

# Understanding CLIMATE CHANGE *and* HUNGER

## HUNGER NOTES BASICS

CANVA

World Hunger Education Service

July 2024

### Introduction

Climate change is not just a distant threat; it is a present reality that fuels global hunger.

This climate crisis is sweeping across the globe, disproportionately affecting the most vulnerable people, damaging food systems, displacing entire nations, multiplying hunger drivers, and depleting resources vital to survival.

We have the knowledge, tools, and potential to mitigate the worst impacts of climate change. However, unless the global community reduces behaviors that cause rising temperatures and scales up adaptive strategies—especially in the most vulnerable countries—climate change will continue to make the world more dangerous, increasing extreme hunger and threatening lives.

### Abdullahi's Story

For some, the battle for survival has already been lost.

Humanitarian Tjada D'Oyen McKenna drew attention to the cruelest consequence of climate change in a 2023 BoF presentation: the death of a child.<sup>1</sup>

McKenna, the CEO of Mercy Corps, was visiting a refugee camp on the outskirts of Baidoa in Somalia when she met a grandmother who had walked 14 days with her family in search of food and water. The family was escaping one of the worst droughts to hit the area in 40 years.

The grandmother told McKenna about her grandchildren and how she was especially bonded to Abdullahi, a sweet, polite 6-year-old but that he had not survived the journey. Abdullahi, like many children who are climate refugees, died of starvation and was buried on the side of the road.

“Sadly,” said McKenna, “that was not the only story I heard like that.”

**CLIMATE CHANGE** refers to significant and lasting changes in the Earth's climate, particularly an increase in global temperatures, mainly caused by human activities like burning fossil fuels, deforestation, and industrial processes. These changes lead to more extreme weather events, rising sea levels, and shifting ecosystems, and **increased global hunger**.

## Increasing extremes

The drought that drove Abdullahi's family from their home and caused his death is part of a tapestry of extreme weather patterns that are occurring with greater frequency and intensity amid a warming planet.<sup>2</sup> Every decade since 1850 has been warmer than the one before, and the last four have been the warmest on record.<sup>3</sup>

## What is climate change?

Climate change is the shift in weather patterns and temperatures primarily caused by human behavior such as burning fossil fuels and chopping down forests. These activities cause greenhouse gas emissions which trap heat in the atmosphere. The trapped heat leads to warmer temperatures, rising sea levels, and a variety of environmental impacts, including droughts, floods, wildfires, heatwaves, and other climate-driven disasters.<sup>4</sup>



**GREENHOUSE GASES** in the Earth's atmosphere trap heat, contributing to the greenhouse effect and climate change. They allow sunlight to enter the atmosphere but prevent some of the heat from escaping back into space, warming the planet. Examples include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O).



**DROUGHT** is a prolonged period of unusually low rainfall, leading to a shortage of water. This can result in dry conditions that harm crops, reduce water supply, and affect the environment and communities.

Somalia has endured five failed rainy seasons, leading to drought impacting 90 percent of the country and contributing to the displacement of 1.7 million people since 2021.<sup>5</sup>

## How does climate change impact hunger?

The unpredictable and extreme weather events caused by rising temperatures reduce crop yields and food quality, disrupting local and global food systems. This leads to scarcity, which increases food costs.<sup>6</sup>

If there are already factors driving hunger in a region, such as conflict, poor governance, or poverty, climate-driven disasters will amplify their impact—this is called the multiplying effect of climate change.

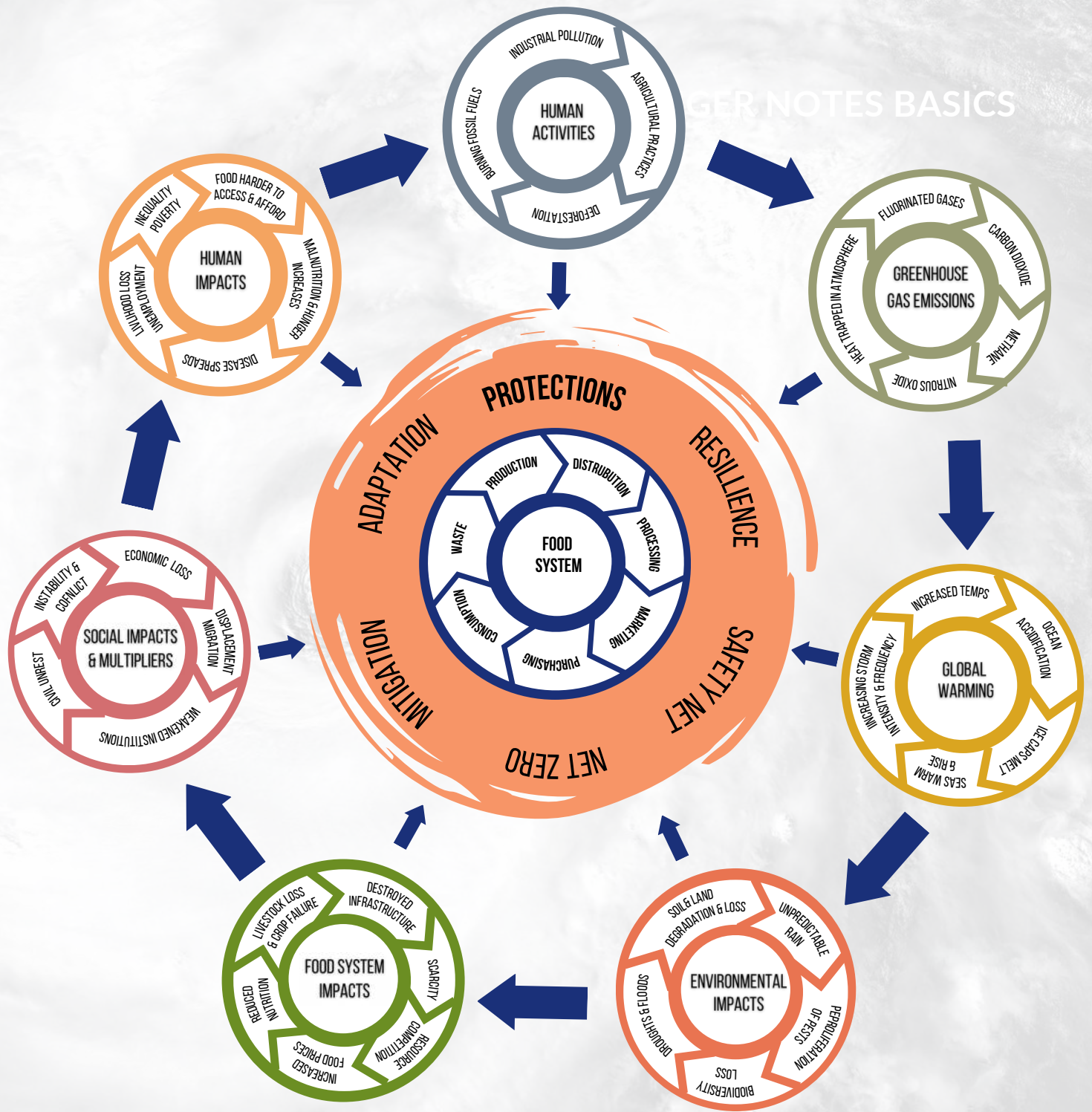
**MULTIPLIER EFFECT** of climate change refers to how climate change worsens existing social, economic, and environmental issues, amplifying their impacts and creating additional challenges.



# CLIMATE CHANGE HUNGER

causes

WORLD HUNGER NOTES BASICS



A 2°C rise in pre-industrial temperatures could lead to **189 million more people experiencing hunger**, while a 4°C rise would put **1.8 billion more at risk**. (World Food Programme)

## How does climate change impact conflict?

An estimated 70 percent of the world's hungry live in conflict zones,<sup>7</sup> where land destruction and scarcity of natural resources amplify violence.<sup>8</sup>

Conflict-prone countries are economically and politically fragile and the most vulnerable to the impacts of climate change.<sup>9</sup> Among the top three, Somalia and Niger are embroiled in civil conflict, while Chad is being pushed towards collapse by the refugee crisis, driven by the war in Sudan.<sup>11</sup> Each of these countries is also ranked among the hungriest.<sup>12</sup>

As the impacts of climate change increase, researchers warn that conflicts will grow.<sup>13</sup>



**DISPLACEMENT** refers to the forced movement of people from their homes due to disasters, conflict, violence, and hunger.

The combination of conflict and climate change is driving record levels of displacement. According to the UN Refugee Agency, more than **120 million people were pushed to leave their homes by May 2024**. Droughts, floods, heatwaves, and extreme storms alone contribute to 23 million displaced people each year.<sup>14</sup>

The Syrian refugee crisis is the world's largest. An intense drought created the foundation for unrest and the war in Syria. In 2024, there are an estimated 13.5 million displaced Syrians since 2011, representing half the population. Most are hosted in neighboring countries of Turkey, Lebanon, and Jordan.

# FIVE COUNTRIES MOST VULNERABLE TO CLIMATE CHANGE

#1



**SOMALIA**

#2



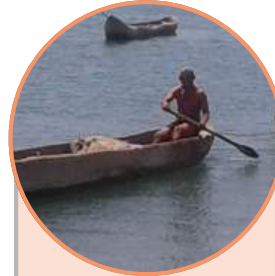
**CHAD**

#3



**NIGER**

#4



**GUINEA-BISSAU**

#5



**MICRONESIA**

## HUNGER STATUS\*

**Alarming**

Food Insecurity:  
79.5 %

**Serious**

Food Insecurity:  
N.D.

**Alarming**

Food Insecurity:  
71.4 %

**Serious**

Food Insecurity:  
77.8 %

**No Data**

Food Insecurity:  
N.D.

## INCOME GROUP

Low

Low

Low

Low

Low

## CONFLICT AND POLITICAL STABILITY

Prolonged Civil War. Ranked as world's most fragile country.

Refugee crisis driven by conflicts in neighboring countries.

Ongoing political instability & violence following a military coup in July 2023.

Ongoing Factional violence and instability include a failed coup attempt in 2023.

Weak governance heavily dependent on foreign aid.

## CLIMATE MULTIPLIERS

Rising Temps, Prolonged Drought, Erratic Rainfall, Flooding, Desertification, Land Degradation, Water Scarcity.

Rising Temps, Drought, Change in Rainfall, Flooding, Desertification, Land Degradation, Water Scarcity.

Rising Temps, Drought, Erratic Rainfall, Flooding, Desertification, Land Degradation, Water Scarcity.

Rising Sea Levels, Increased Frequency & Intensity of Storms, Erratic Rainfall, Rising Temps, Deforestation, Land Degradation.

Rising Sea Levels, Increased Frequency & Intensity of Storms, Ocean Acidification, Rising Temps, Water Scarcity.

The 2023 Global Hunger Index calculations based on undernutrition, stunting, wasting, and child mortality statistics for each country. \*Micronesian statistics are not listed due to unreliable data. Percentages of moderate and severe food insecurity in total population is sourced from *The State of Food Security and Nutrition in the World 2023* (FAO). Data is insufficient for both Chad and Micronesia.

## Case study: Syria

Syria offers a case study of how climate and conflict intersect, creating widespread hunger.

Large-scale protests in 2011—part of the Arab Spring—ignited the civil war in Syria. Prior to the protests, a 2007-2010 drought caused crop failure and a sharp rise in food prices. An estimated 1.5 million people moved from farms and rural areas to the cities.<sup>15</sup>

The drought alone was not enough to cause political unrest. The government also promoted unstable agricultural and environmental policies at the time. Poor governance, unemployment, and growing inequality were part of the equation that ignited conflict.<sup>16</sup>

Hunger rates tripled in the aftermath of the war, making the country one of the most food-insecure in the world.<sup>17</sup> Healthcare has collapsed, water is unsafe, and millions depend on emergency food assistance.

## Case study: the United States

While Syria's experience illustrates the devastating combination of climate change and conflict, the United States demonstrates how robust safety nets and adaptive strategies can mitigate the impacts of climate-related events.

In 2023, which saw a record number of climate-related events in the U.S., the worst impacts of a widespread drought were lessened by an established safety net.<sup>18</sup>

Crop insurance protected farmers who lost crops and livestock.<sup>19</sup> Government food assistance programs—like SNAP and school lunch programs—were in place to absorb price shocks for the most vulnerable Americans, alleviating widespread hunger.

In addition to a safety net structure, the U.S. also prepares for climate impacts.

Adaptation—adjusting to the current and expected impacts of climate change—is at the forefront of U.S. climate policy. Water management policies and early warning systems that account for changing weather patterns ensure the government can respond to disasters when they occur and reduce future risks.<sup>20,21,22</sup>



**ADAPTATION** is the process of adjusting practices, processes, and structures to minimize harm and take advantage of potential opportunities caused by climate-related impacts.

Climate change is happening now and impacts U.S. farmers and ranchers. Heat stress, droughts, storms, and increased insect infestation threaten food supplies.

The USDA has set up climate hubs across the nation to help farmers and ranchers in the U.S. adapt to the region-specific impacts of climate change.<sup>23</sup>

The USDA also helps farmers mitigate risks through crop insurance services, conservation programs, and technical assistance, and commodity, lending, and disaster programs.

## Who does climate change impact?

People in the least developed countries have 10 times more chance of being affected by a climate disaster than those in wealthy countries each year.<sup>24</sup> Marked by poverty and poor governance, most developing countries have neither safety nets to help people weather economic shocks nor do they invest in adaptive strategies to build resilience against future disasters.

People, who did the least to contribute to climate change, are feeling the worst effects, especially women and children.

Smallholder farmers, who produce about a third of the world's food, are also disproportionately impacted by climate change.<sup>25</sup> Generally poorer, they have limited resources to adapt to the increased frequency of severe and unpredictable weather.<sup>26</sup>

**RESILIENCE** is the ability of people, communities, countries, households, and systems to adapt to, recover from, and mitigate stresses and shocks.

### Building Resilience in Guatemala

Communities are struggling to survive in the drought-prone dry corridor of Guatemala, where rains have become more unpredictable and do not last through the growing season.



Smallholder farmers—who manage less than 10 hectares of land—produce 70 percent of the food in Central America but have high rates of food insecurity. Most live on less than \$2.00 a day and depend on rain to irrigate the staple crops like beans and maize.

But when the rains do not come or are unpredictable, there is no cushion to protect families and communities from hunger. Nearly half of the children in Guatemala are malnourished.

In El Aguacate, Juan Olimo, told Reuters that he lost his crop to drought in 2023 and that, “Last year there was also quite a drought and we lost all our seed.”<sup>27</sup>

Traditional farming methods that depend on predictable rain mean disaster in today's climate.

Catholic Relief Services is supporting resilience in communities and helping farmers withstand ongoing climate shocks by implementing climate-smart agricultural practices. Those include providing seeds, fertilizers, dry-land cultivation practices, and water-smart agricultural techniques.<sup>28</sup>

Building watersheds—constructing a water drainage basin to help manage water levels—helps build resilience against crop failure and hunger when rain is unpredictable.<sup>29</sup>

## How does climate change impact nutrition and health?

Climate change affects human health by diminishing the nutritional quality of plants. Rising Co2 levels in the atmosphere reduce micronutrients in staple foods like rice and wheat. As a result, the nutritional quality of these crops decreases, which can lead to deficiencies in populations that rely heavily on these staples for their diet.<sup>30</sup>

When children don't get enough micronutrients, like zinc and iron, they are more likely to be stunted—too short for their age—and suffer life-long consequences.<sup>31</sup> Soil depletion is expected to put 130 million people at higher risk of zinc deficiency by 2050.<sup>32</sup>

Climate change impacts health in other ways, too.

In fragile countries with weak healthcare systems, climate change acts as a multiplier. Not only do natural disasters cause more deaths, but disease spreads quickly. Water scarcity increases diseases like cholera and typhoid.<sup>33</sup>

The World Health Organization (WHO) estimates that between 2030 and 2050, climate change will cause an additional 250,000 deaths per year from hunger, disease, and heat stress.<sup>34</sup>

## How is climate change causing migration?

For people who are already living in poverty and spend most of their budget on food, when crops fail and food prices increase, they are left with impossible choices.

Abdullahi's story highlights the severe personal impact of climate change on families and



Maria Fleischmann / World Bank

Healthy food relies on healthy soil. Climate change depletes nutrients in the soil and makes food less nutritious.

communities. His family's desperate journey in search of food and water illustrates the broader issue of climate-induced migration—a crisis affecting millions of people worldwide.

Across the globe, climate change is increasingly becoming a primary driver of migration. Between 2008 and 2016, 21.5 million people were displaced each year because of climate-related events. That number is expected to grow to 1.2 billion by 2050.<sup>35</sup>



Henry Wilkins/NOA wikimedia

Chad hosts over one million forcibly displaced people.

## Global perspective

Climate change affects everyone, even in wealthy countries that are adopting adaptive strategies.

The U.S. Defense Department lists global warming as one of the greatest threats to safety and considers it a destabilizing force in the world. Mass migration, increased conflict, and competition for natural resources make the world less safe.

“Today, no nation can find lasting security without addressing the climate crisis,” said Secretary of Defense Lloyd Austin III in a 2021 address.<sup>36</sup>

Today’s global food system is complex and vital to every nation. The war in Ukraine showed us how easily disruptions cause food and energy costs to soar, driving hunger in poorer countries.<sup>37</sup>

With every degree of temperature increase, the destructive impacts of climate change grow, including global hunger. According to the World Food Programme, a 2°C rise in temperature from levels before large-scale industrial activities began, could result in 189 million more people experiencing hunger and 4°C would put 1.8 billion more people at risk.<sup>38</sup>

---

“Today, no nation can find lasting security without addressing the climate crisis,”

—Secretary of Defense Lloyd Austin III

---

## Global response

In 2015, world leaders met in Paris and agreed to limit temperature increases to 1.5°C by cutting down pollution and reducing emissions.<sup>39</sup> The world is off track to achieve this goal.<sup>40</sup>

At the 2023 global conference in Dubai, leaders failed to agree to terms that would put limits on fossil fuels and bring the world closer to this target. However, a pledge of \$400 million was made to help vulnerable countries deal with climate disasters—an amount that is helpful but not nearly enough.<sup>41</sup>



COP (United Nations Climate Change Conference) is an annual conference or governments to agree on policies to limit global temperature rises and adapt to impacts associated with climate change.

Photo: Fotografía oficial de la Presidencia de Colombia/Wikimedia



An El Salvador farmer uses Canavalia seeds as a cover crop to improve soil and control weeds, thanks to techniques learned from Catholic Relief Services. The practice helps increase crop yields, restore soil health, and protect water resources

## A climate-smart future

Despite challenges at the global policy level, there are ongoing efforts to build climate resilience on the ground.

Robust safety nets, early warning systems, climate-resistant agricultural practices, and the strengthening of water infrastructure and government institutions are all adaptive strategies necessary to build resilience in the face of extreme weather and rising temperatures.

Successful adaptation means combining a number of these tactics through a region-specific, holistic approach.

Earlier in the paper, we saw how climate-smart water techniques were helping smallholder farmers build resilience in Guatemala. New irrigation options are vital, but not enough on their own.

More farmers and the organizations like Catholic Relief Services that help them are

turning to drought-resistant seeds. Some bean varieties need less water than others to flourish.

Not only are the beans drought-resistant, but some are also biofortified, which means they are iron-rich—a micronutrient vital for the health of child-bearing women and the health of growing children.<sup>42</sup> In a poor country where nearly half of children are too short for their age because of malnourishment, programs like these are building climate resilience and addressing malnutrition at the same time.

---

***We have the knowledge, tools, and potential to mitigate the worst impacts of climate change.***

---

## Conclusion

At the beginning of this paper, we illustrated the worst consequence of climate change: the death of a child. This stark example underscores the urgent need for action. We have the knowledge and tools to save lives like Abdullahi's.

To mitigate the impacts of climate change, we must scale up efforts globally and locally, implement robust adaptation strategies, and reduce global emissions. The stakes are high—global stability, prosperity, and the future of human existence depend on our collective and decisive action. Together, we can confront this challenge and build a resilient, sustainable future for all.

## Resources and further reading

- 1 **BOF**. "The BoF Podcast | Conflict, Climate and Today's Global Hunger Crisis." Business of Fashion, 17 February 2023, <https://www.businessoffashion.com/podcasts/global-markets/the-bof-podcast-conflict-climate-and-todays-global-hunger-crisis/>.
- 2 **NASA Science**. "Extreme Weather and Climate Change." <https://science.nasa.gov/climate-change/extreme-weather/>.
- 3 **IPCC**. Climate Change 2021: The Physical Science Basis. Summary for Policymakers. 2021, [https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC\\_AR6\\_WGI\\_SPM\\_final.pdf](https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf).
- 4 **United Nations**. "What Is Climate Change?" <https://www.un.org/en/climatechange/what-is-climate-change>.
- 5 **European Civil Protection and Humanitarian Aid Operations**. "Somalia." European Commission, [https://civil-protection-humanitarian-aid.ec.europa.eu/where/africa/somalia\\_en](https://civil-protection-humanitarian-aid.ec.europa.eu/where/africa/somalia_en).
- 6 **PBS Newshour**. "How Climate Change Is Disrupting the Global Food Supply." YouTube, 27 August 2023, [https://www.youtube.com/watch?v=nT91uMn\\_TpM](https://www.youtube.com/watch?v=nT91uMn_TpM).
- 7 **World Food Programme**. "Global Hunger Crisis." World Food Programme, <https://www.wfp.org/global-hunger-crisis>.
- 8 **United Nations Peacekeeping**. "Conflict and Natural Resources." United Nations, <https://peacekeeping.un.org/en/conflict-and-natural-resources>
- 9 **OECD**. "Conflict and Fragility." <https://www.oecd.org/en/topics/conflict-and-fragility.html>.
- 10 **GAIN**. "Country Rankings: Vulnerability." Notre Dame Global Adaptation Initiative, <https://gain-new.crc.nd.edu/ranking/vulnerability>.
- 11 **Picco, Enrica**. "The Fallout in Chad from the Fighting in Darfur." International Crisis Group, 10 August 2023, <https://www.crisisgroup.org/africa/central-africa/chad/fallout-chad-fighting-darfur>.
- 12 **Global Hunger Index**. "2023 Global Hunger Index by Severity." <https://www.globalhungerindex.org/ranking.html>.
- 13 **Hsiang, Solomon M., et al.** "Climate as a Risk Factor for Armed Conflict." Nature, vol. 571, 12 June 2019, <https://doi.org/10.1038/s41586-019-1300-6>.
- 14 **UNHCR**. "Refugee Statistics." <https://www.unrefugees.org/refugee-facts/statistics/>.
- 15 **Soffiantini, Giulia**. "Food Insecurity and Political Instability During the Arab Spring." Food Security, vol. 12, September 2020, <https://www.sciencedirect.com/science/article/abs/pii/S2211912420300547>
- 16 **Kelley, Colin P., et al.** "Climate Change in the Fertile Crescent and Implications of the Recent Syrian Drought." Proceedings of the National Academy of Sciences of the United States of America (PNAS), vol. 112, no. 11, 2 March 2015, <https://www.pnas.org/doi/10.1073/pnas.1421533112>.
- 17 **FAO**. "Near East and North Africa: Regional Overview of Food Security and Nutrition 2023 Statistics and Trends," Open Knowledge Repository, <https://openknowledge.fao.org/server/api/core/bitstreams/d18451b6-1c80-40be-b30b-dea116c532d7/content/sofi-statistics-rne-2023/prevalence-undernourishment.html>.
- 18 **NOAA**. "U.S. Struck with Historic Number of Billion-Dollar Disasters in 2023." National Oceanic and Atmospheric Administration, <https://www.noaa.gov/news/us-struck-with-historic-number-of-billion-dollar-disasters-in-2023>.
- 19 **Reiley, Laura**. "The Summer Drought's Hefty Toll on American Crops." The Washington Post, 5 September 2022, <https://www.washingtonpost.com/business/2022/09/05/crops-climate-drought-food/>.
- 20 **USDA**. "USDA Releases Updated Climate Adaptation and Resilience Plan." United States Department of Agriculture, 20 June 2024, <https://www.usda.gov/media/press-releases/2024/06/20/usda-releases-updated-climate-adaptation-and-resilience-plan>.
- 21 **NOAA**. "A New Generation of Water Planners Confronts Change Along the Colorado River." U.S. Climate Resilience Toolkit, <https://toolkit.climate.gov/case-studies/new-generation-water-planners-confronts-change-along-colorado-river>.
- 22 **NOAA**. "Climate Outlooks Increase Farmers' Odds of Success." U.S. Climate Resilience Toolkit, <https://toolkit.climate.gov/case-studies/climate-outlooks-increase-farmers-odds-success>.
- 23 **USDA Climate Hubs**. "Home." USDA Climate Hubs, <https://www.climatehubs.usda.gov/>.
- 24 **GAIN**. "About." Notre Dame Global Adaptation Initiative, <https://gain.nd.edu/about/>.
- 25 **FAO**. "Small Family Farmers Produce a Third of the World's Food." Food and Agriculture Organization of the United Nations, <https://www.fao.org/newsroom/detail/Small-family-farmers-produce-a-third-of-the-world-s-food/en>.
- 26 **Bread for the World**. "Challenges of Smallholder Farmers." Bread for the World, <https://www.bread.org/article/challenges-of-smallholder-farmers/>.
- 27 **Garrison, Cassandra**. "How Climate Change Is Fueling Hunger in a Guatemalan Village." Reuters, 12 October 2023, <https://www.reuters.com/investigates/special-report/guatemala-climatechange-hunger-village/>.
- 28 **Catholic Relief Services**. "Advancing the Safety and Security of Agriculture." Catholic Relief Services, <https://asa.crs.org/en/>.
- 29 **Lock, Helen**. "How Can Regenerative Agriculture Help the Food System Survive?" Devex, 13 November 2023, <https://www.devex.com/news/how-can-regenerative-agriculture-help-the-food-system-survive-106531>.
- 30 **Myers, Samuel S., et al.** "Rising CO2 Threatens Human Nutrition." Nature, vol. 510, no. 7503, 5 June 2014, <https://doi.org/10.1038/nature13179>

- 31 **World Hunger Education Service.** "Child Malnutrition: 2022 Facts and Statistics." <https://www.worldhunger.org/child-malnutrition-2022-facts-and-statistics/>.
- 32 **Stephenson, Robin.** "Healthy Food Relies on Healthy Soil." Bread for the World, <https://www.bread.org/article/healthy-food-relies-on-healthy-soil/>.
- 33 **World Wildlife Fund.** "Water Scarcity." World Wildlife Fund, <https://www.worldwildlife.org/threats/water-scarcity>
- 34 **WHO.** "Climate Change and Health." World Health Organization, <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health>.
- 35 **McAllister, Sean.** "There Could Be 1.2 Billion Climate Refugees by 2050: Here's What You Need to Know." Zurich Insurance Group, 2022, <https://www.zurich.com/en/media/magazine/2022/there-could-be-1-2-billion-climate-refugees-by-2050-here-s-what-you-need-to-know>.
- 36 **Vergun, David.** "Defense Secretary Calls Climate Change an Existential Threat." DOD News, U.S. Department of Defense, 22 April 2021, <https://www.defense.gov/news/news-stories/article/article/2582051/defense-secretary-calls-climate-change-an-existential-threat/>.
- 37 **Emediagwu, Lotanna.** "Update: How Is the War in Ukraine Affecting Global Food Prices?" Economics Observatory, 23 February 2024, <https://www.economicsobservatory.com/update-how-is-the-war-ukraine-affecting-global-food-prices>.
- 38 **World Food Programme.** "What a 2°C and 4°C Warmer World Could Mean for Global Food Insecurity." [Infographic]. [https://docs.wfp.org/api/documents/WFP-0000040125/download/?\\_ga=2.142285430.557314437.1664820303-512389700.1649264850](https://docs.wfp.org/api/documents/WFP-0000040125/download/?_ga=2.142285430.557314437.1664820303-512389700.1649264850).
- 39 **United Nations.** "1.5°C: What It Means and Why It Matters." United Nations, <https://www.un.org/en/climatechange/science/climate-issues/degrees-matter>.
- 40 **Sieff, Jessica.** "Bridging Knowledge with Action: Notre Dame Climate Experts Discuss the Future of Our Planet." Notre Dame Global Adaptation Initiative, 1 November 2022, <https://gain.nd.edu/news/bridging-knowledge-with-action-notre-dame-climate-experts-discuss-the-future-of-our-planet/>.
- 41 **Maslin, Mark, Priti Parikh, and Simon Chin-Yee.** "COP28: Five Major Outcomes from the Latest UN Climate Summit." The Conversation, 14 December 2023, <https://theconversation.com/cop28-five-major-outcomes-from-the-latest-un-climate-summit-219655>.
- 42 **Moloney, Anastasia.** "Forced to Diversify, Guatemalan Farmers Plant Climate-Hardy Beans." Context, 1 November 2023, <https://www.context.news/climate-risks/forced-to-diversify-guatemalan-farmers-plant-climate-hardy-beans>.

## World Hunger Education Service, 2023 Hunger Basics Series

Project Team:

Peter Morris, WHES Board Chair, Hunger Notes Editor

Kathy Pomroy, WHES Treasurer, Editor

Robin Stephenson, RGStephenson.com, Writer, Graphics



Fight Hunger with Knowledge

Hunger Notes

worldhunger.org