

**LOCAL &
INDIGENOUS
KNOWLEDGE:
THE KEYSTONE OF
CLIMATE RESILIENCE
-AND WHY IT'S AT
RISK**

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EXECUTIVE SUMMARY

In 2016, the Grand Bargain recognised the need for reforms in the humanitarian system that genuinely shift power to local actors, who are frequently excluded from decision-making and funding control. This shift in power, known as **localisation**, is vital for improving the humanitarian sector. As well as having better access to affected areas, local actors possess a deep understanding of their communities and the environment and ecology of which they are part, which can be referred to as local knowledge. Furthermore, Indigenous communities possess knowledge rooted in their unique cultural experiences and relationships with the natural environment, developing these understandings and practices over generations. This report refers to these knowledge systems together as Indigenous and local knowledge (ILK). Such knowledge enables more effective, context-specific responses. By redistributing power to local organisations and community members, humanitarian efforts can better reflect local needs, strengthen accountability, and draw on established knowledge and practices to guide response and recovery.

This report examines ILK, focusing on its role in climate adaptation and resilience, the threats it faces, and potential entry points for engagement across the humanitarian sector. Through case studies on Syria and the West Bank, it explores ILK within the appeal contexts of the Disasters Emergency Committee (DEC). The report provides recommendations for the DEC Secretariat and member charities to support ethical engagement with ILK, strengthen the security of knowledge-holding communities, improve climate action, and contribute to the decolonisation of the humanitarian system.

The report addresses three core questions:

- 1. In crisis and displacement contexts, how do Indigenous and local knowledge systems drive climate and environmental risk adaptation and mitigation strategies?**
- 2. What structural, political, and operational factors disrupt or undermine these knowledge systems?**
- 3. What shifts in practice, approaches, partnership models, and decision-making processes are required for DEC members to meaningfully centre, support, protect, and invest in ILK throughout the humanitarian continuum, in line with localisation commitments?**

To explore these questions, the study employed a qualitative methodology that combined desk-based research, interviews with 21 key informants, and a review of internal DEC documentation on recent humanitarian appeals in Myanmar and the Middle East. These sources informed understanding of ILK and its role in climate adaptation and risk reduction, as well as best practices for its integration in humanitarian operations.

EXECUTIVE SUMMARY

The study recognises **the critical role of ILK in climate adaptation and resilience**. Developed over generations, these knowledge systems support weather forecasting, ecosystem protection, livelihoods, and disaster preparedness and response. They prioritise both environmental and human well-being, contributing to **more sustainable interventions and stronger recovery outcomes**. However, ILK is not always equally effective or inclusive, highlighting the need for careful and context-specific engagement.

Despite its value, **ILK is often marginalised and threatened**. Key threats include globalisation, climate change, dispossession, direct violence, migration, and language loss. Within the humanitarian sector, its colonial and patriarchal roots prevent genuine and equitable engagement with ILK. Top-down, Western approaches displace preexisting practices for disaster response and environmental preservation, contributing to the loss of ILK. Even when included, engagement is often superficial or extractive, failing to centre ILK as a foundation of climate action and policy. This kind of engagement also fails to account for local power dynamics, which can reinforce existing inequalities. These threats, both within and beyond the humanitarian sector, emphasise the importance of identifying better approaches to ILK engagement in order for humanitarian practitioners to meaningfully centre, support, protect, and invest in ILK and knowledge-holders.

In line with the goals of localisation and power redistribution, as well as for improved humanitarian interventions, **the report identifies entry points and reforms for ILK engagement across the humanitarian continuum**. It addresses resilience building, preparedness, anticipatory action, emergency response, and climate adaptation and recovery. A consistent finding is the importance of community ownership and long-term engagement, where possible. The short-term timescales, especially during emergency response and in funding processes, often hinder meaningful collaboration, which requires trust-building and respect for intellectual property. Humanitarian practitioners should adopt a supportive role—providing technical knowledge, funding, and material needs, where necessary, while centring local knowledge and practices. However, this must not result in risk transfer. Humanitarian operations should not be displaced entirely but instead undergo **systemic reform based on mutual learning, power redistribution, and iterative feedback structures, supporting decolonisation of aid architecture and ethical engagement**.

EXECUTIVE SUMMARY

From the insights from the literature and interviews, the report concludes that meaningful engagement with ILK requires reforms in funding, shifts towards local ownership, equitable co-production, formal recognition of ILK, inclusion of marginalised groups, and longer-term approaches. It offers the following recommendations to the DEC Secretariat, DEC member charities, and the wider humanitarian sector to support these changes:

Funding	For DEC Secretariat: 1. Explicitly allocate a minimum fixed percentage of raised appeal funds for ILK holders (mutual aid groups, elder groups, etc) 2. Support long-term funding cycles by reopening Appeal fundraising channels when possible and actively work to educate the public on the need for preparedness and AA For DEC Member Charities: 1. Increase the amount of direct, flexible funding to Indigenous and local communities in programming.
Knowledge Support	For DEC Member Charities: 1. Use processes of genuine and balanced co-production, where ILK and mutual learning are foundational and iterative feedback is built in 2. When incorporating ILK in projects, focus primarily on technical support where required and allow Indigenous and local communities control over priorities, solutions, design, and implementation, in line with equitable co-production and commitments to local leadership 3. Support research and open-access documentation efforts to expand engagement with ILK and to promote knowledge preservation and sharing 4. Seek out partnerships with marginalised voices, especially WLOs, grassroots organisations, and Indigenous-led organisations, to ensure inclusivity and better engage with Indigenous matriarchal knowledge systems 5. Support preexisting knowledge and response structures, such as Indigenous and local NbS and mutual aid, rather than imposing external interventions
Programming Structures and Long-term Engagement	For DEC Secretariat: 1. Create a specific section in proposed programming and reporting mechanisms where DEC member charities outline their engagement with ILK For DEC Member Charities: 1. Advocate collectively to donors to shift towards engagement that is long-term and occurs before crises to overcome timescale barriers to ILK integration 2. Establish long-term partnerships with Indigenous and local knowledge-holders to build trust, protect intellectual property and land rights, and support them in the protracted issues they face, such as climate change and land dispossession
Institutionalisation	For DEC Secretariat and/or Member Charities: 1. Institutionalise an approach to co-production that centres ILK as a foundation, equitable partnerships, and mutual learning a. Include in this institutional policy approaches to co-production of NbS and EWS 2. Expand and institutionalise SCLR and LLAA approaches 3. Through preexisting frameworks, specifically UNDRIP and Free, Prior, and Informed Consent (FPIC), and member experience, create and institutionalise approaches to ethical engagement with IKS and Indigenous knowledge-holders

(Figure 1)

ACRONYMS

AA Anticipatory Action

CB-EWS Community-based Early Warning Systems

COP30 30th Conference of the Parties

DEC Disasters Emergency Committee

EPP Emergency Planning Preparedness

ERF Emergency Response Frameworks

EWS Early Warning Systems

GMA Global Mangrove Alliance

IDPs Internally Displaced Persons

ILK Indigenous and Local Knowledge

IKS Indigenous Knowledge Systems

LLAA Locally led Anticipatory Action

NbS Nature-based Solutions

SCLR Survivor and Community-Led Response

WLOs Women-led Organisations

KEYWORDS

Anticipatory Action

“Refers to actions taken to reduce the impacts of a specific, imminent, forecasted hazard before it occurs, or before its most acute impacts are felt. The actions are carried out in anticipation of a hazard’s predicted impacts and based on a forecast [or early warning] of when, where and how the event will unfold” (Ball, 2024).

Climate Change Adaptation

Refers to the process of adjusting to the effects of climate change, both current and anticipated, such as floods, droughts, and extreme weather events, to reduce vulnerability and moderate harm to people and ecosystems (UNFCCC, n.d.).

Climate Resilience

Refers to the ability of communities, ecosystems, and systems to prepare for, withstand, and recover from climate-related shocks and stresses. It involves actions that reduce vulnerability and enhance adaptive capacity to cope with climate change impacts (Mehryar, 2022).

Community

We have used the term “community” throughout this report to describe a social unit of individuals who share a common geographical location, characteristics, and shared relations/connections (e.g., a sense of belonging and interaction). However, it is important to note that the term can be problematic as it is often used ambiguously in politics and social discourse, leading to misunderstandings about who is included or excluded within a community.

Co-production

Refers to a collaborative process where researchers and local stakeholders, such as NGOs and community members, work together to create knowledge that addresses specific needs and challenges. This approach emphasises equitable partnerships, shared decision-making, and the importance of local insights in shaping research outcomes (Wake & Lokot, 2021).

Emergency Response Preparedness

Refers to proactive planning and actions taken before an emergency occurs to ensure a swift and effective response. It includes risk assessment, training, and the development of procedures and resources to protect lives and property during emergencies (UNHCR, 2023)

Humanitarian Continuum

A continuous progression of aid that links relief, rehabilitation, and longer-term development efforts across humanitarian agencies.

KEYWORDS

Indigenous and Local Knowledge Systems

A framework of understandings and strategies built upon natural, cultural, social, and spiritual beliefs and practices and long-term interactions with the surrounding environment.

Knowledge Holders

The individuals or structures within a local or Indigenous community that hold and pass down environmental, cultural, spiritual, and social knowledge; varies by community, but often includes elders, spiritual leaders, artisans, community councils, and (particularly for Indigenous communities) women.

Localisation

A term used within the humanitarian sector to describe processes of redistributing power and enabling increased local capacity and involvement through international support rather than decision-making power that has been institutionalised and built on through the 2016 Grand Bargain.

Locally Led Anticipatory Action

“A process driven and led by communities and actors, at the local level to create an enabling environment for anticipatory action by: empowering communities and local actors to implement their own early actions; identifying and communicating gaps and weaknesses in early warning systems and planning and coordinating mechanisms; and advocating for flexible or pre-agreed financing for autonomous locally led early action ahead of the peak impact of forecastable or predictable hazardous events, or shocks, to reduce their impact” (Ball, 2024).

Nature-Based Solutions

“Actions to address societal challenges through the protection, sustainable management and restoration of ecosystems” (IUCN, 2020).

Survivor Led Community Response

A humanitarian approach that “aims to keep decision-making power in communities, giving communities and people the autonomy to identify, prioritise, and address unmet needs. [It] is designed to complement but not replace other humanitarian and development support” (Christian Aid, 2024).

Western

We have used this term to recognise and identify long-term and inherently colonialist structures within the world order that reinforced dominance and divisions between the Global North and South, using extractive and exploitative power dynamics.

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01. INTRODUCTION

1.1 BACKGROUND

This research examines the role of Indigenous and local knowledge (ILK) in climate adaptation, resilience, and preparedness within the context of humanitarian action, particularly that led by the member charities of the Disasters Emergency Committee (DEC).

ILK systems are complex, holistic understandings of place and social context, developed over generations through direct interaction with natural surroundings (Aijazi & Basu, 2023; Start Network, 2025). They are diverse and reflected in oral traditions, cultural practices, and spiritual values (ibid). This knowledge is crucial for ensuring context-specific, locally owned, and environmentally and socially just strategies for disaster risk reduction, early warning, and resilience (Jigyasu & Sen, 2022; Mercer et al., 2010). Despite growing attention in development studies and humanitarian literature, ILK continues to be rarely applied in practice and faces several threats to its preservation. If included, it is often extracted or co-opted by international organisations and Western scientific frameworks, undermining community ownership and resulting in unequal and frequently ineffective interventions (Agrawal, 1995; Start Network, 2025). Existing literature offers limited guidance on how to meaningfully engage with ILK in development and humanitarian practice, particularly in conflict-affected settings. Moreover, **ILK integration is rarely examined within the broader political and social power structures that marginalise these systems, shape the global humanitarian sector, and contribute to climate change.**

The DEC is a unique membership organisation, comprising 15 of the UK's leading humanitarian charities. Since 1963, it has raised 2.5 billion GBP to help save lives in disaster-affected communities around the world. DEC charities and their local partners have most recently launched appeals for the Myanmar earthquake in March 2025 and a Middle East humanitarian appeal in October 2024, with funds raised for emergency responses in Syria, Lebanon, Gaza, and the West Bank.

In response to overseas disasters, the DEC launches high-profile appeals, coordinates and distributes resources, and, through its member charities and local partners, carries out vital emergency response and recovery efforts. Most DEC member charities emphasise working through local partners, believing that investing in community approaches leads to more impactful humanitarian responses, and a vital part of their localisation efforts is engaging ILK systems.

In line with this emphasis on local leadership, the Grand Bargain, a 2016 agreement between major donors and humanitarian organisations, has encouraged power redistribution efforts within the humanitarian sector, via the concept of “localisation.” **Localisation**, a pledge to directly provide at least 25% of humanitarian funding to local and national responders, aims at closing the humanitarian funding gap and improving the

effectiveness of humanitarian response through commitments to transparency, reduced bureaucracy, flexible funding, anticipatory action, and engagement with ILK (IASC, 2024).

Along with DEC member charities' commitments and the Grand Bargain, global acknowledgement of the role of ILK within climate action and policy has steadily increased. The 30th Conference of the Parties (COP30) in 2025 featured the largest Indigenous representation in COP's history, but it was also marked by protests from Indigenous communities over continuous violence and dispossession, a restriction of only 360 Indigenous delegates with Blue Zone access (where official negotiations take place), and a lack of implementation following the conference's end (Bakker, 2025). Despite the Grand Bargain and Indigenous participation in COP30, oppression and silencing of Indigenous and local communities persist in national and international spaces. Therefore, together with the growing threats to Indigenous and local communities through climate change, violence, and displacement, the question of how the humanitarian system can engage with ILK has become more crucial than ever and is essential for advancing the DEC member charities' commitments to local partnerships.

This research will examine the significance of ILK systems in climate adaptation and resilience, the threats of their erosion from various sources, such as conflict, climate change, displacement, and power imbalances, and potential entry points for engagement across the humanitarian continuum. Section 1 provides background and an introduction on why this research is critical. Section 2 outlines the methodology to address the research process and potential limitations. Section 3 will provide information on what ILK is, examples of its uses in climate adaptation and resilience, and threats it faces, as well as case studies on Syria and the West Bank to provide a glimpse into ILK in the DEC appeal-funded contexts. This section seeks to inform humanitarian practitioners of the instrumental role of ILK in cultural preservation, climate change adaptation, resilience, and disaster response, as well as the threats knowledge-holding communities face to promote better climate interventions and protection of Indigenous and local communities. Section 4 highlights potential entry points to ILK engagement across the humanitarian continuum, addressing resilience, preparedness, anticipatory action, emergency response, and climate adaptation and recovery. This section aims to provide examples that will assist DEC member charities and the greater humanitarian system in centring, supporting, protecting, and investing in ILK throughout the humanitarian continuum.

1.2 RESEARCH QUESTIONS

Question 1: In crisis and displacement contexts, how do Indigenous and local knowledge systems drive climate and environmental risk adaptation and mitigation strategies?

Question 2: What structural, political, and operational factors disrupt or undermine these knowledge systems?

Question 3: What shifts in practice, approaches, partnership models, and decision-making processes are required for DEC members to meaningfully centre, support, protect, and invest in ILK throughout the humanitarian continuum, in line with localisation commitments?

1.3 REPORT AIMS

This research seeks to present ILK and its role in climate adaptation and risk mitigation strategies, the threats ILK and knowledge-holders face, and potential entry points for ethical ILK engagement across the humanitarian continuum. The report provides **only a glimpse** into ILK, particularly in the DEC appeal contexts, and thus seeks to also prompt further research on the topic. Finally, through this information, the report aims to improve approaches to centring, supporting, protecting, and investing in ILK towards better security for knowledge-holding communities, more effective climate action, and decolonisation of the humanitarian system.

02. METHODOLOGY

This report uses a qualitative, desk-based approach, combining literature and interviews with key informants. The literature includes a wide range of academic, policy, and institutional sources that address ILK, climate adaptation, humanitarian response, and locally led action, as well as a review of internal DEC documents on the Middle East Humanitarian Appeal and the Myanmar Earthquake Appeal. The literature was complemented by 21 interviews with both representatives from DEC member charities and external informants.

2.1 INTERVIEW STRUCTURE

The researchers conducted 21 interviews with representatives of 15 DEC member charities, academics, and representatives of other humanitarian organisations. Due to time and capacity restrictions, the other DEC member charities were unable to participate. *Table 1* in the Appendix presents the list of interviewees' organisations and roles.

Interviews explored (1) the role of ILK in climate adaptation, resilience, and response; (2) where ILK is located in communities; (3) threats to ILK; (4) processes for engaging with ILK in humanitarian action; and (5) barriers in the humanitarian system to ILK engagement.

2.2 ETHICAL CONSIDERATIONS

Informed written or spoken consent was obtained from all interviewees. Interviewees were made aware of the purpose of the study, their right to confidentiality and withdrawal, and voluntary participation. The study also underwent an ethics approval process at the London School of Economics and Political Science. The interviewees include representatives of DEC member charities with a range of roles, as well as some external informants. However, no Indigenous or local actors, whose voices are essential for more informed and ethical research on ILK, were able to participate in the interviews due to time and capacity restraints.

2.3 STUDY LIMITATIONS

The report acknowledges the following limitations:

1. **Representation of DEC Member Organisations:** Due to time and capacity restraints, the interviews include practitioners from only seven of 15 DEC member charities, and as a result, the full scope of the DEC membership is not reflected.
2. **Lack of Local and Indigenous Perspectives:** The researchers were unable to consult local or Indigenous knowledge-holders or practitioners and engaged with very few Indigenous-led publications due to time and capacity restraints and difficulty finding verified Indigenous-led sources. These perspectives would have deeply enriched the team's understanding of ILK systems and allowed for more informed recommendations.
3. **Limited Research:** Research into local and Indigenous knowledge across the four focal contexts was limited in depth and breadth, due to protracted conflict, climate change, and displacement. In Gaza, available research and interviewees were particularly limited. This limits the insights of the report and is a point for further research when the situation allows.
4. **Generalisability and Transferability:** Due to the limited sample size, lack of Indigenous and local perspectives, and the deeply context-specific nature of ILK, the team recognises the findings are limited in their generalisability and transferability. Engagement with Indigenous knowledge requires careful discussion of consent and appropriation, which must be considered in planning timescales and the potential entry points.
5. **Researcher Positionality:** All three researchers have Western backgrounds and carried out this research in the United Kingdom, limiting the interpretation of Indigenous and local practices.

03. CONCEPTUALISING AND OPERATIONALISING INDIGENOUS AND LOCAL KNOWLEDGE

To understand the importance of Indigenous and local knowledge systems for improved humanitarian interventions, it is first essential to outline what these systems are, their instrumental role in climate adaptation and resilience, and the threats they face, especially in contexts of violence and displacement and within the humanitarian system itself. To do so, this section will include insights from both the literature and interviewees.

3.1 A NOTE ON TERMINOLOGY

The terms “Indigenous” and “local” are often used interchangeably, but important distinctions exist between the two. Indigenous knowledge is rooted in Indigenous communities and “the understandings, skills, and philosophies that have developed over long periods” in these communities and through their deep ties to their lands (Start Network, 2024, p.6). Indigenous peoples are often considered as such due to their relation to the original inhabitants of a place (Adaptation Research Alliance & Transitions Research, 2025). Local knowledge refers to long-developed insights, practices, and beliefs of communities through observation and interaction with a specific place. These communities often share a common history and culture but are not necessarily related to the original inhabitants of the land (ibid).

Throughout this report, **Indigenous and local knowledge will be referred to together as ILK.** This choice was made due to the shared characteristics of the two, particularly being place-specific and tied to lived experience and culture, and the pertinence of both forms to informing local environmental practices. Research on Indigenous knowledge, especially in crisis-affected regions, is particularly lacking. Deeper engagement with Indigenous knowledge requires careful consideration and discussions on consent and appropriation, potentially presenting a challenge for its inclusion in short-term humanitarian emergency response, although we argue in this report that there are many entry points within the humanitarian continuum for including Indigenous knowledge. The inclusion of both “Indigenous” and “local” was felt to be essential because **distinctions between the two are often contested due to different understandings of what represents Indigenous or local knowledge and because the exclusion of either risks the loss of key insights.**

This report also uses the term “*community*” in reference to local and Indigenous peoples. The term relates to their shared geographic spaces, characteristics, or relations, as the report seeks to address barriers of preservation, such as displacement and land dispossession, and approaches of local engagement. However, we acknowledge that community can be a problematic, ambiguous term. Representation of how local and Indigenous individuals define their community, as well as diaspora communities, is a key piece of ILK engagement and preservation that should be highlighted in future research.

This section will also address key concepts related to ILK and its role in climate work: climate change adaptation, resilience, nature-based solutions, and community-led response. Climate change adaptation refers to shifts in strategies and practices to adjust to anticipated and current climate change effects to reduce vulnerability and mitigate harm (UNFCCC, n.d.). Climate resilience refers to the ability of individuals, communities, or systems to withstand, cope with, and recover from climate disasters and stresses (Mehryar, 2022). “Nature-based solutions” is a term developed by the International Union for Conservation of Nature (IUCN), defined as actions to sustainably manage, restore, and protect ecosystems to benefit

both the environment and human welfare in the face of societal and climatic changes (IUCN, 2020). They can be connected to ILK systems but are not inherently Indigenous or local. Community-led response focuses on empowering local decision-making, prioritising community needs, and using community knowledge in crises to improve humanitarian interventions (Christian Aid, 2024).



3.1.1 Caveat on the Use of ILK

While ILK plays a crucial role in climate resilience and adaptation, it is essential to acknowledge that **not all Indigenous and local practices are inherently positive or effective**, underscoring the importance of thoughtful engagement and processes of scientific and technical integration (Interviewee 12, personal communication, 11 December 2026; Start Network, 2025). The “*noble savage*” trope portrays Indigenous and local peoples as inherently good and harmonious with nature and takes on an uncritical perspective on who counts as “*Indigenous*” or “*local*”, with an assumption of ecological insight simply because an individual comes from a certain place (Interviewee 6, personal communication, 27 January 2026; Interviewee 12, personal communication, 11 December 2026). This essentialist trope reduces the complexities and power dynamics entrenched in certain places. In many rural communities, problematic cultural ideas and practices remain prevalent. Exclusion of women from learning or skill procurement, as well as gendered allocation of labour and child labour, persist in some local and Indigenous communities (Interviewee 6, personal communication, 27 January 2026; Interviewee 8, personal communication, 9 December 2025; Jigyasu & Sen, 2022).

Many Indigenous and local communities are also heavily burdened by poverty and a lack of opportunity. More frequently, they grow commercial crops through commercial practices or express a desire “to employ...modern technology and modern farming techniques, if [they] could afford them,” and younger generations, and their families, want formal educational opportunities and the possibility of new livelihood opportunities (Briggs, 2025, p.99; Interviewee 6, personal communication, 27 January 2026). Some traditional practices also may not be suitable for certain climate stresses and disasters. For example, traditional architecture in Haiti made from riverstone and in Morocco made from adobe masonry and natural stone masonry faced greater damage and collapse during earthquakes than modern buildings (Imtiaz et al., 2025; Interviewee 13, personal communication, 16 December 2025). Balance is imperative in ILK engagement. Humanitarian practitioners should identify and centre best practices while also supporting development, livelihoods, and marginalised groups within local and Indigenous communities.

3.1.2 Limitations and Recommendations for Further Exploration

This report acknowledges limitations that raise key issues for future research. The researchers were unable to interview any Indigenous or local actors or review many Indigenous-led publications due to time and capacity restraints, as well as difficulty finding verified Indigenous-led sources. Similar barriers also limited this report in addressing ILK in the DEC appeal contexts and conflict-affected regions generally, as well as in identifying specific entry points across the humanitarian continuum, especially in emergency response due to its short-term timescales. Due to the complexity of ILK, the report does not address all elements of ILK in depth or the multifaceted ways that ILK and its knowledge-holders could be understood, such as diaspora communities. This leaves several points open for further exploration: further examples and entry points from the DEC appeal contexts and conflict-affected regions generally; context-specific entry points for humanitarian practitioners, especially in emergency response; in-depth analysis of various elements of ILK systems, including its instrumental role in conflict prevention and response; different approaches to understanding “local” and “Indigenous” communities; and most crucially, Indigenous and local voices directly addressing the topic.

3.2 HOW THE LITERATURE DEFINES ILK

ILK systems are **environmental, cultural, social, and often spiritual ways of knowing** that are developed through generations of interaction with specific environments and informed by an emphasis on the interdependency of humanity and nature (Jigyasu & Sen, 2022; Start Network, 2024). They are often transmitted orally but can be passed down through other means, such as recorded histories, observation and participation, or ceremonies (Malapane et al., 2024). They are deeply tied to specific locations, communities, and world views. Simultaneously, they are open, flexible, and constantly evolving, integrating insights from multiple sources to produce holistic understandings of their environment and world (Agrawal, 1995; Start Network, 2025). The knowledge-holders vary by community and by the type of knowledge, often elders but also local authority structures, youth groups, women's groups, local artisans, and others (Adhikari, 2024; Interviewee 8, personal communication, 9 December 2025; Interviewee 12, personal communication, 11 December 2026; Start Network, 2025).



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3.3 THE ROLE OF ILK IN CLIMATE CHANGE ADAPTATION AND RESILIENCE

Climate change adaptation refers to the process of adjusting to the effects of climate change, both current and anticipated, such as floods, droughts, and extreme weather events, to reduce vulnerability and moderate harm to people and ecosystems (UNFCCC, n.d.). **Climate resilience** refers to the ability of communities and ecosystems to prepare for, withstand, and recover from climate-related shocks and stresses (Mehryar, 2022). It involves actions that reduce vulnerability and enhance adaptive capacity to cope with climate change impacts (ibid).

Indigenous and local communities have developed environmental knowledge and adaptation resilience strategies over generations. Through close observation and interaction with specific environments, these communities are able to identify fine-scale environmental indicators, allowing them to anticipate seasonal changes and extreme weather events and adapt accordingly, leading to **greater resilience and recovery** (Start Network, 2025). They also use and apply their traditional ecological knowledge to protect, conserve, restore, and sustainably manage ecosystems, supporting resilience, human well-being, and biodiversity (Jang, 2024). The examples below are only a glimpse into the extensive knowledge and practices of local and Indigenous communities.



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3.3.1 Examples of Indigenous and Local Climate Change Adaptation and Resilience

Weather Forecasting and Community Monitoring

Knowledge of fine-scale ecological indicators enriches weather forecasting, particularly where scientific forecasting and technology are less available (Start Network, 2025). In Meghalaya, India, the Garo tribe uses a variety of indicators to understand and predict climatic changes in their local environment, such as bird nesting patterns to predict wind strength, croaking of the Indian bullfrog to predict monsoons, and the proximity of crab burrows to predict potential flooding (Aijazi & Basu, 2023). In the Vhembe district of Limpopo Province in South Africa, rural farmers frequently cite Indigenous knowledge for forecasting and agricultural decisions, such as the appearance of red ants indicating a drought season, the movement of dragonfly swarms to predict the end of the rainy season, or star migration east to west as a sign of incoming rain (Kom et al., 2023). In Leyte Gulf in the Philippines, fishers predict typhoons and heavy rain when wild pigs gather up leaves and twigs for shelter, and when red skies or strong winds accompany this behaviour, they know to secure their boats and seek safer ground (Dorji et al., 2024). **Connecting community knowledge with technical meteorological forecasting is crucial for improved climate interventions** and is a focal point of locally led anticipatory action initiatives (see section 4.3).

Monitoring also extends to social systems. Community protection committees track changes in coping strategies or social systems and devise protection plans based on community needs (Oxfam, 2021). These committees can be useful for both climate- and conflict-related issues. Intimate knowledge of social and cultural norms and behaviour patterns allows these committees to identify changes that may signal emerging crises. These changes can include school attendance, which is increasingly disrupted by climate crises like heatwaves, the elderly selling assets, and early detection of disease outbreaks (HelpAge International, 2023; UNICEF, 2025; Ratnayake, 2020). **Gender-sensitive monitoring is especially important.** Women's organisations have unique knowledge of gender-based violence, shifts in gendered power relations, and men's movements within and outside the home, which can all indicate incipient conflict (Coomarasway, 2015). Several gendered indicators suggest conflict, including increased rates of domestic violence, rape, and sex trafficking; increased harassment, arbitrary arrest, and interrogation of civilian men; curtailment of women's freedoms and reverting to traditional gender roles; and increased numbers of female- or male-headed households (ibid). Women are also often prescribed roles as providers of food and water for their families, giving them distinct knowledge of agricultural crises and water scarcity, and their vulnerability to climate shocks can lead to new livelihood pathways that become a sign of crisis (ibid).

Agroecology and Sustainable Land Management

Locally developed practices and strategies are tailored to specific environments and support both livelihoods and ecological health. These strategies can take many forms but centre around agroecological and sustainable land management practices. **Agroecology** involves the application of both ecological and social principles to the management of agriculture and food systems, emphasising the relationship between environmental and human well-being (UNFAO, n.d.). **Sustainable land management** refers to “a knowledge-based procedure that helps integrate land, water, biodiversity, and environmental management” to meet human needs while also preserving ecosystems and livelihoods (World Bank, 2006, p.xiv).

In East Africa, pastoralist communities use rotational grazing and mixed-species herds for improved plant growth and diversity, reduced soil erosion, and enhanced animal health and performance (Prodairy East Africa, 2024; Nyariki et al., 2005). Indigenous and local agricultural practices are based on sustainability and harmony, emphasising reciprocity and care for the land in food production (Rúa, 2024). These practices include rotational agricultural plots in the traditional farming system of the Indigenous Maya, agroforestry (in which crops are intentionally planted alongside trees and shrubs) in West Africa, and cultural burning for land management and bushfire mitigation by Aboriginal Peoples in Australia, which, when displaced for Western practices, can lead to higher rates of wildfires (Smith et al., 2021; UNDP, 2024). In south Bangladesh, floating gardens, where water hyacinth is woven together to create a bed to grow vegetables without soil, help reduce vulnerability during monsoons, allowing food production even in flooded areas (Interviewee 8, 9 December 2025; Sunder, 2020). On Mount Hermon, located on the Syria-Lebanon border, local communities see the mountain as a sacred place and have developed long-standing agroecological practices—intercropping, terracing, organic composting, integrated crop-livestock systems, rain harvesting, and detailed knowledge of forage and medicinal plants—to support livelihoods and the mountain’s natural biodiversity and resources (Baydoun et al., 2024).



Communities' strategies also evolve with and respond to changing climatic conditions and disasters. These strategies vary by region but include **growing more resilient crops**, such as drought resistant crops planted by the Naxi peoples in China or yam and tapioca resistant to extreme weather in Fiji; **storage techniques**, such as storing food in advance of natural disasters in Tuvalu; **changes in hunting and fishing**, seen in the Arctic where hunters have shifted from customary spring to fall hunting in response to changes in sea ice or in fishing conservation zones in Salween Peace Park in Myanmar, managed by the Karen National Union; and **water resource management**, such as the reopening of traditional wells and use of ancestral maintenance techniques on Oneisomw Island (Dorji et al., 2024; Huntington et al., 2017; ICCA Consortium, 2021). Traditional architecture has performed better in earthquakes in many areas, such as the 2024 earthquake in Vanuatu and the 2003 earthquake in Algeria, although it has also performed worse in others, for example, in the traditional structures in the Marrakesh Medina and rural areas of Morocco during the 2023 earthquake, emphasising the importance of balanced engagement that supports best practices but also encourages new strategies where necessary (Imtiaz et al., 2025; Jigyasu & Sen, 2022; Interviewee 13, personal communication, 16 December 2025). Lebanon, grappling with the effects of climate change, conflict, and displacement, faces water scarcity and the potential for increasingly frequent and intense drought (Gharios, 2019). Ancestral communal pools, called *birket*, which store runoff and rainwater and are primarily found in southern Lebanon, encourage sustainable water management that protects against the effects of drought, bolstering seasonal irrigation, livestock care, and livelihoods (ibid).

Nature-based Solutions

So-called Nature-based solutions (NbS) can also be linked to ILK, although the term comes from external practitioners and is not inherently an Indigenous nor local practice. However, some Indigenous and local strategies could be considered NbS. Indigenous and local “NbS” are grounded in the following ecological principles: **an emphasis on the interdependence of humanity and nature, reciprocity, regulations constructed through spiritual and cultural beliefs, livelihood-based designs, community-based governance, practices of care for nature, and social justice, encompassing nature, the community, and individuals as one equal system** (Riamit, 2022). Clam gardens, used by the First Nations along the northwest coast of North America, are rock walls constructed in intertidal zones for increased shellfish productivity, allowing for economic and food sovereignty, enduring connection to the land, and collective labour (Jackley et al., 2016). In Senegal, coastal areas face rising sea levels, flooding, and erosion, which have also impacted tourism, a key industry in the local economy (Van Oord, n.d.). NGOs and INGOs have worked alongside local communities to build groynes, detached breakwaters, and anti-salt dikes to reduce coastal erosion, reclaim farmland, and prevent flooding (UNFCCC, 2023; Van Oord, n.d.). Alongside beach reconstruction projects, this joint effort between local and international actors has contributed to the environmental and economic well-being of communities in coastal areas (Van Oord, n.d.). In the Ayeyarwaddy delta, Rakhine coastal region, and Taninthayi coastal region of Myanmar, mangrove forests are a crucial resource, as they support local livelihoods with resources, like firewood, food, and medicine, absorb more carbon than traditional forests, and perform as natural barriers for floods, storms, and

tsunamis (Critchley & Kyaw, 2023; Thaung, 2023). During Cyclone Nargis in 2008, the rate of survival, as well as the pace of the recovery period, was higher in areas with well-sustained mangrove forests (Thaung, 2023). Such examples exhibit the power of Indigenous and local “NbS” for climate adaptation and disaster preparedness.

3.4 THREATS TO ILK AND KNOWLEDGE-HOLDERS

Despite the many far-reaching benefits of ILK systems, as outlined above, Indigenous and local knowledge-holders face several threats, of which humanitarian practitioners need to be aware. Awareness of these threats will allow for more effective support, protection, and investment in ILK and knowledge-holders. The examples above highlight the importance of ILK for climate change adaptation and resilience, but these knowledge systems are also deeply important to Indigenous and local cultural preservation. **Comprehension of these threats supports the prioritisation of local concerns and meaningful power redistribution within the humanitarian sector in line with the Grand Bargain.** This is particularly important for DEC member charities, which have continuously emphasised local partnerships and leadership in their operations. To truly follow through on power shifts and protection of Indigenous and local peoples, humanitarian practitioners must be aware of the following threats.



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3.4.1 Structural, Political, and Operational Threats to ILK and Knowledge-Holders

Indigenous and local knowledge-holders, and thus the knowledge itself, face a multitude of interconnected threats that undermine their sovereignty, self-determination, and security. Many Indigenous and local communities are among the poorest and most vulnerable, often at the frontlines of conflict, climate change, and land grabs and dispossession (Arellano & Praeli, 2022; Start Network, 2024). **Conflict, globalisation, migration, climate change, and separation from the land** on which the knowledge is based lead to disruption of indicators and knowledge transmission, as well as fragmentation of Indigenous and local communities themselves (Jigyasu & Sen, 2022; Start Network, 2024; Start Network, 2025).

Globalisation

Globalisation, defined as a global economic, political, cultural, linguistic, and environmental interconnectedness that transcends borders and boundaries, can bring benefits and risks to localised and Indigenous practices (Umearokwu & Maduka, 2020). Although globalisation can advantage Indigenous and local communities through access to global markets and new technology, it also poses several threats to language, knowledge, and cultural preservation (He, 2020). **Local languages are increasingly lost to globalisation**, as interconnected markets, global migration, and changes in political and educational institutions drive down language diversity (Umearokwu & Maduka, 2020). Language is key for passing down culture, spirituality, and knowledge, and its loss constitutes a serious threat to ILK preservation (ibid). Physical and social mobility and cultural exchange are key for the development of local and Indigenous communities, but these patterns of globalisation must also be balanced with efforts to support the conservation of traditional languages and practices. Globalisation has also supported processes of co-production, as global connectivity enables cross-cultural knowledge exchanges, although these processes often entrench ILK in existing Western frameworks (ibid). ILK engagement in a globalised world frequently reshapes these systems to fit Western structures and displaces key local practices and languages, requiring a careful balance between development and preservation.

Climate Change

Climate change has resulted in increasingly frequent and intense disasters alongside slow-moving phenomena, such as rising sea levels, and as Indigenous and local communities are often heavily dependent on their land, **the effects of climate change disproportionately impact them**. These impacts on local and Indigenous peoples are **exacerbated by social marginalisation, manifested in poverty, discrimination, land and resource loss, and other such experiences** designed to disadvantage these communities (Start Network, 2024). Climate change also threatens the accuracy of long-developed ILK due to unpredictable and accelerated changes in weather patterns, ecosystems, and animal behaviour (Start Network, 2025). However, due to their intimate understandings of their surroundings, Indigenous and

local knowledge-holders are well-equipped to observe this variance and establish changing climatic and weather patterns, as well as to act as a resource for more effective assessment, mitigation, and adaptation (Zent, 2025).

Land Grabs, Dispossession, and Direct Violence

Whilst wider, regional conflict can threaten Indigenous and local peoples, Indigenous communities are often the target of more direct violence. Sometimes living on lands rich in natural resources, these communities find themselves at the centre of conflicts where armed actors and/or corporate and private security fight for possession of such resources and carry out illegal extraction activities, as seen in conflicts in eastern DRC over mineral access or across Latin America for access to mines, forests, and oil, resulting in the deaths and displacement of Indigenous peoples (Arellano & Praeli, 2022; Twahirwa, 2025). In Myanmar and Mount Hermon on the Lebanon-Syria border, local and Indigenous communities are also at the epicentres of conflicts, with the Salween Peace Park in Myanmar facing attacks and Mount Hermon becoming a site of increased conflict (Al Jazeera, 2025; Cowan, 2023). State violence against Indigenous communities is not only about resources but also about eliminating a threat to a dominant national identity (Greaves, 2018). Despite being **4%** of the global population, Indigenous people account for **a third of the total number of environmental activists killed worldwide** (Arellano & Praeli, 2022). **This demonstrates that Indigenous peoples are deliberately and disproportionately targeted for their land, their identities, and their resistance.** Conflict further erodes ILK by driving people to negative coping mechanisms and deprioritising preservation and environmental concerns for survival (Interviewee 21, private communication, 30 January 2026). As conflicts and direct attacks on Indigenous communities rise in frequency, these forms of violence represent a significant threat to ILK and knowledge-holders.

Land grabs and dispossession, enacted by states, big corporations, and settlers, occur outside of conflict as well but are often motivated by similar reasons, seeking resources, power, and an erasure of indigeneity for a cohesive national identity. Legal doctrines, such as “Marco Temporal” in Brazil, and extractive financial practices, such as pipeline projects on Indigenous lands, represent a form of structural violence, **dispossessing Indigenous communities of their lands and with them, their sovereignty, knowledge, and identities** (Spice, 2018; Umbelino et al., 2025). These land grabs also often take place as part of environmental policies imposed by the Global North, using the facade of sustainability for control of land and resources in a phenomenon commonly referred to as “**green colonialism.**” For example, the Fosen wind farm project on Sámi reindeer herding grounds and lithium mining for electric vehicles in the “Lithium Triangle” (Argentina, Bolivia, and Chile) have both severely impacted local water resources and neglected Indigenous rights to land and environmental resources (Aylwin et al., 2025; Mósesdóttir, 2024). Across the globe, these land grabs occur in the name of renewable energy projects, accusations of Indigenous harm to nature, mineral access for electric vehicles, forests as carbon offsets, and other such excuses.

Migration, Separation, and Language Loss

Climate change, conflict, poverty, and dispossession further threaten Indigenous and local communities and their knowledge by driving migration, both voluntary and forced. Younger generations from these communities increasingly migrate into cities for better employment and educational opportunities, while disasters, conflict, and dispossession generate widespread displacement. Thus, language transmission, kinship networks, and cultural practices are disrupted. Indigenous peoples speak **more than 4,000** of the world's languages, of which **many are under threat of being lost permanently**, and threats to Indigenous languages, which are central to their identities, worldviews, and ecological insights, also mean threats to their ancestral knowledge and even Indigenous peoples themselves (Requesens-Galnares, 2023). Language loss is driven by migration and urbanisation but also by settler colonial actions and assimilation policies (Fernández-Llamazares et al., 2021). As highly place-based knowledge, both Indigenous and local systems are obstructed by migration and displacement, which separate the knowledge-holders from the land. Whether forced or voluntary, the movement of local and Indigenous communities erodes their knowledge systems, reinforcing vulnerability and undermining resilience in a vicious cycle.



3.5 CHALLENGES IN ENGAGEMENT WITH ILK

Despite Indigenous and local communities being at the forefront of climate change, conflict, and land disputes, their voices and knowledge are frequently excluded from national and international decision-making arenas (Start Network, 2024). Persistent colonial structures, undervaluation of ILK, and deliberate barriers to their participation remain, weakening the potential of peacebuilding and climate frameworks (ibid). This exclusion exists within development and humanitarian systems, as well, because they are colonial structures. As noted by an interviewee from one DEC member charity, **preconceived Western ideas about development and humanitarian practices remain a challenge to the full integration of ILK and its holders** (Interviewee 21, personal communication, 30 January 2026). These ideas merge with centralised funding mechanisms, complex international and national negotiations, and national government resistance to create persistent barriers (Interviewee 18, personal communication, 26 January 2026). An interviewee from one DEC member charity describes how “the colonial mentality...[or] West knows best” attitude affects not only the international system but also governments and education systems, and this creates a culture which devalues knowledge outside of formal universities and works together with the instinct towards control and centralisation in government against ILK integration (ibid). A lack of support from international organisations and governments for ILK systems—or even discouragement against them in some cases—can pose a significant threat, especially as communities are already in such vulnerable states (Interviewee 17, personal communication, 19 January 2026). Aid without consideration of community needs, knowledge, and practices reverts to the colonial origins of the system, setting a dangerous precedent for the future of ILK.

Standardised humanitarian practice and modes of operation similarly pose a challenge to genuine engagement with ILK. External programming and donor demands shape the humanitarian system towards pre-designed, expertise-based responses, especially among global and national-level clusters and large institutions, and engagement with ILK and community-led responses is often secondary or nominal only (Interviewee 7, personal communication, 22 December 2025; Interviewee 16, personal communication, 12 January, 2025). As one interviewee surmised, humanitarian responses also tend to be large-scale responses to significant, visible disasters, and because ILK often underpins everyday coping and anticipatory action or is present in areas with less visible crises, it is often not integrated into programming and emergency response (Interviewee 11, personal communication, 9 January 2026; Start Network, 2025). As another interviewee shared, recent shifts in funding, along with long-standing risk requirements, reduce the risk appetite of international organisations and constrain accessibility of funds to local actors, especially those in more politicised spaces and with more informal structures, which is precisely where ILK is most prevalent and most threatened (Interviewee 12, personal communication 11 December 2025; Interviewee 18, personal communication, 26 January 2026). These dynamics in the international system, which prioritise Western expertise and restrict funding access and input, contribute to the erosion of ILK through exclusion and devaluation.

The Effects of Colonialism and Patriarchy in Aid

The operations of Indigenous and local civil societies have also been overtaken by Western principles of standardisation and “NGOification.” An interviewee from one DEC member charity reports how in the case of Syria, activists at the inception of the revolution united over a Syrian identity and a desire to help others, but as that identity became more fragmented over time and they became subsumed into the aid architecture, the colonial roots and bureaucratic structure of the aid system changed how they functioned (Interviewee 12, personal communication, 11 December 2026). The obstacles to securing funding often **force local organisations to reshape themselves and their programmes to donor desires**. “NGOification” also feeds into standardisation in aid delivery and crisis response. Aid provision is often irrelevant to community needs, such as standardised hygiene kits, or displaces communal coping skills, such as gas cylinders, which supplant low-carbon practices and communal coping skills (Interviewee 21, personal communication, 30 January 2026). In South Sudan, pastoralist communities had to abandon traveling north during the dry season for access to humanitarian distribution based only in the same urban areas (Interviewee 12, personal communication, 11 December 2026). Standardisation forces communities into the impossible choice between survival and ILK-based practices for the sake of financing and planning convenience. Engagement with Indigenous and local communities **requires decolonisation and restructuring of aid architecture as a whole**, rather than reshaping local organisations towards international practices.

Engaging ILK in international systems that have been formed through colonialism, capitalism, and patriarchy also risks extractive or transformative approaches that dismantle the principles at the heart of ILK. Indigenous systems, in particular, are often matriarchal ways of knowing. Indigenous communities have historically centred women in social structures, and lineage, respect, and knowledge are passed down through the maternal line (Ensor, 2025). **Women often hold the stories, songs, and practices, like farming, medicine, and weaving, that form and preserve Indigenous knowledge** (ibid). Patriarchal colonial systems, both historically and currently, threaten these matriarchal systems by imposing their gendered notions and structures upon Indigenous communities (Owámniyomni Okhódayapi, 2024). Indigenous women also face specific forms of systemic violence. During European colonisation, they suffered forced sterilisation, sexual violence, and family separation, and these practices persist, alongside high rates of femicide, for example, against Mayan women in Guatemala (Karla, 2022). Despite this violence and attempts to deconstruct these matriarchal systems, Indigenous women remain crucial to knowledge preservation and climate and peace advocacy, but humanitarian actors, although they often make references to engagement with women-led organisations (WLOs) and female knowledge-holders, are also often patriarchal in nature and have not sufficiently included and protected Indigenous women (Ensor, 2025; Adhikari, 2024). Centring Indigenous women and matriarchal systems is a key step towards meaningful ILK engagement.



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Co-production Challenges

Co-production, a collaborative process of combining ILK with Western science, is essential to effective climate adaptation and disaster response, but currently, co-production is not widely practised and has no standardised approach, often leading to the reproduction of colonial, extractive practices when carried out (Start Network, 2025). Western science often acts as a benchmark against which to assess the value and effectiveness of ILK (Klenk et al., 2017). This approach frames ILK as data, portraying it as something fixed that should be incorporated into already existing scientific models, and the elements of ILK that do not conform to standard scientific frameworks are dismissed, specifically its cultural and spiritual principles (ibid). If approached in this way, co-production is not a collaborative process but extractive, selectively taking from ILK systems to reinforce the dominance of Western science and global climate governance regimes (ibid). Equitable co-production goes beyond consultation; rather, **it requires ILK to be foundational, not adding ILK to already existing scientific frameworks but bringing the two together as a complementary approach** (Start Network, 2025). To do so, direct funding for collaboration, iterative feedback and validation (of local indicators) mechanisms, community ownership, and processes of mutual learning are all crucial (Start Network, 2025; Mercer et al., 2009). For Indigenous knowledge in particular, external actors must also consider and respect Indigenous rights around knowledge ownership, consent, and self-determination (Lo et al., 2026). Frameworks, such as the United Nations Declaration on the Rights of Indigenous Peoples and Free, Prior, and Informed Consent (FPIC), guide engagement with Indigenous knowledge (ibid). This guidance prevents appropriation and protects Indigenous human rights, but the process of information provision and negotiation is an important challenge to consider when thinking of humanitarian timescales in emergency response.

Understanding Power Dynamics

In engaging with ILK, it is also important to consider local dynamics and the need for diverse, context-specific approaches. Understanding Indigenous and local approaches requires attention to prior civic associations, social movements, and complex local circumstances rather than assuming all local practices are equitable or representative (Mac Ginty & Hamieh, 2010; Briggs, 2005). **External engagement with ILK often misses the nuances of local power structures and dynamics**, which affect whose voices are heard, such as those with literacy or time to attend meetings (Interviewee 8, personal communication, 9 December 2025; Interviewee 12, personal communication, 11 December 2026). Community members, especially marginalised groups, are deeply aware of these dynamics, and deliberately seeking consultation with these groups is key for equitable, genuine ILK engagement (Adhikari, 2024). WLOs, for example, hold knowledge of local gender dynamics and gendered impacts of crises, as well as specific environmental and cultural knowledge, and in local communities where gender inequalities and gendered divisions of labour sometimes persist, they are an invaluable resource for effective humanitarian and development operations (ibid). **Humanitarian engagement risks reproducing exclusion** without active interrogation of local dynamics and the impact of gendered and other inequalities on access to participation (Baydoun et al., 2024; Interviewee 8, personal communication, 9 December 2025). Therefore, engagement and local participation must not simply be approached through blanket participatory planning toolkits and knowledge-exchange workshops, but rather through deliberate consultation with marginalised groups, continuous feedback loops, iterative improvement, and community ownership where possible in emergencies (Forsyth, 2018; Interviewee 16, personal communication, 12 January 2026).

3.6 ILK IN THE DEC APPEAL CONTEXTS

The most recent DEC humanitarian appeals have been the Middle East Humanitarian Appeal in October 2024, which raised funds for Syria, Lebanon, Gaza, and the West Bank, and the Myanmar Earthquake Appeal in March 2025. Consequently, this report sought to explore the role of ILK in climate adaptation and resilience in these contexts. However, we found that the research on ILK in these countries is limited or difficult to identify, as all of these contexts have experienced protracted conflict and occupation, especially their Indigenous populations. With the adoption of ILK in Western academia and policy largely taking off in the 1990s, major gaps persist in the literature (Aswani et al., 2018). Thus, **the following case studies aim only to offer a glimpse of what ILK and threats against it look like in these regions and the potential implications for humanitarian operations of DEC member charities.** ILK may be found in many other aspects of social, ecological, cultural, and spiritual life in these areas and remains an important point for future research.



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3.6.1 Case Studies: ILK in Syria and the West Bank

Syria: Vernacular Architecture

In Syria, there is a long history of vernacular architecture that has allowed Syrians, especially rural populations, to adapt to very arid regions (Red Cross Red Crescent Climate Centre, 2024). An example of this is the beehive homes, especially prevalent in the north (ibid).

Vernacular architecture involves local construction practices designed with environmental, social, cultural, and economic needs in mind (Alarbeed & Lakra, 2025). Vernacular architecture relies on local materials and spatial needs, reducing overuse and aligning with the natural landscape. These materials vary by region, with basalt common in the south, calcareous stones and sandstones in the middle and eastern areas, and clay in river basins (Al Asali & Shahin, 2016). This leads to variety in architectural styles, creating the possibility of exchanging knowledge and materials (ibid).

Homes are constructed to be energy-efficient but adaptive to the arid environment, using, for example, shadows and natural ventilation to reduce heat within the home (Alsulaiman et al., 2023). They follow the direction of the sun, directed south to take advantage of the sun during the winter while closing the eastern and western facades to protect against the summer sun, and they often include other dimensions, like water reservoirs or food storage, to further shape their architecture to their environmental and livelihood needs (Altah & Hajismail, 2024). Countryside homes in Syria are often constructed with three spaces in mind—human, animal, and food storage—and often reflect the primary social institution of the family and cultural practices around hospitality and social networks, apparent in the persistence of courtyards in the design of Syrian homes (Alarbeed & Lakra, 2025; Al Asali & Shahin, 2016).

Many factors have reduced the pertinence of traditional architecture over time. These factors include the availability of materials, durability concerns, new technology, urbanisation, rural-to-urban migration, influxes of internally displaced persons (IDPs), evolving family structures, and aspirations for social and aesthetic prestige (Alarbeed & Lakra, 2025). Urban pressures especially challenge the preservation of vernacular architecture, with higher rates of vertical expansion, house splitting, and house-to-commercial conversions (ibid). However, Syrians demonstrate adaptation of vernacular architecture, rather than complete abandonment, preserving courtyards, local materials where feasible, and traditional spatial terminology (ibid). This reflects the cultural importance of many facets of vernacular architecture and a potential path to negotiate between preservation and need transformations.

Syria has suffered a devastating conflict since 2011, generating widespread displacement. Displacement has forced many Syrians into IDP camps, which are strained in resources and support (Ibrahim et al., 2020). While not all materials used in vernacular architecture are available during crises, adobe, widely available, especially in northern Syria, could be used to construct traditional domes as an alternative to tents, encouraging community participation, environmental and economic efficiency, and preservation of memory and identity (ibid). They are generally more energy efficient, thermally regulated, and comfortable than tents (ibid). The availability of adobe, community participation in construction, and the long-term nature of the Syrian IDP crisis further reinforce the budgetary and timeline possibilities of traditional domes in humanitarian response. In addition, traditional architecture helps to preserve culture and identity, which is crucial in experiences of protracted violence and displacement (ibid).

The West Bank: Olive Groves

In the West Bank, Palestinian practices of olive tree cultivation are an important example of ILK in the region. Grown alongside figs, apricots, oranges, and dates, olive trees have been a critical staple of livelihood, culture, and resilience in what are now the occupied Palestinian territories (oPt), for thousands of years (Shunnuarah, 2023). Because olive trees can grow on arid soils and among salt, drought, and wind, they suit the rocky soil and climate, characterised by long, hot summers and mild winters (Hughes, 2008). These trees live for hundreds of years, and in becoming such an integral part of Palestinian life, growing them has become a collective livelihood endeavour, with the knowledge of their care and family-owned groves passed down through generations. This includes long-used practices, like organic fertilisation and hand picking or the use of small tools, and evolving practices, like regenerative agriculture and bio-traps for pest control, as well as techniques for making olive oil, with traditional methods including rolling a rock over the olives or tools like millstones, grinders, or vats for larger-scale production (Crittenton, 2022; Haddad & Antonopoulos, 2025; Shunnuarah, 2023).

Olive trees are crucial to the Palestinian economy, food sovereignty, and other practices, including medicinal uses, cosmetic uses, and in religious rites (Hughes, 2008; Shunnuarah, 2023). However, they represent much more, as they are thought of as kin, a religiously blessed tree (*shijara mubarak*) or tree of light (*shijara an-nur*), and a symbol of enduring connection to the land, reflected in their resilience and roots that anchor for generations (Meneley, 2011). Palestinians see olive trees and their care as a source of sustenance and social cohesion (*sutra*); collaboration with the family, the village, and nature itself (*a'wna*); and a form of resistance in which preservation of the land and trees in turn preserves Palestinian communities and identities (*sumud*) (Simaan, 2017). In October, the olive harvest, *mawsim al-zaytoun*, is celebrated as a festive event through ceremonies, storytelling, shared meals in the groves, and collective labour (Haddad & Antonopoulos, 2025). Especially in the context of occupation, Indigenous Palestinian knowledge about the olive tree represents the deep ties of ILK to culture, society, and spiritual worldviews, running far deeper than environmental observation and adaptation strategies.

The cultural and economic significance of olive trees to Palestinians, as well as their symbolic meaning as a form of resistance to settler-violence (see section 3.6.2), makes support for and protection of olive groves and farmers an essential element of humanitarian response in the West Bank. Several international volunteer organisations recruit volunteers to help pick olives with Palestinian farmers during the harvest season, when settler attacks often increase, and spread awareness on the conditions impacting these farmers (Meneley, 2011). While violence continues despite their presence, these volunteers play an important role in generating visibility, especially if they are from the Global North (ibid). This represents an important entry point for supporting ILK that does not place all risk on local actors, but it may be difficult for humanitarian organisations due to constraints on access and activities from the Israeli government. The ICRC and Palestinian Ministry of Agriculture carried out a project which successfully distributed thousands of bio-traps to help Palestinian farmers in conflict-affected areas where farmers struggle to access their land and protect their olive trees against the olive fruit fly (ICRC, 2022). The traps use an organic repellent that protects trees for up to eight months and have shown positive results in Gaza and several West Bank villages (ibid). Such an example represents the provision of relevant resources, which crucially support Indigenous communities and their knowledge in the occupied Palestinian territories, as a more accessible entry point for humanitarian organisations.

3.6.2 Case Studies: Threats in Syria and the West Bank

Syria

Conflict-driven threats to ILK and its knowledge-holders remain a key challenge in Syria. Violence against civilians and displacement are widespread in Syria, creating disruptions in the implementation and transmission of ILK, especially vernacular architecture, which is impacted by the destruction of homes and pressures from the increasing number of IDPs (Alarbeed & Lakra, 2025). An interviewee from one DEC member charity explains that the environment is not a priority to people concerned with the survival of themselves and their family (Participant 17, personal communication, 19 January 2026). While Syrians have developed powerful resilience and adaptation methods, the violence and displacement they face remain a key challenge to the preservation of knowledge and communities themselves.

In addition, many Indigenous communities in Syria have faced long-term discrimination by the state. The Kurds in northwest Syria, who have established the de facto autonomous region Rojava, promote ecological principles centred on humans as part of the natural world, women's empowerment, and food sovereignty through the "make Rojava green again" campaign. Under the Ba'ath regime and the Assad regime (until 2012), the Kurds, along with their ecological ideals, were suppressed. Resource exploitation and high agricultural output took priority over any environmental concerns, leading to deforestation and monocultures, and in combination with bans on planting trees or growing gardens, there was significant degradation of Kurdish-majority lands and food sovereignty (Bookchin & Internationalist Commune of Rojava, 2018). Turkish invasions in Rojava similarly feature systematic attacks on the land, such as the burning of olive trees, and resource extraction, particularly groundwater (ibid). The Bedouin, a nomadic group primarily located in the Al-Badia desert region, which intersects with southeastern provinces in Syria, have historically faced forced displacement from their lands, often in the name of "green policies" (Triulzi, 2002). Many Middle Eastern governments adopted policies that nationalised Bedouin rangelands and coerced the Bedouin into sedentary lifestyles. In Syria, government programmes for natural land and wildlife conservation forcibly displaced the Bedouin peoples, justifying the actions through the narrative that Indigenous practices, especially around common-use resources, were environmentally degrading (ibid). These attacks on Indigenous lands and sovereignty stem from notions that indigeneity represents a threat to government control and a cohesive national identity and awareness of the power of environmental degradation and dispossession on Indigenous sovereignty and identity.

The West Bank

Settler violence poses significant threats to Indigenous Palestinians in the West Bank, through land confiscation, destruction of farms, deprivation, and killings. Palestinian landowners are displaced and left without agricultural lands, as their lands are declared as 'archaeological zones', or through use of the Absentees' Property Law of 1950, and other such tactics (Hughes, 2008). The construction of the separation wall also saw the confiscation of Palestinian land and olive gardens, and the checkpoint system prevents Palestinians from easy access to their lands on the other side of the wall, while also damaging their economy by keeping olive harvests at checkpoints for hours and obstructing transport to foreign markets (ibid). The government declared ownership of all water in the West Bank only two days after its occupation, and the strict limitations placed on water leave Palestinians with running water only once a week at best, which has serious consequences on agricultural output in an arid region (ibid).

Illegal settlements have grown significantly across the West Bank since its occupation with government encouragement. They target olive farmers by burning, poisoning, and uprooting groves or just by forcing farmers off the land, after which the trees die without maintenance (Hughes, 2008; Shunnarah, 2022). Attacks on olive groves allow settlers to take the land and destroy Palestinian culture, economy, and society, and olive harvests are a time of heightened violence due to their cultural importance. Settler logic is extractive, viewing the land as a resource to sustain humanity, while the Indigenous perspective is based on reciprocity and nature as a source of life and culture (Shunnarah, 2022). Settler and state violence and land dispossession have further escalated in the West Bank since October 2023, with settler violence during the 2025 olive harvest season reaching the highest level in recent years (OCHA, 2025). Despite the significant violence they face, Palestinians in the West Bank continue to replant and care for their olive groves. Their traditional forms of knowing, long-used practices of olive growing, and the very presence of Palestinians and olive trees on the land have become a form of resistance to settler-colonialism (Simaan, 2017). In the face of state and settler violence, olive trees have taken on an even deeper meaning to Palestinian identity.

04. ENTRY POINTS FOR ILK IN ADDRESSING CLIMATE CHANGE ADAPTATION, RESILIENCE, AND EMERGENCY RESPONSE

In this section, we aim to highlight current approaches and actionable entry points for DEC member charities and the wider humanitarian sector to engage with ILK across the humanitarian continuum to support more effective and equitable climate action and humanitarian interventions. This report utilises the UN's conception that "relief alone is not enough" to define the humanitarian continuum as a continuous progression of aid that links relief, rehabilitation, and longer-term development efforts (Gómez & Kawaguchi, 2016). The humanitarian continuum is pertinent for DEC member charities engaging with ILK not only for potential efficiency gains, but also because assistance that disregards how a crisis evolves can further endanger local and Indigenous populations already under severe strain (Gómez & Kawaguchi, 2016).

Climate change, conflict, and land dispossession disproportionately affect poor and marginalised populations, including Indigenous communities (Dorji et al., 2025; Jigyasu & Sen, 2022). ILK systems help these communities to adapt and build resilience through cultural, ecological, and spiritual beliefs and practices embedded in their relationships with the environment and each other (Dorji et al., 2025). ILK systems are key for improving humanitarian response, encouraging community ownership, and helping to decolonise the humanitarian system. The entry points we have identified include resilience building, preparedness, anticipatory action, with an expansion on Early Warning Systems, emergency response, and climate adaptation and recovery. These entry points are only a taste of potential engagement with ILK across the humanitarian system. Further research on the ethical integration of ILK into the stages of the humanitarian continuum, especially emergency response, is needed. These examples seek to prompt future research and support DEC member charities and the greater humanitarian sector in developing strategies on how to best support knowledge-holders, knowledge preservation, and the institutionalisation of ILK in humanitarian action.

4.1 RESILIENCE BUILDING

Resilience refers to the capacity of an individual, community, or system to cope with, prepare for, and recover from crises (Mehryar, 2022). Resilience prioritises prevention but also includes adaptation, where prevention is not possible. Adaptation and resilience support efforts in disaster risk reduction, sustainable development, and climate policy (Dorji et al., 2025). Literature repeatedly calls for more research on ILK in climate adaptation and resilience to “bridge” scientific knowledge with ILK (ibid). Scientific knowledge and ILK are complementary, strengthening one another, and Indigenous and local communities already incorporate scientific knowledge into their systems in many ways (Jigyasu & Sen, 2022). Bridging the gap thus requires work within scientific frameworks **to deconstruct Western knowledge hierarchies and formally recognise ILK’s value**, which would build and enhance adaptive capacity and resilience by improving climate models, agricultural planning, and policymaking (Dorji et al., 2025; Jigyasu & Sen, 2022). Meaningfully engaging with ILK also empowers Indigenous communities by granting them the agency to choose the climate responses that align with their values and lived experiences (ibid).

ILK-based approaches to resilience address multiple facets of the lives of Indigenous and local communities. ILK is embedded and evolves in tandem with communities’ cultural, spiritual, economic, environmental, and social lives, creating a kind of resilience that supports human and natural well-being (Jigyasu & Sen, 2022). ILK also allows for resilience that can address both everyday and disaster coping mechanisms and is highly effective in high-variability contexts, as it is rooted in continuous, experience-based observation that adjusts to environmental change (Berkes, 2017; Start Network, 2024). These coping mechanisms vary by place, time, and context, but they include everyday practices, such as intercropping, terracing, and rain harvesting, and disaster-based practices, for example, prescribed burning, which helps mitigate forest fires, and intimate knowledge for disaster prediction, such as knowledge of flooding and droughts developed by the peoples along the Mekong river in Cambodia (Baydoun et al., 2024; Jigyasu & Sen, 2022; UNDP, 2024).

Indigenous and local communities have long developed resilience mechanisms, but these mechanisms can be threatened by restrictive policies, climate change, violence, and displacement (Jigyasu & Sen, 2022). These communities also face poverty and discrimination, further limiting their capacity to maintain and adapt their sources of resilience (Start Network, 2024). For example, in Mozambique, traditional housing structures, often made from bamboo, mud render, and constructed on earthen plinths, require significant maintenance, especially during the rainy seasons, but as communities are impacted by increasing levels of poverty and displacement due to conflict in the north, it becomes more and more difficult for them to perform that maintenance (Interviewee 13, personal communication, 16 December 2025). In conflict settings in particular, **mass displacement and intense violence can erode environmentally friendly practices and limit the space and resources for communities to prioritise resilience and adaptation.** Programmes must extend beyond merely delivering services in such circumstances; instead,

they should “enable [communities] to think beyond survival” by diffusing new and existing knowledge and supporting communities’ capacities to recentre resilience and adaptation (Interviewee 21, personal communication, 30 January 2026).

Therefore, capacity-building and livelihood support represent essential entry points for humanitarian operations. An interviewee from a DEC member charity explains that ensuring livelihoods and food security and supporting communities out of extreme poverty “in the context of climate vulnerable communities...becomes climate work” (Interviewee 18, personal communication, 26 January 2026). **Capacity-building**, the process of developing and strengthening skills, abilities, and resources for community and organisational adaptation and prosperity, is crucial for Indigenous and local communities to maintain and develop their knowledge systems (UN Academic Impact, n.d.). A DEC member charity supported a hydroponics project in Lebanon that allowed for new ways of urban growing within the hydroponics plant and at home, and the project also became a way to support IDPs, as the greens grown were sold to soup kitchens aiding IDPs (Interviewee 17, personal communication, 19 January 2026). This example shows that ILK engagement can take many forms, including applying existing knowledge to new technologies, and is not restricted to rural settings. It also highlights its power in addressing environmental challenges, livelihood needs, and conflict. Additionally, the Building Resilience and Adaptation to Climate Extremes and Disasters (BRACED) Alliance within Myanmar relies on capacity-building to enable structures that can predict and prepare for shocks and emphasises that vulnerable communities, if driven by women and children and supported by effective institutions, are more resilient to climate shocks and stresses (Leavy et al., 2018). Foundational to this approach is capacity-building that prioritises marginalised voices. Through capacity-building and livelihood support, local and Indigenous communities can build resilience and recentre their knowledge systems, as they are adapted to new technologies and circumstances.



PHOTO CREDITS: OSCAR SOLANO VIA UNSPLASH

4.2 PREPAREDNESS

Preparedness refers to people's ability to collectively act in response to oncoming disasters (Start Network, 2025). Several capacities are salient for adequate preparedness, including community education, evacuation planning, drills, and clear decision-making structures that translate warnings into life-saving actions (Start Network, 2025). Local communication networks, social organisation, and customary authority shape how communities react to issued warnings. ILK is fundamental for preparedness because it strengthens these capacities by utilising trusted local leadership to promote social cohesion and grounds preparedness behaviours in context-specific norms and practices (ibid). Over centuries, ILK has developed climate-resilient practices to mitigate environmental changes through agroforestry, water management, and disaster preparedness (UNDP, 2024). For example, local-level decision-making structures among Africa's smallholder farming communities rely on ILK for local forecasting information, which is decisive in designing cropping calendars, offering early warnings, and informing preparedness against disasters (Dube et al., 2024).

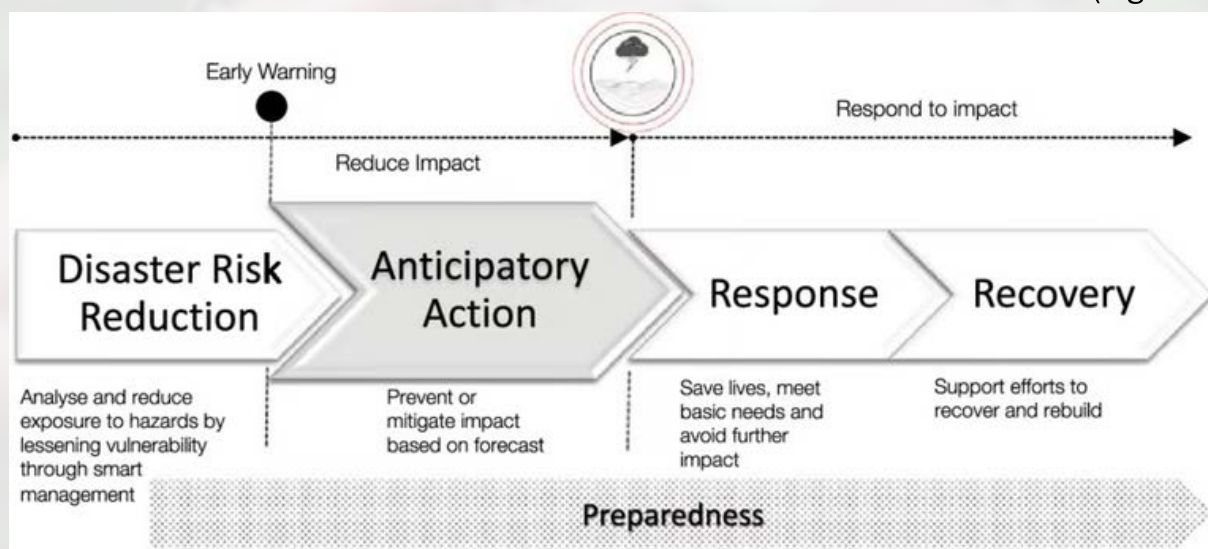
The integration of ILK in preparedness is highly contingent on the types of hazards a community faces, social-cultural contexts, and environmental settings (Start Network, 2025). Using ILK in preparedness appears to be most effective for rapid-onset events and hydrometeorological hazards, such as floods, droughts, cyclones, and avalanches, because such events are preceded by observable environmental signals that communities have learned to interpret through generations of ecological engagement (ibid). Concurrently, for slow-onset hazards, such as drought, ILK provides longitudinal environmental monitoring that tracks subtle ecological changes that are undetectable by technologies at the micro-regional scale (ibid). **The effectiveness of ILK in preparedness relies on the stability of such environmental cues and the continuity of knowledge transfer. It is not inherent but rather relational and depends on how institutions validate and support the knowledge systems apace with scientific systems, making co-production a key entry point for international organisations** (ibid). In northwest Syria, although there was no formal weather forecasting for years, the knowledge of local organisations, particularly women-led groups, was combined with the reach of the UK Met Office MENA Programme, after a DEC member charity acted as an intermediary (Interviewee 12, personal communication, 11 December 2025). The project did not just enable better forecasting but structured it around the needs of communities rather than government concerns, such as cloud cover for the military (ibid). External interventions and co-production can help enhance the accuracy and reach of ILK, but community ownership remains key to ensure relevance to local needs and avoid extractive practices that co-opt knowledge for purposes that perpetuate harm to communities. International organisations can also tailor existing cultural practices to enhance preparedness, such as lyric changes in a traditional folk ballad that raised awareness and trained students on disaster preparedness in schools in Jammu and Kashmir (Start Network, 2024). Again, external and local knowledge are brought together to reduce vulnerability and maintain relevance to local contexts.

4.3 ANTICIPATORY ACTION

ILK proves useful in increasing the effectiveness of **anticipatory action** (AA) (Dube et al., 2024). AA refers to the proactive management of climate-related risks, which is a part of a larger collection of climate action programming (ibid). AA can also be a disaster risk financing model that ensures disaster-mitigating actions are taken before impact by utilising credible seasonal and weather forecasts and pre-allocated funding (ibid). AA receives **only 0.2% of all humanitarian funding**, despite having cost-effective results for humanitarian response (McDonnell et al., 2024b). When used correctly, AA is successful in reducing the humanitarian burden because it reduces the impact of a disaster during the window period between forecast and the start of a weather-related disaster event (Dube et al., 2024).

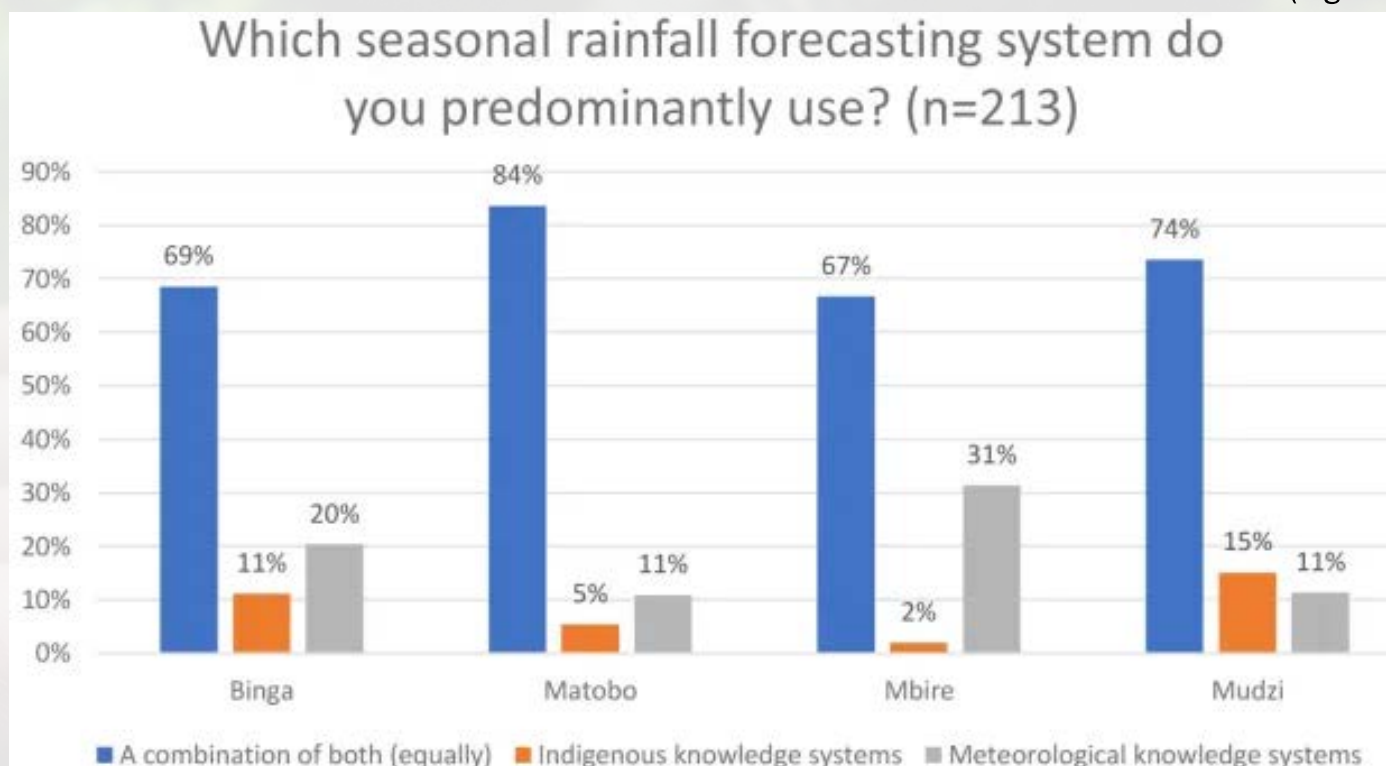
A key component of AA that distinguishes itself from other humanitarian mechanisms is that it shifts response from top-down institutionalised aid toward more localised and resilience-building solutions (Dube et al., 2024). This shift is possible because while traditional humanitarian aid is dispatched only after an extreme weather event has resulted in catastrophic damages and losses, AA localises the prevention of such catastrophic effects (ibid). The promotion of localised AA requires investment in technical expertise in human resources, flexible funding and financing, and the capacity for internal and external coordination through engagement with global and local stakeholders (McDonnell et al., 2024b). Such investments bridge the gap between longer-term disaster risk reduction and conventional humanitarian response by creating a continuum from disaster risk reduction, preparedness, humanitarian action, and long-term development (ibid).

(Figure 2)



Note. [Anticipation in the disaster risk management continuum]. From. "Managing multiple hazards: lessons from anticipatory humanitarian action for climate disasters during COVID-19," by T. de la Poterie et al., 2022, *Climate and Development*, 14(4), p. 375.

(Figure 3)



Note. [Predominantly used knowledge systems]. From Incorporating indigenous knowledge systems-based climate services in anticipatory action in Zimbabwe: an ex-ante assessment, by T. Dube et al., 2024, *Frontiers in Climate*, 6:1301908, p.10.

There are several examples of ILK being used in AA interventions. In Zimbabwe, the Zimbabwe Meteorological Services Department uses Indigenous Knowledge Systems (IKS)-based forecasting to mitigate limitations related to low resolution, difficult accessibility, and low predictive skill at the local ward, village, and household level, hindering the local farmers' ability to properly use forecasts (Dube et al., 2024). The IKS biotic indicators—which include flowering and fruiting patterns of specific trees, behaviour and movements of birds and grazing animals, emergence and movement of insects such as termites, locally observed atmospheric signs like clouds, winds, temperature and humidity, and astronomical cues from the moon and stars—are locally specific and often observable months before the rainy season, rendering them essential for early anticipatory planning (ibid). Relevant AA includes triggering food assistance when agricultural yields fall below the necessary threshold to meet food security requirements, as well as farmers proactively adjusting cropped area by switching to drought-tolerant varieties or scaling up inputs, such as seed and fertiliser, based on forecast information (ibid).

The localised mechanism of AA in Zimbabwe demonstrates the power of **locally led anticipatory action (LLAA)**. LLAA involves using local knowledge, strategies, and leadership to inform triggers for action and response plans and constitutes a key source of ILK engagement (McDonnell et al., 2024b). Combining technical knowledge and ILK, particularly forecasting, is foundational for enhanced anticipatory action. This approach enables holistic triggers, more efficient activation of response pathways, and prioritisation of local needs, as well as being cost-effective and useful across various timescales (ibid).



Its agility and adaptability also make LLAA particularly effective in conflict-affected settings (ibid). Changes in funding mechanisms, institutional environments, and understandings of local capabilities are required for LLAA to be expanded across the humanitarian sector. International humanitarian actors **must increase long-term, flexible LLAA funding, shift away from top-down project delivery, and support the knowledge, strategies, and infrastructure already in place, only adding technical assistance and advocacy where necessary** (McDonnell et al., 2024a; McDonnell et al., 2024b). Value-add for humanitarian organisations should focus on financing, facilitating co-production, rapid data gathering, influencing other external actors, such as governments or donors, and promoting inclusivity in LLAA, particularly for WLOs, who are often among the first to notice signs of disasters and conflict due to their unique environmental knowledge and experiences of gender-based violence (McDonnell et al., 2024a). Tools, such as Christian Aid's roadmap on LLAA and the Global Network of Civil Society Organisations for Disaster Reduction's LLAA Guide and Toolkit, outline pathways towards the incorporation or expansion of sustainable LLAA in humanitarian action. Using such frameworks, international organisations can support and invest in local actors and capacities for more constructive AA rooted in ILK, thus not imposing on and erasing ILK but assisting in its preservation and development.

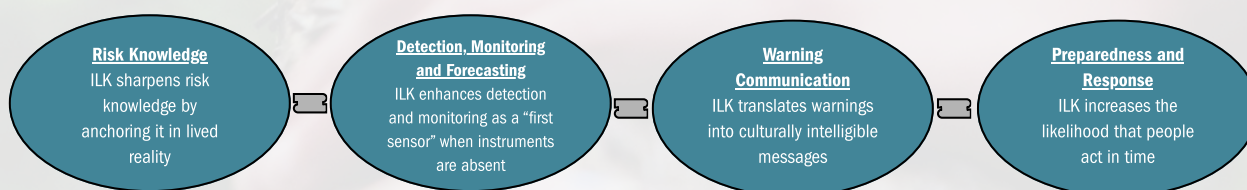
4.3.1 Early Warning Systems

One of the most documented uses of ILK is in weather prediction, as the use of biophysical, ecological, and social indicators, such as animal behaviour, insects, plants, celestial bodies, tides, and ocean currents, enables the anticipation of weather events (Dorji et al., 2025).

Early Warning Systems (EWS) refer to the systematic collection of data and disaster risk assessments for the analysis and forecasting of potential hazards, their translation into warnings, timely dissemination, and use for early action (Percy et al., 2023). The success of EWS is determined through the detection, forecast, and communication of risks and the enabling of timely action to protect communities and prevent catastrophic loss and damage (Start Network, 2025). In order for EWS to be successful, the scientific agencies that create hazard warnings and the end user groups, including local and Indigenous peoples, who require warnings to act in time to save lives and assets, must work hand-in-hand and understand each other's expectations (Percy et al., 2023). Integrating ILK significantly amplifies the reach and effectiveness of EWS because it addresses the four pillars (see figure 4) that comprise the early warning chain by contextualising these functions within cultural systems of trust, authority, and collective action (Start Network, 2015).

ILK in the Early Warning Chain

(Figure 4)



Text Source: Start Network, 2025

Each of these pillars should involve the participation and knowledge of people and organisations at risk in tailored ways in order to form a people-centred approach (Percy et al., 2023). Across all hazards and regions, **people-centred EWS have been shown to dramatically reduce deaths and losses** (Start Network, 2025). People-centred EWS enable AA by linking risk information to preparedness, allowing households, governments, and sectors to adjust practices before disasters strike (ibid). A promising example of people-centred EWS is the DARAJA Service of East Africa. DARAJA seeks to provide actionable climate information and early warning services to 50 million urban residents by 2030 and ultimately to all 1 billion people living in urban informality, as well as to make a significant contribution to the Risk-informed Early Action Partnership (Resurgence, 2026). DARAJA has already performed one of the most comprehensive mappings of information flows through Dar es Salaam, Tanzania, and Nairobi, Kenya (ibid). Accordingly, communities living in the informal settlements of Nairobi and Dar es Salaam have been able to take better AA ahead of threatening weather events, which prevented loss and improved livelihoods (ibid).

People-centred EWS strongly enable entry points to ILK engagement at multiple scales. There are four models for ILK-based EWS: community-based EWS (CB-EWS) models, 50

co-production (or hybrid) models, institutional integration models, and regional and transnational coordination models (Start Network, 2025). CB-EWS models are often entirely based on ILK, exemplified by local community councils that use ILK for anticipation and response, and while these models are cost-effective and community-driven, they are limited in reach and fail to bring ILK into official EWS frameworks (ibid). Co-production models bring ILK and scientific data together, which enables more accurate, far-reaching hazard assessment that remains locally trusted, but these models can only be effective if ILK is foundational to the design, communities are equal partners, and iterative feedback mechanisms allow for continual improvement (ibid). An example is Participatory 3-D Modelling (P3DM) in Vanuatu, which combines traditional spatial memory and mapping technologies for risk maps (ibid). Institutional integration models incorporate ILK into existing frameworks and EWS, such as in Samoa's Climate Risk and Early Warning Systems programme, which includes traditional cyclone knowledge, and while these models crucially codify ILK integration, they are rare and can risk a loss of community ownership if not ethically approached (ibid). Regional and transnational models promote an institutionalisation of co-production and principles for ethical engagement, such as consent and intellectual property rights (ibid). Organisations, such as the United Nations Educational, Scientific, and Cultural Organisation (UNESCO), lead these efforts, representing a potential for recognition of ILK and reformation of disaster governance at an international level, but these models are rare in implementation, like institutional integration models (ibid). International organisations should work towards ILK integration into official EWS frameworks through flexible funding, explicit institutionalised policies, ethical knowledge documentation, and power redistribution towards local ownership (ibid).

4.4 EMERGENCY RESPONSE AND HUMANITARIAN AID

Emergency response is a key stage of the humanitarian continuum, and integrating community practices and structures can improve response efforts. However, **due to the short-term timescales and complexity of emergency humanitarian response, engagement with ILK through traditional humanitarian systems and structures can be difficult**, particularly with Indigenous communities due to Free, Prior, and Informed Consent (FPIC) and intellectual property rights. However, there are models of emergency response that aim to include local and Indigenous communities where possible. CARE International's Emergency Toolkit, while directed primarily at CARE Country staff and emergency personnel, is open access, allowing local organisations to engage with official frameworks (CARE, n.d.). Christian Aid's **Survivor and Community-led Response (SCLR)** approach encourages community-level decision-making, allowing communities to identify unmet needs, design and implement small initiatives, and have a voice in humanitarian operations (Christian Aid, 2024). These approaches represent key entry points for ILK engagement, as they redistribute power towards community leadership and acknowledge that local and Indigenous people are best able to identify their needs and priorities.

For Indigenous communities in particular, emergency response will best engage ILK by doing so before the onset of an emergency. Emergency Preparedness Planning (EPP) frameworks can be co-produced with local practices and interpret ILK norms for the most efficient and effective implementation. Emergency Response Frameworks (ERF) are used by larger, international agencies, such as the United Nations and the International Federation of the Red Cross, and have lasting impacts on the programming structures of other organisations, shifting the normative practices towards more adaptive emergency planning (IFRC, 2024). The Start Fund, a Start Network programme that provides funding and rapid response to small-to-medium-scale crises, includes funding to local NGOs, who utilise local knowledge, and have started encouraging ILK integration through various initiatives, such as the translation of alert notes and documentation into multiple languages and the addition of a section on relevant ILK in alert notes (Start Network, 2024). Additionally, the Start Network supports community-led humanitarian innovation through community spaces for the creation of locally relevant solutions, such as Hub Humanitarian in India or Hub DRC, from which they have produced a Systems Change Playbook to be shared across the humanitarian sector and influence wider change (ibid). Formal documentation and equitable engagement while designing EPP, ERFs, and emergency funds can overcome the timescale barriers for ILK integration at this stage and ensure more effective, appropriate responses.

Mutual aid also represents a key space for ILK in emergency response. It enables engagement with grassroots and locally led decision-making and allows for continued and widespread engagement before, during, and after a crisis (Reports on Disaster Risk Reduction Findings, 2019). This allows for a redistribution of power, overcoming structural barriers widely imposed by international organisations (Posada & Ahimbisibwe, 2025).

Indigenous and local communities have long used mutual aid and reciprocity, such as resource-sharing practices called *xaro* among hunter-gatherers in Africa's Kalahari Desert or the *Osusu* community savings and credit system in The Gambia (Start Network, 2024). Modern approaches to mutual aid, such as social media and WhatsApp groups in places facing crises like Sudan and Syria, expedite and improve local emergency response (Interviewee 14, personal communication, 25 November 2025; Start Network, 2024). Humanitarian practitioners must acknowledge and support existing local networks without imposing on them and changing their core qualities through shifts in financing, compliance systems, power dynamics, and institutional attitudes (Posada & Ahimbisibwe, 2025). In supporting these existing forms of response, humanitarian actors and funders can support local and Indigenous responders. However, it is also essential to ensure that this is not a risk transfer to local actors, nor that these systems are being worked to the point of exhaustion. Rather, external support for mutual aid requires systemic reform towards meaningful ILK investment and collaboration.

Emergencies can be determined in a multitude of ways, such as a forecast-based financing structure, which combines aspects of early warning systems and anticipatory action frameworks to address short-term, high-impact needs. As humanitarian aid in emergency response is a collection of different frameworks and practices, it can be effectively co-produced with ILK. **It is vital to engage early on with those who are most affected by disasters, which is often Indigenous and local communities**, so that gaps can be identified and addressed (Jigyasu & Sen, 2022). Programme evaluation has shifted within the last 10 years, enabling holistic and inclusive approaches more aligned with Indigenous and local practices (Oxfam, 2026). By engaging local stakeholders in the decision-making processes and actively working to expand response capacity, localisation techniques and goals are further supporting ILK structures.



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4.5 CLIMATE ADAPTATION AND RECOVERY

As environmental crises become increasingly common and intense due to climate change, adaptation and recovery have become central to both local and international interventions. The knowledge systems of Indigenous and local communities are vital to planning and implementing responsive and pre-emptive programmes and practices (Lo et al., 2026). Climate adaptation and recovery mechanisms are continuously reinforced by cultural practices and programming tools, but risk commercialisation if not approached with sensitivity to local contexts and rights (UNDP, 2024). **As intensifying climatic variations especially impact the most vulnerable communities, the environmental knowledge, social relationships, and cultural and spiritual norms of Indigenous and local communities enhance coping mechanisms and adaptation** (Dorji et al., 2025). As ILK is based in practical, lived, and spiritual histories, it practices dynamism that can incorporate new knowledge and technology into long-tested strategies and worldviews (Dube et al., 2024). ILK is also dynamic in its continuous evolution and response to new environmental conditions, preserving ILK’s importance to adaptation even in the face of severe climate change (Dorji et al., 2025).

Examples of Key Strategies of Climate Adaptation

Agriculture	• Climate-smart crop varieties, including crops resistant to extreme weather or planting of shade trees • Adjustments to planting and harvesting times • Crop rotation and intercropping • Traditional storage practices • Medicinal plants, used for pest control and human and animal disease prevention
Hunting	• Changes in hunting times, such as in response to changing ice conditions • Food-sharing networks and inter-community trade • Community-sponsored hunts
Fishing	• ILK as a navigation tool/to identify good fishing spots • Traditional fishing traps • Controlled fishing for conservation
Water Resource Management	• Pond fields • Irrigation techniques • Terracing • Controlled water collection due to cultural and spiritual beliefs
Herding	• Migration to drier areas with water and pasture • Transhumance • The reduction of seasonal migration (in response to water scarcity) • The use of more resilient breeds or livestock that requires less sustenance

Data Source: Dorji et al., 2025

(Figure 5)

ILK systems practice sustainable resource use, making them vital to climate adaptation and recovery (UNDP, 2024). Their agroecology practices, which include practices such as rotational agriculture, agroforestry, and cultural burning, promote biodiversity, soil fertility, and reduced risk of total crop failure (ibid). These practices are rooted in the close relationship of Indigenous and local peoples with the environment and resources surrounding them, and their power in adaptation and conservation make them crucial to effective international climate initiatives (ibid). Global initiatives, such as the Agroecology Fund, the Small Grants Programme, and ICCA Global Support Initiative, support knowledge documentation and research, biodiversity conservation, sustainable livelihoods, and climate change adaptation (Rúa, 2024; UNDP, 2024). **Direct funding to Indigenous and local communities is essential for knowledge preservation.** Beyond larger funding initiatives, which may not be within the scope of some humanitarian organisations, cash transfers represent a key strategy for support of knowledge systems and knowledge-holders. A DEC member charity utilises cash transfers in their programmes in Myanmar so that households make their own livelihood and reconstruction choices, drawing on local practices and sustainable materials, such as bamboo (Interviewee 3, personal communication, 29 December 2025). These households receive technical support from engineers and local staff to help identify needs, estimate costs, and consider heat and weather, but communities decide what to repair and which materials to use, embedding adaptation in existing practices rather than imposing top-down interventions (ibid). Such an example demonstrates ILK engagement that embraces equitable co-production and local leadership rather than ILK integration within conventional, pre-designed projects.

NbS are also a key strategy for Indigenous and local climate adaptation, and they have also been integrated into the humanitarian system. Sphere's Nature-based Solutions guide outlines the importance of NbS in climate change adaptation, key areas where NbS can be implemented, the application of the Core Humanitarian Standard in NbS projects, and approaches that ensure local participation and land rights (Sphere, 2023). Examples of key areas include mangrove and coral reef restoration, wetland and watershed restoration, green belts, and urban green and blue spaces (ibid). The guide promotes NbS that improve water management, shelter, livelihoods, food security, health, and environmental well-being, while also acknowledging challenges in implementation, such as scale, timescales, accessibility, and funding flexibility (ibid). These NbS, many rooted in Indigenous and local practices that existed for generations, as well as the recognition of local rights and participation, enable ILK engagement in adaptation and even emergency response. In Kenya's Dadaab Refugee Camp, the Kenya Red Cross counteracted deforestation, the effects of drought, and resource insecurity by creating green belts of indigenous trees, planted alongside fruit trees and vegetable crops, around the camp (Aouinti, 2022). The project combined technical guidance and external funding with community empowerment, as refugees were responsible for maintaining the reforested areas and had a sustainable source of food, of which the excess could be sold for family income (ibid). It improved biodiversity, reduced vulnerability to disasters, and strengthened local livelihoods and food security. The Global Mangrove Alliance (GMA) unites various NGOs, governments, scientists, and local communities, supporting the conservation of mangrove forests, which have been

used by many coastal communities for generations, such as areas of Myanmar (see section 3.3.1) (GMA, n.d.). The GMA promotes adaptation, capacity-building, knowledge sharing, and improved government policy (ibid). **Humanitarian organisations should focus on co-production and technical support, while also maintaining community ownership and working around preexisting knowledge and needs**, rather than imposing NbS strategies from above. Flexible funding and programming, co-production, documentation, and livelihood support should be at the centre of ILK engagement in the climate adaptation and recovery stage of the humanitarian continuum.

Summary of the Entry Points

(Figure 6)

Resilience Building	ILK is embedded and evolves in tandem with communities' cultural, spiritual, economic, environmental, and social lives, creating a kind of resilience that supports human and natural well-being (Jigyasu & Sen, 2022). ILK also allows for resilience that can address both everyday and disaster coping mechanisms and is highly effective in high-variability contexts, as it is rooted in continuous, experience-based observation that adjusts to environmental change (Berkes, 2017; Start Network, 2024). Co-production, livelihood support, and capacity-building represent key entry points for resilience, as they enable mutual learning, community leadership, and recentring knowledge preservation.
Preparedness	Several capacities are salient for adequate preparedness, including community education, evacuation planning, drills, and clear decision-making structures that translate warnings into life-saving actions (Start Network, 2025). ILK is fundamental for preparedness because it strengthens these capacities by utilising trusted local leadership to promote social cohesion and grounds preparedness behaviours in context-specific norms and practices (ibid). Using ILK in preparedness appears to be most effective for rapid-onset events and hydrometeorological hazards such as floods, droughts, cyclones, and avalanches (ibid). Concurrently, for slow-onset hazards such as drought, ILK provides longitudinal environmental monitoring that tracks subtle ecological changes that are undetectable by technologies at the micro-regional scale (ibid). Humanitarian practitioners can achieve more effective preparedness through ILK by providing technical support and using relevant local systems, while also maintaining community ownership.
Anticipatory Action	AA refers to the proactive management of climate-related risks, which is a part of a larger collection of climate action programming, and can also be a disaster risk financing model that ensures disaster-mitigating actions are taken before impact by utilising credible seasonal and weather forecasts and pre-allocated funding (Dube et al., 2024). AA bridges the gap between longer-term disaster risk reduction and conventional humanitarian response by creating a continuum from disaster risk reduction (DRR), preparedness, humanitarianism, and long-term development (McDonnell et al., 2024). One of the most documented uses of ILK is in weather prediction, EWS, and climate adaptation (Dorji et al., 2025). People-centred and ILK-informed EWS enable AA by linking risk information to preparedness, allowing households, governments, and sectors to adjust practices before disasters strike, and they should be more meaningfully integrated and institutionalised in EWS designs (Start Network, 2025).
Emergency Response	Increasing local resilience and capacity measures are at the forefront of programme implementation and self-organisation based on local norms, practices, and community structures. Due to the short-term timescales and complexity of emergency humanitarian response, engagement with ILK can be difficult, particularly with Indigenous communities due to Free, Prior, and Informed Consent (FPIC) and intellectual property rights. However, new approaches to emergency response that aim to include local and Indigenous communities where possible and the integration of ILK in emergency response planning and mutual aid frameworks represent key entry points for ILK engagement in emergency response.
Climate Adaptation and Recovery	As environmental crises become increasingly common and intense due to climate change, adaptation and recovery have become central to both local and international interventions. The knowledge systems of Indigenous and local communities are vital to planning and implementing responsive and pre-emptive programmes and practices (International Institute for Sustainable Development, 2026). Climate adaptation and recovery mechanisms are continuously reinforced by cultural practices and programming tools, but risk commercialisation if not approached with sensitivity to local contexts and rights (UNDP, 2024). The environmental knowledge, social relationships, and cultural and spiritual norms of Indigenous and local communities are key for adaptation, making ILK engagement at this stage of the humanitarian continuum essential (Dorji et al., 2025).

05. RECOMMENDATIONS

This report has sought to explore ILK, its role in climate adaptation and resilience, and potential entry points for its engagement across the humanitarian continuum. We propose the recommendations below to DEC and its member charities, as well as the wider humanitarian sector, to better centre, protect, support, and invest in ILK and knowledge-holders. These recommendations are based on both literature and interviewee insights and are rooted in calls for changes in funding mechanisms, efforts towards local leadership—especially the SCLR and LLAA frameworks already at work within the DEC—equitable co-production processes, formal recognition of ILK, engagement with marginalised groups, and shifts in timescales.

1. Funding

For DEC Secretariat:

- Explicitly allocate a minimum fixed percentage of raised appeal funds for ILK holders (mutual aid groups, elder groups, etc.)
- Support long-term funding cycles by reopening Appeal fundraising channels when possible and actively work to educate the public on the need for preparedness and AA.

For DEC Member Charities:

- Increase the amount of direct, flexible funding to Indigenous and local communities in programming.

2. Knowledge Support

For DEC Member Charities:

- Use processes of genuine and balanced co-production, where ILK and mutual learning are foundational and iterative feedback is built in
- When incorporating ILK in projects, focus primarily on technical support where required and allow Indigenous and local communities control over priorities, solutions, design, and implementation, in line with equitable co-production and commitments to local leadership
- Support research and open-access documentation efforts to expand engagement with ILK and to promote knowledge preservation and sharing
- Seek out partnerships with marginalised voices, especially WLOs, grassroots organisations, and Indigenous-led organisations, to ensure inclusivity and better engage with Indigenous matriarchal knowledge systems
- Support preexisting knowledge and response structures, such as Indigenous and local NbS and mutual aid, rather than imposing external interventions.

3. Programming Structures and Long-term Engagement

For DEC Secretariat:

- Create a specific section in proposed programming and reporting mechanisms where DEC member charities outline their engagement with ILK

For DEC Member Charities:

- Advocate collectively to donors to shift towards engagement that is long-term and occurs before crises to overcome timescale barriers to ILK integration
- Establish long-term partnerships with Indigenous and local knowledge-holders to build trust, protect intellectual property and land rights, and support them in the protracted issues they face, such as climate change and land dispossession.

4. Institutionalisation

For DEC Secretariat and/or Member Charities:

- Institutionalise an approach to co-production that centres ILK as a foundation, equitable partnerships, and mutual learning
 - Include in this institutional policy approaches to co-production of NbS and EWS
- Expand and institutionalise SCLR and LLAA approaches
- Through preexisting frameworks, specifically UNDRIP and Free, Prior, and Informed Consent (FPIC), and member experience, create and institutionalise approaches to ethical engagement with IKS and Indigenous knowledge-holders

(Figure 7)

06. CONCLUSION

CLOSING REMARKS

The purpose of this report is to underscore the significance of ILK systems in climate adaptation and resilience and disaster response, as well as to identify the threats of its erosion from various sources, such as conflict, climate change, displacement, and power imbalances. It seeks to provide potential entry points for engagement across the humanitarian continuum. Through case studies on vernacular architecture in Syria and olive groves in the West Bank, this report explores how ILK can be implemented within DEC appeal contexts and humanitarian operations more widely.

Section 1 provides background and an introduction on the importance of researching and showcasing ILK systems. Section 2 outlines the methodology of the report, addressing the research process and potential limitations. Section 3 defines ILK, provides examples of its uses in climate adaptation and resilience, and discusses the threats ILK faces. This section seeks to inform humanitarian practitioners of the instrumental role of ILK in cultural and environmental preservation to promote better climate interventions and protection of Indigenous and local communities. Section 4 highlights potential entry points to ILK engagement across the humanitarian continuum, addressing resilience, preparedness, anticipatory action, emergency response, and climate adaptation and recovery. This section aims to provide examples that will assist DEC member charities and the greater humanitarian sector in centring, supporting, protecting, and investing in ILK throughout the humanitarian continuum. Section 5 proposes recommendations to the DEC and its member charities based on both literature and interviewee insights that encourage changes in funding mechanisms and efforts towards local leadership. The recommendations advance the SCLR and LLAA frameworks already at work within the DEC and promote equitable co-production processes, formal recognition of ILK, engagement with marginalised groups, and identify shifts in timescales.

This report affirms that engagement with ILK enables more effective humanitarian interventions. By integrating ILK across the humanitarian continuum, resilience, recovery, and response outcomes are improved. Additionally, Indigenous and local communities, as well as their rights and agency, can be better supported and protected. Operationalising the recommendations outlined in Section 5, the DEC and its member charities can move beyond rhetorical commitments towards concrete reforms that recognise ILK as a core pillar of humanitarian action and advance localisation as outlined in the Grand Bargain.

APPENDIX I: RESPONDENTS IN THIS STUDY, n = 21

Reference in Report	Organisation Name	Position of Key Informant
Participant 1	Mon National College in Thailand	Independent Writer and Consultant
Participant 2	CAFOD	Environmental Advisor
Participant 3	Islamic Relief	Head of Mission Myanmar
Participant 4	Islamic Relief	Regional Programme Coordinator
Participant 5	Action Aid	Programme Quality and Assurance Specialist Humanitarian
Participant 6	The London School of Economics and Political Science	Head of the Department of International Development
Participant 7	CAFOD	Programme Officer on Myanmar Earthquake Response
Participant 8	Tearfund	Corporate Priority Strategic Coordinator Environmental and Economic Sustainability
Participant 9	American University of Beirut	Professor and Chairperson of the Department of Landscape Design and Ecosystem Management, Faculty of Agricultural and Food Sciences
Participant 10	The World Bank Group	Environmental Specialist
Participant 11	Save the Children UK	Head of Climate Justice
Participant 12	Christian Aid	Global Humanitarian Manager (Middle East)
Participant 13	CARE	Global Emergency Shelter Team
Participant 14	The London School of Economics and Political Science	Academic
Participant 15	SeeMyRaqqqa	Head of Social Media
Participant 16	Christian Aid	Locally Led Anticipatory Action Multi-Country Manager
Participant 17	CAFOD	Syria Emergency Programme Manager and Consortium Manager
Participant 18	Islamic Relief	Senior Policy Advisor on Poverty Reduction
Participant 19	Tearfund	Middle East Response Manager
Participant 20	Christian Aid	Humanitarian Appeals Manager
Participant 21	Action Aid	Programme Quality & Assurance Manager

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DISCLAIMER: Some photos included throughout the report are royalty-free, which is why citations are not included. Those that are not include citations below.

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