



184th BIFAD Public Meeting (Virtual)

***The Global Food Security Crisis: Exploring the Evidence Base and Lessons from the Past to Strengthen
Agricultural, Nutrition, and Food Systems in the Face of Shocks***

Meeting Minutes

Monday, May 23, 2022 – 12:00 PM to 2:30 PM ET

BIFAD Members:

Laurence B. Alexander, BIFAD Chair and Chancellor of the University of Arkansas at Pine Bluff

Pamela K. Anderson, Director General Emerita, International Potato Center

Marie Boyd, Associate Professor, University of South Carolina School of Law

Rattan Lal, Distinguished Professor, The Ohio State University

Saweda Liverpool-Tasie, Associate Professor, Michigan State University

Henri G. Moore, Vice President/Head of Responsible Business, GSK Consumer Health

Kathy Spahn, President and CEO of Helen Keller International

Former BIFAD Members:

Brady Deaton, Chancellor Emeritus, University of Missouri

Gebisa Ejeta, Distinguished Professor of Agronomy, Purdue University

Mark Keenum, President, Mississippi State University

Richard Lackey, Founder and CEO, World Bank Inc.

James Ash, Food and Agribusiness Group Leader, Husch Blackwell LLP

Mark McDaniel, Partner, McDaniel and McDaniel Attorneys, LLC

Speakers:

Jim Barnhart, Assistant to the Administrator, Bureau for Resilience and Food Security and Deputy Coordinator for Development for Feed the Future

Samantha Power, USAID Administrator

Máximo Torero, Chief Economist, Food and Agriculture Organization of the United Nations (FAO)

Patrick Webb, Alexander McFarlane Professor of Nutrition, Tufts University, and Director, Feed the Future Innovation Lab on Nutrition

Sandrine Chetail, Global Senior Director, Economic Growth, Mercy Corps

Jemimah Njuki, Chief, Economic Empowerment Section, UN Women

Ann Vaughan, Senior Advisor for Climate Change, USAID Bureau for Resilience and Food Security

Welcome and Introducing USAID Senior Leadership

Jim Barnhart, Assistant to the Administrator, Bureau for Resilience and Food Security

Dr. Barnhart welcomed participants to the webinar. He encouraged participants to introduce themselves in the chat. He then welcomed the new BIFAD members recently appointed by President Biden and acknowledged this as the first public meeting since the recent appointments. He said that USAID is looking forward to BIFAD's guidance to navigate a new era of food security challenges. He congratulated and welcomed all BIFAD members and thanked Dr. Laurence Alexander for serving as Chair of BIFAD and for his leadership. Dr. Barnhart expressed his deep thanks to former BIFAD members for their leadership and diverse thought leadership in support of USAID's mission. He then turned to Administrator Samantha Power for her opening remarks.

Welcome and Acknowledgment of BIFAD Members

Samantha Power, USAID Administrator

Administrator Power thanked Dr. Barnhart for his leadership and that of others gathered at the webinar. Administrator Power stated that the meeting could not be more important and could not be better timed. She said that BIFAD was made for this moment in world and human affairs. She, Dr. Barnhart, and the USAID team had spent the last months anticipating the current crisis. She expressed her delight that everyone had come together to discuss steps to protect and strengthen global food security considering spikes in food, fuel, and fertilizer prices—all of which predated but have been exacerbated by the Russian Federation's brutal war on Ukraine.

Administrator Power then acknowledged BIFAD's role as a critical partner for USAID for nearly 50 years, drawing upon America's universities to support a global transformation of agriculture and food systems that now feed twice as many people as they did in 1975, using breakthroughs that have saved countless lives and helped lift billions of people out of poverty. The nation's Historically Black Colleges and Universities (HBCUs) and Minority-Serving Institutions have been important contributors to this effort, and this is why she has made it a priority for USAID to ramp up engagement with Minority-Serving Institutions. The Administrator said she had had the chance to visit several Minority-Serving Institutions recently, including Delaware State University, Alcorn State University, University of Maryland Eastern Shore, Tuskegee University, and the largest Hispanic-serving university in the country, Florida International University. Administrator Power underscored USAID's excitement to deepen the relationship with Minority-Serving Institutions so that they can continue to apply the deep well of expertise to the world's challenges in agriculture, nutrition, and food security. While it is long overdue, she recognized and celebrated Dr. Laurence Alexander, Chancellor of the University of Arkansas at Pine Bluff and BIFAD's first Board Chair from an HBCU. She thanked Dr. Alexander for leading the Board at such an important moment. Administrator Power thanked board members, past and present, for their expertise, wisdom, and focus on leveraging America's talent and innovation to address today's food crisis and build resilience for the future.

Administrator Power reflected on parallels between current geopolitical tensions and surging fuel prices and the energy crisis of the 1970s. It was against this backdrop, in 1975, when Congress enacted the "Famine Prevention and Freedom from Hunger" Amendment to the Foreign Assistance Act, which established BIFAD and charged USAID to call upon the nation's best talent—its universities—to address challenges of famine and food security. She acknowledged the proud legacy of collaboration with BIFAD's stakeholder community that followed: U.S. universities, the private sector, and international partners—everyone.

Working with local communities and partner governments, these efforts have helped raise agricultural productivity, making food more affordable for the poor and helping people sell more crops, grow their

incomes, and improve diets. Then, just a few years ago, rates of extreme poverty and acute malnutrition began to rise, in large part due to protracted conflicts and climate change impacts, which are growing by the year, exacerbated by market impacts brought about by COVID-19.

She recounted this history because we have reached another inflection point that requires us to bring the full weight of American ingenuity to bear to strengthen global food security and avert catastrophic consequences. We are about to enter the fourth month of the Russian Federation's war on Ukraine, and up to 40 million people could be pushed into poverty and food insecurity this year as a result.

Administrator Power emphasized that shocks to humanitarian and food systems were piling up even before Russia's war on Ukraine began. In 2021 alone, more than 193 million people worldwide experienced acute food insecurity, an increase of 40 million people from the previous year. The added shocks are causing massive disruptions in the global food system, further increasing prices of food, fertilizer, and fuel. While the extent of impacts from the array of challenges is uncertain, the United States and its partners are working, both inside Ukraine and around the world, to support the countries and the people most at risk. USAID is scaling up emergency food, health, and livelihood assistance to tens of millions of people likely to fall into food insecurity due to the combined effects of the war, the pandemic, and the climate crisis.

In the last few months alone, the United States has contributed more than \$1.7 billion to West African countries affected by food shortages and conflict in the Sahel, Lake Chad Basin regions, and Yemen. Across the U.S. government, there are sustained multilateral and bilateral efforts underway to try to keep trade open, limit export controls, and mitigate further disruptions, but this is a very challenging time. In recent weeks, Administrator Power met personally with public and private sector leads around the world to identify ways that philanthropy, nongovernmental organizations, and corporations can help address immediate disruptions, mitigate the global fertilizer shortage, and increase investments in agricultural capacity and resilience.

Administrator Power stated that bringing to bear the full weight of American ingenuity means going beyond crisis response to developing lasting solutions to age-old challenges, funding the latest research and technology, and engaging intensively with our nation's agricultural experts. The Green Revolution spurred innovations that drastically improved agricultural and nutritional yields, delivered cutting-edge conservation and land-use techniques, and developed cultivation and storage methods to lengthen the shelf life of crops. Inspired by America's own success in providing new technologies and practices to its farmers, this community gathered at today's meeting helps bring these innovations to the rest of the world. Administrator Power said that today's challenges call for a redoubling of these efforts, and because of the community's work and decades-long partnership, we already have successful models to accelerate and expand upon. Following severe food price spikes in 2008, USAID launched America's Global Hunger and Food Security Initiative, Feed the Future, to equip countries to tackle the root causes of food insecurity and malnutrition within their own borders. She said that the key to unleashing American ingenuity is the work being done at more than 20 Feed the Future Innovation Labs across the country to develop novel solutions to stubborn agricultural productivity challenges. These labs have already developed drought-tolerant varieties of staple crops that have been deployed across 13 African countries and developed a software application that helps Nepalese dairy farmers to formulate more nutritious, less expensive feeding rations to increase milk production. These are innovations that Feed the Future has harnessed to help lift an estimated 23.4 million people out of poverty.

Finally, Administrator Power expressed that we cannot afford to lose this momentum decades in the making, which is why last year, the United States committed \$10 billion to fight hunger and food insecurity. Half of that is being invested here in the U.S.—with the other half meant to expand Feed the Future's work to fight global food insecurity, helping smallholder farmers, their families, and their

communities escape poverty. This commitment will build on Feed the Future's decade of progress, generating new collaborative Innovation Labs—with a greater engagement of HBCUs and Minority Serving Institutions—combining local knowledge with cutting-edge technology to develop climate-smart agricultural solutions that will boost productivity and resilience. She said it is critical that these efforts are informed by this community of researchers and innovators. Administrator Power thanked BIFAD for its work to develop the report and policy recommendations on agricultural productivity growth in sub-Saharan Africa that she received over the weekend. She ended her remarks by saying that there may never be a moment like this one, when so much of the world's attention is galvanized on global food security and preventing a global food crisis. She called on meeting participants to do all we can to seize this moment and envision new ways to overcome today's particular crisis and work to eventually end global hunger and malnutrition in the medium and longer term.

Administrator Power turned to Dr. Jim Barnhart, who next introduced Chancellor Alexander.

Welcome and Introduction of BIFAD Members and Senior USAID Leadership

Dr. Laurence Alexander, BIFAD Chair and Chancellor of the University of Arkansas at Pine Bluff

Dr. Alexander thanked Dr. Barnhart for his warm introduction and Administrator Power for the honor of joining and sharing her remarks. He added his sincere appreciation to recent BIFAD members for their service and leadership. Their vision and work had contributed to USAID's strategic direction and program implementation. The current BIFAD looks forward to building on that legacy. Dr. Alexander shared that he is looking forward to building a fruitful working relationship between USAID and BIFAD and to coalescing around work streams important to our shared vision of reducing poverty and eliminating hunger.

He acknowledged other distinguished guests in today's meeting, including former BIFAD member and Special Envoy for Global Food Security to the Secretary of State, Dr. Cary Fowler; USAID's Deputy Administrator for Policy and Programming, Ambassador Isobel Coleman; and the Director of the Center of Excellence for Global Food Security and Defense, Dr. Moses Kairo at the University of Maryland Eastern Shore. He also recognized all of the participants in the Zoom room, with registered attendees from 22 countries and over 55 organizations, representing universities, USAID, other U.S. government agencies, the private sector, and implementers. He said that their participation would enrich the discussion and inform the Board's work.

Dr. Alexander introduced himself and explained BIFAD and its mandate. BIFAD is a seven-member, presidentially appointed advisory board to USAID, established to ensure that USAID brings the assets of U.S. universities to bear on the development challenges in agriculture and food security and supports their representation in USAID programming. In January 2022, President Biden reinvigorated the Board with the appointment of new members, who each bring a wealth and diversity of experience and expertise.

Board members introduced themselves next.

Dr. Pamela Anderson, Director General Emerita of the International Potato Center, one of the Consultative Group on International Agricultural Research (CGIAR) centers, is a specialist in vector entomology and epidemiology. For four decades, she lived in Latin America and initially worked with the national programs in Central America, and once she joined the CGIAR system, worked globally in Latin America, sub-Saharan Africa, and Asia, always working on food security and poverty reduction with smallholder farmers. She has served on BIFAD since 2015.

Dr. Alexander introduced Professor Marie Boyd, who was not able to attend the meeting. Marie Boyd is Associate Professor at the University of South Carolina School of Law, and her research areas include food law and policy and administrative law.

Dr. Rattan Lal is Distinguished Professor of Soil Science at the Ohio State University and Director of the Rattan Lal Center for Carbon Management and Sequestration. He has been at Ohio State since 1987 and was at the International Institute of Tropical Agriculture, a CGIAR center, at Ibadan Nigeria for 18 years. His recent interest is making agriculture a solution to climate change adaptation and mitigation to recarbonize the soil and terrestrial biosphere.

Dr. Saweda Liverpool-Tasie is Associate Professor of Agricultural Economics in the Department of Agricultural Food and Resource Economics at Michigan State University. She was a post-doctoral research fellow at the International Food Policy Research Institute and has over 20 years' experience working on food system transformation in sub-Saharan Africa. Her research interests are around food systems transformation in sub-Saharan Africa, particularly how the dynamism in food systems transformation creates opportunities for households and entrepreneurs along food value chains.

Ms. Henri Moore heads Responsible Business at the new GlaxoSmithKline company (GSK Consumer Health), which will be called Haleon. She previously worked at Corteva Agriscience with smallholder farmers to improve livelihoods.

Ms. Kathy Spahn is President and CEO of Helen Keller International and a board member of the Access to Nutrition Initiative. Her focus is ensuring that nutrition is central to all discussions on worldwide hunger and food security.

Dr. Alexander expressed how honored he was to serve alongside such a distinguished group of scholars.

Overview of the Meeting Objectives and Snapshot of Board's Priorities and Planning for 2022-2023

Dr. Laurence Alexander, BIFAD Chair and Chancellor of the University of Arkansas at Pine Bluff

Dr. Alexander shared an overview of BIFAD's current work plan priorities and upcoming initiatives. Over the past three months, informed by discussions with Administrator Power and other Agency leaders, the Board has developed a work plan to guide its activities over the next two years, while also accounting for the need to remain responsive to emerging priorities. Overall, BIFAD is committed to providing evidence-based recommendations to USAID and the broader development community to inform strategy, policy, and programming that build resilient and sustainable food and nutrition systems to reduce extreme poverty and malnutrition in a changing climate. The Board aims to accomplish this goal using several overarching principles of engagement, including:

- Ensuring knowledge generation and engagements are inclusive;
- Committing to evidence-centered knowledge generation and advice; and
- Aiming to accelerate bringing innovative ideas and products into social and economic use.

In its work plan, BIFAD has prioritized three key global challenges to address. First, BIFAD sees it as critical to bring forward evidence-based recommendations to strengthen agricultural and food systems to respond to global food security crises and mitigate the impacts of shocks, including those caused by conflict, pandemics, and climate change. We are seeing yet another example of the fragility of global food systems in the second-order impacts of Russia's war in Ukraine and resultant disrupted markets and increased food insecurity in developing countries. BIFAD hopes to play a role in helping to identify short-, medium-, and long-term opportunities to address the current global food security crisis and to address the bigger questions of how we build resilient food systems that are the "insurance" against these shocks. Dr. Alexander said that BIFAD's work in this area would begin with the day's discussions to take stock of the evidence around agricultural and food systems resilience and identify the weak links to address in order to prepare systems to respond or adapt to shocks.

Second, BIFAD's work plan prioritizes evidence gathering around improving the affordability of safe and nutritious foods. Dr. Alexander said that nutrition is foundational to development. Ensuring safe and affordable nutrition is one of the most cost-effective ways to save lives and is essential to health, productivity, gender equity, and other goals. Yet, there are currently more than 3 billion people on the planet who cannot afford a minimally nutritious diet. More than 149 million children suffer from stunting. BIFAD has noted Administrator Power's wish to ensure integration of sectors across USAID. Nutrition is a great integrator, as working to ensure good nutrition brings together multiple sectors, including health, agriculture and food systems, water, humanitarian relief, and resilience, among others. Women, who worldwide are highly engaged in production, processing, distribution, and preparation of food, are central to ensuring good nutrition. Focusing on the affordability of nutritious foods also promotes women's empowerment and gender equity. BIFAD hopes that its work will help inform a cross-sector, whole-of-Agency approach to tackle the challenge of delivering safe, nutritious, affordable foods in Feed the Future target countries and nutrition priority countries.

Finally, as BIFAD's third focal issue, BIFAD is committed to preparing evidence-based recommendations for strategies and programs to adapt to and mitigate climate change in agricultural and food systems. The impact of climate change will be devastating for the planet. Agriculture is both hard hit by—but also contributes significantly to—climate change. Dr. Alexander said that BIFAD can play an important role in helping to identify the most cost-effective climate change adaptation and mitigation measures in agriculture and food systems. This would include working to develop and incentivize locally led innovations for smallholder farmers to boost productivity, enhance nutrient value, improve food safety and prolong shelf life and innovations for other midstream or down-stream agricultural value-chain actors (e.g., traders and processors). Related to the third focal area, BIFAD will announce new work relating to systemic solutions for climate change adaptation and mitigation in agriculture, nutrition, and food systems to inform the implementation of the recently released USAID Climate Strategy 2022–2030.

Dr. Alexander noted that today's public meeting aligns with BIFAD's first work stream on strengthening food systems resilience and BIFAD's third workstream around climate change adaptation and mitigation in agriculture, nutrition, and food systems. In the face of short- and long-term shocks, fragile food systems are driving increases in poverty, hunger, and child stunting. The global effort to end hunger and poverty is at a critical moment, with Russia's invasion of Ukraine adding to an already-compounded global food crisis as countries struggle to recover from the impacts of COVID-19, humanitarian emergencies, and climate change. Today's meeting responds to the current global food security crisis. Intended as a stock-taking initiative, presentations and discussions will explore the evidence base and lessons from the past to strengthen agricultural, nutrition, and food systems in the face of shocks.

Dr. Alexander highlighted that BIFAD, as a federal advisory committee, includes public comment periods in its public meetings, and these are an opportunity for BIFAD to hear directly from stakeholders on the issues before the Board. He invited the public to ask questions in the Q&A box in the Zoom platform and to make comments in the chat for consideration by the Board and the speakers today, who will try to answer as many as possible. BIFAD will post official minutes of these proceedings on USAID's BIFAD website following this event. Participants' comments and questions will form part of the official public record.

Dr. Alexander invited Dr. Pamela Anderson to share framing remarks and to present the key questions for the discussion. He recognized that Dr. Anderson's vision and leadership were central to putting together the program for the meeting and the panel of speakers.

Strengthening Agricultural and Food Systems to Respond to Global Food Security Crises and to Mitigate the Impacts of Shocks

Part One: Setting the Context – Global Food Security Crises, Past and Present

Framing and Key Questions

Dr. Pamela Anderson, BIFAD Member and Director General Emerita, International Potato Center

Dr. Anderson explained that the current BIFAD was appointed by President Biden in January 2022. Just as BIFAD started its work planning, the war on Ukraine broke out. Dr. Anderson explained that the BIFAD's initial thought was to develop a work stream on the implications of the war on food security and USAID's possible responses. But, as the Board started to discuss and deliberate, they realized that for the past 15 years, we have moved from crisis to crisis. For example, the food price crises of 2008 and 2011, Arab Spring in 2010, drought in the Horn of Africa in 2011, Ebola outbreaks in West Africa in 2014, emerging pest and disease outbreaks in many places, COVID-19, and now a new global food, fertilizer, and price crisis. The drought in the Horn of Africa could be the worst in 40 years. It has been a series of shocks. A smallholder farmer in east Africa who is cultivating the staple crop, maize, since 2010, has been faced with an emerging disease outbreak of Maize Lethal Necrosis, followed by an emerging insect pest outbreak, the Fall ArmyWorm, followed by a plague of locusts, then COVID-19, and now the food, fertilizer, and price crisis. Moving from crisis to crisis has become unbearable. Many households and communities have experienced these shocks as waves of simultaneous crises. It appears that we are moving into a new reality of chronic crisis, which is a truly tragic oxymoron. Dr. Anderson said that BIFAD wanted to ask the following questions:

- How do we get out in front of these crises?
- How do we understand and strengthen our food and nutrition systems so that they are resilient against these continual and simultaneous shocks (whether driven by political conflict, global pandemics, emerging pests and diseases, or severe weather events)?

Because food and nutrition systems are complex, Dr. Anderson explained that BIFAD started with the following working hypothesis: If we can understand the weak areas or nodes in these complex systems, it might offer us some strategic entry points for building greater resilience into these systems. In this public meeting, BIFAD wanted to begin exploring the evidence and lessons learned from previous crises. What elements of the food and nutrition systems have collapsed when they have been hit by different shocks?

BIFAD intentionally brought together a diverse panel of speakers, including voices from whom we normally do not explicitly hear. In addition to a food policy perspective, a nutrition perspective would also be represented, because all crises eventually become a nutritional crisis. BIFAD had invited the General Manager of Premium Cassava Products Limited in Nigeria to provide a private sector perspective on how the food systems and supply chains are responding to these shocks. Unfortunately, Nike Tinubu was not able to attend. BIFAD will seek a private sector perspective but not in today's session. Dr. Anderson said that BIFAD had traditionally focused on USAID's development portfolio but felt it was critical to explicitly pull in the humanitarian aid and assistance perspective to be represented by a speaker from Mercy Corps. Referring to a point Dr. Alexander made about BIFAD's work plan, Dr. Anderson said that BIFAD had made a serious and explicit commitment to elevate women's inclusion and empowerment in its work plan, so the program would also include a gender perspective to address how women's inclusion and empowerment can strengthen food and nutrition systems.

Dr. Anderson emphasized that the meeting is just a starting point. She thanked participants for joining and requested that all participants actively engage with BIFAD and the presenters during the session

with questions and with feedback after the session, specifically requesting publications or reports from their networks that point to sources of evidence and lessons learned on how continual shocks are affecting food systems and nutrition in the communities where they work.

Dr. Anderson introduced and welcomed Dr. Máximo Torero to review what is known about the extent and magnitude of the current food security crisis while also pointing to parallels between the current crisis and former global shocks, including the 1973 and 2011 food price crises.

Overview of Past and Current Global Food Security Crises

Máximo Torero, Chief Economist, Food and Agriculture Organization of the United Nations (FAO)

Dr. Torero presented an overview of past and current global food security crises. He started with today's context. We are facing the COVID-19 pandemic and consequent economic slowdowns and downturns, which have been exacerbated by conflict and war. We are also facing climate variability and extremes, which will continue happening and for which we should all be prepared. All of these are affecting the cost and affordability of healthy diets, which brings up other contextual factors of market structure and market incentives. These are the major drivers and underlying factors of poverty and significant inequality, which challenge us today but also challenged us in previous crises.

Dr. Torero said we can look at these crises and shocks in terms of basic risks (predictable consequences) and uncertainties (unpredictable consequences) for agri-food systems. A risk is when we know the probability distribution of the potential effect and loss function, and an uncertainty is when we do not know the probability distribution of the damage and loss function, as was the case at the beginning of the COVID-19 pandemic. Risks and uncertainties in the agrifood system can be categorized in three dimensions: 1) food and agriculture; 2) macro risk; and 3) humanitarian risk. All three dimensions are affected by water stress and climate change. In the food and agriculture dimension, risks and uncertainties include production, input supplies, trade, logistics (very relevant during COVID-19), and infrastructure. Another risk of the food and agriculture dimension is diseases and disease proliferation, which can be affected by climate change. Those five risk elements can affect production and, therefore, prices. At the macro level, energy and biofuels are a key new aspect. We used to look at the competition between food and biofuels, but current energy prices have a stronger effect on the price of fertilizers because of higher gas prices, which are essential for the production of nitrogen in Europe, North America, and the Middle East.¹ Important macroeconomic conditions include debt and growth and their effects on economic downturns and exchange rates. The potential risk of nuclear contamination is another important macro-level risk. At the humanitarian level, international and local food migration, refugees, and displaced populations are a significant source of risk and uncertainty. All of these sources of risk and uncertainty can be affected by water stress and climate change.

Dr. Torero referred to the [FAO Global Crisis Report](#), which was released May 4, 2022. By 2021, about 193 million people were in crisis or worse. On a map graphic, Dr. Torero highlighted countries by their food insecurity intensity, classified by Integrated Phase Classification (IPC) 3 or above. 570,000 people in four countries are in catastrophe, at IPC phase 5. In total, 236.2 million people in 41 countries are in stress, at IPC phase 2 and above. Long-term impacts include high levels of chronic undernourishment, challenges in the eradication of hunger caused by the pandemic, and increased extreme poverty.

¹ N-fertilizer production is based on a catalytic process known as the Haber-Bosch process, a method of directly synthesizing ammonia from hydrogen and nitrogen. While simplifying the complexity of the process a little, it can be said that N-fertilizer production is turning nitrogen (N₂) and hydrogen (H₂) into ammonia (NH₃) via energy. Even simpler, nitrogen fertilizer is a form of energy.

Healthy diets are out of reach for around 3 billion people. The world is not on track to achieve global nutrition targets. While some progress has been made, the effects of the pandemic on nutrition will cause serious future setbacks.

Dr. Torero explained one dimension of measuring resilience—absorptive capacity. FAO, in its 2021 State of Food and Agriculture (SOFA) report, developed a set of indicators to measure absorptive capacity, which include: 1) primary production (measured by the primary production flexibility index [PPFI]); 2) food supply (measured by the Dietary Sourcing Flexibility Index [DSFI]); 3) transport networks (linked to logistics); and 4) economic access to healthy diets. The absorptive capacity of countries' food supply depends on the diversity of domestic production and stocks, and the diversity of imports and trade partners. The DSFI captures the multiplicity of different pathways through which a unit of food can be made available to a consumer, including the diversity of domestic production for the domestic or export market, the diversity of imports and trade partners, and the diversity of food stocks held from previous years. In a graphic example, Dr. Torero showed that one country could have a higher absorptive capacity of its food supply as compared to that of another country when it produced more diverse agricultural commodities, had more diverse food reserves, and imported a more diverse set of products from more countries. The more options in terms of sourcing food, the higher absorptive capacity a country will have. This is extremely relevant today with the shock faced from the war in Ukraine.

Dr. Torero presented a graph showing low- and middle-income, upper-middle-income, and high-income countries' levels of contribution of diversity of domestic production to the DSFI as a function of the level of contribution of diversity of imports to the DSFI. High-income countries have diversity in both import and domestic production dimensions and exhibit the highest absorptive capacity. The upper-middle-income countries have more variance across the different elements. Lower-middle-income countries are closer to the bottom of the graph for lower absorption capacity. Low-income countries show a very low absorptive capacity. This trend is not only true today, but it has been the historical evolution. There have been some improvements, but this incapacity of absorption has been present in low-income and lower-middle-income countries and even in some upper-middle-income countries. Dr. Torero's presentation noted that countries can diversify food sources in different ways and that the effectiveness of diversification does not depend on country size or income level.

Dr. Torero next explained the past and present situation for cereals. Dr. Torero showed data on the concentrated market structure of cereal agricultural export commodities. He showed concentration of most of the global supply of maize (84%), wheat (63%), rice (95%) and paddy and broken rice (80%) in the top five exporting countries during the food crises of 2007–2008 and 2011. Very few countries controlled most of the exports at that time. That is why droughts that affected Australia and other parts of the world created the food crises of 2007–2008 and 2011.

If we look at the situation today, we are facing the same challenge. There has been some improvement with new producing countries. This has been the case with Ukraine and the Russian Federation, which have increased their share of global cereal export markets. These countries together control about 30% of global cereal exports. Only three or four countries control the remaining global cereal exports. The level of concentration has improved but not at the level needed.

In terms of the evolution of food surplus or deficit gaps for wheat between 1990 and today, Dr. Torero presented a graph showing the combined change of wheat surplus or deficit in million metric tons for different countries. For the European Union and the United States, there was a -7 million metric ton (MMT) combined change. The combined change of China and India was +12 MMT. The combined change of Russia and Ukraine was +66 MMT. These two countries came to play a bigger role, and other countries reduced their role, but the concentration remained high. Similarly, Australia, Canada, and

Argentina exhibited a combined change of +2 MMT. There was a significant decline in the combined change in Africa and Asia of -62 MMT—a shocking result.

Dr. Torero presented a graph showing the heavy reliance of some countries on wheat imports from Ukraine and the Russian Federation. In 2021, 50 countries sourced 30% of their wheat imports from Ukraine and the Russian Federation, and of those, 30 countries sourced more than 50% of their wheat imports from these two countries. Dr. Torero emphasized how vulnerable these countries are to this concentration. He noted that wheat import-dependent countries included three countries in food security emergency situations—Madagascar, Yemen, and Ethiopia—each of which has 570,000 people in IPC Phase 5 or above, and six countries with the highest global numbers of internally displaced people. It is important to understand that wheat is not the major commodity of sub-Saharan Africa. Dr. Torero presented 2019 data showing the low levels of consumption of wheat and wheat products in kcal per capita per day in sub-Saharan Africa as compared to North Africa, where wheat is a staple food. Despite this, wheat and maize are feedstock, and they also affect animal feed and all derivatives from other types of foods. As a result, it is not wheat consumption specifically, but the increase in food prices overall that will affect sub-Saharan African countries.

Concentration in the key exporting countries of agricultural commodities, fertilizers, energy, metals, and minerals has been behind major food price spikes across history.

In the case of fertilizers, there is a high concentration of world fertilizer production (urea, diammonium phosphate [DAP]/monoammonium phosphate [MAP], potash, and nitrogen-phosphorus-potassium [NPK]) capacity in very few countries, including China, India, Indonesia, Belarus, and the Russian Federation. Even in NPK, we see a significant proportion of fertilizer exports concentrated in the Russian Federation.

Not only is there high concentration across the world—within the countries themselves, there is a high concentration, with just a few companies controlling the production of fertilizers. For example, for potash, there is only one company that controls production in the main producing countries, with the exception of China having more than one company. In most cases, the concentration is extremely high.

For NPK fertilizer, the Russian Federation is the top exporting country for nitrogen (N), the third-highest exporting country for phosphorus (P), and the second-highest exporting country for potassium (K). Clearly, high concentration is reflected in the fertilizer sector as well.

There is a new element that differentiates the current food price crisis from previous crises. In the 2007–2008 and 2011 crises, the major link was the competition between feedstocks and biofuels. Today, competition for gas between the energy market and the nitrogen fertilizer market is resulting in higher food prices. This new element is the relationship of a different market—the energy market—with the food market because of the need for gas to produce nitrogen fertilizer. This is a unique aspect not seen in previous crises. If the price of gas increases, the price of fertilizer increases. As a result, we observe a significant historic increase in fertilizer prices because of the price of gas. The result is a huge reduction in fertilizer affordability, restricting access to fertilizers. It is not only an issue of the availability of fertilizers because of restrictions by the Russian Federation, but also the access to fertilizers because of the increase of prices.

Trade is a different and very important story. Dr. Torero compared the impact of export restrictions on the share of global trade in calories in the weeks following the onset of the 2020 COVID-19 crisis, the 2008 food crisis, and the 2022 Ukraine crisis. After COVID-19, there was a significant initial increase in the share of global calories impacted by export restrictions, which then subsided to pre-crisis levels by 30 weeks into the crisis. Following the 2008 food price crisis, there was also an immediate increase in the share of globally traded calories affected by export restrictions, but over 10% of globally traded

calories were still affected by export restrictions 50 weeks into the crisis. Similarly, the 2022 Russian invasion of Ukraine resulted in a spike in the share of globally traded calories affected by export restrictions. More than 60 countries today have some type of export restrictions.

While food and agricultural trade became more balanced and resilient on the aggregate, there is still considerable dependence at the product level, especially for staple food stocks. Dr. Torero presented a time series showing the normalized distribution of connectivity across countries and products from 1995 to 2019. Countries that source a large variety of food and agricultural products from many different exporters are located on the right tail of the curve. Those with a high concentration of their imports on few products and exporters are on the left tail of the distribution curve. There are many more countries with a high concentration of their imports on few products from few exporting countries as compared to countries that source a variety of products from many different exporters. Trade was highly concentrated on a few products and countries in 1995, and the distribution curve in subsequent years has shifted to the right. Since 1995, there has been some improvement, but dependencies still exist.

Showing a global map of countries with high numbers of food groups with insufficient domestic supply, Dr. Torero explained that, if we look at access to healthy diets, many of the food groups needed are not present in most of the food crisis countries and in most of sub-Saharan Africa. Therefore, trade is of the essence. If we do not accelerate food trade globally and intra-regionally, we will not be able to achieve global access to healthy diets and the nutritional outcomes that we want to achieve.

Dr. Torero then posed the question “What to Do?” Dr. Torero said FAO has been addressing multiple drivers of agri-food systems transformation simultaneously through a portfolio approach. He presented a conceptual framework describing how resilient agrifood systems transformation could be achieved through building portfolios that include: 1) driver-dependent transformation pathways, or entry points, across six domains (the humanitarian-development-peace nexus [not only concentrated on humanitarian assistance, but also on production]; scaling up climate resilience; strengthening economic resilience; lowering the cost of nutritious foods along food supply chains; addressing poverty and inequality; and shifting to sustainable consumption patterns); 2) coherent policies and investments across systems (agri-food, health, environment, social protection, and other systems); and 3) accelerators or “complements” of transformation that help to make it more inclusive (governance and institutions; technology, data, and innovation; and human capital). Dr. Torero said that modeling could play a significant role in understanding tradeoffs.

Dr. Torero emphasized that agri-food systems transformation needs to move from silos to a system-wide approach. We cannot work on one dimension only but must look across the portfolios, and that is why there are six or more entry points. We need to bring together all these elements into agrifood systems transformation to formulate packages that will help countries. This was what the UN Food Systems Summit tried to do with the transformation pathways to accelerate this process.

There is enormous space to gain efficiencies: in the way we produce, in bringing in more resilience through new technologies, in reducing food loss and waste, and in the way we use inputs, such as fertilizers and pesticides. There are significant challenges common to the previous food crises but also important differences in today’s crisis. Today, we do not have a problem with food availability. The food and fertilizers are there. The problem is that they cannot move out. Dr. Torero ended by saying that we need to find solutions to increase resilience so that this does not happen in the future, and we do not have these high levels of concentration in inputs.

BIFAD Questions and Discussion with Presenter

Dr. Lawrence asked BIFAD members for their questions and comments on Dr. Torero’s presentation.

Ms. Kathy Spahn remarked that it was an excellent presentation, emphasizing Dr. Torero's closing point that there is no lack of global food availability. Ms. Spahn asked about the element of dietary modification about changing diets, changing what people consume so that they are still healthy diets to lessen the impact of malnutrition.

Dr. Saweda Liverpool-Tasie commented in the chat, saying, "Great point about the need for more studies on the demand side to guide strategies to maintain consumption of nutritious foods."

Dr. Alexander read a question from Professor Marie Boyd: "In terms of understanding the current state of food insecurity, what are the unknowns? Are there any knowledge or information gaps, or areas where it would be helpful to have additional research? If so, please explain."

Dr. Pamela Anderson asked, "When you talk about diversification, I understand you are talking about the diversification of trading partners. What are the conversations that FAO is having with partner countries about diversifying the production of foodstuffs within a country?"

Dr. Rattan Lal said that the COVID-19 pandemic and conflict have taught us to increase the strength of the local food production systems so that disruption impacts are much less. Dr. Lal said that urban farming could be an important path to achieve food security to reduce disruptions. He remarked that rather than producing more, let us focus on nutrition-sensitive agriculture for food that is nutrient-rich. More than 2 billion people suffer from malnutrition. He said that healthy diets always come from healthy soil. That disconnect causes a lot of problems. The health of soils, plants, people, animals, ecosystems, and the planet is one and indivisible. Lastly, he mentioned producing more from less. We must save natural resources for nature. Five billion hectares of land for agriculture is far more than what we need.

In response to Ms. Spahn's comment, Dr. Torero said that dietary modification is central and is one of the entry points of the six transformation pathways, which is access to healthy diets. One way to promote dietary modification is to repurpose incentives or subsidies. A significant amount of subsidies are allocated for cereals and not for other commodities or high-value commodities. We need to assess how to repurpose those. Most of the repurposing of incentives will be effective in high-income countries but not necessarily in low- and lower-middle-income countries. In those countries, simulations that will be published in the next FAO SOFI report suggest that repurposing incentives on the demand side is more effective. Incentives to increase the diversity of nutritious food through the demand side could be a cost-effective approach to encourage producers to respond and increase the diversity of nutritious foods rather than providing direct incentives to producers that could be not cost effective. It is a complex issue, but there are windows of opportunity to start switching more diets and creating incentives to switch diets to more diverse, nutritious diets.

In response to Professor Boyd's question, Dr. Torero said there are many unknowns and data gaps. For example, FAO is starting the process of collecting data. We know the supply of food, but we do not know the demand. What is the demand for micronutrients? Knowing demand is important because it will alert us to where the gaps are. The global map previously presented showed the domestic supply of the nine food groups that we need, but that only represents the supply side. It would be ideal to understand the demand side, where the data gaps are, where trade facilitation and trade flows could create the many benefits we are looking for, and where we need to produce more and increase diversity of diets. Many of the elements that we are referring to could refer to risk. However, there is also the concept of uncertainty, meaning something that could happen unexpectedly, and we do not know the potential impact on the agricultural sector. This could be closely related to climate because the changes in temperature and water availability could change the way pests and diseases operate. That could have a significant impact on production in the future. We do not know the probability distribution of the

potential impact. Huge uncertainties are there. Agriculture is becoming one of the sectors that we must operate under risk and uncertainty. We must look at probability distributions to better understand potential impacts.

In response to Dr. Anderson's question about the diversification of trade, Dr. Torero agreed that we need to diversify and have more countries that produce more and have surpluses to export. So, if something happens to one country in the world because of climate or another reason, there are other countries that can back up and respond. We call that supply response to other countries. We are trying to work with different countries in various regions. Dr. Torero explained that he was lucky to attend all five regional conferences² to try to find opportunities. FAO has an initiative called "Hand in Hand," which looks at areas through territorial approaches in countries with significant agricultural potential, but where for some reason farmers are far from achieving that potential. Agriculture has the potential to lift farmers out of poverty. They could be at \$7 per capita per day Purchasing Power Parity (PPP), but today they are at less than \$1.30 or \$1.50. What will that create in terms of diversity of production in the world? Sometimes the solutions are simple and sometimes very complex. Dr. Torero said that FAO is operating in 52 countries in the world in Africa, sub-Saharan Africa, Asia, and Latin America to find solutions. This is what we are doing in FAO to accelerate this process.

Dr. Torero fully agreed with Dr. Lal's comments. Producing more with less is essential. What is happening with the shortage of fertilizers is a huge opportunity to use fertilizers more efficiently. We need soil maps to understand how much we really need for the combination of NPK. We could change the mix that we apply to soils over time. There are a lot of options and opportunities to work with manure. We could work with manure and NPK to ensure the effectiveness of yields, which would allow us to not be so dependent on fertilizers. It is basically reducing waste and loss with fertilizers, as we should do with food.

Part Two: Identifying Lessons Learned, Identifying Gaps, and Key Actions to Prepare for Future Crises and to Build Resilient Food Systems

Dr. Alexander expressed appreciation for Dr. Torero's presentation then introduced the expert panel to present evidence of lessons learned, gaps, and key actions needed to prepare for future crises and to build resilient food systems. He noted that one of the speakers, Ms. Nike Tinubu, had an unexpected conflict and is unable to join today.

Dr. Patrick Webb, Alexander McFarlane Professor of Nutrition, Tufts University, and Director, Feed the Future Innovation Lab on Nutrition

Dr. Webb indicated that his presentation would amplify and build on Dr. Anderson's point on chronic crisis and Dr. Torero's points on diversification and the need for joined-up responses. Referencing a presentation, Dr. Webb highlighted three key messages:

1. Global crises matter because they impact the poor, erode past gains and increase vulnerability in the future. These global crises that keep happening are hugely important because they directly affect so many people. There is still population growth, so more people are being

² Regional Conference for Asia and the Pacific (APRC) 36th Session (8-11 March 2022); Regional Conference for Latin America and the Caribbean (LARC) 37th Session (28 March – 1 April 2022); Regional Conference for Africa (ARC) 32nd Session (11-14 April 2022); Regional Conference for Europe (ERC) 33rd Session (10-13 May); and 7th Informal North America Regional Conference (INARC) (14 April 2022)

affected by each of these crises as they come along and especially where they compound each other.

2. However, between what we are seeing, or what we recognize, as global shocks, there is a growing vulnerability to day-to-day shocks. The inability of many parts of the world to recover from the last shock and the day-to-day fragility of livelihoods in those places become, in themselves, part of this chronic crisis scenario. They pose a challenge to future investments in longer-term development. They make it harder for good ideas and innovations to take root. They often erode some of the gains that have been made in the past. We have to think about these major, or mega, shocks, but they are happening in the context of an almost daily grind of chronic crisis conditions for many households, communities, even countries.
3. Solutions require us to approach this with a food-systems-wide approach; linked-up solutions across sectors, not just agriculture (rural-urban livelihood systems); and focus on risk reduction in fragile contexts. This requires us, therefore, not just to focus on resilience in agriculture, although that is essential, but Dr. Torero pointed to the need for multiple entry points into entire food systems with linked-up or joined-up actions and investments that change things across that system. So, diversifying diets, not just diversifying production or diversifying trade.

Dr. Webb said that we must try to reduce the risks in fragile contexts. “Fragile” refers to combinations of conflict, political instability, weak governance, and environmental threats (including climate change or COVID-19 effects). Referring to a map showing that fragile states are concentrated in Latin America, sub-Saharan Africa, and South Asia³, Dr. Webb said that growing numbers of people are living in fragile contexts in many parts of the world. In 2020, 1.8 billion people lived in fragile contexts, and 2.3 billion are projected to live in fragile contexts by 2030, including 80% of the world’s poor⁴.

That growing numbers of people, and most of the world’s poor, are already, and are going to be, living in what can be classified as fragile contexts going forward is important because it means that we can no longer think about development in its traditional form (i.e., a gradual increase in living conditions and well-being, followed by a shock that causes disruption, followed by a return to normalcy and continued improvement in well-being). We are not seeing traditional development anymore, but rather a downward, negative spiral. The fact that more and more of the world’s poor are living in these contexts will be a challenge for the international community.

Referencing a graphic showing examples of policy actions in the domains of agricultural production, market and trade systems, food transformation (food processing and retail), the food environment, and consumer demand and purchasing power⁵, Dr. Webb said that joined-up actions, policy actions, and investments in research are needed to strengthen food systems (e.g., restoring buildings and roads, engaging traders to stabilize supply, improving food storage systems, brokering links between producers and traders, strengthening supply chains, improving regulation of food safety, improving access to credit, protecting electricity supplies, strengthening the livestock economy [animal health, feed, and fodder], reducing the cost of inputs, building the capacity of smallholder farmers, infrastructure development, increasing the availability of nutritious food, building the resilience of livelihoods, implementing social safety nets, providing cash and voucher assistance to increase purchasing power, and promoting nutrition education). He cautioned that we cannot allow a crisis around a few commodities or issues (e.g., two commodities such as wheat and vegetable oil) or other dimensions

³ Fund for Peace, 2021/2022 ([Fragile States Index | The Fund for Peace](#))

⁴ OECD (2020), *States of Fragility 2020*, OECD Publishing, Paris, <https://doi.org/10.1787/ba7c22e7-en>

⁵ Global Panel on Agriculture and Food Systems for Nutrition, *Strengthening Food Systems in Fragile Contexts*, Policy Brief No. 15, August 2020, <https://www.glopan.org/resources-documents/fragile-contexts>

(e.g., fertilizer prices) to drive the solution. What is needed goes far beyond those two commodities or the price of fertilizer. We need actions that allow an amplification of benefits and reduced risks. We need actions in agriculture but also outside agriculture in rural areas (i.e., livelihood diversification). That requires us to invest heavily in supporting market diversification, in supporting the players in local markets, not just in global trade, in supporting small and medium-term enterprises, and in allowing entrepreneurs and investors at the local level to bring their expertise and their new ideas and insights to the fore.

Dr. Webb explained that the domain of food transformation—everything between the farm gate and the consumer—offers great opportunity for improving shelf life and protecting, through improved storage, food that has already been produced and is typically lost or wasted in very large amounts. Food transformation must be driven, as Dr. Torero mentioned, by shifts in consumer demand, more informed consumer demand, more empowered consumer demand, which is not always what we assume it to be.

Dr. Webb explained that we know a lot about what is produced but very little about what people actually eat around the world. Yet we make important global and national policy decisions on the assumption that we know what people eat, what they want to eat, or what they're going to eat in 10 years, which is not the same as what they ate 10 years ago. We need to be very careful about how we make these decisions and how we interdigitate—or dovetail—actions in these different sectors. Dr. Torero mentioned modeling trade-offs. We must understand those trade-offs very well and make sure that we are acting across the food system.

Dr. Webb said there is significant evidence that we can grow people out of poverty through agriculture as an engine of growth, but it is less clear if we can grow people out of crisis. Additional actions are needed for populations in crisis: 1) protecting consumption (not just production); and 2) valorizing people's assets.

We do need to invest in productivity enhancement, with limitations, as Dr. Lal shared, but we need investments to also protect, diversify, and amplify the demand side (i.e., consumption). Dr. Webb explained that nutritional resilience is “a thing.” Well-nourished and well-nourished adults have been shown to be more resilient to the COVID-19 virus than less well-nourished people. Nutritional resilience is important and is evident in the long term.

Sharing an example from his research in Indonesia during the food price crisis of 2008, Dr. Webb explained that there was a huge nutritional impact because of high rice prices and lack of accessibility to conventional diets. Although the World Bank and RAND Corporation said that there was no real nutritional crisis because children's weights were not declining, out of sight, mothers' weights were significantly declining. Mothers were buffering the calorie consumption of their children. Micronutrient deficiencies of both women and children also went through the roof, especially anemia, which impairs cognitive development, educational development, and labor productivity⁶. Dr. Webb warned that we must be very careful. Dietary diversity and diet quality are not luxuries. Both are part and parcel of making people resilient to the shocks that are affecting them, increasingly, on a daily basis.

Part of investing in consumption comes through ensuring that we understand and valorize people's assets. Valorizing assets means enabling people to secure crisis income from their labor, livestock, learning, and land. We need to amplify what we already have in terms of crop index insurance. We need to look at the many technologies and new solutions for cutting food loss and waste. We also need to look at food safety, which impairs both the health and nutrition of people who eat contaminated foods.

⁶ Webb, P. 2010. *Medium- to Long-Run Effects of High Food Prices on Nutrition*. *Jou. Nutr.* 140 (1): 140S-47S. <https://doi.org/10.3945/jn.109.110536>.

We need to think about more rural banking of the value of livestock before prices plummet and cattle start dying in the next drought. We need to look at cash for work, cash transfers, and other kinds of income transfers that can be used on mobile phones. We need to look at rural, non-farm small and medium-sized enterprises, and we need to focus mainly on public goods like market infrastructure development. In a sense, valorizing assets is building up the resilience of the rural, non-farm economy alongside the farm economy to allow for the food system as a whole to buffer the next storm.

In conclusion, Dr. Webb explained that each crisis, and each mega-crisis, is different, but there are common elements in all of them. They all lead to knee-jerk policy “reactions,” like export bans, and we all know what knock-on effects that policy reaction has. Another common element is the focus on the price of fertilizer rather than on how fertilizer is used or misused. Dr. Webb reiterated Dr. Torero’s point about the gains that we could have from fine-tuning the use of different fertilizers—not just focusing on price. Another common element of these crises is supply chain disruptions, and we have to find ways around these disruptions at the global level and at the local level. Finally, solutions to crises also tend to focus on growing more food rather than transforming systems and operating differently. So, in a sense, it is a food system-wide problem that demands food system-wide solutions that must be taken on in a serious way. Global crises are not just amplifying each other (climate, COVID-19, cost of food, and conflict)—they are exposing the fragility of our entire food system in ways that we had never really understood until quite recently. So, now is the opportunity. The key is to find joined-up, multi-purpose policy solutions, *not* treat crises as unique, and to focus on long-term gains rather than short-term hand-waving.

Now that people are focused on food, food systems, diet, and nutrition again, it is a unique time to join up the humanitarian response with longer-term investments that achieve diversification at all levels—at the livelihood level, the production level, the trade level, but especially at the level of dietary intake and nutrition—and allow people to have more choice with the assets that they have. The international community can empower them to use value in those assets and amplify their potential for responding to crises.

Dr. Webb ended his comments and thanked attendees.

Sandrine Chetail, Global Senior Director, Economic Growth, Mercy Corps

Ms. Sandrine Chetail began by thanking Dr. Alexander and greeting participants.

Ms. Chetail explained that we have heard alarming summaries of the current situation from Dr. Anderson and Dr. Torero. She shared additional statistics:

- There has been a 45% increase in prices of fertilizers and fuel in Ukraine after two months of war.
- There has been a 300% increase in prices of wheat and fuel in Somalia as a result of the drought and the war in Ukraine.
- There has been a 900% increase in the price of bread in Lebanon as a result of the devaluation of the local currency and the war in Ukraine.

Ms. Chetail reminded participants that she presented to BIFAD three years ago and spoke, at that time, of the need to define the shock that people are confronted with to be able to build resilience. We have learned in the past years that we cannot consider crises by themselves. We cannot talk about increasing resilience to climate shocks, like drought in East Africa, without also talking about increasing resilience to conflict and economic shocks. Ms. Chetail asked how we can increase resilience.

Ms. Chetail explained that she will introduce participants to Ayesha and presented a picture of a young girl. She lives in Northeast Nigeria, and Ayesha grows cowpeas to complement revenue she earns from

her petty trade business. Since 2021, she has had trouble making ends meet. Food prices are increasing, seeds, fertilizers and crop protection products are becoming unavailable. She cannot irrigate her crops any longer with a fuel pump as it is too expensive. Mercy Corps supported her business with small cash grants to ensure she could maintain her business and income. However, that's not sufficient to help her go through the lingering crises. Mercy Corps also worked with 20 local input suppliers and transporters to ensure Ayesha could access better seeds in the right quantities and at the right time. Mercy Corps supported 45 cowpea processors so that they could continue to purchase from Ayesha. Mercy Corps also worked with two local banks to develop new small loan products that can support those small businesses in the future.

Ayesha's story highlights the complexity of the constraints small businesses have to deal with. For small agri-businesses like Ayesha's, and for all small businesses along the food system, Mercy Corps has a triple mission:

1. To help businesses protect and maintain their assets and income during a crisis.
2. To re-think food systems to help businesses become more adaptable, including helping them adapt to new market conditions, and
3. To radically transform the food system beyond adaptation so that people like Ayesha do not have to go through these rough periods again.

Ms. Chetail posed the question, "What does it mean to protect and maintain people's assets and income?" We need to continue and extend cash responses at scale and make them "smarter." When Mercy Corps supported over 50,000 small businesses like Ayesha's in Northeast Nigeria with financial aid and business continuity advice, those small businesses were able to replenish inventories, purchase improved products, diversify their business, and prepare for the next season. But Mercy Corps also made these cash transfers "smarter" by using blended finance models to support small to medium-sized businesses with grants and partnering with local banks.

In Northeast Nigeria during the pandemic, with an initial investment of \$3.5 million, Mercy Corps was able to leverage private investment of \$4.6 million and mobilize another \$6 million in loans, an overall leveraging ratio of 1.3.

Cash to support a loan is not sufficient, however, Ms. Chetail explained, especially given the length of today's crisis. We need to layer more systemic interventions to ensure that people continue to be protected when the next crises arise. That means encouraging people to increase their savings, which can buffer against future shocks. The people Mercy Corps worked with were among the most marginalized—earning less than \$1.90 a day—but were nevertheless able to increase their savings at an average of \$72 per individual in less than a year. Another systemic intervention is partnering with private insurance companies to develop and provide insurance products adapted to the needs. In Nigeria, Mercy Corps is working with Pula Insurance, a regional insurance provider, to develop new products and sales models. Bolstering savings and promoting insurance can help increase people's protection.

Ms. Chetail expressed that when feasible, it is important to link with local government social protection schemes so that people can be referred to the government and continue to be supported if their livelihoods are not sufficient. Mercy Corps' cash consortium in Iraq, for example, has demonstrated that those linkages are possible and beneficial, but need to be thought through at the onset of the project to ensure harmonization in targeting data and other processes.

Other lessons learned from Iraq from working on social protection with local actors include the importance of:

- Government engagement;
- Scale, harmonization, and rigor within the international aid community;
- A powerful mediator (in this case, the World Bank);
- Donor commitments to fund beyond short-term humanitarian funding cycles; and
- Early harmonization in targeting and program design across the humanitarian community.

Ms. Chetail said we need to rethink food systems to make them more adaptable. A lesson from the COVID-19 crisis is that supply chains are too long. Wheat comes from Ukraine to be consumed in Somalia, and this relies on efficient logistics and open borders. Ms. Chetail explained that it is important to support and develop more local and more diversified food systems that can be the primary sources of food, or at a minimum, provide substitutes when supply chains are disrupted. In Nigeria, Mercy Corps is supporting food processors to process millet and corn instead of wheat into biscuits and bread. Mercy Corps is working with Flour Mills Nigeria to diversify their sourcing of wheat and spur local production. We need to support the diversification of supply and output markets and build redundancies in the market systems so that if one fails, we have others to fall back on. In Nigeria, Mercy Corps is working with multiple suppliers of agricultural inputs even beyond national borders to help businesses diversify their sources of input, their transport contract, and their customer base.

Ms. Chetail spoke of the need to support the transformation of food systems to go beyond adaptation. The current fuel and food crisis provides a unique opportunity to initiate organizational change towards a greener economic agenda. The cost of fuel used for irrigation or processing and the cost and unavailability of chemical fertilizers are very powerful economic incentives to change behaviors. We have seen in Jordan under Mercy Corps' water savings program that the savings on the cost of fuel for pumping were great motivators for producers to invest in water-saving technology, much more so than the savings on the cost of water, for example, as water in Jordan is very inexpensive. And so, after just three years, Mercy Corps helped save over 10 million cubic meters of water.

Another opportunity in this crisis environment is to leverage technology. The COVID-19 crisis has taught us that people and businesses are extremely resourceful. COVID-19 accelerated the development and uptake of digital solutions as an alternative to face-to-face relationships with transactions. In Nigeria, for example, digitalization has helped Mercy Corps support supply chains and help them continue to function despite the insecurity and violence. Mercy Corps partnered with the transporter association to give transporters access to an online platform that indicates to them the accessible route at any given time. This really allowed the continuation of the transport of goods and services throughout.

Drawing from these lessons, Ms. Chetail concluded with the following recommendations:

- *Layer short-term emergency response with longer-term market support.* This means using smarter cash responses that leverage additional investment, like our blended finance model in Nigeria. It also means being agile in the funding stream so that we can use funding for emergency or development responses, depending on the context at any given time.
- *Partner with actors across the spectrum.* Partnering with private sector actors and local governments will help take full advantage of all the resources in the food system and build redundancies in support of resilience.
- *Invest in innovative solutions at scale.* This means really turning crises into opportunities, very much the way COVID-19 accelerated the digitalization of markets. The current fuel crisis can help shift practices and help markets become greener. Donors and governments should invest in testing and scaling innovation that catalyzes climate resilience solutions and leverages technology.

Ms. Chetail ended her remarks and returned the floor to Chair Alexander.

Dr. Jemimah Njuki, Chief, Economic Empowerment Section, United Nations (UN) Women

Dr. Njuki said the previous speakers effectively laid out the context of the intersection of different crises—climate and environment crises, coupled with conflict—and how COVID-19 has accelerated and intensified these interlinked crises with huge impacts on our food systems. Dr. Njuki’s remarks focused on the implications for gender equality on women and girls. The COVID-19 pandemic has demonstrated that crises have a disproportionate impact on women and girls. Crises exacerbate existing inequalities. They affect jobs and livelihoods. They lay siege to health and wellbeing. They dramatically increase women’s paid care work and women and girls’ unpaid care and domestic work, on which economies and societies depend. This further impedes the resilience and rights of women and girls to adequate food in a changing climate.

Dr. Njuki explained that this is precisely the context of the war in Ukraine. At UN Women, we have analyzed the impacts on what other speakers have described and the implications for women and girls. The impacts on food and energy production, prices, and availability, and what that means for women’s and girls’ energy access and their rights to food. Even in times of peace and times of no crisis, which we haven’t experienced in a while, women tend to be more food insecure than men. Crises entrench gender inequalities, often meaning that women and girls eat less, which Dr. Webb referred to earlier. Their nutritional needs may be sidelined as they take care of everyone, further deepening hunger, malnutrition, and poverty for these groups.

Dr. Njuki said that these interlinked crises, in a way, provide an opportunity. We are at a crossroads, facing the choice between doubling down the mistakes of the past or seizing the opportunity to do things differently. From the perspective of gender equality and impact on women and girls, Dr. Njuki outlined five priorities to help prepare for future crises and build resilient economies and in food systems that work for women and girls:

1. *Prioritize jobs for women and girls.* Women’s access to decent jobs, social protection, and livelihoods needs to be ensured as part of a people-centered economy that addresses inequality within and between countries, while promoting their rights to food security and nutrition. We talk about “just” and “green” transitions, and we need to ensure these transitions are not just green transitions but are also “gender-just” green transitions, which we must harness to create decent jobs for women, whether in care, energy, agriculture, or natural resource management. Universal gender-responsive social protection systems need to be strengthened to provide a bulwark against economic and environmental shocks and address specific risks and challenges that women and girls face, including their access to food, as has been highlighted by previous crises and conflicts.
2. *Prioritize gender-responsive climate action and sustainable food-system transitions.* The need to adopt sustainable and climate-resilient food and energy systems and approaches has never been more urgent. We cannot revert to business-as-usual in the response and recovery. As the UN Secretary General highlighted in our common agenda, we must shift from economies dependent on fossil fuels to ones that are low emission, climate resilient, and centered on women and girls. UN Women’s experience in this field has shown that strengthening resilience requires an integrated approach that addresses the structural barriers that women farmers face within the context of a changing climate. We have a UN Women’s Climate Resilience Agriculture Program that is combining innovative approaches to promote gender-just transitions in key sectors, including work on agroecology, land rights, land tenure security, improving women’s access to markets, information, and time- and labor-saving technologies. We are collaborating with the Rome-based agencies (e.g., FAO, International Food and Agricultural Development [IFAD], World Food Program [WFP]) to focus on the economic empowerment of rural women.

3. *Prioritize women's leadership and participation, including feminist leadership.* We know around the world that women and girls are not just vulnerable, but they are taking action to build resilient economies and food systems at all levels. Two years ago, Dr. Njuki led the process to ensure gender and women's empowerment was central in the UN Food Systems Summit. It was very clear about all the actions that women are taking. But, very often, their voice, agency, and participation continue to be under-reported, under-resourced, undervalued and under-recognized. We know, and there is evidence, that promoting women's and girls' full and legal participation and leadership is key to making our food systems more effective and resilient.
4. *Public investment in the care economy should be a key pillar to economic recovery and women's empowerment including for improving food security and nutrition.* This is often overlooked in talking about food systems. Affordable quality care services are not only critical in supporting women's re-entry into the labor force and for the wellbeing of children and older persons, but we know that investments in care can drive job reach, resilient economies, and recovery. We are investing time and resources jointly with other UN agencies, such as International Labor Organization (ILO), to address the issue of the disproportionate burden of unpaid care, especially post-COVID-19 through promoting decent jobs for women, inclusive growth policies, and investments in the care economy with governments around the world. We are integrating investments in care and climate resilience work, working with farmers' cooperatives in Senegal, Rwanda, and South Africa to include provisions of childcare services, early childhood education, and access to time-saving infrastructure and services. We hope we can see much better mainstreaming of work around care in the interventions on climate resilience.
5. *Gender statistics to understand, track, and better address the disproportionate impacts on women and girls and gender-diverse persons.* We need to improve and invest in disaggregated data in this gender-environment nexus to provide the basis to inform policies and programs for gender-responsive food systems. We are in collaboration with a lot of organizations, with support from USAID, on a Women Count program to do this. It is a primary resource for data on the disproportionate impact of COVID-19 on women and girls that can inform policies and programming.

Dr. Njuki concluded that transformative macroeconomic policies, around which all of this is hinged, are required. We know that achieving gender equality and women's and girls' empowerment is critical to this agenda to achieve a sustainable, equitable, and peaceful world that we all want to build. We have all the evidence to do this. What is left is to seize this opportunity of collaboration, solidarity, and renewed multilateralism that puts women and girls at the center. We need to prioritize jobs, gender-responsive climate action, feminist leadership, address unpaid care burden on women and girls, and gender statistics. As UN Women, we stand ready to partner with others around the world to make this a reality.

BIFAD Questions and Discussion with Presenters

Dr. Alexander opened the floor to fellow BIFAD members for their reflections and questions for the panelists.

Ms. Spahn asked Dr. Webb and Ms. Chetail to comment on an observation. She acknowledged that while the focus of the meeting was on agriculture and food systems, she appreciated the recognition of a need for a multi-sectoral approach and for involving the humanitarian sector. She did not hear about the need to invest in the health sector if we are going to build resilience in these areas. Malnutrition has such a devastating impact on growth and health. The health system can play a vital role in preventing and treating malnutrition. She asked Dr. Webb and Ms. Chetail to comment on this observation.

Ms. Moore highlighted the importance of hand-in-hand partnerships between the public and corporate sectors, drawing from her experience working for two corporations. She asked if the speakers had recommendations or had seen models of effective corporate partnerships with government organizations that can move the needle on some of this work.

Dr. Liverpool-Tasie appreciated all the speakers and directed a question to Dr. Webb and Ms. Chetail about the role of research. Highlighting Dr. Torero's map documenting that some commodities, like wheat, may account for a small share of the budget or of overall consumption, particularly in sub-Saharan Africa, she said that demand-side studies help us to understand consumption patterns and the tradeoffs that households are making among different kinds of foods. Reflecting on policy recommendations and past responses of governments, Dr. Liverpool-Tasie wondered about the role of research in ensuring that governments don't quickly have a knee-jerk reaction, e.g., diverting attention to wheat when this might not be the most effective use of resources given wheat's importance in the household food budget or household consumption basket. She asked speakers to comment on the role of research in guiding policy makers and being able to make responses that are appropriate to a particular context and need.

Dr. Lal's question was directed at Dr. Njuki. In sub-Saharan Africa, where 70% of smallholder farmers are women, the yield gap is a factor of 2-4. What can be attained, and what can go up by 3-4 times in that region and in other places? Dr. Lal asked Dr. Njuki to suggest strategies policymakers could use to empower smallholder farmers, especially women, to translate existing scientific knowledge—not new research—into action and enhance food production.

Dr. Alexander read a question from Professor Boyd. She remarked that many of the briefing materials from speakers that BIFAD read to prepare for the meeting spoke to creating resilient food systems that can respond to future crises and shocks. She asked speakers to point to evidence on how resilient food systems can help to prevent or mitigate future shocks and crises. Dr. Anderson asked Dr. Webb to say more about valorizing smallholder assets, particularly his insights on the obstacles and challenges. Knowing that Dr. Njuki had been collaborating with USAID, Dr. Anderson asked her what would strengthen the collaboration with USAID and what she would like to be doing more of with USAID.

Panelists' Answers

Dr. Webb agreed with Ms. Spahn's observation and gave the example of one of the greatest humanitarian challenges, reaching people with targeted assistance to treat wasting. He noted that the Bureau of Humanitarian Assistance (BHA) and WFP are not just dumping sacks of grain as they did in the old days. They are trying to deliver tailored food baskets, essentially diversified diets, to the people who most need them to maintain or recover their nutritional resilience. One of the biggest challenges in humanitarian work is to treat wasting, to save people—mainly children, but sometimes adults—from preventable death. Between 50 and 75 million children are wasted at any given time, let alone during a crisis. The cost of treating wasting is extremely high but must be done to save children's lives. Referring to his work with the World Health Organization (WHO) on the relationship between the health issues of malaria and diarrheal disease and the incidence and prevalence of wasting, Dr. Webb said that as one would expect, they are positively correlated. Children in areas where malaria is endemic and diarrheal diseases are common are much more likely to be wasted and to die wasted, and this, therefore, makes the treatment much harder. If nothing else, it shows that the prior health services—and the quality and conditions of those services—matter immensely to the food side and to food systems. These sectors need to be brought to the table together.

Responding to Dr. Liverpool-Tasie's question on research, Dr. Webb said there is nothing stopping governments from taking knee-jerk actions. Governments usually are not listening closely to evidence or

science. The one area that governments will listen to closely is economics, and they have a better understanding of economic trade offs, e.g., this action versus that action, the economic cost of inaction, or the cost to the budget, to the government, or to the people of not doing something quickly. Making choices starker in terms of implications of the choices governments are going to make anyway may help, may save some lives, and may save resources.

In reference to Dr. Anderson's question about valorizing assets, Dr. Webb said that in his previous role at the World Food Program as Chief Nutritionist, he was involved with mega shocks like the Asian tsunami and the Haiti earthquake. There is so much effort that goes into saving people's lives and trying to put something back that was there before. There is almost never enough time or resources. Instead of building back better, we could be thinking about building forward better. We can think about what kinds of investments can be made to enhance local assets. Most people rely on a diversified portfolio of incomes. They are not "just" farmers. Most people in low-income countries, even farmers, are net purchasers of food. We have to find ways to increase the diversity of income-earning options in rural areas that are not farm based but that generate demand for farm produce. If you want short supply chains and local food systems, you have to generate more effective demand for more diversified food produced locally. It requires not just focusing on the agricultural side—what goes in the fields—but what is going on around the fields. These are different kinds of jobs: mostly service-type jobs and small- and medium-sized enterprises that are doing all kinds of value-chain work in food and non-food commodities. In targeting resources, rural finance helps people invest in the assets that they have. Dr. Webb mentioned better banking before the value disappears and dies. There needs to be better rural finance to protect consumption. Consumption financing has been tried in the past and then disappeared. We need to know why some of those novel ideas of the past did not take off. People's local knowledge and their learning of livestock and land is another asset. People have knowledge to build on, but they don't often have resources to valorize these assets. They simply need to be enabled to do that. We need to think differently and to intervene differently. We need to enhance people's assets to build on and to build forward better, rather than build back what was there before.

On the importance of health systems, Ms. Chetail suggested that there could be more coordination between the health and agricultural systems, which are still acting very much in silos. Those systems can be brought together. For example, in some countries we have stronger health extension systems than agricultural extension systems and vice versa. How do we build on those strengths to disseminate health and nutrition messages that are critical? We know people are not very likely to pay for agricultural insurance, but they are likely to pay for health insurance. How can we bundle those two systems to work for the people we serve? Bridging those two systems would go a long way to move us in the right direction.

Ms. Chetail responded to Ms. Moore's question on private sector cooperation, noting Mercy Corps' learning in this area and great strides in partnering with private corporations. Mercy Corps is working to ensure—and this is apropos, given the ongoing World Economic Forum discussions—that corporations interested in investing in very fragile contexts are combining efforts with the international development community and the local government to find the appropriate solution. Actors like Mercy Corps can support developing the supply chain with boots on the ground and contextual knowledge. Ms. Chetail asked how we can help big corporations increase their supply chain in a way that is beneficial for the people that we support, and Mercy Corps' experience working with Walmart in Latin America on coffee is an example of strengthening value chains.

Referring to Professor Boyd's question, Ms. Chetail said we have strong evidence of what type of interventions or collaborations can support resilience and can prevent a particular future conflict or climate shock. We don't yet have evidence on combined shocks. There is an evidence gap on how to

build resilience overall against myriad shocks. In response to Dr. Lal's question, Dr. Njuki referred to the productivity gap between what we call women-owned, or women-managed, firms and other firms. We know that gaps in technology access and labor availability contribute to productivity gaps. We know what is causing those gaps and need to figure out how to close them. We also have evidence about how to effectively work with women smallholder farmers, for example, through cooperatives and other groups to make sure they have access to information and technologies. Other, more global, gaps include access to digital technologies and digital platforms to engage smallholder farmers and to ensure they have the right resources. If we don't close that gap and continue to use digital tools to get information, there is potential that we are contributing to widening the digital technology gaps. We need to be much more intentional in deploying technologies and resources to smallholder farmers, ensuring that we are not widening them and closing them where they exist.

We need to start with smallholder farmers, who have been farming and providing food and who understand their constraints. Someone commented in the chat that parachuting technologies to smallholder farmers is not going to work because those technologies need to be adapted to their systems and resource base.

Dr. Njuki described her experience working with the Feed the Future Innovation Lab for Collaborative Research on Sustainable Intensification when it first started and said it was gratifying to see researchers recognizing that mechanization works and technologies exist, but acknowledging that to work in sub-Saharan Africa, they needed to start with the farmers to understand their needs and priorities. As a result, the innovations from that Innovation Lab are different from what we would have seen if it had been a technology transfer process. Research investments on mechanization to thresh bins wouldn't have been a priority in the global scheme of ideas around mechanization. So, we really need to start from farmers themselves.

In response to Dr. Anderson's question, Dr. Njuki said that USAID had invested a lot in data. Feed the Future has had gender and women's empowerment at the center, including investing in measurement, using the Women Empowerment in Agriculture Index. She recommended that USAID should double down on two things. The first was ensuring that all programming meaningfully integrates gender and the focus on the empowerment of women and girls. This could mean specific financial investments, or budgetary provisions, to ensure that programs are reaching women and girls. This goes beyond verbal commitments and translates to financial commitments, mainstreaming in climate action or other interventions. The second was making specific investments on strategic issues around gender equality and women's and girls' empowerment. Dr. Njuki gave the example of gender and climate change and the fact that women and girls are affected in different ways by the climate change crisis. Up to today, we still do not have a women and climate fund that ensures that resources are going directly to organizations that are working on issues related to women and girls. There is still a huge financing gap that mainstreaming has not fixed. It will require specific investments in some of those areas to ensure we are actually getting to the objectives of making sure women and girls become more resilient or that we are solving the energy crisis or the fuel crisis for them.

Dr. Alexander thanked BIFAD members and the panelists for that discussion. He turned to the questions from the audience.

Public Comment Period

Question from Ahmed Kablan at USAID for Dr. Torero: What does the picture look like if we take into account food loss and waste in countries affected most by the Russian invasion? Additionally, are data available on the impact of the current crisis on non-commodity food crops, mainly perishables?

Dr. Torero said that when we talk about food loss and waste, we should not focus only on those countries affected most by the Russian invasion, because those are the most vulnerable countries. Those countries are very import dependent and have significant budget constraints right now. Looking at overall reduction of food loss and waste, if we reduce food loss and waste overall by 50%, there will be sufficient fruits and vegetables available in the food supply to cover the recommended diet of vegetables and fruits per person per day. So, the gains are substantial. In some countries that are import dependent, such as those in North Africa for example, the problem is behavior. To abruptly change the consumption of bread in Egypt will take time. It's not something you can do overnight, and the country is very inelastic to respond to a behavior change because of what happened in the Arab Spring. Dr. Torero would argue that we should not focus on those countries but instead look across the board.

Responding to the question about data on high-value commodities versus staple commodities, Dr. Torero said it is very difficult to separate the different elements. We know how much the overall food import bill has increased in those countries because of the crisis. We are proposing a food financing facility to cover that gap for the most vulnerable countries, but we cannot decompose that food import bill by different types of products. We do have the data that could allow us to do that and can go into more detail later, but at this point, we only know the overall import food bill.

Dr. Alexander read the next question, addressed to the panel.

Question from Gary Alex: There seems a dilemma. The current Ukraine crisis is caused mainly by one "bad actor." Many food crises are caused by bad political decisions. Scientists and development workers are hard pressed to "clean up" after such bad actions. Doesn't the international community have a responsibility to be more proactive in combating such bad actors and bad action? That doesn't mean that scientists and development workers can stand down, but it may recognize that they can't "win the battle" without the needed political actions.

Dr. Njuki commented that this was a really tough question. She said that the international community does have an obligation to support but also to hold governments accountable for their actions. The UN Secretary General has formed a global crisis response group, on which UN Women has a seat, that is looking at the impact of the war on food, energy, and finance. On the finance side, there are actions being taken in the short, medium, and long term to respond to the crisis. She stated her agreement with the comment that the global community has a huge role to play in this. As soon as the crisis hit, UN Women and CARE carried out a rapid analysis to assess the impact on women and girls. Dr. Njuki said UN Women is reorganizing much of its programming in Ukraine and neighboring countries to respond, and other UN agencies are responding in similar ways.

Ms. Chetail agreed that we definitely need to hold those responsible accountable and join forces with the humanitarian community and donors to collectively put pressure and advocate for some of those decisions. Documenting impacts as much as possible is one way to do this, as Dr. Njuki mentioned.

Dr. Webb agreed. Research that documents not just the impact but the costs, or unintended consequences, essentially—of policy actions still has to be done and rolled together. When we talk about crises, we tend to talk about the 2007 crisis, often forgetting about the major world food price spike in the mid-1990's in 1994 and 1996, when there was a UN emergency group brought together. Where things failed, from Dr. Webb's perspective, on the international accountability front, is the collapse of the Uruguay Round and the fact that we need the World Trade Organization (WTO) or something else to take on agriculture and food issues in the way we are talking about them. That was the intention of the WTO in the past, but it doesn't and it never has. And now there is nothing. It is just a vacuum. If there are any lessons to take away, one would be to promote politically in the international community the

creation of a body and a forum for dialogue that would allow for this kind of learning and accountability mechanisms for policy actions that are destructive or damaging to other people.

Dr. Alexander thanked the panelists for their contributions to the discussion and to the work of BIFAD.

Part Three: The Climate Crisis – Approaches for Systems Change for Climate Change Adaptation and Mitigation Action

Dr. Alexander introduced BIFAD member Dr. Rattan Lal to highlight BIFAD plans to identify evidence-based means of accelerating transformative adaptation approaches and systemic solutions to climate change in agriculture, food systems and nutrition.

Accelerating Transformative Adaptation Approaches and Systems Change to Climate Change in Agriculture, Food Systems, and Nutrition: Highlighting BIFAD's Plans

Dr. Rattan Lal, BIFAD Member and Distinguished Professor at Ohio State University, and World Food Prize Laureate

As background, Dr. Lal said there has been 700 gigaton of carbon emitted by human activity since 1750, 66% from fossil fuels and 34% from land use change. While 42% of all that remained in the atmosphere, 31% was absorbed by land-based sinks. Therefore, a very important question is what can be done to increase the strength and capacity of land-based sinks in addition to finding non-carbon fuel sources. The importance of land-based sinks is that food security, nutrition, water quality, biodiversity, and many ecosystem services depend on land-based sinks.

Given the priority of the Agency and the Biden-Harris administration, when BIFAD met with Administrator Samantha Power and senior USAID leadership earlier in the year, the Administrator's first point of business was to request that BIFAD advise USAID on responding to systemic risks brought about by climate change in agriculture, food systems, and nutrition. In other words, she gave us a mandate to find climate resilient or climate-friendly agriculture in such a way that agriculture becomes the solution to the problem.

In that context, Dr. Lal is pleased to announce today that BIFAD plans to take up this call to action and to elevate and accelerate work in this area. Central to BIFAD's response is the commissioning of a study on Systemic Solutions to Climate Change Adaptation and Mitigation in Agriculture, Nutrition, and Food Systems.

Informed by consultations with a broad range of experts, the study will expand the transdisciplinary expertise in this area to advise BIFAD, which can in turn provide USAID with independent recommendations that will enable USAID to improve programming in this area. Therefore, the study will draw upon expertise from program implementers, researchers, and the private sector, with plans to engage over 40 experts globally.

Key outcomes of the study will be to inform priority focus areas in USAID's research portfolio and to summarize and share evidence about the interlinkages among climate change, food security, poverty, malnutrition reduction, natural resource management, and land-use planning in developing countries. The study will advance specifically two objectives:

- *Objective 1* will be to provide evidence-based recommendations to support USAID's role in accelerating systems change and transformative climate change adaptation and mitigation approaches in agriculture, food systems and nutrition in line with the U.S. Government Global Food Security Strategy, USAID's Climate Strategy, and other sectoral policies.

- *Objective 2* will be to provide evidence-based recommendations to support USAID’s role in targeting climate finance to benefit smallholders.

The evidence and recommendations provided by this study will position the Board to advise USAID on how to accelerate climate change action through programs to achieve climate change adaptation and mitigation targets, agricultural productivity growth, inclusive food systems, and poverty and malnutrition reduction.

The study consultation effort will launch this month and will include public workshops leading up to the Conference of Parties (COP) 27.

BIFAD eagerly supports this work and will encourage the study authors to work diligently but quickly to put forward evidence-based recommendations ahead of the COP 27 in November of this year. Dr. Lal invited the attendees at the meeting and their networks to join in the future public discussions to help inform this critically important work.

Dr. Lal thanked Dr. Alexander for his leadership and said he was looking forward to the study.

Dr. Alexander thanked Dr. Lal, saying he was honored to serve on the BIFAD with him and recognizing that his leadership and vision in the climate change space will help guide BIFAD’s important work going forward. He next introduced Ann Vaughan, Senior Advisor for Climate Change in USAID’s Bureau for Resilience and Food Security.

Identifying Opportunities to Accelerate Transformative Climate Change Adaptation and Mitigation Action

Ann Vaughan, Senior Advisor for Climate Change, USAID Bureau for Resilience and Food Security

Ms. Vaughan said that we need collective action to solve the climate crisis. She explained USAID is working to prevent the worst impacts of the climate crisis by working with governments and communities around the world to mitigate against and adapt to climate change impacts that are already happening now. Several foundational strategies are giving USAID direction on how to address the threat of climate change to food systems. USAID needs help to make sure food systems are incorporated into thinking. USAID has three strategies that will help the agency think through how food systems work.

Ms. Vaughan shared the following strategies and plans:

[U.S. Government Global Food Security Strategy \(2022-2026\)](#) includes a new cross-cutting intermediate result (CC IR) on enhanced climate change adaptation and mitigation, (CC) IR4. This change is incredibly important, but our food security work has already considered shocks and stresses from climate for years. Some of the previous strategy’s old IRs addressed these, so this is not new. We know that climate change has been impacting food systems for a long time, but, USAID is redoubling efforts. Therefore, USAID hopes the new study will help us think through and be able to enact this new CC IR. Ms. Vaughan highlighted other related elements of the results framework, including Objective 2: Strengthened resilience among people and systems; IR5: Improved proactive risk reduction, mitigation, and management and IR6: Improved adaptation to and recovery from shocks and stresses; CC IR5: Improved natural resource management; and CC IR6: Improved water resources management.

Ms. Vaughan highlighted [USAID’s Climate Strategy \(2022-2030\)](#), which was launched in April on Earth Day. The Climate Strategy’s vision is to achieve a resilient, prosperous, and equitable world with net-zero emissions. It is a whole-of-agency effort that will guide USAID’s actions through 2030. USAID is setting its most ambitious timelines and targets ever for reducing global emissions, increasing people’s resilience, mobilizing climate finance, and working towards inclusive and equitable outcomes. USAID developed six targets, to include:

1. Mitigation: 6 billion metric tons of CO₂ reduced;
2. Natural & Managed Ecosystems: 100 million hectares of land protected, restored, or managed;
3. Adaptation: 500 million people supported to be climate resilient;
4. Finance: 150 billion dollars of public and private finance mobilized;
5. Country Support: 80 countries (Nationally Determined Contributions [NDCs]/National Adaptation Plans [NAPs]) supported; and
6. Critical Population: 40 country partnerships strengthened to increase equitable engagement.

The targets that USAID hopes the BIFAD study will most help to address are adaptation, mitigation, and mobilizing private finance.

[President's Emergency Plan for Adaptation and Resilience \(PREPARE\)](#): USAID's climate strategy complements and is advancing an important Presidential initiative that is transforming also how USAID is approaching climate adaptation. At COP 26, President Biden announced a new initiative, the President's Emergency Plan for Adaptation and Resilience (PREPARE), which brings together the diplomatic, development, and technical expertise in the United States to support more than half a billion people in developing countries to adapt to and manage climate change impacts by 2030. We know that addressing food security and increasing the ability of vulnerable communities to adapt to and feed themselves in a warming world is a central part of PREPARE. USAID is co-leading PREPARE with the U.S. Department of State and playing a central role in implementing PREPARE, utilizing long-standing local partnerships on the ground to strengthen the climate resilience of governments and communities through sustainable development and humanitarian assistance.

To achieve the targets that are laid out in these three strategies, USAID needs help from a wide range of stakeholders. We are excited about BIFAD commissioning this study that will look at transformational change of food systems, including helping get more climate finance to smallholder farmers. First, when we talk about systems change and transformation, it is easy to talk about but hard to do. We are hoping the study will provide very concrete recommendations for USAID to help make food systems ready for a warming world and find ways to reduce food systems' impact on climate. Second, we need help on climate finance. Despite agriculture's vulnerability to climate change, the total climate finance allocated to agriculture, forestry, and other land use is only a small fraction of what is needed. Only 3% of the total trackable global finance goes towards agriculture. As a global community, we need help to fix these gaps. As you can see, we are setting ambitious targets like our finance target of 150 billion dollars public and private finance mobilized. We are working with the U.S. Department of Agriculture (USDA) and the U.S. Department of State on the [Agricultural Innovation Mission for Climate \(AIM for C\)](#), which was announced at COP. We encourage non-government organizations and the private sector to partner with us on AIM for C to help galvanize private sector investments in climate-smart food systems. Turning back to today's exciting announcement about this important study, we are thrilled in getting the help of these renowned experts to help solve the dual problems of adapting to climate change and mitigating impacts on food systems and making sure that smallholder farmers have the access and right amount of finance to face the growing challenges of feeding their families and the planet. Again, we encourage the public to participate in these different events leading up to the development of the study.

Ms. Vaughan thanked BIFAD again for their support in tackling this important challenge.

Dr. Alexander thanked Ms. Vaughan for her excellent report. He thanked the participants for their lively and thoughtful engagement in the chat and Q&A with speakers and BIFAD members. Public consultation, transparent exploration of the evidence, and collaboration with stakeholders are fundamental pillars of the BIFAD's work. To help reflect upon and synthesize the presentations today, he welcomed BIFAD member Ms. Henri Moore.

Part Four: Synthesis and Reflection

Synthesis and Reflections

Henri Moore, BIFAD Member and Vice President/Head of Responsible Business, GSK Consumer Health

Ms. Moore said she could not condense the proceedings into a short and coherent presentation, but she could capture how we can move forward. Administrator Power talked about the launching of Feed the Future in 2008 and the important work done by the Feed the Future Innovation Labs to develop novel solutions. Dr. Torero focused on the extent and magnitude of the current crisis but also said that we have a window of opportunity to provide incentives through the demand side rather than direct incentives to producers, which may be less cost efficient. Dr. Webb talked about solutions requiring a food systems-wide approach, with linked up solutions, because the global population will grow from 1.8 to 3 billion by 2030. We need to focus on the efficient use of fertilizers rather than on fertilizer prices. Ms. Chetail talked about layering short-term emergency response with longer-term market support, partnering with actors across the entire spectrum, both private and local governments, and investing in innovative solutions at scale. Greater coordination between the health and agriculture systems is needed, because that work is currently being done in silos. Ms. Moore said that Dr. Njuki's remarks spoke to her heart, as one of the pillars at her previous company, Corteva Agriscience, was empowering women. If we can lift women and girls, said Ms. Moore, we can raise the whole family. This work needs to start with smallholder farmers. We cannot just parachute in technologies; they must be adapted to the local context. We need to prioritize jobs for women. We need to strengthen women's land rights and land tenure across markets. We need to prioritize women's leadership and participation to make food systems more effective and resilient for women. Because that is what we do as women—we make things work, and we stretch. We need public investment, and we need to improve the data, because it will really help to inform policies, and we all have a role in this. Ms. Moore's new company, Haleon, is a consumer healthcare company with a focus on health inclusivity in underserved communities, which will include nutrition education on how to eat and live healthfully.

Ms. Moore appreciated the opportunity to listen to wonderful experts and capsulize information so we know where we are going in the future. Ms. Moore thanked Dr. Alexander for the opportunity.

Dr. Alexander thanked Ms. Moore for her great summary and overview. He invited participants to continue to submit questions and comments in the Q&A and encouraged the speakers to respond in the time remaining.

Concluding Remarks and Adjournment

Laurence Alexander

Dr. Alexander noted that the public meeting was the new BIFAD's first. On behalf of BIFAD, he thanked participants for joining. The meeting was a very first big step in the evidence-gathering portion of the BIFAD's work. Dr. Alexander said he hoped to continue coming together around this issue as BIFAD continued to put together evidence-based solutions around the issues of poverty, hunger, and other issues.

Dr. Alexander said that BIFAD/USAID would post official minutes of these proceedings on USAID's BIFAD website following the event. He assured participants that their comments and questions would form part of the official public record and be considered in BIFAD's recommendations to the Administrator.

Dr. Alexander thanked the speakers and recognized those who helped to organize the event, including BIFAD Executive Director Clara Cohen and the BIFAD Support Contract team, including Senior Counselor Carmen Benson, Operations Manager Carol Chan, Project Manager Mary Beggs, Contract Support,

Megan Knight, Climate Change Specialist, Rahel Diro, and the technical team working behind the scenes. Dr. Alexander adjourned the meeting.

Certification of Minutes:

We hereby certify that the foregoing minutes are an accurate and complete summary of the matters discussed and conclusions reached at the meeting held on May 23, 2022.

Laurence Alexander, BIFAD Chair and Chancellor, University of Arkansas at Pine Bluff

Clara K. Cohen, Executive Director, Board for International Food and Agricultural Development, Bureau for Resilience and Food Security, USAID

August 22, 2022

Annex 1: Zoom Questions and Answers

1. **Ahmed Kablan:** Thanks for the presentation Maximo, I wonder how the picture would be if we take into account the % of Food Loss and Waste (FLW) in countries affected most by the Russian invasion? Additionally, are there data available on the impact of the current crisis and similar crisis on non-commodity food crops (mainly those perishables?)
 - a. **Answer:** This is a good idea, but the point is that by reducing FLW in 50%, we will have enough fruits & vegetables available in the food supply to cover the recommendation of consumption per person per day.
2. **Joseph Hunt:** Will the slide decks from presenters be available later?
 - a. **Answer:** Hello Joseph, wonderful that you could join! All of the materials from each BIFAD Public Meeting are made available after the meeting, on the USAID BIFAD website.
3. **Matthew Blair:** Will higher cost of fertilizer affect agronomic crops more than horticultural crops or vice versa? In other words, will dietary diversification suffer even more than food security of staple grains .. thanks< M. Blair
 - a. **Answer:** Not necessarily, it depends on the soil and what the specific plant needs. That is the gap the fertilizer covers.
4. **Joshua Dunne:** Will the powerpoints be available for participants after the webinar?
 - a. **Answer:** Hi Joshua. Yes absolutely. We will share the recording, minutes, and references publicly and directly to registered participants after the meeting.
5. **Matthew Blair:** Thank you .. my question has mostly been answered by Maximo.
 - a. **Answer:** Live answered
6. **Aime BICABA:** One important point is the availability of financial resources to face those challenges.
 - a. **Answer:** Agreed
7. **Allan Hruska:** Thanks for today's session. If we truly want to help smallholder farmers and their families do better, we should start with them. BIFAD should re-direct the approach of "technology transfer", where technologies and solutions that may work for large commercial farmers and "transferred" to smallholders, often with little success. Resource-poor farmers operate in completely different contexts and respond to distinct incentives than those faced by large scale commercial farmers, who often benefit from subsidies, price supports, and risk-transfer mechanisms that are not accessible by smallholder farmers. It is no wonder that smallholder maize farmers don't use the levels of fertilizer or biotechnologies that many developed-country agencies and organizations recommend. Instead of "technology transfer", BIFAD should lead efforts to help the vast majority of the world's farmers (who are smallholders) innovate and use effective, economical, sustainable, and locally accessible innovations that respond to their needs,
 - a. **Answer:** Excellent point. Thanks so much for stating this.
8. **Gary Alex:** There seems a dilemma. The current Ukraine crisis is caused mainly by one "bad actor". Many food crises are caused by bad political decisions. Scientists and development workers are hard pressed to 'clean up' after such bad actions. Doesn't the international community have a responsibility to be more proactive in combating such bad actors and bad action? That doesn't mean that scientists and development workers can stand down but it may recognize that they can't 'win the battle' without the needed political actions.
 - a. **Answer:** Live answered
9. **Joseph Hunt:** Thank you. Your wonderful leadership is inspiring!
 - a. **Answer:** No response.

10. **Keith Cole:** Because of BIFAD's emphasis on evidence, could members of the Board or panelists share their opinions about the extent to which universities that teach international agricultural development and food security courses are really preparing future practitioners with the knowledge and skills most desired by implementing organizations?
- a. **Answer:** Thank you for this question Keith. I think that one thing that universities that teach international ag development can do is to ensure that careful and frequent analysis/understanding of consumer demand behavior and farm and firm supplier behavior is carried out so that we are able to provide evidence to support policy makers and development practitioners to be able to quickly assess likely impacts of different policy actions.
11. **Gary Alex:** Aren't many of the Board member comments recognizing the importance of return to a focus on 'agriculture and rural development'? Rural development in earlier development strategies included health, education, infrastructure, etc. This was in part support to the agricultural sector and in part a focus on people rather than only production. Rural development is needed to correct for urban biases in investments and, by improving rural communities may contribute to resilience and equality.
- a. **Answer:** Yes, in part, Gary. Also 'back to' the old farming systems approach, which was also more inclusive and using a systems lens.
12. **Timothy Mitchell:** Question for Maximo: How can we improve the Agriculture Commodities to address the supply chain shortages of food supplies in other countries, to obtain their crops, allocate resource assistance. How can we better manage emphasis on supply chain logistics in other regions?
- a. **Answer:** First, we need to improve the available information on logistics. It is essential to identify risks and bottlenecks. For example, there is a significant lack of cooling facilities for high value commodities.
13. **Jagger Harvey:** I completely agree with the critical need to focus on smallholder farmers, as well as women as targets and champions of food system transformation. However, a narrow focus on smallholder farmers only risks falling short to sustainably catalyze innovation scaling with inclusive benefits. What role do you (Patrick and others) see for meso-scale actors to serve as agents of change within the food system?
- a. **Answer:** Jagger, Meso scale actors are critical to change. I do think we are putting lots of pressure on smallholder farmers but traders, transporters, processors, and financial institutions have a critical role to play in both ensuring market systems continue to function during a crisis, but also in mitigating some of these shocks, ensuring those actors are "climate-conscious" will go a long way in ensuring climate resilience.
- 14: **Guadalupe Luna** sent this question to the host and panelists in the chat: Will gaps in law that might present barriers to some of the excellent proposals/studies be acknowledged in final reports (if and where applicable)?
- a. **Answer from Carmen Benson:** Thank you for your question. Yes, legal barriers will be acknowledged and addressed in the study and recommendations. Consultation with law experts in this area will be emphasized in BIFAD's evidence gathering and the work of the study team. This is a great reminder. Thank you!

Annex 2: Chat Transcript

11:58:48 From Carmen Benson to Everyone:

Welcome! The public meeting will begin shortly. While you wait, we hope you will participate in a short get-to-know-you poll: <https://pollev.com/meganknight617>

11:59:53 From Carmen Benson to Everyone:

Welcome! The public meeting will begin shortly. While you wait, we hope you will participate in a short get-to-know-you poll: <https://pollev.com/meganknight617>

12:01:54 From Benjamin Kohl to Everyone:

Greetings to all! Ben Kohl. Program Administrator. Feed the Future Innovation Lab for Collaborative Research on Sorghum and Millet (SMIL). Kansas State University College of Agriculture. USA - Manhattan, Kansas 66506. LinkedIn: <https://www.linkedin.com/company/sorghummillet>. Twitter: https://twitter.com/sorg_millet_lab. Website: <https://smil.k-state.edu>

12:02:07 From Rebecca Lochmann to Everyone:

Rebecca Lochmann, Professor, UAPB

12:02:08 From Elizabeth Bryan to Everyone:

Hello everyone. Elizabeth Bryan, Senior Scientist, IFPRI

12:02:12 From Sathish Ponniah to Everyone:

Dr. Sathish Ponniah, Department of Agriculture, University of Arkansas at Pine Bluff

12:02:32 From Stephan Tubene to Everyone:

Stephan Tubene

12:02:34 From BRUCE MCGOWAN to Everyone:

Good morning and greetings from the University of Arkansas at Pine Bluff. - Bruce W. McGowan.

12:02:40 From Shawn Baker to Everyone:

Shawn Baker, USAID, Chief Nutritionist

12:02:48 From Tim Rendall to Everyone:

Hello Everyone. Tim Rendall. Feed the Future Innovation Lab for Food Processing and Post-harvest Handling. Purdue University.

12:02:52 From Clara Cohen to Everyone:

Welcome everyone! Clara Cohen, BIFAD Executive Director, Bureau for Resilience and Food Security, USAID. Great to see you all and welcome BIFAD members.

12:03:00 From Naresh Shahi to Everyone:

Naresh Shahi,

12:03:00 From Karleah Harris to Everyone:

Dr. Karleah Harris, Department of Human Sciences, University of Arkansas at Pine Bluff

12:03:03 From Stephan Tubene to Everyone:

Stephan Tubene, University of Maryland Eastern Shore

12:03:04 From Mary Beggs to Everyone:

Good day everyone! Mary Beggs from Tetra Tech here. Looking forward to the discussion!

12:03:07 From Danielle Palermo to Everyone:

Danielle Palermo, Regulatory Specialist, Humane Society Legislative Fund

12:03:10 From Amanda Heinzmann to Everyone:

Amanda Heinzmann, Agriculture and Economic Growth Sector Intern, Tetra Tech ARD

12:03:12 From Naresh Shahi to Everyone:

Naresh Shahi, Tuskegee University

12:03:16 From Pamela D. Moore to Everyone:

Good morning, Pamela D. Moore, Associate Dean, Global Engagement, University of Arkansas at Pine Bluff

12:03:19 From Eli Sawadogo to Everyone:

Eli Sawadogo, Laval University

12:03:24 From Rebecca Adler Miserendino to Everyone:

Dr. Rebecca Adler Miserendino, Lewis-Burke Associates (a government relations firm that works with many universities interested in international development and food security).

12:03:24 From Dan Spatz to Everyone:

Dan Spatz, Healthy Flavors Arkansas

12:03:25 From SUBRAMANIA SRITHARAN to Everyone:

Greetings All from Sri at Central State University.

12:03:27 From Jenny Vanyur to Everyone:

Jenny Vanyur, Director of Advocacy, Helen Keller Intl

12:03:28 From Ahmed Kablan to Everyone:

Hello Everyone, Ahmed Kablan, USAID/B. for resilience and Food Security (RFS)/Center for Nutrition

12:03:31 From andre shelby to Everyone:

Andre Shelby Tec support for The School Of Agriculture

12:03:46 From Obadiah Njue to Everyone:

Hello, I'm Dr. Obadiah Njue, Assistant Dean for Extension and Outreach, University of Arkansas at Pine Bluff.

12:03:50 From Carmen Benson to Everyone:

Greetings! Carmen Benson, Senior Counselor, BIFAD Support at Tetra Tech. Welcome everyone.

12:04:10 From Britta Hansen to Everyone:

Greeting! Britta Hansen with Land O'Lakes Venture37.

12:04:17 From Jose Jackson-Malete to Everyone:

Hello everyone! Jose Jackson-Malete, Co-Director Alliance for African Partnership, Michigan State University

12:04:26 From Maricelle Saullo to Everyone:

Greetings. Maricelle Saullo, University of Maryland Eastern Shore - CEGFSD Center of Excellence for Global Food Security and Defense

12:04:56 From KIEN NGUYEN VAN to Everyone:

Hi everyone, greeting from PRC. Hanoi. Vietnam

12:05:07 From Dr. Jemimah Njuki, UN Women to Everyone:

Greetings. Jemimah Njuki, Chief for Economic Empowerment at UN Women

12:05:11 From Marcus Glassman to Everyone:

Hi Everyone -- Marcus Glassman with SoAR Foundation

12:05:27 From Mohammed ABAKAR to Everyone:

Hello everyone, ABAKAR Mohammed, Head of Agriculture, Food and Nutrition in ECCAS. I'm followed this important meeting since Libreville, Gabon

12:05:29 From Tope Nwoseh to Everyone:

Hello Everyone! Tope Nwoseh from Tetra Tech ARD.

12:05:43 From Lauren Allognon to Everyone:

Hello everyone! Lauren Allognon, Data & Analytics Associate, Tetra Tech Ag and Economic Growth team.

12:05:58 From andre shelby to Everyone:

Andre Shelby Tec Support for the School Of Agriculture For The University of Arkansas at Pine Bluff

12:06:50 From Dovi Alipoe to Everyone:

Hello from ASU, Alcorn State University.

12:07:33 From Matthew Blair to Everyone:

Hello from Tennessee State University .. best of luck to Dr. Alexander

12:09:19 From Mortimer Neufville to Everyone:

Good afternoon. Great comments. Hope we can return to the days of Title X11. Mort Neufville

12:09:42 From SILAS NGHABI to Everyone:

Hi everyone, I am Silas Ng'habi, Tetra Tech ARD, Tanzania.

12:11:46 From Gary Alex to Everyone:

Greetings, Gary Alex in Alabama.

12:13:39 From Keith Cole to Everyone:

Morning all from Keith Cole here at Texas A&M's Norman Borlaug Institute for International Agriculture and Development.

12:15:36 From Barbara Stinson to Everyone:

Greetings and our thanks to the BIFAD Board from Des Moines, IA, and Barbara Stinson, President World Food Prize

12:30:01 From SUBRAMANIA SRITHARAN to Everyone:

Thanks to all for this informative session.

12:35:57 From Dr. Laurence B. Alexander to Everyone:

Greetings. Thank you for participating.

12:36:02 From Victor Njiti to Everyone:

Dr. Victor Njiti, Department of Agriculture, Alcorn State University

12:36:30 From Miriam Lutz to Everyone:

Greetings from USAID/Mali in Bamako

12:41:29 From Carmen Benson to Everyone:

Participants- Your questions and comments are important to BIFAD. Please share questions for speakers in the Q/A box and any comments or additional resources in the Chat.

12:46:07 From Daniel Bailey to Everyone:

Are the graphics showing for others?

12:46:22 From Ahmed Kablan to Everyone:

Yes I can see the graphics

12:46:28 From Nora Lapitan to Everyone:

yes

12:46:47 From Henri G. Moore to Everyone:

yes

12:46:54 From Daniel Bailey to Everyone:

Thanks. I had to refresh the website.

12:46:57 From Sonoan Kry to Host and Panelists:

Yes, we can see

12:49:19 From Allan Hruska to Everyone:

Good day! Allan Hruska, Global IDEAS, Michigan State University (MSU).

13:00:00 From Rob Bertram to Host and Panelists:

Great question [regarding BIFAD member Kathy Spahn's question from page 11] and response [in reference to Dr. Torero's response on page 12]! A huge opportunity for both poverty reduction and quality diet affordability presents itself in linking Africa's smallholders with growing urban demands for quality, diverse nutritious foods.

13:17:10 From Carmen Benson to Everyone:

Participants- Your questions and comments are important to BIFAD. Please share questions for speakers in the Q/A box and any comments or additional resources in the Chat.

13:34:12 From Carmen Benson to Everyone:

Questions for the panel? Please post in the Q/A box. In a few moments, Chair Alexander will share your questions with speakers to respond to as many as possible.

14:09:11 From Matthew Blair to Everyone:

Have there been recommendations from BIFAD to USAID on rapidly reactivating post conflict Ukrainian exports in cereals? Can Ukraine and in the future Russia play a role in diversifying multiple grains and nutritional value of those grains? modeling of that process by FAO

14:18:38 From Carmen Benson to Everyone:

Read more! USAID Climate Strategy 2022-2030: <https://www.usaid.gov/climate/strategy>

14:21:24 From Ann Vaughan to Everyone:

AIM4C link: <https://www.aimforclimate.org/>

14:26:11 From Dr. Jim Barnhart to Everyone:

Thank you all for a fascinating and productive discussion.

14:26:38 From Brady Deaton to Host and Panelists:

Thank you for a fabulous meeting!

14:27:12 From Matthew Blair to Everyone:

good to see large representation of 1890s faculty on this meeting !

14:27:14 From Sathish Ponniah to Everyone:

Thank you all

14:27:18 From Carmen Benson to Everyone:

Thank you for joining today. The recording, public comments, and resources will be shared after the event with all registrants and posted publicly. Visit www.usaid.gov/BIFAD for these and other BIFAD updates.

14:27:42 From Matthew Blair to Everyone:

thanks for a very interesting event

14:27:45 From Karleah Harris to Everyone:

Thank you!

14:27:49 From Carmen Benson to Everyone:

I agree @Matthew Blair! Welcome all and thank you for your participation.

14:28:00 From Timothy Mitchell to Everyone:

Thank you!

14:28:05 From Eli Sawadogo to Everyone:

Thank you !

14:28:27 From Keith Cole to Everyone:

Great job Carmen and Mary!

14:28:52 From Benjamin Kohl to Everyone:

Thanks to all. Merci à tous.

14:28:54 From Teresa Henson to Everyone:

Thank You! Great Job!

14:29:03 From Jane Opiri to Everyone:

Thank you!

14:29:07 From Clara Cohen to Everyone:

Thanks to BIFAD members, speakers, and participants for a really interesting session!

14:29:14 From Obadiah Njue to Everyone:

Great work Chancellor Alexander

14:29:15 From Tope Nwoseh to Everyone:

Thank you?

14:29:33 From Tim Rendall to Everyone:

Thank You!

14:29:45 From Matias Fabião to Everyone:

thank you

Annex 4: Meeting Participants

Number of Participants: 224

No.	First Name	Last Name	Organization
1	Danielle	Palermo	Humane Society Legislative Fund
2	Mitchell	Berge	HH
3	Teresa	Welsh	Devex
4	Betsy	Hale	KCPS
5	Will	Giessler	Cardno International Development
6	Matthew	Krause	Heifer International
7	Nora	Lapitan	USAID
8	Rimnoma	Ouedraogo	Current and Emerging Threats to Crops Innovation Lab
9	Charlotte	Block	NCBA CLUSA
10	Rob	Bertram	USAID
11	BRUCE	MCGOWAN	The University of Arkansas at Pine Bluff
12	Teresa	Henson	The University of Arkansas at Pine Bluff
13	Obadiah	Njue	The University of Arkansas at Pine Bluff
14	Rebecca	Lochmann	The University of Arkansas at Pine Bluff

No.	First Name	Last Name	Organization
15	Dr. Christopher	Mathis Jr	The University of Arkansas at Pine Bluff
16	Karleah	Harris	The University of Arkansas at Pine Bluff
17	Dan	Spatz	Healthy Flavors
18	Jose	Jackson-Malete	Michigan State University
19	Lauren	Allognon	Tetra Tech
20	Kate	McDonald Polakiewicz	USAID
21	Meredith	Soule	USAID
22	Miriam	Lutz	USAID
23	Aaron	Larsen	USAID/BHA
24	Raphael	Makonen	USAID
25	Aime	BICABA	African Development Bank
26	Richard	Markowski	USAID
27	michelle	dapra	USAID
28	Caroline	Aubry	Tetra Tech
29	Meredith	Mallory	Tetra Tech
30	Shawn	Wozniak	USAID

No.	First Name	Last Name	Organization
31	Britta	Hansen	Land O'Lakes Venture37
32	Jennifer	Pike	USAID/Peru
33	David	DeYoung	Michigan State University
34	Ariana	Scurti	USAID
35	Sylvia	Lynch	USAID
36	Andrew	Bisson	USAID
37	Dominique	Charles	Making Cents International
38	Benjamin	Kohl	Feed the Future Innovation Lab for Collaborative Research on Sorghum and Millet (SMIL)
39	Tim	Rendall	Purdue University
40	Seema	Mahini	USAID
41	Maura	O'Brien	Congressman Raskin
42	Chelsea	Marcho	USAID
43	Lini	Wollenberg	University of Vermont
44	Bouchaib	Boulanouar	African Development Bank
45	Troy	Hoppenjan	MCC
46	Jacob	Ricker-Gilbert	Purdue University

No.	First Name	Last Name	Organization
47	Sonoan	Kry	CE SAIN / RUA
48	Gary	Soiseth	USAID
49	KIEN	NGUYEN VAN	Plant Resources Center (PRC)
50	Modibo	Traore	USAID/Mali
51	Jenny	Vanyur	Helen Keller International
52	Carole	Levin	USAID
53	Elaine	Gray	USAID
54	Hannah	Guedenet	USAID
55	Angela	Records	USAID
56	adam	bushey	usaid
57	Jessa	Barnard	Kansas State University
58	Jaime	Theilen	USAID
59	Uzoamaka	Joe-Nkamuke	African Development Bank
60	Brady	Deaton	University of Missouri, Deaton Institute
61	Monica	Kothari	ICF
62	Tom	Gill	University of Tennessee

No.	First Name	Last Name	Organization
63	Allan	Hruska	Michigan State University
64	Rahel	Diro	Tetra Tech
65	Amanda	Heinzmann	Tetra Tech
66	Julie	Howard	CSIS
67	Kurt	Richter	Michigan State University
68	Sarah	Marlow	Telus Agriculture
69	Jessica	Epple-Farmer	Lincoln University
70	Dovi	Alipoe	Alcorn State University
71	John	Vreyens	University of Minnesota Extension
72	Matthew	Blair	Tennessee State Univ.
73	Mohammed	ABAKAR	CEEAC
74	Marcus	Glassman	SoAR Foundation
75	SUBRAMANIA	SRITHARAN	Central State University
76	Gebisa	Ejeta	Purdue University
77	Jennifer	Billings	Corteva Agriscience
78	Sheena	Meadows	The University of Arkansas at Pine Bluff

No.	First Name	Last Name	Organization
79	Pamela D.	Moore	The University of Arkansas at Pine Bluff
80	BAFON	VALENTINE LAKU	Student
81	Pesach	Lubinsky	USDA
82	Jake		Wave Crest Media
83	Margaret	Walsh	USDA Office of Energy and Environmental Policy
84	Ahmed	Kablan	USAID
85	Diane	De Bernardo	USDA
86	Bjames	Deaton	University of Guelph
87	Cary	Fowler	State Department Office of Global Food Security
88	Richard	Lackey	World Food Bank Group
89	Stephan	Tubene	University of Maryland Eastern Shore
90	Eli	Sawadogo	Laval University
91	Ivan	Otieno Omondi	Radava Mercantile
92	Carrie	La Jeunesse	La Jeune Consulting
93	Ceaser	Siwale	Pangaea Securities

No.	First Name	Last Name	Organization
94	Eliana	Duran	USDA
95	Keith	Fuglie	USDA
96	Matias	Fabião	Misau
97	Sarah	Hoffman	USDA/NASS
98	chris gottschall	chris gottschall	USDA/NASS
99	James	Rowland	U.S. Geological Survey
100	Lila	Cardell	USDA Economic Research Service
101	Dan	Raiten	NICHD/NIH
102	Sara	Stribling	CNFA
103	Getu	Hailu	University of Guelph
104	Jennifer	Thomas	US Food and Drug Administration
105	Vito	Wagner	USDA/NASS
106	Hoa	Hoang	University of Missouri
107	Andre	Shelby	The University of Arkansas at Pine Bluff
108	Mariah	Davidson	Land O'Lakes Venture37
109	Lara	Evans	USAID

No.	First Name	Last Name	Organization
110	Danielle	Niedermaier	Land O'Lakes Venture37
111	Hans	Muzoora	USAID
112	Gary	Alex	NCFAP
113	Lindsey	Saunders	CAFNR - University of Missouri
114	Lina	Ha-Stone	CNFA
115	Guadalupe	Luna	College of Law
116	Joseph	Stewart	CNFA
117	Roe	Raz	LixCap
118	Barbara	Stinson	World Food Prize Foundation
119	Sophia	Lajaunie	USAID
120	Faridah	Sanni	University of Cincinnati
121	Keith	Cole	Norman Borlaug Institute for International Agriculture
122	Joseph	Hunt	Harvard
123	Kedir	Hassen	Kedir Abdi/Haramaya university
124	Soniia	David	Na
125	Olawunmi	Ilesanmi	Texas A&M University

No.	First Name	Last Name	Organization
126	Ellen	Levinson	Levinson & Associates
127	Clement	Petro	Agricultural Produce Exporters Limited
128	Nawra	Mehrin	Brac USA
129	Rebecca	Adler Miserendino	Lewis Burke Associate
130	Jane	Opiri	The University of Arkansas at Pine Bluff
131	Shack	Alibaba	Self
132	Nancy Elsie	Chawawa	World Food Program
133	SILAS	NGHABI	Tetra Tech
134	YAYA	KOLOMA	African Development Bank
135	Clarissa	Harris	Tuskegee University
136	Susan	Vorkoper	Fogarty International center
137	Leonard	Williams	North Carolina A&T State University
138	Michael	Nicholson	US Agency for International Development
139	Carolina	Abrahan	University of Florida
140	Beau	Ingle	The Ohio State University

No.	First Name	Last Name	Organization
141	Tommy	Crocker	Tetra Tech
142	Mortimer	Neufville	1890 Universities Foundation
143	Naresh	Shahi	Tuskegee University
144	Jane	Payumo	Michigan State University
145	Harriett	Paul	FI A&M University
146	David	Bathrick	Self
147	Charlotte	Hackett	Tetra Tech
148	Majed	El-Dweik	Lincoln University
149	Timothy	Mitchell	The University of Arkansas at Pine Bluff
150	Bobby	Hartwell	USAID
151	Shawn	Baker	USAID
152	Andrew	Sheridan	USAID
153	Spring	Anita	University of Florida
154	Elizabeth	Bryan	IFPRI
155	Ibsa	Usmane	Haramaya University
156	Bill	Thomas	USAID/RFS

No.	First Name	Last Name	Organization
157	Jack	Reilly	USAID
158	Joshua	Dunne	Lincoln University Cooperative Extension Human Nutrition and Health Program
159	Salem	Mariam	USAID
160	Victor	Njiti	Alcorn State University
161	Sathish	Ponniah	The University of Arkansas at Pine Bluff
162	James	Rhoads	University of Georgia
163	Maricelle	Saullo	University of Maryland Eastern Shore- CEGFSD
164	Carolyn	Hirshon	USAID
165	Janet	Fierro	Michigan State University
166	Steve	Morin	USAID/RFS/CA
167	Lakesha	Branscomb	The University of Arkansas at Pine Bluff
168	Jim	Gaffney	USAID
169	Madison	Parse	USAID
170	Alexious	Butler	USAID
171	Mamadou	Thiam	Kansas State University

No.	First Name	Last Name	Organization
172	Patricia	Costa	CNFA
173	David	Deaton	Deaton Group
174	Jagger	Harvey	PHLIL - Kansas State University
175	Melinda	Woywod	USAID
176	John	VanPool	Indigenous Food & Agriculture Initiative
177	Desmond	Mortley	Tuskegee University
178	Emily	Green	USAID
179	Benjamin	Rinehart	Tetra Tech
180	Lindsey	Doyle	USAID
181	Caleb	Nindo	UMES
182	Lauren	LaRochelle Benson	CNFA
183	Farzana	Ramzan	USAID
184	Daniel	Bailey	USAID
185	YACOB	ZEREYESUS	ERS
186	Christina	DeMarea	Independent Contractor
187	Doreen	Gordon	MSU

No.	First Name	Last Name	Organization
188	Sarah	Eber	Lincoln University
189	Asli	Kes	USAID
190	Shauncey	Hill	Mississippi State University
191	Oyinkan	Tasie	MSU
192	Nathanael	Bascom	Sorghum and Millet Innovation Lab
193	Trent	Blare	University of Florida
194	Tej	Gautam	Tuskegee University
195	James	Ash	Husch Blackwell
196	Isabella	Blecha	USAID
197	Unidentified #1		Unspecified
198	Unidentified #2		Unspecified
199	Unidentified #3		Unspecified
200	Unidentified #4		Unspecified
201	Mark	Mcdaniel	BIFAD Former Member
202	Mary	Beggs	Tetra Tech
203	Megan	Knight	Tetra Tech

No.	First Name	Last Name	Organization
204	Tope	Nwoseh	Tetra Tech
205	Professor Patrick	Webb	Tufts University
206	Mark	Keenum	BIFAD Former Member
207	Dr. Jim	Barnhart	USAID
208	Dr. Laurence B.	Alexander	BIFAD Member
209	Samantha	Power	USAID
210	Dr. Saweda	Liverpool-Tasie	BIFAD Member
211	Ann	Vaughan	USAID
212	Maximo	Torero Cullen	FAO
213	Sandrine	Chetail	MERCY CORPS
214	Kathy	Spahn	HKI
215	Carmen	Benson	TETRA TECH
216	Henri	G. Moore	GSK
217	Dr. Jemimah	Njuki	UN Women
218	Dr. Rattan	Lal	BIFAD Member

No.	First Name	Last Name	Organization
219	Dr. Pamela	Anderson	BIFAD Member
220	Clara	Cohen	USAID
221	Glen	Fujii	We and Goliath
222	Jeremiah	Erasquin	We and Goliath
223	Daniel	Moss	We and Goliath
224	Jake	Carter	We and Goliath

Annex 5: Written Statements

1	Jean	Public	Unknown
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