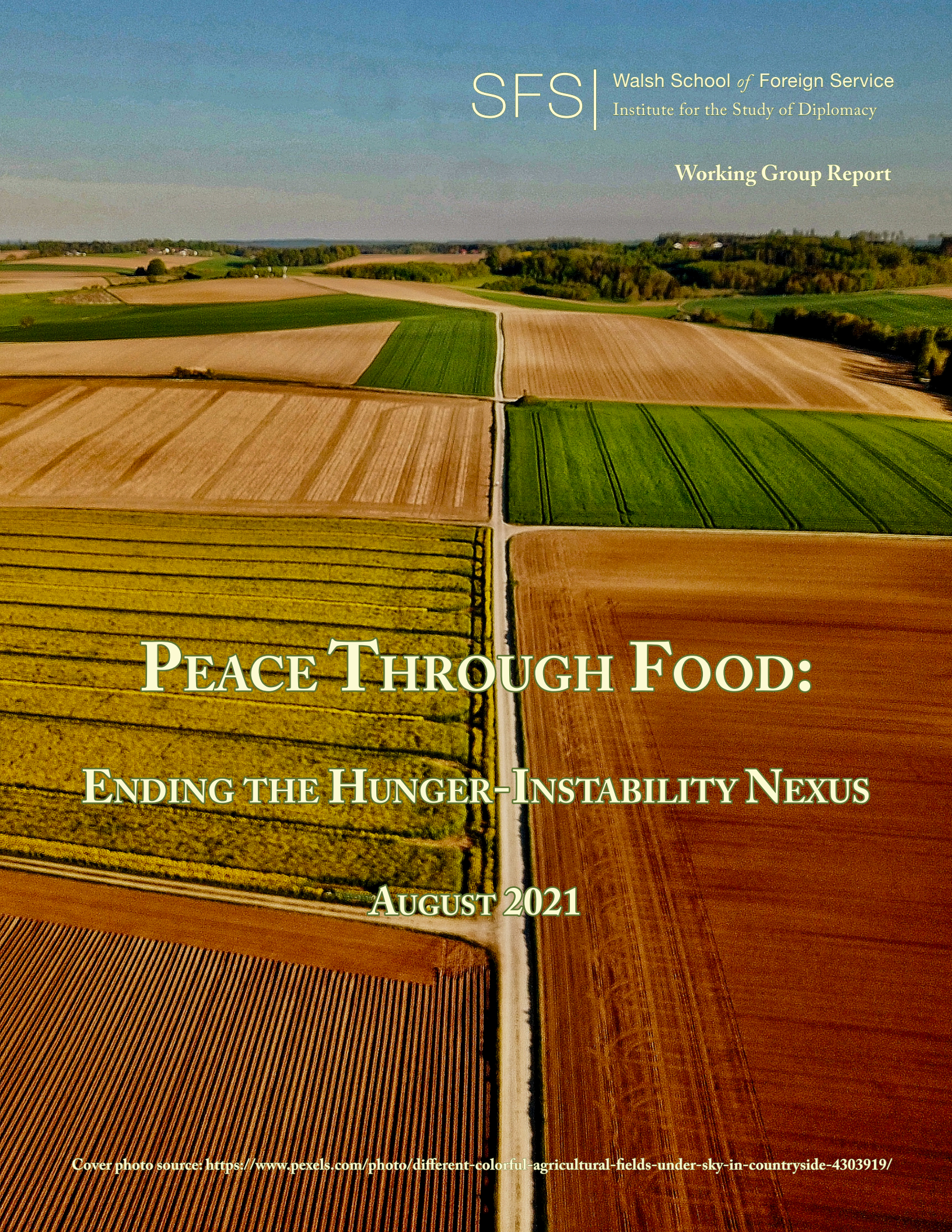

SFS | Walsh School *of* Foreign Service
Institute for the Study of Diplomacy

Working Group Report

Peace Through Food:

Ending the Hunger-Instability Nexus

August 2021

Cover photo source: https://www.pexels.com/photo/different-colorful-agricultural-fields-under-sky-in-countryside-4303919/

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FOREWORD

Death rides a pale horse, but he does not ride alone. With him ride war, pestilence … and famine. Famine—now in the catch-all garb of "food insecurity"—has long followed in the wake of war and plague (under the guise of "conflict," "instability," and "pandemics") … and still does.

Against this backdrop, the World Food Program's receipt of the 2020 Nobel Peace Prize was a well-earned triumph for humanitarianism. The award shone a spotlight on the UN agency's efforts over decades to combat hunger and famine, and prevent the use of food as a weapon of war. As the coronavirus pandemic rages and new variants abound, and with nearly 800 million people food insecure, the WFP's work has arguably never been so important.

Humanitarian intervention alone, while critical and necessary, is not sufficient. It reacts to and mitigates, but does not solve, the underlying causes of food insecurity, nor its relationship—as root and result—to conflict and instability. As I write, hunger has spurred waves of protests in Cuba and South Africa, continues to push desperate people, many of them children, northward from Central America, while fighters and governments callously weaponize food in Yemen and the Horn of Africa. In eighteen months, pandemic-driven political and economic disruptions, from the fractured governments to the collapse of supply chains, have added nearly 120 million people to the ranks of the world's food insecure and malnourished in the Global North and South alike. This slide toward hunger reverses five decades of progress since the Malthusian nightmare of the 1960s. A confluence of environmental degradation, weather disruption, governance failures, and increasing conflict, to mention a few drivers, bode poorly for the future.

The tragic irony is that global production matches, if not exceeds, global need. The world grows enough to solve this problem, but food is maldistributed, commodified, weaponized, and securitized. Distribution systems falter, supply chains break, and 30 percent of food production goes to waste.

To move beyond the humanitarian response and look for solutions to systemic hunger in a world of plenty, ISD convened the latest iteration of its New Global Commons working group series. We brought together, via the wonder of Zoom, policymakers and thinkers from government, international organizations, and research institutions based in the United States, South America, Europe, Africa, and the Middle East to explore the overlapping drivers of food insecurity, political instability, and armed conflict.

Food insecurity, defined by the Food and Agriculture Organization as a lack of stable access to sufficient quantities of food of appropriate quality, reflects the deeply complex and interconnected nature of major, existential issues, to include climate change, demographics, gender equity, nativism, the tension between public good and private gain, and geopolitical competition to secure resources. The results of food insecurity are equally complex, and demand a multilayered commitment to action from the most local level through supranational, not unlike climate change itself.

The United Nations agrees. The Food Systems Summit, to convene in September 2021, will focus international attention on the need to build "safe, accessible, sustainable, and equitable food systems" and to implement the Sustainable Development Goals.

The working group's recommendations centered on three broad categories: reframe, re-think, and reform food systems, from the local to global. First, and critically, is the need to reframe affordable access to nutritional food as a core human right, not a prerogative of the market place and the highest bidder. Alongside environmental justice—the right to clean air and clean water—must come food justice. From that flows a reassessment of the challenge in light of the pandemic and other drivers that rethinks how we view our food systems and leads to a comprehensive restructuring of the system at all levels.

No one said this would be easy, quick, or cheap. All working group participants agreed that systemic change was critical and unavoidable, if the children of the world are to grow to their potential, and if the scourge of famine, conflict, plague, and death can at least be held back.

We are grateful to the Carnegie Corporation of New York for their continued support of ISD's working group series. We hope you will find thought-provoking the analyses, recommendations, and conclusions of the scholars and practitioners who generously gave of their time to engage in a frank assessment of the problem, and to offer some possible solutions.

Barbara K. Bodine

Director, Institute for the Study of Diplomacy
August 2021

Peace Through Food: Ending the Hunger-Instability Nexus
Institute for the Study of Diplomacy, Georgetown University

SUMMARY BRIEF

In the twentieth century, humankind made phenomenal steps to increase food production. But today, complex and interrelated issues drive an increase in food insecurity globally, and propel conflict, migration, and human insecurity. Nearly a billion people, at a minimum, are malnourished or suffer the pains of hunger—while the world wastes a third of food produced. This pain, or the fear of it, drives political instability and conflict as people seek reliable access to food. Adverse climate events, poor resource management, disease outbreaks, breakdowns in distribution, and profit-driven research and development, among other factors, have led to structural imbalances and inequities in the food system, which limit consistent access to nutrition for an increasing number of people.

In spring 2021, the Institute for the Study of Diplomacy convened a series of working group meetings with participants representing academia, think tanks, government, international organizations, NGOs, and the private sector. The group mapped out the current state of global food systems, discussed the relationship between hunger and conflict, and sought ways to establish food security as a means to promote stability and end conflict.

Ultimately, an end to food insecurity requires three strands of policymaking: **re-envision food security as a basic human right; re-think universal food security as a core component of stability and peace; and reform the global food system and distribution networks to address these shifts.** Governments, NGOs, international organizations, and the private sector have already provided a foundation, but it is not yet sufficient to address the issue moving forward.

Key areas to focus on include:

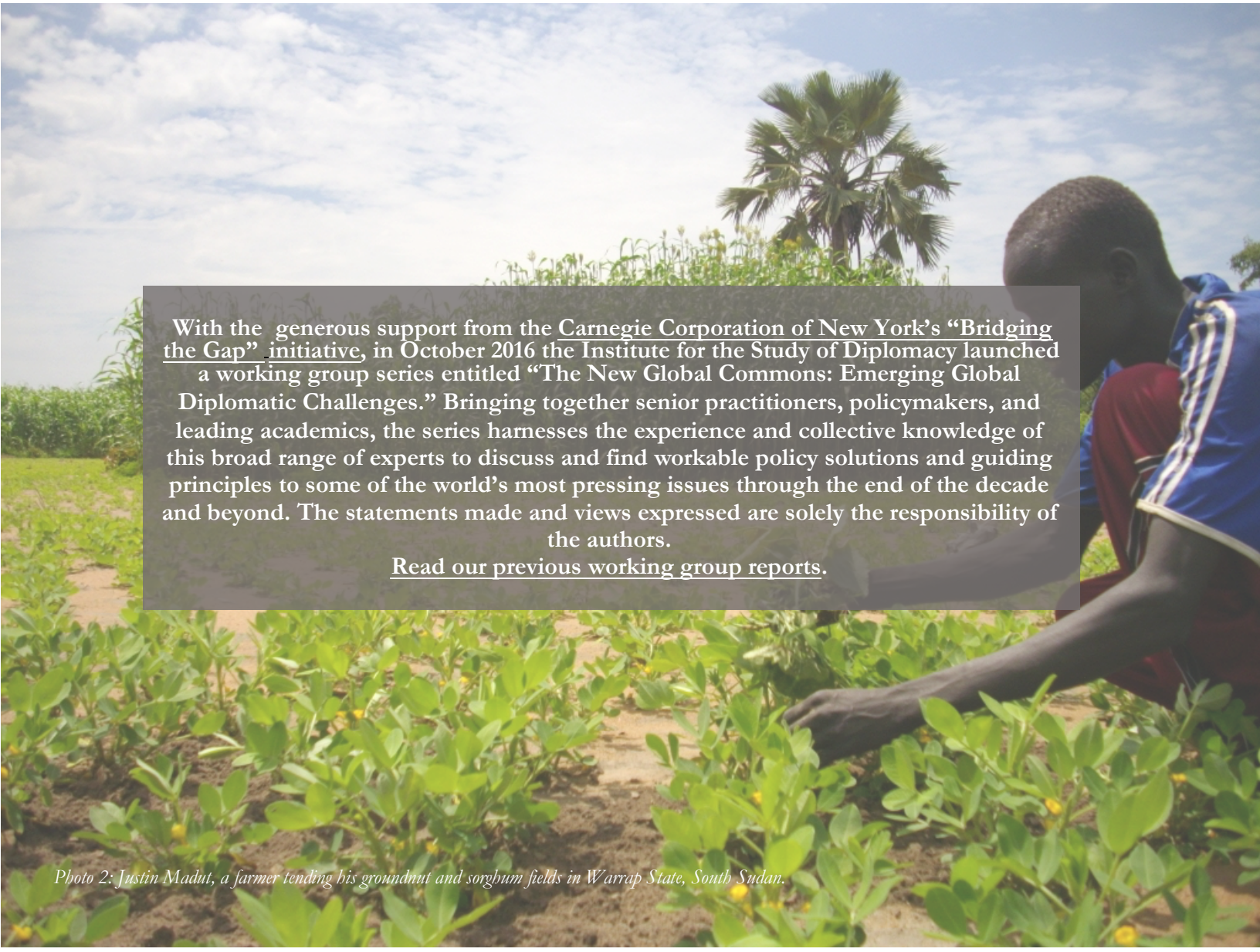
- **A shift in our frame of reference is necessary.** A new framework and vocabulary for food needs to take a proactive approach that re-envisions food security through the lens of social protection, social safety nets, and as a global commons right. In other words, food security is a basic human right. At the same time, from a national security and diplomacy standpoint, analysts and

policymakers need to understand food security as a first-order tool to build stability and prevent conflict and articulate policies with that in mind.

- **The food system must become more resilient and coordination must improve.** Food insecurity often arises due to single points of failure—often foreseeable—which demand humanitarian interventions. Hard-wired resilience at all points in the food system—from plant to pantry—would enable the system to withstand and adapt to periodic disruptions. A better, and greener, post-COVID recovery strategy provides the mechanism to do this. A resilience strategy should also focus on how policy interventions are integrated into local contexts, so the international community understands how investments might affect polarization, instability, and conflict.
- **Ground-up approaches should be front and center.** While international coordination must improve, prevailing views among global policymakers do not always translate well to local conditions; some may even drive conflict. Local leadership and local ownership of programs are essential, but interventions also require government funding and dialogue between those directly affected, national governments, and international organizations. In contexts with unreliable or uneven governance, a focus on the community level may be the best means we have to mitigate conflict driven by food scarcity.

Without systemic interventions and reforms, the United Nations' goal to end global hunger by 2030 will continue to fall further out of reach in coming years. Humanitarian responses, while necessary, are too little, and too late. The international community must undertake a wholesale **rethink of food security, leading to major reform of the food system as we know it.** Beyond the issues noted above, this also includes filling key knowledge gaps, letting nutrition (not calories) drive food systems, aligning the public and private sector on research and development, using government procurement as policy tool, and, crucially, monitoring foreign land acquisitions and developing mechanisms to respond to food export protectionism. To achieve peace through food, all levels, from the local to the supranational, must work together.

Photo 1: Dry ground in the Sonoran Desert, Sonora, Mexico



With the generous support from the Carnegie Corporation of New York's "Bridging the Gap" initiative, in October 2016 the Institute for the Study of Diplomacy launched a working group series entitled "The New Global Commons: Emerging Global Diplomatic Challenges." Bringing together senior practitioners, policymakers, and leading academics, the series harnesses the experience and collective knowledge of this broad range of experts to discuss and find workable policy solutions and guiding principles to some of the world's most pressing issues through the end of the decade and beyond. The statements made and views expressed are solely the responsibility of the authors.

Read our previous working group reports.

Photo 2: Justin Madut, a farmer tending his groundnut and sorghum fields in Warrap State, South Sudan.

Introduction

Rapid economic growth in Asia causes an increase in global demand for food. A thirty-year high in food prices pushes hungry people to the streets in more than 40 countries. Against the backdrop of a global financial crisis, angry citizens riot. Unrest and violence spread, and, in Haiti, they bring down the prime minister.[1] In Syria, over a three-year period, regime mismanagement of agricultural land and centuries of over-farming trigger the worst drought "in the instrumental record." As the drought takes hold, almost 40 percent of the population is employed in the agricultural sector. Over time, up to 1.5 million starved rural workers recently without a livelihood pour into urban areas already racked with high unemployment.[2]

Scholars describe global food riots in 2007-8 as the starting point for renewed food insecurity in the 21st century, "affecting the majority of the world's poor, causing protests in developing countries and presenting policymakers with the challenge of simultaneously addressing hunger, poverty, and political instability."[3] In Syria, and elsewhere, the food crisis was one of many factors that drove the 2011 uprisings we now call the Arab Spring. While the world's poor struggled to eat, policymakers in rich countries paid more attention to the banking collapse at home than to the food crisis.[4] But the underlying nature of food insecurity as a key driver of instability and conflict has been an issue for millennia. It remains one today. With the ongoing COVID-19 pandemic, tenuous distribution networks, and the effects of climate change on an unsustainable trajectory, the scale of the food insecurity challenge will likely increase in coming years.

Climate change, an increase in the number of extreme weather events, land degradation, dwindling water resources, poor governance, international land purchases, food protectionism, and continued armed conflict make UN Sustainable Development Goal #2, "Zero hunger," more difficult to achieve.[5] Current food policies in the United States and internationally—and the underlying structure of the global food system—pose additional barriers. According to the National Intelligence Council (NIC), "increased volatility is likely to lead to the breakdown of political order and outbreak of political

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[1] Paul Collier, "The Politics of Hunger: How Illusion and Greed Fan the Food Crisis," *Foreign Affairs*, November/December 2008, https://www.foreignaffairs.com/articles/2008-11-01/politics-hunger.
[2] Julian Cribb, *Food or War* (Cambridge University Press, 2019), p. 128.
[3] Julia Berazneva and David R. Lee, "Explaining the African food riots of 2007-8: An empirical analysis," *Food Policy,* Volume 39, April 2013, pp. 28-39.
[4] United Nations Department of Economic and Social Affairs, "The Global Social Crisis: Report on the World Situation 2011: Chapter 4," 2011, https://www.un.org/esa/socdev/rwss/docs/2011/rwss2011.pdf.
[5] United Nations, "Goal 2: Zero Hunger," https://www.un.org/sustainabledevelopment/hunger/.

violence in numerous countries, particularly in the developing world." Ongoing food insecurity will most likely exacerbate these trends.[6]

Governments, regional and international bodies, NGOs, the private sector, and research institutions should therefore reframe the way they view the food insecurity and instability/conflict nexus. Only then will the international community be able to restructure global food systems and networks effectively, with a focus on proactive food security measures and resilience. The world needs, and will continue to need, humanitarian interventions to provide food and economic aid to those at risk of hunger and famine due to major weather events and conflict, for instance, but systemic change is also required. Food production is not the problem. Rather, the issue is one of distribution, access, and human disruption or distortion of supply chains.

Ultimately, the key to ending food insecurity as a driver of instability and conflict is to re-envision universal food security as a way to achieve stability and peace, to rethink our food system and distribution networks, and to view food as a basic right. In addition to humanitarian interventions in vulnerable regions, researchers and policymakers should rethink the location and variety of food production, and how leaders think about development. The drivers of food insecurity, and the issues that it creates, are cross-cutting, and affect a multitude of local and international players. Food system reconfiguration would also help to deal with the underlying drivers of protectionist food policies that we have seen in recent years, especially during the COVID-19 pandemic, and external land purchases. A shift toward recognition of food as a global common good to which all have a right—rather than a commodity—is an imperative early step.

In short, the international community will be unable to grow its way out of this problem without major reforms to the entire food system. We need systemic policy innovations and diplomatic engagement to defuse today's current conflicts, but also to preempt the latent conflicts that a lack of credible solutions may bring.

[6] National Intelligence Council, *Global Trends 2040: A More Contested World,* NIC 2021-02339, March 2021, p. 83, https://www.dni.gov/index.php/global-trends-home.

A New Era of Hunger

Today, complex and interrelated issues drive an increase in food insecurity globally, and propel conflict, migration, and human insecurity more broadly. While humans produce more food than the Earth's population needs overall, we waste upwards of 30 percent. Nearly a billion people, at a minimum, are malnourished.

Humankind has made phenomenal strides over the past century to combat hunger. Innovations in science, fertilization, and irrigation, oftentimes through public-private partnerships, have blunted visions of Malthusian dystopia. The world has remained able to sustain a global population that increased from 1.6 billion in 1900 to almost 8 billion today.

Meanwhile, the number of middle-income states dramatically increased, most notably China and India. These increases exponentially raise demand for resource-intensive crops, particularly animal fodder. According to the UN, the number of food insecure people in the world increased by an estimated 318 million in 2020, due in large part to the pandemic.[7] In May 2021, global food prices rose at their fastest level in more than a decade, and the food price index hit its highest levels since September 2011.[8]

Adverse climate events, poor resource management and governance, conflict, disease outbreaks, gender inequality, and profit-driven research and development (R&D), among other drivers, have led to structural imbalances and inequities in the food system, which limit consistent and sustainable access to nutrition for an increasing number of people, especially poor farmers, women, and other marginalized groups.

At the same time, a lack of political will remains one of the largest impediments to food security, as many governments and publics question why they should pay attention, or expend hard-earned political capital, on this issue. In some places, this has led to large-scale, prolonged famines. This trend is accelerating. It will take concerted effort from a host of players, including governments, international and regional organizations, NGOs, and the private sector to mitigate and eventually reverse this trend.

Increased droughts, floods, and other production disruptors have prompted major exporters to pursue food protectionism, intent upon ensuring adequate food for their own populations ahead of others'. Supply chain breakdown

[7] "Pandemic-driven hunger is making the world more unequal," *Washington Post,* July 12, 2021, https://www.washingtonpost.com/world/2021/07/12/coronavirus-peru-hunger-inequality/.
[8] Food and Agriculture Organization, "Global food prices rise at rapid pace in May," June 3, 2021, http://www.fao.org/news/story/en/item/1403339/icode/.

during the pandemic has only exacerbated this global insecurity. Poor distribution networks and a host of other issues lead to vast amounts of food loss in low-income countries, while comparable amounts of food also go to waste in high-income states. And, in a vicious feedback loop, the current food production and distribution system produces a quarter of all greenhouse gas emissions.

The structure of the global food system needs to be reassessed. The current system causes increased financial losses due to the hidden human and environmental costs of food insecurity. The international community needs to find ways to ensure governments support a healthy planet, economy, and population. This systemic challenge links to the broader global economic outlook, because better nutrition contributes to enhanced human capital.

The pandemic has highlighted as never before the interconnected nature of supply chains, food insecurity, the economy, and health. With this in mind, governments and businesses need to invest in human, agricultural, animal, and environmental health in a coordinated fashion ahead of the next pandemic. Value chains are vulnerable to shocks from border closures, lockdowns, and protectionist export controls. COVID-19 has also demonstrated the link between people's diets, immune systems, and disease—90 percent of all COVID deaths have happened in countries where over 50 percent of the population is either overweight or obese, according to working group participants.[9] In particular, obesity afflicts both poor and wealthy citizens of rich countries due to calorific but unbalanced diets—another case where food insecurity affects poor and rich countries, but in different ways.[10]

Meanwhile, academic research and evidence from recent decades demonstrate that food insecurity is a key driver of instability and conflict. As outlined above, the global food crisis in 2007-8 led to riots in over 40 countries. Similar weather-driven shortages have resulted in food price spikes which, along with domestic grievances and economic stagnation, propelled the 2010-11 uprisings across the Middle East, whose ramifications are still playing out today. From Afghanistan to Yemen, the collapse of the agricultural sector drove too many to join insurgent and terrorist groups. Across the Sahel, desertification continues to drive nomadic pastoralists and their herds into crop-based agricultural areas. Efforts to secure "virtual water" (food stuffs) have shaped

[9] Tom Lobstein et al. "COVID-19 and Obesity: The 2021 Atlas: The cost of not addressing the global obesity crisis," *World Obesity*, March 2021, https://www.worldobesityday.org/assets/downloads/COVID-19-and-Obesity-The-2021-Atlas.pdf.

[10] B.G. Link , J. Phelan, "Social conditions as fundamental causes of disease," 1995 *Journal of Health and Social Behaviour*, Extra Issue: 80-94.

Arab Gulf states' policies in the Horn of Africa and elsewhere, while the Chinese government has made land purchases around the globe, with the potential to reshape the balance of power and influence in target countries and regions.

These challenges all conspire to create a new dynamic of both instability and power projection. Governments and international organizations must ensure that the world's malnourished have access to food as a right, not a luxury. But it goes beyond this core humanitarian impulse. Humanitarian intervention will not suffice in a world in which the food system fails to enables sustainable food distribution and access.

Photo 3: Drought in California, 2014

Searching for Peace Through Food

In the spring of 2021, the Institute for the Study of Diplomacy convened a New Global Commons working group over two meetings, called "Peace Through Food: Tackling the Food Insecurity and Instability Nexus." Working group participants represented academia, think tanks, government, international organizations, NGOs, and the private sector, with diverse backgrounds and perspectives on this problem.

The first meeting focused on the current state of the international food system; the bleak outlook for future food security; broad, systemic drivers of food insecurity; and the varied ways in which food insecurity, social and economic distortions, and conflict intersect. The second meeting picked up where the first left off, and sought to establish guiding principles and policy recommendations for this complex issue. Participants also discussed underlying assumptions about the nature of the problem; the mechanisms and entities needed to respond to food insecurity; food protectionism; growing geopolitical divisions around food production and distribution; and possible solutions and their relative likelihood of success.

The group developed principles and recommendations for governments, international organizations, NGOs, the private sector, and other relevant players to enact in both the near- and long-term in order to increase food security and seek peace through food. Some recommendations are for specific groups and/or entities, such as the U.S. government, while other recommendations relate to all who work on this problem set.

Food insecurity may be one of, if not *the* most convoluted and complex issues the world faces today. The vast array of variables affecting food production and distribution creates a situation where there are myriad possible drivers of food insecurity. Some of these variables, such as the macro effects of climate change and population growth are existential questions in their own right. For these reasons, while we discuss the effects of climate change on food, we refrain from offering recommendations to combat climate change overall, which was beyond the scope of this working group.

Food Security and Insecurity Defined

According to the 1996 World Food Summit, "**food security** exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life." But, as a Wilson Center report points out, food security "encompasses not only individuals' intakes of nutrients but also the production, processing, and marketing systems that determines its costs and shapes people's food choices and concerns about acquiring food in the future as well as today."

Food security has four main components, according to the FAO:

- **Availability:** The availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports (including food aid).
- **Access:** Access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet. Entitlements are defined as the set of all commodity bundles over which a person can establish command given the legal, political, economic and social arrangements of the community in which they live (including traditional rights such as access to common resources).
- **Utilization:** Non-food inputs also play a role in food security. Adequate diet, clean water, sanitation and health care all contribute a state of nutritional well-being where all physiological needs are met. Utilization refers to the biological ability of a person to absorb food in light of these inputs.
- **Stability:** To be food secure, a population, household, or individual must have access to adequate food at all times. They should not risk losing access to food as a consequence of sudden shocks. (e.g. an economic or climatic crisis) or cyclical events (e.g. seasonal food insecurity). The concept of stability can therefore refer to both the availability and access dimensions of food security.

Populations, groups, and individuals who do not enjoy these four elements suffer from food insecurity. "**Food insecurity** occurs when people's access to the food that they produce themselves or to food in markets is disrupted, reducing the volume and quality of foods available to them; the resulting diets provide them insufficient nutrients for an active and healthy life. Food insecurity can be experienced either as normal condition of life (chronic food insecurity) or as something more extreme (acute food insecurity)."

As the science continues to mature, "experts are increasingly considering nutrition, in addition to calorie consumption, as part of food security," according to a Council on Foreign Relations report. The authors go on to note that:

> "Food insecurity can also be defined by its duration. Acute: When the inability to consume enough food puts a persons life in immediate danger. Chronic: When a person is unable to meet minimum food requirements over a sustained period. Seasonal: When a person experiences a cyclical pattern of inadequate access to food."

Other terms that are used quite often include *hunger* and *undernourishment*, which "are interchangeable terms to describe when a person does not consume enough calories to live an active and healthy life.

Food loss and food waste are similarly important terms in relation to food insecurity. Food loss, according to a World Bank study, "refers to a decrease in quantity or quality (appearance, flavor, texture, and nutritional value) of food intended for human consumption. These losses tend to occur 'upstream' in the food value chain, and are mainly caused by inefficiencies in agricultural production, harvesting, post-harvest handling, transportation, and storage of crops. They also occur in the midstream segments of the food value chain—during transport to markets, food transformation, and the whole-sale marketing process."

Food waste, for its part, "refers to the discarding of food appropriate for human consumption downstream in the value chain, particularly at the retail and consumer levels. For example, one cause for discarding is excessive grading and sorting of produce to ensure a food item's aesthetic quality. Other causes include spoilage (actual or perceived) linked to inefficiencies in transportation, storage, refrigeration, packaging of food, over-buying of perishable foods, and consumer habits. Consumer waste in high-income countries is typically linked to purchasing and storage of large quantities of food at the household level and post-meal disposal. This is not the case in many low- and middle-income countries where relatively small quantities of perishable foods are stored in the household."

Photo 4: Palmital, Brazil

Drivers of Food Insecurity

After decades of decline, the global number of people that are food insecure is on the rise. Even though food production is high enough to feed the world's population, underlying issues in our global food system/networks are now apparent, even more so since the onset of COVID-19. Population numbers continue to increase, the climate worsens, conflict continues, and our food production and distribution systems have not kept apace. Food insecurity is a risk, to varying degrees, in all countries. The NIC, for instance, assessed in 2015 that food insecurity in many countries would rise in the coming decade:

> [This rise will likely be due to] production, transport, and market disruptions to local food availability, lower purchasing power, and counterproductive government policies. Demographic shifts and constraints on key inputs, such as land and water, will probably compound the risk. In some countries, declining food security will almost certainly contribute to social disruptions and political instability. **Simply growing more food globally will not lead to more food-secure countries because sustainable access will remain unequal; millions lack access to land or income sources to buy sufficient food**.[11]

The NIC's assessment highlights how a lack of sustainable access to food, land, and income, all undermine food security. As our meeting discussions highlighted, poor farmers and women bear the greatest burden. Inequitable structures of aid and entitlements to small farmers mean that low-income producers cannot produce sufficient crops both to sell and eat. Because they currently make up 45 percent of the poor agricultural labor force globally (and 60 percent in Africa) and face greater access and ownership impediments, women are more likely to experience these inequities, according to working group participants.

As the McKinsey Global Institute summarizes, "the global food system has underlying vulnerabilities, such as high geographical concentration of production, long supply chains and high dependency of imports in some countries, especially developing ones."[12] These vulnerabilities allow for a

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[11] National Intelligence Council, "Global Food Security," ICA 2015-04, 22 September 2015, p. i. Emphasis added, https://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/Global_Food_Security_ICA.pdf.

[12] Jonathan Woetzell, Dickon Pinner, Hamid Samandari, Hauke Engel, Mekala Krishnan, Nicolas Denis, and Tilman Melzer, "Will the world's breadbaskets become less reliable?" Case study, May 2020, McKinsey Global Institute, p. 4, https://www.mckinsey.com/~/media/mckinsey/business%20functions/sustainability/our%20insights/will%20the%20worlds%20breadbaskets%20become%20less%20reliable/mgi-

number of issues, both individually and collectively, to disrupt food systems and lead to food insecurity. As working group participants noted, these include climate change, environmental degradation, conflict, changes in human diets, poor governance, population displacement, and disease outbreak, among others. This section will highlight key drivers of food system disruption.

Climate change

The rise in global temperatures over the past century, the increase in the number and severity of storms, and worsening droughts and floods—in other words, climate change—is a major contributor to food insecurity. As the Intergovernmental Panel on Climate Change (IPCC) states: "Observed climate change is already affecting food security through increasing temperatures, changing precipitation patterns, and greater frequency of some extreme events," and "food security will be increasingly affected by projected future climate change."[13] Highlighting the cyclical and interconnected nature of this problem, "food systems are responsible for almost one-quarter of all greenhouse gas emissions."[14] This includes deforestation, transport and storage, and livestock emissions, among others.

2020 alone provided a full spectrum of examples of the damage climate events can bring. In the summer, according to the United Nations Foundation:

> Swarms of locusts—provoked by unusually heavy rains—are destroying crops across large swaths of East Africa and Southwest Asia, disrupting food supplies. As flooding strains Chinese agriculture, the government is pursuing food security by clamping down on food waste. Heat and blazing fires across the Western U.S. are threatening crops and livestock, and

Photo 5: Migratory locusts, Madagascar

will-the-worlds-breadbaskets-become-less-reliable.pdf. See also graphs on pp.16 and 17 of this report, from Woetzell et al., p. 14.

[13] C. Mbow, C. Rosenzweig, L.G. Barioni, T.G. Benton, M. Herrero, M. Krishnapillai, E. Liwenga, P. Pradhan, M.G. Rivera-Ferre, T. Sapkota, F.N. Tubiello, Y. Xu, "Food Security," in *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* [P.R. Shukla, J. Skea, E. Calvo Buendia, V. Masson-Delmotte, H.O. Portner, D.C. Roberts, P. Zhai, R. Slade, S. Connors, R. van Diemen, M. Ferrat, E. Haughey, S. Luz, S. Neogi, M. Pathak, J. Petzold, J. Portugal Pereira, P. Vyas, E. Huntlye, K. Kissick, M. Belkacemi, J. Malley, (eds.)], 2019, In press, p. 439, https://www.ipcc.ch/srccl/.

[14] Johanna Mendelson Forman, "Ensuring the Future of Food Security," Stimson Center, March 30, 2020, https://www.stimson.org/2020/ensuring-the-future-of-food-security/.

> a derecho storm devastated millions of acres of corn and soybean production in the Midwest. Blistering heat and severe drought across France have wreaked havoc on agricultural production and prompted farmers to call on the government for help.[15]

Climate-related extreme events are on the rise. Three decades ago, roughly 100 extreme events were recorded per year worldwide. That number is now 213, creating obvious risks for food production in multiple regions.[16] This is especially disconcerting when one considers that we depend "on four key crops with high geographic concentration of production," and the likelihood of more than one of these geographic regions experiencing a production failure at the same time is growing.[17]

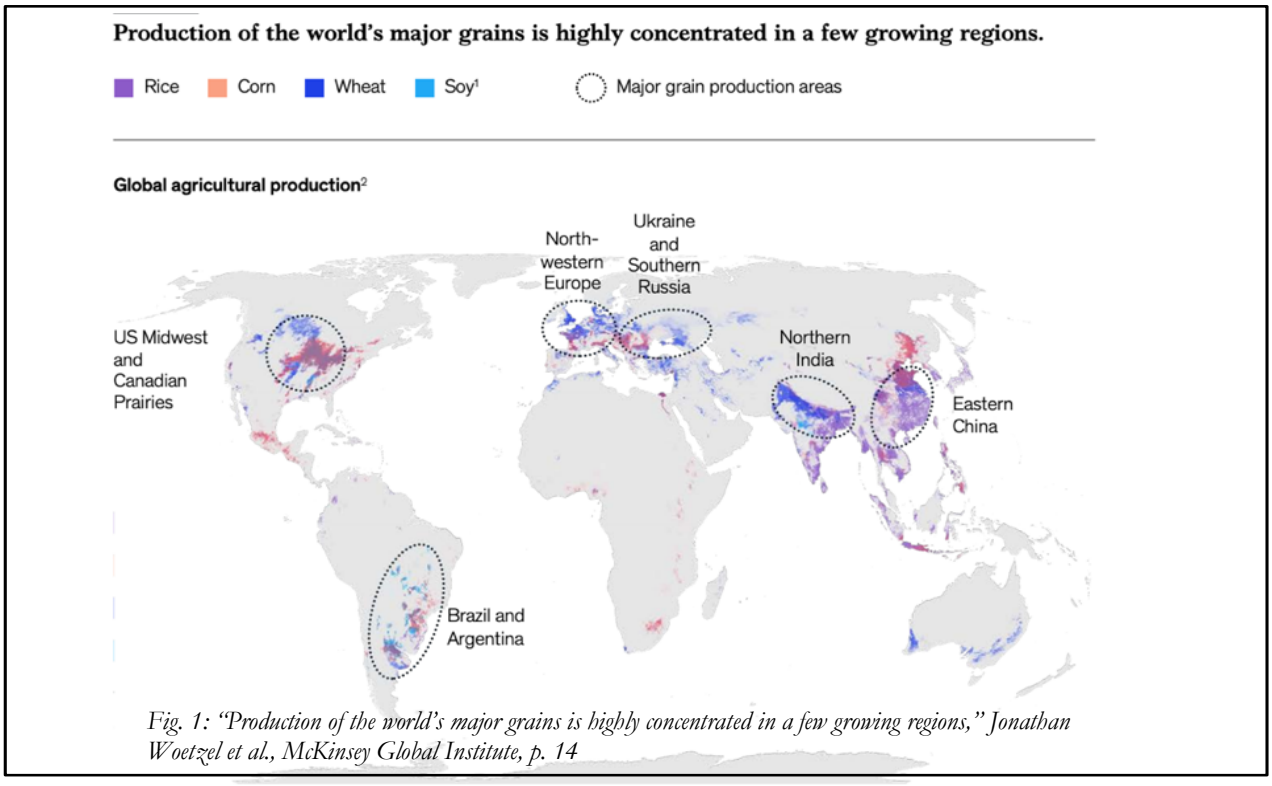

Fig. 1: "Production of the world's major grains is highly concentrated in a few growing regions," Jonathan Woetzel et al., McKinsey Global Institute, p. 14

[15] Ryan Hobert and Christine Negra, "Climate Change and the Future of Food," United Nations Foundation, September 1, 2020, https://unfoundation.org/blog/post/climate-change-and-the-future-of-food.

[16] Chase Sova, Kimberly Flowers, and Christian Mann, "Climate Change and Food Security: A Test of U.S. Leadership in a Fragile World," October 2019, Center for Strategic and International Studies Brief, p. 3, https://www.csis.org/analysis/climate-change-and-food-security-test-us-leadership-fragile-world.

[17] Woetzel, et. al., pp. 9-11. The authors go on to note that: "The human diet is highly dependent on just four grains: rice, wheat, corn, and soy. They make up almost half of the calories of an average global diet, with rice and wheat contributing 19 percent and 18 percent,

Working group participants highlighted this potential problem and echoed the sentiments of a recent Boston University report when it noted that "the structure of globalized food systems, with major constrictions in trade flows and highly concentrated areas of the world's food production, creates obvious vulnerabilities."[18] Likewise, trade in these key crops is "increasing pressure on a small number of chokepoints—critical junctures on transport routes through which exceptional volumes of trade pass."[19]

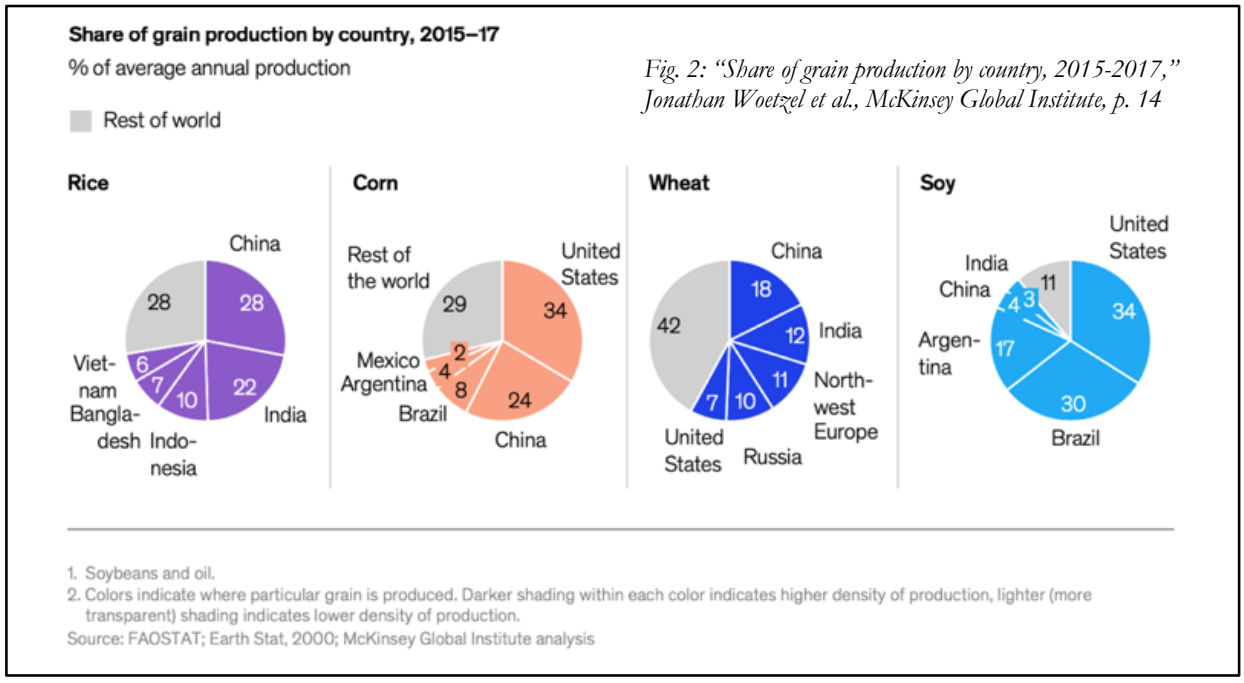

Fig. 2: "Share of grain production by country, 2015-2017," Jonathan Woetzel et al., McKinsey Global Institute, p. 14

respectively. Corn and soy, contributing only 5 percent and 3 percent to human diets directly, are mainly used in animal feed, through which they help supply the 15 percent of calories coming from animal products such as meat, dairy, and eggs. Sixty percent of global food production occurs in just five countries: China, the United States, India, Brazil, and Argentina. Even within these countries, food production is highly concentrated in a few regions." Moreover, "while this concentration of production (often in the form of monocultures) creates significant efficiencies through, for example, economies of scale, it also creates vulnerability for the global food system, because a few geographically concentrated extreme weather events in those production regions could affect a large portion of global production."

[18] Anthony Janetos, Christopher Justice, Molly Jahn, Michael Obersteiner, Joseph Glauber, and William Mulhern, "The Risks of Multiple Breadbasket Failures in the 21st Century: A Science Research Agenda, The Frederick S. Pardee Center for the Study of the Longer-Range Future, Pardee Center Research Report, March 2017, https://www.bu.edu/pardee/the-risks-of-multiple-breadbasket-failures-in-the-21st-century-a-science-research-agenda/.

[19] "Chokepoints and Vulnerabilities in Global Food Trade," Chatham House Report 27, June 2017, https://www.chathamhouse.org/2017/06/chokepoints-and-vulnerabilities-global-food-trade.

According to the IPCC, decreases in rainfall and increases in temperatures have led to some crop "yield potential to decline by 27% from 1990 to 2015." In India, for example, "warming has reduced wheat yields by 5.2% from 1981 to 2009, despite adaptation."[20] Examples like these abound across the globe and include "declines and stagnation in yields, changes in sowing and harvest dates, increased infestation of pests and diseases, and declining viability of some crop varieties."[21] While yields have grown overall, farmers are not necessarily producing enough across regions to respond to losses from main import areas, and access to agricultural output is tightening.

Environmental degradation

Alongside climate change, governance issues and water and soil overuse have led to, and will continue to cause, environmental degradation, short of major technological innovation and changes in agricultural policy and practices. Decades of soil and water overuse have led to lower crop yields and threatened precious resources.

The NIC's 2015 Global Food Security assessment describes these issues in stark detail: "depleted and degraded groundwater and soils—including reduced soil moisture storage capacity and fertility—will lead to local production disruptions that will reduce food security." Lower production also decreases the purchasing power of those locally affected, because "land degradation, drought, desertification, and loss in fertile soil cost up to 5 percent of world agricultural gross domestic production … annually." The connection between environmental degradation and food insecurity is apparent, as "many of the world's most food insecure people live in rural areas that suffer from deforestation, salinization, soil erosion, desertification, and degraded pastures and water resources." The NIC report goes on to note that:

> About 25 percent of arable soil worldwide is highly degraded and often requires large supplies of fertilizers and other inputs to remain productive. This is most pronounced in highly populated areas, including China, India, Pakistan, and the Great Lakes and Sahel regions of Africa, according to the UN. Poor land-management practices, including overgrazing, the expansion of unsuitable cash-crop cultivation, single cropping, and improper application of modern methods, can decrease the fertility of soils and encourage erosion, leading to increased land degradation that contributes to a decrease in crop yields. Large irrigation schemes around the world have created soil and water and salinity problems.[22]

[20] Mbow, et. al., p. 452.
[21] Ibid., p. 453.
[22] National Intelligence Council, 2015, p. 3.

This phenomenon is widespread. Water overuse is rampant in California and Yemen alike, with both places suffering from years of poor water conservation.

Land degradation issues, and the knowledge gaps that remain around it, was a key discussion point among working group participants. In particular, the international community lacks a solid understanding of precipitation patterns, watersheds, and water sources, knowledge that would prove invaluable for estimating crop sustainability. Likewise, this would also enable the international community to understand the speed of land degradation to a better degree.

Conflict

A major recurring point during our discussions revolved around conflict as a major driver of food insecurity. "Of the 200+ million people who have perished in wars between nation states since the 1850s, it is estimated that over half—105 million—have died of hunger," according to one scholar. "This makes food by far the deadliest of all the weapons deployed by governments against their own people or others."[23] This only describes interstate wars; most of today's ongoing conflicts are within countries. According to meeting participants, fragile and conflict-affected states account for 70 percent of food insecure people, with states experiencing a series of interlocking characteristics: poor governance, a lack of cohesion, a high exposure to shocks, and an underdeveloped private sector.[24] Individuals and groups caught in the midst of fighting find it harder to secure the requisite nutrition to sustain healthy daily diets, and many become food insecure. This is especially true for small landholders and farmers, the majority of whom live in conflict-ridden regions.

As with climate change, the conflict-food insecurity nexus is oftentimes a loop where conflict leads to food insecurity, which, in turn, can cause further or elongated fighting over depleted resources:

> Unresolved African conflicts tend to amplify food security crises over time. Conflicts in the 4 countries experiencing stressed levels of food security have been ongoing for 5.5 years on average. In contrast, conflicts in the 7 countries facing crisis or emergency food security conditions have persisted for 14.7 years on average.[25]

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[23] Cribb, p. 19.

[24] For instance, "Three quarters of Africans experiencing stressed, crisis, or emergency levels of food insecurity live in conflict-affected countries," according to the Africa Center for Strategic Studies. "Acute Food Insecurity and Conflict in Africa," Africa Center for Strategic Studies, https://africacenter.org/spotlight/acute-food-insecurity-conflict-africa/.

[25] Ibid.

Conflict drives food insecurity in a number of ways. The most obvious causes stem from fighting that drives individuals and groups from their land, destroys crops and livestock, makes access to resources such as water more difficult, and causes delays in planting or harvesting. Indirectly, conflict also disrupts farmers' access to feed and fertilizers needed for peak crop yields, and can cut off agricultural investment.[26] Even if there is some food production to be sold, oftentimes fighting "disrupts normal commerce, directly reducing flows of food through market channels."[27] Researchers have found that in Ethiopia, for example, "when looking at conflict onset at the local level, there is a large and significant relationship between the onset of violence and decreased agricultural production."[28]

As working group participants bemoaned, weaponization of food access is increasingly a military tactic. Access to food can drive conflict over resources and land, and is itself a tool to perpetuate conflict. From supply chain blockages that led to spikes in food prices in the Central African Republic, to dozens of Houthi checkpoints in Yemen that slow food distribution (and early Saudi airstrikes that destroyed port facilities needed to bring in grain to Yemenis in the first place and an ongoing naval blockade against the same port) combatants have weaponized food access to leverage their own political or security agendas, to support loyalists, and to fund their fight.[29] In these cases, and in others, "food insecurity can trigger, fuel, or sustain conflict."[30]

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[26] Leah Samberg, "World hunger is increasing thanks to wars and climate change," *The Conversation,* October 17, 2017, https://theconversation.com/world-hunger-is-increasing-thanks-to-wars-and-climate-change-84506. For more on conflict as a driver of food insecurity, also see: Tilman Bruck, Negar Habibi, Charles Martin-Shields, Astrid Sneyers, Wolfgang Stojetz, and Stijn van Weezel, "The Relationship between Food Security and Violent Conflict," International Security and Development Center, December 22, 2016; and Simmons, p. 13.

[27] Simmons, p. 13.

[28] Bruck, et. al., p. 3.

[29] Ore Koren and Benjamin Bagozzi, "Food Access and the Logic of Violence During Civil War," *New Security Beat*, May 15, 2017 https://www.newsecuritybeat.org/2017/05/food-access-logic-violence-civil-war/; and Ertharin Cousin, "Hunger is a Weapon of War. Food Can Help Prevent It," *Foreign Policy*, February 22, 2021, https://foreignpolicy.com/2021/02/22/yemen-conflict-food-prevent-hunger-famine/.

[30] Simmons, p. 4. Simmons summarizes the issue well when she writes: "Both theoretical work and empirical analyses substantiate the many ways in which food insecurity can trigger, fuel, or sustain conflict. Unanticipated food price rises frequently provide a spark for unrest. Conflict among groups competing to control the natural resources needed for food production can catalyze conflict. Social, political, or economic inequities that affect people's food security can exacerbate grievances and build momentum toward conflict. Incentives to join or support conflicts and rebellions stem from a number of causes, of which the protection of food security is just one. Food insecurity may also help to sustain conflict. If post-conflict recovery proves difficult and food insecurity remains high, incentives for reigniting conflict may be strengthened."

Food insecurity amidst conflict is also a major driver of migration, a point which we will touch upon more later in this report.

The 2017-2021 Arab country blockade of Qatar also demonstrated that governments may use food as a weapon outside of actual military conflict, as the government in Doha scrambled to secure new access to food from Iran and Turkey. It also led to a burgeoning Qatari domestic dairy production industry.[31] Nations and groups have tried to use food as a weapon for centuries. The United States, for instance, used the food weapon both ideologically and literally throughout the Cold War.[32] The United States agricultural abundance was, in the words of Kennedy administration official Walt Rostow, a tool to "shatter the belief in Communism as the unique method for rapid development." All the while, the U.S. government was enacting food aid policies to combat communist expansion, and even using food as a more literal weapon, such as an embargo on grain shipments to the Soviet Union over its invasion of Afghanistan.

More recently, the United Nations announced that more than 350,000 people in Ethiopia's Tigray region are suffering famine conditions and more than 5.5 million people need food aid.[33] The hunger and famine comes directly on the heels of internal fighting between the Ethiopian central government and a breakaway faction in Tigray that erupted in the fall of 2020. As of mid-2021, thousands have died in fighting and the war has forcibly displaced over 2 million people from their homes. The UN report states that "this severe crisis results from the cascading effects of conflict, including population displacements, movement restrictions, limited humanitarian access, loss of harvest and livelihood assets, and dysfunctional or non-existent markets."[34]

The international community's lack of enforcement mechanisms to ensure parties provide access to food for civilians during conflict sets the stage for acute hunger and famine. As the Stockholm International Peace Research Institute notes, and working group discussants reiterated, "after World War I, the use of starvation against civilians as a method of warfare was prohibited under international humanitarian law. Starvation strategies are in

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[31] Natalie Koch, "Food as a weapon? The geopolitics of food and the Qatar-Gulf rift," *Security Dialogue,* 2021, Vol. 52(2) 118-134, https://journals.sagepub.com/doi/pdf/10.1177/0967010620912353.

[32] For more on how the United States used the food weapons, see: Shane Hamilton, *Supermarket USA: Food and Power in the Cold War Farms Race*, Yale University Press, 2018; and Bryan L. McDonald, *Food Power: The Rise and Fall of the Postwar American Food System,* Oxford University Press, 2016.

[33] "About 350,000 people in Ethiopia's Tigray in famine-U.N. analysis," *Reuters*, June 11, 2021, https://www.reuters.com/world/africa/exclusive-some-350000-people-ethiopias-tigray-famine-un-document-2021-06-09/.

[34] Ibid.

contravention to both the Right to Food, which recognizes that individuals have the right to feed themselves in dignity, and United Nations Security Council Resolution 2417, which protects civilians in conflict from the weaponizing of food."[35] Holding governments and groups accountable is key moving forward. It is imperative to get ahead of the curve, as local conflicts fuel regional intervention, which then adds to the cyclical conflict/food insecurity nexus.

Disease outbreaks

The COVID-19 pandemic that triggered unprecedented lockdowns in countries around the world vividly demonstrates how disease outbreak and concomitant safety protocols have a direct, and serious, effect on food security. As working group participants highlighted, the COVID-19 pandemic has added millions to the ranks of the food insecure, and not just in poorer countries. The pandemic is a global shock to food systems and people's lives.

Pandemics and regional disease outbreaks affect food systems in many of the ways one would imagine, but also in ways not at first apparent. For instance, lockdowns and border closures cause serious disruptions not only in the distribution of food, but they also prohibit people from producing food, selling food, and/or earning enough money to purchase food. Moreover, curfews have led to food loss in many African countries, as drivers that normally transported fresh produce during the cooler night time hours can no longer do so. As the International Food Policy Research Institute states:

> The severe disruption of food systems—including restrictions on labor and interruption of transport, processing, retailing, and input distribution—threatens the food and nutrition security of the poor. COVID-19 has exposed fragilities in food systems, especially in labor-intensive systems, such as those for fresh fruits and vegetables. The breakdown of supply chains due to the virus infection itself and a variety of policy restrictions has caused consumer prices to increase and producer prices to fall at the same time, increasing food insecurity for both urban and rural poor. Many poor people also suffered as their employment in food supply chains—transporting, marketing, and selling food—came to a halt.[36]

Working group participants noted on multiple occasions that COVID-19 has brought with it the realization of extreme vulnerability in high-income

[35] Vongai Murugani, "Feeding Peace," Stockholm International Peace Research Institute, May 3, 2021, https://www.sipri.org/commentary/blog/2021/feeding-peace.
[36] Johan Swinnen and John McDermott, eds., "COVID-19 and Global Food Security," International Food Policy Research Institute, 2020, p. 9, https://www.ifpri.org/publication/covid-19-and-global-food-security.

countries to food insecurity as well. Oftentimes, developed countries focus on issues like crop yields and climate change, among other issues, with the assumption that distribution mechanisms will function. These nations do not often focus on distribution because they believe that their wealth will enable them to purchase commodities from abroad if necessary.

The pandemic has disabused governments of this notion. In the United States, for example, widespread unemployment led to massive lines of cars at food banks, as well as meat shortages after closures of COVID-infected processing plants. We may remember 2020 most of all for COVID, but the pandemic also did much to put issues of food insecurity and the make-up of our food systems in the minds of many in the United States and other developed nations.

Other, non-COVID related supply disruptions have also played a part. In March 2021, the blockage of the Ever-Given container ship in the Suez Canal caused a traffic stoppage and, as one example of its impact, delayed delivery of cow feed to Israel, which led to a milk shortage throughout the country.

The Food Insecurity, Instability, and Conflict Nexus

All working group participants acknowledged the varied issues that drive instability or conflict, whether at the individual, group, and/or state level. As in most chains of causation, these drivers are multiple and overlap, but it has become increasingly apparent in recent years that food insecurity is among them. Its role as a driver will likely increase in the coming decades.

Recently, new qualitative and quantitative work has shown the connection between food insecurity and instability or conflict. Whether conflict erupts over food sources; because individuals have lost their livelihoods and look to profit or simply find food by joining a military group; or because economic mismanagement or corruption pushed food prices out of reach for some citizens, there are several ways food insecurity can spur instability and/or conflict. A World Food Program study found that "approximately 95% of peer-reviewed studies examined" in the report "were able to establish an empirical link between food insecurity and instability."[37]

Instability and conflict: past and present

From small, local-level conflicts, to larger state-on-state violence, to the possibility of increased superpower tensions over resources, food insecurity can threaten instability and/or violence at all levels. According to Charles P. Martin-Shields and Wolfgang Stojetz, "At the individual level, food insecurity—or the threat thereof—may create both material and non-material incentives for individuals to engage in some form of behavior that threatens peace."[38]

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[37] World Food Program, USA, "Winning the Peace: Hunger and Instability," 2017, https://www.wfpusa.org/wp-content/uploads/2019/03/2017-Winning-the-Peace-Hunger-and-Instability.pdf. The report goes on to note that during their review of the literature, they were able to pinpoint "at least 11 unique drivers of food insecurity…and 9 separate manifestations of social unrest." The unique drivers included: "land competition, water competition, food price, food price volatility, food price uncertainty, agricultural production or wage loss, undernourishment, economic reliance on agriculture, drought, rainfall variability, and temperature fluctuation." The unique manifestations of instability/conflict included: "social unrest, political instability, spikes riots, isolated violent conflict, homicide, terrorism or extremism, armed conflict, civil war, and interstate conflict." The report also notes that: "Individual motivations for involvement in food-related social unrest and violence vary between contexts and people, but generally fall into three categories." These include: "(1) Grievance refers to actions motivated by a perceived injustice"; "(2) Greed (economic) motivation occurs when there is a clear economic advantage to resorting to violence"; and "(3) Governance motivation occurs in the context of unachieved expectations or a failure of the state to prevent food insecurity." Likewise, they found that "the drivers of food-related instability can be grouped into three interrelated categories: (1) Agricultural resource competition"; "(2) Market failure"; and "(3) Extreme weather."

[38] Charles P. Martin-Shields and Wolfgang Stojetz, "Food security and conflict: Empirical challenges and future opportunities for research and policy making on food security and conflict," *World Development*, August 2018, http://www.fao.org/3/CA1587EN/ca1587en.pdf.

In line with this thinking, but at the state-level, more recent scholarship has also looked anew at the origins of the Second World War and demonstrated the connection between food insecurity, or the fear thereof, and decisions in Berlin and Tokyo both to go to war and how to prosecute it. An ominous point in these studies is the correlation between a growing urban middle class in Germany and Japan and their desire for increased meat consumption, something we are seeing again today in a number of regions.[39]

In just the last decade-and-a-half, there are multiple instances of food insecurity as a key driver of instability and conflict. From food riots in multiple countries in 2007-2008, to droughts that led thousands into Syria's cities in 2010, to food insecurity and other issues that drive millions to pursue a sometimes tragic route into Europe and America, to desertification that pits differences in food production methods and religion against one another, food is sustenance, and people will go to any ends to secure it.

Photo 6: Villagers receive humanitarian aid in Nijrab, Kapisa Province, Afghanistan.

The drought, associated food insecurity, internal migration, protests, and the horror that became the Syrian Civil War came on the heels of the 2007-8 food riots and put further pressure on an already tenuous political situation in Syria. The upheaval from that war, resulting food insecurity, and the Arab Spring more broadly (along with long-standing wars in Iraq and Afghanistan) worked to drive the largest migration the world has seen since World War II. In the past decade, millions of people have made, or tried to make, the trek from South Asia, the Middle East, and North Africa to other areas within the region, or to Europe, with the highest rates in 2015. As the IPCC notes, and working group participants were quick to highlight, "food insecurity is a critical 'push' factor driving international migration." Moreover, and similar to many of the vicious cycles involved in food insecurity, "the act of migration itself causes food insecurity, given the lack of income opportunities and adverse conditions compounded by conflict situations."[40]

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[39] For more information on this, see: Lizzie Collingham, *The Taste of War: World War II and the Battle for Food*, Penguin Books, 2011; and Gesine Gerhard, "Food as a Weapon: Agricultural Sciences and the Building of a Greater German Empire," *Food, Culture, Society*, Volume 14, Issue 3, September 2011.

[40] Mbow, et.al., p. 516.

Food insecurity, or the threat of it, is a key driver of conflict in the Sahel. There, pastoral systems are particularly vulnerable to climate change. The Sahel is "home to almost 100 million people," with the population expected to "double in the next two decades. Many families in the Sahel rely on subsistence agriculture and pastoralism for their livelihoods and depend heavily on natural resources like land and water," which is a vastly decreasing regional commodity as desertification enlarges the Sahara Desert by "more than a mile each year."[41]

This desertification has consequences, as pastoralists move further south for longer periods each year, clashing with more traditional agriculturalists. "In 2014," for instance, "Fulani herders killed an estimated 1,200 people over disputes relating to farmland, grazing areas, and water. From 2012-2014, the conflict between the herders from the north and farmers in central Nigeria cost the economy more than $14 billion, and caused profound ethnic rifts between the farming and herding communities."[42]

In the Western Hemisphere, prolonged food insecurity due to climate change and violence in Central America's Northern Triangle has drive migration to the United States. Residents there are facing a once-in-a-decade drought that began in 2014 and intermittent torrential rains that destroy any crops that survive. Almost two million people in Central America alone are at risk of going hungry.[43] As we have seen in other regions and countries, rising food insecurity has led many to join the violent gangs that operate in countries like El Salvador, Guatemala, and Honduras to secure money and/or supplies to feed their families. Meanwhile, in both Europe and the United States, far-right, nativist parties have exploited increased migration for electoral gain, which has driven political instability and hyper-partisanship in the democratic West.

More than half of migrants interviewed for a 2017 World Food Program study on El Salvador, Guatemala, and Honduras spent more than two-thirds of their income on food. Forty-seven percent of those interviewed were food insecure. "Reduced agricultural productivity, adverse climatic events such as droughts, [and] pests that result in crop losses" were among their main reasons for emigrating. Droughts linked to climate events like El Niño have further exacerbated food insecurity.[44] The issue has become a key nexus between the

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[41] Sova et al., pp. 4-5.
[42] Institute for the Study of Diplomacy, "New Challenges to Human Security: Environmental Change and Human Mobility," April 2017, p. 7, https://isd.georgetown.edu/2017/04/12/new-challenges-to-human-security/.
[43] Helena Silva-Nichols, "The Hungry Caravan," *Foreign Policy*, November 6, 2018, https://foreignpolicy.com/2018/11/06/the-hungry-caravan-central-america-migration/.
[44] World Food Programme, "Food Security and Emigration," September 2017, https://docs.wfp.org/api/documents/WFP-0000019629/download/.

domestic and foreign policies of the Biden administration. The president tasked Vice President Harris with immigration policy from Central America and regional diplomacy efforts to reduce migration toward the U.S. border. Harris led a delegation to the Northern Triangle in June 2021, with a focus on "border enforcement, stimulating private sector investment, and supporting civil society."[45] The administration sees private sector investment and "climate-smart agriculture" as key to deal with food insecurity as a driver of migration.[46]

The Central American migration example highlights a key global issue that working group participants underscored. The relationship between displacement, migration, and food security is a cyclical one. Not only does food insecurity play a role in initially driving people off their land and out of their homes, but migrants, especially refugees traveling across borders through fragile regions, experience cycles of food insecurity in numerous ways. According to one participant, the average Syrian migrant is displaced three times within Syria before finally leaving the country.

Future food security and geopolitics

Governments are right to view food security as a national security issue, but it becomes dangerous when nations look at food security as a zero-sum game. Securitized approaches can bring food into the realm of geopolitics. For example, governments that embark on protectionist food policies disrupt regional or even global food systems and can cause international tensions. Working group discussions highlighted that a lack of trust in the international food system and its distribution networks drives countries to purchase land abroad, and/or pursue food protectionism. A May 2020 World Bank paper defined "food protectionism" as "export restrictions aimed at isolating domestic food markets from global market developments."[47] Published in the early stages of the pandemic, the paper assessed potentially disastrous consequences of governments' decisions to restrict food exports, with a decrease of up to 20 percent in the global food supply.[48]

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[45] Amelia Cheatham, "Central America's Turbulent Northern Triangle," Council on Foreign Relations, June 2021, https://www.cfr.org/backgrounder/central-americas-turbulent-northern-triangle.

[46] White House, "FACT SHEET: Vice President Harris Launches a Call to Action to the Private Sector to Deepen Investment in the Northern Triangle," May 27, 2021, https://www.whitehouse.gov/briefing-room/statements-releases/2021/05/27/fact-sheet-vice-president-harris-launches-a-call-to-action-to-the-private-sector-to-deepen-investment-in-the-northern-triangle/.

[47] Alvaro Espitia, Nadia Rocha, and Michele Ruta, "Covid-19 and Food Protectionism: The Impact of the Pandemic and Export Restrictions on World Food Markets," World Bank Group, May 2020, p. 2, https://openknowledge.worldbank.org/bitstream/handle/10986/33800/Covid-19-and-Food-Protectionism-The-Impact-of-the-Pandemic-and-Export-Restrictions-on-World-Food-Markets.pdf?sequence=1&isAllowed=y.

[48] Ibid., ii.

If a government does not believe it will be able to export foodstuffs and still provide for its own citizens, regardless of the catalyst, it may take both proactive and reactive measures. As one example, border closures around the world drove up food prices in 2007-8 by 40 percent. In particular, India, Pakistan, Vietnam, and Russia placed export restrictions on foodstuffs such as rice.[49] These policies have a longer history. During the drought of the mid-2000s, both Vietnam and Australia blocked rice and wheat exports, sending global food prices skyrocketing and precipitating, at least in part, revolts across the Arab world.

With little arable land, sparse water supplies, and growing food demands, the Arab Gulf countries are increasingly looking to Africa to secure their food supply. With a growing and more prosperous population, food consumption across the countries of the Gulf Cooperation Council (GCC) is expected to increase 3.3 percent annually between 2018 and 2023.[50] The GCC region is heavily food import-dependent, with countries sourcing as much as 90 percent of their food needs from abroad.[51] Africa, which contains 60 percent of the world's arable land, has become a primary destination for GCC agricultural investments.[52]

Especially since the 2007-8 global food price crisis, GCC states have purchased land and invested in agricultural production in East Africa, primarily through the countries' sovereign wealth funds and other state-led investment mechanisms.[53] The United Arab Emirates (UAE) and Saudi Arabia have been

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[49] International Institute for Sustainable Development, "Food Price Inflation and Food Insecurity: A Morocco case study," January 2017, p. 23, https://www.iisd.org/system/files/publications/food_price_inflation_morocco.pdf. The global price of rice increased by as much as 127% between 2005-08. Taking various factors into account, Will Martin and Kym Anderson estimate that "more than 45% of the explained change in the international price of rice is due to the changes in border restrictions that countries used in an attempt to insulate themselves from the initial increases in price." Will Martin and Kym Anderson, "Export restrictions and price insulation during commodity price booms," The World Bank, 2011, p. 10. https://documents.worldbank.org/en/publication/documents-reports/documentdetail/583201468337175309/export-restrictions-and-price-insulation-during-commodity-price-booms.

[50] Sarah Townsend, "Seeds of Gulf-Africa Agribusiness," *The Cairo Review of Global Affairs,* Winter 2020, https://www.thecairoreview.com/essays/seeds-of-gulf-africa-agribusiness/.

[51] "Changes in GCC-Africa investment provide the Gulf with stable supply," Oxford Business Group, 2015, https://oxfordbusinessgroup.com/analysis/stable-supply-drivers-and-change-gcc-africa-investment-0.

[52] Will Todman, "The Gulf Scramble for Africa," Center for Strategic and International Studies, November 2018, https://www.csis.org/analysis/gulf-scramble-africa-gcc-states-foreign-policy-laboratory.

[53] "Changes in GCC-Africa investment provide the Gulf with stable supply," Oxford Business Group.

the primary players. Saudi Arabia launched its foreign land acquisition campaign in 2008 with the King Abdullah Initiative for Saudi Agricultural Investment Abroad.[54] By 2018, Saudi Arabia was the largest investor in Africa's agricultural industry.[55] Emirati state and private investors launched an alliance in 2015 to invest in food and agricultural projects in "19 countries, including Egypt, Pakistan, Namibia, Sudan, Vietnam and in [parts of] North and South America."[56] In 2016, the UAE was the second-largest overall investor country in Africa.[57] In 2018, the UAE and Uganda signed a deal to establish a 2,500 hectare agricultural "free zone" to enable UAE investors to produce and develop agricultural products in Uganda and export the products more cheaply back to the UAE.[58] Other countries that have received GCC investments linked to agricultural production include Egypt, Tunisia, Morocco, Mali, Mauritania, Mozambique, and Namibia.[59]

Gulf state investments in the region have proved controversial. The local population in Kenya opposed Qatari plans to purchase 40,000 hectares of land in 2009.[60] And in 2012, five people died in an attack on Saudi-leased farm land in Ethiopia.[61] Africans are worried that GCC investors will displace them because approximately 90 percent of land in Sub-Saharan Africa is unregistered.[62] Nevertheless, several countries, including Ghana and Zambia, have actively tried to solicit GCC investment in their agriculture sectors.[63]

More worrisome, in light of the growing competition between the United States and China, is the level to which Beijing views food as a national security priority. As a *Foreign Policy* article, co-authored by a working group participant, noted: "From a food as national security perspective, Beijing's desire to secure

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[54] "Outsourcing's third wave," *The Economist,* May 23, 2009, https://www.economist.com/international/2009/05/21/outsourcings-third-wave.
[55] Todman, "The Gulf Scramble for Africa."
[56] Andrew England and Emiko Terazono, "Pandemic revives Gulf fears over food security," *Financial Times*, August 5, 2020, https://www.ft.com/content/5ff72ce2-5947-497e-ac83-4aa4d008a73d.
[57] Townsend, "Seeds of Gulf-Africa Agribusiness."
[58] Ibid.
[59] See Townsend, "Seeds of Gulf-Africa Agribusiness;" Maha El Dahan, "African states seek new farmland deals without problems of past," *Reuters,* February 6, 2014; and "Changes in GCC-Africa investment provide the Gulf with stable supply," Oxford Business Group. Qatar has also become a more active investor in the region. In 2019, the state's investment fund announced that it would invest $500 million over three years in Sudan's agricultural and food industries. The decision was in part motivated by additional stress on Qatari food imports through the blockade of Qatar starting in 2017, by its Gulf neighbors. Ibid; and Todman.
[60] Ibid.
[61] El Dahan, "African states seek new farmland deals without problems of past."
[62] "Changes in GCC-Africa investment provide the Gulf with stable supply," Oxford Business Group.
[63] El Dahan, "African states seek new farmland deals without problems of past."

nutrition for its massive population may motivate some actions that others consider aggressive, such as the purchase of land in Africa and investment in agriculture and fisheries around the world."[64] This also includes infrastructure projects on the continent, such as railroads, and a Chinese military base in Djibouti which, in part, secures the Chinese-Continental Rail Line here and throughout East and Central Africa.[65]

For the last decade, Beijing has had high ambitions to prioritize food security as national security. Through its Belt and Road Initiative (BRI), which began in 2013, the Chinese government has two aims: to feed its own population of approximately 1.4 billion people, and to project its ambitious campaign to promote global trade and infrastructural connectivity.[66] The BRI's construction of ports, rail, roads, and airports constitute Beijing's attempt to secure not just influence in the countries it invests in, but also to ensure the movement of goods, especially food and fuel. Half the countries that have signed onto the BRI are in Sub-Saharan Africa.[67]

Unforeseen natural phenomena, including the reemergence of the African Swine Fever in 2019, a deluge of heavy rain last year, and the COVID-19 pandemic exacerbated concerns over food security in China.[68] The confluence of these factors and mounting concerns over food scarcity compelled Xi Jinping to launch a state-run campaign to eliminate food waste called the "Clean Plate Campaign."[69] Julian Cribb puts the Chinese food security conundrum in perspective:

> If China cannot feed itself through the twenty-first century, it follows that others, whether willingly or unwillingly, will have to do so—or else face the prospect of a tsunami of Chinese outmigration potentially totaling hundreds of millions. The Chinese Government has been anxious to represent its agricultural investments as benign, as

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[64] Ehud Eiran, Michaela Elias, and Aron M. Troen, "No Bread, No Peace: National security experts need to put food back on the table as core issue," *Foreign Policy*, January 23, 2021, https://foreignpolicy.com/2021/01/23/food-hunger-national-security-issue-instability/.

[65] Arwa Damon and Brent Swails, "China and the United States face off in Djibouti as the world powers fight for influence in Africa," *CNN*, May 27, 2019, https://edition.cnn.com/2019/05/26/africa/china-belt-road-initiative-djibouti-intl/index.html.

[66] Jack Nolan and Wendy Leutert, "Signing up for standing aside: Disaggregating participation in China's Belt and Road Initiative," The Brookings Institution, October 2020, https://www.brookings.edu/articles/signing-up-or-standing-aside-disaggregating-participation-in-chinas-belt-and-road-initiative/.

[67] Ibid.

[68] Scott B. MacDonald, "China, Food Security, and Geopolitics," *The Diplomat*, September 30, 2020, https://thediplomat.com/2020/09/china-food-security-and-geopolitics/.

[69] "China launches 'Clean plate' campaign against food waste," *BBC News,* August 13, 2020, https://www.bbc.com/news/world-asia-china-53761295.

business partnerships, or as aid to help African and other countries (such as the Philippines) to develop their own agricultural resources along the highly successful (until now) Chinese model. However, at some point, the issue will inevitably arise whether the food so produced will be used to feed local people or Chinese people in China.[70]

Photo 7: Rice plantation

[70] Cribb, p. 16.

Current Infrastructure and Programs

Governments, NGOs, and international organizations and networks have demonstrated some success in tackling food insecurity and its nexus to conflict and instability. Whether through UN agencies focused on food security, the Bill and Melinda Gates Foundation, or Feed the Future, internationally renowned entities have dedicated significant attention to the problem. Highlighting the success of existing initiatives is a first step to motivate publics, governments, politicians, and international bodies to take food security programs and infrastructure more seriously.

Photo 8: World Food Program food distribution

Feed the Future: The U.S. Government's Initiative to Tackle Global Hunger

Feed the Future (FTF), a USAID program, aims to "end global hunger." The Obama administration launched FTF in 2010, in response to the 2007-2008 global food crisis, and the program is currently implementing the *U.S. Government Global Food Security Strategy FY 2017-2021*, which puts into practice the Global Food Security Act of 2016 (GFSA). The initiative is a whole-of-government effort involving 11 government agencies—including the Departments of State, Commerce, Treasury, and Agriculture—and works with private sector firms, researchers and universities, NGOs, and volunteers to fulfill its goal. FTF's objective is to "sustainably reduce global hunger, malnutrition, and poverty" through programs that promote sustainable and inclusive agriculture-led growth in target countries, strengthen local communities' and food systems' resilience to shocks, and improve nutrition, particularly among women and young children. FTF currently operates in Bangladesh, Ethiopia, Ghana, Guatemala, Honduras, Kenya, Mali, Nepal, Niger, Nigeria, Senegal, and Uganda. In Honduras, Feed the Future seeks to help poor Hondurans increase their incomes by investing in high-value crops and animal production to diversify their income and economic opportunities. Since FTF started operating in Honduras in 2012, the country has seen a 30 percent reduction in stunting among children. Similarly, in Guatemala, FTF has implemented projects to prevent malnutrition and support innovative agricultural technologies to increase resilience of crops to climate shocks. Between 2013 and 2015, regions where FTF operated saw a 29 percent decrease in poverty and a 10 percent decrease in stunting among children.

In its 2020 progress report, FTF credited itself with generating more than $13 billion in agricultural sales for farmers, providing more than $3 billion in agricultural financing, and helping to lift 23 million people out of poverty and more than 5 million people out of hunger between 2011 and 2019. An independent review of FTF's efforts, prepared for USAID in 2016, found that FTF was performing well against its indicators and contributed to a significant reduction of poverty in 11 out of 17 target countries. Working group participants were unanimous in their praise for FTF and their belief that it could be a key tool in future food security policies.

Photo 9: USAID food distribution in Madagascar

Working group participants underscored that from both a physical infrastructure and a programmatic standpoint, there is a solid foundation to build upon. These ongoing efforts need to be connected to bottom-up solutions, centered on community-based organizations. National and international initiatives must complement local efforts with a focus on the communities they serve. Whether in rich countries or the Global South, these efforts are most effective when they address financial issues, such as fair prices for producers, available credit for individuals, as well as infrastructure and access issues. The provision of training, supplies, and markets for local producers have all shown success when implemented in a community-focused way.

In addition to the widely-known UN agencies like the World Food Program, Food and Agriculture Organization, and the International Fund for Agricultural Development, and U.S. government efforts focused on this issue, below is a brief overview of some of the local, national, and international actions that could serve as a model for new initiatives. For further details and a fuller picture, see the Appendix at the end of the report.

International organizations

- **African Union Commission: Department of Rural Economy and Agriculture, Agriculture and Food Security Division**: The Department coordinates and implements the AU's agricultural production and food security programs, including the Comprehensive Africa Agriculture Development Programme (CAADP).
- **European Commission: Directorate-General for European Civil Protection and Humanitarian Aid Operations; Directorate-General for International Partnerships:** The Directorates coordinate the EU's food security work through humanitarian assistance, nutrition, sustainable agriculture, and food systems.

Governments

- **China International Development Coordination Agency**: The agency coordinates the Chinese government's development aid programs, including food assistance and agricultural development projects.
- **French Ministry for Europe and Foreign Affairs, International Strategy for Food Security, Nutrition and Sustainable Agriculture**: The ministry implements French government's global food security objectives, including strengthening global governance of food security and nutrition; developing sustainable agricultural and food systems; reinforcing France's action in nutrition; supporting sustainable agri-food sectors to promote the creation of jobs in rural areas; and reinforcing food assistance actions for vulnerable populations.

NGOs

- **Bill and Melinda Gates Foundation**: The Foundation's agricultural development work supports farmers and governments in sub-Saharan Africa and South Asia that are seeking a sustainable, inclusive agricultural transformation—one that creates economic opportunity, respects limits on natural resources, and gives everyone equal access to affordable, nutritious food.
- **Feeding America**: The Feeding America network is the nation's largest domestic hunger-relief organization. The group raises awareness and conducts in-depth research to better understand hunger. Moreover, the network works with manufacturers, distributors, retailers, food service companies and farmers to gather food before it goes to waste.
- **Mercy Corps**: The NGO works with communities, local organizations, and government authorities to identify the root causes of food insecurity and malnutrition. It uses this knowledge to develop comprehensive and inclusive programming aimed at achieving resilient food security and improving nutrition.

From *Fome Zero* to Food Insecurity: Brazil, COVID, and Hunger

Brazil's experience of COVID-19 has exposed the systemic issues behind food insecurity. Since the start of the pandemic, 19 million of 211 million Brazilians have suffered hunger—nearly twice as many as in 2018—and more than half of the country's population (approximately 117 million) experience some level of food insecurity. Rising unemployment rates, cuts to government food aid, and high increases in prices for food staples have driven this food crisis. According to the Brazilian Institute of Geography and Statistics, the prices of rice, black beans, and potatoes have increased between 50 and 70 percent since the start of the pandemic while the price of cooking oil has almost tripled.

Brazil's economic and food supply situation was not always this grim. Brazil is one of the largest economies in the world and home to South America's wealthiest city, São Paulo. In 2003, then-President Luiz Inácio Lula da Silva created the *Fome Zero* (Zero Hunger) strategy, a series of policies to strengthen food supply in Brazil, promote smallholder farming, and lift Brazilians out of poverty. Under the Zero Hunger strategy, primarily through its flagship program—the Food Acquisition Programme (PAA), as well as the National School Feeding Programme (PNAE)—Brazil successfully implemented a program of "structured demand," which linked the supply by smallholder farms to the demand of public procurement. Between 2003 and 2013, the Brazilian government purchased 3 million tons of food from small farmers under the PAA. The PNAE mandates that 30 percent of food for school meals must be purchased from smallholder farmers; the program's annual budget amounts to $1.75 billion. Together, these two structured demand programs received nearly $1 billion in government funds in 2013. As a result of the Zero Hunger strategy, the United Nations removed Brazil from its world hunger map in 2014.

However, the Brazilian economy has been in recession since 2014. Today, the country's populist president, Jair Bolsonaro, has not only mismanaged Brazil's COVID-19-response but also cut government assistance to support food purchases this year, which has exacerbated the country's food crisis. As a result, much of the progress that Brazil has made toward lifting its population out of hunger and poverty risks being undone.

Photo 10: Rice plantation, Rio do Sul, Brazil

Photo 11: Floating market in Srinagar, Kashmir

Recommendations: Rethink and Reform

Participants proposed a number of broad principles and more specific policy recommendations for a host of relevant food security players—the international community; local, regional, and national governments; NGOs; the private sector; and academia—to consider. The working group focused on two main avenues of approach—rethink and reform—with recommendations falling into one of these themes.

Working group participants shared the view that more proactive steps toward food security are necessary. This includes a wholesale "rethink" of what constitutes food security, our knowledge around it, and how leaders, policymakers, and the public talk about it. Viewing food security through a new lens is a step toward complete "reform" of the food system as we know it, an imperative to end hunger. The G-20's June 2021 Matera Declaration on Food Security, Nutrition, and Food Systems is a positive recognition of the scope of this problem and is a clear starting point for rethinking and reforming our food system.[71]

Rethink food security

- **A shift in our frame of reference and vocabulary is necessary**. The current food system focuses on preventing food insecurity and on humanitarian responses to situations of hunger. This has served the world well for decades, but we need a new approach for a new reality. A new framework and vocabulary for food security needs to take a

[71] "Matera Declaration on Food Security, Nutrition and Food Systems: A call to action in the time of the Covid – 19 pandemic and beyond," Group of 20, June 2021, https://www.g20.org/wp-content/uploads/2021/06/Matera-Declaration.pdf.

proactive approach that views food security as a social protection/social safety net/global commons right.

At the same time, from a national security and diplomacy standpoint, we need to view it as a first-order tool to build stability and prevent conflict. Seeing food security through this new lens can also help move it up the national security and foreign affairs priority lists in many countries. The United States, for instance, has never truly had the necessary "whole-of-government" approach to food security. Language must be jargon free and accessible to all as the basis for an equitable long-term impact.

- **Knowledge gaps need to be filled.** As working group participants pointed out, there are key gaps in our collective knowledge in a number of areas, ranging from land degradation, water levels, and distribution network vulnerabilities, to name a few. Researchers and policymakers should focus on analysis of real time information and gathering real time date, which can be difficult in certain circumstances. Increased knowledge will allow diplomats and other policymakers to attempt directed interventions.

- **Nutritional need must drive food systems.** Three billion people cannot afford a healthy diet. Calories do not equate to nutrition. Better nutrition leads to more productive people. A lack of healthy diets not only leads to physical and cognitive stunting, but it can lead to obesity and diabetes in both rich and poor countries alike. According to the UN, the number of obese and overweight people globally now exceeds three billion. An increase in the planting of, and marketing of, high nutritional crops would narrow the gap between today's current food supply system and nutrition.

- **The public and private sector need to align on research and development.** Private capital now drives the majority of research and development. This is a significant break from past trends of public/private collaboration that ensured these funding streams were part of a broader strategy. Today, international organizations and governments lack a strong role in this field. They should increase partnerships between the global agricultural sector, agri-business, governments, the international community, and other parts of the private sector.

Reform the system

- **The food system must be resilient.** When a government doubts its ability to acquire food in tough times, it is more apt to make risky

international land purchases and/or undertake protectionist food polices at the first sign of distress. Food insecurity arises due to single points of failure—often foreseeable—which require humanitarian interventions. The need to build resilience into all points of the food system—from plant to pantry—was a recurring recommendation from working group participants and would allow the system to withstand certain levels of disruption. Resilience also helps to build public trust in the system, which curtails many effluvial issues.

- **Coordination must improve.** The international community needs to focus on a better, and greener post-COVID recovery to issues of food security. In order to do so, it is critical to focus on integration, layering, and sequencing when approaching reform and resilience. More careful and holistic investments in agriculture that consider how investments might drive/quell polarization, instability, and conflict, are necessary. Coordination must come at all levels to be successful: global, regional, country, and program.

- **Flexibility and ground-up approaches should be front and center.** Working group participants touched upon these points time and again, including successes at the local level, and those that focus on poor and women farmers. These are transferable and scalable, but not in all situations and in all places; each case is unique. Likewise, prevailing views within the international community do not always translate well to local conditions, and some of these can even have the ill-effect of driving conflict.

  It is important to promote local leadership and local ownership of programs, but that also includes more government participatory action in aid. A key starting point for this includes more inclusiveness and dialogue with all potentially affected peoples. As discussants noted, tackling food insecurity at a community level may be the best means we have in the short run to mitigate conflict driven by food scarcity or climate issues. Local solutions are the only hope in countries where governance is unreliable or uneven.

- **Government procurement is a useful policy tool.** Research has shown that sustainable public procurement of farm produce can create a viable market for farmers. This allows farmers to grow crops other than globally marketable commodities, which are normally the only goods they can sell on the global market, even if it does not make sense for them to grow such crops. Government-driven programs can create multiple "wins," as farmers get a steady buyer and a steady income, which enables them to grow more crop types that make sense at the

local level. This includes growing more vegetables and increasing nutrition. These programs also help to localize the food system and cut out the potential for distribution network disruptions.

- **The international community needs to remain vigilant and do more to monitor foreign land acquisition and respond to protectionism.** Enacting many of the recommendations in this report will go a long way toward curtailing these activities. However, multilateral efforts can go further. The G-20 has begun to do this through its Committee on World Food Security, which has developed guidelines on food investments, for instance. Better regulation of land acquisition is also necessary. With programs like this in place, a key emphasis can and should be on the protection of local land rights and the empowerment of the poor and women. International entities should also work to ensure that governments and the private sector pursue foreign investments in ways that disincentivize securitized, even protectionist, approaches to food security.

APPENDIX

Organizations Tackling Food Insecurity*

Governments, International Institutions, & Multilateral Initiatives		
Country/IO/ Multilateral Body	**Program/Link**	**Details**
African Union	African Union Commission, Department of Rural Economy and Agriculture, Agriculture and Food Security Division https://au.int/en/directorates/agriculture-and-food-security	Coordinates and implements the AU's agricultural production and food security programs, including the Comprehensive Africa Agriculture Development Programme (CAADP).
China	China International Development Coordination Agency http://en.cidca.gov.cn/index.html	Coordinates Chinese government development aid programs, including food assistance and agricultural development projects.
European Union	European Commission, Directorate-General for European Civil Protection and Humanitarian Aid Operations (ECHO): Food Assistance https://ec.europa.eu/echo/what/humanitarian-aid/food-assistance_en	Directs the European Commission's humanitarian food assistance policy. The Directorate has allocated 20 percent of its annual humanitarian aid budget to alleviate the effects of food insecurity and malnutrition, making it one of the larger donors in this domain.
	European Commission, Directorate-General for European Civil Protection and Humanitarian Aid Operations (ECHO): Nutrition https://ec.europa.eu/echo/what/humanitarian-aid/nutrition_en	Leads the European Commission's work on malnutrition.
	European Commission, Directorate-General for International Partnerships (INTPA): Fostering better nutrition	Coordinates the EU's work with 42 partner countries to improve nutrition and related health conditions with a particular focus on child nutrition. Implements the EU's Action Plan on Nutrition: https://ec.europa.eu/international-

	https://ec.europa.eu/international-partnerships/topics/fostering-better-nutrition	partnerships/system/files/action-plan-nutrition-2015_en.pdf
	European Commission, Directorate-General for International Partnerships (INTPA): Investing in sustainable agriculture and food systems https://ec.europa.eu/international-partnerships/topics/investing-sustainable-agriculture-and-food-systems_en	Coordinates the EU's investment in sustainable agriculture through programs like the Africa-Europa Alliance for sustainable investment and jobs; the EU External Investment Plan; and DeSIRA: Development Smart Innovation through Research in Agriculture.
	European Commission, Directorate-General for International Partnerships (INTPA): Resilience to food crises https://ec.europa.eu/international-partnerships/topics/resilience-food-crises_en	Leads the EU's humanitarian and development work tied to helping partner countries develop resilience to food crises. Flagship initiatives include the Global Network against Food Crises and the EU Emergency Trust Fund for Africa.
Food and Agricultural Organization (FAO) - UN	Coastal Fisheries Initiative http://www.fao.org/in-action/coastal-fisheries-initiative/en/	Supports sustainable fishing practices to ensure a steady maritime food supply.
	Hand-in-Hand Initiative http://www.fao.org/hand-in-hand/en	Country-led and -owned initiative to accelerate agricultural transformation and sustainable rural development to eradicate poverty and end hunger and all forms of malnutrition. Uses technologies such as advanced geo-spatial modeling and analytics to identify opportunities to raise incomes and reduce inequities and vulnerabilities of the rural poor.
	South-South Cooperation Partnership http://www.fao.org/partnerships/south-south-cooperation/en/	Facilitates dialogue, provides framework for cooperation, offers technical oversight, and mobilizes resources to facilitate South-South and Triangular Cooperation on food security.

	Technical Platform on the Measurement and Reduction of Food Loss and Waste http://www.fao.org/platform-food-loss-waste/en/	Platform for information-sharing and discussion on prevention of food loss and food waste.
	The Right to Food http://www.fao.org/right-to-food/en/	Develops methods and instruments to assist stakeholders in the implementation of the Right to Food Guidelines, informs and raises awareness and understanding about specific actions.
	Urban Food Agenda http://www.fao.org/urban-food-agenda/en/	Initiative to enhance sustainable development, food security, and nutrition in urban and peri-urban areas, and nearby rural spaces.
Food Security Information Network (FSIN) - WFP, FAO, IFPRI	https://www.fsinplatform.org/	A technical platform for exchanging expertise and best practices on food security and nutrition analysis that promotes independent and consensus-based information. Facilitates a consultative process between government institutions and development partners working on food security issues.
France	Ministry for Europe and Foreign Affairs - International Strategy for Food Security, Nutrition and Sustainable Agriculture https://www.diplomatie.gouv.fr/IMG/pdf/frances_international_strategy_for_food_security_nutrition_and_sustainable_agriculture_cle4f3e1a.pdf	Implements French government's global food security objectives, including strengthening global governance of food security and nutrition; developing sustainable agricultural and food systems; reinforcing France's action in nutrition; supporting sustainable agri-food sectors to promote the creation of jobs in rural areas; and reinforcing food assistance actions for vulnerable populations.
G7	New Alliance for Food Security and Nutrition https://newalliance.travelvisabookings.com/about	Partnership between G7, African governments, private sector and civil society organizations. Created in 2012, committed to achieve sustained and inclusive agricultural growth and raise 50 million people out of poverty in Africa by 2022. Supports the

		implementation of the Comprehensive Africa Agriculture Development Programme (CAADP) and the implementation of National Agriculture and Food Security Investment Plans in countries performing well in CAADP.
G20	Agricultural Market Information System http://www.amis-outlook.org/amis-about/en/	An inter-agency platform, composed of G20 members, Spain, and seven other major agricultural exporters, that provides transparent information on global food supplies and serves as a platform to coordinate policy responses.
Germany	Gesellschaft fuer Internationale Zusammenarbeit (GIZ) - Food and nutrition security https://www.giz.de/expertise/html/60135.html	Germany's international development agency, which promotes improved agricultural practices, informs about safe preparation and consumption of food, works to improve the nutrition of infants, strengthens people's resilience through crisis management strategies, and promotes sustainability.
Global Network Against Food Crises (EU, FAO, WFP)	http://www.fightfoodcrises.net/about/en/	An alliance of humanitarian and development actors, founded by the European Commission, the FAO, and the WFP, that facilitates information-sharing and coordinates investments and political action to address the root causes of food crises.
Global Open Data for Agriculture and Nutrition (GODAN) - Multiple governments	https://www.godan.info/aboutgodan	Harnesses open data to provide innovative solutions to solve global hunger. The steering committee consists of the USDA, the UK Department for International Development (DfID), the Government of the Netherlands, the Open Data Institute, the UN FAO, CTA, CAB International, CGIAR and GFAR.
Intergovernmental Authority on Development (IGAD)	Food Security and Nutrition Working Group https://www.icpac.net/fsnwg/	Provides an up-to-date food security and nutrition situation analysis (early warning) and offering a forum to build

		consensus on critical issues facing policy and interventions for IGAD countries (Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan, Uganda).
International Committee of the Red Cross (ICRC)	Economic Security Unit https://www.icrc.org/en/document/introduction-economic-security	Works to restore food consumption, food production, income, living conditions, and capacity through relief activities, capacity-building, and livelihood activities during crises and conflicts.
Organisation for Economic Co-operation and Development (OECD)	Agriculture and fisheries https://www.oecd.org/agriculture/	Generates data and develops policies on food systems and food insecurity.
United Kingdom	Global Food Security Programme https://www.foodsecurity.ac.uk/about/	Cross-government program that coordinates research on food systems in the UK as well as how the UK food system interacts with global food systems.
United Nations	Committee on World Food Security http://www.fao.org/cfs/en/	Intergovernmental forum that develops and endorses policy recommendations on food security and nutrition, based on assessments by the High-Level Panel of Experts on Food Security and Nutrition (HLPE) and other UN institutions.
	Global Compact on Refugees https://www.unhcr.org/5c658aed4.pdf	Section 2.7, paragraphs 80-81, "Food security and nutrition," urges states to "contribute resources and expertise to facilitate access by refugees and host communities to sufficient, safe and nutritious food," including through food assistance for refugees and host communities.
	International Fund for Agricultural Development (IFAD) https://www.ifad.org/en/about	International financial institution and specialized UN agency that provides grants and low-interest loans to projects focused on supporting farmers in very poor and rural areas, with a

		focus on supporting women, youth and indigenous people.
	Scaling Up Nutrition (SUN) Movement https://scalingupnutrition.org/about-sun/frequently-asked-questions/	Hosted by the UN Office for Project Services, the SUN Movement strengthens political commitments and accountability of countries who are voluntary members of the Movement by establishing institutional homes for nutrition within governments, establishing multi-sectoral, multi-stakeholder, and systems approaches to scaling up nutrition.
	UN System Standing Committee on Nutrition (SCN) https://www.unscn.org/	The UNSCN is a dedicated platform where UN agencies can have an open, substantive, and constructive dialogue on nutrition strategies and initiatives. UN agencies can design joint global approaches, and align their positions and actions when addressing the multi-faceted and evolving nutrition challenges as they arise.
United States of America	U.S. Department of Agriculture (USDA) https://www.usda.gov/topics/food-and-nutrition/food-security	Focuses on in-country capacity building in partner countries, supports research on food security, and seeks to expand export markets for U.S. agricultural products. Most of USDA's work in this field is coordinated through Feed the Future.
	U.S. Department of State - Office of Agricultural Policy (AGP) https://www.state.gov/agricultural-policy/food-security/	Works with USAID to implement Feed the Future and coordinates with other partner organizations.
	Famine Early Warning Systems Network (FEWS NET) https://fews.net/about-us	Created by USAID, FEWS provides monthly reports and maps on current and future food insecurity, alerts on emerging food crises, and special reports and data on food insecurity and crises. Works with scientists, government ministries, international agencies, and NGOs.
	Feed the Future - The U.S. Government's Global Hunger &	U.S. Government initiative that focuses on improving agricultural

	Food Security Initiative https://www.feedthefuture.gov/about/	production in target countries, strengthening communities' resilience to shocks, and reducing hunger and malnutrition, particularly among vulnerable populations. Led by USAID, it involves ten other U.S. government departments and organizations, including the Departments of State, Commerce, Treasury, and Agriculture. FTF also works with universities, private sector firms, NGOs, and partner governments.
	United States Agency for International Development (USAID) - Bureau for Resilience and Food Security https://www.usaid.gov/who-we-are/organization/bureaus/bureau-resilience-and-food-security	Works with partners to advance inclusive agriculture-led growth, resilience, nutrition, and water security, sanitation and hygiene. Leads the coordination of Feed the Future and the implementation of the U.S. Government Global Food Security Strategy and the U.S. Government Global Water Strategy. Oversees the USAID Multi-Sectoral Nutrition Strategy. Leads USAID's Nutrition Leadership Council, the Resilience Leadership Council, and Water Leadership Council.
	United States Agency for International Development (USAID) - Office for Food for Peace https://www.usaid.gov/who-we-are/organization/bureaus/bureau-democracy-conflict-and-humanitarian-assistance/office-food	Provides emergency food assistance after crises and conflict, supports development projects to build resilience of food systems, and provides nutritional support through the International Food Relief Partnership (IFRP).
	Agricultural Trade Development and Assistance Act of 1954 (Pub. L. 83–480) https://www.govinfo.gov/content/pkg/STATUTE-68/pdf/STATUTE-68-Pg454-2.pdf#page=1	First established the Food for Peace program.

	Global Food Security Act of 2016 https://www.congress.gov/bill/114th-congress/senate-bill/1252/text?overview=closed	Requires the U.S. president to develop a Global Food Security Strategy that supports food insecure countries in reaching self-sufficiency; accelerates inclusive, agricultural-led economic growth; increases the productivity, incomes, and livelihoods of small-scale producers; builds resilience to food shocks among vulnerable populations; creates an environment for agricultural growth and investment; and improves the nutritional status of women and children. Reauthorized in 2018.
	Global Fragility Act https://rules.house.gov/sites/democrats.rules.house.gov/files/BILLS-116HR1865SA-RCP116-44.PDF (p. 1321)	Calls for the development of a ten-year Global Fragility Strategy. Authorizes the Prevention and Stabilization Fund (to prevent violence and stabilize areas of conflict), the Complex Crisis Fund (to respond to emerging conflicts), and the Multi-Donor Global Fragility Fund, with at least $230 million per year for five years to support the implementation of the law. The Department of State is the lead implementer, USAID, the DOD, and other relevant federal agencies.
World Bank	Global Agriculture and Food Security Program (GAFSP) https://www.gafspfund.org/about	A $1.6 billion multilateral financing mechanism that supports resilient and sustainable agriculture systems through grants, technical assistance, and other financing tools. GAFSP does not implement its own projects but pools financial resources and channels funding though existing development agencies. GAFSP is supervised by the World Bank Group, the World Food Programme, the Asian Development Bank, the African Development Fund, the Food and Agriculture Organization of the UN, the Inter-American Development Bank, and the International Fund for Agricultural Development.

World Food Programme (WFP) - United Nations	Climate action https://www.wfp.org/climate-action	Provides analysis highlighting the links between food security and climate risks, and the impact of climate change on food security and nutrition. Specific projects include the Food Insecurity and Climate Change Vulnerability map, projects funded through the Food Security Climate Resilience Facility, and the R4 Rural Resilience Initiative (in partnership with Oxfam).
	Disaster risk reduction https://www.wfp.org/disaster-risk-reduction	Supports soil and water conservation and the construction of flood protection, drainage infrastructure, and other infrastructure that prevents erosion. Implements the WFP's Policy on Disaster Risk Reduction and Management and helps implement the UN Sendai Framework for Disaster Risk Reduction 2015 - 2030.
	Gender equality https://www.wfp.org/gender-equality	Guided by the WFP Gender Policy (2015-2020), WFP supports food security and nutrition programs that provide food assistance adjusted to the specific needs of women and children, foster equal participation, enhance decision-making powers of women and children, and ensure that no rights are harmed.
	Nutrition https://www.wfp.org/nutrition	Works to improve the availability of and access to nutritious food through capacity-building. Areas of focus include acute malnutrition, chronic malnutrition, vitamin deficiencies, and obesity.
	Smallholder market support https://www.wfp.org/smallholder-market-support	Includes programs such as Purchase for Progress (P4P) and the Farm to Market Alliance, which encourage investments that connect smallholders to markets; the Home-Grown School Feeding program, which sources food for national school meal systems from small farmers; and Purchase from Africans for Africa which connects

		smallholder farmers to public procurement needs.
	Social protection and safety nets https://www.wfp.org/social-protection-and-safety-nets	Provides technical advice and operational support to strengthen governments' social protection systems.
	Sustainable livelihoods and ecosystems https://www.wfp.org/sustainable-livelihoods-and-ecosystems	Provides support to farmers, such as soil conservation and fertility measures, water harvesting and flood control, to improve sustainability of farming. Rehabilitates farmland and infrastructure through the Food Assistance for Assets (FFA) program.
NGO & Civil Society Programs		
Organization	**Program/ Link**	**Details**
Action Against Hunger	https://www.actionagainsthunger.org/	Tackles the root causes of hunger by addressing problems of production, access, and income through food security and livelihood programs. Encompasses a wide array of activities customized to meet a community's specific needs. Programs bolster agricultural production, jumpstart local market activity, support micro-enterprise initiatives, and otherwise enhance a vulnerable community's access to sustainable sources of food and income.
Bill and Melinda Gates Foundation	https://www.gatesfoundation.org/our-work/programs/global-growth-and-opportunity/agricultural-development	Supports farmers and governments in sub-Saharan Africa and South Asia that are seeking a sustainable, inclusive agricultural transformation through its agricultural development programs—one that creates economic opportunity, respects limits on natural resources, and gives everyone equal access to affordable, nutritious food.
Care International	https://www.care.org/	U.S.-based 501(c)(3) not-for-profit organization that works around the globe to save lives, defeat poverty and

		achieve social justice, and fight for women and girls. The organization focuses their efforts in the fight against poverty by addressing issues relating to crises; food and water; health; education and work; climate; and equality.
Emergency Nutrition Network (ENN)	https://www.ennonline.net/	UK-registered charity, set up in 1996, working with programmers, policy makers and researchers to strengthen know-how and evidence to overcome malnutrition.
Feeding America	https://www.feedingamerica.org/	Raises awareness and conducts in-depth research to better understand hunger across the United States. Moreover, the network works with manufacturers, distributors, retailers, food service companies and farmers to gather food before it goes to waste.
Food for the Hungry	https://www.fh.org/	Seeks to end all forms of human poverty by providing life-changing resources such as clean water, medical aid, food, equal educational opportunities to children, vocational training, and empowerment in the midst of hardship.
Global Alliance for Improved Nutrition	https://www.gainhealth.org/about/strategy	By mobilizing private investment and businesses of various sizes, GAIN seeks to help food systems generate positive nutrition for all people, especially the most vulnerable. For instance, GAIN has launched a COVID-19 response program, Keeping Food Markets Working, which aims to protect the diets of food system workers and protecting SMEs that produce nutritious food in the short to medium term, and in the longer term to institute structural changes which strengthen food systems and initiate preventive action.

Helen Keller International's Enhanced Homestead Food Production	https://www.hki.org/what-we-do/nourishing-families/helping-families-grow-better-food/	Empowers women from poor households in Africa and Asia with the education and resources needed to raise their own nutritious foods. Works with local farmers and through community organizations to establish Village Model Farms and Farmer Field Schools where women receive hands-on training in gardening and farming practices.
Johns Hopkins Center for a Livable Future	https://clf.jhsph.edu/	Works with students, educators, researchers, policymakers, advocacy organizations and communities to build a healthier, more equitable and resilient food system. It operates out of the Johns Hopkins Bloomberg School of Public Health, from the Department of Environmental Health and Engineering.
Mercy Corps	https://www.mercycorps.org/what-we-do/food-security-nutrition	Works with communities, local organizations, and government authorities to identify the root causes of food insecurity and malnutrition. We use this knowledge to develop comprehensive and inclusive programming aimed at achieving resilient food security and improving nutrition.
Oxfam	https://www.oxfam.org/en	Advocates to reform the systems, policies and practices that keep people trapped in poverty. They provide grants and technical support to local organizations that help poor communities grow nutritious food, access land and clean water, and obtain decent work and fair wages.
PepsiCo	https://www.pepsico.com/sustainability/philanthropy	The PepsiCo Foundation is the company's philanthropic arm that seeks to address pervasive hunger by delivering meals, supporting food banks in upskilling their operations, providing logistical and technical support to over 60 partners working to

		address nutrition and food insecurity globally.
Rise Against Hunger	https://www.riseagainsthunger.org/	From the implementation of sustainable community development projects to a meal packaging program that harnesses the passion of local volunteers, Rise Against Hunger strives to make an impact on hunger by building resilience, self-sufficiency and empowerment in communities worldwide.
Private Sector Organizations		
Company	**Program/Link**	**Details**
Alltech	https://www.alltech.com/	Improves plant, feed and food quality through nutrition and scientific innovation, particularly yeast-based technology. Alltech's team is fully committed to helping plants and animals achieve their full potential while supporting producers in greater efficiency, profitability and sustainability.
BASF Agriculture USA	https://agriculture.basf.com/us/en.html	Sells fungicides, insecticides, herbicides and seed treatments to farmers to sustainably increase the yields and the quality of their crops. BASF's technologies aim to ensure that crops grow healthier, stronger and more resistant to stress factors, such as heat or drought.
Bühler, Givaudan and Nestlé	https://futurefoodinitiative.ch/	The three food industry leaders have joined together to establish the Future Food Initiative, designed to accelerate the development of sustainable, plastic-free packaging and secure access to affordable nutrition as part of the global challenge of addressing hunger, malnutrition and sustainability. The Initiative supports research and start-

		ups working in these areas based in Switzerland.
Cargill	https://www.cargill.com/	Works alongside farmers, producers, manufacturers, retailers, governments, and other organizations to nourish the world in a sustainable way. Offers input, expertise, and risk management tools to farmers small and large, helping them boost their productivity and incomes. Develops feed products and works with farmers and scientists to ensure animals well-being, in order to sustainably meet growing demand for animal protein worldwide.
Compass Group Canada	https://www.compass-canada.com/	A food service company, Compass partners with Food Banks Canada to provide Canadian families-in-need with access to fresh, nutritious food through its Nourish program.
DSM	https://www.dsm.com/corporate/sustainability/nutrition-health/tackling-malnutrition.html	Manufactures vitamins, nutritional ingredients, and food fortification technologies works with humanitarian organizations, food companies and social enterprises to provide nutrient-rich foods (such as fortified rice and micronutrient powders) to large populations at scale.
MotherFood International	https://www.motherfoodinternational.com/	Social enterprise that seeks to address malnutrition globally by using a scalable and sustainable market-based approach to invest in and train women to make or sell locally made nutritious and fortified food to improve their financial situation and the health of women, especially those who are pregnant and at greater risk of malnutrition, in their communities.
Sight and Life	https://sightandlife.org/	Formerly a humanitarian aid program, Sight and Life now runs public-private partnerships which seek to address malnutrition globally to translate

		nutrition science to inform policy-makers and participants to make effective policies and to develop business models that are profitable or sustainably subsidized and increase the availability and desirability of nutritious foods.
Tetra Pak	Tetra Laval Food for Development https://www.tetrapak.com/en-gb/sustainability/food/food-availability/food-for-development	Drives the development of the dairy and food value chain through cooperation with customers, governments, development cooperation agencies, funding organizations, and NGOs all over the world.
Unilever	https://www.unilever.com/planet-and-society/protect-and-regenerate-nature/sustainable-and-regenerative-sourcing/	Develops sustainable and regenerative sourcing initiatives to improve social and environmental standards in their supply chain. These efforts include the creation of regenerative programs for ingredients in the supply chain, such as soy, palm oil, sugar, cacao, and vegetables. Launched the "Future Foods" ambition, which aims to help people transition towards healthier diets (by continuing to lower calorie, salt and sugar levels across products) and to help reduce the environmental impact of the global food chain by reducing the food waste in its direct global operations from factory to shelf.
United Nations	UN Global Compact https://www.unglobalcompact.org/	Corporate Sustainability Initiative to align strategies and operations in pursuit of the UN SDGs.

PHOTO CREDITS

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Peace Through Food: Tackling the Food Insecurity and Instability Nexus

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All discussions took place under the Chatham House rule. Government personnel attended in their personal capacity, and not as official representatives of their respective governments.