SHELTERING IN THE CLIMATE CRISIS

Learning to Adapt

Proceedings of the Shelter and Climate Change Adaptation Learning Event on 23rd January 2025

GLOBAL SHELTER CLUSTER
Coordinating Humanitarian Shelter and Settlements

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Acknowledgements

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BURO HAPPOLD

Buro Happold is currently part-funding the Global Shelter Team at CARE. The partnership strengthens CARE's capacity to provide safe, dignified shelter to those who are most vulnerable to disasters and the climate emergency. CARE is developing its approach to the integration of climate resilience and climate justice in humanitarian programming, supported by Buro Happold, which has expertise in climate change adaptation measures at a variety of scales, from single buildings to cities.

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Swiss Agency for Development and Cooperation SDC

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Many hands and minds went into the making of the learning event and this report, which was compiled and edited by **Sue Webb** (Shelter Researcher at CARE) and **Mandy George** (the Global Shelter Cluster's Senior Environmental Advisor), with additional input from **Charles Kelly** (Global Shelter Cluster) and **Janina Engler-Williams** (CARE).

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Contributors to the learning event

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Tinashe Kasirori is the Humanitarian Programs Coordinator for CARE Zimbabwe and currently holds the Southern Africa Regional Manager position. With a background spanning 7 years in the humanitarian field, he has collaborated with organisations like the International Rescue Committee (IRC) and the Government of Zimbabwe in, for example, resilience-building programmes and climate adaptation.

Charles Kelly is a member of the Global Shelter Cluster Green Team, focused on integrating environmental issues into shelter and settlements operations to improve the impact of humanitarian assistance. Kelly's professional background is in Disaster Risk Management and he has been working on the environment-humanitarian nexus for over 25 years. He currently co-chairs the Environment Community of Practice of the Global Shelter Cluster.

Paul Knox Clarke is the Principal of the **ADAPT Initiative**, which supports humanitarian and emergency response organisations to prepare for and adapt to the challenges of climate change. He previously worked in operational humanitarian roles in a number of countries, including Afghanistan, Iraq, Kenya and Sri Lanka and as a researcher and lecturer on issues of humanitarian performance.[1]

Pablo Medina is the Global Shelter Cluster Coordinator/Co-Lead for IFRC. With over 20 years of experience in humanitarian response and coordination, his career encompasses long-term field experience in the Philippines, Guatemala and Sri Lanka, with many other short missions in Latin America, Africa and Asia-Pacific. He has worked with national and international NGOs, the UN, and the Red Cross/Red Crescent Movement.

Esther Menduina is the Shelter Technical Adviser for Africa regions with Norwegian Refugee Council (NRC). She is an architect specialized in sustainable emergency architecture with over 13 years of experience in the humanitarian sector working largely for the NRC and the UN. Esther has been instrumental in disaster risk reduction and climate initiatives, such as managing responses to floods and hurricanes, also contributing to urban resilience profiling in Mexico.

Thi Nguyen is the Manager of Disaster Risk Reduction and Climate Change Adaptation (DRR and CCA) Program for Catholic Relief Services (CRS) in Vietnam. She has 15 years of experience working in Disaster Risk Reduction and Climate Change Adaptation at community and national levels. Thi is currently the chair of the Disaster Management Working Group, co-chair of the Anticipatory Action Technical Working Group and Cash Working Groups.

Sue Webb is a Shelter Researcher at CARE International UK. She has a background in Geography and education. Her work over recent years has focused on the 'wider impacts', or multiplier effects, of humanitarian sheltering, particularly health and mental health.

Janina Engler-Williams, Shelter Researcher at CARE International UK, supported the learning event logistics.

[1] See, for example, Knox Clarke, P. (2021) ***Climate change and humanitarian action*** Oxford: ADAPT Initiative.

EXECUTIVE SUMMARY

In January 2025, CARE International UK hosted an online learning event in collaboration with the Global Shelter Cluster's **Environment Community of Practice**. The learning event on climate change adaptation (CCA) focused on integrating climate resilience into humanitarian shelter and settlement programming. Climate change is increasingly exacerbating humanitarian crises, necessitating proactive adaptation strategies. While the shelter and settlements sector has made progress in 'greening the response' and climate change mitigation, there is a need for more attention to adaptation, as a part of climate-smart programming. The event aimed to bridge knowledge gaps, identify best practices, and enhance collaboration.

The event brought together shelter practitioners, climate specialists and others to explore the WHY, WHAT, HOW and WHAT NEXT of integrating CCA with shelter and settlements programming. Over 130 participants joined the interactive event and contributed their experiences and opinions via pre- and post-event feedback forms, the Zoom chat, Mentimeter quiz responses, and breakout room discussions. Participants explored how CCA fits within broader environment and disaster risk reduction spheres of activity.

Examples of entry points for CCA in the typical response cycle - preparedness, response, recovery and reconstruction - were highlighted. Existing tools and resources that can guide and enhance CCA within shelter and settlements (and multisector) programming were shared. Case studies from Zimbabwe, Mali and Nigeria, and Vietnam showcased how climate information and climate change awareness and experiences can be included in participatory shelter processes. Learning event participants then responded to the initial presentations and case studies in discussion groups, recording their contributions to the topic via a Mural board.

Key outcomes of the event included increased awareness, knowledge sharing and actionable recommendations. The concluding comments and recommendations in the **What Next?** section of this report were derived from analysis of all contributions to the learning event. They intend to prompt further reflection and suggest next steps for enhanced climate-smart humanitarian action. An open invitation exists for interested parties to continue these discussions and access further learning opportunities through the Global Shelter Cluster's **Environment Community of Practice**.

Annex A contains a non-exhaustive collection of tools and resources relevant to integrating CCA with shelter and settlements programming, gathered before and during the learning event. Interested parties are encouraged to add resources to a live version of this collection, in order to continue shared learning and prompt further collaboration.

Annex B contains summaries of the three case studies presented during the learning event.

Terminology used in the learning event and this report

Climate change mitigation refers to efforts to reduce greenhouse gas emissions and to reduce the current concentration of carbon dioxide in the atmosphere by enhancing sinks (e.g. increasing the area of forests)[2]. Climate change mitigation actions in the humanitarian world are often part of broader 'greening' or environmental action. Often they are in the logistics and supply chain areas, such as reducing flights or packaging, or procurement of more sustainable materials or relief items.

Climate change adaptation is *"the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities"* (IPCC, 2022[3]). Climate change adaptation in the humanitarian sector refers to proactive measures aimed at reducing the adverse impacts of climate change while leveraging potential opportunities. It involves adjusting policies, programs, and actions in response to both observed and anticipated climate shifts, such as changes in temperature, rainfall patterns, sea levels, and extreme weather events. Adaptation can occur at multiple levels, from community-based initiatives to organizational and policy-driven strategies. Integrating climate risk assessments and making humanitarian programs and operations 'climate-smart' are key components of effective adaptation, ensuring resilience and sustainability in the face of evolving climate challenges.

Climate change adaptation (CCA) was the focus of the learning event, which also touched on wider climate and environmental considerations for shelter and settlements, and multisectoral, humanitarian programming. CCA is a part of what the IFRC calls **climate-smart programming**, which consists of:

> *Integrating available climate and weather information, both short-term weather and seasonal forecasts and long-term climate projections, in designing and/or adjusting all programmes and operations to ensure that, at a minimum, they do not place people at increased risk from new climate extremes and, if possible/appropriate, empower communities to anticipate, absorb and adapt to climate shocks and long-term changes. (IFRC, 2023[4])*

[2] **https://unfccc.int/topics/introduction-to-mitigation**

[3] IPCC (2022) ***Climate Change 2022: Impacts, Adaptation, and Vulnerability***

[4] IFRC (2023) ***Guide to Climate-Smart Programmes and Operations***

INTRODUCTION

Implications of climate change for humanitarian action

Climate change is contributing to environmental degradation, increased occurrence of natural hazards and other triggers of crises, such as conflict. A recent **Global Humanitarian Overview**, published in December 2024, stressed that climate change and conflict are the two main drivers of increasing humanitarian needs. Climate change is increasingly affecting people already in need of humanitarian shelter and settlements assistance.

> ***"Climate change is not knocking politely on the door. It's barging in, rearranging the furniture and making itself at home. Climate change isn't some distant threat looming on the horizon - it's here and it's now. And it's reshaping our work in humanitarian shelter and settlements in ways that are hard to ignore."***
>
> *Pablo Medina, GSC co-lead for IFRC, in his introduction to the learning event.*

Climate-related crises happen anywhere, wherever there is vulnerability, including in conflict zones. Humanitarian organisations have a responsibility not to put affected populations at greater risk. Therefore, climate change adaptation (CCA) should be a core function of, or integral to, shelter and settlements programming, rather than something perceived as an add-on, despite ongoing and deepening challenges of responding in crisis settings.

> *The humanitarian system is under growing pressure from climate impacts that are aggravating existing vulnerabilities such as poverty, conflict and displacement [...] This requires a long–term vision from humanitarian organizations and donors with more emphasis on community resilience and locally led adaptation. (IFRC, 2023[5])*

In his 2024 book, *Humanitarianism 2.0*; New Ethics for the Climate Emergency, Hugo Slim proposes that we need new humanitarian ethics for the climate emergency, which he also calls the Earth emergency.[6] He suggests that humanitarian response also needs to change:

In the book, he identifies the distinct characteristics of this Earth emergency. It is **irreversible**, **unprecedented**, **cascading**, **universal** and **long**, which necessitates a change in humanitarian mindset and response:

> *Humanitarian need and the response will not simply be more of the same, because climate science suggests that disasters will soon be of a nature, scale, frequency and recurrence that we have never faced before. (Slim, 2024: 26)*

Many INGOs and other organisations, including the Global Shelter Cluster lead agencies, have signed up to the **Climate Charter's six commitments** for addressing the climate and environmental crises in their humanitarian work. The Climate Charter[7] puts ethical emphasis on adaptation, environmental sustainability, community-led action, collaboration, influence and green accountability. Three of the Climate Charter's shared commitments are particularly relevant to the endeavour of bringing shelter and settlements practitioners and others together to examine climate change adaptation:

> *The accumulation of so many hazards and disasters makes it logical to talk of one long emergency and orientate our mindset, planning and response to the idea of a humanitarian marathon rather than a series of sprints (Slim, 2024: 28)*

[5] IFRC & Red Cross Red Crescent Climate Centre (2023) ***Guide to Climate-Smart Programmes and Operations***

[6] Slim's blog post in the New Humanitarian in September 2024 summarises the main arguments in his book: ***Saving humans is not enough. Humanitarian purpose needs to change***

1. Step up our response to growing humanitarian needs and help people adapt to the impacts of the climate and environmental crises.
2. Increase our capacity to understand climate and environmental risks and develop evidence-based solutions.
3. Work collaboratively across the humanitarian sector and beyond to strengthen climate and environmental action.

The Global Shelter Cluster's Strategy[8] includes a commitment not only to respond to immediate needs but also to address longer-term impacts, including adaptation to climate change.

> *GSC partners should…prioritize the systematic integration of environment and climate change into organizational strategies, policies and tools. This will strengthen their capacity to deliver environmentally sustainable and climate-smart responses. They should do this in collaboration with other sectors, balancing environmental protection, climate change mitigation and adaptation, and locally appropriate shelter solutions. Key to this approach is to anticipate, prepare for and adapt to climate change and environmental degradation.*
>
> *Integrating environmental and climate change considerations into shelter and settlements responses reduces harm to crisis-affected populations, improves their living conditions and enables self-recovery. This will not only save lives in the near term but will also contribute to durable solutions that save the lives of future generations. (GSC Strategy 2024-2028)*

Origin of the learning event

InterAction held a Global Shelter and Settlements Conference[9] in early 2024 to develop recommended action items for the Shelter sector. Responding to the Climate and Environment 'action items', CARE International UK volunteered to work with the Global Shelter Cluster's Environment Community of Practice to address the need to "Understand and address the gaps in climate and environmental knowledge and implementation capacity through technical capacity building and cross-sector learning". The learning event evolved to start to address these knowledge gaps and contribute to greater awareness of climate change adaptation.

Objectives of the learning event

The learning event summarised in this report aimed to bring together stakeholders with different sectoral specialisms from global, regional, national and local levels to strategize how to integrate CCA thinking into different phases of a response and different activities. The online event aimed to start a conversation and learn from all participants. The objectives of the learning event were:

1. **To increase awareness and understanding**
   Highlight climate change risks for humanitarian shelter and settlements, emphasizing the need for CCA and exploring decision-making challenges in crisis response.
2. **To identify best practices and gaps**
   Examine effective programming approaches, assess current tools and resources, and determine knowledge gaps in climate-smart shelter and settlements.
3. **To drive action and collaboration**
   Identify next steps, 'quick wins', and opportunities for partnerships to enhance CCA expertise and implementation in humanitarian programming.

[7] **The Climate Charter website**

[8] **Global Shelter Cluster Strategy 2030**

[9] **Report of the Global Shelter and Settlements Conference** hosted by InterAction in January 2024

> ***Climate change is not a problem that any one organisation can solve. It is the partnerships, the shared expertise and the collective action that can make a real difference. That's why I'm proud of how the Shelter and Settlements Sector continues to come together like today, tackling these challenges head on.***
>
> *Pablo Medina, GSC co-lead for IFRC, in his introduction to the learning event.*

Learning event agenda

Introduction. Who? Where?
Sue Webb, Shelter Researcher at CARE International UK

Why now?
Paul Knox Clarke, Principle at ADAPT Initiative

Why?
Pablo Medina, Global Shelter Cluster Co-Lead for IFRC

What do we know? What do we need to know?
Mandy George, Senior Environmental Advisor, Global Shelter Cluster (IFRC)

What are we doing?
Case studies from CARE Zimbabwe, NRC Mali & Nigeria and CRS Vietnam to prompt discussion

So what? What do we plan to do?
Group discussions to gather ideas, priorities and gaps

What next?
Charles Kelly, Global Shelter Cluster Environment Community of Practice

WHY? WHY NOW?

Paul Knox Clarke kickstarted the learning event by addressing the Why? and Why now? questions for the Shelter and Settlements sector integrating climate change adaptation in their programming.

Why does climate change adaptation matter? Why have international humanitarian actors not acted earlier?

Firstly, the frequency and intensity of weather hazards such as wildfires and floods have increased significantly. Secondly, these hazards are happening to people with increased vulnerability; disasters have had significant impacts on their health, on their livelihoods, on their nutritional status, leaving them less able to cope with further weather related disasters when they occur. Finally, the humanitarian sector is not used to responding to new and emerging hazards, such as heat waves which can cause very high mortality rates. There are very reliable projections of the increase of future disasters. For example, the IPCC predicts that by around 2030 to 2035 there will be an 800% increase globally.[10] With regard to extreme heat events, things are worsening very quickly.

While a small number of humanitarian agencies have been addressing climate change since the early 2000s, such as the Red Cross/Red Crescent Movement, and many national actors have been working on climate change for some time, generally international actors have come quite late to this, for several reasons.

- Limited humanitarian funding for climate adaptation - most funding in the humanitarian sector focuses on climate change mitigation rather than adaptation, with little direct support for climate-related humanitarian needs.
- Artificial divide between conflict and climate - some agencies separate conflict and climate crises, restricting humanitarian aid based on displacement causes, despite the complex relationship between climate and conflict.
- Gradual, yet significant climate displacement - climate-driven displacement is increasing steadily rather than through sudden large-scale events, making it less visible but no less urgent.
- Lack of integration in emergency response - climate adaptation efforts focus more on anticipatory action and disaster risk reduction (DRR) rather than being embedded in emergency responses.
- Perceived complexity hinders action - many practitioners see climate programming as overly complex, with a lack of confidence and skills acting as barriers to progress.

Why should we as humanitarians, and shelter and settlement specialists, act now?

- Climate impacts are intensifying - events like the 2024 heat waves in the Sahel and West Africa show that climate change is already contributing to severe humanitarian crises.
- Momentum is growing - more organizations are addressing climate issues, making it a mainstream humanitarian concern and encouraging wider adoption.

Policy and action are advancing - since 2021, major humanitarian networks and agencies have committed to climate action, focusing on impact assessment, anticipatory action, and resilience-building in key sectors like Food Security, Nutrition, WASH, and Health. The Shelter and Settlements sector is increasingly engaged with climate action too.

Concluding his opening address, Paul stated that consensus is growing that system change is needed, at least in part driven by the fact that the humanitarian system will have far fewer resources to deal with greater and greater needs. He suggested that a **"really ruthless focus on doing good quality work becomes important as a result of the climate emergency"**.

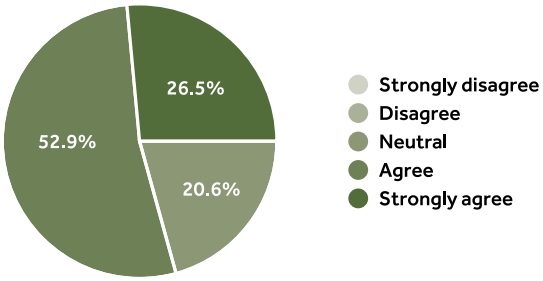
[10] IPCC (2018) ***Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels***

WHAT DO WE KNOW? WHAT DO WE NEED TO KNOW?

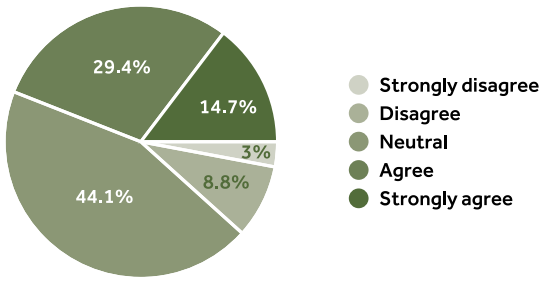
Led by Mandy George, the Global Shelter Cluster's Senior Environmental Advisor, this session began with a recap of the baseline data gathered from 40 participants before the event via a survey to assess the level of knowledge and experience of participants.[11]

The results revealed a fairly high level of knowledge around climate change definitions and use of climate change data in shelter and settlements work. Participants were less confident in speaking about climate change adaptation and what it means for humanitarian shelter, which this session aimed to address.

I am clear about the definitions of terms related to various aspects of climate-smart humanitarian programming (such as adaption and mitigation).



I am confident speaking about climate change adaption (CCA) and what it means for humanitarian shelter.



The session continued by conducting a **Mentimeter poll** to test more specific knowledge around definitions and programmatic activities linked to climate change adaptation, including the difference between mitigation and adaptation in the context of shelter and settlements programming. The results were then used as an introduction to the next presentation where Mandy explored what we mean when we talk about scaling climate action for shelter and settlements response, with a focus on adaptation.

After framing the topic with a quote from Hugo Slim's new book (Slim, 2024) emphasizing the need to **plan from the future** rather than the past,[12] the presentation delved into what exactly we mean by climate change adaptation in shelter and settlements programming and how we can consider it in our responses and programming. Key topics covered in the presentation included:

Risk and Climate Change Impacts

- Anticipating risk is a fundamental aspect of planning for the future and it is key to integrate climate risk into this.
- Risks related to climate change affect all sectors, and no activities are completely safe from its impacts.

Defining what climate action for shelter and settlements is and the different components and terminology, which include:

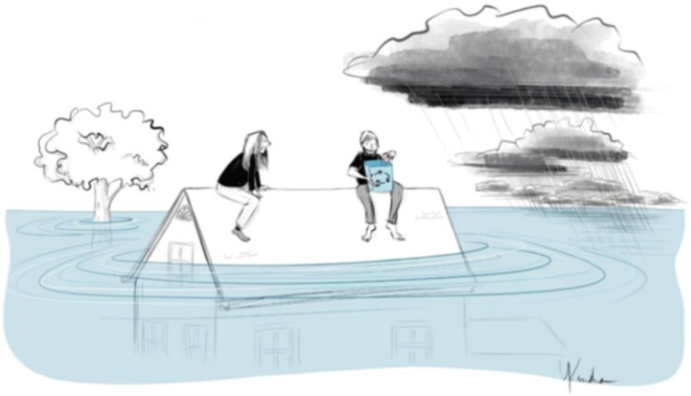
- **Adaptation** – helping communities to adapt to climate change impacts (e.g., building flood-resistant homes, changing agricultural practices).

[11] See **here** for the full survey results.

[12] "Planning from the future, rather than the past, needs to become the norm in humanitarian action if aid is to be timely and relevant to communities struggling to cope and adapt" (**Slim, 2024**)

- **Mitigation** – tackling the root causes of climate change by reducing greenhouse gas emissions (e.g., switching to greener energy sources).
- **Climate-Smart Programming** – using climate information across timescales in designing, adjusting, and implementing programmes and operations.
- **Green Response** – reducing environmental impacts of humanitarian action.

It was emphasised that the sector has made more progress on mitigation and greening the response than on adaptation. The adjacent cartoon[13] was used to illustrate the need to address other major issues (i.e. CCA) beyond mitigation and green response.



"It's not that I don't appreciate your recycling, Leo, I'm just suggesting it's not the only thing we should be doing right now."

© Kendra Allenby/CartoonStock.com

The overlap with DRR and CCA was also discussed as they have increasingly been used in convergence, however they do not overlap completely. DRR deals with all hazards including geophysical hazards and hydro-meteorological hazards, such as hurricanes and flooding. CCA only deals with climate-related hazards associated with changes in average climate conditions, like the increased frequency of hurricanes and typhoons.

Example actions for CCM, CCA and environmental sustainability were presented in Figure 1[14] which shows the overlap between the different categories.

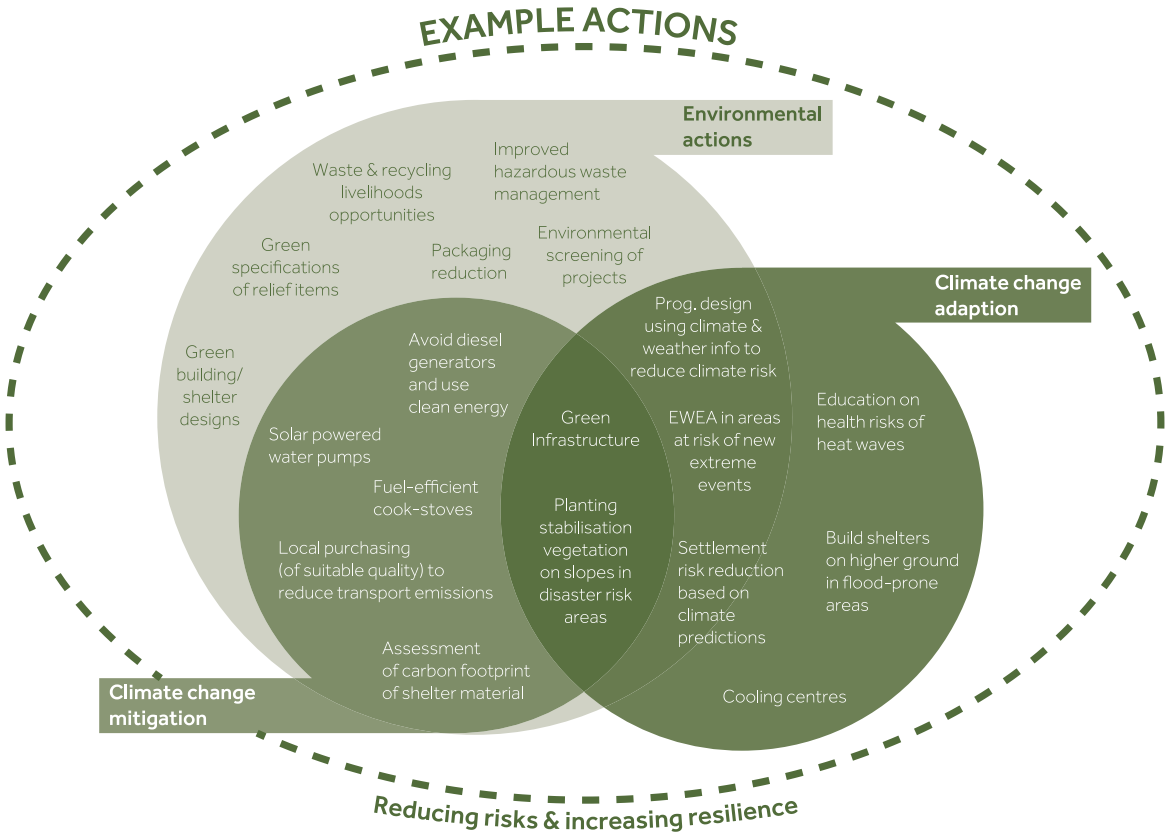


Figure 1: *Examples of Environmental, Climate Change Adaptation and Climate Change Mitigation actions (Mandy George/IFRC)*

[13] Kendra Allenby/CartoonStock.com - used in **http://climatecentre.org/ipcc/**

[14] Mandy George/IFRC, 2024, edited from a version developed as part of the Green Response Guide to Environmental Awareness Raising and Behaviour Change (not yet published)

Integrating Climate Risks into Shelter and Settlements Programming

Some ways that climate risks can be incorporated into shelter and settlement planning were presented, including:

- Understanding **climate forecasts and projections**: e.g. is it predicted to rain more or less?
- Adjusting current programs based on **anticipated risks.**
- Forming **partnerships** with key stakeholders at national and local levels, such as:
  - National Weather Services
  - Civil Protection Agencies
  - Environmental Organizations
  - Relevant government ministries
- **Securing funding** for climate-related interventions through global initiatives.
- **Training and capacity building** to equip local actors with necessary knowledge.
- **Collaboration and learning** from other sectors and experts.

Response Cycle Considerations: The disaster response cycle was presented with some examples of key actions that can take place at each phase. Some examples are also included in Figure 2. These include:

- **Preparedness:**
  - Monitoring weather and seasonal forecasts, particularly in high-risk areas.
  - Revising contingency plans based on new worst-case climate scenarios.
  - Scenario planning to anticipate extreme weather events.
  - Integrating climate change adaptation into risk and needs assessments.
- **Response:**
  - Using information from National Weather Services and other experts, in particular relating to elevated risks in specific operational areas in the coming days/months.

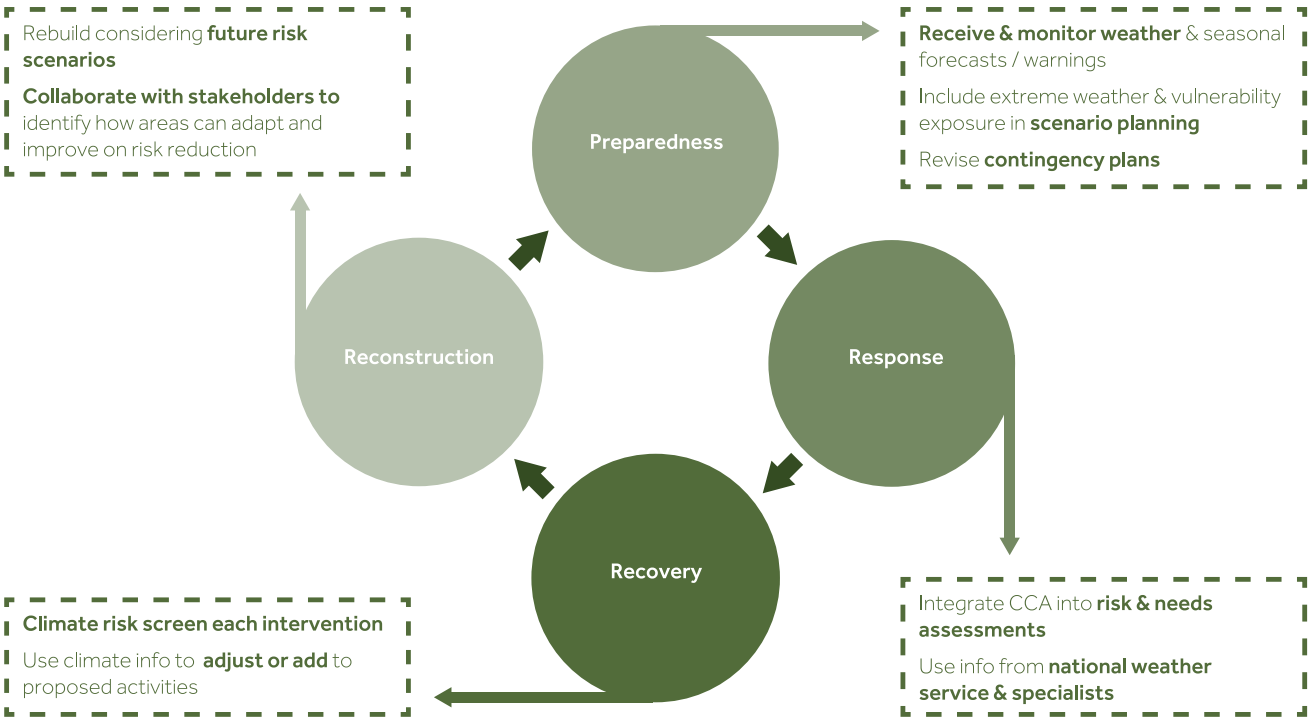


Figure 2: *Examples of climate change adaptation actions at each stage of the response cycle*

- **Recovery:**
  - Screening each intervention to make sure it can withstand climate risks (e.g. assess building materials and designs to ensure shelters can withstand extreme weather, such as stronger roofs for hurricane-prone areas).
  - Using climate information to adjust or add to proposed activities (e.g. improve ventilation for extreme heat conditions).
- **Reconstruction:**
  - Rebuild considering future risk scenarios (e.g. with earthquake-resistant designs and elevated foundations to withstand future seismic and flood risk).
  - Collaborate with climate scientists, land-use planners and communities to identify how areas can adapt and improve on risk reduction (e.g. by mapping flood-prone areas and relocating communities to safer, elevated land).

Key Issues in Climate Risk Assessments for Shelter & Settlements

- A list of **shelter-related risks** that need to be considered, was presented, such as:
  - **Mapping high-risk areas** (e.g., flood-prone regions).
  - Assessing the **adaptability of local building practices** (e.g., through environment impact and risk assessments)
  - Evaluating **existing protective settlement infrastructure** (e.g., cooling centres, shading elements, nature-based solutions).
  - **Redesigning buildings and settlements** to withstand climate extremes.
  - Analysing **potential impacts on critical infrastructure**, such as roads, energy supplies, and community facilities.

Challenges of incorporating CCA into Shelter & Settlements Programming

A few common challenges were suggested, to get participants to discuss them further in the breakout group in the second half of the learning event.

The session concluded with a presentation of some key resources. All of these are included in the **list of Shelter and CCA resources** (also reproduced in **Annex A**) collated prior to and during the learning event.

WHAT ARE WE DOING? CASE STUDIES TO PROMPT REFLEXION

In the second half of the learning event, three case studies were presented to inspire and prompt discussion. Practitioners from CARE, NRC and CRS gave short presentations of their work to incorporate climate change adaptation elements into shelter and settlements and education programming in Zimbabwe, Mali and Nigeria, and Vietnam. Rather than being shelter response projects, these experiences, or reflections from the field, highlighted how investing in pre-disaster planning can yield better response results. The sections below indicate the key content of the presentations, which are summarised more fully in **Annex B**.

Community-Led Shelter Modelling for a Changing Climate: Shelter Preparedness in Zimbabwe

Presented by Tinashe Kasirori, Humanitarian Programs Coordinator for CARE Zimbabwe.

CARE Zimbabwe completed the first pilot of a new shelter preparedness approach described as 'community-led climate-smart shelter modelling'. Community-led shelter design workshops were facilitated to co-create the design criteria for emergency and transitional shelters, with external technical specialists. The process integrated natural hazard risk assessments and discussions of the changing climate, informed by climate projections[15] and local indigenous knowledge. Subsequently, four transitional and three emergency prototype shelters were built and then evaluated by a range of stakeholders against agreed social and technical criteria, including their potential to mitigate future climate risks.

Community design workshops were used to set the agenda for the shelter types to be tested.

*The project's findings, including **shelter designs and technical information**, will provide evidence for the Government of Zimbabwe (including local government), CARE Zimbabwe, and the Shelter Cluster to advocate for more resilient and culturally appropriate designs.*

[15] See, for example, the IFRC **Climate Centre's Zimbabwe Country Profile** and **The World Bank's Climate risk country profile for Zimbabwe**

Climate-Resilient Schools in Nigeria and Mali

Presented by Esther Menduina, the Norwegian Refugee Council's Shelter Technical Adviser for Africa.

This ongoing project is a partnership between the Norwegian Refugee Council (NRC) and IFRC in Mali and Nigeria, aiming to promote greener and more inclusive schools. The **PASSA Youth** *methodology is being used to move through nine stages, from profiling of historic hazards and community mapping, to the identification of future changes to the schools and their surroundings to make them more resilient to context-specific hazards such as extreme heat, flooding and drought.*

Future changes may include:

- *the use of local natural materials, such as bamboo and mud bricks;*
- *improved ventilation to control indoor temperature;*
- *rainwater harvesting for school garden irrigation and cleaning toilets.*

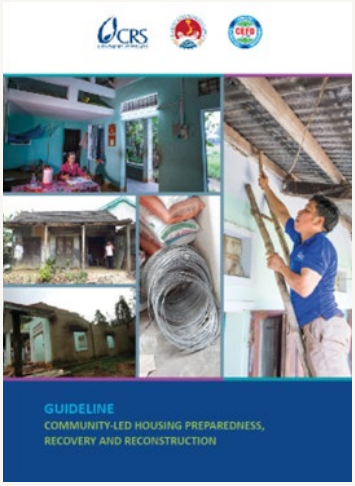
Community-led mapping of hazards by pupils, teachers and parents

Application of a Climate Lens to Risk Reduction and Anticipatory Action for Resilient Shelter in Vietnam

Presented by Thi Nguyen, the Manager of Disaster Risk Reduction and Climate Change Adaptation programs for Catholic Relief Services (CRS) in Vietnam.

Catholic Relief Services (CRS) has been contributing to preparedness for climate-resilient shelter in Vietnam, including influencing the National Community-Based Disaster Risk Management (CBDRM) system which strengthens stakeholders' ability to navigate uncertainty and address emerging risks, including those intensified by climate change. CRS has led the development of comprehensive Resilient Shelter Guidelines using the CBDRM model and their dissemination. CRS supports local actors at the commune level to conduct vulnerability and capacity assessments (using future climate projections) and develop DRR plans, including measures to enable disaster-resilient shelters.

CRS, as co-chair of a technical working group comprising other INGOs and UN agencies, is also working on anticipatory action, including activities such as distributing funds for shelter repairs via a financial services provider.



WHAT ARE WE DOING? SYNTHESIS OF BREAKOUT ROOM DISCUSSIONS

All the participants in the learning event were invited to join 'breakout room' discussions. Participants in each of the ten virtual rooms were asked to explore aspects of integrating CCA into shelter and settlement programming, focusing on gaps, tools, resources, and actionable steps. The prompting questions were:

- What CCA integration into response best-practice can be shared (including from sectors other than S&S)?
- What resources, information and tools are being used in the field? What works? What are the gaps?
- What are current challenges in integrating CCA with S&S programming and why do they exist?
- What is needed to increase CCA integration and by whom?

Post-event feedback suggests that the forty minutes allowed for these discussions were insufficient, and that it would have been better to have had fewer prompting questions. Nevertheless, many participants valued the opportunity to talk to new people and share diverse experiences.

> ***"I loved the diversity of the participants regarding experiences, fields and backgrounds. This enriched the conversation."***
>
> *Comment in post-learning event feedback*

What follows is a consolidated synthesis of the points raised during the discussions and posted on a **Mural board** (see screenshot).

Best-practice examples of integrating climate risk reduction in programming

Breakout room participants recognised that "we are already doing a lot". Many learning event attendees felt that CCA is being used as 'new' terminology, but in reality "we have been doing it" - in terms of striving to ensure that humanitarian projects and their participants are protected from the impacts of future environmental hazards, including hazards related to climate change. However, project evaluation norms mean that impacts and outcomes of CCA activities are not routinely captured and promoted. It was asserted by Mural board contributors that climate change does not necessarily mean developing new tools and approaches. In part, **climate change necessitates scaling up practices that are already known well, and which define a good shelter response, irrespective of climate adaptation needs.**

Several CCA practices in various contexts were highlighted:

- Climbing plants can be grown over sheet metal roofs and walls to reduce heat impact.
- In Vanuatu, shelters are designed to be collapsed to the ground when a cyclone is coming and then rebuilt after the storm.
- Climate-resilient community clinics and other buildings (on plinths or stilts) have been built in Bangladesh, supporting host and refugee communities.
- Raised transitional shelters are being implemented in flood-prone areas, with improved insulation and ventilation.
- Collective shelters in Ecuador have been adapted to incorporate rainwater storage.

It was widely recognised that 'the community'[16] is an invaluable resource for contextual understanding of climate risks and local adaptation practices.

- Community engagement is a vital element of all climate change conversations.
- Community-driven data collection can be linked more strategically to CCA and to other tools and forms of data collection.
- Inclusion of the (most) at-risk groups must be designed into every step of the response program and cycle management - the identification and support of these groups requires community-led practices.

Multi-sectoral integration focusing on climate change was urged by many learning event participants. Some specific best-practice examples were given:

- Integration with WASH programs (rainwater harvesting, greywater treatment and use for re-use in gardens.
- Integration with Livelihoods and Food Security sectors through increased settlement/site planning of green areas and food crop cultivation.
- Promotion of sustainable livelihood options to enable durable resettlement/return.
- If relocation is considered as adaptation, engagement with housing, land and property (HLP) issues is vital to assess feasibility and timing.

Challenges faced by participants in integrating CCA with their [mainly shelter] work

- Lack of consistency and enforcement on any requirements to integrate climate change considerations in programming.

> ***"We have some of the best guidance and know what needs to be done, but there is no consistency in using this, nor enforcing it in programming."***
>
> *Learning event participant*

- The divide between humanitarian and development policies, funding and activities. In part, this leads to insufficient and siloed funding.
  - Lack of funding and/or donors' regulations.
  - Donors rarely engage in long-term programming to allow structural changes in communities to strengthen resilience.
  - There is a need for funds for 'high-risk, high-reward' pilot programs.
- Lack of harmonised approaches between donors, governments, private / public sector, and humanitarian and development actors. National governments need funds for long-term adaptation responses.

[16] The term 'community' was often used as a shorthand for the local actors in humanitarian settings - whether recipients of assistance or not.

- Lack of tenure security is a barrier to CCA (and other activities addressing long-term solutions). Mainstreaming HLP considerations into all stages of disaster risk management is needed.
- Overwhelming other challenges in protracted and multi-crisis settings, which removes focus on CCA. The priority of adopting CCA is less important than responding to humanitarian needs in fragile contexts.
- Perceived additional costs of an emphasis on the use of locally available materials (for sustainability reasons) in the construction of temporary shelter.
- Lack of access to current, reliable data.

Gaps in resources and tools

The following gaps were identified by the learning event participants.

- Ways of capturing knowledge from the global housing sector, especially of low-cost thermal efficiency measures, particularly for use in the tropics.
- Greater access to - and knowledge about where to access - climate forecasting models, which should be used alongside indigenous knowledge.
- Ways to monitor and evaluate CCA interventions. MEAL plans rarely include longer-term evaluations that could identify the post-implementation impacts or long-term user improvements of CCA interventions.

> ***"There is a lack of long-term monitoring that demonstrates not only the program quality impact, but also evidence of the value for money over time [of reducing risk and the negative impacts of climate-related hazards]."***
>
> *Learning event participant*

- Field staff capacity development, especially in locally led climate adaptation for S&S programming.
- Climate-focused country profiles are needed in more countries, with information tailored to humanitarian responders.
- The need for more technical information on specific adaptation activities.
  - Focus on human thermal comfort instead of only temperature. Needed: a set of 'minimum human thermal comfort (MHTC)' guidelines, that then lead to a MHTC standard in Sphere, that looks at radiant, convective and conductive thermal loss and gain, and not just temperature.
- Tools exist, e.g. environmental assessment tools like NEAT+, and shelter tools like PASSA, but they do not have climate change adaptation well integrated into them. It would also be helpful for them to be available in more languages.

Participants also contributed to a collection of resources and tools relevant to integrating CCA in shelter and settlements programming. This can be found in **Annex A**, and in a **live Google document**.

WHAT NEXT?

How to incorporate CCA in shelter and settlements programming involves finding windows of opportunity within the response cycle to augment operational procedures and approaches so as to integrate awareness and knowledge of climate risks. Shelter and settlements actors need to think about their PROCESSES and OUTPUTS and consider how climate change will affect both. Messages from speakers early in the learning event resonated throughout, as participants shared existing knowledge and experience and discussed priorities moving forward.

> ***We know that helping crisis-affected communities adapt to climate change is critical. Adaptation is not about giving up or settling for less. It's about empowering communities to withstand the challenges they face and build a resilient future. This is where we come in - the humanitarian Shelter and Settlements Sector. We have an incredible opportunity to make a difference, and a lasting impact. We're not just putting up emergency or temporary structures, we are creating spaces where people can feel safe, recover and live their lives in dignity.***
>
> *Pablo Medina*

> ***I would strongly suggest that doing something is better than thinking about it. Just getting on and trying programmes out is important because as we've seen with cash and other areas of innovation, a groundswell of activity leads positive change. Start to use one of the tools that are increasingly available to understand the risks facing existing humanitarian programmes. [...] None of us yet know the answers about what the most efficient and effective approaches are, so we need a renewed focus on evaluation and learning.***
>
> *Paul Knox Clarke*

The following section is a summary of the priorities and actionable next steps identified by the learning event participants.

- **Adopting a mindset shift for all elements of climate-smart programming**, starting from procurement, considering two related but distinct issues for future programming:
  - the need for shelter and settlements that are better designed for a changing climate.
  - the need for better preparedness for more and more intense extreme weather events.
- **Linking short-term emergency responses to long-term durable solutions**. This involves incorporating climate and environment risk analysis and using climate projections in preparedness, as there is unlikely to be time or absorptive capacity at the start of a response. This will make it easier to think longer term and know what needs to be done later (e.g. settlement location planning).
- **Advocating for harmonised approaches to CCA** among donors, governments, and humanitarian actors, and for governments to allocate funds for CCA before emergency response is required, so that adaptation works.
- **Better planning for extreme worst-case scenarios.**
- **Allowing more time for context analysis** before a response because the CCA needs vary from one location to another.
- **Including hydro-meteorological data in programming design.**
- **Linking CCA activities to what people are already doing** (adapting to climate change).

  - Ensure CCA aligns with traditional knowledge and link localized climate change knowledge to local and national adaptation plans. To do this, include climate knowledge in risk assessments.
  - Make available, and 'translate' if necessary, climate projections for communities to make informed decisions.
  - Facilitate sessions for project beneficiaries to raise awareness about CCA and to understand their needs. As necessary, build climate knowledge at the community level through facilitated conversations and risk communication.
  - Share knowledge about how to facilitate conversations about CC at community level.
- **Identifying sustainable, ideally locally available materials**, and ensuring these materials are accepted in national response plans.
- **Advocating for and allocating funding to long-term evaluations** to enable user improvements.
- **Focusing on expanding and adapting existing practices** rather than [re]inventing tools.
  - Seeking win-win solutions for climate mitigation and adaptation.
  - Incorporating HLP and environmental restoration management in response measures.
  - Promoting climate change equity and justice, focusing on vulnerable groups.
- **Sharing learning from completed projects** (including housing projects, especially those in informal settlements) to enable advocacy and communication with donors.
- **Connecting more with academia**, for example by accessing evidence and tools from research fellowships.
- **Ensuring access to relevant sector-specific data** (e.g., climate projections, thermal comfort guidelines) and translating it into actionable insights for humanitarian response and planning.

At the end of the learning event, Mandy George and Charles Kelly identified six concluding messages for shelter and settlements actors concerned about how to ensure their programming is climate-smart, and more broadly environmentally responsible. These six messages echoed much of the earlier discussion and points identified by speakers at the start.

1. **Address current hazards effectively** – Prioritize managing existing environmental hazards such as flooding, landslides, and strong winds. Doing so strengthens resilience against climate change-induced changes.
2. **Integrate risk assessments into humanitarian response** – Utilize available tools like NEAT+ and CEDRIG to assess risks before implementing response activities. Anticipating hazards ensures better preparedness and mitigation efforts.
3. **Ensure quality programming** – Focus on high-quality shelter, settlements, and WASH interventions by proactively incorporating risk reduction and adaptation measures.
4. **Consider the broader environmental impact** – Human activities, such as deforestation for shelter, can exacerbate natural hazards. Understanding and mitigating these impacts are crucial.
5. **Develop a holistic approach to climate change** – Climate risks should be addressed in conjunction with environmental factors and the effects of humanitarian assistance on ecosystems.
6. **Engage with environmental networks** – for example, connect with the **Environment Community of Practice** and **Extreme Heat Working Group** for further learning through webinars and case studies (see below)

Next steps

1. **Collaborate and continue the conversation!**

   Learning event participants and others interested in this topic are encouraged to join and contribute to the Global Shelter Cluster's **Environment Community of Practice** and the **Extreme Heat Working Group** to share resources, ideas and expertise, and to access further learning webinars.

   > ***"Please join the working groups and communities of practice - this is where the magic happens! [...]. Together, we're not just responding to the challenges of today, we are shaping our future where communities are safer, stronger and better prepared, more resilient to whatever comes next. So let's keep collaborating."***
   >
   > *Pablo Medina, Global Shelter Cluster Coordinator (IFRC)*

2. **Share resources and learning!**

   As part of the learning event, a **collection of resources** was gathered, presented in **Annex A** and in this **live Google document**. Participants are encouraged to add resources to this live document in comments, and these will be updated by the event organisers.

   The Global Shelter Cluster is developing a **compendium of case studies** to enhance knowledge on environmentally sustainable shelter and settlement approaches including climate change adaptation. The compendium aims to build evidence and strengthen the case for integrating environmental and climate considerations into shelter preparedness, risk reduction, and response efforts. It will also contribute to the work of the Environmental, Technical, and Recovery Communities of Practice, advancing green shelter initiatives, promoting durable solutions, and mainstreaming disaster risk reduction. Additionally, the compendium will serve as an advocacy tool for shelter cluster coordinators, demonstrating how environmentally conscious approaches lead to more effective, cost-efficient humanitarian responses and more resilient communities. See the **GSC's Environment Community of Practice website** for the compendium once it is published later in 2025.

ANNEX A

Collection of resources

This annex presents a collection of resources relevant to Shelter and Settlement practitioners interested in climate change adaptation. This list is not exhaustive but was put together for the Climate Change Adaptation Learning Event in 2025, both from resources gathered during the event's preparation and from interviews with practitioners working in this space or suggested by participants as part of the Mural board exercise during the event. There is a **live Google version of the resources in this section** and users are encouraged to add to it via comments and the resource will be updated by the Global Shelter Cluster Environment Community of Practice. Alternatively, please send resources to **environmentoperations@sheltercluster.org**.

Climate change and humanitarian action

The following are a few key resources on climate change and humanitarian action. The list is not exhaustive - for a full list of resources see the **Guidance section** of the Climate and Environment Charter's website.

The Climate Charter: Many INGOs, including CARE and the Global Shelter Cluster lead agencies, have signed the Climate Charter and have committed to addressing the climate and environmental crises in their humanitarian work. The Charter website contains **guidance, tools and resources** for operationalising each of the 6 commitments.

OCHA 2024 World Humanitarian Overview: States that climate change and conflict are the main drivers of increasing humanitarian needs.

IASC 2024 IASC Climate Crisis Roadmap: Identifies six priority areas (informed by the Climate Charter) and includes recommendations under each priority area. One priority area is: "Help people to adapt and build resilience to multiple risks and the impacts of disasters, climate and environmental crises, especially in crisis and fragile settings"

ALNAP 2021 Adapting humanitarian action to the effects of climate change: ALNAP commissioned a review of evidence from previous humanitarian interventions to identify lessons and examples of best practices that might be applied when designing humanitarian action in response to future climate-related disasters. These include lessons related to shelter (e.g. Lesson 35 on page 52: "Humanitarian actors should support and play their part in multisectoral approaches across shelter, urban planning, WASH and public health to help communities improve their capacity to withstand and respond to the effects of heatwaves.") The paper also suggests effective actions for shelter actors to manage heat waves.

ADAPT 2021 Climate Change and Humanitarian Action: Considers the relationship between climate change and humanitarian action. It asks how climate change will affect humanitarian needs; outlines the current state of readiness to meet these needs; proposes changes required to improve readiness and response capacities; and suggests a series of activities that would support these changes.

Climate change information, guidance and training for humanitarians

Information

Red Cross Red Crescent Climate Centre 2023 Climate Fact Sheets are available for 20 countries. These

include **Climate Centre StoryMaps** which include climate projections. The profiles are designed to make climate science more meaningful, scientific storylines support the integration of climate risks into humanitarian decision-making. Each fact sheet has two to three climate storylines developed by the Climate Centre's science team through in-depth scientific analyses based on climate model projections (scientific data-based estimates of future climate change).

United Nations **Climate Change Nationally Determined Contributions Registry**: A registry of national contribution statements, with climate profiles and climate change impact analyses.

World Bank **Climate Change Knowledge Portal**: provides global data on historical and future climate, vulnerabilities, and impacts. Data can be explored via Country and Watershed views. Includes many **country climate risk profiles**.

IPCC **Regional Factsheets**: Provide an entry point for information relevant to regions and sectors. They are traceable to the underlying Working Group Contribution to the IPCC Sixth Assessment Report and **Interactive Atlas**.

ND-GAIN **Country Index**: a measurement tool that helps governments, businesses and communities examine risks exacerbated by climate change, such as overcrowding, food insecurity, inadequate infrastructure, and civil conflicts. Free and open source, the Country Index uses 20 years of data across 45 indicators to rank over 180 countries annually based on their level of vulnerability, and their readiness to successfully implement adaptation solutions.

NOAA, **Climate Data Online (CDO)**: provides free access to NCDC's archive of global historical weather and climate data in addition to station history information. These data include quality-controlled daily, monthly, seasonal, and yearly measurements of temperature, precipitation, wind, and degree days as well as radar data and 30-year Climate Normals.

Tools, Guidance and Frameworks:

International Federation of Red Cross and Red Crescent (RCRC) Societies and RCRC Climate Centre 2023 **Guide to Climate-Smart Programmes and Operations:** Supports National Red Cross and Red Crescent Societies and the IFRC in making their programmes and operations climate-smart. Includes examples, resources and tools that can be applied easily to make work climate smart and is also relevant for non-RCRC programming. There is a 10-page **summary of the IFRC guide on climate-smart programmes and humanitarian operations.** Annex 2 includes sectoral impact checks. For shelter and settlements, see **Section E: Guiding section for checking shelter, housing and settlements** (p 94ff). This includes a table of questions designed to help think through how climate risks can affect choices in relation to shelter, housing and settlements.

International Committee of the Red Cross, 2024 **Framework for the integration of climate risks into ICRC Operations:** Introduces climate action within the organization and outlines the aims of this framework. It outlines the pathways that ICRC delegations can take to integrate climate risks and related objectives and is relevant for both management teams and coordinators. Section 3 describes the cross-cutting steps, tools and approaches needed to create an enabling environment for climate risk integration within a delegation. It is particularly relevant for management teams. The annexes provide technical guidance.

International Federation of Red Cross and Red Crescent Societies (IFRC) and Climate Centre **Climate Training Kit:** an interactive set of training materials prepared by the IFRC and the Climate Centre. Designed to provide innovative tools to trainers and facilitators within the Red Cross Red Crescent Movement and its partners. It aims to strengthen capacities across the world, without having to fly experts around the globe. Includes information on areas of humanitarian work, including technical aspects of climate risk management, climate-related policy dialogues, climate finance and much more. No specific shelter and settlements section.

Donor policy and guidance

DG ECHO, 2022 Guidance on the operationalisation of the minimum environmental requirements and recommendations for EU-funded humanitarian aid operations: The most comprehensive series of donor requirements for the environment in humanitarian action.

Climate Action Accelerator and the Joint Initiative, 2024, Operationalizing and Scaling-up Donors' Climate and Environmental Commitments: **an analysis of progress, gaps and opportunities:** provides a high level summary of where the donor community stands on these issues, and an annex, which describes the individual greening approaches of 14 donors. The findings are based on desk research, interviews, and correspondence with focal points from the donor agencies listed in the annexe. It focuses on institutional (public) donors, not on private sector donors.

Information and guidance on climate change adaptation

General

CARE and GIZ 2021 Gender-responsive Ecosystem-based Adaptation: aimed at development contexts, rather than humanitarian.

Red Cross Red Crescent Climate Centre Resources on Locally Led Adaptation: includes the RCRC Climate Action Journey and links to training and resources.

IFRC 2024 The Importance of Scaling Up Locally Led Adaptation: a short document that sets out the ambition, principles, and roadmap for scaling up locally led adaptation and the steps of the Climate Action Journey. No specific mention of shelter. Includes eight principles for locally led adaptation, endorsed by over 100 donors, governments and intermediary organizations, including the IFRC, established by the Global Commission on Adaptation in 2021.

IFRC 2024 Manual for the establishment of community cooling centres in cities: This community cooling centre manual aims to support RCRC National Societies' preparedness efforts for heatwaves while contributing to the global RCRC Movement targets to better protect 250 million people from heat by 2025. Complements the City Heatwave Guide for Red Cross Red Crescent Branches, and the Heatwave Guide for Cities developed by the RCRC Climate Centre.

Global Land Tools Network (GLTN) 2019 Land Tenure and Climate Vulnerability: examines the inter-relationships between land tenure and climate vulnerability. The analysis has been framed according to peoples' exposure to climate-related hazards, the sensitivity of different elements at risk in both urban and rural contexts and an understanding of how insecure land tenure influences the adaptive capacity of communities and individuals. Potential feedback loops from climate adaptation measures that may act to undermine peoples' security of tenure have also been considered.

Nature-based solutions

Sphere 2023 Nature based solutions Sphere unpacked guide: emphasises the value and co-benefits of NbS for resilience-building in humanitarian contexts and provides practical guidance for using the Sphere standards when implementing NbS to address societal challenges in humanitarian action. It explores links between NbS and Sphere's four technical chapters - including shelter – while stressing the cross-cutting nature of NbS and its contribution to restoring, protecting and fulfilling human rights, dignity, and agency. The Guide also provides useful tools and resources and illustrative case studies.

UNHCR Guidelines for integrating nature-based solutions in settlement planning: supports efforts to integrate NBS into current settlement planning, development and management practices. It provides a general overview of NBS and technical guidance regarding the integration of particular forms of NBS into settlements.

This information can support initial considerations about the potential integration of NBS into settlement planning prior to more detailed feasibility assessments and design.

IFRC **Global Climate Resilience Platform:** A multi-year initiative to significantly improve and expand the community-based climate action work of Red Cross and Red Crescent Societies around the world. One of its 4 targets, Resilience, has a focus area of **NbSs, with a technical explainer doc.**

UN Habitat, 2025 **Designing for Displacement: A Spatial Guide for Planning Along Seasonal Rivers in Drylands:** this guide aims to establish a knowledge repository of spatial planning and design strategies. These strategies are intended for adoption by humanitarian and development practitioners, national and local governments, and other stakeholders. Specifically, it introduces a collection of Nature-based Solutions (NbS) tailored for use in the context of protracted displacement in dryland regions marked by intermittent or seasonal rivers, notably within the arid and semi-arid land (ASAL) territories of East Africa.

Re-alliance Case Studies: a series of case studies showcasing the restoration and revitalisation of social and ecological systems which integrate the needs of society with the integrity of nature. Includes case studies on **eco-building**.

Yuva Project, **Shelter and Rainwater Harvesting Case Study:** A national NGO in Türkiye has designed and delivered prefab wooden shelters in Hatay, including rainwater harvesting, good insulation, and positioning to take advantage of the sun.

Shelter and settlement environment resources and guidance

Global Shelter Cluster resources: For an overview of all of the environment and shelter resources of the Global Shelter Cluster, visit the **Environmental Community of Practice Page on the GSC website**. Some key resources include:

- **Shelter and Settlement** **Country Environmental Profiles** (13, more to be completed in 2025)
- **Tools for environmental mainstreaming into the Shelter elements of the Humanitarian Programme Cycle** including Needs Analysis and Response Planning:
  - **Response Planning Tip Sheet for Environment, Climate Change and DRR Mainstreaming**
  - **Needs Overview Tip Sheet for Environment, Climate Change and DRR** Mainstreaming
- **Entry Points for DRR Mainstreaming** in **Shelter and Settlements** (UNDRR and GSC, 2024)

GSC, USWG, IMPACT, 2024, **Settlements Approach Environmental Thematic Annex**: Supplements the Settlements Approach Guidance Note, published by the Urban Settlements Working Group of the Global Shelter Cluster in 2020. The Thematic Annex emphasises the need to consider environmental factors early in the programme cycle. It focuses on integrating environmental considerations into: settlement identification and delineation, and context analysis and needs assessment. The Annex is accompanied by **Tools and Resources for Mainstreaming Environmental Considerations in the Settlements Approach**.

Shelter Projects 2024 **Lessons from Floods, Compendium of case studies**: Compendium of case studies specifically on floods, taken from the last decade of Shelter Projects editions.

Disaster Ready online training, 2024, **Humanitarian Shelter and Settlements Course**. Module 5 on Environmental and Climate Concerns covers the concepts of climate change impacts and environmental sustainability in S&S assistance, various approaches, and tools adopting sustainability, resilience, and adaptation across three levels - mainly household, settlements, and ecological.

UNHCR, 2021, **Shelter and Sustainability - A Technical and Environmental Comparative Overview of Common Shelter Typologies Found in Settlements across UNHCR Operations**: a comparative overview of different shelter typologies, which were recently implemented in various field locations and in different stages

of a humanitarian response to forced displacement. Using established criteria to determine the technical performance, habitability, affordability and the environmental impact of each shelter design, this study outlines the real costs of shelter interventions considering the specificities of each context and material used. Climate resilience was not a criterion included in the comparative overview.

NRC 2023 **Housing, land and property in the context of climate change, disasters and displacement**: This 'policy brief' presents NRC's knowledge and experience in addressing HLP issues associated with climate change, disasters and displacement, including those often aggravated by conflict. It is not a comprehensive catalogue of HLP issues, nor does it present the full breadth of NRC's operations. Rather, it reflects the organisation's experience in delivering information counselling and legal assistance (ICLA), shelter and settlements and other programmes, and draws on its role as lead and co-lead of inter-agency coordination. It includes examples from Afghanistan, Iraq, Mozambique, Somalia and South Sudan.

Environmental Assessment Tools

Climate-specific tools

Deltares **Climate Resilient Cities tool**: free software to support urban design and planning for climate adaptation.

CARE Climate Vulnerability and Capacity Analysis (CVCA). **CVCA Handbook** (2nd edition 2019). **Summary handbook**

CRiSTAL Tool: a project-planning tool that helps users design activities that support climate adaptation (i.e., adaptation to climate variability and change) at the community level. CRiSTAL stands for "Community-based Risk Screening Tool – Adaptation and Livelihoods."

Broader environmental assessment tools

Swiss Development Cooperation, **Climate, Environment and Disaster Risk Reduction Integration Guidance (CEDRIG)**: a practical and user-friendly tool developed by SDC. It is meant to systematically integrate climate, environment and disaster risk reduction (DRR) into development cooperation and humanitarian aid to enhance the overall resilience of systems and communities.

Nexus Environmental Assessment Tool (NEAT+): a free and open-source tool designed to aid humanitarian actors in identifying issues of environmental concern and mitigation measures and to make emergency and recovery interventions more sustainable.

CAFOD **Environmental Stewardship Tool (EST) tool**: this Excel-based tool is similar to NEAT+ and was developed to facilitate CAFOD's environmental stewardship in program activities and complement other environmental impact assessment tools. The tool helps teams screen for environmental risks as they design programs and activities, ensuring we not only do no harm, but also support environmental outcomes, restoration, and regeneration efforts. The main objective is to ensure that the preservation of natural resources is done sustainably alongside all activities involving the natural and built environment (such as shelter and infrastructure construction). It also includes guidance on reducing potentially negative environmental and climate impacts from our work.

REH Environmental Assessments Working Group, **MERA (Multi-sectoral Environmental Risks Analysis) matrix**: helps humanitarian and development project developers and technical advisers be aware of the environmental risks of the projects they are developing and to mitigate these risks. Provides a non-exhaustive database of mitigation measures for each environmental risk associated with activities in the Food Security & Livelihoods, Water, Sanitation & Hygiene, Shelter and Mental Health and Psychosocial Support sectors. This matrix does not replace environmental screening tools (like NEAT+, EST), but can complement them.

For further guidance and tools on Environmental Assessments, see the **EHA Connect** assessment guidance page.

Tools for Shelter Design

University of Bath, **Humanitarian Shelter Tools**:[17] A suite of tools aimed at humanitarian actors was developed through a University of Bath research project (Healthy Housing for the Displaced). They are all publicly available and free to use.

1. The **Shelter Assessment Matrix (SAM)** is a scoring mechanism for shelter design. The SAM tool includes 34 criteria of planned temporary/transitional shelter solutions and was developed to avoid oft-repeated and avoidable mistakes. It gives a rational way to assess the potential performance of a shelter – including social issues. It also contains a library of useful information on shelter design.
2. **ShelTherm** is a simple thermal model designed for those with little buildings or modelling experience. It allows you to build your shelter in a user-friendly way, place it in the correct climate and then look at the likely internal **temperatures** on a hot day and a cold day
3. **SheltAIR** is the first simulation tool created using a co-creation approach, involving those for whom it is intended. The development included participation from a diverse group of stakeholders, including shelter designers, humanitarian workers, and academics from 15 different countries. SheltAir is an Excel-based tool that employs simplified airflow equations to model natural **ventilation and indoor air quality**. More information on SheltAIR is available **here**.
4. **Zebra core tools** allow shelter designers to model and assess **embodied and operational carbon**. Zebra is a user-friendly model that aids in designing zero-carbon buildings with minimal inputs and no required training, also enhancing user knowledge of zero-carbon principles.

Build Change, Resilient Housing Ecosystem Assessment Tool (**RHEAT**): RHEAT™ has been developed by Build Change to help countries, states, territories, cities, and communities identify key gaps and challenges as they work toward achieving resilient housing at scale.

Build Change: Build Change technical assistance platform (**BCtap**): an end-to-end solution that pairs technology with subject matter expertise to take resilient housing programs to scale.

[17] For an evaluation of some of these tools in terms of their ability to improve thermal comfort in low-cost housing under future climate scenarios, see the following research paper by Hendriks et al: Sustainability 2025, 17(6), 2511; **https://doi.org/10.3390/su17062511**

ANNEX B

Case study presentation summaries

Community-Led Shelter Modelling for a Changing Climate: Shelter Preparedness in Zimbabwe

Presented by Tinashe Kasiror, Humanitarian Programs Coordinator for CARE Zimbabwe. He currently holds the Southern Africa Regional Manager position on a temporary duty assignment.

Zimbabwe has been experiencing an increased frequency of extreme weather events, for example, several recent cyclones affecting the Eastern highlands, in addition to droughts, heat waves and flash floods affecting most of the country. It is predicted that by 2080 average temperatures will increase by 2-4°C, further impacting ecosystems and communities all over Zimbabwe. Local people are aware of climate change having experienced it directly, for example sharing with the project that "once green spaces are now bare and dusty".

CARE Zimbabwe has been ambitious in its objective to adapt shelter work to the changing climate. They have looked at how to strengthen shelter preparedness through the inclusion of climate change adaptation, focusing on relevant systems and structures, underpinned by CARE's commitment to community participation. By continuing to invest in preparedness and climate change adaptation they work to ensure that future emergency and transitional shelters in Zimbabwe will be more resilient and sustainable. This project was the first pilot of a new approach described as 'community-led climate-smart shelter modelling' and informs CARE's development of a model for similar preparedness activities in other contexts in Southern Africa.

The project began with community-led shelter design workshops with different groups (women, men, young people, elderly people, and persons with disabilities) in the target rural region in Eastern Zimbabwe. These groups were facilitated to discuss, define and prioritise aspects of shelter design, to co-create the design criteria with external technical specialists. It was important to include different people with different needs in the process. This community-led design process also integrated natural hazard risk assessments and discussions of the changing climate, informed by climate projections[18] and local indigenous knowledge.

Community groups including women, men, youth, the elderly and people with disabilities participate in the community design workshop setting their agenda for the shelter types to be tested.

[18] See, for example, the IFRC ***Climate Centre's Zimbabwe Country Profile*** and **The World Bank's *Climate risk country profile for Zimbabwe***

Emergency and transitional shelter designs were developed using these design criteria, and four transitional and three emergency prototype shelters were built. The Bills of Quantities (BoQs) and designs were carefully refined by engineers and local builders to balance cost against quality while still fulfilling the outcomes established in the design criteria. These criteria included targets for cost, longevity, and minimum size for expected occupants.

While these prototypes were evaluated by a range of stakeholders, the process prioritised groups of local builders and community members, using agreed-upon social and technical criteria. Community evaluators set criteria and captured qualitative narratives and quantitative scoring. This evaluation process enabled the humanitarian team to better understand how community members (technically skilled and unskilled) viewed the different structures and how they would perform differently based on local knowledge and experience of building habitation and maintenance. Climate change adaptation was an important part of the evaluation, as stakeholders evaluated the structures' potential to mitigate future climate shocks and risks and integrated these reflections into their feedback and scoring.

This process has resulted in a rich body of learning on vernacular shelter design in Zimbabwe by community members. CARE Zimbabwe, working in partnership with CARE's Global Shelter Team, has consolidated this learning and the evaluation results ***in a technical report and accompanying shelter profiles****. These will be published soon and advocated for along with the Government of Zimbabwe and the Zimbabwe Shelter Cluster who collaborated on the project. CARE hopes that other humanitarian actors responding to future crises will use these learnings and be able to tailor their programs to more closely align with community priorities. The project will provide evidence for the Shelter Cluster to advocate for more culturally appropriate designs. By sharing BoQs and technical drawings actors will also be able to plan and implement humanitarian shelter programs more quickly, either adopting or adapting the designs most highly rated through the community evaluation process.*

For the community-led evaluation, groups of local builders and community members evaluated the prototypes using social and technical categories.

Seven different prototypes of varying materials and configurations were built by local builders with the three-roomed mudbrick shelter (top left) most highly rated as the transitional shelter solution for its durability, resistance to future climate-related hazards, cultural appropriateness and superior thermal properties. The pole shelter with tarpaulin walls and zinc roof (bottom left) came out as the top choice for emergency shelter given its ease of construction, durability against heavy rains and general cultural acceptability in times of crisis.

Climate-Resilient Schools in Nigeria and Mali

Presented by Esther Menduina, the Norwegian Refugee Council's Shelter Technical Adviser for Africa.

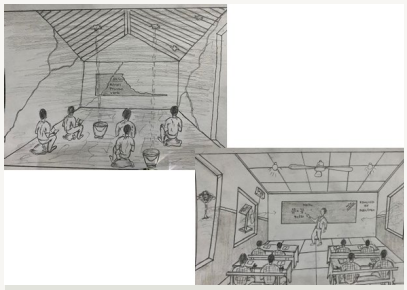
The concept behind this ongoing project, a partnership between the Norwegian Refugee Council (NRC) and IFRC in Mali and Nigeria, is to promote greener and more inclusive schools, through collaborative and participatory school rehabilitation. The methodology we used to incorporate climate adaptation is IFRC's PASSA Youth. This process can mobilise the community, the students and the teachers, and engage them in the planning and design climate adaptations for the school. The communities will also be involved in the construction and post-construction phases.

PASSA *is a* ***p****articipatory* ***a****pproach for* ***s****afe* ***s****helter and settlements* ***a****wareness NRC's ambition is to first pilot this approach in schools and then expand it into shelters and settlements.* **PASSA Youth**, *a variant of PASSA, is a very well documented youth action planning tool that helps the community to identify their problems and work together to find solutions (see video* **here***). IFRC provided week-long training courses in Mali and Nigeria, to key staff to transfer the skills needed to facilitate the PASSA Youth process. The nine stages of the process, illustrated below, are being carried out in Mali and Nigeria and by mid 2025 it will be possible to share the results and planned design solutions for enabling more hazard and climate-resilient schools and communities.*

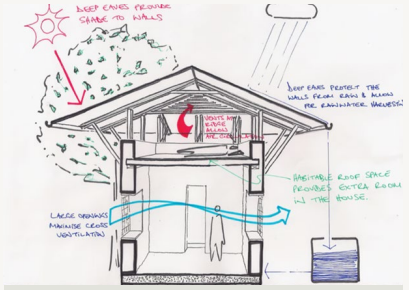
1. Historic profiling to identify hazards and previous risks to the community.

2. Historic profiling to identify hazards and previous risks to the community.

3. Drawings to communicate the frequency and impact of hazards, especially with children.



4. Drawings to identify safe and unsafe aspects of schools.



5. Brainstorming options for solutions to hazards facing schools.

6. Planning for changes to schools.

7. Identifying potential future problems to overcome.

8. Deciding on how to monitor change.

9. Actioning school improvement grants.

Depending on the PASSA Youth results, various future climate-adaptive changes will be addressed to context-specific hazards such as extreme heat, flooding and drought, as well as school-based climate mitigation activities.

Local natural materials, such as bamboo, mud bricks, to withstand extreme weather conditions

Natural light and ventilation to control temperature and reduce use of artificial lighting

Hazard-resilient school structures like pilotis foundations in areas at risk of floods

Other interventions in the future could include:

- rainwater harvesting for school garden irrigation and cleaning toilets
- shading, especially for outdoor class activities
- solar powered bore holes for schools and the wider communities
- solar panels in schools and solar lamps for students' homes
- energy-efficient stoves for school kitchens
- school vegetable gardens for learning and nutrition
- green roofs and walls to manage stormwater and to mitigate extreme indoor heat

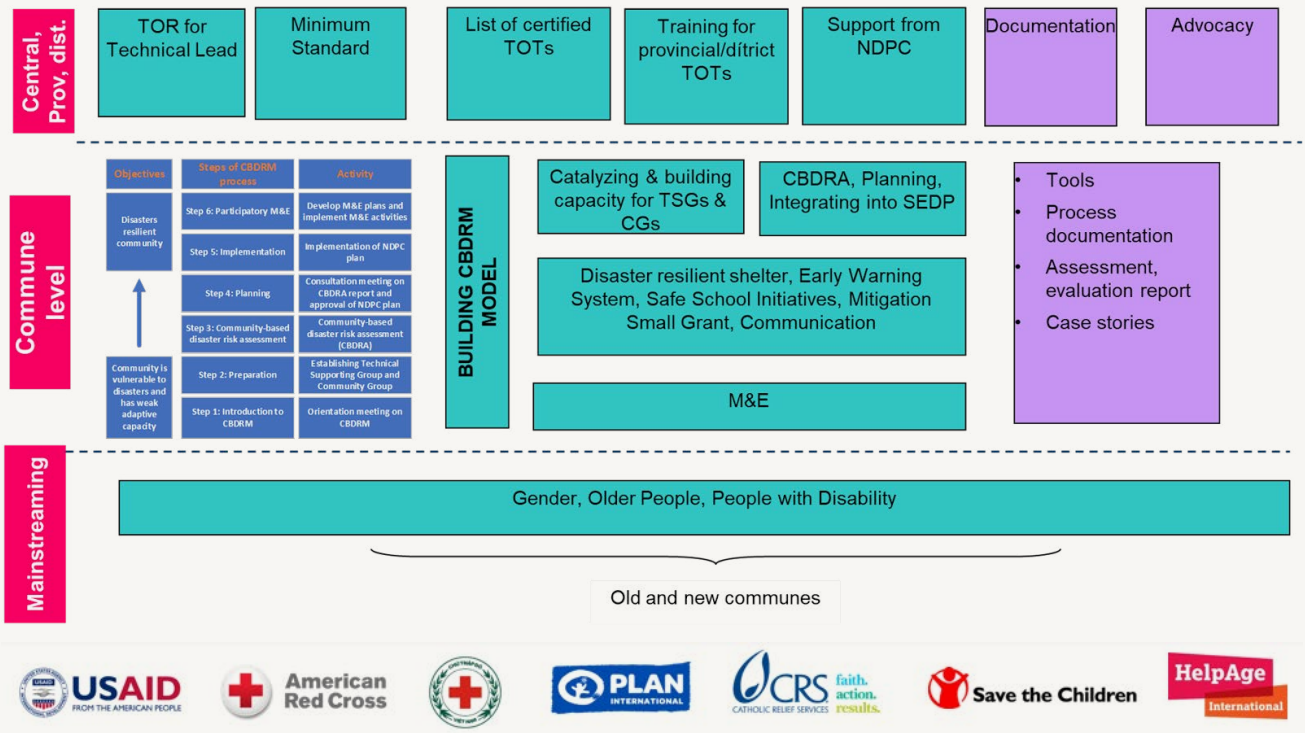
Both climate adaptation and mitigation can be practised side by side and both will boost pupils', parents' and teachers' climate awareness, resilience and agency. The results of these ongoing projects in Mali and Nigeria will be shared in due course.

Application of a Climate Lens to Risk Reduction and Anticipatory Action for Resilient Shelter in Vietnam

Presented by Thi Nguyen, the Manager of Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) programs for Catholic Relief Services (CRS) in Vietnam.

Catholic Relief Services (CRS) has been working in ***preparedness for climate-resilient shelter in Vietnam****, including through several years of influencing the National Community-based Disaster Risk Management (CBDRM) system.* ***The CBDRM process strengthens stakeholders' ability to navigate uncertainty and address emerging risks, including those intensified by climate change.*** *This approach is a part of CRS's strategic change platform:* **Homes and Communities***, which works with systems actors to provide safe, dignified homes and communities at scale. Its ambition is to enable 10 million people worldwide to access safe and dignified shelter by 2030: firstly by directly helping households build resilient homes, reaching 1.5 million people, and secondly by influencing change with government, market or humanitarian systems to reach 8.5 million people.*

It took many years for UN agencies, NGOs and other stakeholders to apply a community-based approach to disaster risk management in Vietnam and the CBDRM programme was officially formed and funded by the government between 2009 and 2020. However, it did not initially include shelter, and CRS was able to contribute to developing comprehensive CBDRM guidelines using the lens of resilient shelter, at national, regional and local levels.



The CBDRM model promoted by the CRS and USAID Disaster Risk Reduction and Climate Change Adaptation Consortium. CRS is the Technical Lead member of the consortium.

During the current phase of the CBDRM program (2021-2030), shelter aspects of disaster management have been acknowledged, but the standardization of Resilient Shelter Guidelines and their application remains inconsistent nationwide. To drive change, CRS and its consortium partners have been actively engaged in the National CBDRM program since 2022. As the Technical Lead within the consortium, CRS collaborates with numerous partners to develop a unified approach, along with the necessary resources and processes at national, regional, and local levels. Leveraging this capacity and expertise, the consortium has successfully developed and implemented Resilient Shelter Guidelines using the CBDRM model in more than 100 communes.

The government CBDRM guidelines require government staff and community members to conduct vulnerability and capacity assessments in their areas to identify those most exposed and vulnerable to disasters, and the reasons for their vulnerability. Based on the results of these assessments, a disaster risk reduction (DRR) plan is developed and is used as the foundation for the government's budget. CRS supports local actors at the commune level to conduct these vulnerability and capacity assessments and develop their DRR plans. These plans include measures to enable disaster-resilient shelters, and also equip communities, local authorities and other commune-level stakeholders with knowledge regarding increased storm intensity, prolonged drought and flood events. ***Future climate projections are built into the vulnerability and capacity analysis*** *to ensure that assessments go beyond the historic and current risks, to include projected long-term changes in hazard risks.* ***Resilient shelter designs then incorporate these climate and hazard risk projections.*** *For example, shelters are built at a higher ground level, informed by predicted changes, rather than on historical flooding events.*

CRS, as co-chair of a technical working group comprising other INGOs and UN agencies, is also working on ***anticipatory action*** *and community-based disaster management. This includes activities such as distributing funds for shelter repairs via a financial services provider.*

In 2022 CRS supported the Vietnam Disaster Management Authority with the development of the Resilient Shelter Guidelines, which were then piloted in Central Vietnam in 2023. The Guidelines are being rolled out and learning from Central Vietnam is informing the current development of technical materials for the South in 2025 and the North in 2026.

Some key lessons learned in this process are:

- **It is essential to engage a range of key stakeholders** to influence change, for example, shelter working groups, peer organisations within the consortium and government authorities from sub-national to national level. CRS was able to develop a strong action plan together with these key stakeholders, creating synergies at the same time as capitalizing on varied expertise and resources.
- **Influencing systems change takes time**. In the case of the CBDRM process, it has already gone through four phases in eight years.

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GLOBAL SHELTER CLUSTER
Coordinating Humanitarian Shelter and Settlements