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CLIMATE CHANGE AND THE SECURITY CASE FOR AGRICULTURAL ADAPTATION INVESTMENT

EVENT SUMMARY

SEPTEMBER 26, 2023

Patricia Parera

Edited by Tom Ellison and Francesco Femia
Climate Change and The Security Case for Agricultural Adaptation Investment: Event Summary

September 2023

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Cover photo: A view of the confluence of the Niger and Benue Rivers in central Nigeria. (Landsat/Copernicus via Google)

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A view of the confluence of the Niger and Benue Rivers in central Nigeria. The Gbedege Nature Reserve (dark green) is visible between the two.

Source: Landsat/Copernicus via Google
Introduction

The Center for Climate and Security (CCS) convened the roundtable Feeding Resilience: Climate Change and The Security Case for Agricultural Adaptation Investment on September 26, 2023, in Washington DC and virtually. This discussion was part of the Feeding Resilience Project, which focuses on the nexus of climate change, food insecurity, stability, and U.S. national security interests and will build to a set of policy recommendations to be circulated among policymakers in 2024. Following the project’s first roundtable on the interplay of food, climate change, and national security, the event centered on the security imperative of agricultural adaptation.

Panelists’ presentations provided insights on security and agricultural adaptation from different organizational perspectives, followed by open discussions, using Nigeria as a case study. This Summary includes background on the nexus of climate change, security, and agricultural adaptation; a synthesis of participants’ perspectives; and conclusions and recommendations to inform policymakers.

The roundtable was held under “Chatham House Rule”1 with diverse participants including from the U.S. government, multilateral development banks, and agriculture research organizations. Roundtable participants, agenda, and presentations can be found online at climateandsecurity.org.

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1 The Chatham House Rule is used around the world to encourage inclusive and open dialogue in meetings. The Chatham House Rule helps create a trusted environment to understand and resolve complex problems. Its guiding spirit is: “share the information you receive, but do not reveal the identity of who said it.” Chatham House Rule | Chatham House—International Affairs Think Tank
Background

The state of global food security is dire.

According to the United Nations (UN) *The State of Food Security and Nutrition in the World 2023* (SOFI) report, more people suffered from undernourishment in 2022 than in 2015, when the 2030 Agenda for Sustainable Development was launched. In 2030, the UN predicts that more people will still suffer from undernourishment than in 2015. According to SOFI, current crises including Russia’s termination of the Black Sea Grain Initiative, the war between Israel and Hamas, and India’s ban on rice exports, threaten to increase global hunger and malnutrition, while climate change continues to produce extremes in temperature and precipitation.

Agrifood systems generate significant benefits to society, including the food that nourishes us and jobs and livelihoods for over a billion people. However, their negative impacts due to unsustainable business-as-usual activities and practices are contributing to climate change, natural resource degradation and the unaffordability of healthy diets. (SOFI 2023)

Climate change multiplies the above risks, fueling conflict and undermining peace and stability.

The United Nations Intergovernmental Panel on Climate Change (UNIPCC) has warned that conflict-affected and poor countries will bear the brunt of the climate crisis. Climate impacts can intersect, amplify and ripple across countries or regions in unexpected ways, “with climate change being a..."
particularly wicked problem, as uncertainties are many, impacts are diffuse, and the risks are constantly evolving.”

Climate change disproportionately harms vulnerable populations and can contribute to compounding security risks such as loss of livelihoods, competition for natural resources, tension over migration and internal displacement, political unrest, diminished social cohesion, recruitment by violent extremist organizations (VEOs), malign influence by state and non-state actors, and increased demand for natural disaster relief. The need to promote, coordinate and advance concrete climate security approaches and initiatives to drive action and implementation efforts has never been so widespread.

The existing agrifood system is not working for many communities.

One of the preliminary results of SOFI 2023 indicates that “the global hidden costs of our agrifood systems—despite the exclusion of certain impacts and a considerable degree of uncertainty—exceed USD 10 trillion.” Hidden costs for low-income countries, on average, account for 27 percent of their gross domestic product (GDP) primarily due to the impacts of poverty and undernourishment. Economic growth alone is insufficient to meet today’s challenges. Greater attention is needed to ensure environmental and social sustainability. Thus, policy makers and implementers need to address social, economic, and environmental sustainability.

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5 FAO. 2023. In Brief to The State of Food and Agriculture 2023. Revealing the true cost of food to transform agrifood systems. Rome. https://doi.org/10.4060/cc7937en
Discussion

Roundtable participants offered insights on key themes, including climate risks to agrifood systems; the overlapping challenges of agricultural emissions, adaptation, and food production; and promising research and development (R&D), adaptation and resilience policy tools.

The world’s agrifood systems face severe climate risks.

According to the Intergovernmental Panel on Climate Change (IPCC), “extreme weather events will likely increase in frequency and magnitude in the coming years, putting global food systems at increased risk of disruption, with supply shortages and price hikes.” Some of the most immediate risks globally are posed by extreme heat. Last summer (2023) the world experienced 30+ days of health-threatening extreme heat.6

At the same time, salinity also poses a critical risk in coastal areas as one billion people rely on drinking water which is being endangered due to sea level rise and salinization. According to the Center for Climate and Security, “food production and distribution systems are increasingly interconnected on a global scale, meaning that climate change related fluctuations in agricultural production in one region stimulate price increases in other regions.”7

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6 Scientific American. CLIMATE CHANGE “Half the World’s Population Faced Extreme Heat for at Least 30 Days This Summer.” By Andrea Thompson on September 7, 2023

According to Roundtable participants, one of the best ways to prevent these downstream impacts on food systems is to invest in mitigation, adaptation and resilience in the communities that need it most. 

*Without resilience, climate hazards are likely to contribute to political, economic, and social instability around the world.*

—U.S. Department of Defense

The world is estimated to require a 40–70 percent increase in food availability by 2050, complicating efforts to combat climate change and maintain global security.

Climate change has slowed down the growth in crop yields, reduced livestock productivity and affected the nutritional content of food as well as farm profitability. According to one of the presenters, “at existing crop yield levels, this increase in food supply would require 23-34 million km² of new farmland and ranches, an area at least as large as all sub-Saharan Africa.” Farmers will need to produce more from existing farmland instead of relying on area expansion. Therefore, the rate of genetic improvement must be doubled to meet future demand and to withstand the impacts of climate change.

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8 Mitigation involves a process of curbing greenhouse gas emissions from human activities, for example emissions from fossil fuels as well as deforestation, with a view to stabilizing greenhouse gas concentration at a safe level. Adaptation involves a range of activities to reduce vulnerability and build resilience in key sectors, such as water, agriculture and human settlements. Resilience is the ability of people, households, communities, countries and systems to manage adversity and change without compromising future well-being. It is associated with lower poverty levels, higher Gross Domestic Product (GDP) per capita, stronger human capital accumulation, and greater human development. Resilience may reduce vulnerability before shocks occur.

9 DEFEND THE NATION. ACT ON CLIMATE. DOD Climate Resilience Portal. DoD-2023
More than 700 million people were chronically undernourished in 2022 compared to 613 million in 2019, and child stunting and nutrient deficiencies are widespread in developing countries.10

Food and the way the world produces it, has a direct impact on addressing the negative impact of climate change, reducing water stress, pollution, restoring lands back to forests or grasslands, and protecting the world’s wildlife.11 The illustration below from the World Resources Institute visualizes the challenge of how to produce more food to feed the world, without using more land, while lowering emissions.


11 Our World in Data, “What are the environmental impacts of food and agriculture?” by Hannah Ritchie November 04, 2019.
Climate change amplifies the severity and incidence of conflict, underscoring the security imperative of addressing food system emissions in a sustainable manner.

According to the International Fund for Agricultural Development (IFAD), one standard deviation rise in temperature increases the rate of interpersonal conflict by 2.4 percent and the rate of inter-group conflict by 11.3 percent. Agricultural systems contribute between 23-42 percent of global GreenHouse Gas (GHG) emissions. According to the IPCC, unless there are immediate and deep emissions reductions across all sectors (including agri-food systems), 1.5°C is beyond reach.

Research suggests that certain land-based mitigation actions like energy crop expansion, non-CO2 emissions reduction in the agricultural sector and afforestation can lead to lowered availability of calories, increase in population at risk of hunger, and higher agricultural commodity prices, all of which could exacerbate insecurity. World Bank data suggests that over a billion people live in Fragile and Conflict (FC) affected areas and that by 2030, almost two thirds of people living in extreme poverty (360 million), will be living in FC areas.

12 See Annex 1 for detailed information on agri-food systems.
13 Intergovernmental Panel on Climate Change (IPCC) 2022.
14 Fujimori et al. 2023, Nature Food. https://www.nature.com/articles/s43016-022-00464-4#citeas
15 Refer to Annex 1, Social Sustainability.
While we can’t phase out food in the same way we can fossil fuels, we can transform food systems so that they have net-zero emissions, restore nature, and boost resilience.¹⁶

—Joao Campari and Morgan Gillespy, IISD

In light of these tensions, according to one of the presenters, there is a need to develop improved, climate-resilient crop varieties and expand access to traditional food crops to provide better nutrition and build resilience. Land use must be matched with its sustainable potential and improved soil management to build healthy soils, leading to:

- More productive and nutritious crops.
- Greater resistance to extreme weather.
- Less need for costly and scarce inputs like fertilizer.
- Avoidance of irreversible land degradation.
- Lower greenhouse gas emissions

One effort to build a more resilient food system by developing diverse, climate resilient crops and healthy soils is the Department of State (DoS) Vision for Adaptive Crops and Soils (VACS) initiative.¹⁷ VACS seeks to differentiate itself from other programs by organizing interventions around a cohesive, interdependent framework that recognizes the complexity of land use—with a particular focus on what farmers should plant and where. Interventions are geared towards empowering farmers, policymakers, extension workers, and suppliers with options and information tailored for their own local conditions and preferences. Interventions prioritize nutrition as the endpoint for resilient food systems with a focus on increasing returns over time. VACS adopts a communication for development approach by identifying the issues, opportunities and constraints, and designing a relevant communication strategy.

¹⁶ IISD, SDG Knowledge Hub, “Food Systems: The Missing Piece of the Climate Puzzle at COP 28.” 2 November 2023

¹⁷ For a detailed presentation of the program refer to Annex 1.
according to the target populations. For example, to reach out to a younger generation of farmers and producers, donors need to address the generational change taking place particularly in Africa and target those audiences with relevant and attractive messaging.

One of the participants suggested that “transformative adaptation that addresses the interactions between food systems and climate change, while at the same time preventing or anticipating conflict and instability, requires adequate, accessible, and appropriate financing.” According to IFAD, providing access to finance to small farmers improves resilience. For example, a study of a rural microfinance program in Mali shows the incidence of conflict decreased by three percent when small farmers had access to finance. Climate finance needs to address specific obstacles of adaptation investments, such as risk, delayed returns, high social values\(^{18}\), and new and unproven activities. According to IFAD, using blended finance integrated with development finance can generate financing appropriate to the investment needs.

**Small-scale farmers produce one-third of the world’s food, more than 70 percent of the food in Africa and Asia and about 50 percent of the food in Latin America. However, small farmers only receive 1.7 percent of climate finance.**

—Jo Puri and Jahan Chowdhury, IFAD\(^{19}\)

The World Bank aims to address the lack of climate finance for small farmers through the “climate finance for peace dividends” program. The program encourages partnering with national institutions, local governments and

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\(^{18}\) Understood as bottom-up approaches versus centralized ones, i.e., “open, responsive, and equitable processes of decision making that enable local people and regional governments to devise their own solutions to national and global challenges.” The World Bank (2010). “Social dimensions of climate change: equity and vulnerability in a warming world / Robin Mearns and Andrew Norton, editors.”

communities; strengthening participatory process, trust and transparency; targeting investments taking into consideration climate and conflict risks with explicit focus on building social cohesion, and thinking regionally and acting locally. Two other examples of climate resilient agriculture and climate finance to mitigate and adapt to climate change are IFAD’s Enhanced Adaptation for Smallholder Agriculture Program (ASAP+) and the Africa Rural Climate Adaptation Finance Mechanism (ARCAFIM). ASAP+ is envisioned to be the largest fund ($500 Million) dedicated to channeling climate finance to small-scale producers, helping to increase resilience, food security and carbon mitigation and sequestration.

Currently, there is not enough investment in resilience to attract government and private capital.

Climate finance needs not only resources from the public sector, but from the private sector as well. For that to happen, there is a need to establish the right incentives for the private sector to participate.20 IFAD is piloting an initiative to measure resilience and monetize improvements in resilience or adaptive capacities.21 This innovation measures resilience benefits using existing methodology that standardizes resilience benefits irrespective of context; then translates these standardized benefits into units or “credits” that can be bought and sold on and off market. A Recovery Index based on subjective measures of resilience to a set of self-reported shocks monitors and measures resilience. The Resilience Design and Monitoring Tool helps design and monitor the performance of resilience-building interventions ex ante and track their adoption and effectiveness in enhancing rural households’ resilience capacities during project implementation.22

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20 IFAD, “Financing climate adaptation and resilient agricultural livelihoods.” 85 IFAD RESEARCH SERIES. 2022. Climate Finance
21 For other innovations, refer to Annex I: Presentations.
22 For more background on this innovative and “work in progress” approach refer to Climate Finance
Conclusions and Recommendations

Insufficient investment and planning for food and agricultural adaptation is a security risk.

Transformative adaptation that addresses the interactions between food systems and climate change, while at the same time preventing or anticipating conflict and instability, requires adequate, accessible, and appropriate financing. The international community can achieve a sustainable and stable future by reforming the financial system, scaling up climate investment, investing in research and development (R&D) for resilient agri-food systems, listening to vulnerable states, and including longer-term, innovative projects.

Adaptation best practices can improve effectiveness and reduce security pitfalls.

IFAD’s research has shown that access to finance by small farmers improves resilience. Thus, the need to target investments taking into consideration climate and conflict risks with explicit focus on building social cohesion. Projects that adopt a holistic approach and invest in rural smallholder farmers through value chains, promote inclusive decision making and are target specific with tailor-made solutions improve resilience of the farmers and the sector. Those solutions need to take into account the cascading effects of climate change on security. Highly localized and contextualized solutions are needed for affected peoples, regions and nations.
Policymakers and decision makers need to ensure that technological and policy breakthroughs lead to just transitions in the agrifood sector.

Economic growth, environmental protection, social development and global security are all interlinked. Lasting progress in one area is impossible without progress in another. Work remains to be done to better anticipate and prepare for climate change’s impact on specific food security challenges, and for governments and relevant stakeholders to translate that awareness into policies and prioritize spending to mitigate and adapt to the impact of climate change on their populations.

There are unanswered questions.

For example: How can the social sustainability framework be a framework to use for agriculture adaptation and security? How can all parties work together to amplify the importance and role of social sustainability in climate action and security? The acknowledgment of interconnected climate change, agrifood, and security challenges by the international community will hopefully create important levers for climate security investments and action. But to achieve these goals, policymakers must first commit to addressing internal drivers of conflict. These are commonly linked to governance deficits, entrenched horizontal inequality, and weak institutions. Trust is essential for coming together to tackle shared challenges.

This Summary Report has identified some of the key issues regarding the nexus between climate change, food and global security. It highlights the need for a comprehensive approach to address social, environmental and economic sustainability by finding innovative and bold solutions to the conflicting needs of transforming agri-food systems, climate finance, agricultural adaptation, climate resilience, economic, social and environmental sustainability. Therefore, the international community needs to work collectively to address these issues. Policymakers in the United States and elsewhere have an opportunity to
identify priorities, make the right choices and implement solutions that will determine the trajectory of our shared future. Consequently, the decisions made about global agrifood systems must acknowledge the interrelated challenges of the systems themselves, climate change, and national security, and the imperative of increased tailored analyses to guide transformational policy actions and investments in climate mitigation, adaptation and resilience.
Annex 1: Presentations from the Roundtable

Click covers to access full slides.

Breakthrough Agenda in Agriculture: Areas to drive food systems transformations

26th September, 2023

Feeding Resilience: Climate Change and The Security Case for Agricultural Adaptation Investment

Dr. Aditi Mukherji
Director, CGIAR Climate Change Impact Platform

VISION FOR ADAPTED CROPS AND SOILS

August 2023
Conflicts, Climate and Food Insecurities: Fixing the downward spiral-

The case of Nigeria

Yemi Akinbamijo, PhD

Washington DC

26th September, 2023

Feeding Resilience: Climate Change and The Security Case for Agricultural Adaptation Investment

Dr. Jyotsna (Jo) Puri, Associate Vice-President, IFAD

26 September 2023

Feeding Resilience

Center on Climate and Security

Louise Cord
Global Director
Social Sustainability and Inclusion
Global Practice
World Bank

September 26, 2023
Addressing the Interplay of Climate Change, Food and National Security: Event Summary
Annex 2: Nigeria: The Link Between Climate Change, Food and Security

During the roundtable, participants discussed Nigeria as a case study for the intersection of climate change, food, and security, highlighting several key points.

In Nigeria, extreme weather events such as floods and heat stress have become more severe and frequent, especially in the northern parts of the country.

These climate risks have already contributed to declining per-capita food production, and according to the International Committee of the Red Cross (ICRC), “Food security remains one of the most urgent humanitarian needs for displaced persons and those returning home.”

- Nigeria is critical to the climate resilience, agricultural adaptation, food security, peace and stability of Africa.
- The Russian invasion of Ukraine further contributes to economic stress by increasing prices of food and fertilizer - although it is partly offset by rising energy prices that benefit Nigeria.
- The country’s ongoing armed conflict has a direct impact on people’s nutrition status, which is further exacerbated by a weak health infrastructure and food insecurity.
- Conflict between pastoralists and sedentary farmers is increasing as climate change intensifies the search for scarce water and grazing land.

23 ICRC Website accessed on 30 October 2023. ICRC-Nigeria
• Climate change has increased competition for diminishing natural resources, arable land and water in parts of the north of Nigeria.

• Agricultural and food security issues are important influences on the multiple internal security challenges faced by Nigeria, both feeding conflict and resulting from it.

• The Boko Haram conflict in the Northeast has destroyed public goods, destabilized local communities, increased food insecurity and drawn national and international security forces into an already-lagging region of the country.

Productivity in Nigeria and across Sub-Saharan Africa needs to improve to reduce hunger, poverty, and the destruction of biodiversity.

To escape poverty, farmers need to increase labor productivity, i.e., to produce more food per hour worked. To protect ecosystems, they need high land productivity, i.e., to produce more food per unit of land area (crop yields) and increase carbon sequestration.24

• Improvements in crop yields are essential to feed a growing population while reducing the environmental impact of food production at the same time. Increasing crop yields can reduce the amount of land we use for agriculture.

Youth and Agriculture in Nigeria: what is keeping youth out of the fields?

Young people across the world struggle to find meaningful work, with over 73 million unemployed youth globally. Africa is one of the continents with the youngest population and has a serious problem of rural unemployment. According to IFAD, just 3 million jobs are created each year despite 12 million

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young people entering the labor market annually. In 2020, 1 in 5 young people in Africa were not in employment, education, or training (EET).

There is a narrative that youth are not interested in agriculture, however the experience of Nigerian youth involved in small-scale agriculture tells a different story. The issue is not one of interest but the fact that the operating environment is not conducive and therefore agricultural ventures are unnecessarily difficult and largely unprofitable. Farms are usually situated away from city centers and the transportation and logistics infrastructure are costly and very inadequate. In addition, lack of access to electricity, insecurity and other factors play pivotal roles in the agricultural sector.

One participant relayed that Nigerian youth have a deep-seated aversion to government involvement, favoring interests that work effectively without government intervention, such as Afrobeats music, fashion, fintechs, cryptocurrency, etc., and that Nigerian youth would be more interested in agriculture if they had a space without government involvement for them to interact and share ideas, i.e., to encourage a community of practice, collective action, creative thinking to come up with solutions to address value chain constraints.

Building and sustaining basic capacity is essential to realizing agricultural transformation in Nigeria.

However, youth empowerment is crucial for this social recalibration to happen. Nigeria’s agricultural transformation will be guided by an analysis of the kind of agriculture Nigeria wants to have in the next 10-30 years. Science, Technology and Innovation (STI) is necessary but not sufficient to realize the desired transformation. STI needs to be linked with other drivers, especially at the policy level. STI needs to be holistic, including scientific knowledge—reductionist, trusted and validated by its method, and local knowledge—holistic, risk-aware, trusted and validated by experience.

25 Based on written inputs provided by one of the participants to the roundtable who himself works in agriculture and is conducting graduate studies and research on this specific subject.
Annex 3:  
Suggested Questions for Discussion

The following questions were suggested to the participants before the roundtable to stimulate and focus the discussion.

1. What enabling environment needs to be cultivated and/or what investments need to be made to push forward agriculture and climate change adaptation innovation and technology transfer? Are there opportunities being missed right now?

2. Since the impacts of climate change are not uniform globally, what are regionally specific agricultural research priorities, in particular for sub-Saharan Africa? What are the priority regions from a security perspective and what innovations are needed to address their challenges?

3. Are there specific programs within the currently pending Farm Bill that are particularly beneficial from the perspective of climate-aggravated food security concerns? Which ones are the most beneficial from a security perspective?

4. Could you suggest experiences and/or strategies that your organization is proposing/implementing to help build agri-food system resilience and prevent conflict at the same time?

5. Are there steps we can take to promote greater investment in climate resilient agricultural innovation? What kind of investment is needed from private and public sources?

6. What do you think is needed to achieve a more equitable transition to climate adaptation vis-à-vis agriculture, food security and climate resilience?
7. What would be priority policies that would encourage synergies and limit the trade-offs between hunger, poverty, nutrition, climate change, peace, and stability (security)?

8. How do we transform short-term/temporary approaches (e.g., conditional cash transfers, food for work, etc.) to more sustainable, long-term approaches?

9. What would be practical suggestions to ensure that women’s voices and leadership are incorporated into climate and agricultural governance at the local and national levels and into multilateral climate dialogues and the private sector?

10. How would you suggest using climate and agricultural adaptation interventions as an opportunity to overcome inequalities, learn from the voices of women, Indigenous and local communities, and unleash women’s green economic potential?

Nigeria

1. What is the impact of food insecurity, high food prices, floods, drought to the national security of Nigeria and the region, and what is being done to address it?

2. What are the new security threats vis-à-vis climate crisis, climate refugees, food, agriculture and ecological security for Africa, for Nigeria?

3. How is the government of Nigeria addressing extreme weather shocks, high food and fertilizer prices, etc.? From your experience, what additional measures and support should be considered by the international community to prepare for a future of climate change worsened by natural disasters?