



International
Labour
Organization

PROSPECTS



Kingdom of the Netherlands

► Adapting on the edge

Accelerating climate resilience through market systems development in fragility and displacement context



► **Adapting on the edge**

Accelerating climate resilience through market systems development in fragility and displacement context



This work is licensed under the Creative Commons Attribution 4.0 International. See: creativecommons.org/licenses/by/4.0. The user is allowed to reuse, share (copy and redistribute), adapt (remix, transform and build upon the original work) as detailed in the licence. The user must clearly credit the ILO as the source of the material and indicate if changes were made to the original content. Use of the emblem, name and logo of the ILO is not permitted in connection with translations, adaptations or other derivative works.

Attribution — The user must indicate if changes were made and must cite the work as follows: *Adapting on the edge: Accelerating climate resilience through market systems development in fragility and displacement context*, Geneva: International Labour Office, 2025. © ILO.

Translations — In case of a translation of this work, the following disclaimer must be added along with the attribution: *This is a translation of a copyrighted work of the International Labour Organization (ILO). This translation has not been prepared, reviewed or endorsed by the ILO and should not be considered an official ILO translation. The ILO disclaims all responsibility for its content and accuracy. Responsibility rests solely with the author(s) of the translation.*

Adaptations — In case of an adaptation of this work, the following disclaimer must be added along with the attribution: *This is an adaptation of a copyrighted work of the International Labour Organization (ILO). This adaptation has not been prepared, reviewed or endorsed by the ILO and should not be considered an official ILO adaptation. The ILO disclaims all responsibility for its content and accuracy. Responsibility rests solely with the author(s) of the adaptation.*

Third-party materials — This Creative Commons licence does not apply to non-ILO copyright materials included in this publication. If the material is attributed to a third party, the user of such material is solely responsible for clearing the rights with the rights holder and for any claims of infringement.

Any dispute arising under this licence that cannot be settled amicably shall be referred to arbitration in accordance with the Arbitration Rules of the United Nations Commission on International Trade Law (UNCITRAL). The parties shall be bound by any arbitration award rendered as a result of such arbitration as the final adjudication of such a dispute.

For details on rights and licensing, contact: rights@ilo.org. For details on ILO publications and digital products, visit: www.ilo.org/publns.

ISBN: 9789220428788 (web PDF)
DOI: <https://doi.org/10.54394/RIFQ3659>

The designations employed in ILO publications and databases, which are in conformity with United Nations practice, and the presentation of material therein do not imply the expression of any opinion whatsoever on the part of the ILO concerning the legal status of any country, area or territory or of its authorities, or concerning the delimitation of its frontiers or boundaries. See: www.ilo.org/disclaimer.

The opinions and views expressed in this publication are those of the author(s) and do not necessarily reflect the opinions, views or policies of the ILO.

Reference to names of firms and commercial products and processes does not imply their endorsement by the ILO, and any failure to mention a particular firm, commercial product or process is not a sign of disapproval.

▶ Contents

List of boxes, figures, images and tables	iv
Acknowledgements	v
Executive summary	vi
Introduction: Why climate adaptation is urgently needed in fragile, displacement settings	vii

Chapter 1: Climate change and displacement: A review of emerging responses **1**

Recognizing the climate crisis: a shift in humanitarian programming	1
Anticipatory action: a bridge between adaptation and humanitarian response?	3
The sustainability gap	4

Chapter 2: Beyond climate response: Rethinking adaptation and resilience **9**

Linkages between adaptation, adaptive capacity and resilience	9
A typology of adaptation actions in fragile contexts	13
Beyond single actions: aligning public-private action for resilient systems	16

Chapter 3: Case studies: Adaptation pathways from Ethiopia and Uganda **17**

Last-mile approaches to adaptation in Ethiopia	18
A growing space for MSD and climate adaptation in Uganda	24

Chapter 4: Emerging lessons and recommendations on MSD for climate adaptation in fragile contexts **34**

Conclusion **39**

References	41
Annex 1: Glossary	44
Annex 2: Further reading — a selection of resources and technical guides	46
Annex 3: UK FCDO International Climate Finance (ICF) Indicators	48

► Boxes

Box 1. Expanding the ILO AIMS approach for climate resilience	viii
Box 2. The PROSPECTS programme	ix
Box 3. Greening of humanitarian action in the triple nexus	2
Box 4. Who pays for climate resilience? Closing the finance gap	7
Box 5. Lessons from BRACED	10
Box 6. Climate projections under a medium/high emissions scenario	18
Box 7. The SHARPE programme	19
Box 8. Climate projections under a medium/high climate change scenario	25
Box 9. Climate Smart Agriculture	26
Box 10. Applying the ten-year test to cocoa	32

► Figures

Figure 1. Refugee Settlements in Uganda, September 2025	24
---	----

► Images

Image 1. Kuey, a refugee CAHW in Jewi camp, Gambella; Fatuma Aden Ali, a refugee CAHW in Bokolmayo camp; Ugaas Agro-Vet shop, Hilaweyn camp	20
Image 2. A climate adapted poultry farm, Melkadida Refugee Camp	22
Image 3. Emmanuel Aria in his shop	27
Image 4. Halima outside her input shop	30
Image 5. Showcasing pfumvudza in Kiryandongo refugee settlement	30
Image 6. Growing watermelons in Rhino Camp and tomatoes in Arua town	31

► Tables

Table 1. Climate adaptation action in displacement and fragile settings	14
---	----

► Acknowledgements

This study was conducted and drafted on behalf of the International Labour Organization (ILO) by Paul Joicey, in coordination with Elisa Mandelli (ILO Geneva). Valuable input and comments were provided by ILO colleagues, including Merten Sievers, Nadja Nutz, Isaac Cowan Gore, Camilla Roman and Nieves Thomet.

Special thanks are also due to the many people who generously donated their time and insights to help with the study. This includes ILO staff: Evans Iwanga, Molly Namirembe, Alice Vozza, Fatma Kaya, Nicholas Grisewood, Nilesh Nikade, Luana Ayala, Stephan Opio and Eirmyas Kaase. In Uganda, this includes my co-researcher, Paul Gitta; the many members of the Climate Smart Jobs programme, particularly Mathew Rupanga, Jacklin Kitongo, Christopher Atibo and Mulumba Agaba; Collins Apuoyo from FtF-IAMS; Cecilie Gundersen at the URRI Secretariat; Md Arifur Rahman, Sojung Kang and Gerald Emoyo at UNHCR; Lisette Gotink at U-Learn; and the Ag-Ploutus team. Further thanks go to: former colleagues and partners at SHARPE; Debora Randall; Nick Pyat at Climate Sense; Dr. Radhika Singh, David Mondorf and Anna Gaunt at UNHCR; Lili Mohiddin; Ailsa Buckley; Mike Klassen; Nandi Hall; Dr. Katherine Warner; Dr. Sam Barrett; Dr. Evans Easton Calabria; Clara Garcia Parra and Maha Elhayek at Canopy Lab; Meseret Getahun and Alison Hemberger at Mercy Corps; Netsaalem Bahiru Gebrie; Yared Sertse; Ferhan Abdulkadir; Habib Onifade and Silas Ochieng.

► Executive summary

With over 123 million people displaced globally, three-quarters living in countries highly exposed to climate hazards, climate adaptation in fragile and displacement settings is now a priority. Refugee-hosting areas face increasing risks of extreme heat, floods, and droughts, with these hazards projected to intensify.

This study, commissioned by the ILO under its Just Transition Action and PROSPECTS programmes, explores how climate adaptation and resilient livelihoods can be strengthened in protracted displacement contexts through a Market Systems Development (MSD) approach. The study finds a growing shift among humanitarian and development actors toward integrating climate adaptation and resilience into programming. But this is still early days, much more needs to be done to intentionally integrate climate science and adaptation into programmes, policies and organisations.

In displacement contexts, most current interventions rely on direct delivery modalities that provide free or subsidised goods and services. These approaches often lack sustainability and do not intentionally seek to develop the role of local market actors, often undermining local enterprise development. The report argues for a transition to locally led, market-based approaches that engage the private sector, strengthen local markets, and promote self-reliant, climate-resilient livelihoods.

The MSD approach offers strong potential for adaptation by addressing systemic market constraints, supporting local innovation, and engaging micro, small, and medium-sized enterprises (MSMEs) as drivers of change. In refugee settings — where markets are thin and mobility restricted — MSD can promote inclusion by de-risking private investment, offering smart subsidies, and helping local businesses adapt products and services to the realities of refugees and host communities. Case studies from Uganda and Ethiopia illustrate how small and medium sized enterprises such as *Omia Agribusiness* and *Horn Afrique* have embedded climate adaptation into business models, supplying climate solutions to displaced people through commercial channels.

Adaptive capacity — the ability of systems and communities to adjust and cope with climate stress — is central to building resilience but remains constrained in fragile contexts by limited assets, weak institutions, and restrictive refugee policies. Incremental adaptation measures, while valuable, are insufficient to address escalating risks; transformative adaptation — fundamental shifts in livelihoods, production systems, and governance — is needed but requires access to resources such as finance, information, and land. Decision-making should be guided by climate science and frameworks such as ISO14090, ensuring interventions are resilient to both current and future climate scenarios through tools like the “ten-year test.”

The study identifies ten categories of adaptation actions relevant to displacement contexts — ranging from capacity building and finance to technology and policy reform — and emphasizes the need for systemic approaches that combine public and private action. Successful adaptation requires a range of different adaptation and resilience building measures — one technical solution on its own will not be enough.

Climate change can no longer sit on the margins, programmes must evolve from being climate-aware or climate-linked to becoming fully “climate-purposed” — explicitly embedding climate science, climate risk analysis and setting explicit climate targets and goals. Enabling factors include growing private sector readiness, emerging climate-focused donor funding, and open policy environments such as Uganda’s, which support the economic inclusion of refugees. Persistent challenges — especially affordability and financing gaps — underscore the need for innovative funding mechanisms and smart subsidies to make adaptation technologies accessible to the most vulnerable and to develop new solutions for future climate change scenarios.

Ultimately, impact at scale can only be reached when mechanisms are found to build financially sustainable distribution systems that allow displaced people to access innovative new ideas and technologies, and enable MSMEs and other private sector actors to develop commercially viable business models to supply these groups with the necessary products, skills and infrastructure in the long run. MSD has this potential but the use of systemic approaches to support climate action among displaced people is still in its early stages — there is much to learn.

Introduction: Why climate adaptation is urgently needed in fragile, displacement settings

Around 123 million people are now displaced worldwide, three in four living in countries with high, severe or extreme exposure to climate-related hazards.¹ Displaced people are not exempt from the climate crisis — they are highly vulnerable to the impacts of climate change. Refugee-hosting sites are often located in climate hotspots, facing increasing risks of extreme heat, floods and droughts alongside unpredictable rainfall. These climate trends are predicted to worsen. By 2040, as climate related hazards increase, the number of countries facing extreme climate related hazards are expected to increase from three to 65, the majority of which are hosting displaced people.² Alongside more frequent floods and droughts, extreme heat³ is predicted to rise significantly, with most refugee settlements projected to experience twice as many days of extreme heat by 2050.⁴

Climate change adaptation is the process of adjustment to the effects of actual or expected climate, successful adaptation reducing vulnerability and building resilience.⁵ Even if global temperature rise is limited to 1.5°C, significant adaptation action is still needed, especially for agricultural and other natural-resource based livelihoods. Adaptation needs are even more pronounced among people affected by conflict, fragility and displacement where vulnerability is higher and the ability to absorb and cope with climate related impacts is lower. Fragile states are among the most exposed to climate change but they receive very little adaptation finance: extremely fragile states average just \$2 per person annually, compared to \$161 in more stable states,⁶ and less than 1 per cent of global adaptation funding goes to the ten most fragile countries. This deepens the adaptation gap.

123 M	displaced people worldwide
70%	hosted in climate-vulnerable countries
<1%	of global adaptation funds reach them

1 Figures at a glance | UNHCR US.

2 Craparo, A.C.W., Minoarivelo, O. H., Basel, A.M., Nguyen, K.T. Dao., H., Birner, J., Yonetani, M., Antinoja, E., Sanchez Torres, D.G., Brown, O.D., Pacillo., G., Harper, A., Laderach, P. 'Compound Risk Framework and Crisis Assessment'. CGIAR. In UNHCR (2024) 'No escape: On the frontlines of climate change, conflict and forced displacement'.

3 Defined as above 35°C.

4 Van den Hoek, J., Tuholske, C., and Zimmer, A (2024). 'Documenting Rapid Increases in Hazardous Heat Exposure Among Refugee Populations Worldwide'. In UNHCR (2024) 'No escape: On the frontlines of climate change, conflict and forced displacement'.

5 These concepts will be defined and explored more fully in [chapter 2](#).

6 UNHCR (2024). 'No escape: On the frontlines of climate change, conflict and forced displacement'. United Nations High Commissioner for Refugees.

Scope and objective of the study

With the impacts of climate change becoming increasingly visible, there is a growing push to integrate climate adaptation into existing policies, programmes, and institutions. Ignoring climate risks in analytical and decision-making processes is becoming neither feasible nor ethical. Climate and nature considerations must now be treated as core priorities, alongside more traditional human development objectives. Across the Humanitarian-Development-Peace Nexus (HDPN) there is increasing recognition that more systemic, market-led approaches can contribute to develop interventions that are anchored in local markets and systems and can deliver long-term, scalable, and inclusive solutions for refugees and host communities while contributing to social cohesion.⁷

Through its Just Transition Action programme, the ILO is increasingly investing in generating knowledge and developing solutions to advance the Just Transition of the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind. The ILO's Recommendation No. 205 provides policy guiding framework for integrating climate adaptation into fragile and displacement contexts by promoting decent work, social justice, and resilience. When combined with the Humanitarian-Development-Peace Nexus, it supports a shift from short-term responses to long-term, inclusive strategies that empower local actors and build sustainable livelihoods.

As a development actor the ILO has also been a pioneer of using a systems approach to better understand and shape market systems and market actors' behaviour, with the aim of supporting better and inclusive jobs for marginalized groups.

► Box 1. Expanding the ILO AIMS approach for climate resilience

The ILO's Approach to Inclusive Market Systems (AIMS) has been applying Market Systems Development (MSD) in forced displacement contexts for over a decade, across more than 20 refugee-hosting countries. Unlike traditional models that focus on direct aid delivery, AIMS works through a systems-based approach and tailored interventions that improve how markets function, creating long-term, locally rooted benefits and sustainable livelihoods for refugees and host communities. Yet, increasing climate disruptions are threatening livelihoods in displacement settings, where jobs often depend on climate-sensitive staple crops. In response, AIMS is mainstreaming the Just Transition principles and climate adaptation interventions into its approach, focusing on systemic and scalable solutions that strengthen the resilience of refugees, vulnerable groups, and key market actors.

In this context, and in the broader framework of the AIMS approach and the PROSPECTS programme (see box 2), the ILO has commissioned this study to explore the current landscape of climate change adaptation and resilient livelihoods in protracted displacement settings, and apply a systemic lens in assessing the effectiveness, inclusiveness, sustainability, and scalability of existing interventions. The study combined desk research, interviews, and field visits to review adaptation initiatives focused on building climate-resilient livelihoods among refugees and host communities. It particularly examined programmes using a Market Systems Development (MSD) approach—those that actively engage local businesses and support the integration of refugees into market systems while also promoting climate resilience. Given that agriculture and natural resource-based livelihoods are among the most climate-vulnerable, the study focused primarily on rural, refugee-hosting regions. It aimed to identify emerging trends and incentives driving climate adaptation in these contexts.

⁷ This topic is further unpacked and analysed in this ILO report “[The humanitarian development nexus in action: A review and mapping of market-led approaches in forced displacement contexts](#)”, 2023.

The study puts forward a set of practical recommendations to support the integration of climate adaptation and resilience into inclusive market systems programmes, with the goal of advancing both economic inclusion and climate resilience for people affected by conflict and displacement.

► Box 2. The PROSPECTS programme

The PROSPECTS Partnership was launched in 2019 by the Government of the Netherlands and extended into a second phase in 2024. It aims to maximize synergies and leverage the comparative advantages of its partners in responding to forced displacement. The Partnership brings together the International Finance Corporation (IFC), the International Labour Organization (ILO), the UN Refugee Agency (UNHCR), the UN Children's Fund (UNICEF), and the World Bank. It is currently being implemented in eight countries: Uganda, Sudan, Egypt, Ethiopia, Kenya, Iraq, Jordan, and Lebanon. The Partnership focuses on four critical areas to support forcibly displaced persons and host communities: 1. Education and learning; 2. Economic inclusion; 3. Protection and social protection; 4. Critical infrastructure.

As AIMS and other agriculture-focused interventions under PROSPECTS increasingly observe how climate change disproportionately threatens hard-won gains, there is growing recognition of the need to integrate climate-resilient measures across all interventions. This study was developed within that evolving focus.

Limitations

Given the context of conflict, fragility and protracted displacement, this study prioritises climate change adaptation over mitigation. Although referenced in relation to the spread and adoption of renewable energy technologies, which are much needed in such contexts, the mitigation impacts in these contexts remain negligible. Broader mitigation efforts must continue to focus primarily on high-emission countries and sectors, which are the main drivers of climate change.

Research projects such as the CGIAR-led initiative⁸ were not included since the intent was to explore practical approaches being used to make climate change adaptation solutions available to people living in displacement contexts, with a specific focus on the potential of systemic approaches. Renewable energy projects were not included, unless solar was used to support more resilient livelihoods.⁹ The study also focused on the adaptation and resilience aspects of the wider greening agenda and the green transition — greening of businesses, value chains and green jobs were not a focus of the study.

As a guide, the eight countries where the ILO is implementing the PROSPECTS programme were prioritised (see box 2). This was not, however, an exclusive list — programmes were also reviewed in Myanmar, Somalia, Nigeria, Sudan, Mozambique and Tanzania. Ultimately, however, the main focus was East African refugee hosting countries, mainly Ethiopia and Uganda.

The research was also conducted when USAID was closed and significant cuts were made to Overseas Development Assistance. Many of the programmes reviewed were suddenly impacted by funding cuts and prematurely closed. This further impacted the choice of programmes and locations for more detailed research.

8 <https://www.cgiar.org/research/cgiar-portfolio/>

9 The state of energy access in displacement settings has been comprehensively reviewed and documented by UNITAR, the UN Institute for Training and Research, under the READS programme.

Structure

The report is divided into four sections:

1	► Chapter 1: Presents a review of how humanitarian and development actors are integrating climate adaptation into displacement responses, with a focus on emerging market systems and private sector development approaches and the role of business.
9	► Chapter 2: Clarifies key concepts such as resilience, vulnerability, and adaptive capacity, introduces a decision-making framework, and presents a typology of adaptation actions suited for displacement settings, emphasizing systemic and public-private approaches.
17	► Chapter 3: Draws on MSD programmes in refugee-hosting regions to show how climate adaptation is embedded in commercial delivery models, including examples of smart subsidies, future-oriented adaptation strategies, and practical tools like the ten-year test.
34	► Chapter 4: Stresses the need to fully integrate climate science and risk analysis into programming and offers practical recommendations for embedding adaptation into MSD approaches, highlighting enabling factors for scaling climate resilience in displacement contexts.

▶ 1

Climate change and displacement: A review of emerging responses

▶ Humanitarian and development actors operating in displacement and fragile contexts are increasingly introducing climate resilience and adaptation into their overall programming. This section presents a review of these initiatives. It firstly reviews trends and emerging practices in humanitarian programming before exploring the application of market systems and private sector development initiatives in fragile, displacement settings. It then discusses the potential of these more systemic approaches to support climate change adaptation and the critical role of business in supporting adaptation and climate resilience.

▶ Recognizing the climate crisis: a shift in humanitarian programming

▶ Despite the evident threat, many humanitarian actors have not engaged with the impact that climate change is having, and will increasingly have, on humanitarian activities. Among those actors who are aware of the challenge, many are not clear how humanitarian programmes can best address climate issues.¹⁰

The situation described above in 2021 is no longer so stark. Humanitarian actors are increasing their focus on how to address the impacts of climate change on vulnerable communities in fragile and conflict affected settings.¹¹ Climate change is increasingly part of the mainstream humanitarian narrative, with humanitarian donors requiring consideration of climate change considerations, some emerging examples of climate finance being used in displacement and fragile settings and humanitarian agencies starting to integrate climate adaptation and resilience into their work.

10 Knox Clarke, P. *Climate change and humanitarian action: 2021*. Oxford: ADAPT Initiative.

11 Tholstrup, S. and Vazquez, M. (2024) *Humanitarian action on climate and conflict: narratives, challenges and opportunities*. ODI Report. London: ODI.

One response is advocacy for increased climate financing in fragile and conflict affected settings, highlighting climate change both as a driver of displacement and as a threat to the health and livelihoods of displaced people.¹² Migration and the right to move is highlighted as a necessary climate adaptation and resilience strategy,¹³ a key consideration when it comes to considering the extent to which displaced people living in closed camps, with no freedom of movement, are able to build their resilience. Climate change is being incorporated into refugee response plans, with a push to integrate both refugees and climate into government development plans, including National Adaptation Plans (NAPs).¹⁴ ¹⁵ **BOX 3**

► **Box 3. Greening of humanitarian action in the triple nexus**

In fragile and displacement-affected contexts, greening of humanitarian operations is a critical entry point to bridge humanitarian, development, and peace objectives. Through the HDPN lens, greening humanitarian action is not just about reducing environmental impact; it becomes a pathway for resilience, inclusion, and peace, turning short-term humanitarian interventions into stepping stones toward durable solutions and more stable societies. Climate initiatives potentially contribute to all three pillars, reducing immediate risks to displaced populations; providing opportunities for more resilient and sustainable livelihoods; and contributing to social cohesion and peace through greening initiatives that mitigate potential conflict drivers.

Greening of humanitarian action is an increasingly common response to climate change. Broadly this can be viewed as greening of operations and the greening of humanitarian programmes. Greening humanitarian operations focuses on mitigation, striving to decrease the contribution to climate change of the operations of humanitarian organisations.¹⁶ Greening humanitarian programmes, or making programmes more climate smart, covers both mitigation and adaptation, and is increasingly being applied in fragile, displacement contexts. Many such examples are presented in [Table 1](#), a typology of potential adaptation actions for fragile contexts.

More than 480 humanitarian agencies have now signed up to the Environment and Climate Charter, developed by the International Red Cross and Red Crescent movement, committing to:

Reduce risks and vulnerability to shocks, stresses and longer-term changes through an increased focus on climate change adaptation, disaster risk reduction and anticipatory action. Across all of our work, including preparedness, response and recovery, we will consider and address changing climate and environmental risks in rural and urban settings. Our programmes and operations will be based on sound risk analyses, informed by the best available short-, medium- and longer-term climate and environmental science and data, and by local and indigenous knowledge.¹⁷

Implementation of the commitments, however, is still challenging. Many humanitarian actors lack the knowledge, skills and capacity to implement climate sensitive interventions — investments in building capacity, organisational systems and procedures is needed. Despite resilience being highly context specific, similar projects are regularly replicated across contexts, without rigorous evidence for their

¹² See for example, *No Escape*, published by UNHCR in November 2024 in the run-up to COP 24, or *Disrupted Lives. Climate Crisis and Internal Displacement. A Study of Somel District, Iraq*, published by CARE Iraq (2024).

¹³ Reid, E et al (2024). *Migration as Climate Adaptation. Facilitating Mobility to Strengthen Resilience*. Mercy Corps Climate (2024).

¹⁴ Perry, J (2024). *Localising Climate Adaptation Planning in Kenya's Refugee Hosting Counties*. Refugees International.

¹⁵ See for example *Melkadida Compact* and the *Kebribeyah Inclusion Road Map*, both from Ethiopia's Somali region; Kenya's *Shirika Plan*; Uganda's Country Refugee Response Plan; and pledges made at the 2023 Global Refugee Forum.

¹⁶ See [Annex 2](#) for examples of resources for greening of humanitarian action.

¹⁷ ICRC and IFRC, 2021. <https://www.climate-charter.org/>

effectiveness in building resilience. Programmes are not always based upon climate risk analysis, thereby risking contributing to maladaptation, incentivizing people to remain in livelihoods that may become untenable.¹⁸

The energy sector has a growing number of initiatives seeking to increase access to renewable energy among displaced people, many of which engage with markets and the private sector: public-private partnerships developing and operating mini-grids¹⁹; developing cooking and fuel resources such as biogas and briquettes; and initiatives such as Last Mile Climate | Non-profit Climate NGO, working to bridge gaps between the private sector and the humanitarian world, with programmes such as SOLCO expanding access to clean cooking technologies in refugee settings.²⁰ Despite the huge market for energy and cookstove solutions, these initiatives remain small-scale and often subsidised, the problem being both the affordability and the supply of quality energy supplies to the remote camps. Many solar products are simply too expensive for refugees, despite the use of more accessible payment modalities such as PAY-GO.



Limited awareness of the potential opportunities, the lack of a supportive enabling environment, and restricted access to foreign currency has hindered the establishment of market-based models, perpetuating reliance on grant funding for electricity access projects.²¹

► Anticipatory action: a bridge between adaptation and humanitarian response?

New models are also being trialled, most notably anticipatory action — activities ahead of a predicted event, to prevent or reduce acute humanitarian impacts before they unfold. Anticipatory action is supported by pre-agreed finance, which is triggered subject to crossing some pre-defined threshold, often in relation to weather forecasts or risk analyses. The integration of climate information is critical to inform anticipatory action, with early warnings and forecasts of climate shocks such as floods and droughts triggering programmatic response.

The principles of anticipatory action can be applied more broadly, its application going beyond humanitarian action. Anticipatory action could be a focal point for overlap between the climate adaptation and humanitarian sector, ensuring the preparedness of communities to withstand, and recover from, the adverse impacts of climate change. At its heart it is about anticipatory capacity, one of the three pillars of resilience (see Annex 3) — it speaks to the importance of information and knowledge, allowing people to plan ahead and prepare better.

A useful example is provided by a study on anticipatory action in the agricultural context which emphasised the importance of enhancing anticipatory capacity by providing vulnerable populations with information on: weather and climate; how the crisis is expected to evolve; and on appropriate agricultural practices and livestock health.²²

18 Tholstrup, S. and Vazquez, M. (2024) *Humanitarian action on climate and conflict: narratives, challenges and opportunities*. ODI Report. London: ODI.

19 <https://shenga.co/news/ethiopias-largest-private-mini-grid-lights-up-refugee-camp>

20 https://www.linkedin.com/posts/last-mile-climate_sustained-sustainabledevelopment-cleancooking-activity-7271925207408275457-jFul?utm_source=share&utm_medium=member_android

21 [A_Roadmap_for_Energy_Access_in_Displacement_Settings_Ethiopia_Report_2024.pdf](#)

22 ODI. (2020). Anticipatory action for livelihood protection. https://cdn.odi.org/media/documents/202006_odi_anticipatory_action_for_livelihood_protection_wp_final.pdf

► The sustainability gap

Where humanitarian agencies have embraced adaptation and resilience, climate solutions are mainly delivered through direct delivery modalities, providing free or subsidised supplies, inputs, technologies and services, with little consideration of local markets. This modality is often implemented directly or through local implementing partners but with few efforts aimed at developing a sustainable market for these products. There are also few attempts to work with local MSMEs with a view to them supplying these products on a commercial basis. As a result, they remain heavily dependent on ongoing external funding and delivery, and often unintentionally crowd out local providers — making it harder for viable, market-based models to take root.

Without addressing the wider systems and societal constraints, direct delivery approaches are limited in their ability to achieve scale, sustainability and impact. The recent cuts to humanitarian funding further highlight the fragility of the direct delivery model. The core issue is not a lack of climate solutions, but rather the absence of inclusive systems that can make them accessible, affordable, and sustainable over time. There are many examples where refugees are not able to capitalize on opportunities, such as receiving drought tolerant seeds or a free goat, unless there is a sustainable system established through which they get the support to capitalize on these business opportunities.

Climate adaptation and market systems development (MSD)

The potential for an MSD approach in greening²³ economies and supporting a just transition is widely acknowledged. For example, the ILO notes:

► MSD projects can...intervene in high potential sectors to alleviate systemic constraints that limit an enterprise's ability to identify and take advantage of business opportunities that improve economic, social and environmental outcomes...Environmental objectives of an MSD project can be to promote growth in a 'green' sector such as renewable energy; greening, or improving the environmental sustainability of a sector; increasing resilience of a sector to environmental constraints, particularly climate change; and/or promoting a do-no harm approach relative to environmental impacts.²⁴

In practice, MSD is highly adaptive and driven by local context with local market actors taking the lead. The importance of local action, locally-led solutions and strengthening the role of local actors has been widely acknowledged as critical for successful adaptation, with the International Institute for Environment and Development (IIED) developing eight principles for community led action²⁵ — this is not a top-down, one-size fits all approach.

MSD fits this locally driven approach by facilitating linkages and knowledge that local market actors, including the micro-businesses in and around refugee camps, need to improve businesses, innovate and lead lasting change processes. With MSMEs needing more strategic support to contribute to the adaptation economy — stronger market linkages; more investment; more innovation; more engagement in adaptation — inclusive MSD approaches hold potential.

The MSD approach is already being used to promote certain aspects of just transition, particularly in support for adaptation in the agricultural sector.²⁶ However, this is not always driven by intentional commitment and there is a lack of guidance to support donors and practitioners.²⁷ With a few notable exceptions, the integration of climate and nature considerations into MSD programmes is still in early stages. It is, however, rapidly gaining momentum.

23 Greening is a wider concept but includes climate adaptation and mitigation within the broader definition.

24 Cowan Gore, I, 2020. *Market Systems Development and the Environment: A Strategic and Operational Guidance Note*. ILO.

25 IIED's [Principles for locally led adaptation](#) - eight principles for locally led adaptation.

26 As mapped in USAID Feed the Future's 'Market Systems Resilience: State of the Field Map'.

27 Bird, J, 2024. *Market systems development for a just transition*. ILO.



Greening is a relatively new ambition for practitioners of the MSD approach, but one that is fast gaining traction.²⁸

Helpful guides and toolkits²⁹ have been published related to green growth, greening MSD and greening private sector development — the most recent being *Green Market Systems Development*.³⁰ None of these technical guides are designed for displacement contexts and do not discuss the additional barriers and issues to be addressed to reach and include refugees.

There are a few obstacles to overcome if MSD programmes are to successfully integrate climate goals and promote adaptation. Typical MSD objectives such as improved incomes, job creation and increased productivity may not always be consistent with green, or climate change related objectives — there may be trade-offs. Private sector partners may not have the incentives or resources to change practice and support adaptation and green objectives. MSD programme teams may not have the right skill-set to understand and address climate risk.

Despite such obstacles, the MSD approach seems well suited to the challenge of supporting locally led, transformative adaptation. MSD has potential to change and develop systems that enable the growth of local business and support business adaptation as well as their ability to supply new adaptation goods and services. To do this, MSD programmes may need to go beyond a narrow focus on value chains and try to influence broader frameworks; rethink policy-level engagement; and develop a broader understanding of what drives change.³¹

Can market systems development work for refugees?

A visitor to any refugee camp will quickly see the signboard jungles, an unwanted legacy of the multitude of livelihoods projects that have been implemented over the years, many of which faced criticism for limited impact and sustainability. In response, systemic approaches such as MSD are being adapted for humanitarian contexts to promote refugee economic inclusion.³² Though still emerging, MSD shows promise in building resilience and integrating refugees into local markets,³³ raising the question of whether it can also support climate adaptation.

In these settings, markets tend to be stressed and very thin, with few market actors and an absence of support services. Livelihoods choices are also restricted, particularly for refugees living in a closed camp or isolated settlement. An influx of refugees into already quite marginal ecosystems often poses an environmental threat, most notably deforestation as people cut down trees for cooking fuel or to produce and sell charcoal, one of the most basic of survival strategies. Refugees also face a set of specific barriers to market engagement, issues ranging from language barriers, low purchasing power, few connections with the host community, living in a camp with no official freedom of movement or legal rights to work, and, in some locations, safety and security concerns.³⁴

MSD can successfully include refugees in value chains and markets, but this is not MSD in the pure sense. To overcome many of the additional barriers that refugees face, MSD needs to be highly flexible and adaptive — business models that work for the ‘last mile’ host community need to adapt if they are to reach

28 Garcia Parra, C., 2023. *Greening the MSD Approach in Agricultural Programmes*. The Canopy Lab.

29 Refer to Annex 3 for a short list of technical guides and further reading.

30 Hilton, T., Panton, A., and Stewart, A. (2025) *Green Market Systems Development guidelines v1.0*.

31 ILO Systems Change Initiative (2025). *What is not green about market systems development. Three considerations for your journey towards greener MSD*. Geneva.

32 The Market Systems Resilience map, published by USAID, mapped out 45 different programmes where a market system resilience lens was being used in 2024, mostly in a fragile and/or displacement context.

33 Examples of studies, reports and practical guides on the application of MSD in a humanitarian context, including from the ILO, are provided in Annex 2.

34 Refugee Self Reliance Initiative (2024). *‘Can Market Systems Approaches Catalyze Self-Reliance for Forcibly Displaced and Host Populations. Key Considerations and Strategies’*.

and include refugees.³⁵ Smart subsidies are needed to de-risk private investment³⁶ — refugee markets are not initially attractive to the private sector and companies operating in these markets need a lot longer to break even. In the absence of financial services or any kind of capital, refugees also need financial support, the 'push', to help them become market ready. A study on refugee business in Ethiopia³⁷ found that 98 per cent of refugee micro-businesses were self-financed, a significant barrier to growth.

The focus should be on local/regional businesses as the lead firms, extending their services to refugee markets, typically through establishing sales outlets and agents inside refugee camps; adapting their sales offer to make it affordable and relevant to refugees, reducing the size of seed packets for example, or reducing up-front payments; and strengthening their backward linkages to suppliers, business support services and finance. Emerging evidence indicates that local businesses are much more invested in refugee markets and are most likely to sustain without public subsidy. These local MSMEs can become adaptation actors, driving adaptation solutions into refugee communities, if they have access to these solutions and if they see a business case.

Omia Agribusiness,³⁸ based in Arua in Uganda's West Nile region, is a good example. Omia is an input dealer buying seeds and inputs from suppliers in Kampala and selling to refugees by establishing sales points in Rhino and Bidi-Bidi settlements. They also buy back vegetables for sale in their Omia branded vegetable shops in Arua. Climate adaptation is now becoming embedded into the Omia business model, as will be discussed in the Uganda case study.

While MSD in a refugee setting is still quite new, already signs are emerging that this approach can enable climate adaption. Working with local MSMEs, developing and improving their sales models into refugee markets and embedding training and extension services into their business models provides an excellent platform to supply climate adaptation goods, services and technologies. MSD can also work on the wider systems challenges that are needed for refugees to build more resilient livelihoods and successfully adapt. We should not, however, be unrealistic — without a fundamental shift in the refugee model, more successful, transformative adaptation will remain out of reach. So long as refugees remain confined in camps and excluded from national systems and markets, most refugees will be unable to make transformative changes to their lives and livelihoods.

Greening business support services

With a common goal of self-reliance and economic inclusion, alongside the growth of MSD, there is a proliferation of programmes providing support to refugee entrepreneurs, offering business development services and finance, although not always seeking to address wider systemic constraints to resilient livelihoods. With a few design changes, such initiatives could become more climate-purposed. Business Development Services can integrate education on climate change, or embed climate information services, to enable adaptation planning among MSMEs, and intentionally focus on supporting the growth of adaptation and green businesses.

Impact investing has also entered the refugee space,³⁹ mobilising equity for investment into refugee focused businesses, typically regional MSMEs that have included refugees in their business model. Initiatives such as Climate Finance Lab⁴⁰ and the Stability and Peace Accelerator⁴¹ take this one step further by integrating climate adaptation into the model, the latter incubating and accelerating four business models designed to address twin challenges of climate change and fragile and conflict affected contexts. Refugee focused impact investing could integrate climate adaptation objectives and incentives alongside those designed to ensure refugee inclusion in commercial business models.

35 Bear, M., Joicey, P., Brady, A. (2025). 'Going Beyond the Last Mile: Adaptation to Increase Refugee Adoption'. DAI.

36 *The humanitarian development nexus in action: A review and mapping of market-led approaches in forced displacement contexts*. Geneva: International Labour Office, 2023.

37 *Refugee Business in Ethiopia*. SHARPE, DAI, 2021.

38 <https://omiaagribusinessdg.com/>

39 See for example: Opportunities Archive - Refugee Investment Network; and RIF - Refugee Investment Facility - Transforming economies and lives through impact-linked loans and technical support for SMEs in refugee hosting areas.

40 [Home | The Global Innovation Lab for Climate Finance](#).

41 [Stability-and-Peace Accelerator | WFP Innovation](#).

► Box 4. Who pays for climate resilience? Closing the finance gap

Finance is needed to fund climate adaptation, ideally finance tied to specific adaptation and resilience targets. However, data shows that countries which are the most vulnerable and least ready to adapt to climate change receive the least climate finance per capita. Public funding, mainly from development finance institutions channelled to public institutions, is the main source of support for climate change adaptation. This is insufficient, however, to meet global demand, with the UNEP Adaptation Gap Reports highlighting serious shortfalls in public adaptation finance in those countries where vulnerability and need are highest.

With public adaptation finance inadequate and donor funding increasingly constrained, there is a need to mobilise the resources, initiatives, and efforts of the private sector. The UNEP Finance Initiative emphasises that private investment in climate adaptation would significantly increase adaptation finance and provide a critical source of finance for the private sector to adapt. Yet, private sector contributions to climate finance—particularly for adaptation—remain minimal to virtually non-existent.

Business and climate change adaptation

■ ■ Markets and private sector investment are an important driver of community-based adaptation. Without them publicly funded adaptation initiatives, no matter how efficient or impactful they are, will mean that communities and countries fail to effectively adapt to climate change.⁴²

The private sector is critical for successful adaptation. Micro, small and medium sized enterprises (MSMEs) are important private sector adaptation actors — they create and enable the livelihoods of people most affected by climate change. This is also true for refugees whose livelihoods and micro-businesses are closely linked to, and dependent upon, local MSMEs from the host community, businesses such as aggregators, input sellers, mobile money agents and traders. Without strong linkages to host community MSMEs, refugee micro-business would struggle to survive — they are highly dependent upon the local market for supplies and for sales.

MSMEs are already heavily invested in adapting to climate change impacts, but much of this local investment focuses on absorbing climate risks rather than adapting and transforming livelihoods for future resilience.⁴³ In fragile and remote settings, the private sector is often the only viable partner and only source of support for people; agro-input dealers and community animal health workers, for example, provide an important support system for farmers and owners/breeders of livestock.

Private actors — individuals, households, communities, businesses — play a role in delivering adaptation solutions while also having their own adaptation needs.⁴⁴ Typically, private actors adapt through informal, autonomous measures, either self-financed or by seeking investment in the form of loans, debt or equity to support adaptation. Factors such as motivation, technological capacity, information resources, enabling institutions, and access to finance influence their ability to adapt.⁴⁵

42 Henderson, C., Greene, S., Nanduddu, S., and Barrett, S. (2024). [Boosting community adaptation with a thriving private sector - Practical Action](#).

43 Ibid.

44 Fayolle, V., Fouvet, C., Soundarajan, V., Nath, V., Acharya, S., Gupta, N., Petrarulo, I. (2019). 'Engaging the private sector in financing adaptation to climate change'. Learning from Practice. Action on Climate Today Learning Paper 1-36.

45 Smit, B., and Wandel, J. (2006). *Adaptation, adaptive capacity and vulnerability*. Global Environmental Change 16 (2006) 282-292.

For business, climate change is a risk that needs to be anticipated and mitigated, while also presenting new opportunities to develop and supply new products and services that help others to adapt. Taking into account the need for climate change adaptation can help businesses to stay competitive and become more resilient to the changes expected in the future.

The private sector is already seeking out and acting on many of the challenges and opportunities posed by climate change, particularly in agri-business. This is more challenging for MSMEs which often lack the skills and information needed to conduct assessments of climate risk and business opportunities and to tap into finance to fund adaptation strategies.

Larger companies, however, can access expertise and finance to adapt their business models, protect themselves and invest in new opportunities brought about by climate variability and change. This can include insurance; business planning; adaptation of physical infrastructure such as storage facilities; moving away from more climate sensitive business options, locations and value chains; and developing products and technology that are more climate resilient and that reduce risk and uncertainty.⁴⁶ Seed companies, for example, used to consider drought resistant seeds as being on the margins of their business, but are now seeing them as a mainstream product, widely in demand by farmers. Larger companies can also work with their suppliers, farmers and local MSMEs, to influence their practices and support them to adapt, thereby protecting their own supply chains and reducing risk. These aspects are further analysed in the 'Business incentives and affordability in MSD interventions' section.

Lack of access to finance is a key constraint for companies wishing to adapt. While MSMEs in general often lack financial literacy and know-how to tap into existing financial institutions, in the context of displacement and fragility there may simply be no financing options available. Given that the private sector in fragile, conflict affected and displacement settings is dominated by (informal) micro and small enterprises that are largely locked out of formal finance, it is clear that MSMEs operating in this context need assistance to effectively adapt.

Why refugee resilience depends on local market systems?

In fragile, displacement contexts, markets are thin with few private sector actors, disconnected from higher value supply chains and facing difficulties in sourcing quality goods. They also face frequent shocks and disturbances; and struggle to access any kind of business finance or financial product beyond a savings or mobile money account. Yet, the resilience of these businesses, markets and relationships — their ability to survive shocks and adapt — is fundamental to building resilience to climate change among both refugees and host communities.

Approaches to strengthen resilience and adaptation in these contexts need to be anchored in the broader market systems of the host community to be sustainable. They must strengthen local markets and the micro level business activities and enterprises upon which people's livelihoods depend, while also fostering social cohesion between refugees and host communities, a fundamental building block of resilience in a displacement context.

Opportunities are emerging. As the private sector sees the incentive to adapt, new climate adaptation technologies and solutions become available, solutions such as drought resistant seeds, solar irrigation pumps, climate adapted livestock and climate-indexed crop insurance. Such solutions allow people to make small, incremental changes to their livelihood. The challenge is to make these solutions sustainably available and accessible to some of the most climate vulnerable people, including refugees, in a way that effectively builds their resilience. This has to strengthen, not undermine, local markets and businesses, creating new opportunities and addressing wider systemic constraints.

Ultimately, impact at scale can only be reached when mechanisms are found to build financially sustainable distribution systems that allow vulnerable marginalized groups to access innovative new ideas and technologies, and enable MSMEs and other private sector actors to develop commercially viable business models to supply these groups with the necessary products, skills and infrastructure in the long run.

46 From Barrett S, Chaitanya R, 2023. Adapted from Biagini et al 2014.

▶ 2

Beyond climate response: Rethinking adaptation and resilience

▶ Concepts such as resilience, adaptation, vulnerability and adaptive capacity are interrelated, but often poorly defined, making not only measurement difficult but potentially leading to misunderstandings. This section offers definitions of these important concepts while seeking to clarify how one relates to another. It introduces a framework to guide decision making for adaptation before presenting a typology of potential adaptation actions suitable for the context of fragility and displacement, highlighting the importance of both a systemic approach and the need for public-private collaboration.

▶ Linkages between adaptation, adaptive capacity and resilience

Adaptation is a broad concept applicable to many different contexts, sectors and approaches. Adaptation is closely associated with the concepts of vulnerability and adaptive capacity — adaptations are manifestations of adaptive capacity and they represent ways of reducing vulnerability.⁴⁷ There are many definitions of adaptation, mostly variations on a common theme, usually referring to ‘*adjustments*’, ‘*practical steps*’ and ‘*process*’ to reduce vulnerability to actual or expected climate change/external stress. This report uses the IPCC (2022)⁴⁸ definitions, defining climate change adaptation in human systems as ‘the process of adjustment to actual or expected climate and its effects in order to moderate harm or exploit beneficial opportunities’.

47 Smit, B and Wandel, J. *Adaptation, adaptive capacity and vulnerability*. Global Environmental Change 16 (2006) 282-292.

48 IPCC (2022). *Climate Change 2022: Impacts, Adaptation and Vulnerability*. Cambridge University Press.

Successful adaptation is the process of change, with outcomes being expressed as either reduced vulnerability and/or increased adaptive capacity, in turn leading to greater resilience. Adaptations can be classified in different ways⁴⁹:

- ▶ by timing (anticipatory, reactive),
- ▶ by intent (planned, autonomous),
- ▶ by spatial scope (local, widespread)
- ▶ by form (technological, behavioural, financial, informational, institutional).

Adaptations can also be distinguished by the degree of adjustment needed — incremental or transformative — the latter changing the fundamental attributes of a social-ecological system in anticipation of climate change and its impacts.⁵⁰

Resilience has many different definitions, mostly referring to resilience as bouncing back and returning to a previous state after a disturbance. More broadly, resilience describes not just the ability to maintain essential function, identity and structure, but also the capacity for transformation.⁵¹ The UK FCDO International Climate Finance (ICF) methodology⁵² conceptualises climate resilience across three different dimensions:

- ▶ adaptive capacity
- ▶ anticipatory capacity, and
- ▶ absorptive capacity.

This helps to illustrate that adaptive capacity is critical to build resilience, but more is needed — the ability to anticipate and absorb the impacts of climate variabilities and extremes is equally important as the ability to adapt. Anticipatory capacity can be enhanced through improved climate information to allow planning and preparation; absorptive capacity is how people survive shocks by deploying assets, savings, networks and diversification.

▶ Box 5. Lessons from BRACED

Building Resilience and Adaptation to Climate Extremes and Disasters (BRACED) was funded by DfID and implemented in 13 countries across Asia, the Sahel and East Africa, including in fragile, conflict affected contexts. A review of BRACED noted that resilience outcomes are strongly linked to development outcomes: growth in income and assets; savings and credit; access to finance; diversified livelihoods and incomes; food security; and household level gender equality, all build resilience. The review also noted that providing information to address climate variability is more important than providing long-term climate projections; and that building resilience is not enough on its own without wider systemic, transformational change. Understanding context is also critical — climate resilience can only be understood in relation to the context in which it is experienced, highlighting the importance of climate science in building resilience.

Source: Silva Villanueva P et al. Routes to Resilience. Insights from BRACED final year. Synthesis Paper. BRACED 2018.

Adaptive capacity is highly contextual, localised and reflective of broader conditions — the capacity of a household to cope with climate risks is influenced by the broader enabling environment. Practical adaptation initiatives seek to improve adaptive capacity and thereby reduce vulnerability.

49 Smit et al (2000). *An anatomy of adaptation in climate change and variability*. Climate Change 45, 223-251.

50 IPCC (2022). *Summary for Policymakers*. Cambridge University Press.

51 IPCC (2022). *Climate Change 2022: Impacts, Adaptation and Vulnerability*. Cambridge University Press.

52 Refer to Annex 3 for further information on the UK ICF methodology and indicators.

Adaptive capacity is not static; it responds to changes in conditions over time — resource depletion, for example, gradually reduces the system's ability to cope, while economic growth or technological advances may increase adaptive capacity. External socioeconomic and political factors, including conflict and displacement into already marginal ecosystems will reduce the ability of the system to cope. Cumulative impacts of increased frequency of events (low rainfall, or repeated conflict for example) may also decrease the ability of the system to cope — two years of low rainfall require drawing on resources and assets to cope, which will reduce the ability to cope in subsequent years should the problem persist.

Adaptive capacity is restricted by conditions of conflict, fragility and displacement. Systemic constraints impact negatively on the building blocks of adaptive capacity — assets, incomes, opportunities, capacities, relationships, institutions and government support. People living with fragility, conflict and displacement cannot be expected to meaningfully adapt to climate change without addressing the wider conditions that creates vulnerability.⁵³ Integrated approaches are needed that link humanitarian action with long-term development strategies and peacebuilding measures, addressing climate risks alongside tackling the social and economic drivers of vulnerability.

In such situations, to be effective adaptation needs to combine climate-centred technical solutions alongside actions that build wider resilience and address underlying conditions. Simply offering a technological fix to a currently observed, climate related problem — drought resistant seeds for example — without addressing the underlying conditions is unlikely to be enough to build adaptive capacity and support successful, or transformative, adaptation.

From coping to changing: Incremental and transformative adaptation



Most observed adaptation is fragmented, small in scale, incremental, sector-specific, designed to respond to current impacts or near-term risks, and focused more on planning rather than implementation.

IPCC, 2022: Summary for Policymakers. In: *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press.

Most current adaptation initiatives are incremental, responding to current climate change, mostly via adjustment of existing systems. Incremental measures are 'actions where the central aim is to maintain the essence and integrity of the existing technological, institutional, governance, and value systems, such as through adjustments to cropping systems via new varieties, changing planting times, or using more efficient irrigation'.⁵⁴ They are extension of actions that are currently generally accepted ways of reducing losses and risk.

Incremental measures are important and valuable to build resilience to the current climate, but are they enough to build resilience to future climate change? As climate change impacts intensify, evidence is mounting that incremental measures alone will not protect farmers, fishers, herders, and other rural people from growing risks.⁵⁵

Transformative adaptation seeks to respond to both future and current climate and involves a step-change. Transformative adaptation seeks 'to change the fundamental attributes of systems in response to actual or expected climate change and its effects, often at a scale and ambition greater than incremental activities'.⁵⁶ This includes measures such as changing livelihoods from cropping to livestock or migrating to take up a livelihood elsewhere.

53 Opitz-Stapleton, S., Gulati, M., Laville, C., Vazquez, M., and Tanner, T. (2023). *Building forward better: A pathway to climate-resilient development in fragile and conflict-affected situations*. ODI Framing note. London: ODI. <https://odi.org/en/publications/building-forward-better>

54 IPCC (2022). *Climate Change 2022: Impacts, Adaptation, and Vulnerability*. Cambridge University Press.

55 Carter, R., Choularton, R., Ferdinand, T., Ding, H., Ginoya, N., and Preethan, P. (2021). *Food Systems at Risk. Transformative Adaptation for Long Term Food Security*. World Resources Institute. Washington DC: WRI.

56 IPCC (2022). *Climate Change 2022: Impacts, Adaptation, and Vulnerability*. Cambridge University Press.

The agriculture sector, provides many examples of locally led, or autonomous, transformative adaptation in which local farmers respond to climate change without external support or guidance. However, examples of transformative adaptation mostly take place where there is adequate adaptation capacity within the system and where farmers are engaged in commercial value chains. The number of farmers and communities with the ability to make transformative changes without external assistance is quite limited; those that do tend to be those with greater access to resources such as land, credit, information and technical capacity with which to manage increasing climate risks.⁵⁷

Many rural households still face severe adaptation deficits and are struggling to manage and thrive given the current climate risks. Adaptation deficits are both systemic and institutional, requiring research capacity to identify alternative crops and new seed varieties that thrive in a changed climate, extension services to support farmers to switch crops, finance to support the switch, and the marketing capacity to store, transport and sell new crops.

Decision-making for climate adaptation

The International Organization for Standardization (ISO) is a global body that develops and publishes standards to promote best practices across a wide range of sectors—including the well-known food safety standards. Among these, ISO14090 offers practical guidance to help organisations effectively adapt to the specific climate change challenges they face and to effectively integrate adaptation into their processes.

ISO14090 recommends that climate change assessments consider both slow onset impacts (chronic) and sudden impacts due to extreme events (acute) and also include an assessment of past and future trends. The availability of data, however, poses a significant challenge to decision-making. There are many uncertainties in climate scenarios and future climate projections, particularly in regions where the required level of information is simply not available — as is the situation when looking at future climate scenarios in humanitarian contexts. Climate projections have not focused on the most vulnerable areas, and limited progress has been made in pulling together environmental, demographic, economic and other types of projections into a holistic basis for long-term planning.⁵⁸ In such situations, an impact assessment should be based upon historical climate trends, variability and events that have been experienced. The focus can then be upon understanding the implications of future climate change trends and climate events over the full lifespan of a decision.⁵⁹

ISO 14090 also recommends that adaptation options should be assessed in relation to ‘the expected duration of a decision’. Practically this means that interventions that are planned to last less than ten years should focus on building resilience to the current climate, with an underlying assumption that interventions resilient to the current climate can absorb climate change over the next 10 years.⁶⁰ This requires a lower level of climate analysis since the intervention is responding to current climate scenarios. However, for innovations promoting long-term crops and products designed to remain productive for over 10 years, agroforestry trees for example, the impact of climate change over the lifespan of the innovation needs to be tested. In this scenario projected climate changes over the next decade and beyond could significantly impact their productivity. The further into the future the assessment needs to go, the more uncertainty will have to be managed in the decision.

Decision-making capability should be adapted according to the expected lifespan of an innovation. Highlighting the importance of climate science and technical expertise, the organisation needs to have the capacity to make climate change adaptation decisions ‘at the level of expertise commensurate with the complexity of the decisions’. This issue is further discussed in the case study from Uganda, in relation to the practical application of a ten-year test.

57 Carter, R., Choularton, R., Ferdinand, T., Ding, H., Ginoya, N., and Preethan, P. (2021). *Food Systems at Risk. Transformative Adaptation for Long Term Food Security*. World Resources Institute. Washington DC: WRI, p8.

58 Tholstrup, S. and Vazquez, M. (2024) *Humanitarian action on climate and conflict: narratives, challenges and opportunities*. ODI Report. London: ODI.

59 ISO14090 *Adaptation to Climate Change*. International Standards Organization, 2024.

60 This tool is further explained the section “Adapting for tomorrow: The Ten-Year Test” [on page 31](#).

► A typology of adaptation actions in fragile contexts

A typology of adaptation actions

Climate change impacts can be direct or indirect and can take many forms; as such climate adaptation has a very broad scope. Adapting a typology developed during a review of projects funded by the Global Environment Facility,⁶¹ we map out adaptation actions that could apply to the displacement context, grouped into ten overarching categories (see Table 1).

These examples of adaptation actions were taken from a desk review of market-systems or market-based programmes⁶² implemented in the context of displacement and/or fragility, all with an overall goal of resilience and/or climate adaptation.⁶³ They are also drawn from recommendations made by the Refugee Self-Reliance Initiative (RSRI)⁶⁴ and from interviews held with a selection of stakeholders from the selected programmes. None of the programmes reviewed considered issues such as migration, freedom of movement and the right to leave the camp as an adaptation strategy. Refugee focused programmes were from rural hosting areas, excluding urban refugees, and mostly from countries where refugees are denied formal freedom of movement, limiting the potential for transformative adaptation.

In considering adaptation options for refugees, it is important to note the specific set of constraints that they face in building more resilient livelihoods, with different locations posing different sets of constraints. Some factors hinder adaptation while others enable. Factors that hinder adaptation include for instance:

- **Limited rights and mobility.** Despite policy level progress the day-to-day reality for many is still defined by limited rights, shrinking aid, and systems not built with them in mind. Two-thirds of refugees live in countries with limited or no access in practice to formal employment,⁶⁵ with many physically unable to leave the camp without official permission.
- **Restricted access to land and productive resources.** Most do not have access to land for farming — although renting land may be possible for those who can afford it, and small-scale kitchen gardens are also possible within the family compound — limiting the efficacy of climate resilient agriculture in most contexts, Uganda being an exception to the norm. Livestock ownership is widespread, but small-scale, with usually just a few animals, mostly sheep, goats and chickens.
- **Weak extension and advisory services.** Extension and advisory services, where available, are usually run by NGOs, time-bound and project based.
- **Unreliable water access.** Access to water may be challenging, particularly in arid locations and in places where there is tension with the host community.
- **Limited financial inclusion and capital.** Although refugees are, in many cases, now allowed to open bank accounts and have SIM cards, financial services do not go beyond this — insurance; loans; credit etc are all very difficult for refugees. On average, refugees are poorer than their neighbouring host communities, with fewer assets, fewer social & business connections and less political influence.

On a more positive note, for those living in camps enabling factors include access to free and functional basic services such as healthcare, primary education and a basic, rent-free shelter; a functional camp government system and (until recently) a safety net with monthly food and/or cash distribution. There may also be access to services such as gender-based violence and protection services and to solar lighting in public spaces.

61 Biagini, B, Bierbaum, R, Stults, M, Dobardzic, S. *A typology of adaptation actions: A global look at climate adaptation actions financed through the Global Environment Facility*. Global Environmental Change 25 (2014) 97-108.

62 These examples were taken from Uganda, Ethiopia, Kenya, Somalia, Nigeria, Tanzania, Mozambique, Myanmar, Jordan, Syria, Sudan, Lebanon, Malawi & Nepal.

63 Selection criteria included: context; resilience and/or climate resilience as an objective; delivery methods; promoting adaptation; and the level of integration of climate change into the programme.

64 Refugee Self-Reliance Initiative (2025). *'Climate Risks and Displaced People. Considerations for Self-Reliance Programming'*.

65 UNHCR. *Climate Action Plan for the East and Horn of Africa and the Great Lakes Region, 2023-2028*. UNHCR.

► **Table 1. Climate adaptation action in displacement and fragile settings**

Description	Examples of action
Capacity building	
Developing human resources, institutions and communities, equipping them with the capability to adapt to climate change	► Training/workshops in climate risk and adaptation for stakeholders — Government Refugee Agency Staff; UN; NGOs; Camp Management Committees etc. ► Public outreach and education to community leaders ► Identify of best practices in displacement / fragile settings ► Provide information to refugees on climate change ► Work with the media to help communicate the impacts of climate change and how to adapt.
Management and planning	
Incorporating understanding of climate science, impacts, vulnerability and risk into government and institutional planning and management	► Consider climate risk and impact assessments in the design of programmes and projects. ► Consider climate change in the design and location of camps and settlements and into camp management plans ► Develop an adaptation plan. ► Include refugees in district development plans ► Research initiatives to inform planning
Practice and behaviour	
Revisions or expansion of practices and on the ground behaviour that are directly related to building resilience	► Promote climate-resilient livestock practices ► Conservation or regenerative agriculture practices, including soil and water conservation ► Enable and support livelihood diversification ► Provide animal health advisory & extension services ► Post-harvest storage and management solutions ► Rainwater collection ► Job creation in green sectors
Policy	
The creation of new policies or revisions of policies or regulations to allow flexibility to adapt to changing climate	► Include refugees in national climate policies ► Ensure access to legal documentation and socioeconomic rights — the right to work; freedom of movement etc. ► Ensure refugees have documentation & IDs ► Mainstreaming adaptation into refugee policies ► Include refugees in shock responsive safety net & social protection programmes. ► Lift banking restrictions on lending to refugees
Information	
Systems for communicating climate information to help build resilience towards climate impacts	► Extend climate information services to refugees — provide long-term information on seasonal forecasts for slow-onset hazards like droughts as well as early warnings for sudden-onset hazards like floods ► Make available digital tools and apps for farmers ► Integrate climate change into business development and entrepreneurship support programmes to enable adaptation planning

Description	Examples of action
Physical infrastructure	
New or improved hard physical infrastructure aimed at providing direct or indirect protection from climate hazards	▶ Construct climate-resilient shelters, including buildings for housing livestock. ▶ Solar power for public buildings — clinics, schools etc ▶ Enable investment in, and development of mini-grids ▶ Water storage — improving irrigation systems to optimise water use ▶ Flood protection infrastructure
Warning or observing systems	
Implementation of new or enhanced tools and technologies for communicating weather and climate risks, and for monitoring change in the climate system	▶ Ensure disaster preparedness ▶ Extend early warning systems to displaced people ▶ Scale-up anticipatory action
Green infrastructure	
New or improved soft, natural infrastructure aimed at providing direct or indirect protection from climate hazards.	▶ Encourage tree planting ▶ Restoration of wetlands or rangeland ▶ Promote nature-based solutions to conserve critical natural resources and ecosystem services.
Financing	
New financing or insurance strategies to prepare for future climate disturbances.	▶ Enable access to financial services for refugees, including digital financial services, insurance schemes and micro-lending. ▶ Extend microfinance to displaced people ▶ Mobilise savings & VSLA ▶ Provide small grants and loans ▶ Invest in refugee business through equity & impact investing, integrating climate adaptation criteria.
Technology	
Develop or expand climate-resilient technologies	▶ Solar supplies — productive use solar kits; solar powered fridges/cool boxes etc; solar irrigation; energy kiosks etc ▶ Crop and livestock varieties that are more climate resistant such as drought resistant seeds and quick maturing varieties. ▶ Adaptive livestock & animal husbandry — poultry; goat rearing etc ▶ Technologies to improve water use or access such as rainwater harvesting, drip irrigation etc ▶ Post-harvest management and storage solutions.

► Beyond single actions: aligning public-private action for resilient systems

Recognising the scale and breadth of the challenge both public and private institutions need to work together with the shared objective of climate resilient development — both play a critical role in adaptation. Many of the adaptation options included in Table 1 are more appropriate for public actors while others fall into the realm of both public and private actors. Categories such as capacity building, management and planning, policy and warning systems fall more in the public sector category, while the other six categories — practice and behaviour; information; physical infrastructure; green infrastructure; financing; technology — fall into both public and private categories, with clear opportunities for local businesses.

The sheer range and number of possible adaptation options highlights the importance of a systemic approach. One action on its own might enable small tweaks but is insufficient on its own. The whole system which impacts the lives and livelihoods of displaced people needs to be analysed, systemic barriers to adaptation and resilience addressed. A combination of different adaptation actions, for example combining technology with information and climate adapted extension, alongside access to finance, market linkages, improved infrastructure and policy reform would be a more effective approach to help people adapt and become more resilient.

There are an increasing number of private businesses operating in refugee economies,⁶⁶ most of which have received some kind of public subsidy or incentive to extend into these markets. There is a clear role for the private sector in supplying technology and information as well as promoting climate adapted practices and behaviour, and for systemic approaches to develop further enhance and develop this role. The majority of examples found where the private sector was active were related to categories of practice and behaviour, and to technology, mostly related to agriculture and livestock.

Private sector delivery of climate information remains rare, particularly when it concerns refugees. One programme operating in Ethiopia's Somali region⁶⁷ did seek to integrate government climate information into a digital platform which disseminates information directly to their farmer clients, recognising that the private sector can play a valuable role in disseminating climate information services. There are many challenges — quality and availability of climate information; building up people's trust in such information services; and embedding into commercial models to name but three, but surely opportunities also.

Anticipatory action also holds some promise for the promotion of business. Based upon people's experiences of climate events such as floods or droughts, there is the potential to support refugees to develop business solutions. In drought prone areas, for example, there could be potential opportunities for refugee entrepreneurs in the water supply value chain to increase efficiency and in the protection of public goods such as roads and water sources before an acute event such as a flood occurs.⁶⁸

66 U-Learn counted 180 in Uganda: <https://ulearn-uganda.org/>

67 *Climate information services in Ethiopia – a key resilience capacity for households and businesses*. Learning Brief #5, 2023. Resilience in Pastoral Areas-North (RIPA-North). Mercy Corps and Save the Children.

68 Singh, R.; Mekuria, W.; Dessalegn, M.; Melaku, D.; Adam-Bradford, A.; Ruckstuhl, S. 2024. *Water security and climate resilience in the Somali Region, Ethiopia: an assessment of the vulnerabilities of refugee and host communities*. Colombo, Sri Lanka: International Water Management Institute (IWMI). CGIAR Initiative on Fragility, Conflict, and Migration.

3

Case studies: Adaptation pathways from Ethiopia and Uganda

Taking MSD programmes from refugee hosting regions in Ethiopia and Uganda this section offers practical examples of how climate adaptation was embedded into programmes and into commercial delivery channels. These examples highlight that while action for current climate change can involve familiar solutions, adapting to future climate change needs investment and innovation. With the use of smart subsidies MSD can support the establishment of these business models in last-mile and refugee markets. Taking a fully purposed climate programme from Uganda, a practical tool to embed climate adaptation decision-making, the ten-year test, is introduced with some guidance on how this can be applied.

With the help of two case studies, one from Ethiopia and one from Uganda, this chapter showcases practical examples that build adaptive capacity and support people living in displacement contexts to adapt to the already very visible impacts of climate change. The case studies highlight systemic approaches used to develop commercial delivery channels and strengthen the role of local micro and small enterprises in adaptation.

Ethiopia and Uganda were selected, partly because of the presence of refugee focused MSD programmes in both countries, but also because they showcase key contextual differences that impact how MSD programmes can work in these contexts. While both have open and progressive policy regimes when it comes to refugee inclusion, Uganda goes further than Ethiopia by giving refugees small plots of land to farm and the right to work, a key difference when it comes to developing resilient livelihoods in rural areas. Promoting climate smart agricultural practices has become part of the refugee response in Uganda in both direct delivery and market systems development programmes, with much higher levels of private sector engagement in refugee economies in Uganda compared to Ethiopia. In contrast, creating the conditions to grow livestock and poultry-based businesses is more feasible within the Ethiopian context.

Each case examines how different actors—including development and humanitarian agencies, local businesses, host communities, and refugees themselves—are engaging in climate adaptation efforts that aim to go beyond one-off, time-limited interventions and shift towards longer-term, locally rooted, and market-led strategies with the potential for sustained impact. Although the integration of climate adaptation into MSD is new, the cases from Ethiopia and Uganda provide practical insights into both the opportunities and challenges of implementing systemic, climate-resilient approaches in refugee-hosting areas.

► Last-mile approaches to adaptation in Ethiopia

Background

Ethiopia is the second largest refugee hosting country in Africa, home to over one million refugees, mostly from South Sudan (44 percent), Somalia (32 percent), Eritrea (18 percent), and Sudan (6 percent). Ethiopia is still one of the most camp-reliant refugee hosting countries with refugees registered in 24 camps and settlements established across five regional states, the majority in the lowland regions of Gambella (395,470, mostly Nuer from South Sudan) and the Somali region (359,616 Somalis).⁶⁹ This is a protracted displacement situation⁷⁰ — most refugees have been in Ethiopia longer than ten years.

Where refugees and host communities have cultural and ethnic similarities, for example in the Somali and Afar regions, integration is quite common and refugees have de-facto freedom of movement. This is not the case in regions such as Gambella, where host and refugee communities frequently clash and refugees are often confined to camp, further restricting livelihood and socioeconomic opportunities.

The Government of Ethiopia has made significant strides in its refugee policies, putting in place a series of policies and directives designed to enable integration of refugees into national systems and into local economies. The most recent⁷¹ was introduced in 2024 to operationalize refugee right to work, specifically legal rights to obtain work permits, business licenses and residence permits. Actual implementation, however, remains challenging, it remains difficult for refugees to secure work permits, residence permits and business licenses, all of which are needed to access financial services beyond mobile money and savings accounts.

Ethiopia is one of most vulnerable countries in the world to climate change. According to the ND-GAIN index⁷² (2023) for climate vulnerability, Ethiopia ranks 163 out of 185 countries, ranked the 24th most vulnerable country and the 156th most ready country meaning that it is vulnerable to, yet largely unready to combat climate change effects. Ethiopia is already experiencing more frequent flooding, droughts and extreme heat, with drought and high temperature extremes the main drivers hindering crop and livestock productivity.

► Box 6. Climate projections under a medium/high emissions scenario

- Increase in mean temperature of 1.5°C by 2030 and 1.8°C by 2050.
- More hot days — 18 more hot days per year by 2030 and more than 70 hot days by the 2060s
- Erratic rainfall, increased unpredictability of seasonal rains, more frequent heavy precipitation events
- More frequent and severe dry spells and drought events

Source: USAID (2024) Climate Change Risk Profile Ethiopia. <https://www.climatelinks.org/resources/climate-risk-profile-ethiopia>

Climate projections predict rising temperatures, uncertain rainfall, more hot days and an increase in extreme events, especially droughts. Alongside more frequent and intensified droughts and floods, the increase in extreme heat is a serious threat to health and livelihoods.

69 Benishangul-Gumuz, Afar, Amhara and Addis Ababa also host significant numbers of refugees.

70 With the exception of close to 100,000 arrivals from Somalia into SE Ethiopia in 2023 and 60,000 recent arrivals from Sudan.

71 Directive No. 1019/2024 to Implement Recognised Refugee's and Asylum Seeker's Right to Work.

72 The ND Gain Index summarizes a country's vulnerability to climate change and other global challenges in combination with readiness to improve resilience. <https://gain.nd.edu/our-work/country-index/rankings/>.

The lowland regions where most refugees are located are projected to be at greater climate risk with prolonged droughts, more flash floods, unpredictable rainfall patterns, more hot days and increasing temperatures. All five refugee hosting regions are predicted to face increasing climate risk — the CGIAR composite index⁷³ classified four out of five refugee hosting regions as facing a ‘severe’ climate risk by 2040, with Afar facing ‘extreme’ risk by 2040. These extreme weather events — droughts, floods, extreme heat — interact and exacerbate each other, causing significant socioeconomic impacts. This is in a context of already high socioeconomic vulnerability, where high population density in and around camps adds to exposure and vulnerability.

Strengthening Host and Refugee Populations in Ethiopia (SHARPE)

► Box 7. The SHARPE programme

- Ran from September 2019 to March 2025
- Implemented by: DAI Global (UK) with technical support from Opportunities Unlimited, First Consult and Market Share Associates.
- Funded by: FCDO, with total spend of GBP15,000,000
- Focus regions: Gambella, Jijiga and Dollo Ado, all of which are predicted to face severe climate risks by 2040.

Refugees in Ethiopia are not given small plots of land to farm. Small-scale backyard farming is possible within family compounds and on the limited land available within the confines of the camp, but this is not at a scale where it is currently of interest to commercial agri-business. Trials with seed companies to develop a market for improved seed varieties in the camps of Gambella proved unsustainable without a high level of subsidy due lack of land and low purchasing power among refugees. Livestock, however, proved to have high potential among both host and refugees, the majority of whom come from traditional pastoralist backgrounds. Within this context SHARPE focused mainly on three inter-connected sectors:

- **financial inclusion:** expanding mobile money services and agents to refugee locations, and pilot testing loan products for refugee business owners.
- **agri-business:** improving and expanding agro-vet dealers and community animal health services; developing poultry and egg production; expanding opportunities for fattening and trading of sheep and goats; developing local feed production; and developing the market for hermetically sealed post-harvest storage solutions and improved maize and vegetable seeds.
- **renewable energy:** working with solar companies to increase access to quality solar products, mostly as an enabling factor to business and livelihoods in off-grid situations.

SHARPE did not have an explicit climate goal, was not funded with climate finance, and did not initially factor climate risk analysis or information on future climate scenarios into its decision-making and design processes. Climate risk and adaptation needs were not included in partnership concept notes and design processes. As with most MSD programmes operating in a displacement context, SHARPE’s overall goal was to build resilience and boost incomes by creating new and improved economic opportunities for refugees and for host communities.

Through a combination of support SHARPE did successfully help host and refugee households to build resilience to current conditions. A resilience study of SHARPE⁷⁴ concluded that resilience grew by building people’s ability to engage with the system and building the system’s ability to engage with refugees. More resilient households had diversified livelihoods and were engaging in some form of economic activity that required investment, improving knowledge and developing additional networks. Opportunities for resilience come from systems outside the camp, the commercial interactions with host markets and communities in nearby places, and refugees need to have the skills and means to capitalise on those opportunities to build their resilience.

⁷³ A composite index refers to a combined index that integrates multiple types of climate hazards, such as droughts, high temperatures, and heavy precipitation events.

⁷⁴ Sen-Bekkers, N, Brady A and Bekkers H. *Understanding Refugee Resilience and Inclusion in Markets*. DAI, 2025.

How did SHARPE enable adaptation?

An MSD programme such as SHARPE can improve the ability of already vulnerable households to cope better with shocks by enhancing capacities, connections and services; promoting diversification; and creating more opportunities within the system or market within which refugees operate. For example, strengthening and expanding Community Animal Health Worker (CAHW) services and agro-vet dealers, taking their goods and services into refugee camps provides an important support system to local farmers and pastoralists. By supporting these small rural agri-businesses to survive climate extremes and continue to offer their services through periods of drought for example (where their customers may migrate elsewhere in search of water) they make an important contribution to the climate resilience of local households.

People such as Kuey and Fatuma are now working as certified Community Animal Health Workers (CAHWs) in remote camps which previously had no access to CAHW services. Working together with three other newly trained refugee CAHWs, Kuey now works to keep livestock healthy and productive inside Jewi camp, a large camp with approximately 66,000 residents.⁷⁵ Jewi is located in a part of Gambella which is prone to conflict with the host community, meaning that access outside the camp is not always possible due to safety and security concerns, highlighting the importance of developing such services inside the camp. Similarly, Fatuma has opened a small shop inside Bokolmayo camp in the Somali region, sourcing supplies from agro-vets such as Ugaas and serving both hosts and refugees with animal health products and advisory services.

Increasing access to basic services such as agro-vets and community animal health services unquestionably help to build resilience among pastoralists and keepers of livestock. But was SHARPE risking maladaptation by promoting livelihood and business opportunities that incentivise people to remain in livelihoods that will become untenable? To answer this question, a climate review was conducted to assess the climate risks to the interventions being promoted, to identify adaptation needs and consider contributions to adaptation and mitigation. This review concluded that much of what SHARPE was already doing was already contributing to climate adaptation, but some additional, low-tech adaptation needs were also identified.

► **Image 1. From Top Left, clockwise: Kuey, a refugee CAHW in Jewi camp, Gambella; Fatuma Aden Ali, a refugee CAHW in Bokolmayo camp; Ugaas Agro-Vet shop, Hilaweyn camp**



© P.Joicey

Climate resilient poultry production: A climate-smart private extension model

SHARPE promoted semi-commercial⁷⁶ poultry farming among refugee communities, primarily for egg production and sale. Each region was supported and supplied by a regional poultry hub, linked to national level importers and poultry suppliers such as EthioChicken. In the Somali region, the poultry hub was Horn Afrique Poultry Farm.⁷⁷

Horn Afrique is a vertically integrated poultry farm, located in Jijiga, the capital of the Somali region. Horn Afrique produces quality poultry feed, day old chicks and eggs, supplying markets in Ethiopia and Somalia. It is also a refugee focused business — 20 per cent of its market is currently refugees. SHARPE worked closely with Horn Afrique to open up and develop the poultry market in Awbare and Sheder refugee camps, located 80-100km from Jijiga, setting up poultry farms in the camps. Horn Afrique also expanded to the Dollo Ado region, opening a poultry farm in Bokolmayo to develop the poultry market among the refugees living there. Horn Afrique now produces bio-gas from chicken waste and uses solar to power its hatchery.

Horn Afrique supplied a starter pack — 80-100 pullets plus equipment, feed and medicines — to refugee households, along with training and ongoing advisory and extension services. To make these poultry products more readily available in the camps Horn Afrique hired newly trained, refugee community animal health workers such as Fatuma as extension workers, sales agents and feed dealers. So long as the poultry farmers are able to cope with climate shocks and stay in business, this is a mutually beneficial business relationship that should continue beyond the end of the SHARPE programme — Horn Afrique continues to sell pullets, feed, equipment and medicines to the refugees through last mile sales agents, while the refugee farmers have a source of quality inputs and advisory services to help them run a successful poultry business.

Poultry are vulnerable to climate change because they can only tolerate narrow temperature ranges.⁷⁸ Heat stress on poultry reduces feed intake which in turn impacts weight gain. Laying hens respond to increasing temperatures by reducing the number and size of eggs produced. Stressful weather conditions negatively affect internal and external quality of eggs. High temperatures result in lower fertility rates, egg hatchability, and chick quality. Additionally, heat-stressed males produce semen with lower sperm quality and concentration. Adaptation actions to heat stress include the introduction of more heat tolerant poultry breeds and construction of poultry sheds that reduce the risk of heat stress through ventilation and cooling.

Reducing the heat stress of poultry is central to effective adaptation, which is particularly important in places such as Dollo Ado and Melkadida where the climate is already hot and dry, with predictions for it to become both hotter and drier. To adapt to current and future climate projects, SHARPE worked with Horn Afrique to adapt the business model. Horn Afrique was already producing its own poultry in solar powered hatcheries, this in itself an important adaptation measure; locally produced poultry are thought to be more resilient to the local climate compared to poultry that are shipped in from a different climatic zone. Additional adaptation measures taken included:

- Re-design of poultry sheds to maximise ventilation and shading in hot conditions, ideally with solar powered fans to help keep the birds cool. This includes concrete, rather than dirt floors, covered with vegetation such as crop residue to keep them cool. In locations where floods are a risk, poultry sheds should also be raised off the ground.
- Increased water capacity for drinking — more drinkers were added and water storage capacity was increased.

⁷⁶ Due to land and financial constraints, and to minimize risk, refugee poultry farms were smaller than a typical commercial poultry farm in the host community, refugee farms typically starting at 80-100 chickens whereas commercial farms in the host community would have a minimum start-up size of 500.

⁷⁷ <https://hornafriq.com/>

⁷⁸ Training Manual on Climate Smart Poultry Practices — PIND Foundation.

- Adapting training and advisory services to include advice on techniques that be used to help the chickens adapt, for example by spraying water on their food in hot climates to encourage them to eat the correct amount and maintain weight and productivity. Refugees working as agro-vets and community animal health workers were given this information.
- Refugee poultry farms were trained in hydroponic farming for poultry feed production, an important addition to the diet to maintain poultry health and productivity.

These adaptation measures were critical for business continuity and to adapt to the current climate, but they also increased the construction costs of poultry sheds, a trade-off that needs to be considered. They also demonstrate that adaptation can be fairly simple, low-tech and affordable.

Last-mile storage solutions in Gambella

Gambella hosts the largest number of refugees in Ethiopia, a situation which exacerbates the long-standing conflict between indigenous Anuak and Nuer populations. It is known as an agricultural region, although it is prone to flooding from the Baro river.

To increase farm productivity among the host community SHARPE worked closely with Shayashone plc⁷⁹ in Gambella. Shayashone is a last-mile agri-business service provider that manufactures and sells Purdue Improved Storage (PICS) bags and imports improved vegetable seeds, all distributed and sold through agro-vet dealers and promoted in rural, last mile situations through a lead farmer model. PICS bags are promoted as ‘an effective, cost-efficient and insecticide free-on-farm storage solution’.⁸⁰ It is a hermetic storage solution, made with low-cost technology, that eliminates post-harvest losses. It is also a chemical free storage solution, eliminating the need for fumigants and pesticides. Sold at approximately \$2 per bag, Shayashone calculate that one bag pays for itself with one harvest — farmers no longer have to apply chemicals to prevent weevil infestation and post-harvest losses are reduced to almost zero.

- **Image 2. A climate adapted poultry farm, Melkadida Refugee Camp, designed to maximize air flow and ventilation and minimize heat stress**



© P.Joicey

⁷⁹ <https://shayashone.com/>

⁸⁰ <https://picsglobal.com/>

This affordable, low-tech solution is effective in various climates, protecting grains from spoilage and pests. They help farmers adapt to climate change by providing a reliable storage solution that minimizes losses due to changing weather patterns and pest infestations. They offer a climate-smart solution by reducing the environmental impact of food production while contributing to food security and incomes among small-holder farmers. Shayashone now supplies PICS bags to agro-vet dealers throughout Gambella while also running demonstrations directly with farmers to develop demand by demonstrating the effectiveness of the bags in reducing post-harvest losses.

Alongside the introduction and promotion of PICS bags into rural markets in Gambella, Shayashone also introduced improved vegetable seeds to small-holder farmers, mostly host community. Alongside the seeds, Shayashone provided training and coaching for lead farmers, organized demonstrations and field days at farmer's plots and provided capacity building for front-line businesses — the local agro-vet dealers who sell the seeds and offer advisory services to farmers. Farmers were trained in climate smart agricultural practices such as mulching, crop rotation, minimum tillage and correct spacing.

While effective to help farmers to adapt to climate change, these climate-smart solutions were mostly targeted towards the host community, which is where the market for these products lies. Without access to farm land, the potential for commercially driven climate smart agricultural solutions among refugees in Ethiopia remains very limited.

Energy for business

Most refugee camps and hosting regions in the Somali and Gambella are off-grid.⁸¹ People mostly rely on batteries and/or buying electricity from people running diesel generators, both of which are expensive, harmful to the environment and contributing to greenhouse gas emissions.

To provide access to clean energy SHARPE introduced three solar companies to refugee markets. These national companies developed partnerships with local businesses and trained and hired local sales agents and technicians to sell and maintain quality solar energy kits for refugee and host families. These were kits for home and productive use, providing lighting at home while powering small businesses and providing services such as phone charging, refrigeration, juice making and barber shops. As knowledge of the solar sector grew, SHARPE started to introduce solar into many different business models, providing power for sub-branches of Shabelle Bank located inside refugee camps; powering refrigerators in refugee tea shops and small restaurants; and providing a steady, reliable energy source for poultry hatcheries.⁸²

Solar products are overwhelmingly positive in terms of environmental and climate impact, providing much needed clean electricity to people living in off-grid situations. Without solar power, people use polluting and more expensive sources for their power. In all future climate risk scenarios — hotter, drier, wetter, more unstable — the main risk to solar energy panels is from extreme weather / storms which can damage the solar panels. There may also be additional risks posed by higher temperatures. This is not a major risk and can be addressed simply by providing information at the point of purchase to solar kit owners on how to avoid damage from storms and high temperatures.

While more expensive initially, solar provides a sustainable, low-cost energy alternative that proves more cost-effective in the long-term, while also providing a potential business opportunity for refugees. With most solar panels imported, the main challenges lie on the supply side, making solar supplies affordable for refugees through payment packages such as PAY-GO, and by building up a ready supply of solar technicians to offer repair and maintenance services.

81 Sheder camp now benefits from a mini-grid developed and operated by Humanitarian Energy plc, with similar mini-grids operating in some of the camps in the Dollo Ado and Melkadida region, mostly powering public services and lighting public spaces.

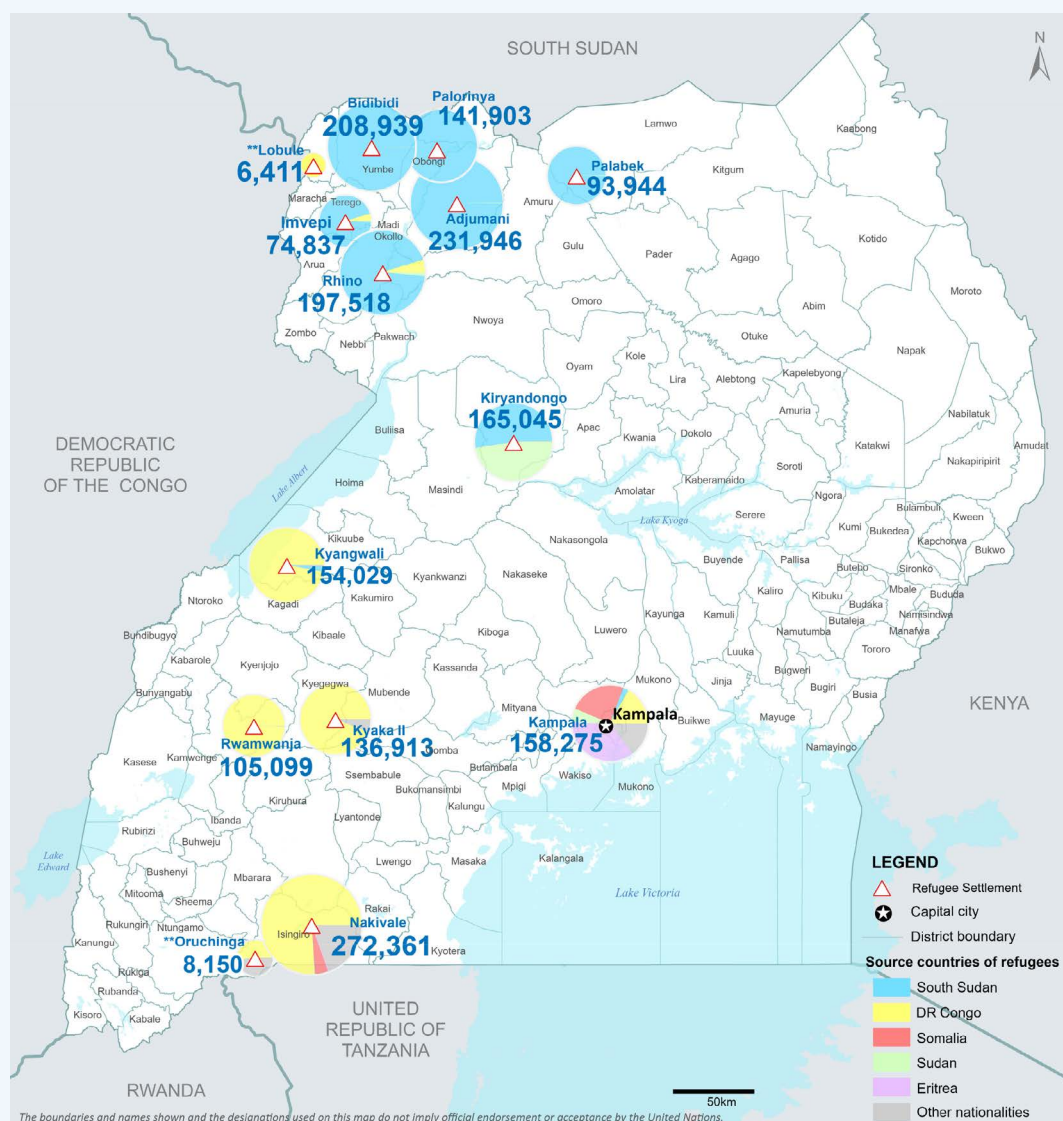
82 Similar examples can be found in the Inclusive Resilience in Somali (IRIS) programme from Somalia with solar used with international displaced people to power last mile sales outlets and milk collection centres. <https://dt-global.com/projects/iris/>

► A growing space for MSD and climate adaptation in Uganda

Background

With more than 1.8 million refugees,⁸³ Uganda provides a home to more refugees than any other African country, the majority from South Sudan (54 per cent) and the Democratic Republic of Congo (32 per cent). New arrivals have continued to enter Uganda, mainly from DRC, South Sudan and Sudan.

► Figure 1. Refugee Settlements in Uganda, September 2025



** Oruchinga and Lobule symbols not to scale

Source: Uganda — Overview of Refugees and Asylum Seekers, Septmber 2025. Office of the Prime Minister and UNHCR.

83 UNHCR, 2025.

Uganda has a progressive refugee policy, often referred to as one of the most liberal in the world. Refugees are granted freedom of movement, the right to work and the right to access basic social services such as health and education. They can open bank accounts, register businesses and access financial services.

Land access conditions and regulations vary by district, but most refugees are allocated a small plot of land, 30mx30m, to build a house and engage in small-scale agriculture for food production, a livelihood strategy that is likely to become more important with the recent cuts to food rations.⁸⁴ Living in settlements, many of which are far from markets, refugees have few resources to adapt and have little access to information on managing climate-related stresses.

Uganda is highly vulnerable to climate change, ranked by the ND-Gain index as the 32nd most vulnerable country and the 172nd most ready. Depending on the scenario, temperature in Uganda is projected to rise by between 1.5 and 3.5°C by 2080, with higher temperatures and more temperature extremes projected for the north and east of the country. Even under a moderate climate change scenario central Northern Uganda would experience 30 more days over 35°C each year by 2050 and 60 more days by 2080. Rainfall trends are highly uncertain and predicted to increase, alongside more extreme dry and wet periods.⁸⁵ The unpredictability of the timing of rains is already reported by host farmers to be significantly disrupting agricultural practice. Agriculture in Uganda needs to adapt to these current and future climate scenarios.

► Box 8. Climate projections under a medium/high climate change scenario

- Increase in mean temperature of 1.3°C in 2030, 1.5°C in 2050 and 2.3°C in 2080
- More days of extreme heat — 13 more very hot days over 35°C per year in 2030 than in 2000, 26 more in 2050 and 39 more in 2080.
- Erratic rainfall, increased unpredictability of seasonal rains and more frequent heavy rains
- More extreme dry and wet periods.

Source: GIZ Climate Risk Profile for Uganda.

Uganda's refugee settlements, mostly located in the north-west and south-west, are in areas highly vulnerable to the effects of climate change, including extreme heat and seasonal flooding. Northern Uganda is known as an agricultural area, but rural livelihoods are being impacted by prolonged dry spells, shifting rainfall patterns and unpredictable rainy seasons. Northern Uganda is also projected to experience hotter conditions, with more hot days in the future, a serious risk to crops.

Leveraging block farming for climate-smart agriculture

To support greater self-reliance and reduce dependency on humanitarian aid, refugee farming initiatives have become common in Uganda. Although refugees are given small plots, these are insufficient for commercial farming, lack of access to land for farming still being one of the main restrictions refugees face. Block farming is an approach widely used to overcome this challenge where refugees are grouped together, receive training and free inputs, and rent a block of land from the host community, with rental costs often paid by the project.

84 In June 2025, food rations ceased to more than half of the refugees, with the most vulnerable receiving 40 per cent of their previous rations.

85 Climate Risk Profile: Uganda. GIZ.

► Box 9. Climate Smart Agriculture

CSA is an integrated approach to managing landscapes that aims to address the challenges of food security and climate change simultaneously. It has three mutually reinforcing objectives: sustainably increasing agricultural productivity and incomes; adapting and building resilience to climate change; and reducing or removing greenhouse gas emissions where possible. CSA recognizes that not all practices will meet all three objectives and it may be necessary to balance the benefits and trade-offs of each. CSA helps to identify approaches and technologies that will contribute towards two or more of the objectives.

Climate-smart agriculture is increasingly being integrated into these refugee farming initiatives, helping to foster more resilient farming practices.

A review of the application of CSA practices with refugees identified that 33 CSA initiatives were being carried out in 12 of the 13 refugee-hosting districts, the majority being implemented by NGOs⁸⁶ with only one of the 33 identified as a market systems development programme.⁸⁷ A range of CSA practices were being promoted through these initiatives, the most common being the promotion of agro-ecological and conservation farming practices; providing climate resilient seeds; and support for soil and water conservation practices, including use of organic compost. Some small-scale initiatives are extending crop and livestock insurance to host community farmers, but premiums of around \$25 remain unaffordable for refugees.

Developing commercial pathways for adaptation and resilience

Uganda's open policy regime enables refugees to actively participate in local economies, providing a favourable environment for the application of market based and market systems development programmes as part of the refugee response. In January 2025, before the closure of USAID there were six active refugee MSD programmes in Uganda,⁸⁸ soon to be reduced to four.⁸⁹ As with SHARPE in Ethiopia, most of these programmes did not systematically use climate change information in their decision-making processes. Without access to climate change technical support or integration of climate risk analysis into decision-making, these programmes build resilience to current conditions rather than future climate scenarios. This exposes refugee communities to the risk of being locked in to maladaptive decisions made today, as future unforeseen climate impacts emerge.

Uganda's refugee MSD programmes mostly aim to make markets more inclusive, competitive and resilient, working to trial and scale interventions to address barriers faced by both refugees and host communities in accessing markets. Working with a range of different agri-businesses such as input suppliers, off-takers and processing companies, as well as energy companies and financial service providers, they develop systemic solutions to overcome barriers faced by refugees in their livelihoods and businesses — reducing distance; developing financial services; increasing access to land, inputs, extension services and information; and developing relationships with host community businesses.

Increasingly climate change is being seen as one of these barriers to market engagement, and a threat to business resilience, with adaptation measures starting to be integrated into the MSD approach. With climate change making harvests more unpredictable, agri-businesses are seeing the need to protect their supply chains and support their suppliers, small-holder farmers, to adapt and become more resilient. Many are seeing the clear business incentive to supply adaptation goods and services as a business opportunity while also protecting their own supply chains. MSD programmes are starting to tap into these incentives and market signals.

86 U-Learn. 'Application of Climate Smart Agricultural Approaches in Uganda's Refugee Response', 2025.

87 IAMS, funded by USAID Feed the Future and implemented by DAI, which was closed in June 2025.

88 See U-Learn, 'Market Systems Development in the Uganda Refugee Response'. 2025. <https://ulearn-uganda.org/>

89 Uthabiti and the Inclusive Agriculture and Market Systems (FtF-IAMS) programmes ended with the closure of USAID.

With support from ILO PROSPECTS, Ag-Ploutus,⁹⁰ a national off-taker and input supplier, expanded its business into refugee settlements such as Rhino camp in the West Nile region. Refugees in Rhino camp are already experiencing climate change, with farmers struggling to cope with more extreme heat and shorter rainy seasons with less predictable timing of rains. Ten micro-enterprises engaged in the sesame value chain were supported by Ag-Ploutus and village aggregation facilities were established in both host and refugee communities. To adapt to the refugee market Ag-Ploutus had to change their usual sales offer, reducing the size of input packages to match the small plot sizes and low purchasing power among refugees, and combine it with extension services. The company also subsidized inputs to help farmers cope with climatic losses, seeing this as part of the customer loyalty and business strategy. Ag-Ploutus recruited and trained networks of local sales agents to provide services to farmers including selling inputs, providing extension and advisory services and to aggregate their grain at harvest. The agents are paid on commission.

Emmanuel Aria is one of these sales agents. From his small shop inside Rhino camp, Emmanuel sells climate adapted inputs such as drought resistant and fast maturing seeds alongside climate-smart farming advice. He also sells through his own network of sales agents who offer extension services to farmers on their farms alongside sale of inputs. Through his sales agents, Emmanuel now provides training for refugees in conservation farming practices like mulching, crop rotation, and minimum tillage, with these extension and advisory services proving as vital to resilience as the seeds themselves. This sales and service package is now critical to his business, demonstrating how local businesses can achieve multiple goals of adaptation, resilience, productivity and profitability.

The Feed the Future Inclusive Agricultural Market Systems (FtF-IAM) programme⁹¹ also demonstrates how MSD can build resilience among refugees and host communities engaged in small-scale farming. FtF-IAMS partnered with climate-smart agro providers and helped them to develop sustainable last mile distribution models to incentivize them to expand into refugee markets. These models often involved setting up networks of village agents to provide a bridge between the companies and farmers, helping the farmers to access services and establish business relations with input dealers and aggregators. The agents link farmers and businesses and offer complementary extension services to ensure a good crop yield for the buyers, services which are increasingly climate focused, intended to help farmers adapt and cope with climate shocks and stresses. Climate-smart technologies and services supplied through a commercial approach included: early-maturing seeds that are drought tolerant and pest/disease resistant; promotion of conservation farming; fertilizer blends suitable for local soils and

► **Image 3. Emmanuel Aria in his shop**



© P.Joicey

⁹⁰ <https://agploutos.com/>

⁹¹ Funded by USAID Feed the Future and implemented by DAI.

crops; small-scale irrigation systems and sustainable soil and land management techniques. FtF-IAM also promoted agro-insurance among host community farmers and the use of technologies to inform weather-related decision-making.⁹²

Many of these technologies, however, remain unaffordable for refugees. FtF-IAM partnered with Sprinktek⁹³ to supply solar irrigation and solar pumps to local businesses in refugee hosting regions, which then sell to local farmers. Half an acre is the smallest system and customers can buy the systems through PAY-GO, making these solar supplies more accessible for small-holders — but the up-front costs are still too expensive for refugees. Forty solar irrigation kits were sold to refugees, with FtF-IAM subsidizing the cost for refugees. Now, without subsidies it is questionable whether this business model will sustain in refugee settlements, highlighting a common issue encountered in supplying climate adaptation technologies through commercial channels — many adaptation solutions are simply too expensive for refugees and commercial delivery channels are unlikely to last without the financial support of a donor. Products such as irrigation and insurance are out of the reach of the vast majority of refugees and need to be subsidized.

A similar issue was encountered with organic fertilizer. Working with Bio Bloom,⁹⁴ a producer of Bokashi organic fertilizer produced by upcycling bio-waste using Black Soldier Fly technology, local input suppliers in refugee settlements found little demand, partly due to lack of awareness of the benefits of Bokashi, but also due to cost.

Both FtF-IAM and PROSPECTS enabled incremental adaptation measures to the current climate with a focus on climate-smart agriculture practices and technologies. They built resilience to current conditions, without analysing future climate scenarios and testing proposed innovations against future climate scenarios. Goods and services available through commercial channels, drought tolerant seeds for example, are what have been developed by private companies and brought to market, with a view to meeting current demands of farmers who want to minimize risk.

Climate Smart Jobs (CSJ)

Funded by UK Climate Finance, the Climate Smart Jobs (CSJ) programme⁹⁵ in Uganda has climate change objectives and reports against specific climate adaptation and resilience criteria. CSJ uses the FCDO resilience definition of absorptive, adaptive and anticipatory capacity, seeking to strengthen all three aspects of climate resilience, with the project logframe structured around these three components. Climate adaptation and resilience have been fully integrated, providing an example an MSD programme working in and around refugee settlements that enable adaptation and build resilience through a commercial delivery model.

Identifying a lack of information and knowledge about climate change as a barrier to change, CSJ took a systemic approach to how to disseminate the media reports on climate change. While we all know about the weather, understanding how the climate is changing and what we need to do to adapt is different. Working with the media sector, CSJ trained environmental journalists, journalism students and content creators on climate change, providing incentives such as a Journalism Climate Award to publish stories and information on climate change. This includes village/community exhibition events, including in refugee camps, where discussions are held on the impact of climate change in the region and how farmers can positively adapt.

92 Najjingo, D., (2024). *A Market Systems Approach to Climate Smart Agriculture in Uganda*. DAI Blogs. [A Market Systems Approach to Climate-Smart Agriculture in Uganda](#) · DAI Publications.

93 <https://sprinktechug.com/>

94 <https://biobloomug.com/>

95 CSJ is the successor to NU-TECH and is implemented by Palladium, Swiss Contact, CABI and Stanbic Uganda Holdings Ltd. <https://csj.co.ug/>

CSJ also strives to develop the next generation of 'green' businesses as agri-business are starting to embed climate solutions into their business models, seeing the need to protect their supply chains. More aware companies are also now seeking climate finance, with international exporters recognising that they need ESG⁹⁶ compliance to enter certain markets. Focusing on larger companies that work with small-holders in Northern Uganda, CSJ provides support to green operations and supply chains, adopting environmentally sound practices to reduce emissions, conserve ecosystems and biodiversity and build climate resilience. CSJ has also developed a Climate Innovation Fund,⁹⁷ an incubator seeking to take new climate adaptation ideas and turn them into business models, supplying climate adapted goods and services to farmers in Northern Uganda.

Pfumvudza: food security first

CSJ promotes climate-smart agriculture in Uganda's refugee settlements, promoting a model from Zimbabwe, *pfumvudza*, which combines conservation agriculture with food security. *Pfumvudza* was originally developed by Foundations for Farming⁹⁸ to answer the question of how much land is needed to feed a family. Using intensive and regenerative farming practices *pfumvudza* uses small, intensively managed plots to produce enough food for a family of six. Combining conservation agriculture practices like minimum tillage, mulching, and crop rotation with balanced organic and chemical inputs, *pfumvudza* improves soil health and water retention.

For refugees in Uganda, the model has been adapted to work with the small plots typically farmed by refugees. Input packages have been customized specifically to fit these plot sizes, rather than typical input packages designed for an acre or a hectare of land. To minimize the risk to refugees a balanced approach is taken to the use of chemicals. Both organic and chemical fertilizers are promoted in the first year, alongside training in the correct application of chemicals, with chemicals being phased out in subsequent years as the organic inputs start to take effect.

CSJ provided training in *pfumvudza* for 13 local input companies, all located close to refugee settlements, to promote *pfumvudza* practices among refugees. These trained agri-input dealers now provide training and extension services for refugees on these climate-smart techniques alongside selling climate-adapted seeds and inputs.

Located in the bustling market town of Kiryandongo, just a few kilometres from the Kiryandongo refugee settlement, Halima Nalunkuuma has run the Agro-Input Centre Ltd for ten years. She saw that many of her customers were struggling with the inputs she was selling, particularly refugees, many of whom did not come from farming backgrounds and who had the extra problem of a language barrier. In response she hired one local women farmer as an extension worker who started going out to farmers, providing training while selling inputs. With the support of CSJ Halima went to Rwanda to learn about *pfumvudza*, and hired two additional extension workers, both women, one refugee and one from the host community. Through this adapted business model Halima is now selling climate adapted seeds alongside the promotion of *pfumvudza*, climate-smart farming practices. This year she worked with refugee farmers to conduct experiments with maize, using *pfumvudza* practices alongside traditional practices to allow farmers to see the difference. Specifically targeting women farmers, Halima is promoting practices such as mulching, using maize stalks and grass, crop rotation, minimum tillage, spacing and the use of organic manures.

96 ESG stands for Environmental, Social, and Governance and refers to the three key factors used to measure a company's sustainability, impact on society, and responsible business practices.

97 Operated by Stanbic Uganda Holdings Ltd.

98 <https://foundationsforfarming.org/pfumvudza/>

► Image 4. Halima outside her input shop



© P.Joicey

► Image 5. Showcasing *pfumvudza* in Kiryandongo refugee settlement — climate smart practices were applied on the plot to the right



© P.Joicey

Agri-input dealers such as Omia and African Shepherd, both based in Arua town, also promote *pfumvudza* climate smart agricultural practices alongside sales of adapted seeds and other inputs. Located around 70km from Rhino camp, these agri-input dealers have recruited local sales agents to bridge the distance from the town to the camp. These agents now train refugee farmers in *pfumvudza*, conservation farming practices while selling seeds and other inputs appropriate to the 6m × 6m plots. The input dealers trained by CSJ all see the business opportunity of combining *pfumvudza* inspired extension services alongside the sale of climate adapted inputs.

- **Image 6. Growing watermelons in Rhino Camp and tomatoes in Arua town using techniques of mulching, integrated pest management, minimum tillage and appropriate fertilizer usage**



© P.Joicey

Adapting for tomorrow: The ten-year test

With technical support from Climate Sense,⁹⁹ CSJ applies the ten-year test to all proposed business models and interventions. Based upon the ISO14090 international standard for climate adaptation, the ten-year test is a practical way to integrate climate risk into decision-making. This tests the impact of climate change over the life of a proposed innovation, i.e. whilst the crops and products may be well-suited to the existing climate, projected climate changes over the next decade and beyond could significantly impact their productivity. This process assumes innovations resilient to the current climate can absorb climate change over the next 10 years and that risks may occur beyond 10 years into the future.

By applying an RCP6¹⁰⁰ climate scenario, all proposed interventions are scrutinized at an early stage to test how well they will cope with both current and future climate scenarios. This then feeds into a decision-making matrix using a traffic light system to scrutinize potential impacts on all proposed business models and identify adaptation needs. In this way climate and the environment are used alongside more familiar criteria such as impact, inclusion, scalability and sustainability to analyse all proposed business models and inform decision-making.

In an RCP6 scenario, the West Nile region, for example, home to six large, sprawling refugee settlements, is predicted to experience a rise in the number of hot days¹⁰¹ from the current average of 32 to 42 days, conditions which place considerable stress on crops as well as on human health. Refugees in Rhino camp are already experiencing difficulties with extreme heat, a situation predicted to get worse. Planned interventions need to be able to cope with this situation, particularly those with a planned lifetime longer than ten years.

⁹⁹ <https://www.climatesense.global/>

¹⁰⁰ Representative Concentration Pathways (RCP) are climate change scenarios to project future greenhouse gas concentrations. RCP6 is considered the most likely trajectory given current greenhouse gas reduction commitments by UN member states as of 2023. This climate change scenario represents a moderate level of greenhouse gas emissions, leading to a significant increase in global temperatures over the coming decades. CSJ recognises that continuing increases in emissions may mean this scenario becomes an underestimate, and analysis may need to be revisited with a higher case scenario.

¹⁰¹ Defined as above 35°C.

► **Box 10. Applying the ten-year test to cocoa**

For planned work to develop cocoa in Northern Uganda a climate analysis was conducted to look at the impacts of climate change over a 25-year period. The analysis focused on the three varieties promoted for mixed production in Uganda and determined their potential to remain productive for over 25 years. Data specific to Northern Uganda under the RCP6 scenario was applied, the analysis revealing that only one specific variety, *Forestario*, was more suitable for future climate scenarios. Given the projected increase in very hot days, adaptation strategies such as the use of shade trees and improved irrigation could improve resilience, but not fully protect productivity losses from climate change.

Source: Climate Smart Jobs.

The ten-year test was applied to goat breeding and trading, a common livelihood practice. This concluded that the promoted goat breeds are already sufficiently heat tolerant, and so no change needs to be made. Analysing the impact of goats on ecosystem services identified a need for larger breeds with a better feed conversion ratio, and training to grow supplementary feed and reduce the impact of goats on the environment.

Climate adapted seeds are widely available in Uganda — every input dealer visited during this study was selling drought resistant and/or fast maturing varieties.¹⁰² These seeds are mostly developed by companies and researchers in countries such as Zimbabwe, before being introduced to Uganda and tested in different agro-climatic conditions by the National Agricultural Research Organisation (NARO), prior to approval and licensing. This whole process can take 5-10 years. While drought resistant seeds were previously on the margins of their business, seed companies are seeing them as a mainstream product, widely in demand by farmers. These seeds, however, need to be produced for future as well as current climate scenarios, not just adapted for more unpredictable rains but also able to cope with hotter conditions.

The ten-year test quickly reveals that many currently available seed varieties will not cope well with future climate scenarios. Of the twelve coffee varieties being promoted by the Government of Uganda, there is no information on how they will perform in the hotter conditions that will develop over their planned productive life of 25-50 years, whilst expecting that the most common varieties are likely to significantly reduce productivity relatively early in their planned life. Similarly, sesame seeds being sold and planted in Northern Uganda may be more resistant to drought, but will they survive heat? There are two varieties of soy bean available — getting a new variety can take ten years.

More systemic solutions are needed — seed researchers and companies need to be developing new seeds that can cope with future scenarios and be ready to make them available to the market when climate conditions need them. NARO's Drought Resistant Crop Research station has acknowledged that the research agenda has considered increasing drought but not increasing heat. Consequently, varieties planned for future markets may not be as resilient to future climate as expected. Without this forward planning, local agro-dealers such as Emmanuel and Halima, that are so important to the resilience of refugees, will not be able to source the products that are suited to the future climate when it is needed.

In response, CSJ started to work with NARO to help them apply the ten-year test to develop new varieties of seed adapted to future climate scenarios. A key basis for NARO being able to justify changes in research agenda is market demand. There is an opportunity to influence research priorities by collaborating with, and influencing the bodies that decide on the development and licensing of crops required for the future. They can also engage with commercial seed companies to develop capacity to supply seeds at sufficient scale in future that will be resilient to the changed climate.

¹⁰² Access is different. Many input dealers had only recently established sales networks into refugee settlements and climate adapted seeds are more expensive. Many refugees still use seeds held over from last year due to inability to purchase climate adapted varieties.

Key takeaways from Ethiopia and Uganda

- ▶ **Promising early stages of MSD implementation.** The application of the MSD approach as part of the refugee response is still in relatively early and experimental stages. The examples highlighted are all relatively new innovations and still small-scale, making any judgement on the likelihood of sustainability premature. However, as demonstrated by the input dealers promoting *pfumvudza*, the potential for scalability is clear — there is clear demand for climate resilient goods and services supplied through commercial channels.
- ▶ **An enabling environment for private sector engagement.** An open policy environment, not only for refugees but also for business, is a clear enabling factor for climate adaptation goods and services to be supplied commercially, even to refugees. In Uganda, having access to land has opened up the refugee market to agri-business in a way that is not yet feasible in other refugee hosting countries.
- ▶ **Adapting business models to refugee's realities.** In these fragile, remote markets, working with, and investing in local private sector actors, improving their service while building connections, both forwards into new (refugee) markets and backwards to importers and suppliers is critical to improving adaptive capacity among displaced communities. However, if these commercial models are to sustain in refugee markets, sales offers need to be adapted to the reality of refugees — small plot sizes; low purchasing power; language barriers to name but a few. Many climate change technologies, and goods and services that build resilience, are simply too expensive for refugees and/or still not easily accessible.
- ▶ **Embedding climate change into extension and information services.** Climate change needs to be embedded into extension and information services. Aid agencies, extension workers, input dealers, seed companies, crop development researchers, media houses all need to understand climate change and build this knowledge into their service delivery models. The model of selling climate adapted seeds alongside extension services which teach farmers conservation farming and agroecological techniques has proven value, both from a business as well as impact perspective.
- ▶ **Use climate risk data from the start.** Invest in climate risk analysis in the early stages of a programme and use this in decision-making processes to identify adaptation needs — BE INFORMED. The example from SHARPE shows us that a well guided MSD approach can support adaptation and build resilience, but it did so without specific climate analysis and had to adapt its business models during the later stages of the programme based upon a climate risk analysis. Doing the climate assessment late also risks missing potential climate adaptation opportunities.
- ▶ **Analyse all proposed business models and interventions against the ten-year test.** If they are building resilience to the current climate, and are not intended to last as long as ten years, then they should be able to cope with climate change and enhance resilience. However, if they are expected to last longer than ten years then it is critical to analyse these plans from the perspective of climate change, and make a choice now that remains resilient to the climate impacts which are expected to emerge but are not experienced today. Also, if the lead time to provide a climate sensitive product, such as seed, takes longer than 10 years, or is intended to offer value for more than 10 years (crops may take 10 years to develop with the intent of being useful for 30 years), the ten-year test is also useful to consider the climate conditions for which the crop needs to be able to thrive. Where the ten-year test finds that options for current crops become unviable and there needs to be a shift to other crops as staples e.g. maize to small grain crops, support agencies can begin to prepare people and their markets to be able to make that transition.
- ▶ **Combine low-tech measures with systemic innovation.** Adaptation is often highly practical and common-sense — maximise cooling opportunities in scenarios of increased heat; raise infrastructure off the ground to minimise flood risk. Solar should also be integrated wherever possible into MSD interventions to reduce the environmental impact of business while supporting adaptation and providing new business opportunities. However, more systemic interventions are also needed e.g. new seed varieties and poultry breeds specifically bred for new climate scenarios.
- ▶ **Assessing ecosystem impacts alongside market criteria.** All proposed interventions and business models should be analysed from the perspective of their impact on ecosystem services, alongside more familiar criteria such as impact, inclusion, scalability and sustainability. Positive ecosystem impacts should be maximized while negative ones should be avoided or reduced wherever possible.

▶ 4

Emerging lessons and recommendations on MSD for climate adaptation in fragile contexts

▶ This section highlights the importance of being fully climate purposed and fully integrating climate science and climate risk analysis into programmes, policies and organisations. Climate adaptation can no longer sit on the edge—adaptation solutions are in demand and are starting to be supplied. MSD can support the spread of these solutions to fragile, displacement settings in a way that is appropriate, affordable and accessible. This section offers some practical guidance to effectively integrate climate adaptation while highlighting a number of enabling factors that became evident during the course of this study.

This study presents only a snapshot of the myriad of climate initiatives being implemented in contexts of fragility and displacement. There is an impressive array of initiatives being planned and implemented, all with the goals of adapting and building resilience to climate change, mostly resilience to the current climate. The intentional and systemic integration of climate science into organisations, business models and programmes, facilitating adaptation to future climate change, is still scarce.

Despite many initiatives, climate adaptation in a displacement setting is still in its early stages — much more is needed. There is a big learning agenda, with a need to learn what works in different contexts, to scale-up and be intentional, while prioritising local action and the role of local micro and small businesses in adaptation. Climate affected populations, businesses and communities must be at the heart of decision making and see benefits of adapting and making incremental changes to reduce impact and become more resilient. Without such engagement and buy-in, the adoption of climate resilient practices that strengthen rather than undermine ecosystems will not be sustainable.

Collaboration is also needed, the agenda is broad and a diversity of different approaches and solutions are needed, with strong collaboration between public and private sector actors — both public and private actors need to embrace adaptation for more climate resilient futures. Ultimately, for refugees, the fundamental model needs to shift if there is any possibility of transformative adaptation.

The application of systemic approaches in displacement and humanitarian settings is itself new, but brings system thinking and a collaborative approach between private and public sector. There is significant value in building on and strengthening existing systems, bringing together public and private sector actors who have distinct but valuable roles to play in addressing the consequences of — and identifying solutions to climate change.

In a displacement context it is essential to recognize and support small-scale and informal enterprises in refugee and host communities, instead of marginalizing, dismissing, or ignoring them.¹⁰³ The examples from Ethiopia and Uganda demonstrate the importance of developing their role as adaptation actors while also showing that it is possible to engage these small-scale, informal enterprises in climate adaptation. Systemic approaches can introduce and scale-up solutions, bringing climate adaptation goods and services to these markets. Business models need to adapt to reach refugees, but without such approaches refugees will continue to remain on the margins, unable to access the goods and services they need to build more climate resilient livelihoods.

Still small-scale and experimental, it is too early to draw any conclusions on the sustainability of these business-led approaches once the public subsidy ends. However, the potential for scalability is clearly demonstrated by the acceptance and spread of climate-smart agriculture practices such as pfumvudza — input dealers have taken up this model and clearly see the business case in embedding climate smart agriculture extension services in their business models. Local input dealers recognise that they need to support their customers to adapt and that this is in their business interest. The same can be said for larger companies — seed importers; aggregators and agro-processing companies; exporters etc — who are starting to see the need to protect their supply chains by helping their farmers to adapt.

Much more innovation is needed. Many climate solutions are neither accessible nor affordable for refugees, highlighting a role for the public sector in de-risking and incentivising private investment in refugee markets and finding innovative approaches to bringing these goods and services to some of the most climate vulnerable people. Solutions for future climate change may also not yet be known — investment in research and innovation is needed to develop new solutions to cope with situations such as extreme heat. The role of information in adaptation also needs to be highlighted and the role that the private sector can play, not just in weather information but in helping people to learn new skills and approaches. This is hugely underdeveloped, but essential to build anticipatory capacity among climate vulnerable households.

Becoming climate purposed

The World Bank¹⁰⁴ breaks down programmes into three categories related to climate change:

- ▶ **Climate-aware programmes:** acknowledge climate risks and their impact but do not comprehensively integrate climate and poverty considerations into their objectives, components, or activities.
- ▶ **Climate-linked programmes:** integrate climate and poverty considerations in specific components or activities, but climate change is not a primary objective and is not fully aligned with project outcomes.
- ▶ **Climate-purposed programmes:** show the highest level of climate-poverty alignment. They comprehensively assess and address the intersection of climate and poverty by explicitly incorporating climate objectives into their activities, components, and outcomes.

With the exception of the Climate Smart Jobs programme all other programmes reviewed by this study fall into either the climate-aware or climate-linked categories. Almost all focused on current resilience, with little analysis of climate change. Only CSJ was fully climate-purposed, with climate change fully integrated and actively using climate science to guide decision-making and develop adaptation plans.

103 Singh, R.; Mekuria, W.; Dessalegn, M.; Melaku, D.; Adam-Bradford, A.; Ruckstuhl, S. 2024. *Water security and climate resilience in the Somali Region, Ethiopia: an assessment of the vulnerabilities of refugee and host communities*. Colombo, Sri Lanka: International Water Management Institute (IWMI). CGIAR Initiative on Fragility, Conflict, and Migration.

104 Costella, C et al (2023). *Pathways to Climate Resilient Economic Inclusion*. World Bank, 2023.

The aim is for all programmes to become climate-purposed, with signs showing that an increasing number of programmes and organisations are seeking to become fully-climate purposed. It will likely be an increasing demand — from government, donors, implementers, from business, as well as from our ultimate clients, in this case refugee and host community households and micro-businesses. Climate change will need to be fully integrated as we transition into becoming climate-purposed, rather than just aware.

It seems likely that the trend to integrate climate adaptation and resilience thinking into programmes and into business will continue to accelerate. Businesses are already seeing the need to adapt to protect their supply chains as well as the clear business case for supplying and selling climate adaptation solutions. Donors will also increasingly need to take action on climate change and to fully integrate climate adaptation into a range of programmes and initiatives.

Perhaps most importantly, the people we ultimately aim to support are in need of adaptation solutions. It is clear that systemic approaches have potential to accelerate this change among both public and private actors, while ensuring that micro-businesses in refugee and host communities are not left behind.

How to do it

How do we become more intentional and systematic in addressing climate change and fully integrating it into our work, our organisations and programmes.

1. **Set targets.** Develop specific climate change targets against which progress can be measured, ideally aligned to national climate change goals. Resilience is often poorly defined making it difficult to measure. Teams need to have clear signals that climate goals are to be taken seriously and that performance will be judged against these goals.
2. **Embed climate analysis.** Access climate science and embed climate risk assessments into all decision-making processes — climate related risks and adaptation needs need to be systematically, and intentionally, identified and analysed at all stages, not just at design stage. Better analysis can help market actors envision a more climate-resilient, inclusive, and sustainable market and help to inform investments in the capacities needed in the public and private sector to support locally driven, market-based adaptation pathways.
3. **Involve local and regional business.** Rather than relying on direct delivery of climate adaptation, use smart subsidies and targeted interventions to crowd in local and regional businesses. Their proximity, knowledge of local markets, and long-term incentives position them to adapt products and delivery models to refugee realities, while ensuring sustainability and scale beyond donor support.
4. **Invest in skills and knowledge.** Teams need to understand climate change and how it will impact upon their plans and interventions. Assuming not everyone is a climate expert, it will be critical to bring in climate science and have access to climate advisory services and expertise. Climate adaptation can be common sense, but we need to be informed about future climate scenarios and understand the impacts of these scenarios on our planned interventions.
5. **Simplify and de-mystify.** Climate adaptation is rarely complicated and does not always require sophisticated innovation. After the analysis, adaptation can become very practical and common-sense — increase ventilation, cooling and shade and improve water management in hotter & drier scenarios; raise infrastructure off the ground, or perhaps relocate further from the water source in wetter scenarios.
6. **Run the Ten-Year Test.** Try to apply the ten-year test — test for resilience to the current climate and to future climate. While it is good to build resilience to current climate change, we need to go beyond that, particularly if planned interventions are intended to last longer than ten years. Responding to what farmers are saying, based on last year's experiences is good for current resilience, but not necessarily enough to adapt to future climate scenarios.

7. **Promote diversification.** Diversification is at the heart of adaptation and resilience — in an increasingly uncertain scenario people need options so they can shift from one strategy to another. The role of relationships and business networks should also be recognised in providing both a support system and to enable diversification.
8. **Think and act systemically.** Offering one adaptation solution is inadequate on its own without addressing wider systemic constraints. While the system itself currently restrains the adaptive capacity of refugees, there are still many options for adaptation in a refugee context. Think broadly and act on a diversity of adaptation strategies and approaches.

Enabling factors for adaptation

During the course of this study many enabling factors and incentives became evident in making the shift from 'livelihoods' to 'adapted and resilient livelihoods'. A selection are presented here.

Readiness of the private sector: particularly in agricultural value chains, businesses are responding to the needs of farmers by supplying climate adapted technologies and/or advising on new/different crops. This is in response to market demand — what farmers are telling them — and also responding to supply, the new goods and services that are available from their suppliers. Companies see the need to protect their own supply chains which, in the case of agri-business, entails helping farmers to successfully adapt. More is needed, but change is evident.

Climate change impacts already being evident: most current climate change adaptation models and technologies are responding to what is happening now, without necessarily looking at what might happen 10 or 20 years into the future. However, changes in temperatures and rainfall patterns, with spread of new pests and diseases, alongside more frequent climate shocks, is starting to make farmers demand new solutions to these new problems, many of which they have not previously experienced.

Solarisation: the development of the renewable energy sector and relative accessibility of solar products is an enabling factor, both for greening of business models and for enabling technology transfer to remote, off-grid locations. Solar powered technologies — cool-boxes; solar fridges; solar pumps; phone charging and barber kits — also provide new business opportunities in off-grid situation, with green jobs also needed as solar technicians and sales agents. MSD can help to make these supplies available in refugee markets, but most remain too expensive for refugees without subsidies and more accessible payment modalities

Focus from the donor / funding source: donors with a strong climate focus, funding programmes through specific climate funding streams are much more likely to have climate change goals and to have climate resilience as an intended overall objective. Such programmes tend to have climate change goals in the results frameworks at all levels; integrate climate analysis into all stages of programme design, delivery, management and adaptation; and be assessed/evaluated against climate change criteria — in other words are fully purposed climate change programmes. This trend is likely to increase.

Affordability: climate smart technologies can be more expensive. Poultry sheds adapted to minimize extreme heat or raised off the ground; drought resistant seeds; solar pumps; and micro-insurance provide simple examples of proven adaptation goods and services that are too expensive for many, particularly refugees. Although these investments in climate-smart technologies should prove to be more cost-effective in the medium to longer-term, resource poor households need a quick return and may be unable to pay for such improved technologies. There is little benefit in making green solutions available if households cannot afford them. Subsidies and/or innovative and accessible payment modalities are needed if refugees are not to be excluded.

Refugee policy environment: in the context of displacement an open policy environment that supports integration and enables economic inclusion is critical. There is a reason why Uganda has many more refugee focused market systems and adaptation initiatives compared to other refugee hosting countries. Having freedom of movement, the right to work, access to land and basic services all enables the extension of supply chains and markets into refugee settlements. Without a supportive and open enabling environment, the challenge for systemic approaches becomes greater.

Working across the HDPN: the infamous ‘siloes’ that restrict cooperation both between and within organisations across the ‘humanitarian-development’ divide equally apply to the integration of climate change adaptation and resilience. In protracted displacement these siloes make no sense and a shift to longer-term thinking, analysis, planning and action would significantly enable more effective adaptation actions.

Leadership for adaptation: adaptation will not happen by accident. Organisations, programmes and policies that have changed and fully integrated climate adaptation have done so through a clear and conscious decision to change. Climate action needs to be embedded from the top, with clear incentives for everyone to buy into.

Finance for adaptation: as has been mentioned throughout this report, public funding for adaptation is inadequate, particularly in displacement and fragile settings; and private adaptation financing is negligible. Access to finance is a key enabler of adaptation and more innovative financing solutions are needed in displacement markets if local, refugee ran enterprises can become effective adaptation actors.

Conclusion

Climate change, conflict, and displacement are increasingly interconnected — climate change is a driving factor in migration and displacement while also impacting the lives of displaced people. Many of the world's current refugee camps and settlements are located in climate hot-spots, with climate hazards predicted to worsen in many of these locations. Climate change also contributes to the factors that force people to seek refuge in their neighbouring country.

Climate action can no longer be left on the margins. Climate change adaptation is increasingly being integrated into policies, programmes and organisations, including those that work in fragile contexts — momentum is growing. This study found many examples of climate action being considered and integrated into action designed to improve the living conditions of displaced people. This is positive, but still early stages — much more needs to be done and many organisations need to change to fully embrace climate action.

Successful adaptation cannot be achieved by the delivery of one technical solution alone — a bundle of adaptation and resilience building measures are needed to address systemic constraints, with both public and private actors having an important role to play. The whole system which impacts the lives and livelihoods of displaced people needs to be analysed, systemic barriers to adaptation and resilience addressed.

If displaced people are to adapt successfully, the current refugee model also needs to change more quickly — building adaptation and resilience among people living in poverty, with few options and limited mobility will be small-scale and incremental at best. Cuts to humanitarian funding and essential services further highlight the need for change. With the way out of the camp often being economic, pathways need to be strengthened for people to expand their opportunities and build their resilience more sustainably. More opportunities are needed for integration and inclusion of refugees in national systems and economies.

As more systemic approaches start to be applied in situations of fragility and displacement, climate action needs to be fully integrated. As has been witnessed in this study, MSD approaches are well suited to respond to climate change and are also starting to shift. Locally-led, adaptive, flexible approaches are needed for successful adaptation — climate resilience can only be understood in relation to the context in which it is experienced. With business, including MSMEs, recognised as critical adaptation actors, and already starting to respond to both the threats and opportunities posed by climate change, MSD is well positioned to help them innovate, adapt and unlock opportunities. Refugee markets, however, have key differences that need to be understood and MSD approaches need to understand these differences to be successful in a displacement context — the business model that works in the host community may not always be the right one for refugees. Business models need to adapt if they are to effectively serve the needs of the refugee market and embed themselves in these markets.

Many MSD programmes have genuine claims to be supporting adaptation, but this is not always done intentionally — they are not yet fully climate purposed. Common approaches such as increasing access to finance; improving services such as veterinary and agricultural extension services; creating market linkages; and strengthening networks and relationships build adaptive capacity and resilience. But without the intentional use of climate science, and fully integrating climate risk analysis into decision-making processes there is a risk of missed opportunities alongside the risk of maladaptation.

Perhaps not always using the language of climate adaptation, there are already many well-known solutions available. Yet many more are needed, both in terms of innovation to develop new solutions but also in terms of making climate solutions more accessible, affordable and available in local markets, including in refugee markets. MSD can support business to respond to this agenda — using subsidies to develop, test and expand new business models that respond to the needs of refugees; creating incentives for companies to continue to invest in these markets; and by continuing to work with their clients to progressively increase their incomes while making investments in climate solutions increasingly good value. But for these approaches to deliver on the adaptation and resilience agenda, a more intentional approach is needed, built on clear leadership, using climate science, integrating climate risk analysis into decision making processes, and developing and using practical decision-making tools such as ten-year test.

No one intervention or approach can do this — adaptation needs are broad and both public and private action is needed. This includes greater finance for adaptation, and finance that reaches last mile businesses allowing them to invest in adaptation. Pathways need to be found to extend these financing and adaptation opportunities to refugee markets.

Donors also need to change. To further support climate action through MSD approaches leadership is needed. Donors need to look at longer-term targets and goals that support innovation, adaptation and build lasting resilience — short-term targets and goals will not achieve this.

Finally, a story from Uganda tells of a government agriculture extension worker who offered his advice to his farmer clients, based on what he had studied in agricultural college 15 years ago. Unfortunately, this advice no longer fitted current climatic conditions and harvests were not good that year. The extension worker was chased out of town, never to return. We need to change — don't be the extension worker.

References

- ALNAP-EXplain (2023). *The Climate Crisis and Humanitarian Action: current approaches and discourse*. <https://alnap.org/documents/20778/ALNAP-EXplain-EssentialBriefings-LongRead-Climate.pdf>
- Barrett S., Chaitanya R., (2023). *Getting private finance in adaptation to work: Effective adaptation, value, and cash flows*. Global Environmental Change 83. https://www.researchgate.net/publication/376119186_Getting_private_investment_in_adaptation_to_work_Effective_adaptation_value_and_cash_flows
- Bear, M., Joicey, P., Brady, A. (2025). 'Going Beyond the Last Mile: Adaptation to Increase Refugee Adoption'. DAI. <https://beamexchange.org/resources/2122/>
- Biagini, B, Bierbaum, R, Stults, M, Dobardzic, S. *A typology of adaptation actions: A global look at climate adaptation actions financed through the Global Environment Facility*. Global Environmental Change 25 (2014) 97-108. <https://www.sciencedirect.com/science/article/pii/S0959378014000065>
- Bird, J., 2024. *Market systems development for a just transition*. ILO: Geneva. <https://www.ilo.org/sites/default/files/2024-06/MSD%20and%20JT%20-%20v1.1.pdf>
- Buckley, A. (2025). Climate action through market systems: why businesses need a systems development approach.
- CARE Iraq (2024). *Disrupted Lives. Climate Crisis and Internal Displacement. A Study of Somel District, Iraq*. <https://www.care.de/media/websitedateien/care-allgemeines/publikationen/studien-reports/care-iraq-disrupted-lives.pdf>
- Carter, R., Choularton, R., Ferdinand, T., Ding, H., Ginoya, N., and Preethan, P. (2021). *Food Systems at Risk. Transformative Adaptation for Long Term Food Security*. World Resources Institute. Washington DC: WRI. <https://www.wri.org/research/food-systems-risk>
- Costella, C., Clat, T., Donoghue, M., and Giron, L. (2023). *Pathways to Climate Resilient Economic Inclusion*. World Bank. https://www.researchgate.net/publication/375032288_Pathways_to_Climate-Resilient_Economic_Inclusion_A_Framework_for_Integrating_Climate_Action_in_Economic_Inclusion_Programs
- Cowan Gore, I., (2020). *Market Systems Development and the Environment: A Strategic and Operational Guidance Note*. ILO: Geneva. <https://www.ilo.org/sites/default/files/2024-07/MSD%20and%20Environment%20SCI.pdf>
- Craparo, A.C.W., Minoarivelo, O. H., Basel, A.M., Nguyen, K.T. Dao., H., Birner, J., Yonetani, M., Antinoja, E., Sanchez Torres, D.G., Brown, O.D., Pacillo., G., Harper, A., Laderach, P. 'Compound Risk Framework and Crisis Assessment'. CGIAR. Cited in <https://www.unhcr.org/publications/no-escape-frontlines-climate-change-conflict-and-forced-displacement>
- DAI (2021). *Refugee Business in Ethiopia*. SHARPE. <https://www.dai.com/uploads/Refugee%20Businesses%20in%20Ethiopia%20Report.pdf>
- Danish Refugee Council. *Northern Uganda Resilience Initiative – NURI. Development Work in Refugee Hosting Areas. Lessons in Operation and Implementation*.
- FAO. 2023. *Developing sustainable and resilient agrifood value chains in conflict-prone and conflict-affected contexts. Practitioner guidelines for selection, analysis and design*. Cairo. <https://doi.org/10.4060/cc6662en>
- FAO. 2023. *Project brief: Greening the humanitarian response in displacement settings – Ecosystem restoration and sustainable forest management for enhanced energy access and livelihood resilience*. Rome. <https://doi.org/10.4060/cc5353en>
- Fayolle, V., Fouvet, C., Soundarajan, V., Nath, V., Acharya, S., Gupta, N., Petrarulo, I. (2019). 'Engaging the private sector in financing adaptation to climate change'. Learning from Practice. Action on Climate Today Learning Paper 1-36. https://www.opml.co.uk/sites/default/files/migrated_bolt_files/engaging-private-sector-learning-paper.pdf
- FCDO (2023). *Number of People Supported to Better Adapt to The Effects of Climate Change as a result of International Climate Finance*. ICF KPI 1 Methodology Note. https://assets.publishing.service.gov.uk/media/63fe279d8fa8f527f4f54b03/international-climate-finance-KPI_1_Methodology_Note_People_supported_to_adapt_to_the_effects_of_climate_change.pdf
- FCDO (2024). *Number of people whose resilience has been improved as a result of International Climate Finance*. ICF KPI 4 Methodology Note. <https://assets.publishing.service.gov.uk/media/65e0b94f3f6945001d03602e/KPI-4-number-people-resilience-improved1.pdf>
- García Parra, C (2023). *Greening the MSD approach in agricultural programmes*. The Canopy Lab, commissioned by DCED, accessed from www.beamexchange.org
- GIZ. *Climate Risk Profile: Uganda*.
- Global Center on Adaptation. 2023. *State and Trends in Adaptation Report 2023*. Rotterdam.
- Henderson, C., Greene, S., Nanduddu, S., and Barrett, S. (2024). Boosting community adaptation with a thriving private sector - Practical Action.
- Hilton, T., Panton, A., and Stewart, A. (2025) *Green Market Systems Development guidelines v1.0*. <https://www.itad.com/knowledge-product/evidence-review-for-the-inclusive-resilience-in-somalia-iris-activity-final-report/>

- ILO (2020) *Market Systems Development and a Just Transition: Learnings from an ILO experience in Tanzania*. Market Systems Development and a just transition.
- ILO (2023). *The humanitarian development nexus in action: A review and mapping of market-led approaches in forced displacement contexts*. Geneva. <https://www.ilo.org/publications/humanitarian-development-nexus-action-review-and-mapping-market-led>
- ILO Systems Change Initiative (2025). *What is not green about market systems development. Three considerations for your journey towards greener MSD*. Geneva What is not green about MSD - ILO Systems Change Initiative.pdf
- International Committee of the Red Cross and ODI (2024). *Strengthening resilience and climate adaptation in conflict and fragile settings: towards effective action*. Report. London.
- IPCC (2022). *Climate Change 2022: Impacts, Adaptation, and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press. Cambridge University Press, Cambridge, UK and New York, NY, USA, 3056 pp., doi:10.1017/9781009325844.
- IPCC, 2022: Summary for Policymakers [H.-O. Pörtner, D.C. Roberts, E.S. Poloczanska, K. Mintenbeck, M. Tignor, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem (eds.)]. In: *Climate Change 2022: Impacts, Adaptation, and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 3-33, doi:10.1017/9781009325844.001.
- ISO14090 *Adaptation to Climate Change*. International Standards Organization, 2024.
- Knox Clarke, P. (2021). *Climate change and humanitarian action*. Oxford: ADAPT Initiative. https://adaptinitiative.org/wp-content/uploads/2021/11/ADAPT-Climate-Change-Humanitarian-Action-2021_with_links.pdf
- LIFE-AR (2024). How to channel climate funds to the local level: choosing the right delivery mechanism. https://www.life-ar.org/documents/10/LIFE-AR-Delivery_mechanisms-online.pdf
- Mahmud, S., Covey, J. and Hébert, R. (2024) *Adapting Agriculture Programmes to Address Climate Change: A Case Study from the CASA Programme*. CASA. <https://casaprogramme.com/wp-content/uploads/2024/05/CASA-Climate-Paper-v2.pdf>
- Market Systems Resilience: State of the Field Map*. Feed the Future, USAID, 2024. <https://beamexchange.org/resources/1569/>
- Meijer, K. and Ahmad, A, S. (2024). *Unveiling Challenges and Gaps in Climate Finance in Conflict Areas*. SIPRI Insights on Peace and Security, No. 2024/03. <https://www.sipri.org/publications/2024/sipri-insights-peace-and-security/unveiling-challenges-and-gaps-climate-finance-conflict-areas>
- Mercy Corps (2025). *Bridging the Fragility Gap. Climate Action in Fragile and Conflict-Affected Settings*. <https://www.mercycorps.org/sites/default/files/2025-05/bridging-the-fragility-gap.pdf>
- Mercy Corps and Save the Children (2023). *Climate information services in Ethiopia – a key resilience capacity for households and businesses*. Learning Brief #5. Resilience in Pastoral Areas-North (RIPA-North). <https://www.mercycorps.org/sites/default/files/2024-02/ripa-north-learning-brief-5-climate-information-services-in-ethiopia-a-key-resilience-capacity-for-households-and-businesses-dec-2023.pdf>
- Mitchell, T. (2025). Finance for climate adaptation in the most vulnerable places... Time for a major rethink? | International Institute for Environment and Development.
- Najjingo, D., (2024). *A Market Systems Approach to Climate-Smart Agriculture in Uganda* · DAI Publications.
- ODI. (2020). *Anticipatory action for livelihood protection*. https://cdn.odi.org/media/documents/202006_odi_anticipatory_action_for_livelihood_protection_wp_final.pdf
- Office of the Prime Minister and UNHCR. *Uganda – Overview of Refugees and Asylum Seekers, June 2025*.
- Opitz-Stapleton, S., Gulati, M., Laville, C., Vazquez, M., and Tanner, T. (2023). *Building forward better: A pathway to climate-resilient development in fragile and conflict-affected situations*. ODI Framing note. London: ODI. <https://odi.org/en/publications/building-forward-better>
- Perry, J (2024). *Localising Climate Adaptation Planning in Kenya's Refugee Hosting Counties*. Refugees International. <https://www.refugeesinternational.org/reports-briefs/localizing-climate-adaptation-planning-in-kenyas-refugee-hosting-counties/>
- PIND Foundation (2023). *Training Manual on Climate Smart Poultry Practices* — PIND Foundation.
- Practical Action (2024). *Boosting community adaptation with a thriving private sector* - Practical Action.
- Red Cross Red Crescent Climate Centre (2025). *Mapping exposure to climate-related hazards of refugees and IDPs* – Red Cross Red Crescent Climate Centre.
- Refugee Self-Reliance Initiative (2024). *'Climate Risks and Displaced People. Considerations for Self-Reliance Programming'*. <https://www.refugeeselfreliance.org/resource-database1/climate-risks-and-displaced-people-considerations-for-self-reliance-programming>
- Refugee Self-Reliance Initiative (2024). *Can Market Systems Approaches Catalyze Self-Reliance for Forcibly Displaced and Host Populations? Key Considerations and Strategies* — Refugee Self-Reliance Initiative.

- Reid, E et al (2024). *Migration as Climate Adaptation. Facilitating Mobility to Strengthen Resilience*. Mercy Corps Climate (2024). <https://www.mercycorps.org/sites/default/files/2024-11/mc-climate-possible-paper-migration.pdf>
- Sandwell, P., Täuber, M., Gebremariam, A, T., Elif Gül Demir, E, G., and Ben-Hur, A. (2024). *A Roadmap for Energy Access in Displacement Settings: Ethiopia*. UNITAR. Geneva, Switzerland. https://www.humanitarianenergy.org/assets/resources/A_Roadmap_for_Energy_Access_in_Displacement_Settings_Ethiopia_Report_2024.pdf
- Sen-Bekkers, N, Brady A and Bekkers H. (2025). *Understanding Refugee Resilience and Inclusion in Markets*. DAI. <https://beamexchange.org/resources/2141/>
- Silva Villanueva, P., et al. *Routes to Resilience. Insights from BRACED final year. Synthesis Paper*. BRACED 2018. <http://www.braced.org/resources/i/routes-to-resilience-insights-from-BRACED-final-year>
- Singh, R.; Mekuria, W.; Dessalegn, M.; Melaku, D.; Adam-Bradford, A.; Ruckstuhl, S. 2024. *Water security and climate resilience in the Somali Region, Ethiopia: an assessment of the vulnerabilities of refugee and host communities*. Colombo, Sri Lanka: International Water Management Institute (IWMI). CGIAR Initiative on Fragility, Conflict, and Migration. https://www.researchgate.net/profile/Dagmawi-Abegaz/publication/384225423_Water_security_and_climate_resilience_in_the_Somali_RegionEthiopia_An_assessment_of_the_vulnerabilities_of_refugee_and_host_communities_CGIAR_Initiative_on_Fragility_Conflict_and_Migration/links/66ee99b0750edb3bea65e744/Water-security-and-climate-resilience-in-the-Somali-Region-Ethiopia-An-assessment-of-the-vulnerabilities-of-refugee-and-host-communities-CGIAR-Initiative-on-Fragility-Conflict-and-Migration.pdf
- Smit et al (2000). *An anatomy of adaptation in climate change and variability*. Climate Change 45, 223-251. https://www.researchgate.net/publication/270589024_An_Anatomy_of_Adaptation_to_Climate_Change_and_Variability
- Smit, B., and Wandel, J. (2006). *Adaptation, adaptive capacity and vulnerability*. Global Environmental Change 16 (2006) 282-292. <https://www.sciencedirect.com/science/article/abs/pii/S0959378006000410>
- SPARC (2024) *Pastoralism and agriculture in conflicts and crises: a review of three years of SPARC research*. London, UK: SPARC. www.sparc-knowledge.org/publications-resources/pastoralism-and-agriculture-in-conflicts-and-crises-review
- Springfield Centre (2025). *Does MSD have a role to play in addressing climate change?* <https://www.springfieldcentre.com/does-msd-have-a-role-to-play-in-addressing-climate-change/>
- Tana Copenhagen (2023). *Feasibility Study. Climate Resilience for Refugee Affected Areas and Regions in Uganda*. <https://tanacopenhagen.com/feasibility-study-on-climate-resilience-for-refugee-affected-areas-and-regions-in-uganda/>
- Tholstrup, S. and Vazquez, M. (2024) *Humanitarian action on climate and conflict: narratives, challenges and opportunities*. ODI Report. London: ODI (<https://odi.org/en/publications/humanitarian-narratives-climate-change>).
- Trabacchi, C., Koh, J., Shi, S., Guelig, T. (2020). *Adaptation Solutions Taxonomy*. Adaptation SME Accelerator Project, ASAP. <https://publications.iadb.org/en/adaptation-solutions-taxonomy>
- U-Learn (2025). *'Application of Climate Smart Agricultural Approaches in Uganda's Refugee Response'*. <https://ulearn-uganda.org/application-of-climate-smart-agriculture-approaches-in-ugandas-refugee-response/>
- U-Learn (2025). *Market Systems Development in the Uganda Refugee Response*. https://ulearn-uganda.org/wp-content/uploads/2025/03/MSD-Compendium_Final_Web.pdf
- UNEP Finance Initiative (2019). *Annual Overview*. UNEP-FI-Annual-Overview-2019-.pdf
- UNHCR (2024). *Focus Area Strategic Plan for Climate Action 2024-2030*. United Nations High Commissioner for Refugees. <https://www.unhcr.org/media/focus-area-strategic-plan-climate-action-2024-2030>
- UNHCR (2024). *No escape: On the frontlines of climate change, conflict and forced displacement*. United Nations High Commissioner for Refugees. <https://www.unhcr.org/publications/no-escape-frontlines-climate-change-conflict-and-forced-displacement>
- UNHCR. *Climate Action Plan for the East and Horn of Africa and the Great Lakes Region, 2023-2028*. United Nations High Commissioner for Refugees. <https://data.unhcr.org/fr/documents/details/104399>
- United Nations Environment Programme (2023). *Adaptation Gap Report 2023: Underfinanced. Underprepared. Inadequate investment and planning on climate adaptation leaves world exposed*. Nairobi. <https://www.unep.org/resources/adaptation-gap-report-2023>
- Van den Hoek, J., Tuholske, C., and Zimmer, A (2024). *'Documenting Rapid Increases in Hazardous Heat Exposure Among Refugee Populations Worldwide'*. Cited in <https://www.unhcr.org/publications/no-escape-frontlines-climate-change-conflict-and-forced-displacement>
- Warner, K. (2024). *'Building Resilience and Enabling Adaptation to Climate Change. An Assessment of SHARPE'*. DAI. <https://beamexchange.org/resources/2121/>

► Annex 1: Glossary

Adaptation limits: the point at which an actor's objectives (or system needs) cannot be secured from intolerable risks through adaptive actions. *Hard adaptation limit*— no adaptive actions are possible to avoid intolerable risks. *Soft adaptation limit*—options may exist but are currently not available to avoid intolerable risks through adaptive action.

Adaptation: is defined, in human systems, as the process of adjustment to actual or expected climate and its effects in order to moderate harm or take advantage of beneficial opportunities. In natural systems, adaptation is the process of adjustment to actual climate and its effects; human intervention may facilitate this.

Adaptation gap: the difference between actually implemented adaptation and a societally set goal, determined largely by preferences related to tolerated climate change impacts and reflecting resource limitations and competing priorities.

Adaptive capacity: the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities or to respond to consequences.

Climate: often defined as the weather averaged over time (typically 30 years).

Climate action: refers to a range of activities, mechanisms, and policy instruments that aim to reduce the severity of climate change and its impacts.

Climate change: change in climate over time, whether due to natural variability or as a result of human activity. The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as *'a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.'*

Climate change impacts: The effects of climate change (e.g. increasing temperatures and change in seasonal patterns) and extremes (e.g. heat waves, heavy rainfall, severe storms) on human systems and the environment. The impacts of climate change include: physical impacts — floods, droughts and sea level rise; environmental — impacts on ecosystems such as loss of biodiversity, water scarcity, and land degradation; and impacts on human systems — socioeconomic effects (e.g. loss of life and livelihood, food insecurity), and infrastructure consequences.

Climate-resilient development: the process of implementing greenhouse gas mitigation and adaptation measures to support sustainable development for all. Climate-resilient development involves questions of equity and system transitions in land, ocean, and ecosystems; urban and infrastructure; energy; industry; and society and includes adaptations for human, ecosystem, and planetary health.

Climate risk: The potential for climate change to create adverse consequences for human or ecological systems. This includes impacts on lives, livelihoods, health and wellbeing, economic, social and cultural assets and investments, infrastructure, services provision, ecosystems and species

Ecosystem services: the benefits that people obtain from nature, including provisioning services (like food and water), regulating services (like climate and flood control), cultural services (like recreation and spiritual value), and supporting services (like soil formation and nutrient cycling).

Exposure: the presence of people; livelihoods; species or ecosystems; environmental functions, services and resources; infrastructure; or economic, social or cultural assets in places and settings that could be adversely affected.

Feasibility: the potential for an adaptation option to be implemented.

Green transition: A shift toward an economic model that is not based on fossil fuels and overconsumption of natural resources. The concept of green transition contains societal actions that seek to mitigate climate change (by reducing greenhouse gas emissions concentration) and adapt to it while acknowledging ecological and environmental degradation caused by other factors, such as overconsumption.

Hazard: the potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources.

Just transition: The term is originally rooted in the US labour movement in the 1970s, having now been reinterpreted within environmental and climate justice communities, and incorporated in the Paris Agreement. It refers to a set of principles, processes, and practices that aim to ensure that no people, places, sectors, countries, or regions are left behind in the transition from a high-carbon to a low-carbon economy. It stresses the need for targeted and proactive measures from governments, international organizations, and other authorities to minimize the negative impacts of economy-wide transitions while maximizing benefits for those disproportionately affected.

Maladaptation: actions that may lead to increased risk of adverse climate-related outcomes, including via increased greenhouse gas emissions, increased or shifted vulnerability to climate change, more inequitable outcomes, or diminished welfare, now or in the future. Most often, maladaptation is an unintended consequence.

Market systems development: An approach widely used in economic development since the early 2000s. Involves a facilitative, systemic approach to drive systemic change in complex market systems.

Mitigation: a human intervention to reduce the sources or enhance the sinks of greenhouse gases. Also, human interventions to reduce the sources of other substances which may contribute directly or indirectly to limiting climate change

Nature Based Solutions: actions that protect, conserve, restore, and sustainably manage natural ecosystems to address societal challenges while simultaneously benefiting people and nature, in part by creating new economic opportunities.

Resilience: the capacity of social, economic, and ecosystems to cope with hazardous events, trends, or disturbances, responding or reorganizing in ways that maintain their essential function, identity, and structure as well as biodiversity in the case of ecosystems while also maintaining the capacity for adaptation, learning, and transformation.

Risk: the potential for adverse consequences for human or ecological systems, recognising the diversity of values and objectives associated with such systems.

Supporting function: Services that actors in markets need in order to succeed e.g., finance, skills, technology, transport, utilities.

Systemic approach: Interventions that seek to bring about fundamental lasting changes to the way that market systems work by unlocking systemic constraints/root causes, thereby increasing the likelihood of sustainable results at scale.

Transformation: a change in the fundamental attributes of natural and human systems.

Vulnerability: the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes.

Weather: atmospheric conditions at a particular place and at a certain time in terms of temperature, precipitation, wind speed, humidity, atmospheric pressure, and cloudiness.

► Annex 2: Further reading – a selection of resources and technical guides

Private Sector Development, Market Systems Development and Green Growth

- Donor Committee for Enterprise Development (DCED) website has a number of technical guides and resources on green growth: Green Growth - DCED.
- BEAM Exchange is an excellent source of materials: <https://beamexchange.org/>
- Green PSD Navigator – Overview of Green Growth Approaches for Private Sector Development, Donor Committee on Enterprise Development (DCED), 2021.
- Maor, D., Gallagher, E. and Dugard, J. (2023). *Private Sector Engagement to Advance Climate Adaptation and Resilience: A Guide to Building Effective Partnerships*. USAID. https://beamexchange.org/media/filer_public/7a/e4/7ae4b6d1-30c6-462b-9b3a-d4692ed906c7/1893_pse-to-advancedclimateadaptationandresilience.pdf
- Mahmud, S., Covey, J. and Hébert, R. (2024) *Adapting Agriculture Programmes to Address Climate Change: A Case Study from the CASA Programme*. CASA. <https://casaprogramme.com/wp-content/uploads/2024/05/CASA-Climate-Paper-v2.pdf>
- 'Climate Adaptation Finance for Agriculture: Donor and Investor Guidance Document'. USAID Feed the Future, 2024. https://beamexchange.org/media/filer_public/b2/04/b2040e50-8946-46da-a652-58c5b9b40762/1997_msp_climate_adaptation_donor_and_investor_guidance.pdf
- 'Guideline - Assessing Climate Risks and Vulnerabilities in Market Systems'. Helvetas (2018). <https://www.helvetas.org/en/switzerland/what-we-do/our-topics/water-food-climate/climate-disaster-resilience/climate-change-expert/guideline-assessing-climate-risks>
- Hilton, T., Panton, A., and Stewart, A. (2025) *Green Market Systems Development guidelines v1.0*. <https://beamexchange.org/resources/2146/>
- García Parra, C (2023). *Greening the MSD approach in agricultural programmes*. The Canopy Lab, commissioned by DCED, accessed from www.beamexchange.org
- Bird, J., 2024. "Market systems development for a just transition: What does it really mean for donors and practitioners?". ILO: Geneva.

Climate Change and Humanitarian Action

- The Red Cross Climate Centre: <https://www.climatecentre.org/>
- Anticipation Hub. 'What is anticipatory action?'. Web page. <https://www.anticipation-hub.org/about/what-is-anticipatory-action>
- Tholstrup, S. and Vazquez, M. (2024) *Humanitarian action on climate and conflict: narratives, challenges and opportunities*. ODI Report. London: ODI. <https://odi.org/en/publications/humanitarian-narratives-climate-change>
- Framework for the Integration of Climate Risks into ICRC Operations: <https://www.icrc.org/en/publication/framework-integration-climate-risks-icrc-operations-version-10-2023-2025>,
- The Climate and Environment Charter for Humanitarian Organisations; <https://www.climate-charter.org/>
- The Environment and Humanitarian Action Network <https://ecentre.org/partners/the-eha-network/>
- The Nexus Environmental Assessment Tool (NEAT+) — Resources tool that ECHO requires to be implemented for shelter and WASH interventions.
- 'Compendium of Good Practices for a Greener Humanitarian Response', DG-ECHO, 2021. European Union.
- UN-OCHA Centre for Humanitarian Data. <https://centre.humdata.org/>
- The Roadmaps for Energy Access in Displacement Settings (READS) programme, with 10 comprehensive country reports.

Market Systems Development and Refugees

- ▶ Making Markets Work for the Poor (M4P) Operational Guide. <https://beamexchange.org/resources/167/>
- ▶ Bear, M., Joicey, P., Brady, A. (2025). *'Going Beyond the Last Mile: Adaptation to Increase Refugee Adoption'*. DAI.
- ▶ *'The humanitarian development nexus in action: A review and mapping of market-led approaches in forced displacement contexts'*. Geneva: International Labour Office, 2023.
- ▶ *'Designing and implementing market-led interventions in forced displacement settings'*. Geneva: International Labour Office, 2024.
- ▶ *'A Guide to market-based livelihoods for refugees'*. Geneva: International Labour Office, 2017.
- ▶ <https://www.refugeeselfreliance.org/resource-database1/can-market-systems-approaches-catalyze-self-reliance-for-forcibly-displaced-and-host-populations>
- ▶ <https://www.refugeeselfreliance.org/resource-database1/climate-risks-and-displaced-people-considerations-for-self-reliance-programming>
- ▶ Warner, K. (2024). *'Building Resilience and Enabling Adaptation to Climate Change. An Assessment of SHARPE'*. DAI.

► Annex 3: UK FCDO International Climate Finance (ICF) Indicators

The UK Foreign, Commonwealth and Development Office (FCDO) International Climate Finance (ICF) definitions give examples of how adaptation can be measured. ICF is Official Development Assistance (ODA) from the UK to support developing countries to reduce poverty and respond to the causes and impacts of climate change.

ICF Key Performance Indicator (KPI) 1: relates to climate change adaptation and counts the number of people supported to better adapt to the effects of climate change. KPI1 is an output indicator that counts the number of people whom ICF programmes have supported to prepare for and deal with the effects of climate change, including long-term changes in weather patterns and the increasing frequency and severity of extreme weather events. According to the methodology note,¹⁰⁵ adaptation activities give people resources, tools or skills to better cope with changing, unpredictable and extreme weather. A programme or component can count as climate change adaptation if its scope meets the IPCC definition, and its activities are expected to reduce people's vulnerability to the effects of climate change.

ICF Key Performance Indicator (KPI) 4 is an outcome indicator that counts the number of people with an improvement in climate resilience. KPI4 follows the IPCC definition of resilience, emphasising that climate resilience refers to protection from both climate shocks as well as more long-term changes in temperature and water. The methodology note¹⁰⁶ states that *'a person's resilience to climate shocks and changing weather patterns can only be understood in relation to their specific context, and against the specific climate threats that they face. Because climate resilience looks different in different parts of the world, it is not straightforward to measure in a standardised way'*. Climate resilience is multi-dimensional, therefore improving it in any context requires a focus on the stability of systems — individual interventions do not build resilience on their own; they require to be nested within a comprehensive strategy.

3A's Resilience Model: To assess climate resilience, FCDO KPI 4 uses the '3A's resilience model which conceptualises resilience across three different dimensions: adaptive capacity, anticipatory capacity and absorptive capacity. A programme needs to demonstrate improvements in at least two of the three dimensions to be considered as having built resilience.

- Adaptive Capacity is the ability of social systems to adapt to multiple, long-term and future climate change risks, and also to learn and adjust after a disaster. It is the capacity to take deliberate and planned decisions to achieve a desired state even when conditions have changed or are about to change. An example is farmers diversifying the crops they grow in order to reduce vulnerability to specific kinds of bad weather or pests.
- Anticipatory Capacity is the ability of social systems to anticipate and reduce the impact of climate variability and extremes through preparedness and planning. An example would be to cultivate mangroves and build sea walls to protect a coastal zone from storms and sea level rise.
- Absorptive Capacity is the ability of social systems to absorb and cope with the impacts of climate variability and extremes. It is concerned principally with functional persistence, that is, the ability of a system to bear, and endure the impacts of climate extremes. For example, the ability of communities to access and deploy tangible assets such as savings and intangible assets like social networks to help them survive intensive shocks and maintain wellbeing.

¹⁰⁵ FCDO (2023). Number of People Supported to Better Adapt to The Effects of Climate Change as a result of International Climate Finance. ICF KPI 1 Methodology Note, February 2023.

¹⁰⁶ FCDO (2023). Number of people whose resilience has been improved as a result of International Climate Finance. ICF KPI 4 Methodology Note, February 2024.



International
Labour
Organization

Made possible by support from the



Kingdom of the Netherlands