

# CLIMATE, CONFLICT AND GLOBAL FOOD SYSTEMS

Findings and Recommendations



**The year is 2020 and the world's food system is under increasing stress. Extreme weather and political conflict are undermining food production and creating shortages. Prices are skyrocketing. Social unrest is growing. Populations are at risk.**

**How will the world respond?**

**Food Chain Reaction was an international simulation held in Washington D.C. in November 2015. Over the course of two days, 65 thought leaders and policy-makers from around the world, confronted crises, flash points and trade-offs. They emerged with a way forward, and a clear mandate that the time to act is now.**

Teams from the United States, European Union, Brazil, China, Continental Africa and India, along with individuals representing multilateral organizations, businesses and investors, participated in **Food Chain Reaction: A Global Food Security Game**. The event was a role-playing exercise with global experts serving as governments, institutions and businesses, designed to explore how they might respond during a future crisis in the global food system.

Game play began in 2020 in a world where population growth, rapid urbanization, extreme weather and political crises combine to threaten global food systems. Over the course of two days, the players collaborated, negotiated, made decisions, and confronted trade-offs while dealing with the consequences of their actions between 2020 and 2030.

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**“THE WORLD CAN GET IT RIGHT. WHEN WE ARE FACED WITH BIG CHALLENGES, WE COME UP WITH BIGGER SOLUTIONS.”**

*Debisi Araba, Fellow, Harvard University  
Team: Africa*

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Throughout the game, disruptions to food production and accessibility led to rapid price increases, food shortages and civil unrest.

Each disruption required players to respond with a set of actions –new trade, climate and tax policies, emergency measures to aid vulnerable states and cross-border solutions.

Food Chain Reaction was designed to help high-level decision-makers better understand the interdependencies of food, climate, trade and political stability, and the cascading effects of collective and individual policy decisions. This report offers actionable recommendations based on lessons learned during the game.



## Primary findings from a global food policy interaction

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The game put the issue of food security at the forefront of a global conversation. Players realized that policies and actions affecting trade, climate, and security can cause, or mitigate, food system pressures and volatility worldwide. Over four rounds, teams demonstrated an increasingly coordinated response to the challenges, even as pressures ratcheted upward. Overall game findings include:

**Instability and volatility are the “new normal,” and both are inevitably linked to food security.** In this increasingly volatile environment, players acknowledged the link between food insecurity, climate and political instability. Food disruptions and rising prices gave rise to migrant flows and refugee crises.

Teams discovered that inaction can result in harmful, cascading effects across geographies. They proposed strengthening existing multilateral institutions, and creating new coordinating agencies.

**Because food security and climate are linked, climate-smart agriculture is necessary.** The link between climate and food security was well-recognized across the wide variety of players in the game. Many teams took action that acknowledged that vulnerable food systems are made more so by unpredictable climatic effects. Recognizing the potentially destructive nature of this feedback loop, players looked to increase productivity through sustainable and climate-smart practices.





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“FOR INDIA, WE CAN MAKE A LOT OF DIFFERENCE, AND WE MAY NOT ALWAYS RECOGNIZE THE KIND OF CONTRIBUTIONS WE CAN MAKE.”

*Partha Mukhopadhyay,  
Centre for Policy Research  
Team: India*

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Additionally, teams agreed to price environmental services, tax carbon, support the development of a market for carbon trading, and adopt measures to cap global emissions levels.

**Global collaboration is essential.** As the game progressed, a quick convergence of ideas allowed teams to agree on common goals and engage in complementary activities. Teams came to the conclusion that no one nation, organization or business can successfully address global food security and the isolated actions of any actor can create cascading impacts globally.

With a clear view of mutual dependency, most teams agreed to avoid bilateral commodity trading agreements, opting instead to engage in broader global partnerships.





**Long-term investments in agricultural research and development will create a more food-secure future.** Teams proposed long-term investments in research and development, and large investments in low-income nations. Players also highlighted the need for innovative financing approaches.

Research and development focused on creating heat-tolerant and climate-resilient crops; making production and processing easier; and improving nutrition. Players cited the need for more open approaches to managing intellectual property to accelerate innovation.

**Building new information sharing systems will enhance food security.** Across the board, the teams emphasized the need to build new information sharing systems to improve the world's ability to share data about agriculture and food conditions and the way the food system works.

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**“USING THE TECHNOLOGY BRAZIL HAS DEVELOPED, WE CAN EXPAND IT NATIONWIDE BUT ALSO TAKE IT TO OTHER CONTINENTS, BUILDING CAPACITY.”**

*Cassia M. Carvalho, Brazil-U.S. Business Council  
Team: Brazil*

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Better information about food production (e.g., planting, yields, global stocks, etc.), as well as a wider range of related variables (e.g., food demand; water issues, infrastructure, etc.) would allow global leaders to monitor food security challenges in real-time and react faster.

Teams learned that shared, transparent information is fundamental to improving monitoring systems essential for food security, particularly in the new normal of volatility and uncertain climate.

**Long-term solutions require better global governance.** As the game progressed, teams adopted longer term views, with more multilateral actions and a heightened focus on strengthening global governance. As new crises arose, teams moved away from traditional food aid approaches, favoring instead conditional cash transfers that better enable people to respond in a crisis and communities to build resilience.



“I REALLY WANT THE GLOBAL FOOD SYSTEM TO WORK WELL AND THIS EXERCISE IS GIVING US A CHANCE TO THINK ABOUT HOW IT MIGHT OPERATE UNDER STRESS.”

*Daniel Pearson, Cato Institute,  
Former Chairman U.S. International Trade Commission  
Team: United States*







## Food Chain Reaction exposed three critical gaps in global food systems. In order to create a more resilient, food-secure future, these gaps must be closed.

### 1 Addressing the Knowledge Gap

Develop a real-time global food security dashboard that allows public- and private-sector decision-makers to detect and address disruptions to the global food system before they occur. Engage a trusted global agent to collect and maintain data in a transparent manner.

- The dashboard incorporates existing data-sets, and supplements them with data about resource scarcity; food supply and demand; food stocks, demographic trends; nutrition; the availability, usage and rights to land and water; production trends; a global inventory of degraded lands and other factors.
- The dashboard serves as an early-warning system for food system disruptions; it identifies at-risk areas, and tracks tipping points that may lead more severe crises.
- The approach requires countries to report transparently about their food stockpiles, agricultural and food subsidies, land leasing relationships, and efforts to reduce agricultural-related emissions which will help food producers plan for future production in the face of climate impacts.
- Efforts to boost productivity must be concentrated in low-income countries, where population growth will be faster, climate impacts harsher, and demand for protein will increase due to economic growth.



**“THE GAME DEMONSTRATED THE CRITICAL ROLE OF INDUSTRY IN SUSTAINABLE FOOD SECURITY.”**

*Joe Stone, Cargill*

*Team: Businesses and Industry*



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## 2 Addressing the Productivity Gap

Increase agricultural productivity in low-income countries in a sustainable manner, while minimizing its impact on the environment. Focus public, private and multi-lateral investments on research, improved farm inputs, expanded extension services, and in the physical infrastructure needed to more efficiently store and move food from production to demand areas.

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- Invest in degraded lands to restore their use for agriculture. Reduce further destruction of valuable natural areas, such as tropical forests and conservation lands, for food production.
- Develop a global food waste reduction strategy. Invest in infrastructure to improve food storage, transport and delivery systems. Establish global standards for measuring and reporting food waste.
- Drive broad adoption of “trailing edge” agricultural technologies, which can maximize efficiencies and output and minimize environmental footprint. This will allow low-income countries to boost their production significantly, even when “leading edge” approaches are not available.
- Adopt climate-smart and sustainable agricultural practices to grow output and mitigate the impacts of climate change on food production. Widen the use of precision agricultural techniques, climate-tolerant crops, improved water and soil management tools, and advanced inputs.
- Expand targeted agricultural extension services to help farmers improve their crop management practices.

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### “THE ‘NEW NORMAL’ IS VOLATILITY.”

*Molly Jahn, Ph.D., University of Wisconsin  
Team: Adjudication Cell*

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# 3

## Addressing the Collaboration Gap

Create specialized forums to enable better decision-making in times of crisis, introduce long-term measures and engage public- and private-sector decision-makers on global food security issues.

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- Improved coordination must lead to collaborative and sustainable global trade policies, greater integration of climate actions and food policies, and better management of the geopolitical implications of climate and food security issues.
- International trade policy-makers at both the multilateral and bilateral levels should take into account the potential impacts of their actions, such as tariffs, export restrictions, and subsidies on food security.
- Nations must fully implement agricultural emissions reduction programs to meet their climate commitments under the Paris Agreement. Private-sector actors have a responsibility to contribute to reducing carbon emissions in their operations.
- Leaders should investigate the possible implementation of a cross-border carbon tax and/or carbon emissions trading schemes. Gain a better understanding of the benefits and consequences.
- Food security should become a more integral element of nations' foreign policy considerations, with a focus on reducing food insecurity as a root cause of instability, conflict and human migration.

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**“THERE IS A HOPE THAT A [SIMULATED] CRISIS WILL CREATE THE ABILITY FOR US TO DO THINGS BETTER AND RECONFIGURE THE WORLD IN A BETTER WAY.”**

*Tim Benton, University of Leeds  
Team: European Union*

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## Conclusion

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The global food system is heavily networked and complex, making it vulnerable to a variety of risks and disruptions. Demographic changes, increasingly degraded natural resources, climate pressures and political crises will continue to challenge food security.

There is no single solution. Food Chain Reaction demonstrated that policies and actions affecting climate, stability, environment and trade can cause, or mitigate, food system pressure and volatility worldwide. By addressing these issues in an integrated manner, we can produce sounder decision-making across all sectors.

Solutions lie in more innovative collaboration among governments, business, civil society and multilateral institutions. Information sharing systems can be improved, so that decisions can be made with accurate, real-time and trusted data.

Investments across the agricultural value chain are essential. And by evolving attitudes from reactionary to visionary, a future crisis can be as visceral and motivating as an actual present-day catastrophe.

The Food Chain Reaction players and sponsors know practical solutions are possible and are focused on realizing proactive, cooperative and balanced approaches to promoting global food security.



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**“ACHIEVING GLOBAL  
FOOD AND NUTRITION  
SECURITY IS NOT A  
GAME WE CAN AFFORD  
TO LOSE.”**

*Tom Daschle, Distinguished Senior Fellow  
Center for American Progress*

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# Players & Participants

## TEAM BRAZIL

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John Podesta | *former White House Counselor | Keynote Speaker*

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A Global Food Security Game



For the latest on global food security, as well as information, videos and testimonials from the game, please visit: [FoodChainReaction.org](http://FoodChainReaction.org)

