

CLIMATE CHANGE

A HUNGER CRISIS IN THE MAKING



**ACTION
AGAINST
HUNGER**

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EXECUTIVE SUMMARY

OUR ESCALATING CLIMATE EMERGENCY IS ALSO A HUMANITARIAN EMERGENCY. EVEN IF RISING TEMPERATURES CAN BE KEPT WITHIN 1.5°C OF PRE-INDUSTRIAL LEVELS (AND CURRENTLY WE ARE ON COURSE FOR 2.7°C¹) THE WORLD CAN EXPECT A FUTURE CHARACTERISED BY WORSENING GLOBAL FOOD CRISES, BIODIVERSITY LOSS, MORE FREQUENT EXTREME WEATHER EVENTS, AND SHORTER GROWING SEASONS. FRESH WATER WILL BECOME SCARCER AND DISEASE AND MALNUTRITION WILL RISE, CONTRIBUTING TO DISPLACEMENT AND CONFLICT.

These impacts are disproportionately felt by poorer countries who contribute least to the problem.^{2,3} For example, the total greenhouse gas emissions of the 27 most vulnerable countries that are already hunger hotspots (who have least financial resources to cope and adapt) is less than 5% of the total emissions of G7 nations.⁴ Worst-hit are those already experiencing marginalisation and gender-based inequalities – especially women and girls, communities already living in extreme poverty, and those who rely on agriculture.⁵

HUNGER AND MALNUTRITION: Climate change has significant implications for people's diet and nutrition. Reduced access to sufficiently nutritious foods impairs nutritional status and diminishes resilience, particularly in low-income communities. Eight out of ten of the 35 countries at greatest risk from climate change⁶ are already experiencing extreme food insecurity.⁷ In these 27 countries alone, over 117 million people are living with crisis or worse level hunger. Even in contexts where disasters and drastic changes in climate change may not have an immediate effect, nutrition and health outcomes are likely to worsen.⁸

CHILD AND MATERNAL NUTRITION: Climate change impacts maternal, neonatal, and child health through maternal nutrition, environmental risks and infectious disease.

Nearly one in three children in the 27 food-insecure countries most at risk from climate change live with chronic malnutrition and stunting (harming their capacity to learn and develop⁹) or with acute malnutrition, which can be fatal.¹⁰ One global study found that in five of six regions, higher temperatures are associated with decreased dietary diversity.¹¹ By 2050, higher CO₂ emissions could push an additional 138 million people into zinc deficiency, with disproportionate burdens for children and pregnant or lactating women who have heightened nutritional requirements.¹²

YIELDS, LIVESTOCK, AND FISHERIES:¹³ In 2020, 2.37 billion people were affected by malnutrition and irregular access to nutritional needs.¹⁴ Climate change is set to affect yield quantity and quality, reproduction, growth rates and increased temperature-related stress and deaths in livestock,¹⁵ as well as feed quality and spread of pests, ruminant and zoonotic diseases.¹⁶

Water-resource availability for livestock will decrease because of increased runoff and reduced groundwater resources. Globally, a decline in livestock of 7–10% is expected at 2°C, with associated economic losses of between \$9.7 and \$12.6 billion.¹⁷

1 Quiggin, D., De Meyer, K., Hubble-Rose, L. and Froggatt, A., 2021. [Climate change risk assessment 2021: The world is dangerously off track to meet the Paris Agreement goals.](#)

2 Diffenbaugh, N. S. & Burke, M. Global warming has increased global economic inequality. *Proc. Natl Acad. Sci. USA* 116, 9808–9813 (2019)

3 Letta, M. & Tol, R. S. J. Weather, climate and total factor productivity. *Environ. Resour. Econ.* 73, 283–305 (2019)

4 The total GHG emissions of G7 countries is 8700mt. This is more than 20x the combined GHG emissions of the 27 hunger hotspots at greatest climate risk. Total GHG emissions is 421mt, outliers are Angola, Nigeria and Bangladesh. See tables in Annex 1.

5 Eastin, J. Climate Change and Gender Equality in Developing States. *World Development* 2018; 107:289-305.

6 This is calculated based on the [University of Notre-Dame GAIN Climate Risk Index \(CRI\)](#). "A country's ND-GAIN index score is composed of a Vulnerability score and a Readiness score. Vulnerability measures a country's exposure, sensitivity and ability to adapt to the negative impact of climate change. ND-GAIN measures the overall vulnerability by considering vulnerability in six life supporting sectors – food, water, health, ecosystem service, human habitat and infrastructure".

7 27 of the 35 highest ranking countries on the GAIN ND Index are also 'hunger hotspots'. These are countries with large populations in 'crisis' or worse level food insecurity, as measured by the [Integrated Food Security Phase Classification \(IPC\)](#).

8 Springmann, M., Mason-D'Croz, D., Robinson, S., et al, 2016a. Global and regional health effects of future 695 food production under climate change: a modelling study. *Lancet* 387, 1937–1946. 696

9 Data source: Unicef, WHO, The World Bank (2021) [Levels and trends in child malnutrition: key findings of the 2021 edition of the joint child malnutrition estimates](#). New York: United Nations Children's Fund; 2021.

10 Ibid.

11 Niles, M.T., et al, 2021. [Climate Impacts associated with reduced diet diversity in children across 19 countries.](#) *Environ. Res. Lett* 16 015010

12 Myers, S.S., Zanobetti, A., Kloog, I., et al. Increasing CO2 threatens human nutrition. *Nature*. 2014; 510: 139-142

13 Ortiz-Bobea, A., Ault, T.R., Carrillo, C.M. et al. [Anthropogenic climate change has slowed global agricultural productivity growth.](#) *Nat. Clim. Chang.* 11, 306–312 (2021).

14 FAO, IFAD, UNICEF, WFP and WHO. 2021. *The State of Food Security and Nutrition in the World 2020. Transforming food systems for food security, improved nutrition and affordable health diets for all.* Rome, FAO

15 Notenbaert, A.M.O., J.A. Cardoso, N. Chirinda, M. Peters, and A. Mottet, 2017. Climate change impacts on livestock and implications for adaptation. *International Center for Tropical Agriculture (CIAT)*, Rome, Italy

16 Izaurrealde, R.C. et al, 2011. [Climate Impacts on Agriculture: Implications for Forage and Rangeland Production.](#) *Agronomy Journ* al, 103(2), 371–381.

17 Boone, R.B., R.T. Conant, J. Sircely, P.K. Thornton, and M. Herrero, 2018. Climate change impacts on selected global rangeland ecosystem services. *Global Change Biology*, 24(3), 1382–1393, doi:10.1111/gcb.13995

Increased temperatures, ocean acidification, disease, parasites and pathogens and other drivers are affecting fisheries (which play a vital role in the food security of many vulnerable countries¹⁸) and hatching grounds. Rising sea levels and storm intensification pose an additional risk.¹⁹

GENDER-BASED INEQUITIES: Women, children, marginalised groups, and communities living in poverty bear the brunt of climate change.²⁰ Women and children are 14 times more likely than men to die during a disaster, and women are also often at greatest risk of displacement: the United Nations Development Programme estimates that 80% of climate-displaced people are women. And when lower yields spell a drop in income and food scarcity, women and girls are often the first to eat less. Lack of land rights leave women unable to develop land to meet and adapt to their nutrition needs²¹, and they are often excluded from decisions on how to overcome climate challenges.^{22 23}

FOOD PRICES: Increased demand for dwindling resources, changes in tax and subsidy regimes, and fossil fuel availability and prices (pressurised by the global shift to more resource intensive, meat-based diets) are diminishing access to adequate nutrition for less well-off communities, especially women and children.²⁴

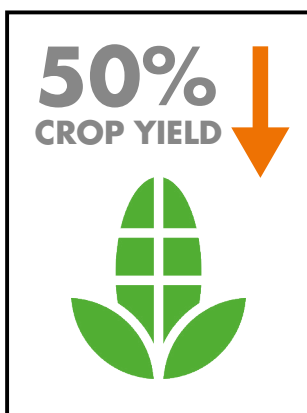
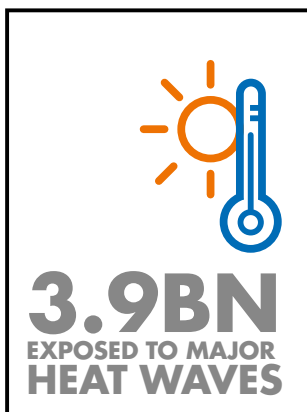
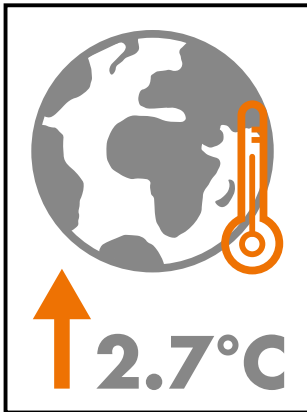
BIODIVERSITY LOSS: In 2021, the World Economic Forum announced that biodiversity loss is the third greatest threat facing humanity, behind weapons of mass destruction and state collapse.²⁵ Since the 1900s, 75% of plant genetic diversity has been lost as farmers worldwide have swapped local varieties for genetically uniform, high-yielding varieties²⁶ and today just 12 crops and five animal species provide 75% of the food we produce. This loss of agricultural diversity has contributed to climate change, ecosystem destruction and hunger.

THE STATE OF OUR OCEANS: Sea levels are rising, as are our oceans' heat storage and acidification levels, diminishing the ocean's capacity to moderate climate change. Rising sea levels cause saltwater intrusion into freshwater aquifers and inundation in low-lying areas and loss of land.²⁷ The degradation of coastal ecosystems reduces protection against storms, tsunamis and other sudden-onset events, leaving people exposed and vulnerable and increasing their risk of displacement. Without intervention, between 145 million and 565 million people living in coastal areas today will be exposed to, and affected by, rising sea levels in the future.²⁸

WATER AND SANITATION: Changing rainfall patterns are escalating water scarcity in some regions and are set to drive increasing tensions over access to river catchments. At the same time, increased temperatures increase the demand for water by plants, animals and people. Climate change threatens to reverse progress in improving access to clean water, decent sanitation and good hygiene, pushing more people into extreme poverty.

CONFLICT AND CLIMATE SECURITY: Climate change is increasingly seen as a threat to national security and a contributor to global conflicts,²⁹ while climate-related risks make up the majority of the World Economic Forum's 2021 threat report.³⁰ The potential security consequences are far reaching and complex, and are already being felt throughout vulnerable regions. The 2019 IPCC³¹ Climate Change and Land report concludes that extreme weather and climate may lead to increased displacement and conflict. The eight worst food crises in 2019 were linked to both climate change impacts and conflict.³² Additional crises, such as Covid-19, add to this complexity. Climate projections anticipate a 54% increase in armed conflict (393,000 deaths) by 2030 in the absence of climate change mitigation.³³

18 McClanahan, T.R., E.H. Allison, and J.E. Cinner. 2015. Managing fisheries for human and food security. *Fish and Fisheries*, 16(1), 78–103, doi:10.1111/faf.12045
 19 Weatherdon, L., A.K. Magnan, A.D. Rogers, U.R. Sumaila, and W.W.L. Cheung. 2016. Observed and Projected Impacts of Climate Change on Marine Fisheries, Aquaculture, Coastal Tourism, and Human Health: An Update. *Frontiers in Marine Science*, 3, 48, doi:10.3389/fmars.2016.00048
 20 UNDP. 2013. Gender and disaster risk reduction. <https://tinyurl.com/y4wrrlh9>
 21 UN Women, Op cit
 22 UN CEDAW. *General recommendation No.37 on gender-related dimensions of disaster risk reduction in the context of climate change*. United Nations Committee on the Elimination of Discrimination against Women, CEDAW/C/37, 15 March 2018.
 23 Petzold, J., Andrews, N., Ford, J.D., Hedemann, C., Postigo, J.C. Indigenous knowledge on climate change adaptation: a global evidence map of academic literature. *Enviro Research Letters* 2020;15:113007.
 24 Oxfam, 2019. *Ten years after the global food crisis, rural women still bear the brunt of poverty and hunger*.
 25 World Economic Forum, 2021. *The Global Risks Report 2021*, www3.weforum.org/docs/WEF_The_Global_Risks_Report_2021.pdf
 26 <http://www.fao.org/3/y5609e/y5609e02.htm>
 27 IPCC. Climate Change 2014. Synthesis Report, Summary for Policymakers. 2014
 28 The 2020 report of The Lancet, *Countdown on health and climate change: responding to converging crises*. December 02, 2020.
 29 UK Ministry of Defence 2021. *Ministry of Defence Climate Change and Sustainability Strategic Approach*.
 30 World Economic Forum 2021. *The Global Risks Report 2021 16th Edition*.
 31 Intergovernmental Panel on Climate Change (IPCC) (2019), *Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems*. Eds: Shukla, P. R., Skea, J., Calvo Buendia, E., et al.
 32 OCHA (2020). *Global Humanitarian Overview 2020*.
 33 Burke et al. (2009).



We are on course for 2.7°C of warming, and many of the effects are already locked in. Based on this trend, by 2040 3.9 billion people will be exposed to major heat waves, 400 million will be unable to work, and there will be an additional 10 million deaths per year. There will be up to 50% loss in crop yields, 700 million more people will be exposed to drought risk, and there will be increased flooding.

RECOMMENDATIONS

CLIMATE CHANGE MITIGATION

- All governments must deliver on nationally determined contributions (NDCs) to meet their fair share of mitigation action, to limit the average rise in global temperatures to 1.5°C.
- Major emitters must develop clear, timebound, actionable and accountable plans of action for 2021–25 in support of ambitious NDCs.

CLIMATE CHANGE ADAPTATION

- Governments must demonstrate enhanced ambition on, and clearly signal the critical role of, adaptation and resilience building in the international climate process.
- Donors should allocate at least 50% of climate finance to adaptation, and make this finance accessible to CSOs and grassroots communities most affected.
- All governments must prepare and submit National Adaptation Plans no later than the end of 2021 and immediately begin implementing adaptation priorities.
- Funding for adaptation must be made available to local grassroots groups, and the proportion they receive tracked.

CLIMATE FINANCE

- Governments must deliver on promises to ensure \$100 billion per year in international climate finance flows is met up to 2024.
- Governments must commit to scaling up annual financing in the period 2021–2025 with a focus on grants, not loans. Further, agree a higher global finance goal for 2025 onwards as mandated in the Paris Agreement.
- Governments must ensure provisions of scaled up new and additional financing for nature-based solutions with social, health and nutrition co-benefits, such as agroecology.

LOSS AND DAMAGE

- Appoint (at COP26) a loss and damage champion to consult and build consensus for action. Governments should further operationalise the Santiago Network.
- Establish a loss and damage finance facility able to address the needs of vulnerable developing countries and ensure its inclusion in discussions on the new finance goal.
- Establish loss and damage as a permanent, standalone UNFCCC agenda item.

HUMANITARIAN RESPONSE AND ANTICIPATORY ACTION

- All humanitarian organisations, across sectors, must be supported to plan for rising needs and the multiplier effect of climate change. To support this, donors must provide more flexible, accessible and long-term funding opportunities to enable faster responses.
- Greater donor investment is needed to ensure that most climate-vulnerable, least-developed countries have the resources and capacity to take nationally driven anticipatory action ahead of climate-related extreme events.
- Clear data-driven thresholds for action are needed along with agreement between relevant agencies on what these should be.

NUTRITION SECURITY

- Governments must promote healthy and sustainable diets, rich in plant-based foods and sustainable agricultural methods.
- Governments must address the role of poverty in driving malnutrition and increase access to social protection measures such as basic incomes during crises.
- Governments must recognise and address the gendered impacts of climate change at all levels of decision-making, across sectors.
- Scaling up investment and policy support for water, sanitation and hygiene (WaSH) infrastructure must be a priority in countries with a high burden of malnutrition, supported by donors and multilaterals.

NATURE

- Governments and the UN must recognise the role and importance of nature for climate change mitigation, adaptation, resilience, and loss and damage and in human rights, and provide a recommendation by COP27 on how to include this formally in the UNFCCC.
- The Global Stocktake should assess practices that must stop, such as fossil fuel use and risks of reliance on unproven technologies.
- The development and humanitarian sectors should work with environment actors on environmental mainstreaming in their operations.

GENDER-FOCUSED RESPONSES

- Mitigation and adaptation efforts should systematically and effectively address gender-specific impacts of climate change.
- Financing mechanisms must reflect women's priorities and needs. The active participation of women in the development of funding criteria and allocation of resources for climate change initiatives is critical, particularly at local levels.
- The equal consultation and participation of women in climate change initiatives must be ensured, and the role of women's groups and networks strengthened.

TRANSFORMATIVE AGRICULTURAL ADAPTATION

- More research and innovation is needed to address the needs of small-scale farmers; the vast majority of studies are not relevant to this population.
- Governments and donors should invest in delivering training and tools for transformative agricultural adaptation, such as agroecology, to ensure long-term resilience and food and nutrition security in areas most vulnerable to climate change.

INTRODUCTION

The climate emergency is a humanitarian emergency, and it is predicted to get a lot worse, even if the rise in average global temperatures is kept to 1.5°C. In all scenarios, there will be food crises globally due to the warming climate and biodiversity loss, extreme weather events will become more frequent, and growing seasons will be shorter. Freshwater will become scarcer, and disease and malnutrition will rise. This will contribute to displacement and conflict and – as is so often the case – women and children will be disproportionately affected.

As global health experts have recently warned, 'the consequences of the environmental crisis fall disproportionately on those countries and communities that have contributed least to the problem and are least able to mitigate the harms.'³⁴

Currently, we are on course for 2.7°C of warming, and many of the effects are already locked in.³⁵ Based on this trend, by 2040 3.9 billion people will be exposed to major heat waves, 400 million will be unable to work, and there will be an additional 10 million deaths per year. There will be up to 50% loss in crop yields, 700 million more people will be exposed to drought risk, and there will be increased flooding. More alarmingly, tipping points are already being reached, including melting permafrost and Amazon die back. All these will increasingly impact human health, nutrition and economic security.

The rise in the frequency and intensity of natural threats due to the climate crisis will remain a key accelerating factor in increasing hunger over the next five years, with a particularly heavy toll on the most vulnerable communities. The resulting pressures on resources, food security and ecosystems will exacerbate existing social challenges in the poorest regions of the world, bringing an additional set of challenges. With this in mind, we urgently need to better understand and respond to the impacts of the climate crisis on hunger and nutrition.

HUNGER AND MALNUTRITION: HOW CLIMATE CHANGE IS DRIVING A CRISIS

The climate crisis is already driving devastating hunger. Out of the 35 countries at the top of the GAIN ND Climate Risk Index (CRI),³⁶ 27 of them – 8 out of 10 – are already hunger hotspots³⁷, where thousands of people are living with crisis or worse level food insecurity. In these 27 countries alone, over 117 million people – on average more than one in five of the population – are living with crisis or worse level hunger³⁸. Thousands are living in famine like conditions, or are on the brink³⁹. Madagascar is frighteningly close to a climate change induced famine⁴⁰. Enduring the worst drought in 40 years, thousands of people are reduced to eating insects and cactus leaves, for lack of real food.

The impacts are hardest on the children. Nearly one in three children in these 27 countries is living with chronic malnutrition, which stunts growth and harms children's capacity to learn and develop⁴¹. Thousands of children too are acutely malnourished, which can be a fatal condition that requires urgent treatment⁴².

Climate change is not the only cause for hunger and malnutrition in these 27 countries. Protracted conflict, poverty and inequality are also leading causes. But climate change is an additional stressor in such fragile places, contributing to the risk of new conflicts emerging, and tipping vulnerable communities over the edge.

The great injustice of this is that the people worst affected by climate change – going hungry, missing out on healthy childhoods, dying even – are the least responsible for causing it. The average greenhouse gas (GHG) emissions in these countries is 1.22 tonnes per person.⁴³ By comparison, in the G7⁴⁴, where leaders have recently signed a compact to end famine⁴⁵, the average person is responsible for 8.92 tonnes of GHG emissions each year.⁴⁶ This is seven times the average of the most at-risk countries.

34 BMJ 2020, [Call for emergency action to limit global temperature increases, restore biodiversity, and protect health](#).

35 Quiggin, D., De Meyer, K., Hubble-Rose, L. and Froggatt, A., 2021. [Climate change risk assessment 2021: The world is dangerously off track to meet the Paris Agreement goals](#).

36 This is calculated based on the [University of Notre-Dame GAIN Climate Risk Index \(CRI\)](#).

*A country's ND-GAIN index score is composed of a Vulnerability score and a Readiness score. Vulnerability measures a country's exposure, sensitivity and ability to adapt to the negative impact of climate change. ND-GAIN measures the overall vulnerability by considering vulnerability in six life supporting sectors – food, water, health, ecosystem service, human habitat and infrastructure'.

37 This is calculated based on the latest United Nations Population Division estimates.

38 On average 22% of the populations of each of these countries is living in IPC3+ (crisis level food insecurity) conditions. This calculation is based on the average of the populations in IPC3+ across all countries, but has not been adjusted for population size. Data source: [IPC Integrated Food Security Phase Classification, IPC Mapping Tool, Acute Food Insecurity \(2019-2021\)](#).

39 Famine like conditions have been declared in Yemen, Ethiopia, Madagascar, north-east Nigeria and South Sudan.

40 BBC, 2021, [Madagascar on the brink of climate change induced famine](#).

41 Data source: Unicef, WHO, The World Bank (2021) [Levels and trends in child malnutrition: key findings of the 2021 edition of the joint child malnutrition estimates](#). New York: United Nations Children's Fund; 2021.

42 Ibid.

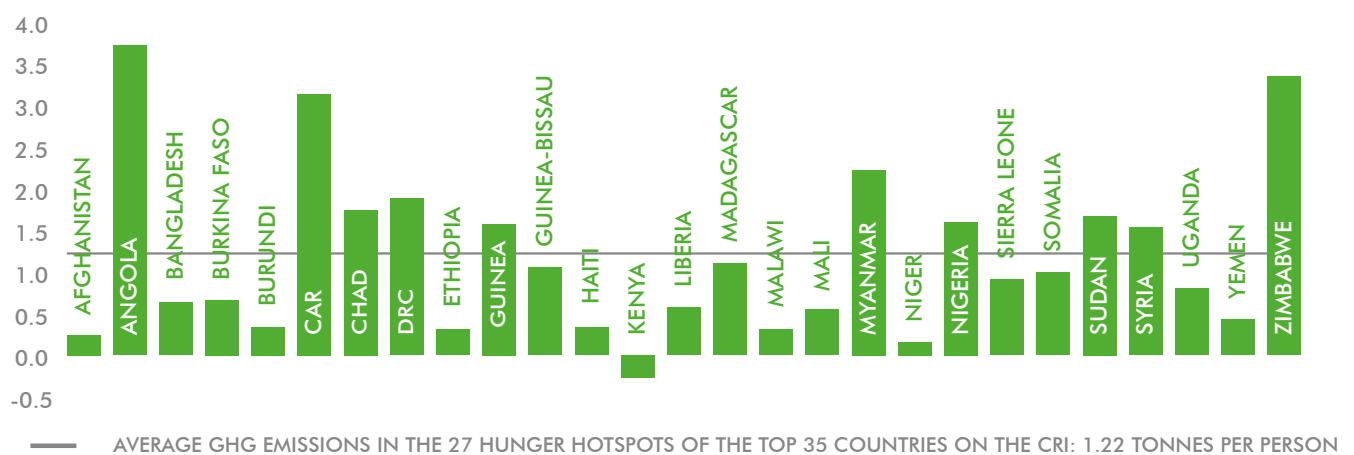
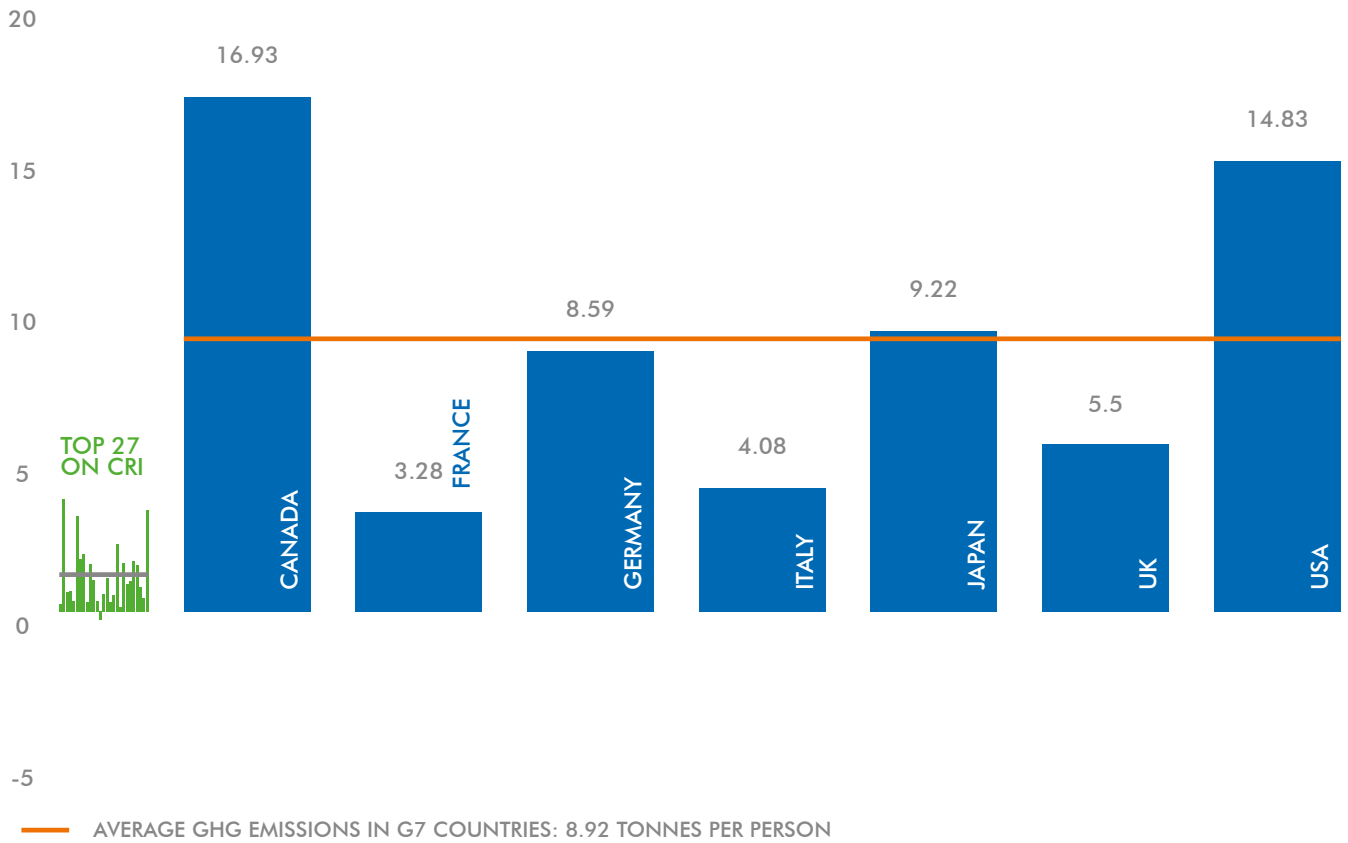
43 Data based on OurWorldInData.org, Ritchie H. and Roser M. (2020). [CO₂ and Greenhouse Gas Emissions](#).

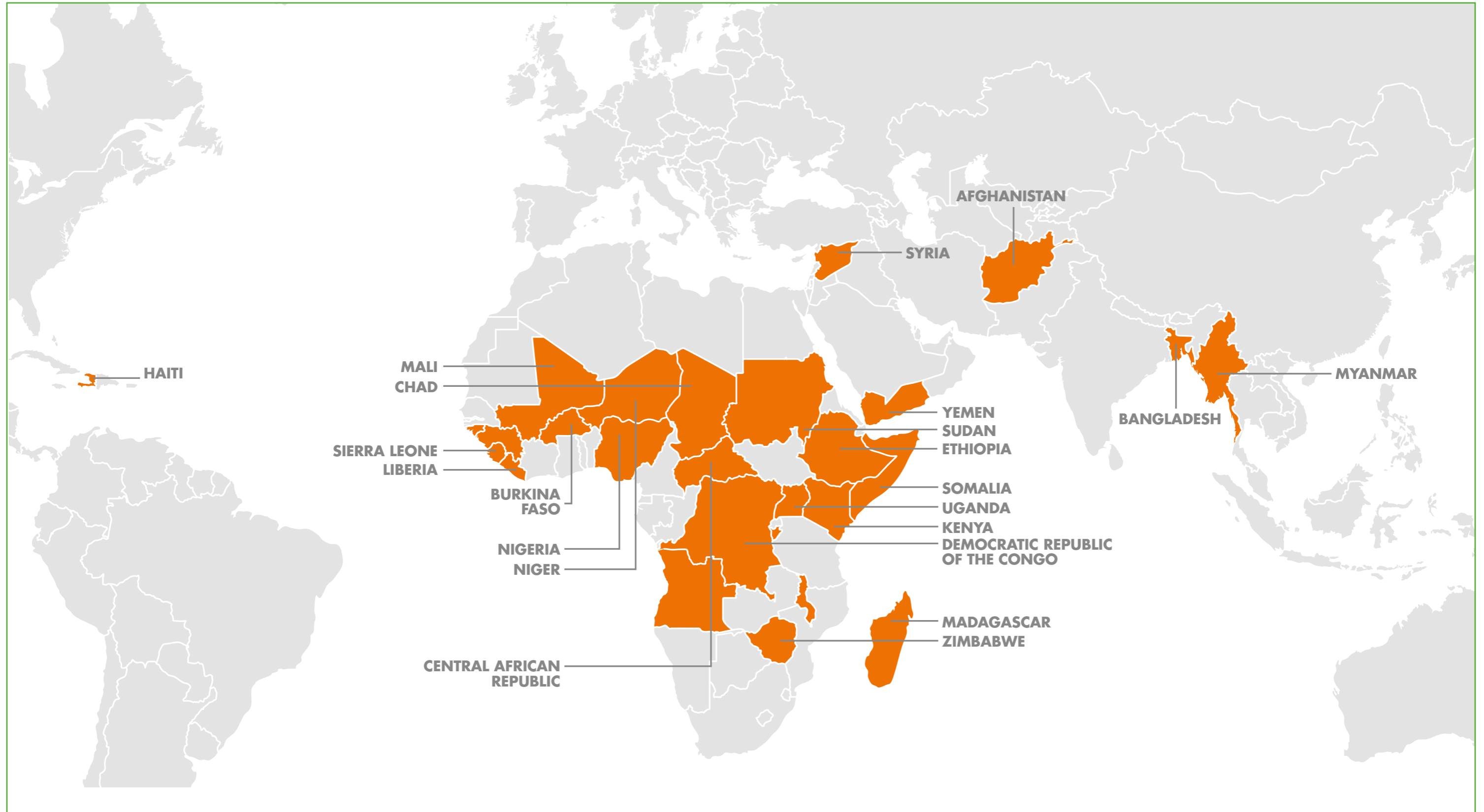
44 The countries in the G7 are the UK, US, Italy, Germany, France, Canada and Japan.

45 [G7 Famine Prevention and Humanitarian Crises Compact \(2021\)](#)

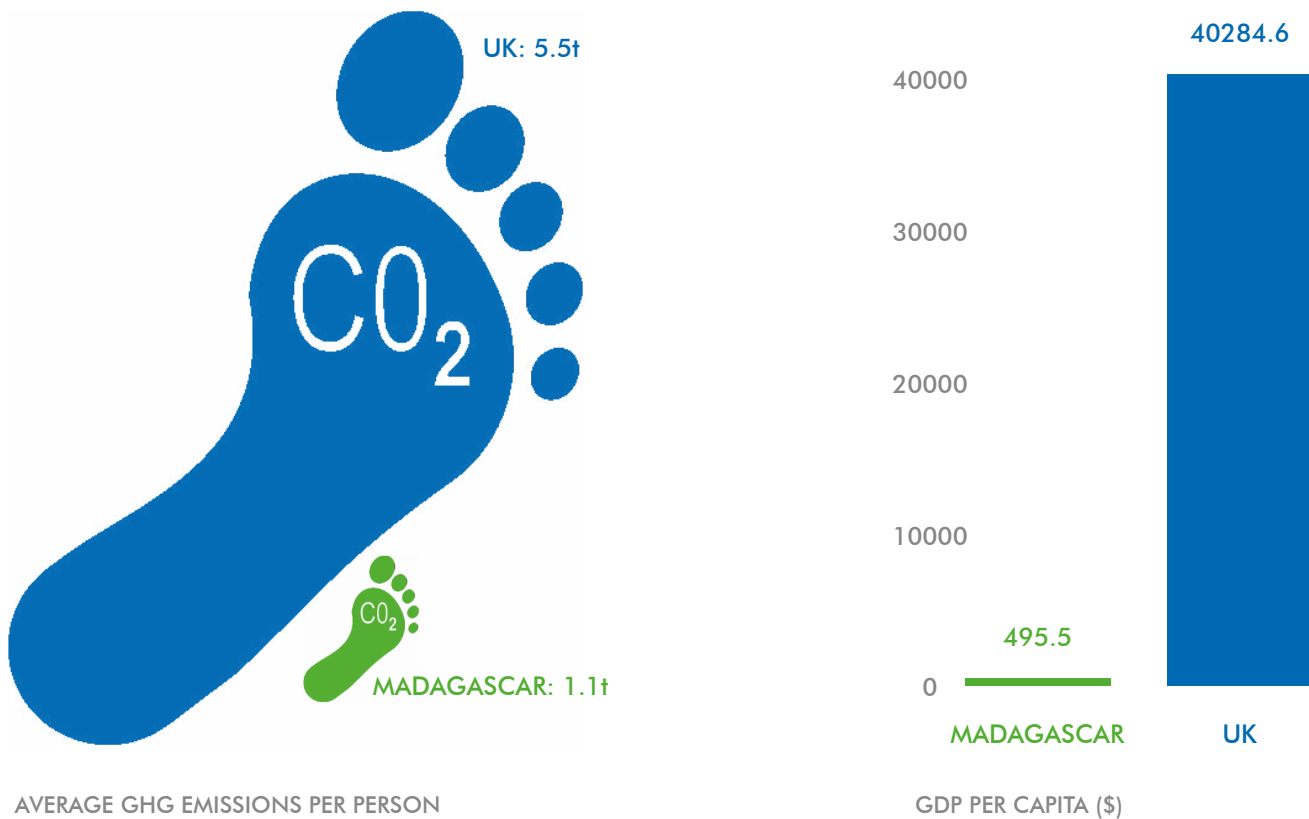
46 Data based on OurWorldInData.org, Ritchie H. and Roser M. (2020). [CO₂ and Greenhouse Gas Emissions](#).

PER CAPITA EMISSIONS IN G7 COUNTRIES AND THE HUNGER HOTSPOTS AT GREATEST CLIMATE RISK





Hunger hotspots at the top of the Climate Risk Index (CRI)



AVERAGE GHG EMISSIONS PER PERSON

GDP PER CAPITA (\$)

Comparison of GHG emission and GDP per capita between UK and Madagascar

The total GHG emissions of these 27 most vulnerable countries is less than 5% of the total emissions of G7 nations⁴⁷. And people in these countries have vastly less in the way of the financial resources needed to cope and adapt.

Gross Domestic Product (GDP) per person in these countries is less than 2.5% of per person GDP in G7 nations⁴⁸.

Analysis of the climate risk of rich G7 nations finds that, despite the clear and devastating impacts of wildfires, heatwaves and floods across these countries, the impacts are still very far from the severity of what the world's poorest countries are faced with⁴⁹.

The UK, for example, has per capita emissions five times higher than Madagascar, where nearly half the population are living in a climate change linked food crisis, and four in ten children have chronic malnutrition. Yet the UK's wealth per person is over 80x greater than Madagascar, giving the country vastly greater resources to adapt⁵⁰. See Annex 1 for full data on the 27 hunger hotspots and G7 countries described here.

The climate crisis intersects with simultaneous urgent needs to address inequalities in all forms, conflict, environmental degradation and biodiversity loss, all of which are major drivers of hunger and malnutrition. In the next section, we explore some of the most critical concerns, from food systems change to gender inequality.

FOOD PRODUCTION AND CONSUMPTION

IMPACTS ON AGRICULTURE

Global agriculture is rapidly becoming more sensitive to climate change, and its effects are increasingly more pronounced on yields, harvests and nutrition.⁵¹ These impacts are disproportionately felt in the global South, and are exacerbating inequality between poor and rich countries.^{52,53}

Those who are profoundly impacted by climate change-related inequalities are particularly those experiencing pre-existing marginalisation and gender-based inequalities and discriminations –

47 The total GHG emissions of G7 countries is 8700mt. This is more than 20x the combined GHG emissions of the 27 hunger hotspots at greatest climate risk. Total GHG emissions is 421mt, outliers are Angola, Nigeria and Bangladesh.
 48 Average GDP per capita is \$970 in the 27 affected countries. Average GDP per capita in the G7 is \$43,300. Data source: World Bank national accounts data, and OECD National Accounts data files.
 49 There average ranking of G7 countries on the GAIN ND Climate Risk Index is 17, compared to an average position of 166 (out of 182 countries) for the most food insecure. 182 being the most vulnerable and least prepared. Data source: URL: <https://gain.nd.edu/our-work/country-index/rankings/>
 50 See tables in Annex 1
 51 Ortiz-Bobea, A., Ault, T.R., Carrillo, C.M. et al. [Anthropogenic climate change has slowed global agricultural productivity growth](#). Nat. Clim. Chang. 11, 306-312 (2021).
 52 Diffenbaugh, N. S. & Burke, M. Global warming has increased global economic inequality. Proc. Natl Acad. Sci. USA 116, 9808-9813 (2019)
 53 Letta, M. & Tol, R. S. J. Weather, climate and total factor productivity. Environ. Resour. Econ. 73, 283-305 (2019)

especially women and girls, communities already living in extreme poverty, and/or those who have an economic reliance on agriculture.⁵⁴

Climate change will exacerbate malnutrition by reducing nutrient availability and the quality of food. In 2020, 2.37 billion people were affected by malnutrition and irregular access to nutritional needs with women experiencing a higher likelihood of food insecurity than men in almost two thirds of countries^{55, 56}. Traditional gender roles and male migration due to the need for diversified income often restrict the capacity of women to develop adaptive strategies to climate change. Many women have limited decision-making power to diversify income, operate their own land due to gendered land ownership laws, and find information and support from governmental policies or services that can prioritize supporting men^{57 58}.

Women living in rural contexts often depend on forests for fuel, cooking, and access to nutrition; yet, women make up just 25-35% of community forestry use and have limited rights to land ownership.⁵⁹

Alongside men leaving rural communities for work, this creates gendered barriers for women who are unable to develop land to meet and adapt to their nutrition needs,⁶⁰ despite them having essential knowledge in terms of adaptation, agroecology and biodiversity conservation practices. As risks, disasters, and impacts from climate change persist, there will be increased vulnerability caused by decreases in water and food availability in the African Sahel, the Mediterranean, central Europe, the Amazon, and western and southern Africa.⁶¹ Food security and climate change are strongly associated with gender-based and equity-related vulnerabilities, and women, children, marginalised groups, and communities living in poverty will bear the brunt of these vulnerabilities.

The need for urgent action to limit global temperature rises to the level that is already locked in is clear.

Limiting warming to 1.5°C will result in smaller net reductions in yields of maize, rice, wheat, and potentially other cereal crops, particularly in sub-Saharan Africa, southeast Asia, and central and south America, and in the nutritional quality of rice and wheat. Keeping warming to 1.5°C rather than 2°C would also avoid declining tropical crop yields in west Africa, southeast Asia, and central and south America.⁶²

Climate change will affect yield quantity and quality, reproduction, growth rates and increased temperature-related stress and deaths in livestock,⁶³ as well as feed quality and spread of pests, ruminant and zoonotic diseases,⁶⁴ Water resource availability for livestock will decrease owing to increased runoff and reduced groundwater resources. Increased temperature will induce changes in river discharge and the amount of water in basins, leading human and livestock populations to experience water stress, especially in the driest areas (i.e., sub-Saharan Africa and south Asia). Elevated temperatures also increase methane production. Globally, a decline in livestock of 7-10% is expected at 2°C, with associated economic losses of between \$9.7 and \$12.6 billion.⁶⁵

Fisheries and aquaculture face similar problems. Global fisheries and aquaculture contribute a total of 88.6 and 59.8 million tonnes respectively of fish and other foods annually.⁶⁶

They are essential for meeting global protein demand, playing a vital role in the food security of many least developed, vulnerable countries.⁶⁷ Increased temperatures, ocean acidification, introduced and invasive species, disease, parasite and pathogens and other drivers are affecting fisheries and hatching grounds. Rising sea levels and storm intensification pose an additional risk, compounded by the rapid degradation of key ecosystems such as coral reefs, seagrass and mangroves.⁶⁸ These changes are driving many small-scale fisheries well below the sustainable harvesting levels required to maintain these resources as a source of food.

54 Eastin, J. Climate Change and Gender Equality in Developing States. *World Development* 2018; 107:289-305.

55 UN Women. [Sustainable Development Goal 15: Life on Land](#). Accessed September 1, 2021.

56 UN Goal 2

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FOOD PRICES

Food prices are rising now, and will continue to do so as the effects of climate change are increasingly felt. As well as direct climatic price rises there will be other upward pressures on the costs of production, such as increased demand for dwindling resources, changes in tax and subsidy regimes, and fossil fuel availability and prices. Price rises would be further pressurised by the global shift to more resource intensive, livestock heavy, diets.

Climate change is often called a threat multiplier, impacting on existing problems. As droughts, storms and floods increase, their interconnected impacts can be felt through global economic and trading systems. For example, the prices of the four main traded food crops in the world (wheat, maize, rice and soybeans), produced in breadbaskets such as Australia, Brazil, the USA and Europe, are vulnerable to simultaneous failures. When this has happened in the past, there is evidence that this has contributed to food price riots and, arguably, conflicts.

For examples droughts and heat waves in the Ukraine and Russia in 2007 and in 2009 damaged wheat crops and caused global wheat prices to rise considerably⁶⁹. With climate change, there is a likelihood of increased water stress across these breadbaskets, which will put increased pressure on the food system and prices.⁷⁰ As we saw with Covid-19, it is often those least able to afford food who suffer most when price spikes hit.

Rises in food prices uniquely affect access to adequate nutrition for communities with a lower and middle socio-economic status, who are largely women and children. A minimum of 70% of those living in poverty reside in rural areas, and are dependent on smallholder farming for domestic use. This creates issues of food insecurity due to limited purchasing power for seeds and food, and the need to buy less nutritious but more adaptable crops.⁷¹ Of this 70%, almost half of farm labour falls under the responsibility of women who are often in charge of food production, processing, storing, and livestock, as well as collecting water and firewood.⁷²



Agauwol Akec, farmer and mother of 5 children, walks home after fetching water from a well refurbished by Action Against Hunger, in her home village of Yargot, South Sudan.

⁶⁹ [Why Have Food Commodity Prices Risen Again?](#), by Ronald Trostle, Daniel Marti, Stacey Rosen, and Paul Westcott, USDA, Economic Research Service, June 2011

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Many women may not have the ability to access resources or adapt to rising food prices due to limited land ownership and financial security, increasing the threat of undernutrition and loss of livelihoods.^{73,74}

Households are also switching to more cost-effective and less diverse diets due to rising food prices, limiting the nutritional value of food. Women are taking on the hardships of shifting climates and labour and are at a larger threat of anaemia in their reproductive years, which is a profound contributor to 20-40% of maternal deaths.⁷⁵

There is also an increased risk of malnutrition for children in countries experiencing escalated food prices. In 2015, India housed one third of the world's malnourished children, and as food prices rose showed a significant increase in wasting (28%) and an increase in overall malnutrition.⁷⁶

NATURE, BIODIVERSITY LOSS AND CLIMATE

The unique biodiversity of our planet provides us with food, water and shelter, influences our climate, controls diseases and regulates nutrient and water cycles. In 2021, the World Economic Forum announced that biodiversity loss is humanity's third greatest existential threat, behind weapons of mass destruction and state collapse.⁷⁷ The failure to slow biodiversity loss and address climate change has huge humanitarian consequences – if biodiversity is not restored, the battle against hunger and climate change will be lost.

Biodiversity is essential to our food system. Crops and livestock have evolved under and adapt to specific conditions. Local crop and livestock varieties tend to be resilient and adaptable in the face of a changing climate as they have evolved in that location, have great adaptive capacity and there will be wild crops relatives, a plant closely related to a farmed one, which can be used to build adaptive capacity and enhance local food security.

A nutritious diet is built on varied local production systems and species. Yet just 12 crops and five animal species provide 75% of the food we produce worldwide. Of the 250,000-300,000 known edible plant species, only 150 to 200 are used regularly by humans. Just three – rice, maize and wheat – make up nearly 60% of the calories and proteins obtained by humans from plants.

Since the 1900s, 75% of plant genetic diversity has been lost as farmers worldwide have exchanged working with multiple local varieties for genetically uniform, high-yielding varieties.⁷⁸

The results of this loss of agricultural diversity have contributed to climate change, ecosystem destruction and hunger. Current food production depends heavily on the use of inputs such as fertilisers, pesticides, energy, land and water, and on unsustainable practices such as monocropping and heavy tilling.

This has reduced variety in landscapes and habitats, threatening or destroying the breeding, feeding and/or nesting of birds, mammals, insects and microbial organisms, and crowding out many native plant species.

As a major contributor to global greenhouse gas emissions, our food systems are driving climate change, which further degrades habitats and causes species to disperse to new locations. In turn, this brings new species into contact with each other and with people, leading to competition for space and resources and resulting in invasive species taking over. It also creates new opportunities for the emergence of infectious disease.⁷⁹

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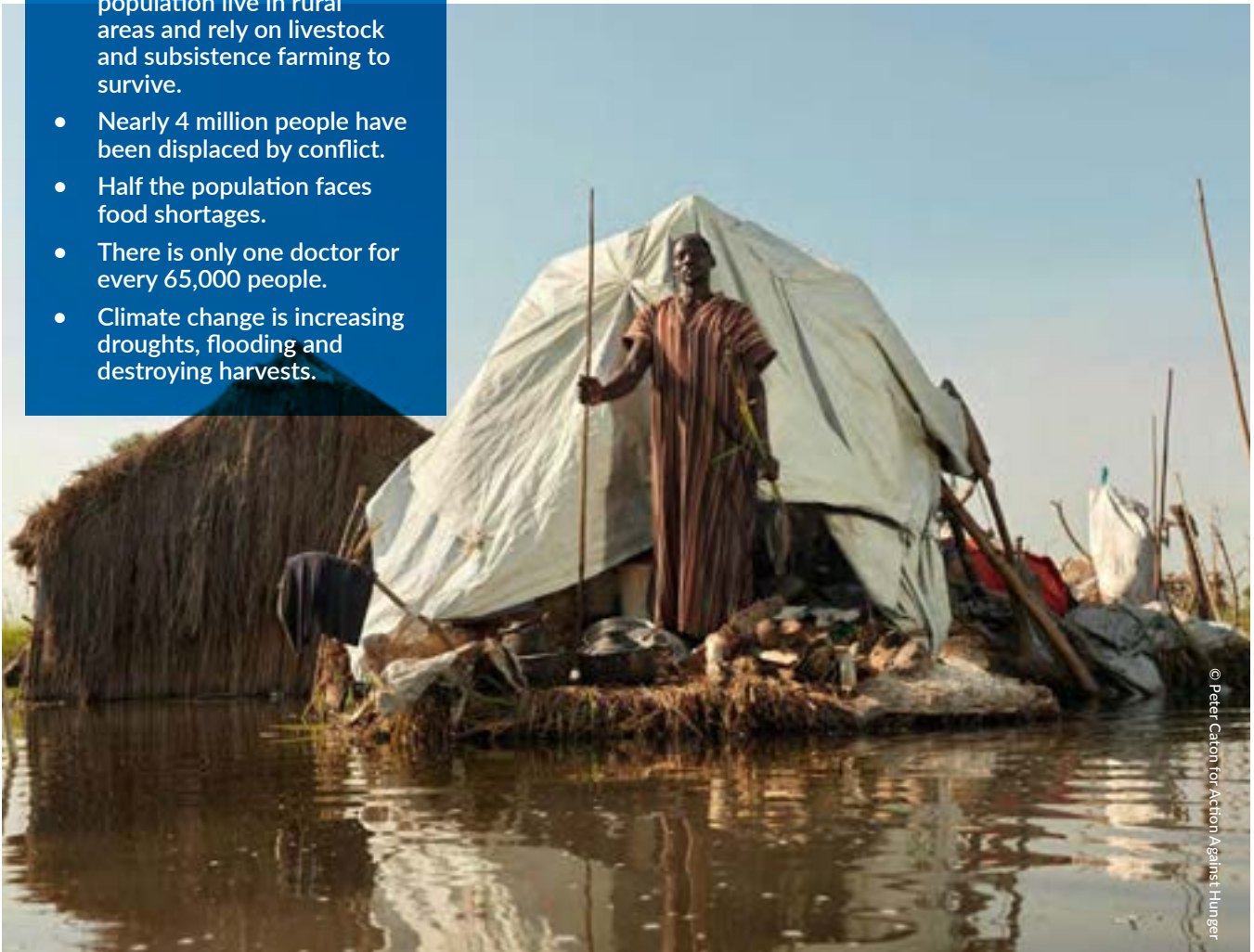
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SOUTH SUDAN - FACTS

- Around 80% of South Sudan's population live in rural areas and rely on livestock and subsistence farming to survive.
- Nearly 4 million people have been displaced by conflict.
- Half the population faces food shortages.
- There is only one doctor for every 65,000 people.
- Climate change is increasing droughts, flooding and destroying harvests.



© Peter Caron for Action Against Hunger

Samuel stands atop the small grass island where he and his father have been living following the flood.

CASE STUDY - SOUTH SUDAN**PETER AND SAMUEL - AS THE WATER RISES SO DOES HUNGER**

In 2020 in Old Fangak, South Sudan, unusually heavy rains caused the waters of the White Nile to rise, causing flooding and leaving families with little to eat and nowhere to live. Father and son, Peter and Samuel, were forced to send their family away to live on higher ground when the water destroyed their home and killed their livestock. But they stayed behind. They were relatively lucky, they had a fishing net and could catch fish in the flood waters to send to their family and to sell. "All the goats and cows are dead. All the sorghum is submerged. The crops that we cultivated are underwater. All of it,"

Having only fish means they don't have a balanced diet and are always hungry. "I take the fish to the highland and either sell it and buy flour so that my family can eat chapati or if I can't sell the fish they just eat it," says Samuel. Peter suffers with pain in his legs and so cannot travel with Peter to give the food to his family. "I miss my grandchildren," he says.

Peter and Samuel say that floods like this are unheard of. "The water is still coming and coming although the rain has stopped. This flood could be the worst I've seen in my life. People will die of hunger," says Peter.

GENDER EQUALITY AND WOMEN'S EMPOWERMENT AND RIGHTS

Women and children bear much of the brunt of climate change, being 14 times more likely than men to die during a disaster. They constitute 70% of people living in poverty in low income countries who are the most vulnerable to climate change and least able to adapt^{80 81}. Women are also often at greatest risk of displacement: the United Nations Development Programme estimates that 80% of climate-displaced people are women.⁸²

Globally, one fourth of all economically active women are engaged in agriculture, where they must contend with climate consequences such as crop failure. Often, they have access to fewer resources to cope. By 2050, wheat production may fall by 49% in south Asia and 36% in sub-Saharan Africa. Lower yields mean a drop in income as well as a scarcity of food, with the risk that women and girls will be the first to eat less. Other pressures come from their disproportionate responsibilities, including unpaid care work and collecting increasingly scarce water and fuel.

In coastal communities, fishing industries are predominantly managed by men, and women are often in charge of lower paying jobs such as fish processing and market sales. Increases in coastal disasters, shifting resource availability, pollution and plummeting fish stocks further threaten communities, and more specifically the sustainability of livelihoods for women.⁸³

However, through their experiences and traditional knowledge as stewards of many natural resources, women can offer valuable insights into better managing scarce resources and mitigating climate risks. They also have a right to all the skills, tools and finances needed to adapt to climate change and to participate in decisions with profound implications for people and the planet.

Women and girls are affected by increased gender-based violence, early and forced child marriage, fewer social and democratic opportunities, and higher rates of deprivation and poverty.⁸⁴ Displaced or migrating and immobile women are likely to face gender-specific challenges.

Girls face education and health barriers including gendered expectations of care, safe access to facilities, economic disparities, and challenges in accessing support for adolescent girls' health.

In a few specific cases it is not women who are impacted the worst. Men and boys are more likely to suffer from climate change-related mental health challenges, and unmarried men have a higher risk of death during heat waves than unmarried women.⁸⁵ Additionally, gender-diverse people will continue to exist on the margins of humanitarian care and climate change policy advances if they are not included within the scope of diverse social groups impacted by climate change risks, hazards, and hardship.⁸⁶

In rural areas, livelihoods are dependent on natural resources – which are highly vulnerable to a changing climate. Women and children are more dependent on these resources and are likely to have trouble accessing the information, skills, and knowledge needed to adapt. Women and diverse social groups are often excluded from decisions determining how climate challenges should be overcome. This is despite contexts where women and indigenous peoples may hold region-specific understanding of traditional land management and knowledge systems, making it close to impossible to deliver social justice and effective climate action.^{87, 88}

HEALTH

Climate change is often neglected in conversations around human health, despite the clear links it has to key health determinants such as clean water, disease vectors and air quality. The effects on health are overwhelmingly negative.

Increased temperatures directly cause heat stress and contribute to cardiovascular deaths, while extreme cold can affect the health of the most vulnerable. Extreme weather disasters result in deaths, injuries, clean water and sanitation disruption, trauma and mental illness.

A changing climate means that disease bearing insects are also on the move. For example, as temperatures and carbon dioxide concentrations increase, so does the density, geographical distribution and the number of species of mosquitoes,⁸⁹ leading to increases in related diseases.

Climate change acts as a health threat multiplier and increases existing health inequalities, particularly between genders.

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Safiya, gives her severely malnourished daughter Fardosa Plumpy Nut at Yabelo General Hospital, Ethiopia

Women are vulnerable to the health risks connected to climate change. In many regions, women and girls have increased health risks as a result of climate change compared to boys and men.⁹⁰ Climate change might affect women's ability to seek reproductive and maternity health services, and pregnancy-related outcomes can be affected by changes in infectious diseases, temperature, and nutritional status.⁹¹ Pregnancy and childbirth pose particular risks. Every day, 830 women die from preventable causes related to pregnancy and childbirth around the world. Globally, that amounted to about 303,000 women in 2015.

Women and men may have different health care needs, but they have an equal right to live healthily. For many women and girls, however, gender discrimination systematically undermines their access to health care, for reasons that include fewer financial resources and constraints on mobility.

This is compounded by additional burdens imposed by gender disparities that limit their ability to stay healthy. These include long hours spent on domestic work, unsafe work environments and gender-based violence, with mechanisms for prevention and protection often inadequate.

Food insecurity, leading to malnutrition and hunger and the associated health impacts, is a direct and tangible outcome of the climate crisis.

NUTRITION

THE NUTRITION PROFILE OF FOOD

The implications of climate change extend across all determinants of malnutrition, from underlying factors such as gender equality and environmental conditions, to more direct determinants such as food and nutrient intake, and disease.⁹² The effects of climate change on nutritional status vary based on gender,⁹³ food security, and environmental conditions affecting food quality and availability. Climate change exacerbates undernutrition in four main ways:

1. Household food security: access to safe, affordable, and sufficient food, child feeding and care practices, environmental health and access to health services.⁹⁴ This affects stunting and micronutrient deficiencies in women and children, with food insecurity affecting women more than men in two thirds of countries globally.⁹⁵

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95 UN Women. [Sustainable Development Goal 2: Zero Hunger](https://www.unwomen.org/en/transforming/2016/05/sustainable-development-goal-2-zero-hunger).

2. Responses to climate challenges: affect women's labour allocation and increase the burden of household and agricultural responsibilities. Women have to work harder to sustain themselves and their families due to food and resource insecurity, threatening their nutritional status as they may not have capacity to obtain the nutrients they need.^{96,97} Gender discrimination influences the time women have available for child feeding and care practices, not only affecting their own nutritional needs, but also those of children.⁹⁸ Women and children are the first to eat last, further affecting the nutritional status of both women and children.⁹⁹
3. The yields and the nutrient content of foods will change. Higher carbon dioxide concentrations affect the nutritional composition of plants, increasing the production of carbon-dense micronutrients (e.g. vitamin C) at the cost of essential nutrients such as protein, iron, and zinc.¹⁰⁰
4. Anthropometric carbon dioxide emissions: affect the bioavailability and absorption of nutrients used by the body.^{101,102} Due to climate change, there is a potential increase in the risk of nutrient deficiencies such as anaemia in women and children, especially within communities where food diversity is declining.

The effects of climate change on agriculture will have significant implications for food security, and thus on human diets and nutrition.

Reduced access to sufficient nutrient-dense foods will lead to impaired nutritional status and diminished resiliency, particularly in low-income communities.

Even in "business-as-usual" contexts where disasters and drastic changes in climate change may not have an immediate effect, nutrition and health outcomes are likely to worsen.¹⁰³

There is still poor understanding from global bodies, health care professionals and civil society around the link between climate change and nutrition, and an urgent need to start linking them together.

In order to tackle nutritional deficiencies in the population, warming needs to stay at 1.5°C, and adapted or new varieties of crops and livestock need to be raised. The effects will be felt greatest in the global South and least developed countries.

CHILD AND MATERNAL NUTRITION

In 2020, globally 149.2 million (22%) of children under five years old suffered from stunting. Nearly three-quarters of the world's stunted children lived in central and southern Asia (37%) and sub-Saharan Africa (37%). Meanwhile, 45.4 million children under five years old (6.7%) were wasted.¹⁰⁴

Climate change is a key contributor to hunger and poor nutrition in children and pregnant women worldwide. It affects maternal, neonatal, and child health through maternal nutrition, environmental risks, and infectious disease. The effect will be worse in regions that are already battling malnutrition. Failing to urgently address nutrition and climate change concurrently will slow down, or even reverse, progress made so far.

One of the biggest issues is dietary diversity – the variety of foods a person eats. This is an indicator of diet quality, and is noticeable in the under-fives. One global study found that in five of six regions, higher temperatures are associated with decreased dietary diversity.¹⁰⁵

Zinc deficiency is a particular risk. By 2050, elevated carbon dioxide concentrations could push an additional 138 million people into zinc deficiency, with disproportionate burdens for children and pregnant or lactating women who have heightened nutritional requirements.¹⁰⁶

Infectious diseases are more serious for maternal, foetal, neonatal, and child health, and are a key cause and consequence of malnutrition. With deteriorating water quality, the incidence and severity of food-borne illness, diarrhoeal disease, and environmental enteric dysfunction is set to rise.

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ETHIOPIA - FACTS

- The number of people in need of humanitarian assistance is 19.2 million.
- Over 35% of children suffer from some form of malnutrition.
- Action Against Hunger's programmes reached over 1.8 million people in Ethiopia in 2020.
- Of these, 668,956 people, including 22,591 children with severe and acute malnutrition under the age of five, were reached through curative and preventive nutrition and health activities.

Gelaye Bekele gives a cooking demonstration at a camp for displaced people in Guchi.

© Peter Caton for Action Against Hunger

CASE STUDY - ETHIOPIA

Ethiopia has long been associated with drought and humanitarian crises, and climate change is making things worse every day, not just for families but for healthcare workers like Gelaye too.

Gelaye Bekele, 24, works in an Action Against Hunger mobile therapeutic feeding programme, where she monitors children and educates mothers about nutrition and breastfeeding practices. "The mobile OTP is very important for this community because before, many people had to travel for more than 5km to reach a health centre. But now we go to the communities," she says.

"Around this area mothers face the challenge of hunger because they have to migrate from other places and they are poor. They don't have enough money to buy anything.

There is not enough rain in this area, and people are unable to grow anything which means they can't earn any money.

"In this area when the climate changes there isn't enough rain and the cattle don't get enough to eat so they don't give milk.... During the dry season, Action Against Hunger tries so hard to help malnourished children because the number of malnutrition cases increases so much that even this therapeutic feeding centre is full. It makes me feel sad to see that.

"But because of Action Against Hunger there are a lot of changes in this community. A lot of malnourished children have been saved because of the nutrition education and medication."

WATER

Rising sea levels are accelerating, while ocean heat storage and acidification are increasing, diminishing the ocean's capacity to moderate climate change. Rising sea levels have many impacts, for example saltwater intrusion into freshwater aquifers, inundation in low-lying areas and loss of land.¹⁰⁷ The degradation of coastal ecosystems reduces protection against storms, tsunamis and other sudden-onset events, leaving people exposed and vulnerable and increasing their risk of displacement. Without intervention, between 145 million and 565 million people living in coastal areas today will be exposed to, and affected by, rising sea levels in the future.¹⁰⁸

Increased salinisation inhibits seed germination and plant growth, which reduces coastal crop yields and may make arable land unproductive. It contaminates drinking water sources, undermining food and water security and increasing displacement risk. The loss of reefs and mangroves increases the vulnerability of coastal communities to rising sea levels as well as reducing their food security, as reefs and mangroves are key nursery grounds for juveniles and shelter for fish. This issue is particularly pertinent for small island developing states, given their low elevation, limited territory and dependence on natural resources and agriculture for subsistence. Whole communities are having to consider permanent relocation to higher ground or larger islands.¹⁰⁹

The ocean absorbs around 23% of the annual emissions of human-produced atmospheric CO₂, helping to alleviate the impacts of climate change. However, the CO₂ reacts with seawater, lowering its pH: known as ocean acidification. This acidification affects many organisms and ecosystem services, threatening food security by endangering fisheries and aquaculture. It also affects coastal protection by weakening coral reefs, which shield coastlines.

CLEAN WATER AND SANITATION

Water scarcity currently affects around 700 million people worldwide.¹¹⁰ Changing rainfall patterns are increasing water scarcity in some regions and is set to drive increasing tensions over access to river catchments.

Worryingly at the same time, increased temperatures increases the demand for water by plants, animals and people. Climate change also exacerbates water scarcity caused by exploitation and lack or mismanagement of water and related ecosystem services.

Given the uncertain impact that climate change and socio-economic trends will have on water resources, there is growing concern that water's use and allocation will give rise to conflicts between users.¹¹¹

Droughts, floods, saltwater contamination, poor service management, weak governance and environmental degradation all contribute to people not having clean water close to home, putting them at increasing risk of waterborne diseases such as cholera. Climate change is amplifying this danger.

The increasing unpredictability of weather patterns and extreme weather events and natural disasters also mean sewage systems are flooded with increasing frequency, contaminating water sources and the local environment. Severe droughts force people to resort to even less safe sources of drinking water.

Meanwhile, melting glaciers are upsetting the flow of rivers and will result in flooding and eventually water shortage. If climate change continues at its present rate, glaciers will disappear completely, with devastating effects on people throughout the river basin. Melting snow caps and glaciers will also drive rising sea levels and cause the salination of freshwater resources.

Climate change threatens to reverse progress in improving access to clean water, decent sanitation and good hygiene (WaSH), pushing more people into extreme poverty. 2020 was the hottest year on record, and 2021 is breaking records. The more global warming is locked in, the more people will feel its effects, and the worse these will be. It is vital that we develop climate-resilient water and sanitation systems, linked to better management of water resources such as aquifers and river basins.

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CASE STUDY - MADAGASCAR

Madagascar is undergoing the world's first climate change famine. Tens of thousands of people are suffering catastrophic levels of hunger and food insecurity after four years without rain. Half a million children under the age of five are on the verge of acute malnutrition.

The hunger gap, which usually starts in October, has started earlier in 2021 as the agricultural season has been very poor, food stores are exhausted, food prices have risen, and people have less money than ever. People have resorted to eating red cactus leaves, when they can find them, which can lead to sickness and diarrhoea.

Samoline Razafimamisoa, 35, is a mother of seven, who struggled to feed her children. Thanks to Action Against Hunger, she now works on a market garden.

She says "the climate is not the same as it was before. It's getting worse. Before the price of food was affordable and the rain was always regular but now the rain is scarce and prices are going up. It has become very hard."

"Our life has changed with this market gardening. The products we have here, we couldn't even buy them for 1000 MGA at the market before. Now we don't need them because we grow what we need. Plus it's a source of income for us. This project has changed our lives. This is why market gardening is very important for us."

"In the past, we practiced market gardening, but we had no equipment. Then we worked with Action Against Hunger, who gave us materials such as watering cans, spades, buckets and rakes. We also got seeds for courgettes, carrots, aubergines, tomatoes, Chinese cabbage. It's very varied. We plant everything we can."

MADAGASCAR - FACTS

- Madagascar's Grand Sud continues to face a food security and nutrition crisis, with 135,476 children under five years old suffering from acute malnutrition.
- The longstanding drought has created urgent WaSH needs and only 30% of people have access to drinking water services.
- The 2019/2020 rainy season was the lowest observed since 2014.
- Action Against Hunger reached 127,960 people and launched 14 mobile healthcare teams in 2020.



© Stéphanie Rakotonalala for Action Against Hunger

Samoline Razafimamisoa stands in front of her market garden.

CONFLICT AND CLIMATE SECURITY

The UK Ministry of Defence sees climate change and its impacts as a threat to national security and a leading contributor to global conflicts,¹¹² while climate-related risks make up the majority of the World Economic Forum's 2021 threat report.¹¹³

The potential security consequences are far reaching and complex, and are already being felt throughout vulnerable regions. The 2019 IPCC¹¹⁴ Climate Change and Land report concludes that extreme weather and climate may lead to increased displacement and conflict. In 2020, conflict and disasters triggered 40.5 million new internal displacements across 149 countries and territories.

In the first half of 2020 there were 9.8 million climate-related displacements mainly in South and South-East Asia and the Horn of Africa.¹¹⁵ Communities are facing wide-ranging impacts on their health and livelihoods through the loss of food, water, land and other natural resources essential for survival and wellbeing. Resilience to climate-related disasters, environmental degradation and displacement is often lowest in fragile and conflict-affected contexts. Without ambitious climate action and disaster risk reduction, climate-related disasters could double the number of people requiring humanitarian assistance to over 200 million a year by 2050.¹¹⁶

Climate change is a displacement trigger in its own right when, for example, coastal land is lost to rising sea levels. It can also lead to secondary displacement. In 2020 there were new disasters forcing already displaced people to flee again. Flooding in Somalia triggered around 250,000 secondary displacements from overcrowded camps, while many people who fled torrential rains and severe flash floods in Yemen were displaced by conflict or drought.¹¹⁷

Some other displacement drivers include desertification, glacial retreat, increasing temperatures, land degradation, reduction in rivers and loss of biodiversity. These become more apparent with every passing year. However, the overall scale of the phenomenon is unknown because it is so difficult to monitor.

RESOURCE CONFLICT

Currently, most conflict-driven food insecurity can be linked to the active decisions of warring factions – such as the destruction of crops or a decision to starve populations.

Climate change and the overexploitation of natural resources aggravate instability and conflict, which in turn trigger displacement and hunger.¹¹⁸ Climate projections anticipate a 54% increase in armed conflict (393,000 deaths) by 2030 in the absence of climate change mitigation.¹¹⁹ Many conflicts are already linked to climate-related events, the depletion of natural resources and the degradation of nature.

Countries are more conflict-prone when less agricultural land is available or it becomes less productive, when they are overly dependent on natural resources, or when events such as droughts are more frequent.¹²⁰ Seven of the ten countries most vulnerable to, and least prepared for, climate change, such as Haiti and Mozambique, host a peacekeeping operation or a special political mission. This include ¹²¹ Sudden- and slow-onset disasters may exacerbate conflict dynamics and increase the impact of other drivers of conflict and fragility.¹²² The eight worst food crises in 2019 were linked to both climate change impacts and conflict.¹²³ Additional crises, such as Covid-19, add to this complexity.

112 UK Ministry of Defence 2021. [Ministry of Defence Climate Change and Sustainability Strategic Approach](#).

113 World Economic Forum 2021. [The Global Risks Report 2021 16th Edition](#).

114 Intergovernmental Panel on Climate Change (IPCC) (2019). [Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems](#). Eds: Shukla, P. R., Skea, J., Calvo Buendia, E., et al.

115 [State of the Global Climate 2020](#)

116 International Federation of Red Cross and Red Crescent Societies (IFRC). [The Cost of Doing Nothing: The Humanitarian Price of Climate Change and How It Can Be Avoided](#). Geneva 2019

117 IDMC. [Disasters meet political unrest, displacing millions in East Africa](#), Expert Opinion. June 2020

118 [Selby and Hoffmann \(2014\)](#), [Salehyan \(2014\)](#)

119 [Burke et al. \(2009\)](#)

120 [IUCN report nature in a globalised world: conflict and conservation](#)

121 UN News July 2020. [Climate emergency 'a danger to peace'](#), UN Security Council hears

122 UNHCR, [In Harm's Way: International Protection in the Context of Nexus Dynamics Between Conflict or Violence and Disaster or Climate Change](#), 2018

123 OCHA (2020). [Global Humanitarian Overview 2020](#).

CLIMATE JUSTICE

In recent decades, there has been a significant increase in our global demand for food, timber, fibres, biofuel, and water. This has affected the ability of ecosystems to provide the regulating and maintenance services on which our economies ultimately depend. For example, land used for agriculture increased by over 100 million hectares between 1980 and 2000 across the tropics, with half of this land directly converting the tropical forests that regulate climate, host essential biodiversity and prevent soil erosion. In our oceans, fish catches have more than quadrupled since 1950. Data on our current and predicted future consumption tells a story of escalating demands for food,¹²⁴ energy¹²⁵ and other resources.¹²⁶

If we are to avoid exceeding the limits of what nature can provide on a sustainable basis, while still meeting the needs of the human population, consumption and production patterns will need to be fundamentally restructured. For example, food production is the most significant driver of terrestrial biodiversity loss. In 2016, livestock occupied over two-thirds of global agricultural land – 3.28 billion hectares. This figure does not include an additional 35% used for crop production for livestock feed.¹²⁷

Even as more than 10% of the world's population goes to bed hungry, there is also significant waste: approximately one-third of food produced is lost or wasted,¹²⁸ and food remains under-priced for the more affluent.

High-income countries have a greater degree of responsibility for climate damage than the rest of the world, and yet feel its effects the least.¹²⁹ However, in order to reduce the humanitarian impacts of climate change and to move to a more equitable system where the eradication of poverty is achieved, there is a need to deliver climate justice.

The energy sector accounts for 73% of direct global emissions, which includes energy use in industry (24%), electricity, heating and transport (16%), buildings and homes (11%), agriculture and fishing (2%), and food processing (1%). Meanwhile, agriculture, forestry and land use accounts for a further 18%.¹³⁰ In total, food from farm to fork accounts for 26% of all greenhouse gas emissions.¹³¹ G20 countries cause at least 78% these emissions, primarily through industry and lifestyle choices.¹³²



Climate change makes life challenging for herders as water and grazing land becomes harder to find.

124 <https://www.wri.org/research/creating-sustainable-food-future>

125 <https://www.statista.com/statistics/222066/projected-global-energy-consumption-by-source/>

126 OECD 2019, *Global Material Resources Outlook to 2060: Economic Drivers and Environmental Consequences*, OECD Publishing, Paris.

127 Foley, J. A., N. Ramankutty, K. A. Brauman, et al 2011. Solutions for a Cultivated Planet, *Nature*, 478(7369), 337–342

128 FAO 2019, *The State of Food and Agriculture 2019. Moving Forward on Food Loss and Waste Reduction* (Rome: FAO)

129 Hickel, J. 2020. Quantifying national responsibility for climate breakdown: An equality-based attribution approach for carbon dioxide emissions in excess of the planetary boundary. *The Lancet Planetary Health*, 4(9), e399–e404

130 <https://ourworldindata.org/emissions-by-sector?country=>

131 Poore, J., & Nemecek, T. 2018. Reducing food's environmental impacts through producers and consumers. *Science*, 360(6392), 987–992.

132 [UNEP Emissions Gap 2020](#)

SOLUTIONS AND RECOMMENDATIONS

CLIMATE CHANGE MITIGATION

By 2030, we need to cut global emissions by 45% from 2010 levels if we are to limit the global average temperature rise to 1.5°C. The UNFCCC's interim report on Nationally Determined Contributions (NDCs) submitted since the Paris Agreement shows governments are nowhere close to the level of ambition needed. Wide ranging action is needed, from reforestation and ecosystem preservation to decarbonising energy systems, carbon taxes, divestment and a switch to lower consumption. There are important roles for offsetting, net zero and new technology. All are part of the solution to the carbon crisis, but all have their drawbacks.

Many governments and businesses are now aiming to achieve 'net zero', which means balancing greenhouse gases entering and removed from the atmosphere. For many higher emitting countries, the goal of achieving this should be brought forward and needs to cover the whole production to consumption value chain. High emitting countries and companies need to go further, faster.

Another method of tackling emissions is through offsetting – neutralising greenhouse gas emissions by buying credits that fund investment in projects such as renewable energy programmes in the developing world and tree planting. However, there are limits to offsetting. Major criticisms include that these schemes fall short of the emissions generated, they replace concrete action to reduce emissions, and many projects such as tree planting have no long-term management plans. Despite this, carbon offsetting is likely to play a major role as part of wider global emissions reduction strategies.

Technology will be key to increasing ambitions in line with the Paris Agreement. While innovative climate technologies are critical to delivering the NDCs, there is a worrying tendency of governments to have lower short-term mitigation measures and plans based on a belief in the future potential of yet-to-be developed technologies. New technology is important, but strong climate action is needed now to reduce the overreliance on unproven and sometimes unknown future technologies.

Whilst there are a lot of promising opportunities, from hydrogen-fuelled airplanes to cellular meats and energy storage, this process has to be equitable.

The global South has to be at the forefront of developing new technology, conducting the research and having access to it. Climate funds should be channelled towards incentivising countries to make ambitious green reforms and to mainstream NDCs in economic stimulus packages to enable leadership. These technologies will provide a common good for tackling a global crisis.

RECOMMENDATIONS

- All governments must submit and deliver on nationally determined contributions that meet their fair share of mitigation action needed to limit the average rise in global temperatures to 1.5°C.
- Major emitters in particular must develop clear, timebound, actionable and accountable plans of action for 2021-25 in support of ambitious NDCs.

CLIMATE CHANGE ADAPTATION

Climate change impacts and catastrophes are accelerating. Africa is a particularly vulnerable hotspot, with its adaptation needs expected to grow substantially even if global warming is held below 2°C. Every delay in implementing adaptation increases the costs and the human impacts.

The countries set to be worst hit by the climate crisis are those with the least responsibility for causing it, and least capacity to adapt. The 2015 Paris Agreement set out that a Global Goal on Adaptation (GGA) would be established. This aims to provide a system for tracking and assessing countries' progress on adaptation actions, and for catalysing adaptation funding. Progress will be assessed through the Global Stocktake report, from 2021. However, there is no simple way of measuring adaptation across diverse countries and populations, so measuring progress will not be easy.

The main challenge for adaptation remains inadequate finance, with funding from developed countries and multilateral agencies still skewed in favour of mitigation. The 46 least developed countries have received less than 3% of the funds they need to transform their societies and economies to adapt to climate change – a huge shortfall in the estimated \$40 billion per year that they need to adapt to the changes in climate that are now inevitable¹³³.

The Green Climate Fund (GCF) of the United Nations Framework Convention on Climate Change (UNFCCC) is the world's largest dedicated fund, and an essential channel for directing urgent climate change funding to frontline communities and climate-vulnerable countries. The GCF's commitment to allocate 50% of its funding to adaptation programming, and 50% of those funds to priority countries, is a commendable goal – though up to 2020 only 36% of the GCF portfolio had reached these countries.¹³⁴

RECOMMENDATIONS

- Governments must demonstrate renewed commitment to enhanced ambition on adaptation and resilience building, sending a clear signal of its critical importance in the international climate process. This includes establishing a clear process to define the Global Goal on Adaptation, as contained in the Paris Agreement.
- Donors should commit to allocating at least 50% of climate finance to adaptation and make this adaptation finance accessible to CSOs and grassroots communities most affected, through suitable co-designed mechanisms.
- All governments prepare and submit National Adaptation Plans (NAPs) no later than the end of 2021, in advance of the Global Stocktake process, and immediately begin implementing adaptation priorities.
- Funding for adaptation must be made available to local grassroots groups, and the proportion they receive tracked. Women, marginalised groups, least developed countries, small island development states and nature are all key to the success of this work.

CLIMATE FINANCE

At the 2009 Copenhagen COP, developed countries agreed to jointly mobilise \$100 billion per year by 2020 to address the climate change needs of developing countries. The commitment was reinforced in Paris at COP21 in 2015. Meeting this commitment is essential for encouraging and enabling greater ambition among emerging markets and developing countries. The commitment has so far not been met. It must be remembered that, despite this, the target should be a floor and not a ceiling. Ensuring climate finance reaches the most climate vulnerable, least developed countries, must be a priority.

Yet the majority of the most climate vulnerable countries received less than \$20 per person per year in climate change adaptation financing¹³⁵ from 2010–2017, despite the fact that 58% of disaster-related deaths occurred in the top 30 fragile and conflict-affected countries.¹³⁶

As implementation of the Paris Agreement moves into its first five-year cycle, the focus must be on ensuring that there is a major collective boost of climate finance to support strong and green recovery packages and enhanced ambition of NDCs. The next five years are crucial, starting now. The collective goal is to surpass the \$100 billion per year target in 2021 and to scale-up international public finance to ensure climate justice and accelerate the drive to net zero carbon and climate-resilient growth.

Currently, mitigation such as developing green energy attracts two-thirds of total climate finance provided and mobilised by developed countries, driven notably by finance for activities in the energy and transport sectors. Finance for mitigation is preferred by many donors to adaptation, as it can be given in the form of loans, while adaptation measures tend to require grants. The shares represented by loans (including both concessional and non-concessional) and grants were 71% and 27% respectively of total public climate finance provided in 2019¹³⁷. Asia remains the main beneficiary of climate finance provided and mobilised by developed countries with 43% of funding, significantly ahead of Africa and the Americas.

RECOMMENDATIONS

- Global governments must deliver on the promises made in Copenhagen in 2009 and the Paris Agreement commitment to ensure \$100 billion per year in international climate finance flows is met up to 2024.
- Government's commit to scaling up annual financing in the period 2021-2025 with a focus on grants, not loans. Further, agree a higher global finance goal for 2025 onwards as mandated in the Paris Agreement, with clear plans in place for finance mechanisms post 2025.
- Governments ensure provisions of scaled up new and additional financing for nature-based solutions with social, health and nutrition co-benefits, such as agroecology.

134 Hardaway, A (2021) [The Green Climate Fund and Adaptation Finance](https://floodresilience.net/resources/item/at-what-cost-how-chronic-gaps-in-adaptation-finance-expose-the-world-s-poorest-people-to-climate-chaos/), Prevention.

135 <https://floodresilience.net/resources/item/at-what-cost-how-chronic-gaps-in-adaptation-finance-expose-the-world-s-poorest-people-to-climate-chaos/>

136 <https://odi.org/en/publications/when-disasters-and-conflicts-collide-facts-and-figures/>

137 OECD (2021), [Climate Finance Provided and Mobilised by Developed Countries: Aggregate Trends](https://www.oecd.org/climate/aggregate-trends/) Updated with 2019 Data, Climate Finance and the USD 100 Billion Goal, OECD Publishing, Paris.



Women in Borena, Ethiopia, walk three hours to reach a water point.

LOSS AND DAMAGE

It has been clear for many years that there are limits to adaptation. The 2018 IPCC special report¹³⁸ presented evidence of limits to adaptation under different temperature scenarios. For example, under the 1.5°C scenario, coral reefs are expected to experience 90% irreversible losses by 2050 and nearly total loss under the 2°C scenario, with disastrous consequences for livelihoods, food security and the ecological integrity of the global ocean. Where climate change impacts cannot be fully adapted to, communities and nations incur loss and damage. Developing countries are disproportionately affected by loss and damage associated with climate change due to the higher levels of vulnerability in general of their economies and communities. Fatalities are far higher in developing countries, with 95% of natural-disaster-related deaths happening in them. These countries also do not have access to the financial resources to pay for the impacts of loss and damage or to support those affected. This compounds the effects and exacerbates poverty.

In 2012 the Warsaw International Mechanism for Loss and Damage was established; however, it focuses on research and dialogues, rather than liability or compensation.

It was reaffirmed in the Paris Agreement as the main vehicle under the UNFCCC process to avert, minimise and address loss and damage. Since Paris, progress on loss and damage mechanisms has been glacial, which has resulted in increased impacts and costs. In 2019 the Santiago Network for Loss and Damage (SNLD) was agreed at COP25.

RECOMMENDATIONS

- At COP26, a loss and damage champion should be appointed to consult and build consensus for action. Governments should further operationalise the SNLD, meeting its mandate to provide action and support for vulnerable developing countries.
- Establish a loss and damage finance facility able to address the needs of vulnerable developing countries. Ensure inclusion of loss and damage in the discussions on the new finance goal to come into effect from 2025, with new and additional sources and levels of finance.
- Establish loss and damage as a permanent standalone agenda item under the UNFCCC from COP26 onwards.



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Not far from Korbessa in Merti, Kenia, there's no water, no plants, no trees, this village is in the middle of an arid desert.

HUMANITARIAN RESPONSE AND ANTICIPATORY ACTION

The global humanitarian system, traditionally designed to respond to crises, is in a process in many countries of restructuring around the nexus of peacebuilding-development-resilience building-humanitarian response. It is vital that, as this process evolves, the rising impacts of the climate crisis are fully accounted for, so that governments, humanitarian and development actors are preparing for and responding to the anticipated impacts. This means shifting the focus from recovery to resilience.

Anticipatory action is a data-driven approach to help communities prepare for weather events. During a disaster, while some loss is unavoidable, loss of livelihoods is not. The right kind of support at the right time protects both lives and livelihoods. Anticipatory action is a proactive and cost-effective method of managing risks, reducing the impact of the crisis, and saving lives and money. Coupled with resilience building, it will be key to tackling the climate crisis in the most humane way. According to USAID, donors can receive 30% from earlier and proactive responses. When combined with resilience building, savings increase to \$3 saved for every \$1 invested.¹³⁹

RECOMMENDATIONS

- All humanitarian organisations, across sectors, must be supported to plan for rising needs and the multiplier effect of climate change. To support this, donors must shift to providing more flexible and long-term funding opportunities that are accessible to frontline NGOs to enable faster responses to climate crises.

- Greater donor investment is needed in financing mechanisms that ensure the most climate vulnerable least developed countries have the resources and capacity to take nationally-driven anticipatory action, ahead of climate-related extreme events, to avert health, nutrition, and food crises.
- Clear data-driven thresholds for action are needed along with agreement between relevant agencies on what these should be.

NUTRITION SECURITY

The recent rise in food and nutrition insecurity is, in part, a consequence of the climate crisis – and the impacts are set to escalate this century. Gender inequality is a further major contributor. Combined with a rise in protracted conflict and economic instability, these factors are increasing poverty and displacement, vulnerability, and injustice. Climate change is projected to reduce dietary diversity, leading to increased child malnutrition. Agriculture accounts for approximately 20% of global greenhouse gas emissions with many products, notably red meat, that are least beneficial for human health also having the highest carbon footprint. In addition, industrial, high-intensity agriculture is environmentally destructive as it relies on a myriad of methods – from the use of certain fertilisers to the razing of grounds – that creates further stress and damage to the environment. This can accelerate climate change.

Some ways to combat these issues would be to promote locally-sourced diets that are rich in whole grains, legumes, vegetables and fruits, and low in red meat and processed products, produced using climate-sensitive and sustainable agricultural methods.

This can be achieved through measures including: the incorporation of climate change considerations into food-based dietary guidelines; empowering consumers with information to facilitate dietary choices that are both healthy and sustainable; and the allocation of subsidies to support sustainable agricultural practices. Available food resources should be equitably distributed, minimising both malnutrition and food waste.

RECOMMENDATIONS

- Governments promote healthy and sustainable diets, rich in plant-based foods and sustainable agricultural methods. Encourage inclusion of climate change considerations in dietary guidelines and the equitable distribution of food resources.
- To begin to address the role of poverty in driving malnutrition, increase access to social protection measures such as basic incomes during crises, prioritising the needs of the most vulnerable.
- Recognise and address the gendered impacts of climate change at all levels of decision-making, across sectors.
- As climate change threatens to increase the numbers of internally displaced people (some of the most vulnerable to waterborne disease) and affect water supplies, scaling up investment and policy support for water, sanitation and hygiene (WaSH) infrastructure must be a priority in countries with a high burden of malnutrition, supported by donors and multilaterals.

NATURE

Responding to the accelerating degradation of nature globally must be fully integrated into efforts to mitigate and respond to climate change. Nature-Based Solutions (NBS) offer a key means to achieve this. These solutions are defined by the International Union for Conservation of Nature (IUCN) as, “actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human wellbeing and biodiversity benefits.”

There are nevertheless grounds for concern about the specific use of NBS, notably for carbon or biodiversity offsetting. Such measures can have significant negative environmental and social consequences and can even hinder or undermine the global fight against the climate crisis.

We therefore support the four guiding principles on NBS proposed by Oxford, which include ensuring that NBS are not a substitute for phasing out fossil fuels; also that NBS are designed, implemented, managed and monitored by or in partnership with indigenous peoples and local communities through a process that fully respects and champions local rights and knowledge, and generates local benefits. This includes working with marginalised groups and focusing on women.

RECOMMENDATIONS

- Governments and the UN recognise the role and importance of nature for climate change mitigation, adaptation, resilience, and loss and damage and in human rights, and provide a recommendation by COP27 on how to include this formally in the UNFCCC.
- The Global Stocktake should assess practices that must stop, such as fossil fuel use and risks of reliance on unproven technologies.
- The development and humanitarian work with environment actors on environmental mainstreaming in their operations.

GENDER-FOCUSED RESPONSES

Climate change is a gender issue. It affects women and men differently including the types of foods that are available, the nutritional content of food, and the productivity of land and water. The UN recognises that climate change and disasters are increasing the risks, burdens, and impacts of vulnerability for women and girls, marginalised groups, and communities living in poverty.¹⁴⁰

This is especially so in contexts of gender-based economic and health inequalities, declining food and water security, land degradation, and malnutrition.¹⁴¹ Climate change risks and vulnerabilities are exacerbated by traditional gender norms and power inequalities, such as limited land ownership, economic decision-making power, access to information and resources, and integration of inclusive policies that shape or impede the ability to adapt. One effect of this is that when climate change impedes women’s opportunity to earn a living from the land, they have less opportunity than men to find alternative work. Ninety per cent of countries impede women’s economic opportunities, e.g. by barring women from factory jobs or employment without their husband’s approval.¹⁴²

140 UN CEDAW. General recommendation No.37 on gender-related dimensions of disaster risk reduction in the context of climate change. CEDAW/C/37, 15 March 2018. <https://reliefweb.int/report/world/general-recommendation-no-37-gender-related-dimensions-disaster-risk-reduction-context>

141 UN CEDAW, GR37, 2018.

142 UN Development Programme Global Gender and Climate Alliance, 2015, Overview of Linkages between Gender and Climate Change Policy Brief

Women and girls, however, play a vital role in tackling climate change. Better solutions are reached when women are involved in decision-making, and their knowledge is essential to designing responses.¹⁴³ Gender-equal representation has led to policy-making with better outcomes for the environment.¹⁴⁴ Nevertheless, women are badly under-represented in many countries' adaptation and mitigation planning processes, and the related gender-responsive budgets are largely missing.

RECOMMENDATIONS

- Mitigation and adaptation efforts should systematically and effectively address gender-specific impacts of climate change in the areas of, inter alia, food security, agriculture and fisheries; biodiversity; water; health; human rights; and peace and security.
- Financing mechanisms must be flexible enough to reflect women's priorities and needs. The active participation of women in the development of funding criteria and allocation of resources for climate change initiatives is critical, particularly at local levels.
- Gender analysis of all budget lines and financial instruments for climate change is needed to ensure gender-sensitive investments in programmes for adaptation, mitigation, technology transfer and capacity building.
- The consultation and participation of women in climate change initiatives must be ensured, and the role of women's groups and networks strengthened. Women and men should be equally represented in decision-making structures.

TRANSFORMATIVE AGRICULTURAL ADAPTATION

This is a relatively recent concept based on adapting now to predicted changes in temperature, weather patterns, rising sea levels and desertification. These are affecting growing seasons and the types of crops that can be produced. Managing these risks will require significant changes in how we plan for, and invest in, adaptation.

Transformative approaches are needed, to better ensure long-term climate resilience. Most agricultural adaptation plans emphasise the rapid scaling of measures intended to preserve existing systems by building resilience over the short term; few are planning for longer term, systemic shifts in anticipation of intensifying climate change impacts. Yet incremental adaptation solutions alone will leave the world hungry.

Transformative adaptation requires wide-scale changes in agricultural landscapes, such as a shift from rice to aquaculture in Bangladesh. It also requires the application of new methodologies and/or technologies at a broad geographical scale, such as large-scale silvopastoralism in Brazil. Some crops, such as coffee, will also see their growing regions relocated.

A challenge will be working with farmers to identify new climate-resilient crops that continue to provide equal nutrition and income to previous crops. This process can take years, but climate impacts are already being felt, so more action research is urgently needed, working closely with local communities and farmers in the most climate vulnerable regions.

At its best, transformative agricultural adaptation is a way of managing biodiversity loss, building climate resilience and adaptation, long-term food and nutrition security and community viability, with local action and people placed at the centre. An example is reinstating mangroves in areas vulnerable to sea-level rise. They provide protection from inundation, reduce soil erosion and provide fuel, as well as acting as nursery grounds for fish, increasing future food security.

RECOMMENDATIONS

- More research and innovation is needed to address the needs of small-scale farmers; currently the overwhelming majority of studies are not relevant to the needs of smallholders and their families.¹⁴⁵
- Governments and donors should invest in delivering training and tools for transformative agricultural adaptation, such as agroecology, to ensure long-term resilience and food and nutrition security in areas most vulnerable to climate change impacts on farming, fishing yields and incomes.

143 UN Factsheet, [Women, Gender Equality and Climate Change](#).

144 World Bank, 2011, [Gender and Climate Change briefing](#).

145 Johns Hopkins University School of Medicine, J., (KIT), K., (NIMS), N. and (ZALF), L., 2021. [Ending hunger: science must stop neglecting smallholder farmers](#).

CONCLUSION

Currently we are on course for 2.7°C of warming, and many of the effects of climate change are already locked in. Based on this trend, by 2040 3.9 billion people will be exposed to major heatwaves, 400 million will be unable to work, and there will be an additional 10 million deaths per year. There will be up to 50% loss in crop yields, 700 million more people will be exposed to drought risk, and there will be increased flooding .

The rise in the frequency and intensity of natural threats due to the climate crisis risks an acceleration in already rising levels of hunger globally. The poorest and most vulnerable communities will pay the highest price.

The resulting pressures on resources, food security and ecosystems will exacerbate existing social challenges in the poorest regions of the world, bringing an additional set of challenges. The great injustice of this, is that those people and communities most vulnerable to the impacts of climate change, the ones who are already on the front lines, have contributed least to the causes of the climate crisis. Climate justice requires the people and countries who have been responsible for climate change rapidly transition to a zero carbon, nature friendly future. We urgently need to better understand and respond to the impacts of the climate crisis on hunger and nutrition, and take action to limit global temperature rises.



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A member of the Farmer Field School waters the plants during a Community Mobilisation session on kitchen gardening in Jamot Village, Pakistan.

10 WAYS

ACTION AGAINST HUNGER IS HELPING FAMILIES TACKLE THE CLIMATE AND HUNGER CRISIS

While governments, businesses, and individuals must step up quickly to dramatically curb harmful greenhouse emissions, here's a piece of good news: we have the knowledge and tools to support families who are struggling now. Here are a few of the many ways that Action Against Hunger is partnering with communities to tackle the climate and hunger crisis:

1. TEACHING CLIMATE-SMART GROWING TECHNIQUES

From Pakistan to Somalia to Cameroon, Action Against Hunger has established Farmer Field Schools. Our agriculture experts teach farmers climate-smart growing techniques, introduce nutritious, resilient crops, and provide practice plots for people to test what they've learned. When participants are ready, they take supplies and new skills home to their own land.

2. HELPING HERDERS NAVIGATE DROUGHT

In the Sahel region of West Africa, livestock accounts for 40 per cent of the agricultural GDP, but climate shocks make decent pasture harder to find. To solve this problem, we created the Pastoral Early Warning System, an innovative system of real-time alerts that help herders find better grazing land.

Our system uses satellite imagery of biomass and water, which we combine with mobile surveys of people on the ground who share market prices, trends in animal diseases, and reports of bushfires. Using artificial intelligence, we then analyse the data and send alerts to approximately 100,000 herders via radio, text, and community bulletins.

3. GROWING CROPS WITH LESS WATER

Even when rainfall is limited, it's possible for gardens to flourish and provide enough yield to feed families and livestock. By teaching innovative growing techniques – including hydroponics and vertical gardens – our teams are helping farmers grow crops with less water.



A group of women farmers work together to plant crops in southern Madagascar, which is in the midst of the worst drought in decades.

4. IMPROVING SOIL QUALITY

Climate shocks, such as prolonged and severe droughts, can impact the quality of soil – ultimately causing lower harvest yields and less nutritious foods. We're working with farmers to revitalise the earth and create healthier soil where crops can thrive.

In Pakistan, for example, we're introducing crops like sugar beets, which can help reduce saline levels in soil – a consequence of drought and rising tides. Around the world, our teams are also working with farmers to teach practices that encourage more fertile fields, such as composting.

5. ESTABLISHING LOCALLY-LED FARMER COOPERATIVES

Tackling climate change is a team effort. To foster collaboration and learning, Action Against Hunger creates and supports farmers' cooperatives. Some of these groups come together to collectively rent land for farming, while others share lessons learned with each other. In Uganda, many farmers' groups are negotiating fair prices for supplies and creating local demand for nutritious crops like mushrooms.

6. INVESTING IN WOMEN'S FUTURES

In many communities where traditional gender roles pervade, the responsibilities for gathering water, food, fuel, and for caring for children primarily fall on women.

That's why we're working with women, particularly mothers and grandmothers, to help them earn more income and save for their futures. Through our savings and loans groups, women pool their resources and can borrow to invest in a new business or to cope in an emergency.

7. OPTIMISING LAND AND NATURAL RESOURCES

Around the world, Action Against Hunger uses agroecological principles to sustainably improve food security in vulnerable communities. What exactly does that mean? Agroecology is an environmentally-friendly approach that helps people make the most of their local natural resources – including land, water, soil, and seeds – to grow nutritious foods, diversify their crops, and build up markets.

A herder in Ethiopia, grows fodder for his livestock at home, using less water than with traditional methods.



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As part of the Food Security and Livelihoods programme, community members are paid to help construct a road that connects the village to the nearest school.

8. PROVIDING A HELPING HAND IN TOUGH TIMES

Our programmes aim to help communities to build their resilience to shocks – but, sometimes, a shock is too severe or sudden for people to cope. That’s why our teams also provide cash transfers in emergencies. For a family displaced by floods, money is often the fastest and most flexible way to help them find food, a place to stay, medicine, and other basic things they need to survive.

9. MAKING FOOD LAST THROUGH LEAN SEASONS

Each year, many rural communities prepare to face the “hunger season,” or the period between harvests when food supplies run out. Climate change has exacerbated hunger seasons: prolonged droughts and other severe shocks have made hunger seasons longer and more unpredictable. To support families, we’re helping them make their crops last longer with drying and storage tools.

10. HARNESSING THE POWER OF THE SUN

During a drought or a heatwave, the sun beats down on rural communities. So, with the help of solar power, we’re putting that sunshine to good use. Now, across many of the countries where we work, the sun helps to fuel everything from water pumps to portable irrigation systems.

ANNEX: Key data from G7 countries and hunger hotspots on GHG emissions, hunger and climate risk**G7 COUNTRIES**

COUNTRY NAME	TOTAL GHG (IN MILLION TONNES) ¹⁴⁶	GHG EMISSIONS PER CAPITA ¹⁴⁷	% OF CHILDREN WITH STUNTING ¹⁴⁸	% OF CHILDREN WITH WASTING ¹⁴⁹	GDP PER CAPITA ¹⁵⁰ (\$)	NOTRE DAME CLIMATE RISK INDEX ¹⁵¹ (1-182)
CANADA	5.77E+08	16.93	No data	No data	43241.6	14
FRANCE	3.24E+08	3.28	No data	No data	38625.1	16
GERMANY	7.02E+08	8.59	1.6	0.3	45723.6	10
ITALY	3.37E+08	4.08	No data	No data	31676.2	33
JAPAN	1.11E+09	9.22	5.5	2.3	40113.1	17
UK	3.7E+08	5.5	No data	No data	40284.6	11
USA	5.28E+09	14.83	3.2	0.1	63543.6	19

27 HUNGER HOTSPOT COUNTRIES IN TOP 35 OF CLIMATE RISK INDEX

COUNTRY NAME	TOTAL GHG (MILLION TONNES)	GHG PER CAPITA ¹⁵²	% OF POPULATION IN IPC3+ ¹⁵³	NUMBER OF PEOPLE IN IPC3+ ¹⁵⁴	% CHILDREN WITH STUNTING ¹⁵⁵	% CHILDREN WITH WASTING ¹⁵⁶	GDP PER CAPITA ¹⁵⁷	NOTRE DAME CLIMATE RISK INDEX ¹⁵⁸
AFGHANISTAN	10720332	0.24	34%	10,300,000	35.1	5.1	508.8	175
ANGOLA	38020297	3.71	47%	422,000	37.7	4.9	1,895.80	160
BANGLADESH	85718805	0.63	21%	3,531,581	30.2	9.8	1,968.80	163
BURKINA FASO	4301291	0.66	13%	2,867,061	25.5	8.1	830.9	156
BURUNDI	579786	0.34	9%	1,044,784	57.6	4.8	274	169
CENTRAL AFRICAN REPUBLIC	307653	3.13	47%	2,289,736	40.1	5.2	476.9	181
CHAD	1030268	1.74	12%	1,778,630	35	13.9	614.5	182
DEMOCRATIC REPUBLIC OF THE CONGO	2282718	1.88	27%	26,178,635	40.8	6.4	556.8	178
ETHIOPIA	16255141	0.31	74%	4,397,377	35.3	7.2	936.3	157
GUINEA	3153404	1.57	4%	418,453	29.4	9.2	1,194.00	148
GUINEA-BISSAU	320957	1.05	-8%	100,582	28	7.8	727.5	179
HAITI	3280850	0.33	44%	4,333,426	20.4	3.7	1,176.80	168
KENYA	17315266	-0.27	14%	2,147,839	19.4	4.2	1,838.20	148
LIBERIA	1321680	0.57	-20%	939,381	28	3.4	583.3	148
MADAGASCAR	4014831	1.1	43%	1,137,633	40.2	6.4	495.5	166
MALAWI	1466344	0.31	6%	1,064,674	37	0.6	625.3	163
MALI	3394412	0.55	6%	1,310,736	25.7	9.3	858.9	170
MYANMAR	26231575	2.22	1% ¹⁵⁹	700,000 ¹⁶⁰	25.2	6.7	1,400.20	161
NIGER	2135276	0.16	10%	2,309,137	46.7	9.8	565.1	176
NIGERIA	1.4E+08	1.6	12%	12,567,299	35.3	6.5	2,097.10	161
SIERRA LEONE	1027063	0.91	22%	1,762,535	26.8	5.4	484.5	157
SOMALIA	677567	0.99	22%	2,652,000	27.4	14.3	309.4	174
SUDAN	1584884	1.67	16%	7,298,273	33.7	16.3	595.5	176
SYRIA	26960685	1.53	36% ¹⁶¹	6,600,000 ¹⁶²	29.6	11.5	2,032.60	150
UGANDA	5531265	0.8	16%	187,655	27.9	3.5	817	167
YEMEN	13006337	0.43	54%	16,147,000	37.2	16.4	824.1	172
ZIMBABWE	10374287	3.34	35%	3,380,232	23	2.9	1,128.20	171

146 Data source: OurWorldInData.org, Ritchie H. and Roser M. (2020). [CO₂ and Greenhouse Gas Emissions](#).

147 Ibid.

148 Data source: UNICEF, WHO, The World Bank (2021) [Levels and trends in child malnutrition: key findings of the 2021 edition of the joint child malnutrition estimates](#). New York: United Nations Children's Fund; 2021.

149 Ibid.

150 Data source: Data source: World Bank national accounts data, and OECD National Accounts data files. URL: <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD>

151 Data source: University of Notre-Dame (2019). [GAIN Climate Risk Index \(CRI\)](https://gain.nd.edu/our-work/country-index/rankings/). URL: <https://gain.nd.edu/our-work/country-index/rankings/>

152 Data source: OurWorldInData.org, Ritchie H. and Roser M. (2020). [CO₂ and Greenhouse Gas Emissions](#). URL: <https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions>

153 Data source: IPC Integrated Food Security Phase Classification. IPC Mapping Tool, Acute Food Insecurity (2019-2021). URL: <http://www.ipcinfo.org/>

154 Ibid.

155 Data source: UNICEF, WHO, The World Bank (2021) [Levels and trends in child malnutrition: key findings of the 2021 edition of the joint child malnutrition estimates](#). New York: United Nations Children's Fund; 2021.

156 Ibid.

157 Data source: Data source: [World Bank national accounts data, and OECD National Accounts data files](#).

158 Data source: University of Notre-Dame (2019). [GAIN Climate Risk Index \(CRI\)](#).

159 Data source: FSIN and Global Network Against Food Crises (2020). [Global Report on Food Crisis](#). Rome.

160-163 Ibid.

FOR A WORLD FREE FROM HUNGER

FOR FOOD

AGAINST HUNGER AND MALNUTRITION.

FOR CLEAN WATER

AGAINST KILLER DISEASES.

FOR CHILDREN THAT GROW UP STRONG

AGAINST LIVES CUT SHORT.

FOR CROPS THIS YEAR, AND NEXT

AGAINST DROUGHT AND DISASTER.

FOR CHANGING MINDS

AGAINST IGNORANCE AND INDIFFERENCE.

FOR FREEDOM FROM HUNGER

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