

In addition to these government-based initiatives, several NGOs and civil society organisations (CSOs) continue to implement community-based climate action to build the resilience of local communities, especially vulnerable groups. While these initiatives demonstrate localised efficacy, they are consistently measured against systemic barriers, including an acute shortfall in devolved finance, persistent exclusion of marginalised stakeholders, and inadequate translation of climate data into actionable insights at the local level (Singh et al. 2017). To bridge these gaps, India must address the structural barriers that constrain subsidiarity, inclusion, and the effective use of local data. The next section outlines these challenges in detail and identifies the systemic reforms required to enable locally-led climate action at scale.



Image: iStock

## 2. Challenges in operationalising locally-led climate action in India

Despite growing emphasis on decentralised and community-based approaches in India's climate response, significant structural barriers continue to hinder the institutionalisation and scaling of LLCA. These challenges fall into three major categories, aligned with the core LLCA design features:

- **Finance and subsidiarity:** Does money reach the last mile, and do local actors have control over how it is used? Are funding opportunities patient and predictable? Are there mechanisms in place to ensure transparency, accountability, and effective outcomes?
- **Inclusion and participation:** Are local governance systems genuinely representative, and do they empower marginalised communities?
- **Climate-informed planning:** Are local decisions shaped by accessible, usable, and locally validated climate data?

Each of the following sub-sections unpacks challenges in these three domains and draws on evidence from government schemes and civil society experiences to illustrate common implementation hurdles.

## 2.1 Challenges associated with subsidiarity and finance

Despite growing recognition of the importance of locally-led climate action, major challenges persist in operationalising the principle of subsidiarity and securing adequate, timely, and accessible finance at the local level. These challenges include chronic under-capitalisation and misaligned fund flows. Studies estimate that while climate finance investments in India continue to rise for both climate adaptation (INR 1.09 lakh crore or USD 12.72 billion in 2024) and mitigation (INR 3.71 lakh crore or USD 50 billion in 2024), they still remain significantly below what is required for India to meet its national climate goals (Chakravarty et al. 2024). Globally, estimates suggest that less than 10 per cent of climate finance reaches the local level, where the need is most acute (UNEP 2023). Private-sector finance is typically channelled through traditional instruments such as green bonds and loans (Steinbach et al. 2022). However, accessing these instruments requires a high degree of credibility, demonstrated repayment capacity, updated financial records, and overall financial health, which local actors might not always meet. In addition, the absence of stakeholders with the capacity to implement projects constrains the scaling of pilot projects and impedes the flow of finance. Procedural and regulatory processes, such as procurement rules, fund-use restrictions, and environmental clearances, also impede the timely implementation of local action (Bajpai et al. 2024).

In India, while national and international climate finance flows have increased in recent years, only a small fraction reaches community-level institutions, such as gram panchayats, SHGs, and forest user groups. Given that the climate impacts are localised, it is critical for the local institutions, such as PRIs, to play a central role in planning and implementing climate action. However, their involvement has remained limited, particularly in the preparation of state action plans on climate change (SAPCCs), where planning processes are highly centralised (Sharma et al. 2015). Funds disbursed under SAPCCs often serve predetermined state-level goals, leaving limited flexibility to respond to local circumstances. As a result, local institutions have limited autonomy and discretion in accessing finance for climate action. Although India has submitted project proposals over the years to multilateral agencies to mobilise climate finance, approval and funding decisions rest with the boards or CEOs of these agencies, who may not always be familiar with the country's local climate vulnerabilities. Moreover, economically vulnerable communities often lack the technical capacity to submit project proposals and navigate complex procedures (Sharma et al. 2015). This combination of centralised decision-making and lack of capacity contributes significantly to the limited disbursement of climate finance at the local level.

In terms of devolved authority and finance, only a limited subset of schemes and programmes demonstrates substantive transfer of fiscal control and decision-making power to local institutions. Schemes such as the ABY, the watershed development components of the PMKSY, and the NRLM provide block grants or revolving funds that are planned and managed by gram panchayats, SHG federations, or hill development authorities (MoJS 2023; MoAFW 2023a, 2025b; MoRD 2025). These mechanisms allow a degree of local discretion over resource allocation, which is essential to the LLCA principle of subsidiarity. However, these are notable exceptions. The majority of programmes, such as the *Jal Jeevan Mission*, *Namami Gange*, and *AMRUT*, create decentralised implementation structures but retain financial authority at higher levels, leaving local bodies acting as implementers rather than decision-makers (NMCG 2016; MoJS 2019; MoHUA 2021).

Several flagship agricultural programmes, including the PMFBY, PM-KISAN, *Rashtriya Krishi Vikas Yojana*, the *Mission for Integrated Development of Horticulture*, the *National Livestock Mission*, and the *Pradhan Mantri Matsya Sampada Yojana*, disburse subsidies or benefits directly to individual farmers (MoFAHD 2020; MoAFW n.d., 2020; MoFAHD 2021). However, these schemes operate primarily as beneficiary-driven models and do not provide community institutions with financial autonomy or participatory budgeting authority.

Disaster- and health-related schemes such as the *National Cyclone Risk Mitigation Project*, *Aapda Mitra*, the *National Vector Borne Disease Control Programme*, and the *National Coastal Mission* follow centralised protocols with minimal scope for local adaptation or control over resources (MoHA 2015; NDMA 2015, 2025a, 2025b; Bhandodkar et al. 2023).

In addition:

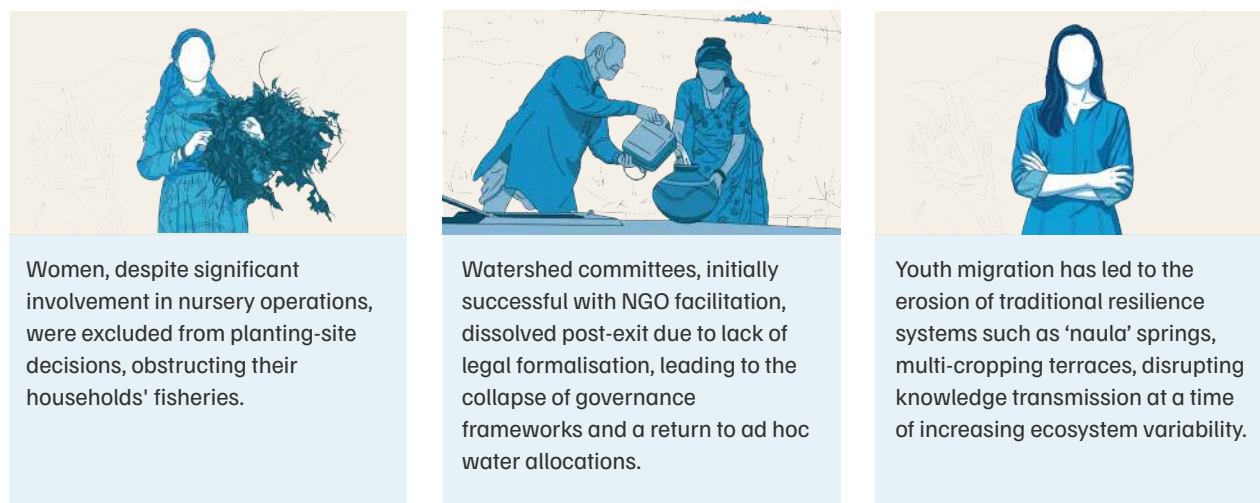
- Private and philanthropic funding remains marginal (<0.5 per cent of domestic charitable flows) and is often short-term, reinforcing project-based approaches (Madan et al. 2022; Sheth et al. 2024).
- Experiences from the Sundarbans show how institutions such as women's SHGs struggle to access credit due to risk-averse banking systems (Biswas and Nautiyal 2020; Dasgupta et al. 2025).
- Lack of capacity-building of communities and institutions at the local level increases their dependence on NGO support, which is often neither predictable nor responsive to accelerating local needs (Singh et al. 2017).

Therefore, without predictable, flexible, and devolved financing—and without clearly defined functions for the lowest decision-making committees—LLCA cannot be sustained or scaled. It also risks reinforcing dependence on NGOs or external consultants, thereby undermining community autonomy in the long run.

## 2.2 Challenges associated with inclusion and participation

Participatory planning has become a standard requirement across Indian schemes, from watershed development to disaster management. While participation has moved marginally beyond symbolic engagement, it remains far from substantive, particularly for women, Scheduled Castes and Tribes, and landless groups. These challenges stem from persistent hierarchical capture, digital exclusion, and institutional invisibility. Population pressures, inadequate access to basic services, and administrative neglect further impede the adaptive capacity of vulnerable urban communities, such as slum dwellers, informal-settlement residents, and women, to respond to changing climatic conditions. Sporadic initiatives, such as 'climate saathis' in some major Indian cities, provide useful entry points (MHT 2019). However, despite constitutional mandates for participatory governance under the 73<sup>rd</sup> and 74<sup>th</sup> Constitutional Amendment Acts, women's leadership in climate action remains minimal. Village-level institutions, conversely, often mirror existing power hierarchies. Women may be active in implementation (e.g., nursery operations in Andhra Pradesh) but are excluded from decision-making forums.

Figure 4. Examples of social and governance challenges in operationalising local adaptation



Source: Authors' analysis based on Kumari et al. 2021; Jeffery et al. 1998; Samuel et al. 2009; Sati 2021; Rajendra P. Mamgain and Reddy 2025.

#### Key limitations include:

- Absence of legal mandates that allow community institutions to hold or exercise authority
- Lack of third-party facilitation to ensure equitable participation
- Overreliance on informal governance structures, which lack accountability mechanisms

These limitations underscore that participation protocols do not equate to genuine empowerment. When leadership rotates or crises emerge, socially marginalised groups often find themselves without representation or recourse. While schemes such as the NRLM, the *Pradhan Mantri Van Dhan Yojana*, the *Green Skill Development Programme*, and the *National Mission on Agricultural Extension and Technology* integrate targets, representation quotas, and capacity-building measures, their effectiveness varies by state capacity and ground-level execution (TRIFED 2020; MoEFCC 2023; MoAFW 2025a; MoRD 2025b). Several programmes demonstrate intent to align with the LLCA principle of inclusive governance. In the water sector, schemes such as the ABY, *Jal Jeevan Mission*, the NWM, the *Dam Rehabilitation and Improvement Programme*, and the *National River Conservation Plan* establish water user associations and village-level water and sanitation committees (MoJS 2019, 2022, 2023). However, field-level evidence indicates that meaningful inclusion is not always realised in practice. These committees often operate under the influence of local elites and without independent facilitation or mandated transparency mechanisms, leaving marginalised groups excluded from substantive decision-making.

Although forestry and biodiversity programmes provide opportunities for communities to voice their opinions, their influence over decisions, such as site or species selection, remains limited and is often concentrated within formal institutions (IWGIA 2017; ActionAid 2018). Urban sanitation and water supply missions such as *Swachh Bharat* (rural and urban) and AMRUT engage local bodies through ward committees and SHGs. However, sustained community engagement often declines once infrastructure is delivered, as maintenance and monitoring responsibilities are typically centralised (Regmi et al. 2016; Sivadas and Matto 2025).

## 2.3 Challenges associated with climate-informed planning

Local resilience planning requires not only financial and institutional support but also climate information that is accessible, comprehensible, and usable at the community level. Despite the growing availability of national and regional climate data, significant barriers persist in converting this information into formats that are actionable for community actors. Climate-planning processes often rely on top-down technical assessments that overlook local knowledge systems and socio-ecological contexts. As a result, adaptation measures often become misaligned with local priorities or poorly timed for implementation. Climate interventions, therefore, tend to be reactive, designed in response to recent shocks, rather than part of a forward-looking strategy grounded in evidence and iterative learning.

Only a few schemes demonstrate structured and technical approaches to integrating climate data into programme design and implementation. Programmes such as NICRA, the *National Mission for Sustainable Agriculture*, and PM-KUSUM explicitly use agro-meteorological information, crop modelling, and assessments of solar energy potential to guide planning and roll-out (MoA 2014b; Srinivasrao et al. 2016). Water management programmes, including the NWM, ABY, *Namami Gange*, and the *National Plan for Conservation of Aquatic Ecosystems*, employ hydrological assessments, remote-sensing data, and groundwater models to inform investment decisions (MoEFCC 2019; NMCG 2020; Niti Aayog 2020, MoJS 2023). Similarly, AMRUT incorporates service-level benchmarking and climate risk screening to prioritise urban infrastructure investments, while the Smart Meter National Programme and the PAT scheme rely on digital data streams and energy-use analytics to measure and incentivise efficiency improvements (MoHUA 2021).

Despite these advances, several key issues persist:

- **Climate data are not translated into local languages or simplified for SHG/panchayat use.** Several Indian policies and programmes face challenges in making climate data accessible to local actors. Under the NWM, data from river-basin models are rarely translated into local languages for panchayat use. Similarly, scientific data under ABY's groundwater modelling outputs are often presented in technical formats that remain inaccessible to community groups.
- **Co-production of knowledge between communities and scientists is limited.** Local-level peer-learning networks, knowledge hubs, and intergovernmental exchanges remain absent. For instance, while the *National Vector Borne Disease Control Programme* incorporates climate-sensitive disease surveillance, climate risk information is not consistently used to guide frontline health worker responses (Shrikhande et al. 2023).
- **Early warning systems (EWSs) often stop at district headquarters, and the last-mile reach is weak.** Forestry programmes such as GIM and CAMPA reference national forest inventories and carbon-accounting frameworks, yet local implementation units rarely receive site-specific data to inform afforestation decisions (Mehta 2015). Under the *National Cyclone Risk Mitigation Project* and *Aapda Mitra*, EWSs often stop at district headquarters, resulting in inconsistent last-mile dissemination to at-risk households (Dash and Jagirdhar 2022; Punoli and Geethalakshmi 2023).

- **Digital and participatory platforms for interpreting and applying data are limited.** For example, although the *Jal Jeevan Mission* and PMKSY include components on source sustainability and water-use efficiency, gram panchayats often lack access to real-time climate projections or risk assessments for long-term planning (Singh et al. 2019; Kumar 2021). Additionally, the national programme NICRA is currently implemented in only 448 villages nationwide and continues to face challenges in disseminating advisory services, which remain largely analogue, often relying on hand-written notices rather than digital platforms and leading to delays in farmers' decision-making (Pa et al. 2023).
- **Data inconsistencies undermine stakeholder trust.** A granular review across southern India reported dry-spell alert false-alarm rates of up to 81 per cent during the kharif season, reducing local trust and willingness to act (Punnoli and Geethalakshmi 2023). Similarly, in coastal restoration programmes, saplings frequently died after planting in high-salinity zones because hydrodynamic data were either unavailable or ignored (Kaledhonkar et al. 2018).

Challenges associated with climate-informed planning continue to undermine the effectiveness of community-based climate action in India by limiting the relevance, accessibility, and applicability of available climate information at the local level. The challenges hinder the implementation of locally-led interventions that can address climate vulnerabilities. However, several successful cases demonstrate that devolved decision-making, climate risk-informed planning, resource mobilisation, and improved coordination among multiple stakeholders—including community institutions and block- or district-level administrations—have resulted in more effective delivery and implementation of climate action at the local level. A notable example is Nepal's local adaptation plans of action (LAPAs), which adopted a devolved climate-financing approach to address food and water insecurity by improving the management of natural resources, including watershed management, biodiversity conservation, and landscape management. Adaptation actions were prioritised through detailed climate risk mapping at the household, community, and sectoral levels, with risk profiles updated annually. This enabled local community members to make informed decisions and prioritise adaptation actions that addressed their most urgent needs. To broaden resource mobilisation, funds were pooled from both private and public sources, disbursing more than USD 150 million for LAPA implementation. This was facilitated through cross-sector collaboration among different actors, including palikas (rural municipalities), internal sectoral departments, and international and national CBOs involved in the implementation. The success of Nepal's LAPA demonstrates the potential of devolved, locally informed climate planning to drive sustained adaptation outcomes.

Several countries across the Global South have developed scalable mechanisms that align financial flows with local priorities, embed inclusive governance in climate planning, and integrate community knowledge with scientific data to inform adaptation strategies. These experiences offer valuable insights into institutional design, accountability systems, and multi-level coordination that can help bridge implementation gaps in India. The next section presents a curated set of case studies and tested approaches from diverse regional contexts, selected for their alignment with the LLCA design features and their potential applicability to India's policy and governance landscape.



Image: iStock

### 3. Best practices observed across the Global South

Several countries across the Global South have implemented locally grounded climate actions that reflect the three design features of LLCA: subsidiarity in finance, inclusive participation, and climate-informed planning. These initiatives offer practical insights into how community-driven climate action can be scaled and sustained. They also demonstrate how aligning projects with LLCA principles can enhance the effectiveness, relevance, and sustainability of climate action at the local level, while supporting progress towards national adaptation plans (NAPs), NDCs, and other national climate goals. Importantly, many of these countries have pioneered approaches that align with the LLCA framework while tailoring solutions to their socio-ecological contexts. Their experiences serve not only as proof of concept but also as operational models for policy transfer, institutional reform, and financing innovation. As India seeks to strengthen its own community-based climate responses, these international experiences offer valuable insights and tested models to inform the design and scaling of locally driven strategies.

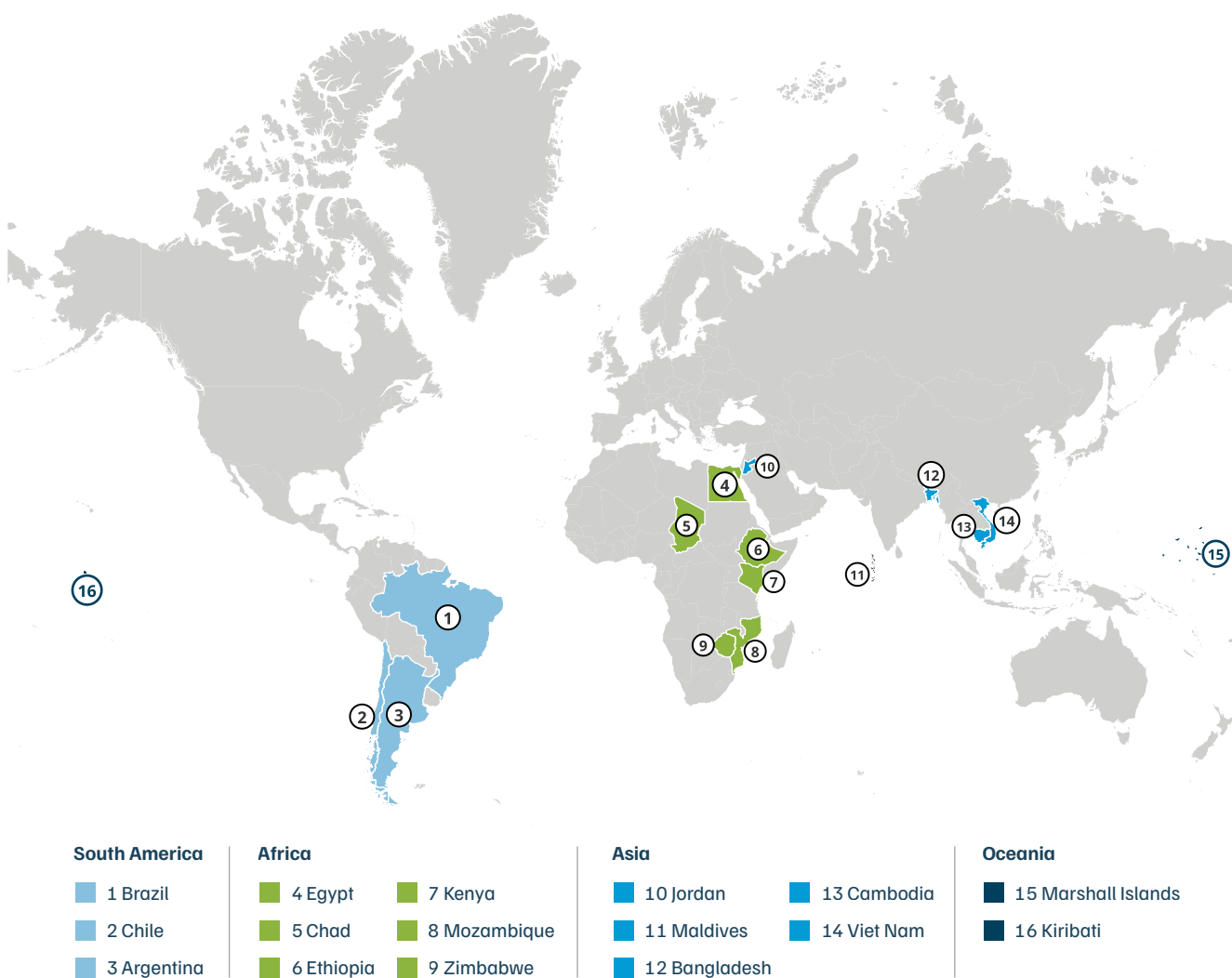
## 3.1 Methodology for case selection

The following criteria guided the selection of case studies:

- 1. Similar climate-vulnerability profiles:** The study focused on Global South countries characterised by similar climate and development profiles to those of India. These include countries with fragile mountain ecosystems (e.g., Nepal, Ethiopia), coastal deltas (e.g., Bangladesh, Viet Nam), and arid lands and urban margins (e.g., Kenya, Egypt). These contexts face similar constraints in institutional capacity, financing, and social inclusion. The prevalence of shared climate challenges, such as droughts, flooding, salinisation, land degradation, and crop failure, further underscores the relevance of these examples for India.
- 2. Availability of secondary data sources:** Best practices were identified through an extensive review of established databases and documentation platforms archiving climate action initiatives. Sources included official portals of Ministries of Environment in selected countries and project databases maintained by multilateral institutions, such as the GCF, the Global Environment Facility (GEF), the Adaptation Fund, the World Bank, the Asian Development Bank (ADB), and other international and regional development banks. These multilateral institutions were selected for their comprehensive documentation of climate finance initiatives and their credibility with national governments, grounded in fiduciary relationships in which national authorities serve as stakeholders or shareholders.
- 3. Alignment with the LLCA design features:** A total of 75 LLCA-aligned initiatives across the Global South (Africa, Asia, Latin America) were reviewed. Indicators based on the eight principles of LLA were developed to identify and map alignment with LLCA design features. Some of these indicators included the presence of devolved decision-making processes at the local level, the involvement of actors from marginalised sections in the planning and implementation of adaptation measures, access to patient and predictable sources of finance to sustain interventions, and the existence of feedback loop mechanisms to support the effective maintenance of the intervention, etc. The assessment examined the outcomes and benefits delivered by these projects, including improvements in resilience, adaptive capacity, and local-level institutional ownership. During the process, best practices were identified in each of the 16 countries, for which five projects in each country were reviewed.

Figure 3 presents the countries selected for analysis. One project per country (across 16 countries) was analysed in depth, with the larger list of projects and best practices included in Annexure B. Projects implemented over the past two decades (2005–25) and still ongoing were prioritised to ensure contemporary relevance. Additional preference was given to projects with at least five years of financing, enabling a meaningful assessment of the benefits derived from implemented climate action, given sustained financing and established monitoring systems. Projects that integrated traditional knowledge with scientific development and fostered collaboration among international, national, and sub-national actors were also given due preference.

Figure 5. Case study countries that have implemented climate actions at the local level



Source: Authors' analysis

## 3.2 Scope and limitations of the research

While the review covers a wide range of Global South contexts, it is constrained by its reliance on publicly available documentation, which may underrepresent relevant programmes and projects without accessible records. Key information, such as funding amounts, channels of financial dispersal to local communities, and the degree of consent or contractual engagement with affected populations, is often missing from available documents. Only project-proposal documents and periodic project-evaluation reports could be reviewed to evaluate implementation processes and qualitative and quantitative outcomes. Absence of social audits and limited access to annual progress reports for ongoing projects further restricted a comprehensive assessment.

The scope was also limited to five projects per country to ensure representation across diverse bio-geographies, hazard profiles, and extreme weather events, such as cyclones, droughts, and floods. Many initiatives are still ongoing, making it challenging to evaluate the long-term effectiveness or success of implementation activities. The study is further constrained by the lack of validation and on-the-ground evaluation.

Considering these limitations, contextualisation of insights for India was essential. By capturing the dynamic nuances of local governance systems, socio-cultural dynamics, and climate-specific risks, the study seeks to identify pathways for operationalising locally-led climate action across India and diverse regions of the Global South.

### 3.3 Summary of selected case studies

The following pages present summaries of 16 community-based climate actions (CBCAs) from across the Global South that are driven by community to increase resilience from climate events and shocks. Each case illustrates how community driven climate action can be designed and implemented in diverse ecological, cultural, and governance contexts, and the extent to which these efforts align with the LLCA design features. These summaries are structured to showcase each project's core objectives, implementing agencies, LLCA-aligned design features, and key takeaways. Although the cases were initially identified through a CBA lens, these were subsequently evaluated against a comprehensive set of indicators under the eight LLA principles, aligning with the three LLCA design features. It aims to assess how the framework, departing from the benefit-centric approach of CBA, devolves more agency and ownership to communities in planning and implementing climate solutions.



*Stilt fishermen practice community-managed fishing that reduces pressure on coral reefs and helps prevent overfishing.*



## Sustainable management of arid and semi-arid ecosystems to combat desertification in Patagonia

### ARGENTINA

**Period of implementation:** 2007–16

**Project finance:** USD 32.2 million

**Implementation agency:** UNDP

**Targeted climate-vulnerable groups:** Agro-pastoralist communities and livestock breeders

#### **Objective of the CBCA**

The project aims to combat desertification in the Patagonia region by promoting sustainable land-use practices that restore ecosystem stability, functionality, and resilience. Its primary goal is to eliminate capacity-related barriers that hinder the effective implementation of sustainable land management (SLM) across the region.

#### **Challenges identified**

Patagonia faces widespread land degradation driven by overgrazing and other human pressures, which have depleted its diverse grasslands and undermined rural employment for livestock breeders.

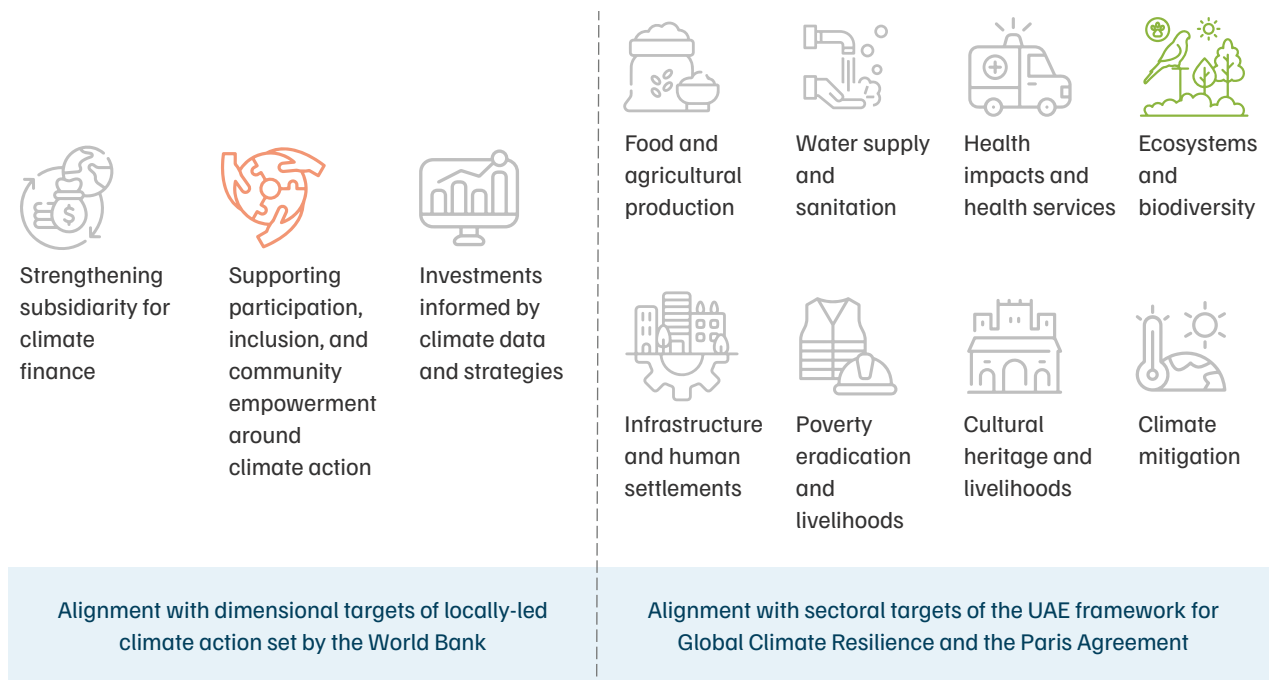
#### **How does the CBCA address these challenges?**

To combat these interconnected environmental and social challenges, the project employs a community-driven approach that strengthens local cooperatives and organisational structures, while promoting participatory extension systems for SLM. It provides technology transfer and training to small-scale breeders to reduce land degradation and conserve ecosystems in the region. The project also includes direct action at the local level to complement the ongoing *Sustainable Sheep Husbandry Development Programme*, enhancing its effectiveness restoring degraded landscapes and protecting ecological integrity.

#### **Benefits provided by the CBCA**

The project delivers ecosystem restoration and biodiversity conservation benefits while contributing to poverty eradication, livelihood generation, and the preservation of cultural heritage.

Figure 6. Argentina - Alignment of the project with the World Bank’s LLCA dimensions and the UAE framework for Global Climate Resilience



Source: Authors' analysis

**Key activities enabling the implementation of the project**

- Building awareness and mobilising community to strengthen understanding of land-degradation issues and SLM practices.
- Conducting capacity assessments and training local leaders and promoters to strengthen local organisations that enable small breeders to access programmes, inputs, and information otherwise out of reach for individuals.
- Establishing financial incentives, such as subsidies and promotional interest rates linked to technology management enterprise performance implementation, to encourage adoption of the intervention.

### Box 3. Argentina - Best practices of project aligning with design features of LLCA

#### Utilises different forms of knowledge that come from local actors

The project involves reviews by anthropologists and rural sociologists to understand the extent and degree of local and traditional knowledge used by the communities to manage arid and semi-arid rangelands.

#### Builds community capabilities for ownership and informed decision-making

The project strengthens community ownership and decision-making by improving small breeders' access to information and programmes through investments in social capital. It engages larger breeders' associations to expand the use of technology management enterprise and build technical capacity.



*An agro-pastoralist managing livestock grazing to reduce land degradation across arid rangelands.*

Source: Authors' analysis of project documents from Global Environment Facility.

#### Alignment with Argentina's national goals

The project advances Argentina's NDC, NAP, and National Biodiversity Strategies and Action Plans (NBSAP) commitments by restoring degraded land in Patagonia through improved grazing practices, early warning tools, and farmer support. It unites national and local actors to promote sustainable farming, reduce emissions, and safeguard ecosystems and livelihoods in regions most affected by desertification.



## Enhancing the adaptive capacities of coastal communities, especially women, to cope with climate change-induced salinity

### BANGLADESH

**Period of implementation:** 2015–26

**Project finance:** USD 33 million

**Implementation agency:** Ministry of Women and Children's Affairs

**Targeted climate-vulnerable groups:** Women and agricultural communities

#### **Objective of the CBCA**

The project aims to ensure water security, strengthen institutional capacity, and build enhanced adaptive capacity for climate-resilient agricultural livelihoods, with a specific focus on women.

#### **Challenges identified**

Climate change-induced salinity continually threatens the livelihoods of coastal agricultural communities and exacerbates the scarcity of potable water.

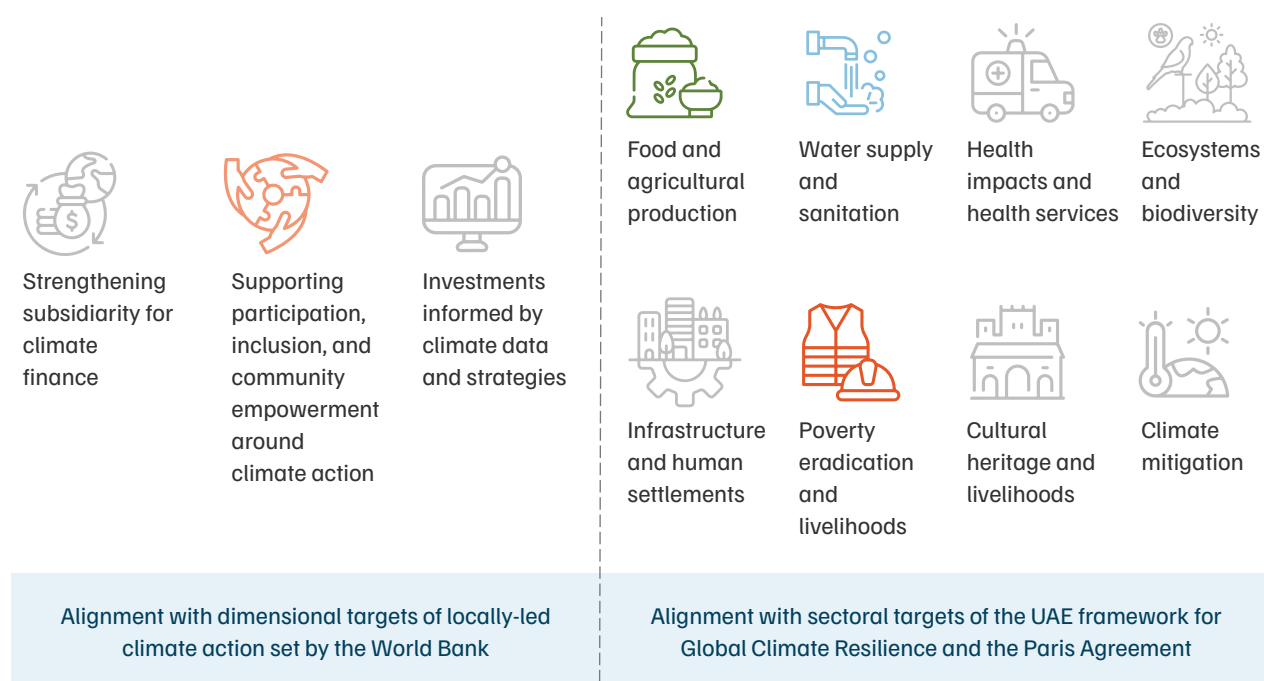
#### **How does the CBCA address these challenges?**

The project enables climate risk-informed management by strengthening local women-led institutions, including women's livelihood groups and water user groups, through ward- and union-level community consultation. It promotes evidence-based learning through participatory assessment of adaptive capacity, the integration of traditional knowledge and technologies such as aquaponics, hydroponics, and traditional saline-tolerant plant varieties, and pond-based solutions. The initiative also identifies and maps potential resilient livelihood strategies and drinking-water sources at household and community levels, helping institutionalise knowledge dissemination and build long-term capacity.

#### **Benefits provided by the CBCA**

The project enhances access to safe drinking water and sanitation while improving food security and climate-resilient agricultural production.

Figure 7. Bangladesh - Alignment of the project with the World Bank’s LLCA dimensions and the UAE framework for Global Climate Resilience



Source: Authors' analysis

### Key activities enabling the implementation of the project

- Conducting community consultations across 39 unions and 5 upazilas in Khulna and Satkhira, at both the ward and union level, to identify potential climate-resilient livelihood options and map potential climate-resilient drinking-water sources at both household and community levels.
- Conducting capacity-building workshops on climate risk–reduction strategies for women volunteer groups.
- Establishing 39 social audit committees to support participatory monitoring of resilient livelihoods.

## Box 4. Bangladesh - Best practices of project aligning with design features of LLCA

### Enables the collaboration of multiple agencies and organisations for project implementation

Gender mainstreaming in this project is both gender-responsive and gender-transformative. It addresses gendered climate resilience across the household, community, and institutional levels.

### Integrates modern science and with indigenous knowledge systems

There will be 20–25 representatives across ministries, banking and financial institutions, and relevant local unions, along with facilitating NGOs.



*Women farmers drying harvested rice to ensure food security and post-harvest resilience.*

*Source: Authors' analysis of project documents from Green Climate Fund.*

### Alignment with Bangladesh's national goals

Activities such as community consultation and gender-mainstreaming initiatives under the project support Bangladesh in achieving participatory water management and climate-smart agriculture, helping build disaster preparedness and resilient communities as outlined in its NAP.



## Effective conservation and sustainable use of mangrove ecosystems

### BRAZIL

**Period of implementation:** 2009–17

**Project finance:** USD 20.8 million

**Implementation agencies:** UNDP, Ministry of Environment, Instituto Chico Mendes de Conservação da Biodiversidade (ICMBIO), Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA), and state and municipal environmental agencies

**Identified climate-vulnerable groups:** Coastal communities

#### Objective of the CBCA

The project aims to conserve and sustainably use Brazil's mangrove ecosystems, protecting globally significant biodiversity and strengthening coastal resilience to climate change. It achieves this by developing protected-area management tools and building the capacity of traditional and marginalised coastal communities.

#### Challenges identified

Brazil's mangroves face severe loss and fragmentation due to habitat degradation, pollution, and overexploitation, threatening biodiversity, ecosystem services, and local livelihoods.

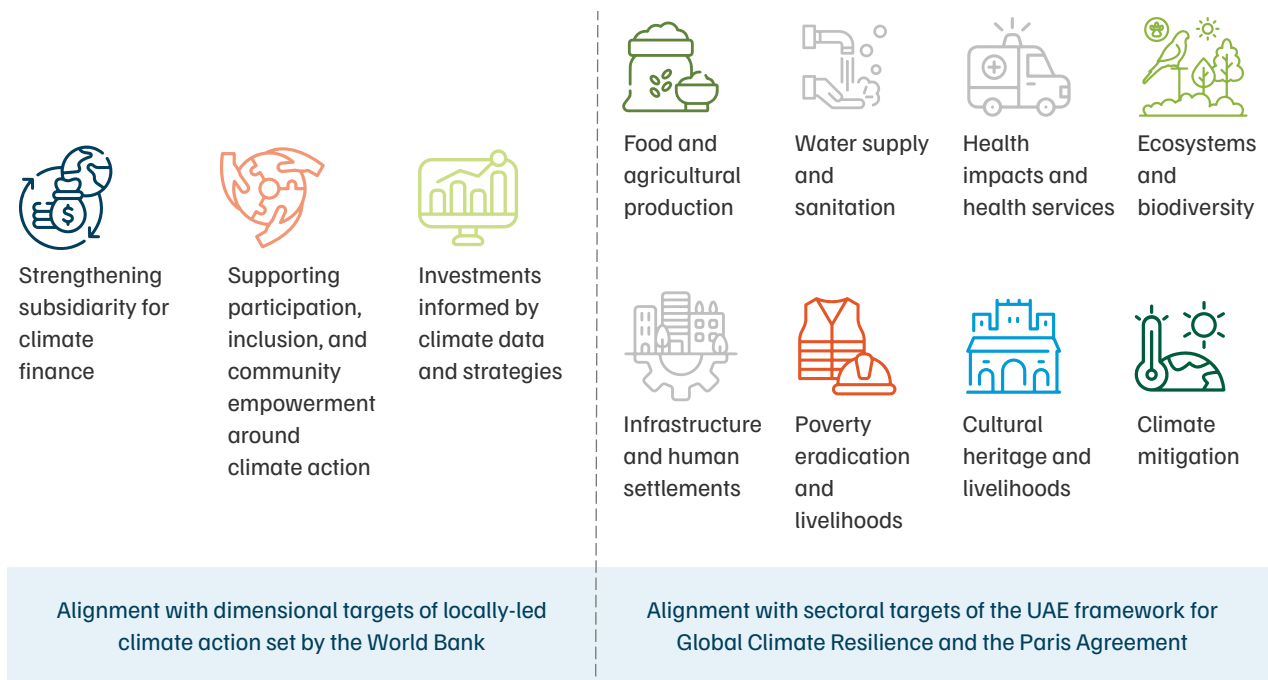
#### How does the CBCA address these challenges?

To conserve and sustainably use Brazilian mangroves, the project directly supports 5,68,000 ha of globally significant mangroves that play a significant role in global biodiversity, carbon storage, and other ecosystem services. It builds coastal resilience to climate change through the creation of protected-area management systems and the capacity-building of traditional and marginalised coastal communities. It promotes community participation through Unidade de Conservação (UC) councils to ensure equitable benefit-sharing and sustainable mangrove use, while also facilitating sustainable economic alternatives.

#### Benefits provided by the CBCA

The project enhances food and agricultural production, conserves ecosystems and biodiversity, supports poverty eradication and livelihood security, protects cultural heritage, and contributes to climate mitigation.

Figure 8. Brazil - Alignment of the project with the World Bank’s LLCA dimensions and the UAE framework for Global Climate Resilience



Source: Authors' analysis

**Key activities enabling the implementation of the project**

- Integrating scientific monitoring with indigenous and community knowledge to assess and validate the recovery and stability of vulnerable, economically important species.
- Identifying community experts to serve as information sharers and advisors to the project team.
- Implementing a participatory monitoring and evaluation (M&E) system to support adaptive management, capture lessons learnt, gather stakeholder feedback, and inform decision-making and replication.

## Box 5. Brazil - Best practices of project aligning with design features of LLCA

### Engages local actors in decision-making

The project supports community-led decisions through community representation in the project steering committee, conservation units, and extractive reserves.

### Builds community capabilities for ownership and informed decisions

The project provides training on finance, governance, and alternative livelihoods through partnerships with multiple stakeholders, empowering communities in protected areas.



*A small-scale fisher navigating the Jaguaripe River in a community-led mangrove and coastal ecosystem.*

Source: Authors' analysis of project documents from Global Environment Facility.

### Alignment with Brazil's national goals

The project supports Brazil's NBSAP and helps meet various targets by strengthening the protection of coastal and marine ecosystems.



## Reducing the Vulnerability of Cambodian Rural Livelihoods through Enhanced Sub-National Climate Change Planning and Execution of Priority Actions

### CAMBODIA

**Period of implementation:** 2015–20

**Project finance:** USD 4.9 million

**Implementation agencies:** Ministry of Environment, National Council for Sustainable Development, UNDP

**Identified climate-vulnerable groups:** Landless, small landholders, and female-headed households

#### Objective of the CBCA

The project aims to strengthen sub-national administrative systems to support rural livelihoods affected by climate change through climate-sensitive planning, budgeting, and execution, thereby enhancing community, asset, and household resilience to climate change.

#### Challenges identified

Disrupted monsoonal cycles have exacerbated the vulnerability of landless and marginal farmers, especially women, further weakening already fragile rural livelihood security.

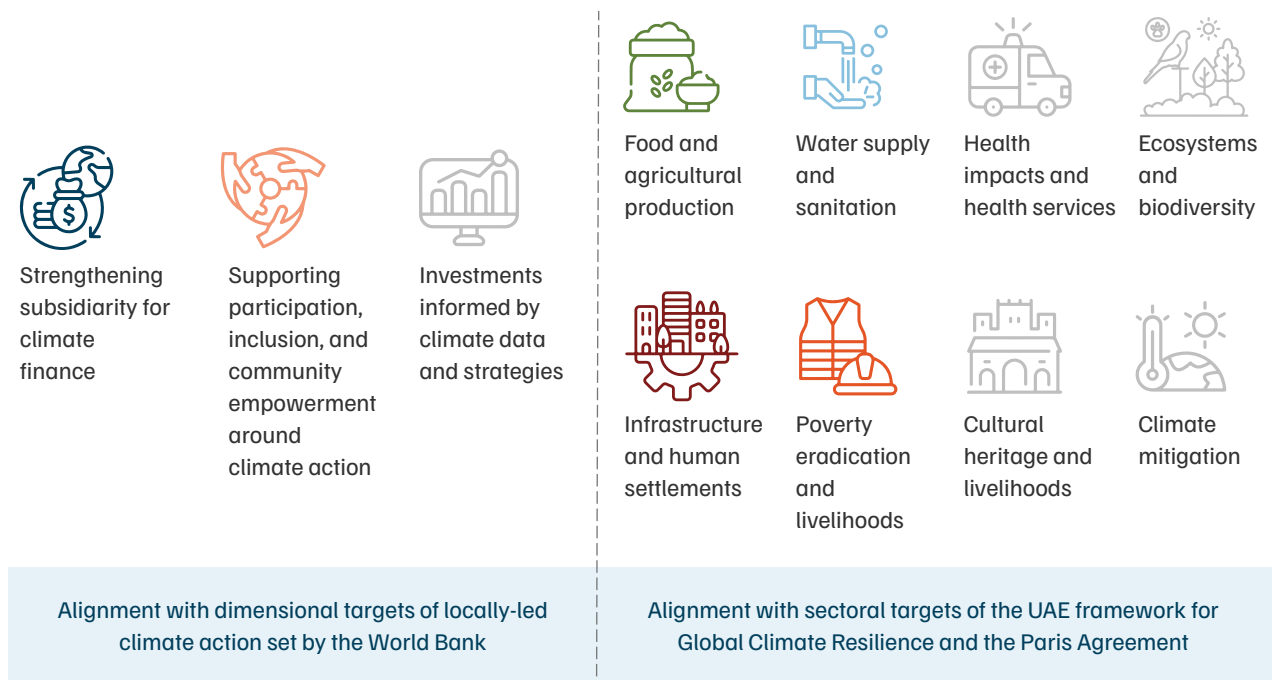
#### How does the CBCA address these challenges?

To alleviate the vulnerability of Cambodian rural livelihoods, priority actions such as small-scale water management infrastructure, climate-resilient agricultural practices, and capacity-building interventions were implemented to support vulnerable groups, including landless women and smallholders practising rainfed agriculture. Innovative conditional-financing mechanisms, such as participatory performance assessments, were used to monitor capacities, improve ownership, and raise awareness. These interventions enabled the participation of 6,745 households, with women accounting for 66.5 per cent of participants.

#### Benefits provided by the CBCA

The project provides benefits across food and agricultural production, ecosystems and biodiversity conservation, poverty reduction and livelihood security, protection of cultural heritage, and climate-mitigation outcomes.

Figure 9. Cambodia - Alignment of the project with the World Bank’s LLCA dimensions and the UAE framework for Global Climate Resilience



Source: Authors' analysis

**Key activities enabling the implementation of the project**

- Installing small-scale resilient water infrastructure systems, supported by the performance based climate resilience grant mechanism.
- Building technical capacity for agricultural extension officers and livelihood service providers to enhance climate-resilient livelihoods and support local communities through workshops on beneficiary selection and climate-resilient agricultural extension packages.

## Box 6. Cambodia - Best practices of project aligning with design features of LLCA

### Addresses structural inequalities faced by vulnerable groups

The project identifies districts with the largest numbers of landless women and farmers practising rain-fed agriculture and prioritises them for implementing climate-resilient livelihood measures.

### Integrates modern science and with indigenous knowledge systems

Participatory GIS-based vulnerability mapping combines scientific data with communities' lived experiences and disaster histories to guide context-specific, evidence-based local adaptation planning.



*Farmers work collectively in a rice field based on locally informed water and crop management practices to enhance agricultural resilience.*

Source: Authors' analysis of project documents from UNDP Cambodia.

### Alignment with Cambodia's national goals

The project *Reducing the Vulnerability of Cambodian Rural Livelihoods through Enhanced Sub-National Climate Change Planning and Execution of Priority Actions* incorporates local engagement, participatory performance assessments, and the active inclusion of local knowledge to mainstream climate change planning and management at the sub-national and local level, as outlined in its NAP.



## Programme for Integrated Development and Adaptation to Climate Change in the Niger Basin (PIDACC/NB)

### CHAD

**Period of implementation:** 2022–ongoing

**Project finance:** USD 2.09 million

**Implementation agencies:** African Development Bank, Executive Secretary of the Niger Basin Authority, and ministers in charge of water resources of the nine countries

**Targeted climate-vulnerable groups:** Rural population of the Niger River basin

#### **Objective of the CBCA**

This project aims to undertake a series of integrated and comprehensive actions to reduce silting in the Niger River, improve natural resource management, and strengthen the population's ability to adapt to climate change. It also includes mitigation activities, including those related to forestry and land use.

#### **Challenges identified**

Communities in the Niger Basin face high population growth, land degradation, resource-use pressures, shifting rainfall patterns, increasingly frequent and intense droughts, and conflicts over natural resources. These challenges have weakened community resilience, disrupted livelihoods, and contributed to famine and high mortality rates.

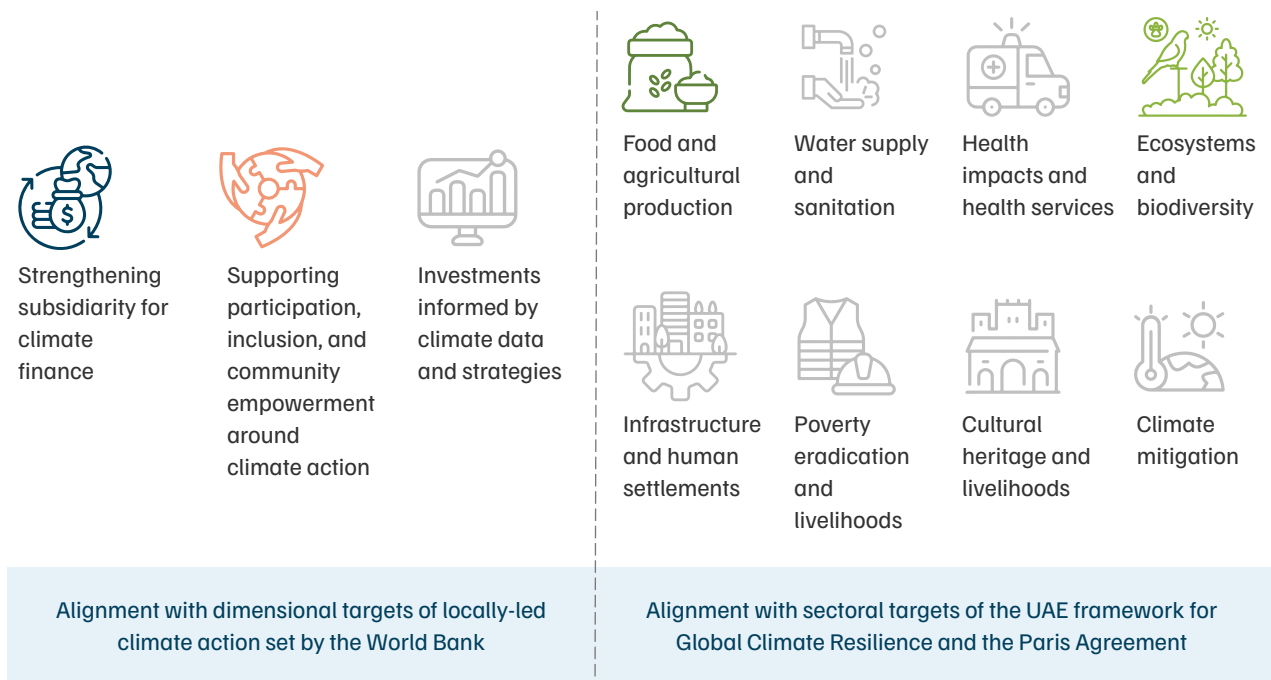
#### **How does the CBCA address these challenges?**

The project supports integrated development and climate change adaptation planning in the Niger Basin through initiatives such as developing innovative information products, training 30,000 producers in EWSs, creating water points for livestock, and documenting indigenous climate knowledge. These interventions localise climate information and improve access for vulnerable communities. In addition, prioritising women's participation and representation in committees and planning processes has been instrumental to inclusive decision-making and budgeting, thereby improving livelihoods and resilience.

#### **Benefits provided by the CBCA**

The project enhances ecosystem and biodiversity conservation in the Niger River Basin while strengthening EWSs and supporting climate change mitigation.

Figure 10. Chad - Alignment of the project with the World Bank’s LLCA dimensions and the UAE framework for Global Climate Resilience



Source: Authors' analysis

**Key activities enabling the implementation of the project**

- Alignment of the project with the World Bank’s LLCA dimensions and the UAE framework for Global Climate Resilience.
- Conducting gender-sensitive consultations with end-users to provide climate information tailored to the specific needs of decision-makers and local communities.

## Box 7. Chad - Best practices of project aligning with design features of LLCA

### **Supports vulnerable groups in practicing their rights and accessing or owning resources**

The project supports gender-sensitive budgeting in local administrations to institutionalise equity in resource allocation. Gender Action Plans promote women's representation in community action committees, planning, improves access to land and other initiatives.

### **Builds leadership along with technical and other capabilities to enable communities to take ownership**

The project will develop a toolkit for disseminating early warnings, including a gender-based analysis of national and local media to deliver weather and climate alerts. Subsequently, the project will provide climate information tailored to local communities' needs.



*Community members inspecting vegetable crops along fertile riverbanks to address drought risk in arid regions.*

Source: Authors' analysis of project documents from Green Climate Fund.

### **Alignment with Chad's national goals**

The PIDACC/NB emphasises the importance of increasing access to land resources for vulnerable groups, particularly women, and of building community capacity for climate services, such as early warning dissemination tailored to local needs, as outlined in the country's NAP.



## Biodiversity conservation in Altos de Cantillana

### CHILE

**Period of implementation:** 2005–13

**Project finance:** USD 2.09 million

**Implementation agencies:** UNDP, Comisión Nacional del Medio Ambiente Región Metropolitana (CONAMA RM)

**Targeted climate-vulnerable groups:** Local landowners and communities

#### Objective of the CBCA

The project aims to conserve the globally significant biodiversity of the Altos de Cantillana massif and the Aculeo Lagoon Basin by establishing a public–private partnership to conserve and co-manage private lands, serving as a replicable model for Chile’s National System of Protected Areas (NSPAs).

#### Challenges identified

The Altos de Cantillana region, a Mediterranean biodiversity hotspot, faces conservation threats on entirely private lands, where traditional protected-area approaches are inadequate.

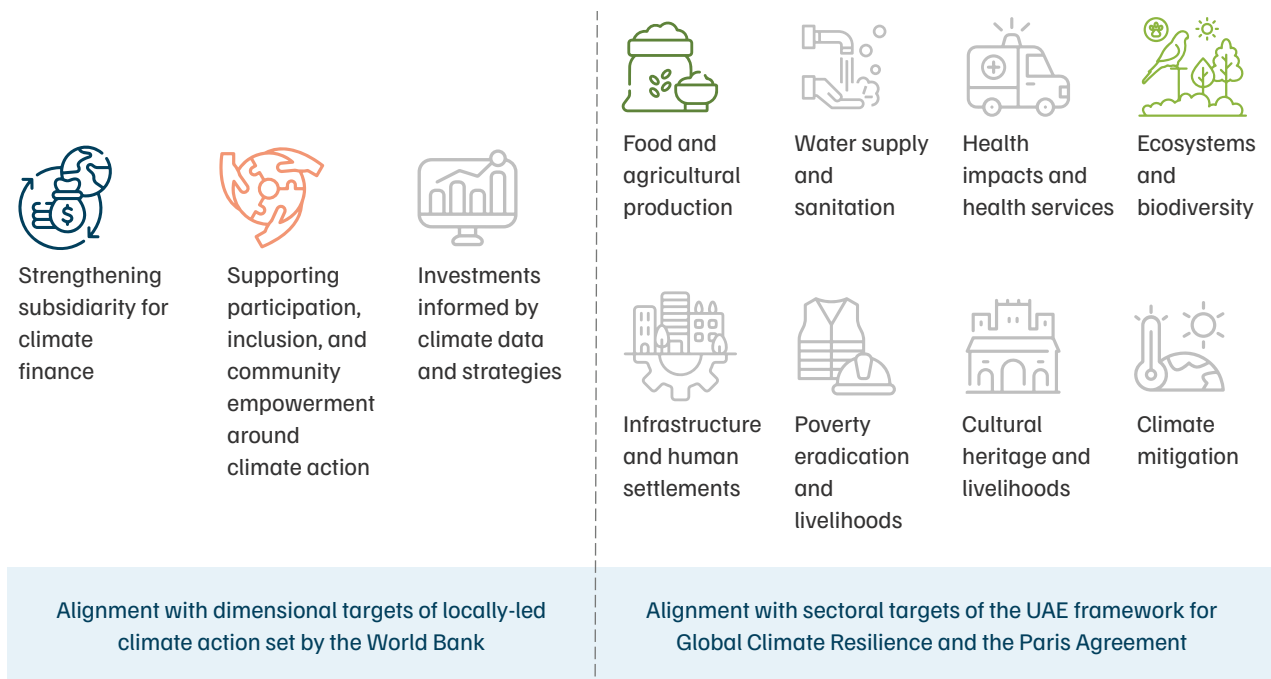
#### How does the CBCA address these challenges?

The project establishes a community-led public–private partnership model, training local landowners and communities in sustainable forest management while developing environmentally friendly economic alternatives to reduce illegal harvesting of flora and fauna. Key interventions include capacity-building for vulnerable small landowners, creation of sustainable income opportunities, and partnership-building among government agencies, NGOs, and communities, resulting in a replicable conservation model that balances biodiversity protection with local economic needs.

#### Benefits provided by the CBCA

The project provides supports ecosystem and biodiversity restoration, contributes to poverty eradication and livelihood security, safeguards cultural heritage, and delivers climate-mitigation benefits.

Figure 11. Chile - Alignment of the project with the World Bank’s LLCA dimensions and the UAE framework for Global Climate Resilience



Source: Authors' analysis

**Key activities enabling the implementation of the project**

- Identifying communities facing natural resource threats and developing locally appropriate sustainable alternatives and technologies tailored to their conditions.
- Collaborating with local institutions, such as the National Forest Corporation, alongside government agencies, local landowners, local communities, and industry, to support management plans and integrated forest management across the area.

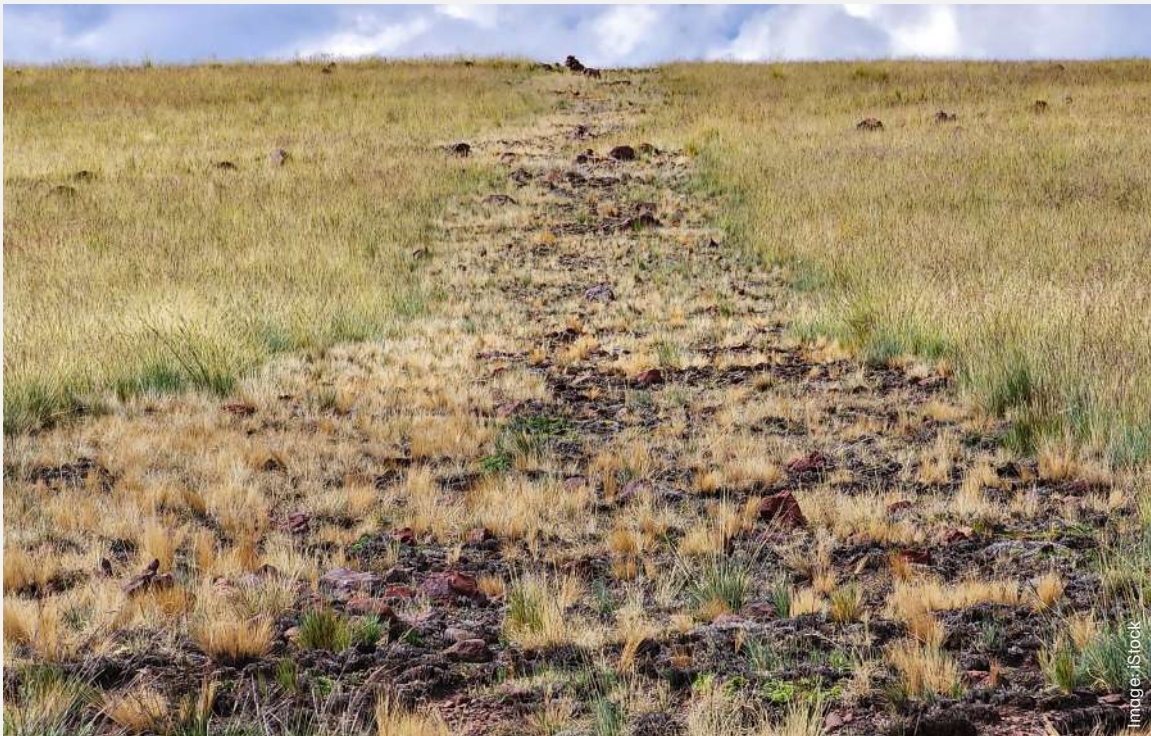
## Box 8. Chile - Best practices of project aligning with design features of LLCA

### **Includes vulnerable groups within local actors to support decision-making**

Landowners and leaders are trained in project management, while agencies build partnerships to ensure community input in planning and enforcement.

### **Ensures that local actors are involved in M&E systems**

The project trains landowners and leaders to plan and monitor initiatives, ensuring local participation, accountability, and ownership in M&E efforts.



*Fire prevention measures adopted in natural pastures to manage wildfire risk.*

*Source: Authors' analysis of project documents from Global Environment Facility.*

### **Alignment with Chile's national goals**

The project aligns with the country's NDCs and NBSAP by restoring forests and reforestation across 1,00,000 ha, helping sequester up to 144 million tonnes of CO<sub>2</sub> over 20 years, conserving biodiversity across 4 threatened ecoregions, restoring native habitats, creating biological corridors, and integrating biodiversity into land-use planning while supporting sustainable farming and forestry, improving local governance, and addressing desertification.



## Building Resilient Food Security Systems to Benefit the Southern Egypt Region – Phase 2

### EGYPT

**Period of implementation:** 2020–25

**Project finance:** USD 3.09 million

**Implementation agency:** Ministry of Agriculture and Land Reclamation

**Targeted climate-vulnerable groups:** Smallholder farming communities, women and adolescent girls, and marginalised groups (youth, the elderly, and the disabled)

#### **Objective of the CBCA**

The project aims to strengthen the resilience of farming communities in Southern Egypt against climate change and variability, thereby reducing risks to food security.

#### **Challenges identified**

The challenges addressed in this project are both climatic and socio-economic, where rising temperatures, extreme weather, water scarcity, and land degradation are reducing crop and livestock productivity and threatening food security. Concurrently, widespread poverty, limited access to finance and knowledge—especially for women—gender inequalities, and weak local institutions restrict the ability of communities to adapt and sustain resilience measures.

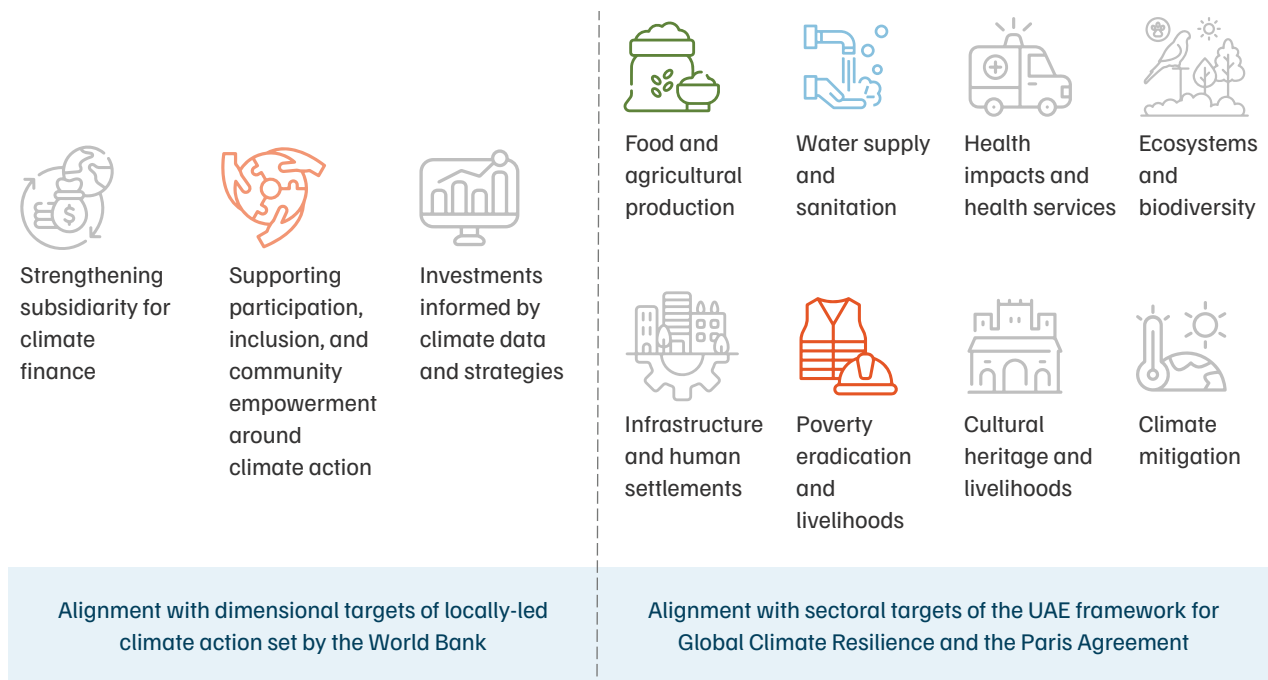
#### **How does the CBCA address these challenges?**

To increase the adaptive capacity of vulnerable communities, the project builds resilient food-security systems by increasing the productivity of staple crops, diversifying production, improving water resource management, and reducing losses based on an EWS. The established climate information centres and EWS platforms provide timely information on climate impacts and connect farmers to technical expertise, enabling widespread dissemination of information through TV and radio, thereby improving the uptake and adoption of different measures.

#### **Benefits provided by the CBCA**

The project enhances ecosystems and biodiversity, supports poverty eradication, and strengthens food and agricultural production and livelihood security.

Figure 12. Egypt - Alignment of the project with the World Bank’s LLCA dimensions and the UAE framework for Global Climate Resilience



Source: Authors' analysis

**Key activities enabling the implementation of the project**

- Establishing climate information centres to deliver timely insights on climate impacts to agriculture, share adaptation techniques and resource materials, and connect farmers and women with technical expertise.
- Disseminating project information through local and national media, as well as through community-based events such as farm visits, demonstration fields, and harvest days, to promote knowledge-sharing and increase visibility of interventions.

## Box 9. Egypt - Best practices of project aligning with design features of LLCA

### **Ensures that feedback mechanisms, social audits, and local actors are part of the project**

Targeted invitations ensured participation of diverse community members. Opportunities and grievance mechanism were publicised in public channels for complaints and feedback.

### **Makes information regarding the details of the solution accessible to local actors**

Information is disseminated through local TV and radio programmes. Farm-to-farm visits, demonstration fields, and commemorative harvest days are celebrated regularly to discuss and share experiences.



*A farmer walking alongside irrigation canals formed in response to rising water scarcity and better agricultural practices.*

Source: Authors' analysis of project documents from Adaptation Fund.

### **Alignment with Egypt's national goals**

Activities such as the establishment of climate information centres and EWSs under the project *Building Resilient Food Security Systems to Benefit the Southern Egypt Region–Phase 2* support Egypt in achieving national targets in agriculture, water resources, and irrigation, as outlined in its updated NDCs.



## Responding to the increasing risk of drought: Building gender-responsive resilience of the most vulnerable communities

### ETHIOPIA

**Period of implementation:** 2019–25

**Project finance:** USD 50 million

**Implementation agencies:** Ministry of Agriculture, Ministry of Finance, Ministry of Water, Irrigation and Energy, regional bureaus and *woreda* offices

**Targeted climate-vulnerable groups:** Women, female-headed households, rural farmers, youth, and poor communities

#### Objective of the CBCA

The project aims to expand water access for domestic use and irrigation, manage natural resources, and strengthen local institutional capacities.

#### Challenges identified

Across Ethiopia's 22 drought-prone districts, rising drought frequency has intensified water scarcity, accelerated land degradation, and reduced agricultural productivity. These impacts heighten the vulnerability of rural communities, especially women and female-headed households, exacerbated by poor water infrastructure and weak institutional capacity for climate-resilient water management.

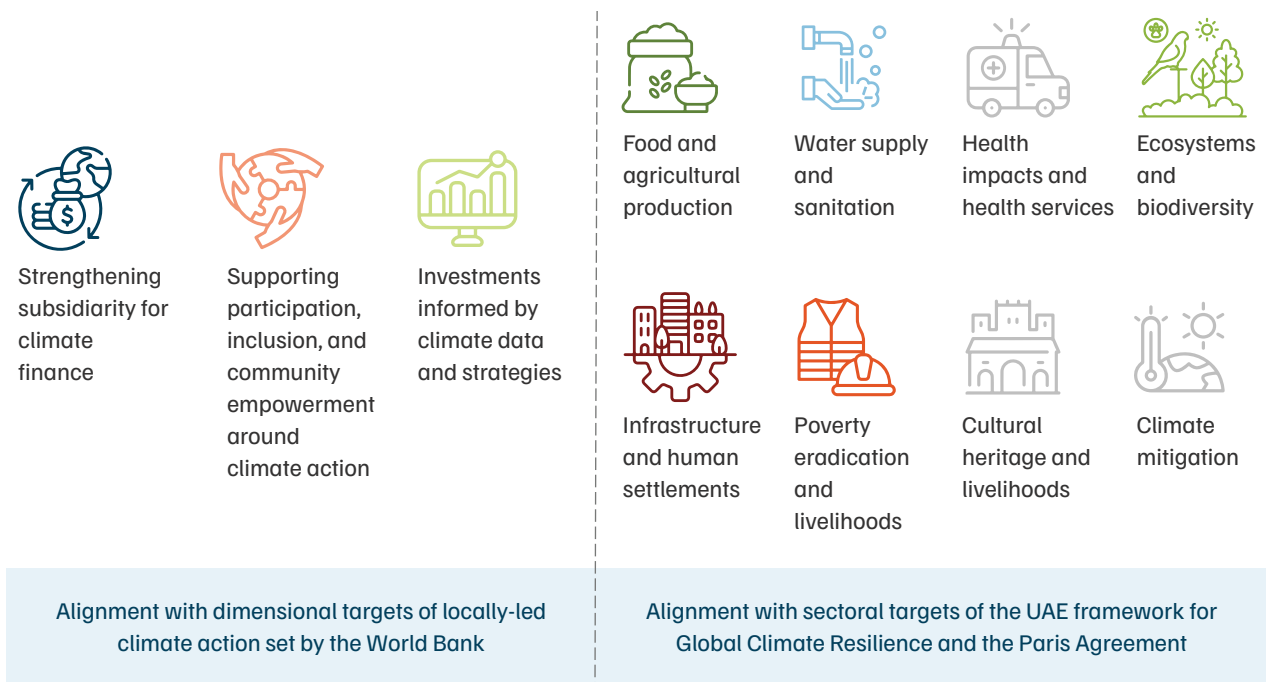
#### How does the CBCA address these challenges?

The project addresses drought and water scarcity in Ethiopia's drought-prone *woredas* through a community-led, bottom-up approach, targeting 3,30,000 beneficiaries through *kebele* implementing committees with 50 per cent women's representation. Key interventions include solar-powered water schemes, small-scale irrigation, and community-led watershed rehabilitation, leveraging women's indigenous knowledge in water management. By empowering over 150 women and building institutional capacity for water resource management, the project enhances resilience for vulnerable populations, including female-headed households.

#### Benefits provided by the CBCA

The project provides targeted benefits on water supply and sanitation, food and agricultural production, ecosystems and biodiversity, infrastructure and human settlements, poverty eradication and livelihoods.

Figure 13. Ethiopia - Alignment of the project with the World Bank’s LLCA dimensions and the UAE framework for Global Climate Resilience



Source: Authors' analysis

**Key activities enabling the implementation of the project**

- Ensuring youth and women’s participation in community decision-making through bylaws that include provisions for monitoring and reporting on gender participation and leadership.
- Establishing irrigation/water user associations to maintain and govern assets such as boreholes and solar water pumping stations installed by community members, thereby instilling a sense of ownership and accountability.

## Box 10. Ethiopia - Best practices of project aligning with design features of LLCA

### Includes vulnerable groups within local actors in decision-making

The project advocated for a minimum of 30 per cent representation of women in all decision-making processes and implementation of activities for gender balance and empowering women.

### Conducts risk assessment studies considering social vulnerabilities

The project undertakes a wide-ranging gender assessment to examine gender-mainstreaming opportunities. The project aims to identify women as leaders and decision-makers through relevant targets and activities.



*Women and girls collecting water from a rain-fed source.*

*Source: Authors' analysis of project documents from Green Climate Fund.*

### Alignment with Ethiopia's national goals

This project supports the Climate Resilient Green Economy Strategy and NDCs by strengthening water supply and management systems and increasing the resilience of rural communities. It improves food security, women's participation, and agricultural productivity, benefiting 3,30,000 direct beneficiaries and 9,90,000 indirect beneficiaries.



## Reduction of methane emissions and utilisation of municipal waste for energy in Amman

### JORDAN

**Period of implementation:** 2019–25

**Project finance:** USD 5.32 million

**Implementation agencies:** UNDP, Government of Jordan through the Ministry of Planning

**Targeted climate-vulnerable groups:** Urban local population of the city of Amman

#### **Objective of the CBCA**

The project aims to reduce greenhouse gas emissions in Amman by addressing barriers to the local utilisation of MSW for methane (CH<sub>4</sub>) production and extraction as a fuel for electric power generation.

#### **Challenges identified**

The Amman–Zarqa region faces a critical waste crisis, with the Russeifa landfill releasing over 40,000 tonnes of methane annually from 0.6 million tonnes of municipal waste. This has led to severe environmental and health hazards due to the open landfill, uncontrolled methane emissions, inadequate waste management systems, and limited knowledge of advanced waste-disposal methods in Amman.

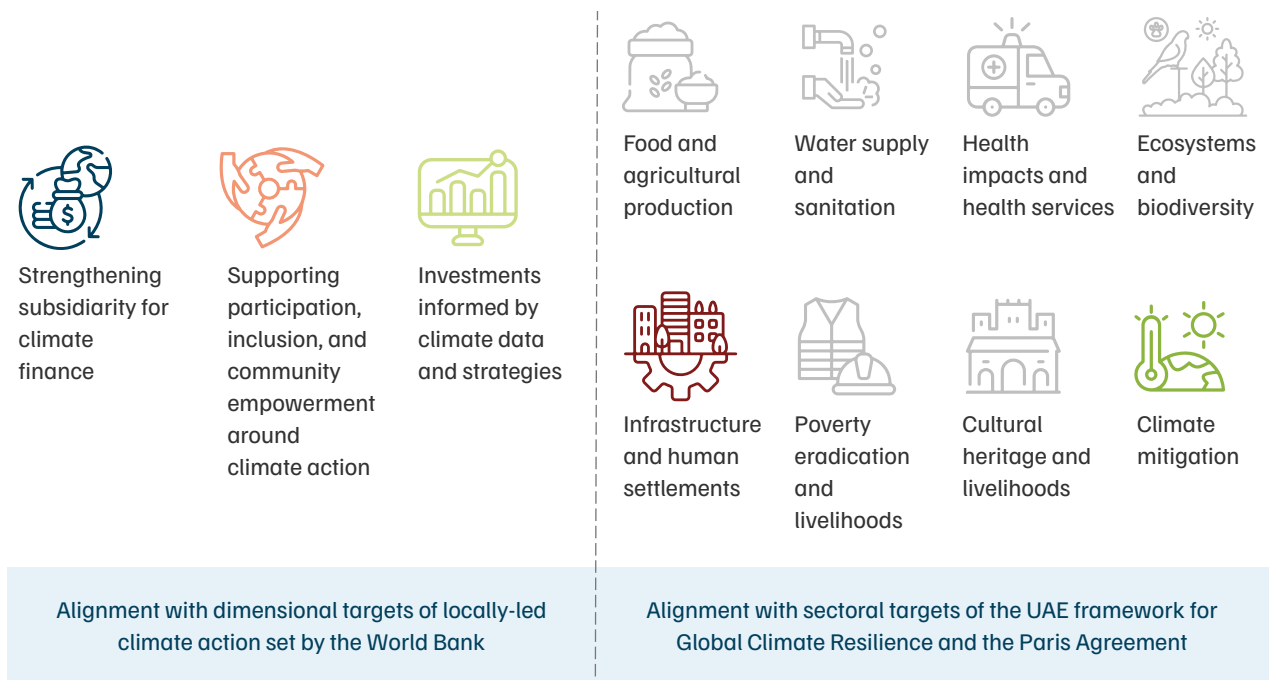
#### **How does the CBCA address these challenges?**

To address environmental and energy security challenges associated with waste management at the Russeifa landfill, a 1-MW biogas power plant was constructed to capture methane for electricity generation. Key activities included community outreach programmes, educational centres, and capacity-building initiatives targeting local communities and women in waste management. The project successfully reduced GHG emissions, generated clean electricity and fertiliser, decreased oil dependency, and empowered vulnerable groups, including local communities and women, through enhanced participation in environmental management.

#### **Benefits provided by the CBCA**

The project provides benefits on infrastructure, human settlements, and climate mitigation.

Figure 14. Jordan - Alignment of the project with the World Bank’s LLCA dimensions and the UAE framework for Global Climate Resilience



Source: Authors' analysis

**Key activities enabling the implementation of the project**

- Conducting community-level awareness efforts on pollution prevention and possibilities for women’s participation.
- Incorporating various feedback mechanisms involving local actors.

## Box 11. Jordan - Best practices of project aligning with design features of LLCA

### **Builds community capabilities for ownership and informed decisions**

Community-level actions aim to raise awareness about pollution prevention and women's role in waste management and impact, laying the groundwork for future initiatives.

### **Utilises modern science and integrates it with knowledge systems**

The project built Jordan's first biogas plant and research lab. It successfully converted urban waste into clean energy, meeting nearly 80 per cent (~31,000 tCO<sub>2</sub>e/year) of its target for electricity generation and methane capture.



*A wastewater treatment facility with decentralised water-reuse systems supporting climate-resilient agriculture through locally governed reuse of treated water.*

*Source: Authors' analysis of project documents from Global Environment Facility.*

### **Alignment with Jordan's national goals**

The project aligns with Jordan's NDCs, as it has nearly achieved an annual reduction of 31,000 tonnes of CO<sub>2</sub> equivalent by capturing landfill gas for electricity, thereby helping Jordan reduce reliance on oil imports through domestic energy production.



## Towards Ending Drought Emergencies (TWENDE): Ecosystem-based adaptation in Kenya's arid and semi-arid rangelands

### KENYA

**Period of implementation:** 2019–25

**Project finance:** USD 50 million

**Implementation agencies:** Government of Kenya, National Drought Management Authority, Conservation International

**Targeted climate-vulnerable groups:** Agro-pastoralist communities

#### Objective of the CBCA

The project aims to reduce the economic burden on agro-pastoralist communities through rangeland restoration and improved ecosystem governance. It supports Kenya's national policy of 'Ending Drought Emergencies' and contributes to the broader climate change adaptation goals under Kenya Vision 2030.

#### Challenges identified

Kenya's arid and semi-arid lands face recurrent climate-induced droughts that impact the livestock sector, which provides income for around 80 per cent of households. Over the years, weakened customary institutions have contributed to breakdowns in resource governance, resulting in conflicts over resource sharing in ecologically fragile grazing landscapes.

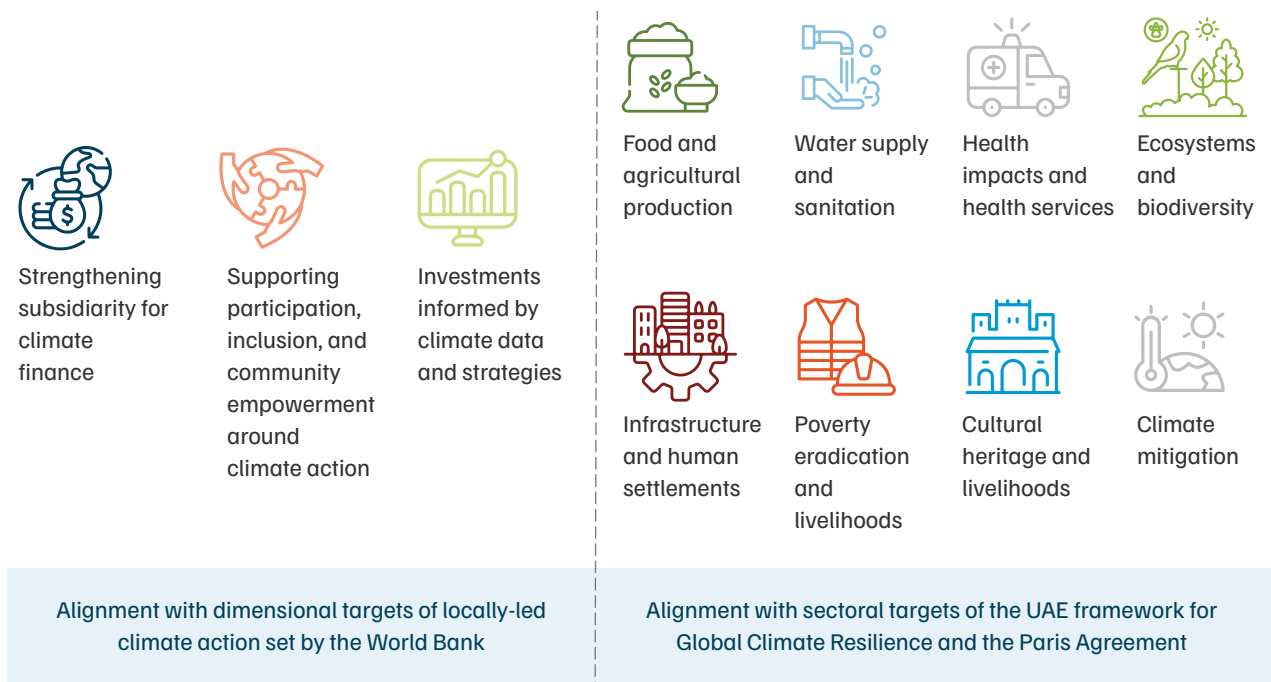
#### How does the CBCA address these challenges?

To address climate-induced impact on grazing landscapes, the project employs community-led interventions. These include establishing landscape management and peace committees, developing participatory rangeland-restoration plans through pastoral field schools, and creating inclusive decision-making mechanisms to counter male-dominated traditional governance. The initiative has restored 10,887 ha of land and supported vulnerable groups, including female-headed households, through training and livelihood diversification.

#### Benefits provided by the CBCA

The project enhances food and agricultural production, ecosystem and biodiversity restoration, poverty eradication and livelihood resilience, cultural heritage and livelihoods, and climate mitigation.

Figure 15. Kenya - Alignment of the project with the World Bank’s LLCA dimensions and the UAE framework for Global Climate Resilience



Source: Authors' analysis

**Key activities enabling the implementation of the project**

- Establishing landscape and stakeholder forums to form and structure landscape management committees.
- Identifying and supporting institutional arrangements to foster conflict management, particularly in the Mid Tana and Sabarwawa landscapes.
- Developing and operationalising landscape-level climate information systems by downscaling and integrating climate and land-degradation data, creating decision-support dashboards, and training staff in their use.

## Box 12. Kenya - Best practices of project aligning with the design features of LLCA

### Includes vulnerable groups within local actors in decision-making

The project actively engages women, youth, and other groups in land-use planning and ecosystem restoration, alongside support for vulnerable households to access livelihood incentives.

### Uses an M&E system for local agency, empowerment, and leadership in processes

The project has a participatory M&E system to track local engagement, leadership, and empowerment to ensure that local agency is measured, valued, and integrated into decision-making and implementation.



*Pastoralists bringing cattle to a common water body near the Maasai Mara emerging through locally coordinated water-resource management.*

Source: Authors' analysis of project documents from Green Climate Fund.

### Alignment with Kenya's national goals

The TWENDE project restores 5,00,000 ha of degraded rangelands, benefits ~6,20,000 people, and strengthens climate resilience in arid and semi-arid regions in Kenya. It supports Kenya's NDCs and NBSAP, aligns with Kenya Vision 2030 and the Climate Change Act, and supports the Bonn Challenge.



## South Tarawa Water Supply Project

### KIRIBATI

**Period of implementation:** 2018–ongoing

**Project finance:** USD 58.1 million

**Implementation agency:** Ministry of Finance and Economic Development

**Targeted climate-vulnerable groups:** South Tarawa population, especially women, poor households, and female-headed households

#### **Objective of the CBCA**

The project aims to reduce climate vulnerability in South Tarawa by improving water security through a reliable, safe, and climate-resilient water supply.

#### **Challenges identified**

Kiribati's water security is severely threatened by sea-level rise, prolonged droughts, extreme rainfall linked to El Niño–Southern Oscillation, and rising temperatures that increase daily water demand. These challenges, compounded by groundwater contamination and rapid population growth, place immense pressure on already limited freshwater resources.

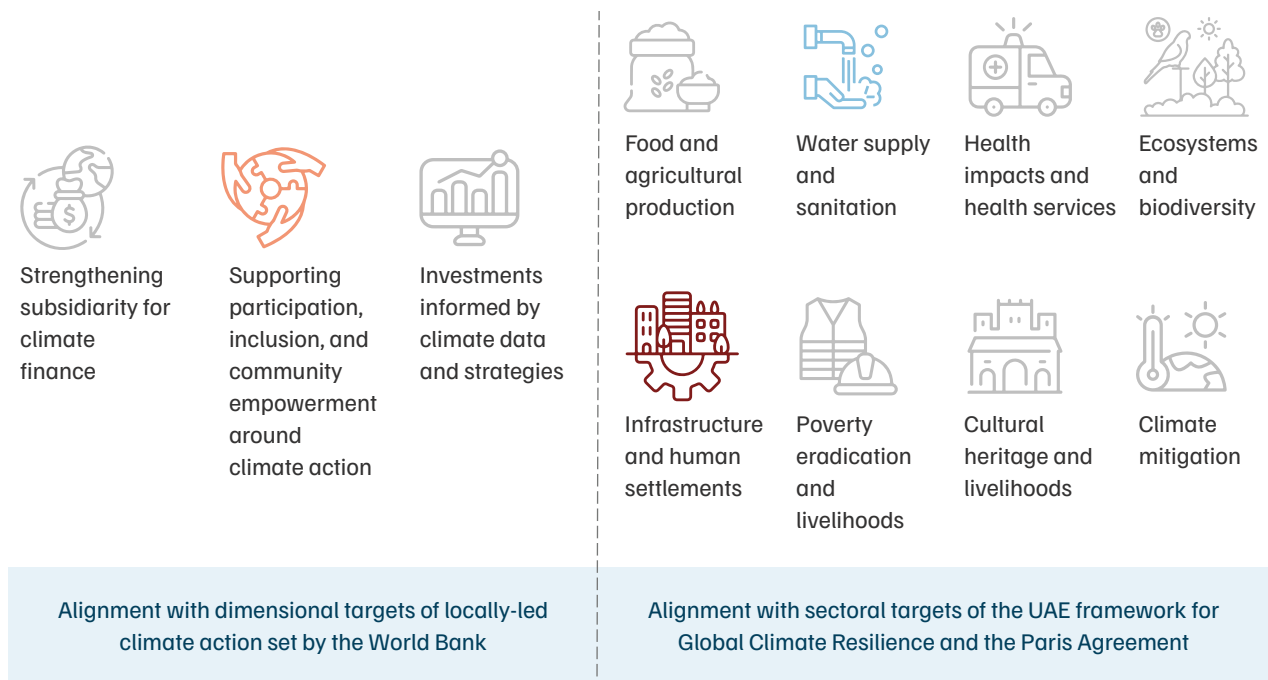
#### **How does the CBCA address these challenges?**

To reduce climate vulnerability and strengthen water security in South Tarawa, the project established a 4,000 m<sup>3</sup> desalination plant, a photovoltaic system to provide low-emission power, and a water supply network for the plant, thereby reducing emissions associated with fuelwood use. Social inclusion and community ownership were incorporated through the integration of local customs in initiatives such as *Water for Life* and *Walk the Talk*. These measures aim to cultivate the sustainable and responsible use of resources and the necessary policy framework to support the intervention.

#### **Benefits provided by the CBCA**

The project improves water and sanitation systems alongside strengthened climate mitigation measures.

Figure 16. Kiribati - Alignment of the project with the World Bank’s LLCA dimensions and the UAE framework for Global Climate Resilience



Source: Authors' analysis

**Key activities enabling the implementation of the project**

- Implementing water conservation and WASH awareness programmes (e.g., Water for Life) to promote sustainable water management and build community ownership to manage natural resources.
- Supporting regional knowledge-sharing platforms, such as the Pacific Water and Wastewater Association’s annual conference, with support from international organisations such as the ADB, to build regional capacity and strengthen collaboration among stakeholders.

## Box 13. Kiribati - Best practices of project aligning with design features of LLCA

### **Builds leadership, technical, and other capabilities to enable communities to take ownership**

The project promotes water conservation through capacity building, community ownership, and strengthening user practices through the *Water for Life* and *Walk the Talk* components.

### **Addresses structural inequalities faced by vulnerable groups**

Project's gender action plan assesses gender-inequality risks and promotes women as project beneficiaries by targeting female participation in the community across design, implementation, capacity-building, and employment in water supply infrastructure.



*Houses on stilts built by communities in low-lying areas to overcome coastal flooding, high tides and rising sea level.*

Source: Authors' analysis of project documents from Green Climate Fund.

### **Alignment with Kiribati's national goals**

The *South Tarawa Water Supply Project* advances priorities outlined in the Climate Change Policy by ensuring access to potable water and building awareness and capacity for the ownership of infrastructure and water conservation initiatives, thereby strengthening water governance and optimising water for diverse uses.



## Supporting Vulnerable Communities in the Maldives to Manage Climate Change–Induced Water Shortages

### MALDIVES

**Period of implementation:** 2015–23

**Project finance:** USD 28.2 million

**Implementation agency:** UNDP

**Targeted climate-vulnerable groups:** Outer-island communities, low-income households, and women

#### Objective of the CBCA

The project aims to strengthen freshwater security for vulnerable island communities by scaling up an integrated water resource management system, with a focus on improving access to safe, sustainable freshwater, particularly for islands facing climate change–induced water shortages.

#### Challenges identified

The islands and atolls of the Maldives face increasing water insecurity due to climate change–induced stressors, including sea-level rise, erratic rainfall, rising temperatures, and more intense cyclones that contribute to erosion, flooding, and saline intrusion into freshwater bodies. Groundwater contamination and recurring droughts further exacerbate water insecurity, leaving many islands dependent on costly emergency supplies from Malé.

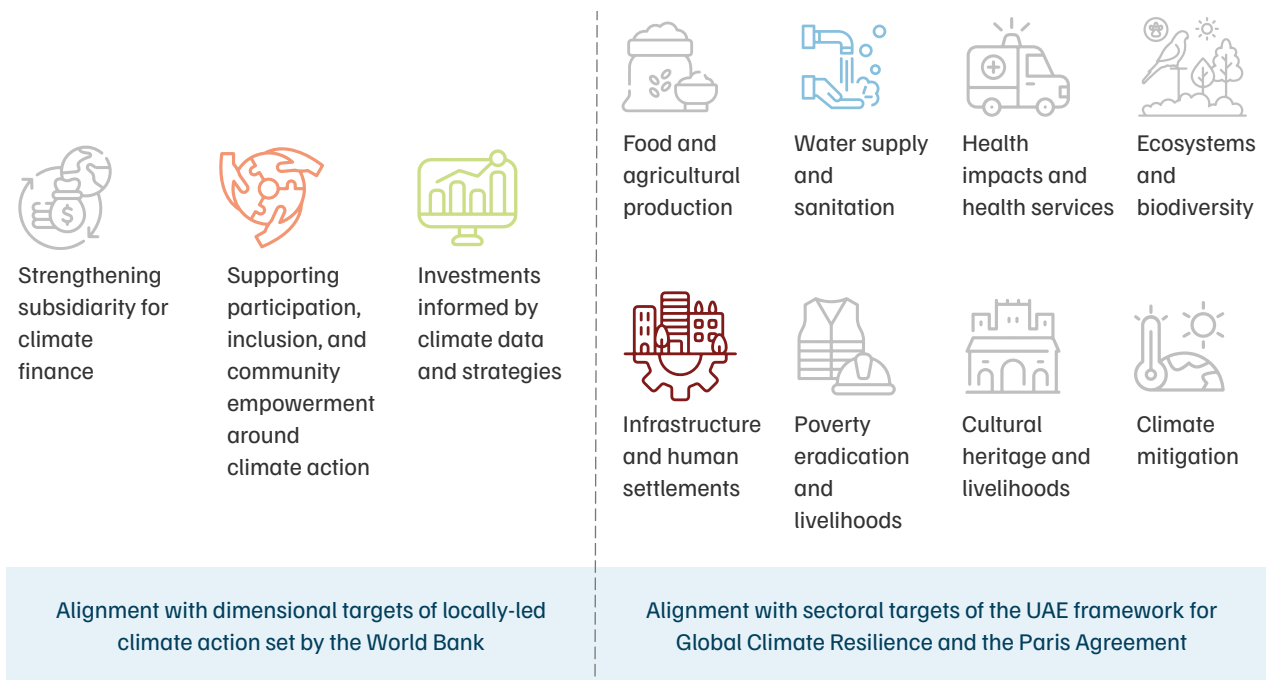
#### How does the CBCA address these challenges?

To address climate change–induced water shortages, the project conducted training programmes on water quality assessment and planning, accompanied by certification courses. A community-based water task force was established to provide a platform for participatory decision-making. In parallel, island councils and women’s development committees were strengthened to ensure that women’s household-level concerns are effectively represented in the forum. Together, these interventions support the decentralised and equitable expansion of integrated water supply to 49 vulnerable islands.

#### Benefits provided by the CBCA

The project ensures sustainable access to freshwater for vulnerable households, builds local technical capacity to manage and maintain integrated water systems, and reduces community vulnerability to climate-induced droughts and extreme weather conditions.

Figure 17. Maldives - Alignment of the project with the World Bank’s LLCA dimensions and the UAE framework for Global Climate Resilience



Source: Authors' analysis

**Key activities enabling the implementation of the project**

- Co-designing and co-implementing integrated water solutions through collaboration among the UNDP, the Government of Maldives, and local councils.
- Conducting training sessions to strengthen the capacity of local technicians and community representatives to operate and maintain integrated water systems.

## Box 14. Maldives -Best practices of project aligning with design features of LLCA

### **Builds leadership, technical, and any other capabilities to enable communities to take ownership**

The project aims to train and build the leadership, technical, and institutional capabilities of local actors in water preservation, management, and forecasting, thereby strengthening their decision-making.

### **Includes vulnerable groups within local actors in decision-making**

The project aims to provide safe and reliable water access to at least 32,000 people, including 15,000 women through a gender-responsive design as per the *Gender Action Plan* to increase participation and capacity-building.



*Intergenerational knowledge sharing supports community responses to climate risks.*

Source: Authors' analysis of project documents from Green Climate Fund.

### **Alignment with Maldives's national goals**

Activities such as decentralised island council engagement, groundwater assessment training, and the establishment of a community-based water task force under the project *Supporting Vulnerable Communities in Maldives to Manage Climate Change–Induced Water Shortages* align with the mandate to implement cost-effective integrated water resource management systems laid down in its NDCs.



## Sustainable food systems and integrated land/seascape management in the Marshall Islands

### MARSHALL ISLANDS

**Period of implementation:** 2022–ongoing

**Project finance:** USD 2.3 million

**Implementation agency:** Ministry of Natural Resources and Commerce

**Targeted climate-vulnerable groups:** Outer-island and atoll communities, subsistence farmers, fishermen, women, and households dependent on imported food

#### **Objective of the CBCA**

The project aims to transform food systems and land/seascape management in the Marshall Islands to deliver integrated global environmental and health benefits by enhancing green and blue food production in sustainably managed land/seascapes.

#### **Challenges identified**

The Marshall Islands face severe climate threats that undermine its food systems. Sea-level rise and saltwater intrusion are damaging arable land, contaminating groundwater, and threatening staple crops such as breadfruit and taro. This loss of productive land is further compounded by intensifying storms that erode coastlines, causing coastal erosion and flooding low-lying areas. Changing rainfall patterns create droughts and water stress that undermine agriculture, while rising temperatures stress crops, livestock, and coral reefs, weakening fisheries.

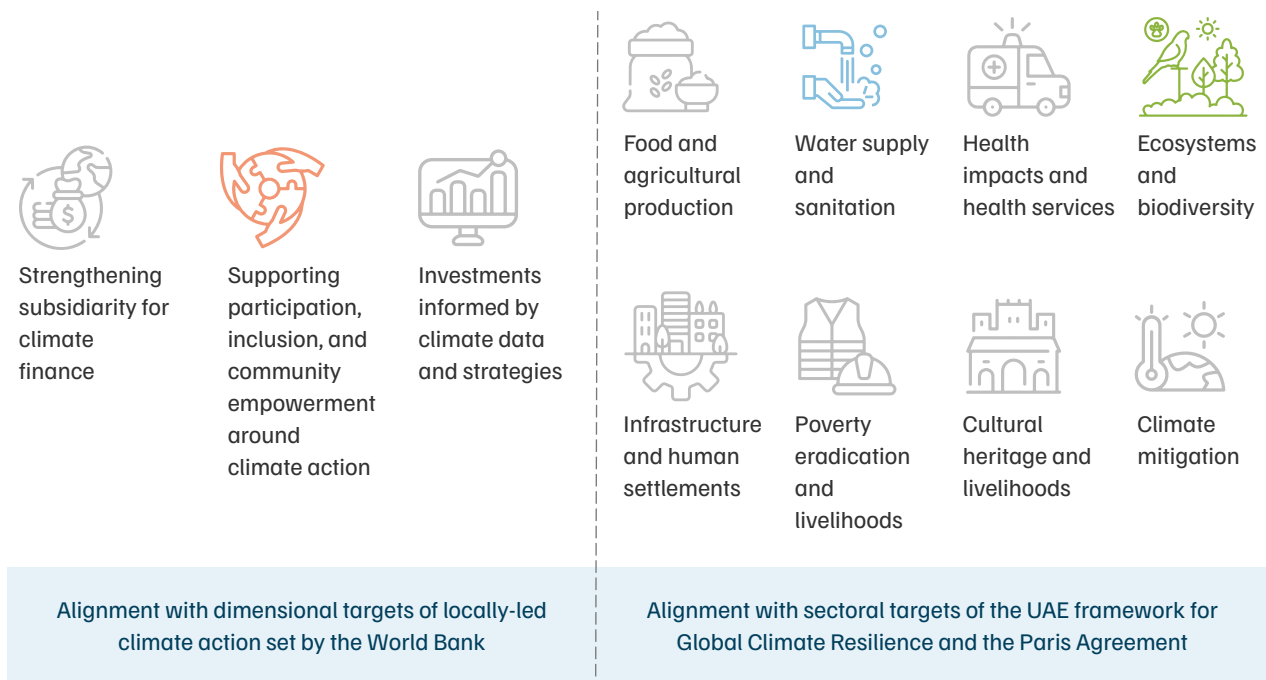
#### **How does the CBCA address these challenges?**

To transform the food system to deliver both environmental and health benefits in the Marshall Islands, the project emphasises community empowerment and local participation in conservation planning and resource management to augment community involvement and ownership. Training is provided to enable benefits from available and emerging supply chains. The project also actively engages with local knowledge on climate impacts to build resilient food systems and ensure nutritional and food security.

#### **Benefits provided by the CBCA**

The project provides targeted benefits in poverty eradication and livelihoods, ecosystems and biodiversity, and food and agricultural production.

Figure 18. Marshall Islands - Alignment of the project with the World Bank’s LLCA dimensions and the UAE framework for Global Climate Resilience



Source: Authors' analysis

**Key activities enabling the implementation of the project**

- Developing tools (guidelines, best practices, toolkits, etc) through consultations with local actors to promote local food production and consumption, and landscape/seascape management.
- Involving custodians of traditional knowledge in project implementation, particularly in decisions on documenting and applying traditional knowledge, including the proposed atoll-level food-system data and knowledge audits.
- Providing gender-inclusive training to strengthen women’s participation in the project.

## Box 15. Marshall Islands - Best practices of project aligning with design features of LLCA

### Utilises different forms of knowledge that come from the local actors

The project involves reviews by anthropologists and rural sociologists to understand the extent and degree of local and traditional knowledge used by the communities to manage arid and semi-arid rangelands.

### Develops tools (guidelines, best practices, toolkits, etc) 'in consultations' with local actors

The project develops manuals and toolkits to encourage local food production and consumption, and landscape/seascape management. It will also provide gender-inclusive training and farmer field schools.



*Harvested coconuts prepared for local use by communities as food security strategy in climate vulnerable islands.*

*Source: Authors' analysis of project documents from Global Environment Facility.*

### Alignment with Marshall Islands's national goals

Sustainable food systems and integrated land/seascape management in the Marshall Islands provide training and capacity-building for the harvesting and processing of traditional food products, enabling food and livelihood security while managing fragile atoll ecosystems, as mandated under its NDCs.



## Building climate resilience by linking climate adaptation and social protection through decentralised planning in Mozambique

### MOZAMBIQUE

**Period of implementation:** 2022–ongoing

**Project finance:** USD 4.8 million

**Implementation agency:** Save the Children Australia

**Targeted climate-vulnerable groups:** Female-headed and child-headed households, households with persons with disabilities, chronic illness, elderly members, and malnourished children

#### Objective of the CBCA

The project aims to pilot a range of coping mechanisms to reduce the vulnerability of farmers and pastoralists to future climate shocks.

#### Challenges identified

Mozambique's most vulnerable communities face intensifying droughts, floods, and heatwaves that threaten food security and livelihoods. Limited resources, weak infrastructure, and gaps in social protection further constrain adaptive capacity, especially for women and children.

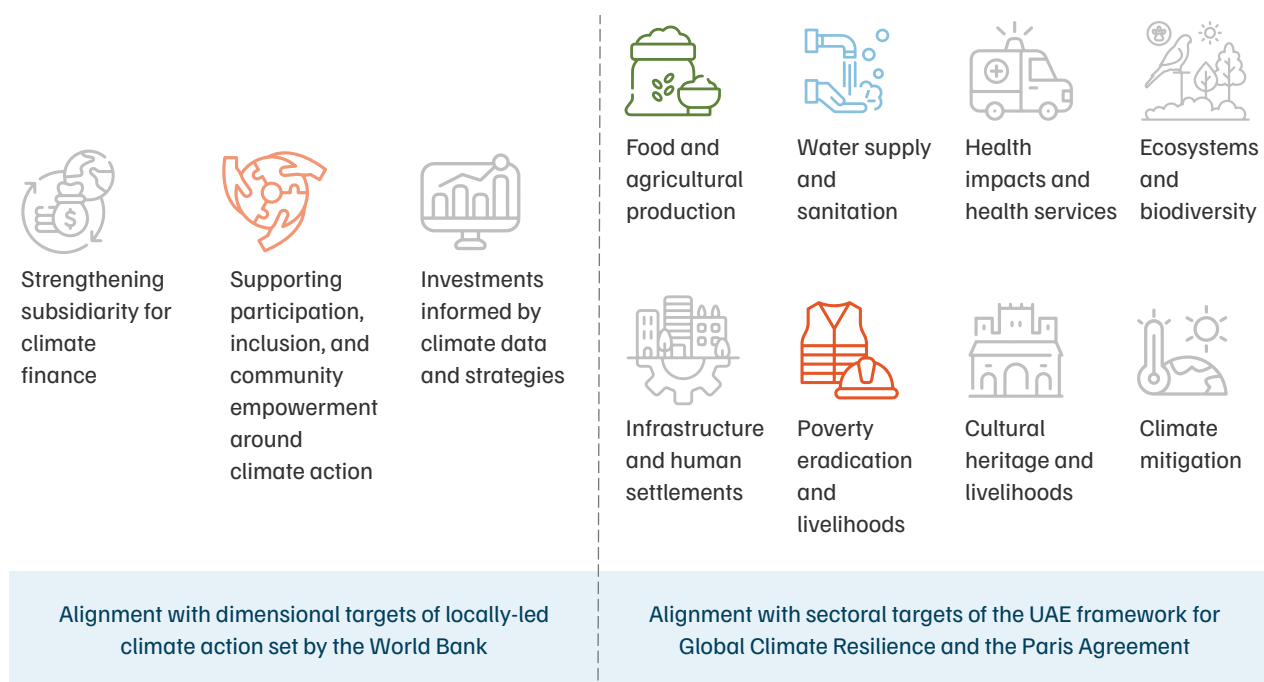
#### How does the CBCA address these challenges?

To address Mozambique's drought-induced food and water insecurity, the project integrates climate adaptation with social protection using community resilient networks (CRNs). These networks implement locally-led interventions, such as drought-resistant agriculture, hydroponic systems, water infrastructure, and income-generating activities. The project targets women and children in drought-prone areas to build adaptive capacity and prevent deeper poverty.

#### Benefits provided by the CBCA

The project provides support benefits across water supply, food and agricultural production, ecosystems and biodiversity, poverty eradication and livelihoods, and cultural heritage.

Figure 19. Mozambique - Alignment of the project with the World Bank’s LLCA dimensions and the UAE framework for Global Climate Resilience



Source: Authors' analysis

**Key activities enabling the implementation of the project:**

- Disseminating information through community radios and schools.
- Conducting training programmes to build youth capacity to undertake youth-centric risk assessments and integrate findings into technical dialogues and project planning.
- Facilitating technology transfer and capacity-building in nine districts on the use of DrySat, a satellite-based soil moisture sensing and data system, to strengthen district-level drought forecasting and EWSs.

## Box 16. Mozambique - Best practices of project aligning with design features of LLCA

### Conducts risk assessment studies that consider social vulnerabilities

The project implementation agencies focused on youth capacity-building to conduct a youth-centric risk assessment, feeding into technical dialogues and activities planning as part of the project.

### Makes information regarding the details of the solution accessible to local actors

Real-time EWSs, advanced agricultural technologies, and integrated information platforms are disseminated via radios and schools to support adaptation through participatory planning tools and community-led platforms.



Women collecting water from a communal tank to support household resilience through locally managed water systems.

Source: Authors' analysis of project documents from Food and Agriculture Organization

### Alignment with Mozambique's national goals

The project emphasises the transfer of satellite-based soil-moisture-sensing technology, capacity-building, and training in resilient agriculture, all compatible with Mozambique's NAP.



## Integrating biodiversity conservation, climate resilience and sustainable forest management in Trung Truong Son landscapes

### VIET NAM

**Period of implementation:** 2019–25

**Project finance:** USD 59.3 million

**Implementation agency:** ADB

**Targeted climate-vulnerable groups:** Agriculture and forest-dependent households, ethnic minorities, indigenous people, and women

#### **Objective of the CBCA**

The project aims to strengthen the management and ecological integrity of protected areas in Viet Nam's Trung Truong Son region by integrating biodiversity conservation, climate adaptation, and sustainable forest management. It seeks to safeguard ecosystems while supporting the livelihoods of local communities.

#### **Challenges identified**

Vulnerable communities in the region face rising droughts, intense rainfall, and prolonged dry seasons that threaten crops, livestock, and water security. Increasing temperatures and shifting precipitation patterns contribute to heightened food insecurity, while forest degradation erodes biodiversity and limits livelihood opportunities. These challenges are compounded by a lack of institutional support and limited viable alternative livelihoods.

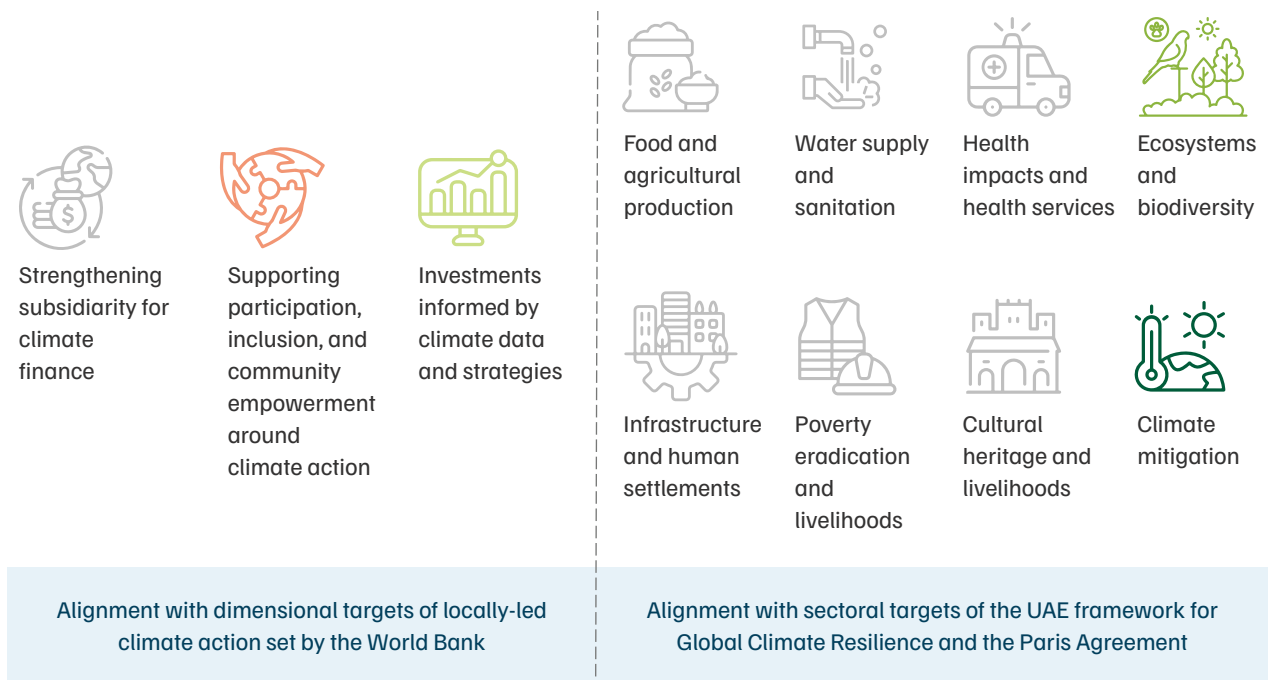
#### **How does the CBCA address these challenges?**

To address the severe biodiversity loss and forest degradation in the Trung Truong Son region of Viet Nam, the *ADB Phase II Biodiversity Corridors Project* employs locally-led conservation strategies. It established village conservation plans and community development funds through participatory workshops with vulnerable groups, including ethnic minorities, women, and youth. Key interventions include community-based forest restoration, participatory land-use mapping, and sustainable livelihood improvements through Payment for Ecosystem Services (PES) and benefit-sharing arrangements.

#### **Benefits provided by the CBCA**

The project enhances protected area management and biodiversity conservation while promoting sustainable forest use and ecosystem services.

Figure 20. Viet Nam - Alignment of the project with the World Bank’s LLCA dimensions and the UAE framework for Global Climate Resilience



Source: Authors' analysis

**Key activities enabling the implementation of the project:**

- Directly engaging buffer-zone communities in developing VCPs to ensure that biodiversity and adaptation measures reflect local needs.
- Prioritising indigenous communities, women, and forest-dependent households in conservation planning and benefit-sharing mechanisms.
- Co-creating guidelines, operational management plans, and biodiversity conservation plans with local stakeholders to ensure ownership.

## Box 17. Viet Nam - Best practices of project aligning with design features of LLCA

### **Delivers a significant amount of finance to local communities**

The project boosted local and institutional capacity through financial management, disbursement monitoring, and direct fund transfers to locals.

### **Aims to address structural inequalities faced by vulnerable groups**

The project addressed inequalities faced by vulnerable groups by expanding sites for minority inclusion and publishing gender and ethnic outcomes for future policy.



*Community members conserving bamboo groves to strengthen local resilience and rural livelihoods through sustainable forestry.*

*Source: Authors' analysis of project documents from Global Environment Facility*

### **Alignment with Viet Nam's national goals**

The project directly contributes to Viet Nam's NDCs by targeting emissions reductions of 10.9–14.4 million tonnes of CO<sub>2</sub>e through avoided deforestation and sustainable forest management, and by establishing provincial and local monitoring systems linked to national MRV efforts. It aligns with Viet Nam's NBSAP by increasing management effectiveness in seven protected areas by 33.81 per cent, developing species action plans, and piloting PES.



## Integrated Climate Risk Management for Food Security and Livelihoods

### ZIMBABWE

**Period of implementation:** 2021–ongoing

**Project finance:** USD 9.9 million

**Implementation agencies:** Ministry of Lands, Agriculture, Water, Climate and Rural Resettlement of Zimbabwe; World Food Programme (WFP)

**Targeted climate-vulnerable groups:** Subsistence farmers, ethnic minorities, indigenous people, women, disadvantaged groups, and agriculture and forests dependent households

#### Objective of the CBCA

The project seeks to improve national and community-level capacity to manage climate risks by using climate forecasts and information. It aims to strengthen the capacity of vulnerable households through community-led asset creation and risk-transfer mechanisms, while enabling smallholder farmers to invest in climate-resilient practices and sustain development gains.

#### Challenges identified

This project addresses climate-induced agricultural vulnerability in the Masvingo and Rushinga regions, where smallholder farming communities, especially women, face severe agricultural decline from erratic rainfall and rising temperatures, leading to food insecurity and threatened livelihoods.

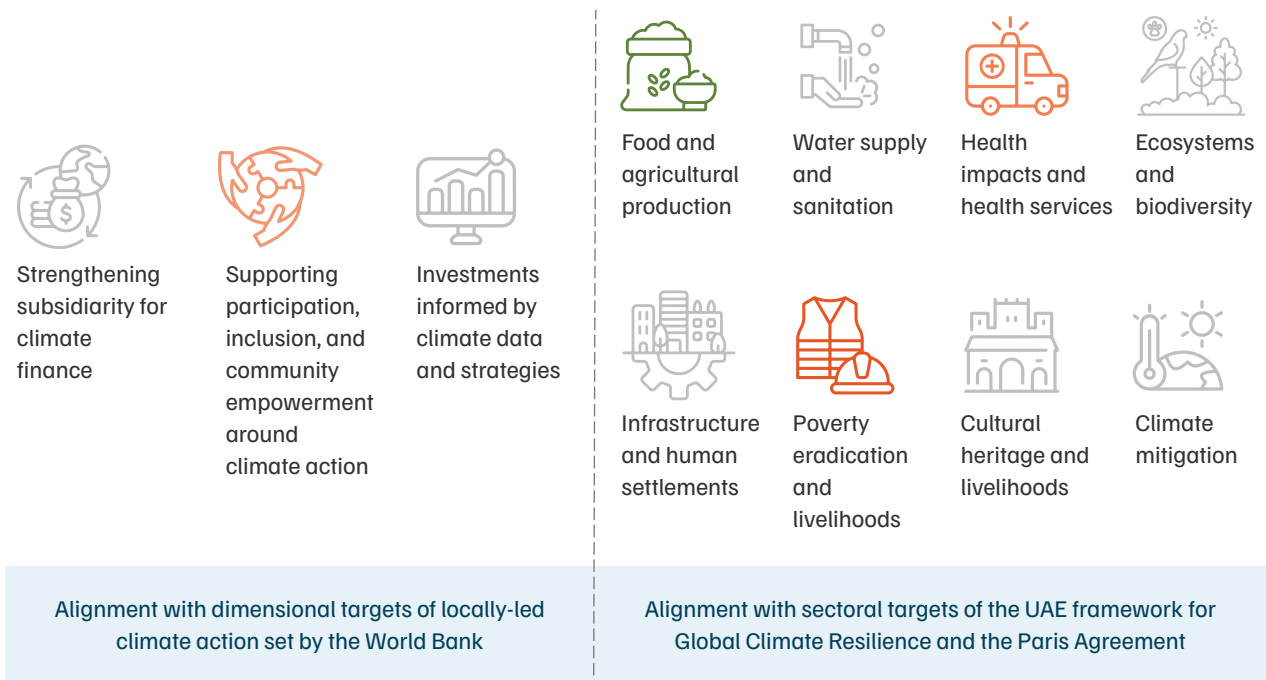
#### How does the CBCA address these challenges?

The project strengthens community-led climate adaptation by enabling locally driven decision-making and capacity-building. It trains farmer groups in care services that blend scientific forecasts with indigenous knowledge. The project empowers vulnerable communities, particularly women and food-insecure households, to anticipate climate shocks.

#### Benefits provided by the CBCA

The project enhances food and agricultural production, supports poverty eradication and livelihoods, and safeguards cultural heritage.

Figure 21. Zimbabwe - Alignment of the project with the World Bank’s LLCA dimensions and the UAE framework for Global Climate Resilience



Source: Authors' analysis

**Key activities enabling the implementation of the project:**

- Strengthening capacities and systems for the co-production of tailored climate services, including translation and adaptation of key messages to improve understanding and use by local communities.
- Training farmer groups in basic marketing and business skills, such as record-keeping, pricing, contracting, and negotiations.

## Box 18. Zimbabwe - Best practices of project aligning with design features of LLCA

### Develops tools in consultations with local actors

Different groups of the community were provided information using a set of participatory tools to assess accuracy and usefulness for decision-making and planning.

### Conducts risk assessment studies that consider social vulnerabilities

The project identifies key local actors and conducts vulnerability analysis for each group using socio-economic indicators to translate climate forecasts into local context-specific anticipatory action.



*Livestock rearing in traditional homestead land enables rural livelihoods and food security to survive drought conditions.*

Source: Authors' analysis of project documents from Green Climate Fund

### Alignment with Zimbabwe's national goals

The project supports Zimbabwe's NDC goals on agriculture and food security by promoting climate-resilient farming and EWSs. Insurance uptake and gender-disaggregated data address gender mainstreaming, while training in marketing and aggregation enhances livelihood resilience. It also contributes to NAP priorities on local capacity, risk-informed planning, and anticipatory action through climate services and socio-economic vulnerability mapping. The integration of indigenous knowledge with climate forecasts aligns with NBSAP objectives, while participatory M&E and social audits reflect NAP's inclusive governance mechanisms.



Image: iStock

## 4. Cross-learning from the Global South: Operational insights for India

In addition to the best practices highlighted in these case studies, a broader mapping exercise across countries in the Global South reveals several initiatives that align with LLCA's core design features. Although not always formally classified under LLCA, these initiatives demonstrate strong commitments to inclusive, participatory, and context-specific climate action. They employ mechanisms such as community-based planning frameworks, integration of traditional and indigenous knowledge systems, decentralised decision-making structures, and targeted efforts to address gender and social inequities. These examples further validate the relevance and applicability of LLCA principles across diverse socio-economic and ecological settings, reinforcing the potential for cross-learning and replication. This mapping exercise also provides valuable insights into how different regions operationalise LLCA elements and highlights the scope for institutionalising these approaches more systematically within national adaptation strategies.

## 4.1 Strengthening subsidiarity and finance (Design Feature #1)

Integrating local actors in decision-making enhances ownership, sustainability, and contextual responsiveness of climate adaptation interventions – an approach observed across most projects aiming to ensure local-level climate action. Projects in the Maldives and Argentina demonstrate how devolved governance structures, such as island councils and community resource committees, can effectively lead planning, stakeholder engagement, and implementation of climate interventions. These bodies were supported through training programmes for community-based actors, such as school management committees, women’s development committees, and other local authorities, to enhance capacity for informed participation (GCF 2015). This participatory structure ensured localised planning, institutional ownership, and community-driven implementation. Similarly, Argentina’s dryland governance model empowered local communities to co-create sustainable land-use plans and ecological management practices. These communities also received targeted training on SLM practices, financial access facilitation, and replication strategies, enabling strong local leadership and accountability in landscape governance (UNDP 2014).

### Implications for India

Drawing from the devolved governance models for landscape management in the Maldives and Argentina, integrating this LLCA design feature into India’s policy landscape will require stronger community-led decision-making. Flagship programmes such as NRLM and ABY can strengthen local involvement by mandating participatory planning, implementation, and review of landscape and water management interventions in arid and dry ecosystems. The SHG federations under NRLM could co-develop climate-resilience plans, while the aquifer committees under ABY could shape groundwater norms by integrating scientific assessments and traditional knowledge. This would require procedural mandates for inclusive representation, sustained capacity-building, and formal recognition of local knowledge systems. In addition, fiscal tools such as sectoral grants and untied funds, as recommended by the 15th Finance Commission, can be leveraged to institutionalise decentralised financing for LLCA and serve as key instruments of fiscal subsidiarity.

## 4.2 Enhancing participation, inclusion, and community empowerment around climate action (Design Feature #2)

Several selected projects from Cambodia, Kenya, Chad, and Brazil demonstrate how transparent communication channels and equity-focused design can improve participation and build trust. These initiatives ensured that local actors have accessible information regarding implementation strategies, financing, and responsible agencies. In Cambodia, nodal agencies of the project actively disseminated accessible information by publishing success stories on the FAO Cambodia website, along with draft policy briefs and factsheets summarising project achievements, in simple, locally relevant formats (FAO 2021). Similarly, in Kenya, a community-focused ‘Radio–Internet’ (RANET) station broadcast real-time climate, agriculture, and market information in local dialects within a 50–75 km radius. This approach ensured that target communities could understand the solution’s operational details, relevance, and potential benefits, reinforcing transparency and community-level engagement. Projects in Chad and

Brazil embedded gender-transformative approaches by addressing land-tenure inequities, promoting women’s cooperatives, and including marginalised groups in decision-making (GCF 2018). This foregrounds how participation and inclusion of women-led bodies and other marginalised social groups in planning and implementation are instrumental to the success and sustenance of such interventions.

When local actors understand how solutions operate, it strengthens ownership essential for planning and sustaining interventions.

### Implication for India

Advancing this LLCA design feature will require embedding decentralised, locally relevant communication systems into national schemes. Programmes such as the NWM, *National Mission for Sustainable Agriculture*, and MGNREGS can leverage tools such as local radio, digital boards, and vernacular Information, Education, Communication (IEC) materials to share weather forecasts, crop advisories, pest and disease alerts, training modules, budgets, timelines, responsibilities, etc. This can help rainfed agrarian communities, who have been struggling with erratic monsoon patterns, to plan and adapt more effectively. Gram panchayats could adopt interactive dashboards to track climate-linked activities and expenditures under schemes such as MGNREGS, enabling beneficiaries to review progress and adjust village or gram panchayat development plans accordingly. Effective implementation will require collaboration between technical agencies and community-based organisations, supported by knowledge intermediaries and proximate community leaders who can localise and simplify complex information.

Addressing the structural exclusion of marginalised groups will require institutional reforms that move beyond symbolic participation. A promising example is the MoPR’s recent mandate to include women from SHGs in theme-based standing committees at the gram panchayat level. Women are often among the most affected groups during a hazard event, yet are among the least likely to receive early warning information or relief assistance, and are least likely to influence decision-making on resource allocation. While this reform marks a significant step towards inclusive governance, the functional effectiveness of these committees remains variable. To strengthen outcomes, MoPR could invite funders and donors to invest in operationalising and making standing committees accountable at the local level. Beyond SHGs, representation can be broadened by nominating members from farmers’ collectives, children’s collectives, non-NRLM collectives, displaced groups, and landless collectives, ensuring that committees reflect the diverse socio-economic vulnerabilities driven by climate change-induced hazards.

## 4.3 Embedding investments informed by climate data and strategies (Design Feature #3)

Several projects across the Global South have institutionalised feedback mechanisms and social audits to ensure effective participation of local actors in project implementation and monitoring. In Kenya, Egypt, and Ethiopia, participatory monitoring tools strengthened transparency and enabled community feedback to shape project decisions. For example, Kenya’s Participatory Monitoring, Evaluation and Learning (PMEL) system allows community members and implementing partners to track project performance, share lessons, and provide continuous feedback through a web-based platform linked directly to local activities. In Egypt, project feedback sheets systematically captured community inputs, linking local implementation with real-time monitoring and adaptive learning (World Bank 2017).

In some cases, risk assessments integrated social vulnerabilities, including gender and intersectional inequities, into project planning and implementation. In Cambodia, rapid gender assessments and vulnerability reduction assessments informed project redesigns to effectively

address gender-differentiated climate impacts (GEF, UNDP, and Canadian International Development Agency 2025). Brazil similarly incorporated participatory land-use planning and safeguards to address the needs of indigenous communities, youth, and women, strengthening tenure security and community resilience.

When resilience strategies blend communities' lived experiences and traditional knowledge with science, they enable locally grounded, evidence-based decisions.

Robust local financial oversight is also emerging through activity-based budgeting and village-level reporting. In Ethiopia, 23 per cent of a climate adaptation project budget (USD 1.2 million), was allocated to M&E, with complete alignment between planned and actual expenditure, underscoring high fiscal discipline and transparency at the sub-national level. Similarly, in the Marshall Islands, village-level reporting systems reviewed by the Environmental Protection Fund (EPF) ensured that adaptation spending remained traceable and aligned with community priorities (GCF 2023).

### Implication for India

Experience across the Global South shows that tools such as community scorecards and feedback sheets improve transparency when tied to budget reviews and adaptive management. Effective implementation will require collaboration between technical agencies and community-based organisations, supported by knowledge intermediaries and proximate community leadership to localise and simplify complex information. The NRLM/Antyodaya, which decentralises finance through SHGs, could leverage Promoting and Accelerating Young and Aspiring Innovators and Startups (PRAYAS) and MoRD's District Development Coordination and Monitoring Committees (DISHA) digital platform for transparent monitoring of climate-related activities and spending, whether for rainwater harvesting in drought-prone districts or mangrove restoration along eroding coastlines. India's ongoing schemes, such as the GIM and CAMPA, could incorporate community-designed scorecards and local monitoring committees to track ecological and livelihood outcomes. Formal efforts must be made to assess climate risk at sub-national levels and to downscale climate data in ways that reveal broader interlinkages and aggregate dynamic, current trends, thereby facilitating planning and M&E. To improve accountability mechanisms, programmes such as MGNREGS could expand social audits to include climate resilience indicators, such as soil health, water retention, biodiversity, and livelihood outcomes, using participatory monitoring frameworks.

The third LLCA design feature can be advanced by embedding decentralised, locally relevant communication systems into national schemes, thereby empowering communities facing diverse climate vulnerabilities, such as in the flood-prone Himalayan villages, the drought-affected hamlets in Rajasthan, and the cyclone-impacted coastal settlements in Odisha, to access timely, actionable information. Integrating indigenous and local knowledge into monitoring and EWSs would further strengthen India's programmes, provided formal mechanisms exist to document, validate, and embed traditional practices into policy and implementation.

## 4.4 Integrating indigenous knowledge and science

Integrating indigenous knowledge and science is an essential element across all LLCA design features. Efforts to integrate indigenous and local knowledge into climate adaptation strategies are gaining significant traction. For example, Bangladesh revived traditional land-use methods such as the sorjan system and sack farming for saline-prone areas. This involves excavating trenches and dykes in saline and waterlogged land to enable joint cultivation of fish and vegetables. These methods have significantly improved land use in previously fallow coastal areas. In Zimbabwe, indigenous weather knowledge was blended with scientific data to co-develop tailored climate services (GEF 2006; UNDP 2025). This approach strengthened the credibility and relevance of climate forecasts and ensured that adaptation strategies were grounded in the lived experiences and expertise of local populations.

Additionally, such forms of indigenous knowledge and locally derived solutions are now being integrated into measures that rely on modern scientific tools for design and execution. For example, in Jordan and Mozambique, traditional practices were merged with modern technologies such as solar-powered water systems, smart meters, and EWSs for droughts, designed and managed in partnership with local communities, reinforcing trust, ownership, and sustainability (GCF 2024).

### Implication for India

Several Indian states possess rich traditional ecological knowledge. Programmes such as the *National Mission on Himalayan Studies* and SAPCCs can formalise partnerships with tribal institutions, farming collectives, and local SHGs to co-produce climate advisories, land-use plans, and EWSs. Establishing validated registries of indigenous practices could further feed into technical manuals and training curricula.

## 4.5 Pathways to operationalise locally-led climate action in India: from insight to action

Translating global best practices into the Indian context will require targeted interventions across the three LLCA design features. The way forward must prioritise action across the identified frontiers of finance, governance, and local capacity. Table 2 outlines priority actions under these three frontiers, phased across short-term (0–1 year), medium-term (2–5 years), and long-term (more than 5 years) periods to support the operationalisation of LLCA in India.




Table 2. Priority actions to operationalise LLCA

Timeline	Governance	Finance	Capacity-building
<b>Short term (0–1 year)</b>	<ul style="list-style-type: none"> <li>Incentivise participatory budgeting in rural schemes.</li> </ul>	<ul style="list-style-type: none"> <li>Simplify fund access for SHGs, WUAs, and FPOs through multilingual digital systems.</li> </ul>	<ul style="list-style-type: none"> <li>Deploy trained facilitators for gram sabha-led planning.</li> <li>Build peer-learning networks among panchayats and SHGs.</li> </ul>
<b>Medium term (2–5 years)</b>	<ul style="list-style-type: none"> <li>Establish a clear framework for identifying community bodies, define the criteria for their formal recognition, and implement a standardised process for granting such recognition to ensure accountability and legitimacy.</li> <li>Institutionalise state-level social audit directorates to conduct annual social audits for programmes with high public interface, ensuring transparency and accountability mechanisms.</li> </ul>	<ul style="list-style-type: none"> <li>Institutionalise block grants with local discretion.</li> <li>Set up a local climate resilience fund, co-financed by state and philanthropic sources.</li> </ul>	<ul style="list-style-type: none"> <li>Embed vulnerability assessments into climate planning through staff training and alignment with state planning departments.</li> </ul>

Timeline	Governance	Finance	Capacity-building
<b>Long term (&gt;5 years)</b>	<ul style="list-style-type: none"> <li>Establish legal recognition and representation quotas for community bodies, ensuring mandatory inclusion of persons with disabilities, women, children, youth, elderly persons (including those facing caste-based marginalisation), and Particularly Vulnerable Tribal Groups (PVTGs).</li> </ul>	<ul style="list-style-type: none"> <li>Simplify fund access for SHGs, WUAs, and FPOs through multilingual digital systems.</li> </ul>	<ul style="list-style-type: none"> <li>Establish scientist–community co-creation platforms for transferring technical knowledge.</li> <li>Establish e-governance and digital excellence centres within gram panchayat offices or community service centres to provide real-time climate advisories and information services in vernacular languages tailored to local contexts.</li> </ul>

Source: Authors' analysis

Table 3. Policy and institutional mechanisms as potential entry points to operationalise LLCA

 <b>Strengthening subsidiarity for climate finance</b>	 <b>Supporting participation, inclusion, and community empowerment</b>	 <b>Investments informed by climate data, and local strategies</b>
Policy Mechanism	Policy Mechanism	Policy Mechanism
<p><i>Atal Bhujal Yojana (ABY)</i>  <i>National Rural Livelihood Mission (NRLM)</i>  <i>Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)</i>  <i>State Action Plans on Climate Change (SAPCCs)</i></p>	<p><i>Joint Forest Management</i>  <i>State Rural Livelihood Missions (SRLMs)</i>  <i>National Green Corps (NGC)</i>  <i>Aapda Mitra Scheme</i>  <i>National School Safety Programme (NSSP)</i>  <i>National Education Policy (NEP)</i>  <i>Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)</i>  <i>Integrated Watershed Management Programme (IWMP)</i></p>	<p><i>Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)</i>  <i>Compensatory Afforestation Fund Management and Planning Authority (CAMPA)</i>  <i>National Innovations on Climate Resilient Agriculture (NICRA)</i>  <i>Smart Cities Mission</i>  <i>Jal Jeevan Mission</i>  <i>National Water Mission (NWM)</i>  <i>Atal Bhujal Yojana (ABY)</i>  <i>National Mission for Sustainable Agriculture (NMSA)</i>  <i>Rashtriya Krishi Vikas Yojana (RKVY)</i>  <i>NRLM, SAPCC, MGNREGS</i></p>
Institutional Mechanism	Institutional Mechanism	Institutional Mechanism
<p>State Disaster Management Authority (SDMA)                      Farmer Producer Organisation (FPO)</p>	<p>CBO federations under National Rural Livelihood Mission (NRLM)</p>	<p>State Disaster Management Authority (SDMA)                      Farmer Producer Organisation (FPO)</p>

Source: Authors' analysis

Interventions must be designed for longer time frames to allow sufficient time to invest in building institutional capacity and to integrate a process of ‘learning by doing’. Such iterative approaches enable implementers and communities to course-correct over time, drawing on evidence, feedback, and experiential learning, thereby strengthening local participation and improving the effectiveness of climate action.

However, national-level programmes funded by multilateral institutions such as the GCF are typically limited to five-year cycles. A significant portion of this period is spent on administrative and procedural steps, such as national-level launches, public calls for proposals, end-of-cycle evaluations, leaving limited time for implementation or for testing context-specific approaches that communities can sustain independently (Steinbach et al. 2022). Nonetheless, these challenges can be overcome as funders and implementers develop climate action investment programmes with longer project timelines to achieve sustained, long-term community resilience in managing climate vulnerabilities. Extended durations would also allow projects to include social audits that assess risks of elite capture and corruption, thereby strengthening transparency and fiscal discipline in planning and implementation.

Additionally, projects must onboard area specialists and expert stakeholders who can help prioritise scientifically robust and community-centred action. Inclusive governance and community participation are often constrained by tokenistic representation and social fissures—such as caste—within communities. Civil society and community organisations in India have made significant contributions to addressing these gaps, despite challenges such as limited capacity, funding, and fragmentation. Their work has been instrumental in building local capacities, innovating solutions, and linking communities with government programmes, though scaling and institutionalisation remain key challenges that must be addressed to maximise impact. Through a combination of awareness-raising, strengthened legal mandates, and strategic partnerships, these governance regimes can build community agency and embed equity and participation in climate solutions.

Further, involving stakeholders with diverse technical expertise can help better address gaps arising from the lack of periodic local-level data. Their inputs can also help simplify and localise data, which is essential for community members to anticipate risk and plan adaptive measures. By building local capacity through targeted training programmes, climate action can address critical data gaps and ensure genuine local engagement. These initiatives can also leverage existing policy frameworks and institutional mechanisms to recalibrate action areas and strengthen response strategies.



## 5. Conclusion: Embedding locally-led climate action in India's climate governance

As climate risks intensify across India, the need for decentralised, inclusive, and context-responsive adaptation approaches has become increasingly urgent. Locally-led climate action provides a practical framework for strengthening resilience by shifting from top-down planning towards community-driven decision-making and implementation. This compendium demonstrates that LLCA is not an abstract or aspirational model but an operational approach that has successfully integrated local knowledge, participation, and agency into climate adaptation efforts in many parts of the Global South.

India already possesses the institutional depth and community infrastructure required to scale LLCA. Programmes such as NRLM, ABY, PMKSY, and MGNREGS have established the foundation through decentralised structures and participatory processes. However, realising the full potential of LLCA will require India to move beyond inclusion as intent and towards inclusion as practice. This requires:

- Institutionalising **sub-national financing mechanisms** with discretionary powers for local bodies
- Embedding **legally mandated participation and representation**, especially for women, SC/ST communities, and youth
- Establishing **co-creation ecosystems** where communities and scientists jointly design climate solutions
- Operationalising **localised data systems** and **feedback loops** to inform planning and adaptive learning

Insights from the Global South serve as both inspiration and roadmap. They show that climate resilience is strongest when it is shaped by those most affected, rooted in lived experience, and supported by enabling institutions. India now has the opportunity to lead by example, systematically embedding LLCA principles into its climate and development governance and communities as co-architects of a resilient future rather than mere implementers of externally designed programmes.

Importantly, this report is not only a documentation exercise. It serves as an actionable reference for national and state governments, development agencies, and grassroots organisations to reform policies and scale up proven LLCA practices. The insights generated here will feed directly into a larger study on operationalising LLCA in India, culminating in the development of a framework for institutionalising local climate resilience across governance, financing, and planning systems. This framework will aim to guide long-term policy reforms, support pilot-to-scale transitions, and help build a robust evidence base for embedding LLCA into India's development and climate policy architecture.

As part of this broader effort, we are working towards developing a dedicated LLCA framework for India, adaptable across similar regions in the Global South. This framework will distil best practices from locally-led initiatives, identify key enablers and systemic barriers, and provide guidance for scaling such initiatives. In doing so, it will create a replicable model that strengthens local ownership of climate action while informing regional and global adaptation discourses.

# Acronyms

ABY	<i>Atal Bhujal Yojana</i>	IWRM	integrated water resource management
ADB	Asian Development Bank	KVK	krishi vigyan kendra
AMRUT	<i>Atal Mission for Rejuvenation and Urban Transformation</i>	LLA	locally-led adaptation
CAMPA	Compensatory Afforestation Fund Management and Planning Authority	LLCA	locally-led climate action
CBA	community-based adaptation	M&E	monitoring and evaluation
CDP	community development fund	MDB	multilateral development bank
CRN	community resilient network	MGNREGS	<i>Mahatma Gandhi National Rural Employment Guarantee Scheme</i>
CSO	civil society organisation	MoAFW	Ministry of Agriculture and Farmer's Welfare
DPC	district planning committee	MoEFCC	Ministry of Environment, Forest and Climate Change
DRR	disaster risk reduction	MoHUA	Ministry of Housing and Urban Affairs
EPF	Environmental Protection Fund	MoJS	Ministry of Jal Sakti
EWS	early warning system	MoRD	Ministry of Rural Development
FAO	Food and Agriculture Organization	NAP	national adaptation plan
FDA	forest development agency	NBSAP	National Biodiversity Strategic Action Plan
FPOs	farmer producer organisation	NDCs	nationally determined contributions
GCA	Global Commission on Adaptation	NDMA	National Disaster Management Authority
GCF	Green Climate Fund	NGOs	non-governmental organisation
GEF	Global Environment Facility	NICRA	<i>National Innovations in Climate Resilient Agriculture</i>
GIM	<i>Green India Mission</i>	NITI Aayog	National Institute for Transforming India
ICCCAD	International Centre for Climate Change and Development	NMCG	<i>National Mission for Clean Ganga</i>
IEC	information, education, communication	NMSA	<i>National Mission for Sustainable Agriculture</i>
IIED	International Institute of Environment and Development	NPCA	<i>National Plan for Conservation of Aquatic Ecosystems</i>
IMD	Indian Meteorological Department	NRLM	<i>National Rural Livelihoods Mission</i>
ISRO	Indian Space Research Organisation		
IWGIA	International Work Group for Indigenous Affairs		
IWMP	<i>Integrated Water Management Programme</i>		

NRSC	National Remote Sensing Centre	SC	Scheduled Caste
NSPA	National System of Protected Areas	SFM	sustainable forest management
NWM	<i>National Water Mission</i>	SHGs	self-help group
OMP	operational management plan	SLM	sustainable land management
PAT	<i>Perform, Achieve and Trade</i>	SRLM	state rural livelihood missions
PBCRG	Performance-Based Climate Resilience Grant	ST	Scheduled Tribe
PES	payment for ecosystem services	TME	technology management enterprise
PFS	project feedback sheet	TRIFED	Tribal Cooperative Marketing Development Federation of India
PIDACC/NB	<i>Programme for Integrated Development and Adaptation to Climate Change in the Niger Basin</i>	TWENDE	<i>Towards Ending Drought Emergencies</i>
PMEL	participatory monitoring, evaluation and learning	UNDP	United Nations Development Programme
PM-KISAN	<i>Pradhan Mantri Kisan Samman Nidhi</i>	UNEP	United Nations Environment Programme
PM-KUSUM	<i>Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan</i>	UNFCCC	United Nations Framework Convention on Climate Change
PMFBY	<i>Pradhan Mantri Fasal Bima Yojana</i>	UNICEF	United Nations Children's Fund
PMKSY	<i>Pradhan Mantri Krishi Sinchayee Yojana</i>	USD	United States dollar
PRI	panchayati raj institutions	VCP	village conservation plan
PVTG	particularly vulnerable tribal groups	VRA	vulnerability reduction assessments
RANET	Radio–Internet	WFP	<i>World Food Programme</i>
SAC	social audit committee	WMO	World Meteorological Organisation
SAPCC	state action plans on climate change	WRI	World Resources Institute
SBI	State Bank of India	WUA	water user association

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# The authors

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**Ishita Gupta**

ishita.gupta@ceew.in

 Ishita Gupta

Ishita is a Research Analyst with the Climate Resilience team at The Council. Her work focuses on analysing policies to build local-level resilience and identifying mechanisms to bridge India's adaptation finance gap. Before joining The Council, she worked as a community-based practitioner with agro-pastoralist and forest-dependent communities on natural resource governance and water security.

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**Lalitha Ramalingan**

lalitha.ramalingan@ceew.in

 Lalitha Ramalingan

Lalitha is a Research Consultant with the Climate Resilience team at CEEW. Her research focuses on climate adaptation action that centres community perspectives to build ground-up evidence in support of adaptation policies. With a keen interest in building long-term resilience to climate change, she works at the intersection of policy, research, and action.

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**Taveri Rajkhowa**

taveri.rajkhowa@ceew.in


 Taveri Rajkhowa

Taveri is a Research Consultant with the Climate Resilience team at CEEW. Her work focuses on locally-led adaptation, examining how gender and social dynamics influence community resilience. She contributes to research on gender-responsive adaptation and climate risk assessments across diverse socio-economic contexts. With a background in climate science, policy, and geography, her work employs participatory approaches, spatial analysis, and policy evaluations to support inclusive, community-driven decision-making.



## Aryan Bajpai

aryan.bajpai1824@gmail.com


 Aryan Bajpai

Aryan was a Research Analyst with the Climate Resilience team at The Council. His work focuses on analysing policies through a socio-economic lens to support people-centric adaptation strategies. Prior to joining the Council, he interned with several organisations, including CPR, ORF, Jan Sahas, and Tata Trusts, where he explored the intersection of climate change with land rights, health, migration, displacement, urban development, education, and livelihoods.



## Vanya Pandey

vanya.pandey@ceew.in


 Vanya Pandey

Vanya is a Research Analyst with the Climate Resilience team at CEEW. Her research focuses on assessing risks associated with extreme climate events and developing tools to evaluate adaptation capabilities and strengthen resilience. She integrates science, policy, and practice to mainstream climate action.



## Shreya Wadhawan

shreya.wadhawan@ceew.in

 Shreya Wadhawan

Shreya is a Programme Associate with the Climate Resilience team at The Council. Her work focuses on spatiotemporal analysis to help design decision-making tools for effective policymaking on the intricacies of climate risks, sustainability, and environmental resource management. Her research contributes to mainstreaming adaptation strategies across India and advancing efforts to mobilise adaptation finance for locally-led adaptation.



**COUNCIL ON ENERGY, ENVIRONMENT AND WATER (CEEW)**

ISID Campus, 4 Vasant Kunj Institutional Area  
New Delhi - 110070, India  
T: +91 (0) 11 4073 3300

[info@ceew.in](mailto:info@ceew.in) | [ceew.in](http://ceew.in) | [X@CEEWIndia](https://twitter.com/CEEWIndia) | [Instagram ceewindia](https://www.instagram.com/ceewindia)



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