2025

BRIEF OVERVIEW OF THE RELATIONSHIP BETWEEN THE CLIMATE CRISIS AND NUTRITION IN EMERGENCIES

Global NUTRITION CLUSTER

What is the Global Nutrition Cluster Climate Crisis Working Group?

The Global Nutrition Cluster (GNC)—one of eight humanitarian clusters that bring together organizations working on humanitarian action—hosts the Climate Crisis Working Group which focuses primarily on climate, weather shocks, and seasonality and their impact on nutrition outcomes and their underlying causes. The Working Group provides an essential platform for exchanging ideas, generating learning, and defining climate approaches for addressing nutrition in emergencies.

This brief builds on the GNC NiE and Climate Crisis Scoping paper (2024) and the expertise of the Working Group members including Jessica Fanzo, Domitille Kauffmann and Angeline Grant.

Why this brief and why now?

The climate crisis is one of the most significant challenges the world is facing, posing an existential threat to our planet and ways of life. This global phenomenon is characterized by long-term changes in temperature and weather patterns, primarily driven by human activities such as burning fossil fuels and deforestation. The consequences of the climate crisis are far-reaching and severe, impacting every aspect of human existence.

At the same time, the climate crisis is exacerbating all forms of malnutrition across the life cycle and in all regions. This deterioration in nutrition is particularly severe in emergency contexts, where populations are already vulnerable. The increased frequency and intensity of climate-related near-term events such as droughts, floods, and other extreme weather events and disasters are increasing the prevalence and severity of malnutrition, putting additional strain on humanitarian resources and response systems.

Extreme weather and climate events and their impacts can occur in complex combinations, an interaction shaped by physical drivers and societal forces. Often termed compounded events, they comprise multiple events, risks, and hazards that can be temporally and spatially concurring. They can also be non-linear, interacting, and cascading, influencing many forms of vulnerability, adaptation, and potential migration. In turn, humanitarian responses to extreme weather events and nutrition emergencies are becoming more complex—making traditional response timing less effective. This context poses new risks (for example, dangerous heatwaves forcing populations to migrate), spurring the need to adapt existing nutrition emergency approaches and to develop new strategies.

What is the Climate Crisis?

Throughout the past hundred years, the global rise in greenhouse gas (GHG) emissions can be primarily attributed to human activities. These activities include increased consumption of energy for electricity and heat production; industry use for facilities and chemical processes; agriculture, forestry, and land use change; transportation; and buildings.

The primary forms of GHG are carbon dioxide, methane, and nitrous oxide. Carbon dioxide (CO_2) accumulates, whereas methane and nitrous oxide, while potent and highly damaging, are short-lived gasses. Put simply, these greenhouse gasses warm up the planet. Atmospheric concentrations of these heat-trapping gasses have caused the planet's average surface temperature to increase 1.1°C since the late 1800s and expedited changes in earth systems, including ocean and biosphere alterations. The World Meteorological Organization has reported that 2024 was the hottest on record, with the global temperature crossing the threshold of 1.5C above the pre-industrial baseline.

The increases in GHG emissions (GHGe), starting in 1750 with the industrial revolution in Britain, have accumulated in the atmosphere and the permafrost. This accumulation and concentration of GHGe have spillover and knock-on effects, causing massive declines in biodiversity, accelerated coral reef bleaching and ocean acidification, and increased environmental pollution. Some of these systems—coral reefs, thawing of the permafrost, collapse, and breakups of Greenland and Antarctic ice masses, and loss of rainforests—are reaching tipping points, which could signal a point of no return and put humanity down a perilous path.

Human-induced climate change also alters weather patterns and increases the risk of extreme weather events, causing widespread adverse impacts, losses, and damages to human society and nature. Climate change, in turn, influences extreme weather events' frequency, intensity, and patterns. While climate variability and extreme weather events have been a historical constant and more extreme in some places than others, the unpredictability, frequency, and severity of these events have significantly increased. Rising sea levels, droughts, heat extremes, heavy precipitation, and flooding impact communities across wide-ranging geographies around the world. Climate change also increases the likelihood of *compound* extreme events, where multiple hazards occur simultaneously or in close succession, amplifying their impacts.

Because of the accelerating and intensifying threats posed by climate change and the urgency for action, the term “climate crisis” has been used to stress the severe and potentially catastrophic nature of climate change that could irreversibly damage ecosystems and human societies. If we remain on a high emission, “business-as-usual” trajectory, climate extremes and long-term climate change impacts, such as irreversible changes to crucial earth systems, will result in devastating outcomes for humans and the planet. While the scenario is not optimistic, the United Nations Framework Convention on Climate Change, also known as the Paris Agreement, signed by all countries in 2015, aims to keep global temperatures below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C by the end of the century. Despite global efforts for mitigation, current trends indicate that the world is falling short of meeting the Paris Agreement's goals, making it much harder for many populations worldwide to adapt (**see Box 1**).

Box 1: What is the difference between mitigation and adaptation?

Mitigation involves reducing or preventing the release of greenhouse gases into the atmosphere to lessen the impact of climate change. Mitigation efforts can include slowing or stopping the increase in fossil fuel emissions and using nature-based solutions.

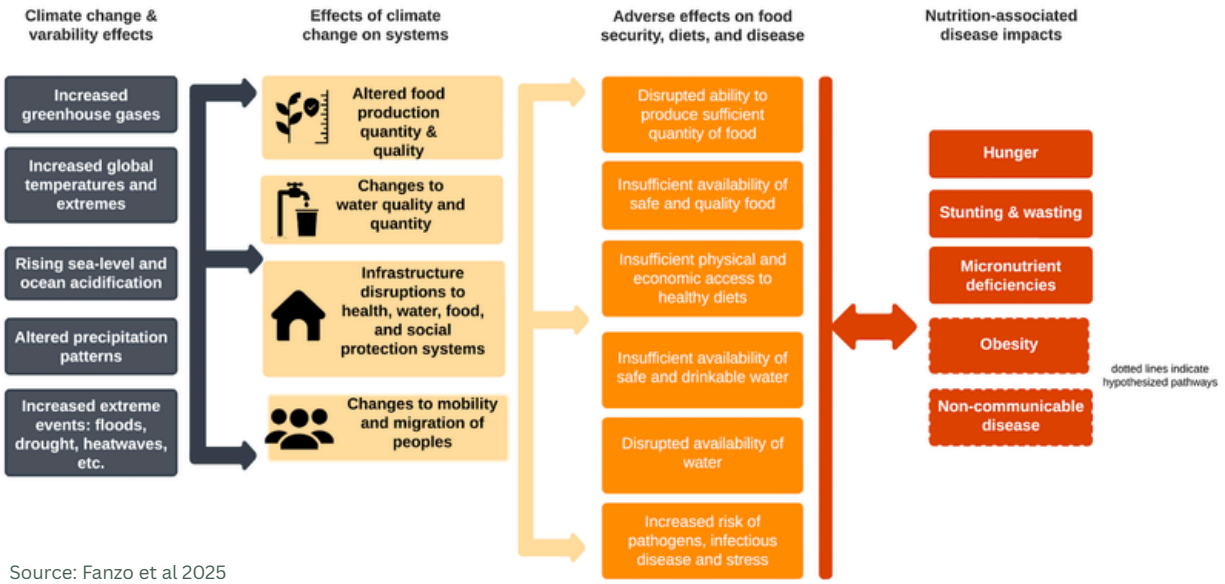
Adaptation involves adjusting to the current and future effects of climate change. Adaptation can include preparing for, minimizing, or taking advantage of the effects of climate change.

What is the bi-directional relationship between climate crisis and nutrition?

Nutrition and climate change are inextricably and bi-directionally linked through complex, multiple pathways. More specifically, long-term climate change and near-term extreme weather events negatively affect food security, diets, and nutrition via complex, multi-directional pathways through food, health, water, and social protection systems (**Figure 1**). Evidence is increasingly suggesting that the climate crisis exacerbates all forms of malnutrition across the life cycle and all regions of the world, impacting the underlying determinants of malnutrition. Climate-related events like extreme weather and resulting hazards such as droughts, floods, heat, and less predictable seasonal shifts, increase malnutrition's prevalence and severity in emergencies.

Climate change affects the fundamental factors that contribute to optimal nutrition, such as food security, access to clean water, and health services. For instance, severe, prolonged droughts may reduce crop yields, leading to food shortages, while floods can contaminate water sources, increasing the risk of waterborne diseases that contribute to malnutrition. In context where WASH conditions are already sub-optimal, cholera outbreaks often occur within 2-3 weeks after water sources dry up. In the context of rapid-onset hazards, damage or contamination of water and sanitation systems can trigger waterborne, as well as vector-borne diseases, leading to public health emergencies.

Figure 1: Effects of climate change and extreme weather events on various systems that influence nutrition outcomes



Source: Fanzo et al 2025

Climate change disrupts care practices essential for child nutrition. Women's labor allocation is often diverted from childcare due to increased time spent securing food, water, and fuel. This shift in caregiving responsibilities can lead to decreased diet diversity in children and increased malnutrition rates. Furthermore, extreme weather events can limit access to health services, particularly for those in remote areas, further compromising care practices. The nutrition of pregnant and breastfeeding women is especially critical, as inadequate nutrition during these periods can result in adverse health outcomes for offspring. Supporting breastfeeding during climate-related emergencies is key to protecting infant nutrition.

Reversely, undernutrition negatively impacts vulnerable populations' health and coping mechanisms, lessening their resilience and capacity to mitigate climate change and adapt to the consequences of climate change (**see Box 2**). Vulnerable populations include women and children and poorer, rural households, particularly those living in fragile and conflict-affected states. The climate crisis disproportionately affects the vulnerable populations and communities that contribute the least to climate change, both historically and today. On a per capita basis, many wealthy, industrialized nations have disproportionately contributed to the climate crisis due to their long history of fossil fuel use and industrial development, yet only represent about 12% of the world population. This inequity is particularly relevant in emergencies, where pre-existing vulnerabilities are often exacerbated.

Box 2: Who is vulnerable?

Focusing on women's and children's nutrition in emergencies is crucial due to their heightened vulnerability and the long-term consequences of malnutrition. Climate-induced food insecurity and famines disproportionately affect women and children, preventing them from meeting their nutritional needs and accessing primary health care. This impact is exacerbated by existing gender inequalities and additional caregiving responsibilities placed on women during crises.

In addition, a large body of work has emerged on the environmental impact of various diets on climate change. Current food systems generate one third of greenhouse gas emissions. Global food production, particularly the large-scale rearing of livestock, threatens climate stability and ecosystem resilience.

The climate crisis leads to more frequent and severe weather events, increasing the likelihood and severity of nutrition emergencies. This puts additional strain on humanitarian response systems and resources to address nutrition, particularly nutrition in emergencies (NIE). For example, alterations in the predictable patterns of seasonality may require adaptations to existing nutrition approaches and the development of new strategies to address emerging nutrition challenges in emergency contexts. Understanding these specific interactions is crucial for developing effective strategies to address NIE in the context of the ongoing climate crisis.

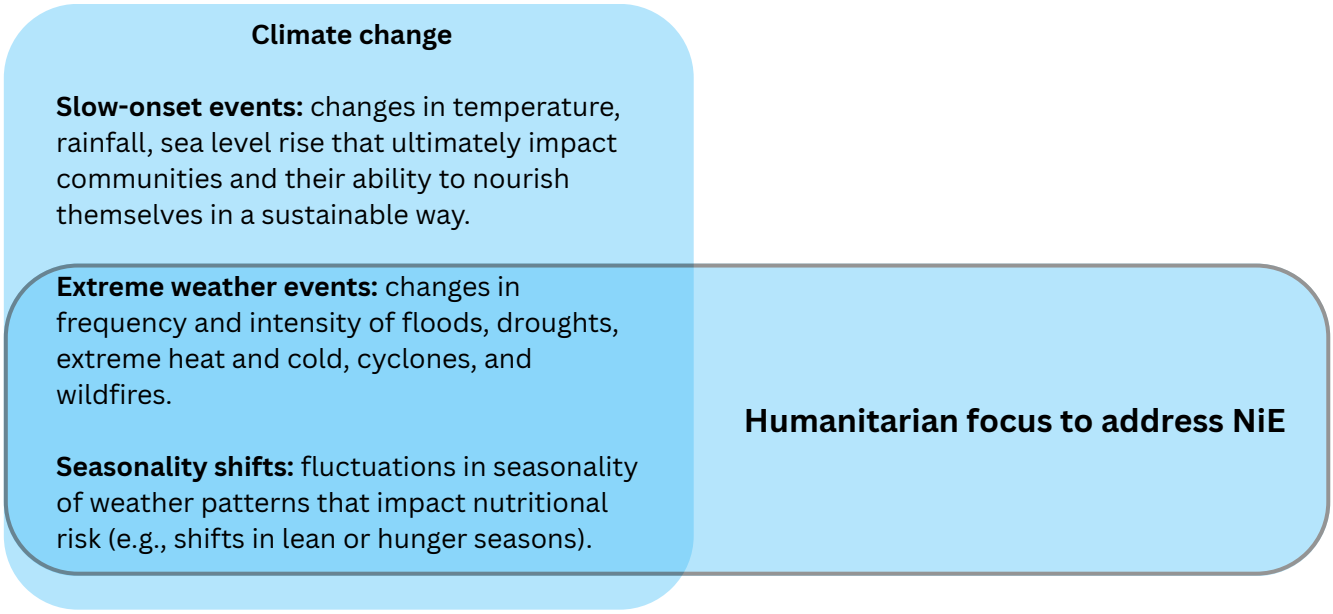
Long-term climate change projections suggest that scenarios that de-emphasize mitigation and continue generating GHG will worsen food security and nutrition outcomes for many populations worldwide. At the same time, near-term climate-related extreme weather events will adversely affect undernutrition, particularly wasting. There is a growing body of literature that correlates consistent hotter days and heat waves with poor birth outcomes, stunting and wasting. However research to better understand the impacts of climate on nutrition outcomes needs to be accelerated. There is a need for more sophisticated data, methods, and analysis to monitor and track climate change's causal impacts on nutrition outcomes of individuals over longer time scales, who are consistently exposed to extreme, prolonged events. There are also significant gaps in how compound and cascading episodes of climate-related extreme events and other shocks (including non-climate drivers such as conflict) will impact nutrition.

Further, our understanding of these bidirectional relationships, particularly in humanitarian emergencies, is still limited. Measuring climate-attributable malnutrition impacts, especially among the most vulnerable populations, remains challenging. More research is needed to fully comprehend how the climate crisis and NiE interact and how these pathways influence each other and intersect with other hazards. This knowledge gap extends to effective adaptation and mitigation strategies for nutrition and climate issues at a program level. There is also a lack of understanding of how NIE programming and coordination actions can address the climate crisis, highlighting the need for more comprehensive and targeted research in this area.

Why is the issue so pressing for the humanitarian community?

For decades, the humanitarian nutrition community has voiced concerns about the impact of climate change on nutrition in humanitarian contexts. Additionally, the humanitarian nutrition community has extensive experience preparing for, and responding to, extreme weather events and seasonal malnutrition drivers (**Figure 2)**.

Figure 2: The humanitarian community's focus in addressing NIE in the climate crisis



Source: Global Nutrition Cluster (2024) Nutrition in Emergencies and the Climate Crisis: Global Nutrition Cluster Scoping and Options Paper.

So, why is this issue more pressing for those working in NIE specifically?

- ***Exacerbation of malnutrition:*** The climate crisis is worsening all forms of malnutrition across the life cycle and in all regions, putting nutrition increasingly at risk. Climate-related events are increasing malnutrition's prevalence, complexity, and severity in emergency contexts.
- ***Complex interactions:*** The bi-directional relationship between nutrition and climate change creates a feedback loop that can worsen nutrition emergencies and climate impacts, necessitating a multisectoral approach from humanitarian agencies.
- ***Increased frequency and intensity of emergencies:*** The climate crisis leads to more frequent and severe weather events, increasing the likelihood and severity of nutrition emergencies. This puts additional strain on humanitarian response systems and resources.
- ***Impact on underlying determinants****:* The climate crisis affects the fundamental factors contributing to good nutrition, such as food security, access to clean water, and health services. This comprehensive impact complicates humanitarian responses.
- ***Disproportionate effects:*** The impacts of the climate crisis on nutrition are not equitably distributed. Vulnerable communities, who historically, and currently, contribute the least to climate change, are disproportionately affected. This inequity is particularly relevant in emergencies, where pre-existing vulnerabilities are often exacerbated.
- ***Limited time for action***: The window for countries to take climate action and support sustainable development is rapidly closing, adding urgency to the need for humanitarian agencies to address this issue. The time left for countries to take climate action and support sustainable development is quickly running out. Yet, with more severe, compounded events, humanitarian action must pivot and do things differently.

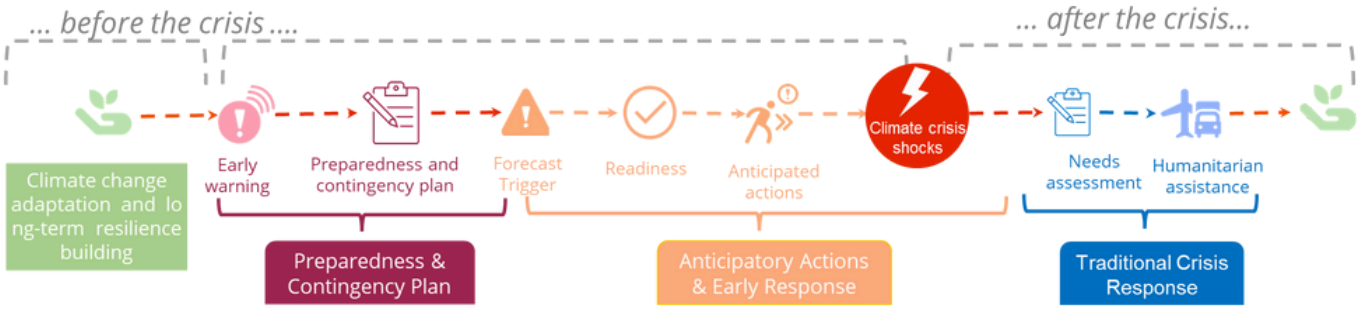
- ***New opportunities:*** There are emerging opportunities for action, funding, research, and progress tracking within global climate initiatives that humanitarian agencies can leverage to enhance their NIE responses.
- ***Funding challenges:*** Humanitarian funding is not keeping pace with increasing global needs, putting more pressure on available resources. This makes it crucial for agencies to adapt their strategies and use resources more efficiently. The key will be to use the funds effectively and to mobilize available resources and actors.

By recognizing these concerns, humanitarian agencies can better prepare for, and respond to, the evolving challenges posed by the climate crisis in nutrition emergencies, ultimately improving their ability to safeguard vulnerable populations.

What should be the priorities of the humanitarian community to address NIE with the climate crisis?

The climate crisis underscores the need to continue shifting from being just reactive to more of a forward-looking, agile humanitarian system. **Figure 3** shows how the humanitarian community can better respond to the climate crisis before, during, and after weather shocks and extreme events that result in an increased risk of hazards and disasters. With better preparation and the formulation of contingency plans, actions and early responses can be contextually anticipated, leading to more effective humanitarian action .

Figure 3: Forward-looking humanitarian response to NIE



Source: WFP, Presentation on Anticipatory Action and Nutrition, GNC Regional Event, Nairobi 2024

This forward-looking approach should consider several priorities that can better address NIE:

1. ***Improve evidence base and understanding:*** Work to better comprehend the complex bi-directional relationships between the climate crisis and NIE, including how these pathways interact with each other and other hazards.
2. ***Adopt a climate crisis lens in current approaches:*** Explicitly consider how the climate crisis is changing disaster and nutrition risk profiles and address these risks using existing tools and approaches to support continuity of nutrition services.
3. ***Build capacity for climate-informed analysis:*** Enhance abilities to articulate how the climate crisis exacerbates existing hazards and risks and incorporate climate predictions into nutrition analyses, scenario planning, and nutrition anticipatory action.
4. ***Strengthen foundational NIE capacity:*** This should be the basis for addressing the climate crisis, as it will enable better preparedness and response to nutrition emergencies exacerbated by climate impacts.
5. ***Promote multisectoral action:*** Recognize the complexity of the bi-directional climate change and nutrition relationship and work across sectors to address these interconnected challenges.
6. ***Develop climate-adapted NIE strategies:*** Address additional climate crisis-related risks and vulnerabilities that cannot be handled through current business-as-usual approaches. This may involve developing new coordination and programming approaches for threats like increased disease outbreaks, heatwaves, and population movements.
7. ***Mitigate adverse climate and environmental impacts:*** Change NIE programming to reduce the nutrition cluster/sector's contributions to climate change and ecological degradation and pollution.
8. ***Prioritize climate and environmental justice:*** Inform NIE work in the context of the climate crisis with a focus on addressing the disproportionate impacts on vulnerable communities.
9. ***Enhance localization efforts:*** Foster broad-based engagement in shaping NIE and climate crisis work, recognizing the importance of decentralized and local inputs in crafting effective action.
10. ***Advocate for longer-term funding:*** Address the challenge of short-duration humanitarian financing, which is not suited to the length and type of interventions required to address the impacts of the climate crisis.

These priorities aim to enhance the humanitarian community's ability to address NIE in the context of the evolving climate crisis while also considering issues of equity, localization, and environmental impact.

How can you get involved?

- Visit the GNC Climate Crisis Working Group webpage Climate Crisis Working Group | Global Nutrition Cluster for more information and resources
- Learn more about the GNC's approach to the climate crisis by reading the GNC Scoping and Options Paper on NiE and Climate Crisis
- Get familiar with your agency's climate crisis-related capacities and commitments
- Connect with the working group co-leads and explore collaboration opportunities (GNC Climate Crisis Working Group co-chairs: Domitille Kauffman (domitille.kauffmann@wfp.org) and Blanche Mattern (blanche.mattern@croix-rouge.fr)

Further reading

- The ENN Nutrition and climate: Current state of play: Scoping Review describes food, care, and health system pathways
- The ENN Exploring new, evolving and neglected topics at the intersection of food systems, climate change and nutrition: a literature review describes food systems in conflict settings.
- Global Nutrition Cluster (2024) Nutrition in Emergencies and the Climate Crisis: Global Nutrition Cluster Scoping and Options Paper
- The FAO/Initiative on Climate Action and Nutrition Climate Action and Nutrition Pathways to Impact describes agrifood, WASH, social protection and health system pathways, with gender mainstreamed across systems
- The International Medical Corps Evidence Report: Impact of Climate Change describes health, nutrition, water and sanitation, and food security pathways
- The IASC Climate Crisis Roadmap (2024)
- Fanzo et al (2025) Climate change, extreme weather events, food security, and nutrition: Evolving relationships and critical challenges. Annual Review of Nutrition. In press
- United Nations Children's Fund (2025). Child Nutrition and the Climate Crisis. UNICEF Framework for Action

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