

Cultivating Global Food Security

A Strategy for U.S. Leadership on Productivity, Agricultural Research, and Trade

A Report of the CSIS Task Force on Global Food Security

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PREFACE

Senators Richard G. Lugar and Robert P. Casey Jr. and Representative Betty McCollum have been leaders in calling for a strong, strategic U.S. commitment to global food security. They chaired this effort and continue to serve as critical voices in the U.S. Senate and House of Representatives on the importance of U.S. leadership to curbing hunger and poverty worldwide. We are grateful for their leadership and support of this effort.

This task force report is the second phase in our efforts. In 2008, the task force, led by Senators Lugar and Casey, issued a CSIS report, *A Call for the Strategic U.S. Approach to the Global Food Crisis*. The report, released in the midst of the global food crisis, focused on the need for a major U.S. commitment to improving food security by modernizing emergency assistance, improving trade and biofuels policies, making agriculture a priority for U.S. development efforts, and strengthening U.S. organizational capacities.

In 2009, with important progress under way in the Senate, the House of Representatives, and the Obama administration on the U.S. approach to food security, the group reconvened to consider three major pillars of achieving long-term global food security: boosting agricultural productivity, especially in developing countries; strategically investing in agricultural research and development to increase productivity; and energizing the trade agenda to play a strong role in improving food security.

Over the course of the project, we hosted more than 18 meetings, including 10 meetings of the task force, to discuss priority policy issues related to agricultural productivity, research and development, and trade policy. Our speakers ranged from U.S. government officials to agricultural scientists and researchers, representatives from the private sector, and two World Food Prize laureates. We extend thanks to our speakers, who are listed in this report's appendix, for providing their views on many of the complex and challenging issues facing U.S. and global efforts to improve food security in the years ahead. Their insights and views helped to shape the recommendations included in this report.

We hosted two major public forums, one with World Food Programme executive director Josette Sheeran and one with World Food Prize laureate Monty Jones, director of Forum for Agricultural Research in Africa (FARA). CSIS hosted several other small discussions about the direction and strategy of U.S. food security plans and the state of key food insecure countries, including Somalia and Afghanistan.

The content of this report was informed by four papers. Two have been published—*Agricultural Productivity in Changing Rural Worlds* by Melinda Smale and Timothy Mahoney and *U.S. Agricultural Research in a Global Food Security Setting* by Phil Pardey and Julian Alston—and are available at www.csis.org. Two forthcoming reports will be released in the spring of 2010: one, by Charlotte Hebebrand of the International Food & Agricultural Trade Policy Council (IPC) and

Kristin Wedding of CSIS, will address the role of trade in food security; the other, by Jennifer Cooke of CSIS, will offer an assessment of African attitudes toward agricultural biotechnology and genetic modification to inform U.S. policymakers.

The Task Force on Global Food Security comprised a diverse group of senior-level representatives from nongovernmental organizations, former government officials, and agricultural trade, economic, and research experts. The members gave generously of their time and energy throughout the course of the effort, and each member contributed personally with their expertise and advice on how to craft an approach that is strong, practical, and comprehensive enough to address the complex web of factors contributing to food insecurity.

This volume represents a strong consensus of the members, but it is not assumed that the members necessarily endorse each finding and recommendation. Members of the task force served in their personal capacities, and the language included in this report does not imply their institution's endorsement of the report recommendations.



ACKNOWLEDGMENTS

The community of individuals and organizations dedicated to relieving hunger and improving food security is highly knowledgeable and deeply committed. The CSIS Task Force on Global Food Security is fortunate to have had guidance and input from many people in the development of this report.

The efforts of the Task Force on Global Food Security were led by Johanna Nesseth Tuttle, CSIS vice president, strategic planning, who authored this report, with substantial input from members of the task force. J. Stephen Morrison, senior vice president and director of the CSIS Global Health Policy Center, served as an adviser on the project and provided invaluable guidance and input. Kristin Wedding provided essential research and input for this final task force report, and Brett Baptist expertly managed the task force's events and activities.

Jennifer Cooke of CSIS and Vinca LaFleur and David Litt provided essential assistance in reviewing and editing this report; Karen Meacham was a constant guiding hand; and Elizabeth Sullivan, Shannon Hayden, and Kate Thompson all provided strong support to the task force's activities.

We are most appreciative of the guidance and advice from Connie Veillette with the Senate Foreign Relations Committee staff, Damian Murphy in Senator Casey's office, and Peter Frosch in Representative McCollum's office. They have been gracious, thoughtful, and committed.

The task force received expert input from many representatives in the worlds of agricultural development, emergency relief, trade, agricultural research and development, and domestic agriculture policy. Over the course of the project, CSIS conducted more than 150 consultative conversations to inform the findings and recommendations in this report and relied in particular on several expert advisers. The World Food Programme has been a strategic partner to CSIS, and we extend our thanks to Josette Sheeran, Allan Jury, Chris Moore, and Jennifer Parmelee for their ongoing contributions. From CARE, Helene Gayle and David Kauck (now with the International Center for Research on Women) provided strong support and insights. Julie Howard of the Partnership to Cut Hunger and Poverty in Africa has been an invaluable partner, and Charlotte Hebebrand of the International Food & Agricultural Trade Policy Council has provided us with careful guidance through the complex world of trade policy.

Ann Tutwiler of the U.S. Department of Agriculture (USDA) and Josette Lewis of the U.S. Agency for International Development have been invaluable participants in many of our working discussions. At the U.S. Government Accountability Office, Susan Offutt, chief economist, and Thomas Melito, Phillip Thomas, and Joy Labez provided substantive input to our approach. Joseph Glauber, chief economist at USDA, Kay Simmons of USDA's Agriculture Research Service, and Bill Craft and Gary Clements of the U.S. Department of State all made important contributions to our thinking, as did Karen Monaghan and Charlotte Friddle from the intelligence community and

Jolyne Sanjak and Kristin Penn of the Millennium Challenge Corporation. The World Bank's Vera Songwe, Will Martin, and John Nash provided great expertise. Kirsten Thorne of Chevron was a stalwart supporter, and Kim Elliott of the Center for Global Development provided helpful guidance throughout the project. We also benefitted from the input and advice of Marshall Bouton and Lisa Eakman of the Chicago Council on Global Affairs.

The work of the CSIS Task Force on Global Food Security was generously supported by the William & Flora Hewlett Foundation and the Bill & Melinda Gates Foundation. We are grateful for their support in our efforts to highlight the role of food security and agricultural development in U.S. foreign policy.



EXECUTIVE SUMMARY

In 2008, a complex combination of changes in demographics, food demand, and poor weather led to skyrocketing food prices around the world,¹ prompting riots in dozens of countries, from Bangladesh to Burkina Faso. While prices have stabilized in developed countries, high prices in the rest of the world continue to limit both access to, and availability of, staple food items. The number of people living with chronic hunger has jumped to more than 1 billion people—one sixth of the world's population²—and those trends show no signs of reversal: between 2007 and 2008, the number of people suffering from chronic hunger in the developing world increased by 80 million. In 2009, as many as 100 million additional people were pushed into a state of food insecurity.³ Continued high food prices and a global recession further exacerbate the rising numbers of food insecure people. Hunger has emerged as perhaps the most endangered Millennium Development Goal.

In 2008, the United States and the world responded with billions of dollars in emergency assistance, helping to ameliorate some of the worst cases of hunger. But a host of new factors affecting the global food supply, including a rising population, increased demand for meat and dairy products, and high fuel prices that drove demand for biofuels, are likely to cause permanent changes. To address these and other emerging challenges, the world must bring new policies to bear that give the hungry poor the tools they need to more effectively manage risk and volatility and better leverage immediate assistance toward the goal of achieving lasting food security.⁴ Unless serious vulnerabilities in the global food system are addressed, it is only a matter of time until the next food crisis occurs.

But the challenge in the present global environment—where demand for food continues to grow, risk and vulnerability are the new normal, and disasters like Haiti's January 2010 earthquake can cripple an entire nation—is to forge a path for food security that continues and improves emergency assistance and at the same time builds toward long-term stability by providing tools, training, and access to markets that can lead to greater food security. And that path must be paved

1. For a short summary of the drivers of the crisis, see J. Stephen Morrison and Johanna Nesselth Tuttle, *A Call for a Strategic U.S. Approach to the Global Food Crisis* (Washington, D.C.: Center for Strategic and International Studies, July 28, 2008).

2. Food and Agriculture Organization (FAO), *The State of Food Insecurity in the World: Economic Crises—Impacts and Lessons Learned* (Rome: FAO, 2009).

3. S. Shapouri, S. Rosen, B. Meade, and F. Gale, *Food Security Assessment, 2008–09*, Economic Research Service Report (Washington, D.C.: U.S. Department of Agriculture, June 2009).

4. The Food and Agriculture Organization (FAO) defines food security as a condition that exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life. Specifically, food security includes three elements: (1) food availability, (2) access, and (3) utilization. At the November 2009 World Summit on Food Security, the FAO added stability as a fourth element.

with powerful policies and programs that reinforce investments and institutions, build and support productive assets, and also guard against their loss.

U.S. policymakers, in partnership with the G-8, the G-20, the World Bank, and other multilateral donors, have recognized the need for a new approach to global hunger. At the 2009 G-8 summit in L'Aquila, Italy, President Barack Obama pledged \$3.5 billion over three years to global food security and won additional commitments totaling US\$22 billion⁵ from partners at the L'Aquila summit and the subsequent G-20 summit in Pittsburgh.⁶

American leaders have demonstrated a renewed interest to global food security and have directed attention and resources to improving food security through a sustained, high-level commitment to emergency assistance, coupled with a revitalized approach to agricultural development. In September 2009, Secretary of State Hillary Clinton reinforced this commitment by outlining the parameters and principles of a U.S. Global Hunger and Food Security Initiative (GHFSI). The goals of the initiative are to “sustainably reduce chronic hunger, raise the incomes of the rural poor, and reduce the number of children suffering from under-nutrition.”⁷

Congress mobilized to commit significant resources; in 2008, Senators Richard G. Lugar and Robert P. Casey Jr. introduced legislation (S. 384)⁸ to renew the U.S. commitment to improving food security by supporting long-term rural development and poverty alleviation, human and institutional capacity building for agriculture and extension, and U.S. emergency responses to food crises. In the House of Representatives, Rep. Betty McCollum introduced a similar bill (H.R. 3077)⁹ with the same name in 2009. Built on the Senate version's framework, it added additional detail on the nature of a serious, renewed effort to build agricultural capacity in developing countries and included a significant rewrite of the authorizing language of the 1961 Foreign Assistance Act.

In 2008, the CSIS task force issued a report, *A Call for a Strategic Approach to the Global Food Crisis*, that recommended several bold approaches to improve food security, including increasing and reforming emergency assistance; doubling the U.S. annual commitment to emergency food relief; requiring that expanded relief funds be available for local and regional purchase; and expanding emergency social safety net programs such as budget support, school feeding, and food for work.¹⁰ The report also called for making rural development and agricultural productivity

5. Major donors and their commitments—totaling \$22 billion—are as follows: Australia, \$464 million; Canada, \$1.2 billion; the European Commission, \$3.8 billion; France, \$2.3 billion; Germany, \$3 billion; Italy, \$450 million; Japan, \$3 billion; the Netherlands, \$2 billion; Spain, \$729 million; Sweden, \$563 million; the United Kingdom, \$1.8 billion; and the United States, \$3.5 billion.

6. U.S. House of Representatives, Committee on Appropriations, and U.S. Senate, Committee on Foreign Relations, *Global Food Security: U.S. Agencies Progressing on Governmentwide Strategy, but Approach Faces Several Vulnerabilities*, U.S. Government Accountability Office Report to Congressional Committees, 111th Cong., 2nd sess. (March 2010), pp. 1–2.

7. U.S. State Department, Bureau of Public Affairs, *Global Hunger and Food Security Initiative: Consultation Document* (Washington, D.C.: U.S. Department of State, September 28, 2009).

8. Lugar-Casey Global Food Security Act, S.384, originally introduced in the Senate on September 23, 2008, was reintroduced on February 5, 2009. The bill's full text is available at <http://thomas.loc.gov/cgi-bin/query/z?c111:S.384>.

9. H.R. 3077 was introduced on June 26, 2009. The bill's full text is available at <http://thomas.loc.gov/cgi-bin/bdquery/z?d108:h.r.03077>.

10. Morrison and Nesselth Tuttle, *A Call for a Strategic U.S. Approach to the Global Food Crisis*.

U.S. foreign policy priorities, focusing U.S. trade policy on promoting developing country agriculture, strengthening U.S. organizational capacities for delivering food assistance and coordinating food security efforts across agencies, and revising the U.S. approach to biofuels.

The task force's 2008 recommendations remain important and relevant, and we encourage the continued pursuit of these policy options. Congress and the administration have acted on several of these recommendations. But to make lasting progress in the fight against global hunger, the Obama administration and its successors should craft—and remain committed to—a long-term, comprehensive, sustainable plan of action, recognizing that it will take several years to show significant results on the ground.

During the course of 2009, the CSIS Task Force on Global Food Security, cochaired by Senator Richard G. Lugar (R-IN), Senator Robert P. Casey Jr. (D-PA), and Representative Betty McCollum (D-MN), undertook a study to better inform the foreign policy community of the challenges and complexities of food security and to offer priority recommendations to the administration as it fleshes out its commitment to global hunger and agricultural development.

Recognizing the pressing challenges ahead that must be addressed as a part of a comprehensive approach to food security, the CSIS Task Force on Global Food Security focused its attention on three main areas: raising productivity among small-scale farmers, investing in agricultural research and development, and addressing the role U.S. trade policy plays in the broader food security agenda. Tackling these challenges will not be easy, but if the administration and the Congress forge a strong commitment and employ greater resources, progress will follow.

We offer the following priority recommendations for forging a new approach to food security:

- **Develop a comprehensive approach to food security.** Achieving food security requires an integrated plan that includes improved emergency assistance, safety nets, better nutrition, enhanced inputs, proven systems of farmer education and innovation, a greater use of research and technology to raise the level of food produced, sold, and consumed, strengthened national and regional markets and regulatory capacity, and a review and revision of U.S. trade policies that hamper global food security.
- **Empower leadership and ensure coordination.** Implementing a major cross-agency effort will be challenging, and strong implementation will be crucial to the initiative's success. There should be an empowered leader, backed by the White House, to drive the food security agenda and the interagency process; this person should ensure that the initiative is strategic and effective and that it is integrated with other streams of U.S. assistance. Implementation of the U.S. food security initiative should be led by the U.S. Agency for International Development (USAID), the agency best prepared to manage development initiatives with its advantage of integrating food security with other USAID-led efforts in areas including health, nutrition, and democracy.
- **Support country-led, demand-driven plans for agriculture.** Promoting food security and agricultural development and building the requisite capacities within countries are not suited to a "one size fits all" approach. There are vast differences among (and often within) developing countries in hunger vulnerability, climate conditions, soil quality, availability of water and agricultural inputs, cultivation practices, market access, infrastructure, regulatory frameworks, and research and policy capacities. U.S. in-country missions, our closest on-the-ground presence, should therefore be given the flexibility and authority to work with partner country govern-

ments and donors to develop country-specific plans and targets. These strategic plans must be created with input from governments, international organizations, research institutions, civil society groups, and farmers themselves; and they should be coordinated with the overall food security strategy to reflect U.S. policy interests and priorities. Once the plans have been developed, U.S. programming and resource allocation should be based on these plans. Coordination with other donors and actors on the ground, including NGOs and private foundations, should be a hallmark of U.S. food security efforts.

- **Elevate agricultural research and development to improve food security.** The United States should reclaim its leadership in agriculture by reinvesting substantially in research and development that targets agricultural productivity and improves the nutritional value of food produced. These investments should be rooted in well-regarded partnerships and institutions such as the Consultative Group on International Agricultural Research (CGIAR) system's regional and national research centers; they should leverage U.S. land-grant university strengths to train scientists and researchers in Africa and other developing countries; they should incorporate the expertise and resources of the private sector; and they should integrate developing world needs into the U.S. research agenda.
- **Leverage the strengths of the private sector.** The private sector is integral to future technological innovation and investment in food and agriculture across the developing world. The leadership of the U.S. food security initiative should seek out new ways to leverage the private sector's special capacities and create a dialogue with the private sector to seek new and innovative approaches to research; technology development and distribution; information and analysis capabilities; innovations that better link farmers to markets, credit, and each other; nutrition; food processing; supply chain management; and financing.
- **Renew the U.S. commitment to trade as a tool for foreign policy and development.** The United States should reengage in the trade discussion and recognize the positive role trade plays in improving stability and economic growth both at home and abroad. The United States should focus efforts on strengthening the regional capacity of communities in food insecure areas of the developing world and building infrastructure to provide better access to markets and reduce post-harvest loss. To demonstrate global leadership, the United States should take the long view and press for progress in the Doha Round, despite recent setbacks and persistent skepticism. Improvements to developing countries' access to the U.S. market and overall economic development should be enhanced by streamlining U.S. trade preference programs.

1

A NEW U.S. COMMITMENT

A half century ago, the world's food systems were failing. The problem was devastating: across the globe, from Latin America to South Asia, there were not enough calories to support fast-growing populations. Agricultural output had already been pushed to its limits. Mass famines—and resulting global instability—seemed inevitable. Yet, thanks to major efforts to improve crop yields and crop varieties and to adapt to new methods of farming, new types of agricultural staples tripled—and in some cases even quadrupled—crop yields. Nobel laureate Norman Borlaug, who passed away in 2009, demonstrated the power of sustained, focused efforts to bring about major technological innovation and dramatically increase food supplies. Partly because of his efforts, about half of the world's population consumes food grains derived from genetic strains he had a hand in developing.¹

The U.S. government, foundations, and the private sector played a crucial part in supporting and funding this decades-long “Green Revolution,” and together with partner countries, they changed the face of global agriculture. Farmers in many parts of the developing world were able to move beyond subsistence. Countries like Mexico, which had once been on the brink of famine, became major food exporters. Hundreds of millions of people were saved from starvation, though millions still suffered from hunger and malnutrition as populations rose and access to food and markets were limited by infrastructure, poor governance, and other obstacles. Africa in particular was unable to utilize the tools of the Green Revolution and still suffers from many of these obstacles.

In the years following the Green Revolution, the United States continued to play a vitally important role in providing emergency food assistance, but its commitment to agricultural development declined. Worldwide, the share of agriculture in Official Development Assistance (ODA) from all donors has fallen from a high of 13 percent in 1985 to under 4 percent between 2002 and 2007.² U.S. ODA to African agriculture fell from its peak of about \$500 million in 1988 to less than \$100 million in 2006.³ USAID once considered agricultural expertise to be one of its core strengths; today, such knowledge is sparse. As recently as 1990, USAID employed 181 agricultural

1. Justin Gillis, “Norman Borlaug, Plant Scientist Who Fought Famine, Dies at 95,” *New York Times*, September 13, 2009, <http://www.nytimes.com/2009/09/14/business/energy-environment/14borlaug.html>.

2. United Nations Conference on Trade and Development (UNCTAD), *World Investment Report: Transnational Corporations, Agricultural Production and Development* (New York and Geneva: UNCTAD, September 17, 2009), p. 102.

3. U.S. House of Representatives, Committee on Foreign Affairs, *International Food Assistance: A U.S. Governmentwide Strategy Could Accelerate Progress toward Global Food Security*, Hearing before the Subcommittee on Africa and Global Health, 111th Cong., 1st sess. (October 29, 2009), p. 10.

specialists; in 2009 it employed just 22.⁴ In the 1970s, the U.S. government sponsored around 20,000 annual scholarships for future leadership in agriculture, engineering, and related fields; today, that number has fallen to fewer than 900.⁵

As global commitment fell in the 1980s and beyond, the seeds of the 2008 crisis were being sown. Growing populations and rising incomes were driving food demand steadily higher. Cereals were being used in ever-greater quantities to feed livestock for the production of meat and dairy products and to fill rising demand for biofuels. Between January 2006 and January 2008, a toxic combination of high oil prices, weak harvests in breadbasket countries, and rising global demand all combined to create a worldwide panic and scramble for resources. Wheat prices more than doubled and rice prices more than tripled between January and May 2008.⁶ Twenty-eight countries imposed export bans on their crops, which significantly limited the supply on the global market and contributed to driving up the price of basic commodities.⁷ Political unrest broke out across the globe—including Haiti, Egypt, Bangladesh, Mexico, Uzbekistan, and South Africa—concentrated among developing countries with large food insecure populations of urban poor.

Although the onset of the global economic crisis in late 2008 temporarily halted the runaway increases in food and oil prices, many of the underlying supply and demand forces that contributed to the crisis continue, and with prices still much higher than they had been in the decades preceding the crisis, the risk of future price spikes and vulnerabilities is high. In sub-Saharan Africa, for example, 80 to 90 percent of all cereal prices remain 25 percent higher than they were before the crisis began. In many Asian, Latin American, and Caribbean countries, prices are still more than 25 percent higher than in the pre-crisis period.⁸ Despite a leveling-off of nominal prices in 2009, increasing inflation has continued to erode the purchasing power of many of the people in the developing world, further deteriorating their food security.

At the same time, the economic effects of the global recession have further compounded the hardship. Tightened credit led to a surge in unemployment and a dramatic drop in remittances. The world's poorest countries have been hit hardest, but they are not the only ones at risk. Shortly after the economic crisis began, the World Food Program began to receive requests for assistance from countries—such as Kyrgyzstan—that had previously been wholly food sufficient.

It has become clear that on the path ending global hunger, the Green Revolution was an important first step, not the final one. Today, the simple fact remains: we live in a world where, every five seconds, a child starves to death.

4. U.S. Senate, Committee on Foreign Relations, Testimony of Robert Paarlberg, "Evaluating, and Improving, America's Response to Global Hunger," in *Alleviating Global Hunger: Challenges and Opportunities for U.S. Leadership*, Hearing before the Committee on Foreign Relations, 111th Cong., 1st sess. (March 24, 2009), p. 25.

5. Jennifer Cooke and Richard Downie, *African Conflicts and U.S. Diplomacy: Roles and Choices*, CSIS Africa Program and the American Academy of Diplomacy (Washington, D.C.: Center for Strategic and International Studies, January 2010), p. 12.

6. World Bank, "Double Jeopardy: Responding to High Food and Fuel Prices," paper presented at the G8 Hokkaido-Toyako Summit, July 2, 2008, p. 1, <http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:21827681~pagePK:64257043~piPK:437376~theSitePK:4607,00.html>.

7. Robert Zoellick, "A 10-Point Plan for the Food Crisis," *Financial Times*, May 29, 2008, http://us.ft.com/ftgateway/superpage.ft?news_id=fto052920081408032208.

8. Food and Agriculture Organization of the United Nations Media Centre, "Food Prices in Many Countries Remain Very High," July 16, 2009, <http://www.fao.org/news/story/en/item/28797/icode/>.

Demographic trends will increase the strain on global agriculture. In 40 years, the world's population will grow more than 25 percent to exceed 9.1 billion.⁹ The majority of that growth will be concentrated in the developing world, and most of that growth will occur in cities.

As a result, by 2050, the world will need to produce 70 percent more food with nearly 20 percent less water and the same amount of arable land. Annual cereal production will need to rise from 2.1 billion tons today to 5.1 billion tons in 2050. A larger and more urban population will be accompanied by rising incomes and changing food preferences. To meet demand in 2050, meat production will need to increase to 470 million tons—200 million more tons than today.¹⁰

At the same time, there are growing concerns that climate change will threaten agricultural production through an increase in severe weather events, such as droughts and floods, uneven rainfall patterns, higher temperatures, and climate-related disasters. Developing countries and those with the highest levels of chronic hunger will almost certainly be hardest hit. Poor land management, land degradation, soil erosion, and widespread desertification will only exacerbate these effects.

None of these problems can be solved overnight. Threats to crops—pests, disease, and drought—require years to address. Infrastructure, which is expensive and complicated, can be quickly destroyed by conflict and instability or by natural disasters. U.S., European, and other countries' trade policies that block market access undermine progress in improved productivity.

But the only way to feed a growing population and improve food security—especially for the poorest people—is through a major, enduring, multilateral commitment to supporting hungry people, their communities, and countries in securing and developing the tools and skills they need to mitigate risk and feed themselves. The U.S. government, its multilateral partners, and the private sector should reinvest in agricultural development, strengthen agricultural science and research, and enable poor farmers to reach markets and consumers as part of a broader commitment to a comprehensive approach to food security. And the United States can and should take a leading role in making investments, building partnerships, and ensuring a long-term commitment. Supporting efforts to improve food security in developing countries promotes stability and economic growth—both vital U.S. interests. And careful measurement can show that U.S. investments are generating concrete results.

9. Obtained from the United Nations Population Division, *World Population Prospects: The 2008 Revision Population Database*, found at <http://esa.un.org/unpp/>.

10. Food and Agriculture Organization of the United Nations, "How to Feed the World in 2050," paper presented at the High-Level Expert Forum on How to Feed the World in 2050, Rome, October 12–13, 2009, p. 8.

2

AMERICA'S INTEREST, AMERICA'S ROLE

The United States has important moral, humanitarian, and strategic stakes in solving the hunger and malnutrition challenge.

The United States leads the world in responding to emergencies and to food assistance needs. In 2009, the United States provided \$1.76 billion to the World Food Program—followed by the European Commission and European Union (EU) member states, which provided a total of \$1.18 billion.¹¹ And Americans immediately responded to the January 2010 earthquake in Haiti by contributing millions of dollars to emergency relief efforts—much of it in \$10 increments through cell phone-based donations. But the United States also has a compelling security stake in food security—for nations that lack sufficient food for their people are prime candidates for instability.

Haiti's prime minister was ousted in April 2008 as the country erupted in riots when food became unavailable. Madagascar's president was forced from office after he agreed to a massive land sale of 3.2 million acres to Daewoo Logistics, which was subsequently rejected by the new government. Some of today's least stable countries are the most vulnerable to hunger and malnutrition and the most reliant on agriculture for their economies. In Afghanistan, until a viable agricultural sector develops, poppy production and instability will continue to thrive; and U.S. security—and the lives of U.S. troops and citizens—will continue to be threatened. Social unrest and violence sparked by hunger can spill over into neighboring countries, unraveling aid and development efforts that have taken years to build.

To reduce systemic poverty and achieve greater food security, the world's poorest countries need comprehensive food security solutions that embrace agricultural production, nutrition, research and development, safety nets, and sound trade policies. Most of the least-developed countries are largely agricultural and will not develop economically until their agricultural systems and markets improve. In 2005, nearly half of the economically active population in developing countries—2.5 billion people—relied on agriculture for their livelihood.¹² To build an effective, integrated approach to U.S. development, agriculture must be a major pillar in U.S. foreign assistance efforts.

Put simply, bolstering food security will generate significant benefits to humankind—while reducing risks to a world in which America's interests can thrive. In many countries where food security and agricultural development have declined, U.S. national interests are threatened.

The U.S. government has taken a number of important steps in this direction already. In June 2008, the U.S. Congress provided \$770 million to USAID as part of the President's Food Security

11. Calculated from World Food Program 2009 contributions data available at <http://www.wfp.org/about/donors/wfp-donors/2009>.

12. World Bank, *World Development Report 2008: Agriculture for Development* (Washington, D.C.: World Bank, 2008).

Response Initiative (PFSRI) for international disaster and development assistance to address the needs of food insecure populations worldwide, in addition to existing funds allocated for food assistance; and Senator Lugar, Senator Casey, and Representative McCollum followed with legislative proposals to significantly enhance U.S. food security efforts.¹³

President Obama's commitment of \$3.5 billion over three years, made in July 2009 at the G-8 Summit in L'Aquila, Italy, signaled a renewed willingness to take on a global leadership role in this area and generated additional commitments totaling \$22 billion from G-8 and G-20 partners.

In September 2009, the State Department released a consultation document outlining the broad principles and content of a new Global Hunger and Food Security Initiative. This multi-agency, country-driven initiative has won broad support. Of particular note are the initiative's focus on a demand-driven model, the special attention devoted to safety nets, women farmers, the role of nutrition, climate, and environment, the importance of trade, and the use of science and technology to increase productivity.

But as promising as these endeavors are, their success is far from guaranteed.

First, the initiatives are intended to rebuild core competencies that the United States possessed three decades ago, which means they are costly and will require time and committed leadership to rebuild. With any new, multiagency effort, there is a risk that organizational and structural issues will overwhelm the administration's capacity to implement the initiative.

Second, it remains unclear which agency or entity will lead the Global Hunger and Food Security Initiative, yet the quality of that leadership, including budgetary control and the ability to drive interagency coordination, will be critical to the initiative's success.

And third, addressing global food security will require a long-term, bipartisan commitment from policymakers in Congress and the administration, yet the issue currently needs a broader base of congressional and public champions. At a time when the United States confronts high unemployment and economic insecurity at home, it may prove doubly challenging to build support for a major, internationally focused initiative.

The challenges are real. Yet, so is America's extraordinary potential to improve the well-being and livelihoods of people throughout the world.

As the Obama administration develops its plans for a new, integrated U.S. commitment to global food security, the CSIS Task Force suggests the following approach:

- **Develop a comprehensive, balanced approach to food security.** While emergency assistance is critically important and must remain available to people in need, it should be enhanced with long-term investments and used to build a bridge to greater food security with safety nets, better nutrition, improved inputs, proven systems of farmer education and innovation, greater use of research and technology to raise the level of food produced, sold, and consumed, and a review and revision of U.S. trade policies that hamper global food security.
- **Empower leadership and ensure coordination.** Implementation of the U.S. food security initiative should be led by USAID. There should be an empowered leader to drive the interagency process and ensure that the initiative is strategic and effective and that it is integrated with

13. See http://www.usaid.gov/our_work/humanitarian_assistance/foodcrisis/documents/052209_food-crisis_sr1.pdf.

other streams of U.S. assistance and with multilateral efforts. But the White House, Congress, and the Department of State must provide the agency with adequate flexibility, resources, and personnel to carry out this role.

- **Carefully measure progress and build public support.** Given the long lead-time required to show results for agriculture and the need for transparency and good governance, it will be essential to develop new champions and a sustained commitment from the Congress and the U.S. public and to invest in nutrition and safety-net programs that can deliver quick wins while driving longer-term gains in agricultural productivity. Especially at a time of budgetary constraint, this will depend on effective governance, transparency, efficiency, and robust benchmarks for progress that can demonstrate a record of concrete success. The administration should work to build new champions within the Congress by creating a cadre of congressional supporters that have not traditionally been engaged in global development. It should seek the passage of authorizing legislation to ensure that robust congressional support in the early years is sustained over the long term. Congressional delegations should visit food insecure countries, an approach that has been highly successful in developing support for global health initiatives over the past decade. Positive results should be communicated widely to maintain support within the Congress and the public; problems or negative outcomes should be addressed immediately with plans to revise approaches and methods.
- **Plan for Monitoring and Evaluation of Projects to Sustain Support.** At least 5 percent of U.S. investments in food security should be used to monitor projects and evaluate success. Technical and evaluative assistance should be provided as countries develop their plans, and the United States should include some standard requirements across country plans—for example, monitoring and evaluation mechanisms, transparency measures, gender equity targets, inclusive consultative processes (ensuring adequate input from farmers and rural communities), and investments in indigenous research.

3

THREE AREAS FOR ACTION

As part of a comprehensive food security strategy, the task force focused on three specific areas that would benefit from increased attention and a more focused policy approach. We recommend ways, detailed below, to boost productivity, invest in research and development, and improve access to food through improved trade policy.

Boost Productivity

Agricultural productivity in developing countries, especially Africa, is low, and efforts to improve it are limited by many factors, including inadequate inputs such as fertilizer and seeds; lack of knowledge of modern farming techniques; a lack of safety nets that limits farmers' willingness to take risks and make investments; and a lack of infrastructure. Changing weather conditions and climate pressures plague farmers, especially in dry and fragile environments, where a drop in rainfall averages can be devastating. In a resource-constrained world, where major components of the Green Revolution—water, fertilizer, and pesticides—will be less plentiful, less predictable, and more expensive, it is imperative to focus on ways to grow productivity that recognize these constraints and innovate around them. Climate conditions, soil quality, availability of water and agricultural inputs, cultivation practices, market access, farmer attitudes, infrastructure, regulatory frameworks, and research and policy capacities differ, even among neighboring states. No single approach or focus will work in every case. U.S. efforts to improve agricultural productivity will need to be driven by each country's needs and requirements.

Efforts to increase productivity should give priority to the following:

Low Yields. The Green Revolution changed the world's views about agriculture and its ability to meet growing needs for food. Through intense and focused agricultural research, combined with investments in irrigation systems and market infrastructure and supportive agricultural policies, crop yields and productivity increased dramatically in many parts of the world.

But productivity failed to rise in some places and has stagnated in others. Although in the United States, crop yields more than doubled, in some countries, such as Pakistan, that benefited from the liberal use of water, fertilizer, and improved seeds, yields have stagnated from water shortages and soil degradation. Other regions of the world, including most of Sub-Saharan Africa, have yet to benefit from a Green Revolution. In Asia, at least 80 percent of the planted crops are new varieties of rice, maize, sorghum, and potatoes. However, Sub-Saharan African grain yields per acre are roughly 40 percent of those achieved in other developing countries, and only 20 to 40 percent of Sub-Saharan Africa's planted crop area uses new seed varieties.¹⁴

14. Thomas Melito et al., *Insufficient Efforts by Host Governments and Donors Threaten Progress to Halve Hunger in Sub-Saharan Africa by 2015*, Report to Congressional Requesters, U.S. Government Accountability Office, May 2008, p. 21.

Post-Harvest Loss. An estimated one third of crops and produce in parts of the developing world are lost after they leave the field—through spoilage, rodents, pests and other factors—resulting in significant food waste and lower incomes for farmers. Cutting losses even by one third automatically increases the amount of food available in the system and raises incomes for farm families.

Natural Resource Management. In many food insecure areas, especially in Sub-Saharan Africa, cropland is dry and overused and has been stripped of important nutrients. Farmers understand that crop production depends on quality soil, and efforts to improve soil and soil and natural resource management practices are essential to producing more, better quality food. Yet growing pressures from erratic weather, droughts, and floods make it more important than ever to develop methods—and train farmers in old but effective methods—to preserve and enhance the natural resource base around each farm.

Biotechnology. To date, only two countries in Sub-Saharan Africa—South Africa and Burkina Faso—produce commercialized genetically modified crops, and only South Africa produces genetically modified food crops. A number of countries are considering biotechnology, but most lack regulatory structures and clear national policies to fully assess and make determinations about the risks and benefits of such technology, and concerns that exports to the European Union may be rejected due to negative consumer attitudes toward these crops further hampers the development of strong, science-based regulatory structures.

USAID has a strong record of working with developing countries to improve and enhance regulatory structures and the use of biotechnology. Transparency, science-based, predictable regulation will encourage investments from the private sector, and better regulation of the seed industry will improve new and old technologies that can have a positive impact on production levels.

Box 1. Rural Women Farmers: The Foundation of Agricultural Production

In many countries around the world, women are the foundation of agricultural production and are responsible ensuring that their families have adequate food and proper nutrition. Poor women farmers are responsible for a disproportionate burden of farm work. In Sub-Saharan Africa, 80 percent of farmers are women, and in Asia more than 60 percent of farmers are women.¹ Additionally, women supply 52 percent of labor in land preparation, 80 percent in sowing, 88 percent in weeding, and 80 percent in harvesting in the Sub-Saharan.²

Despite their roles in agriculture relative to men, women face crippling disparities in accessing resources, such as land ownership and property rights, and important inputs and services, such as information, research, extension, and credit. Gender disparities not only unfairly burden women; they undermine a country's broader food security and economic development efforts.

Studies widely indicate that when women receive increased resources and earn more income, there are strong multiplier effects in the family's education, health, nutrition, and overall welfare. For increased investment in agricultural productivity to translate into increases in economic growth, poverty reduction, and enhanced food security, gender disparities must be effectively addressed and reduced. Policies and programs must recognize the integral role that women play and must be designed and implemented to most effectively address women's needs and provide them access to the inputs and services they require.

¹ Catherine Bertini and Dan Glickman, coauthors, *Renewing American Leadership in the Fight against Global Hunger and Poverty* (Chicago: Chicago Council on Global Affairs, 2009).

² E. Somado, R. Guei, and S. Keya, eds., *NERICA®: The New Rice for Africa—A Compendium* (Cotonou, Benin; Rome; and Tokyo: Africa Rice Center [WARDA]; Food and Agriculture Organization of the United Nations; and Sasakawa Africa Association, 2008).

Infrastructure. Productivity is hampered by lack of storage, poor packing techniques, inadequate roads, and delays in reaching markets or consumers. Several studies have shown that returns on investment in infrastructure outpace returns in most other areas. China’s infrastructure projects in Africa have been welcomed by African governments and citizens. Virtually every Millennium Challenge Account compact in Africa has an infrastructure component, a testament to the importance that African states attached to such investments as a driver of economic growth.

Farmer Education and Outreach—Especially for Women. New innovations and technologies to improve productivity are only effective when they reach farmers through education and outreach to farmers. Since the majority of developing country farmers are women, approaches that consider their unique needs and situations are especially important (see box 1).

Financing and Access to Credit. Because many smallholder farmers lack access to credit, they are unable to purchase seeds that can lead to higher yields and better crops, or to weather poor harvests. Lack of access to market information means that farmers are unable to capitalize on price fluctuations. Lack of storage also means that many farmers must sell their products at the same time—immediately post-harvest. This creates a temporary glut in supply that drives prices down and leaves farmers unable to reserve any part of their harvest to sell when prices rebound.

Raising agricultural productivity on a significant scale will be challenging, but in many cases, particularly in Africa, even small improvements in technology, infrastructure, and cultivation practices can have dramatic impact for the small-scale farmer. We recommend the following approaches to improving productivity in developing countries:

- **Support country-driven plans for agriculture.** U.S. plans and resources to partner countries should flow from strategic plans that are developed in each participating country, with input from farmer representatives, the private sector, and other key stakeholders.
- **Focus on the farmer, especially the woman farmer.** Prioritize rural communication and outreach so that programs for education, communication, training, financing, and inputs benefit the end-user—the smallholder farmer. A comprehensive approach to supporting poor women in all aspects of their lives is central to long-term food security. All U.S. food security efforts should include a holistic approach that focuses on women farmers by designing programs that provide them with practices and tools that will be the most beneficial.
- **Make “technology transfer” and innovation collaborative and farmer-centered.** Technologies and innovations delivered in a “top-down” fashion are less likely to succeed than ones developed in concert with the farmers who put them into practice. The spectrum of available technologies is wide, including implements, fertilizers, communication and financing systems, hybrid seeds, and genetic modification. Farmer demands and farmer-led innovations should be given the highest priority and the strongest support.
- **Promote natural resource stewardship.** All country-created plans should include a resource management component to ensure that efforts to increase productivity have positive long-term impacts by carefully using water, improving soil, and promoting ecologically sound farming practices.
- **Support regulatory capacity for new technologies.** USAID, in cooperation with biotechnology advisers in the departments of State and Agriculture, should provide technical assistance for the development of science- and evidence-based regulatory systems and policy approaches to those countries that choose to consider biotechnology. The United States should provide tech-

nical assistance for science-based policies, communication strategies, and regulatory systems that can assess, manage, and facilitate introduction and adaptation.

- **Join with partners to build infrastructure.** The United States should contribute to a fund for agricultural development at the World Bank and work with other international donors to support productivity-enhancing projects such as infrastructure corridors, regional capacities, and innovative financing mechanisms. As China continues to invest in developing countries, the United States should seek to engage in a dialogue with China on infrastructure and development practices.
- **Leverage the private sector.** The private sector has unique assets relevant to farming and agriculture, especially with respect to investment in technological innovation. Food manufacturers, grocers, and distributors have expertise in supply chain management, distribution systems, packaging, and production that could be shared with both the U.S. government and with farmers in local areas. Technologies can enhance capabilities to track and manage crop production trends and provide greater warning of potential supply shortages. USAID should develop a forum to convene a public-private partners group to engage leaders from private foundations and from companies in the inputs, food manufacturing, grocery, and technology industries to develop recommendations for a flexible and robust private sector engagement in agricultural development.
- **Assist partner-country institutions in creating an environment that will bolster agricultural productivity.** The United States should encourage public investments in partner countries that will improve market access and private investment: infrastructure, communication technologies, financial services, policies, and regulatory systems. The Global Hunger and Food Security Initiative should consider a “compact model” that holds government partners accountable for establishing transparent, equitable regulations and for making progress toward raising public expenditure in agriculture to 10 percent of GDP, a commitment made in 2003 by 38 countries in the Comprehensive Africa Agriculture Development Programme (CAADP).¹⁵ Currently, just eight¹⁶ countries have met the goal as of 2007;¹⁷ this initiative could provide incentives to countries to make further progress toward these goals.

Invest in Agricultural Research and Development

Productivity gains over the past 40 years were significantly increased by improved crop varieties that raise yields, resist pests and diseases, and shield plants from weeds—all products of agricultural research. Continued and increased investments will be required to meet the many challenges the world faces in the coming decades, from rising populations and growing malnutrition to increased demand for meat and dairy products. However, U.S. public investment in agricultural research and development has lagged behind investment in research for medicine and other sciences, and a lack of competitive grants for agriculture has hampered innovation and creativity in

15. See <http://www.nepad-caadp.net/about-caadp.php>.

16. Burkina Faso, Ethiopia, Ghana, Guinea, Malawi, Mali, Niger, Senegal. Of these countries, Malawi and Ethiopia are under consideration for GHFSI assistance in fiscal year 2011 as Phase I countries, while Ghana, Mali, and Senegal are under consideration as Phase II countries. Rwanda and Tanzania are also under consideration as Phase II countries although they have not yet met the 10 percent CAADP pledge.

17. U.S. House Committee on Appropriations and U.S. Senate Committee on Foreign Relations, *Global Food Security: U.S. Agencies Progressing on Governmentwide Strategy, but Approach Faces Several Vulnerabilities*, pp. 35–37.

the public realm. Agriculture research as a share of U.S. federal government funds directed to the life sciences declined significantly—at an average of 4 percent per year—from 10.7 percent in 1980 to just 3.9 percent in 2005.¹⁸ The National Science Foundation awards competitive research grants almost exclusively, and the National Institutes of Health awards about 75 percent of its grants through a peer-reviewed, competitive process. In contrast, only 9 percent of research grants from the U.S. Department of Agriculture (USDA) are awarded competitively.¹⁹ Over the past two decades, the force of the public agricultural research agenda has diminished as the private sector has invested heavily in research, due in part to developments in patent laws and DNA technology that enable companies to achieve greater, and more lucrative, results from proprietary research focused on major crops used largely in developed countries.

While private entities such as corporations and foundations are investing in agriculture, the United States requires a more structured, enhanced public component, paired with a commitment to research for developing country agriculture. Without such a commitment, we will be unable to meet the many challenges ahead, including feeding a growing population with more and better foods, combating pests and diseases that destroy crops, and dealing with changing climate conditions such as increased drought and heat (see box 2 for a discussion on wheat rust).

Research conducted in the high-quality facilities of the United States can develop new knowledge and crop varieties that not only increase U.S. agricultural production, but also have significant spillover effects to other countries. To improve food security, the public sector must take a leadership role in agricultural research to address the problems of staple crops in the developing world. This will require encouraging and advancing the reforms that are already under way in the United States and international agricultural research systems; engaging the private sector in new and innovative ways; and setting a strategic agenda for research as it relates to food security.

U.S. leadership can and should be a primary driver of a global agricultural R&D agenda, especially in an era where weather, water, and soil conditions are growing less consistent. The United States has incredible strength in its public research system, through the USDA research system, in the land-grant university system, and in its outreach to researchers in other countries.

Two leading public institutions—the U.S. Department of Agriculture, or USDA, and the Consultative Group on International Agricultural Research (CGIAR)—are in the midst of significant and promising reforms. In the 2008 Farm Bill, the USDA's research efforts were reorganized under the umbrella of the Research, Education, and Extension office (REEO). This reorganization created two new institutions: the National Institute for Food and Agriculture (NIFA) to assume responsibilities for extramural research, education, and extension activities; and the Agriculture and Food Research Initiative (AFRI) to administer a new competitive grants program for basic and applied research. AFRI was authorized for annual appropriations of up to \$700 million; the 2010 budget included appropriations of \$262 million.²⁰

18. J.M. Alston, M.A. Andersen, J.S. James, P.G. Pardey, *Persistence Pays: U.S. Agricultural Productivity Growth and the Benefits from Public R&D Spending*, Natural Resource Management and Policy Series 34 (New York: Springer, 2010), p. 142.

19. *Ibid.*, p. 201.

20. Melissa Ho, *Agricultural Research, Education, and Extension: Issues and Background* (Washington, D.C.: Congressional Research Service, September 17, 2009), p. 11.

Box 2. Wheat Rust

Wheat rust is an informative case study for the importance of effective agricultural research and development. In 1999 in Uganda a new wheat stem rust variety—dubbed Ug99—appeared. Once Ug99 infects a crop, it results in “ghost kernels” that lack nutritional value.

Testing reveals that a sample of susceptible wheat exposed to wheat rust shows a 100 percent infection rate after 50 days. Ug99 is a particularly volatile variety with the ability to evolve and overcome genes that have protected the U.S. wheat crop for decades.

Only a handful of rust pathologists in the world can reliably identify Ug99. Specialists at the Agricultural Research Service (ARS) lab—the main research wing of the USDA—fully expect Ug99 to enter the United States as all other past forms of wheat rust have done so.

More than 80 percent of U.S. wheat is vulnerable to Ug99, 95 percent of new seed varieties are at risk, and 100 percent of barley varieties are at risk. The risk of spreading the fungus is so great that scientists are only permitted to culture the live pathogens during the three coldest months of the year; cold climates negate the spread of wheat rust, and only labs in Minnesota and Canada accept live samples. The Ug99 DNA sequence differs greatly from other forms of rust, and scientists lack an accurate marker test.

The spores can travel on humans and through wind, but many variables affect the spread rate, including climate conditions. Mapping wind flows remains the most reliable way to track and predict the spread of the spores. Atmospheric

monitoring is possible, but some experts question the accuracy of this technique.

Wheat stem rust spores have recently migrated north from Uganda into the Horn of Africa and the Middle East; this puts Iran, Turkey, India, Pakistan, and Afghanistan in danger of an epidemic, though current drought conditions have decreased the likelihood of widespread distribution. This area represents 19 percent of global wheat production, and local farmers generally plant 30-year-old seed varieties, ensuring the area’s inability to manage a major epidemic.

With increased support for maintenance breeding, sequencing of the next genome, and translational research, the scientific community can better prevent destabilizing epidemics. The sobering grain shortages of 2008 exposed the serious need for improvements and investment in infrastructure to ensure safe supply and good production. Without careful research, detection, and prevention, these pathogens can overcome all efforts to protect a steady food supply.

The U.S. government is currently working, in conjunction with the Bill and Melinda Gates Foundation, CGIAR facilities, and national research centers to develop new, rust-resistant varieties of wheat. But there are only a handful of specialists worldwide who focus on the issue, and ramping up the development and production of new varieties for use in each risk-prone area takes years. Strategic focus on agriculture research and development can help to address this issue now and build our capacity to tackle this challenge in the future.

A large component of USDA’s agricultural research and outreach takes place in the U.S. land-grant universities.²¹ The land-grant system, founded in the nineteenth century, was designed to improve agricultural research and education for the large, growing farm population of the United

21. “The term ‘land-grant’ refers to the law first establishing an institution of public higher education in each state to teach the ‘agricultural and mechanical arts.’ The Morrill Act of 1862 gave a grant of federal land to each state and directed the state to sell the land and use the proceeds to establish a college of agriculture. In many states, the original 1862 school became the foundation for the state university, growing to include a wide range of academic disciplines, including agriculture. These large institutions are sometimes referred to as ‘land-grant universities,’ but USDA funding and programs pertain only to the colleges of agriculture within them.” *Ibid.*, p. 3.

States. The system has had a major impact on research and education in this country and internationally. Much of the basic agricultural research we rely on today took place at land-grant universities; many of today's leading researchers in developing countries graduated from U.S. universities. Until the 1980s, it was common for U.S. land-grant universities to host researchers from countries throughout the world, supported with funds from USAID and the State Department. Opportunities for American students to study abroad and for international students to study at U.S. universities had a lasting effect on the institutions in which these researchers worked. Such exchanges created a long-term understanding of the challenges to developing country agriculture and made important contributions to the quality of work in national and regional research centers throughout the world. To improve food security through research and development, it will be important to reinvigorate the commitment to building a long-term capacity for research in developing countries. However, funding for research fellowships and support for the international exchanges that have contributed so vitally to developing country agriculture have declined precipitously.

Beyond the United States, CGIAR, a consortium of 15 international research centers, is a leader in agricultural research to benefit developing countries. With a mandate to “reduce poverty and hunger . . . through high-quality international agricultural research, partnerships and leadership,” CGIAR centers have been responsible for major research successes on rice, wheat, and other crops. Over the past two decades, however, donor-requested projects and pressure to rapidly expand the number of centers have pulled the CGIAR away from its core agenda. At the same time, U.S. investment in the CGIAR has fallen precipitously—unrestricted research dollars (dollars that have the flexibility to be deployed for the most pressing research needs) fell from a high of \$89 million annually in the late 1980s to \$18 million annually in 2008 (inflation-adjusted 2008 U.S. dollars).²² To redress the system's problems, from mission to funding, the CGIAR has embarked on a reform effort to improve its research and outreach toward the goal of reducing hunger and poverty. While streamlined management and systems will be welcome, reform must be matched by an increase in funds to support core crop research and to engage in innovative partnerships with national agricultural research centers and with the private sector. For example, the CGIAR system maintains extensive gene banks. Private sector investments in research on those genes could yield valuable public information and data.

National and regional research centers are at the heart of the discovery, application, and capacity that enables countries to meet local challenges to agriculture. These centers have the ability to develop new crop varieties and test them for local weather and soil conditions. They also, importantly, are near the end user, so that test plots are visible and researchers are accessible to the farmers who will use the resulting products. There is little use in developing, for example, a red bean to work in a culture where white beans are the norm—the seed is less likely to be purchased and used. However, if farmers see test plots and can witness the way research products develop in their fields, they are more likely to adopt the new technologies and put them to use effectively.

Over recent decades, the private sector has assumed a pivotal role in agricultural research. Private sector funding directed toward food and agriculture research climbed from roughly \$2 billion per year in 1970 to approximately \$4.6 billion²³ per year by 2006.²⁴ In the past 25 years, the private sector agricultural research and development spending has been higher than public spending in most years. However, it is important to note that, similar to public spending, the rate of growth

22. Data provided in e-mail exchange with the USAID Bureau of Economic Growth and Trade (EGAT).

23. Amounts are in 2000 U.S. dollars.

24. Alston et al., *Persistence Pays*, figure 6-6, pp. 146–150.

of private sector investment in agricultural research and development has slowed since the 1980s. Major breakthroughs have become possible as companies seek new technologies, and spillover effects have made an impact in developing countries, especially as companies share research and developments.

However, without expanded and enhanced private-public partnerships, poor-country crops, which may not have a potentially large market, may not receive enough attention. Partnerships could have a powerful impact on agricultural productivity, but because of concerns about intellectual property and liability issues, the private research that may be beneficial to developing country agriculture is not always adequately utilized or even undertaken in the first place.

- **Set priorities for the food security–related research agenda.** The president should charge the secretaries of agriculture and state and the leadership of the Global Hunger and Food Security Initiative with producing a joint strategic document to set priorities for the food security–related research agenda; the resources and commitments should flow to land-grant universities, USDA, CGIAR, and national and regional research centers based on these strategic priorities.
- **The Office of Science and Technology Policy (OSTP) should convene a semiannual meeting to understand research needs in developing countries.** The meetings should include the OSTP, USAID, and the USDA, and should have input from key research partners in international research centers and national and research centers in the developing world. Prioritize research awards that incorporate the extension of findings to developing countries.
- **Make agricultural research more competitive.** Congress should increase appropriated funds for competitive grants. Grants through AFRI should be increased from \$262 million to \$500 million, well within the \$700 million level that was authorized in the 2008 Farm Bill. New food security–related research grants should be awarded on a competitive basis.
- **Root international research in long-standing partnerships and institutions.** Congress should, over the next five years, double unrestricted U.S. funding to the CGIAR system, from the 2009 level of \$29 million to \$58 million annually, to support high-quality research, to maintain gene banks, and to manage facilities. New dollars should be targeted toward work on crops that are important to diets in the developing world, even if they have little commercial demand in the developed world.
- **Increase the capacity of national agricultural research systems (NARS) in food insecure countries and facilitate partnerships with research institutions in developed countries.**
- **Revitalize educational opportunities and exchanges for scientists in developing countries.** USAID, the State Department, and the USDA through its Borlaug and Cochran fellowship programs should increase the number of scholarships for researchers from developing countries to study at U.S. institutions and should provide opportunities for U.S. researchers to work internationally.
- **Actively engage the private sector in research to improve food security in developing countries.** Pursue creative, public-private cofinancing of research initiatives, especially for targeted issues such as wheat stem rust. Develop frameworks for protecting intellectual property for companies engaged in cooperative work on food security–related research and financing mechanisms for making that research available to developing countries; and while all measures must be taken to ensure the safe use of new technologies, liability protection should be made available for those companies donating research and technology.

Integrate Trade into Food Security

To achieve the goals of the Global Hunger and Food Security Initiative, trade needs to be an integral part of the process. However, to make a lasting impact on food security, the United States must reconcile its trade and development policies so that they reinforce, not undermine, each other. The U.S. Department of State's September 2009 strategy for food security recognized that trade-related issues play a role in food security, but the details of this role remain largely undefined. U.S. trade policy is a vital method for interacting with key regions such as Asia and Europe, and it provides powerful opportunities for engagement with developing countries. The United States stands to gain from increased trade and economic growth in developing countries, in terms of greater stability and security and stronger economic ties. The Obama administration's leadership within the G-8 and G-20 on the global food security agenda provides it with an opening to highlight the importance of trade reform in developed and developing countries alike.

Improved markets and trade flows play an essential role in food security and agricultural development. At the most basic level, trade enables food to flow from areas of surplus to areas of need and helps boost agricultural production by creating and opening new markets for developing country farmers. Trade serves to enhance food security because farmers must have access to markets, both near to their fields and in other countries, in order to take the steps toward increasing productivity and income. Trade links directly to agricultural research and development as well as productivity. Improved crop types and methods will yield higher productivity; higher productivity can lead to higher incomes, but can be hampered if post-harvest losses remain high and access to markets remains low. Without increased trade development and capacity, it is difficult for the most fundamental progress to take place. Farmers on small plots of land have little incentive to take the risk of investing in improved varieties of seeds, or in fertilizer, if there is little or no capacity to sell the increased production. Tariff and subsidy barriers, both in OECD countries and between least-developed countries, limit agriculture and economic growth in poor economies and, while agricultural productivity and scientific research are essential for improving livelihoods, without well-functioning markets, increased productivity will not result in greater food security.

The issues surrounding trade are complex, but a norms-based trade system is crucial for global development and economic growth. The Doha Development Round of trade talks has been stalled for two years, and even if it moves forward in the next year, questions have been raised about whether a consensus-based model that takes more than a decade to negotiate provides sufficient heft or agility in this fast-moving economic environment. U.S. leadership is key to moving forward with a global trade agenda, but U.S. leadership is constrained by the difficult domestic issues that affect both Congress and the administration.

The global food crisis of 2008 was exacerbated by export bans, which limited supply, drove prices higher, and proved devastating to countries in dire need of food stocks. Ramped-up production of biofuels from agricultural feedstocks also contributed to price peaks and brought greater scrutiny of U.S. and EU biofuel mandates and subsidies. CSIS's 2008 task force report recommended that the United States revisit its biofuels policies.²⁵ Although the visibility of the issue has receded, it merits continued attention. Additionally, with rising food prices and decreased supply, the world saw a surge in attempts by countries and private investors to acquire farmland abroad (see box 3).

25. See J. Stephen Morrison and Johanna Nesseth Tuttle, *A Call for a Strategic U.S. Approach to the Global Food Crisis* (Washington, D.C.: Center for Strategic and International Studies, July 28, 2008).

There are four key areas for attention.

Building Infrastructure and Trade Capacity in Developing Countries to Improve Markets and Enhance Economic Opportunities. Although less-distorting trade policies in high-income countries will be important in expanding trade and agricultural production, so too will be the boosting of trade capacity within partner countries. Both “soft” and “hard” infrastructure development are necessary to address supply-side constraints in developing countries. Improvements to physical infrastructure including roads, ports, railroads, electricity, telecommunications, water and sanitation, and storage facilities can help reduce post-harvest loss and improve efficiency in getting goods to markets. Developing countries face additional constraints from poor “soft infrastructure” and need improvements in market information systems, food safety and quality control, land ownership, intellectual property rights, and burdensome customs regulations. The United States and multilateral partners can work with developing countries to overcome these constraints and take greater advantage of existing trade preference programs by investing in infrastructure and providing technical assistance, negotiating capacity, and creating an enabling environment for agricultural production and investment, which will in turn contribute to food security.

The Millennium Challenge Corporation (MCC) provides robust support to building trade capacity, and most of the compact countries have included a major infrastructure component in their proposed strategies. But MCC compacts are limited to those countries that meet relatively stringent requirements in economic and political governance and delivery of public services. Another U.S. program, the African Global Competitiveness Initiative—a \$200 million, five-year USAID initiative—works to promote African export competitiveness and to expand trade within Africa and with the United States and other international partners. For programs such as these and other U.S. and international capacity-building efforts to be most effective, it is important to increase policy coherence across the various programs.

The U.S. government should collaborate in these capacity-building efforts with multilateral donors and the private sector. Institutions such as the World Bank, International Monetary Fund, and Food and Agriculture Organization (FAO) play an important role in building both trade capacity and countries’ ability to negotiate more effectively in trade multilateral trade talks. The private sector, particularly companies with wide distribution systems, can also provide important capacity-building opportunities by engaging in contracts with farmers and farm organizations for products and goods. Companies can assist in improving efficiency, developing supply chains, improving the quality of produce, and providing markets for increased productivity.

U.S. Trade Policy. Important steps that the United States can take to encourage trade with, and within, the developing world, include making changes to its preference programs and continuing efforts to improve emergency assistance. Although the spike in food prices was a concern in 2008, developing country producers have historically been harmed when prices are driven too low by trade-distorting subsidies. Developed countries that may want to continue supporting their own producers should be encouraged to do so in ways that do not distort the international market. Some near-term steps the United States can take to improve food security through trade policy include reforming the U.S. preference programs and continuing to modernize its emergency food assistance programs.

The United States should take steps to reform its trade preference programs, which provide developing countries with enhanced access to U.S. markets. Although existing U.S. preference programs, including the Generalized System of Preferences (GSP) and African Growth and Op-

portunity Act (AGOA), provide duty-free treatment for many products, there are still significant barriers for many countries to benefit from these programs. Improving and redesigning existing U.S. preference programs, including AGOA, could make them more effective and promote the broader U.S. goal of creating better economic opportunities and facilitating the development of regional markets.

In 2008, CSIS advocated that the United States should modernize food aid.²⁶ In addition to providing much-needed emergency relief, it can strengthen markets in developing countries. One promising effort is a pilot program for “local purchase” that was passed in the 2008 Farm Bill. This program enables food to be purchased in the region or country where it will be used so that U.S. grain stocks do not distort the cost of food in local markets and so that developing country farmers have access to markets for their products. This program was relatively small in comparison to other forms of emergency assistance—\$60 million—but provides a good opportunity to study the potential for growing this mode of assistance, which is commonly used by other major donors.

Support Regional Integration. Integration of national trade systems within regions can lead to positive benefits to farmers and to a country’s overall food security. For example, Africa’s Regional Economic Communities (RECs), which were established to improve economic integration within Africa, can be a center for more U.S.-coordinated engagement on trade and economic issues. Regional economic integration provides opportunities for the smaller countries to benefit from regional markets, capitalize on economies of scale, and compete more effectively on the global stage. To date, U.S. assistance and trade policies have privileged bilateral over regional engagement, but integration could be enhanced through technical assistance to harmonize agricultural policies and strategies, reduce import and export barriers to the free flow of food, strengthen regional trade infrastructure, and invest in regional research capacities and regulatory frameworks.

Export Bans. In 2008, a number of countries enacted price controls and export restriction measures as an attempt to secure affordable food for their own populations. This led to a run on grains that severely reduced their availability on the world market and impeded a supply response to the increased demand. China, India, and Vietnam restricted rice exports, while Argentina, Kazakhstan, and Russia limited wheat exports. According to FAO estimates, export bans in Tanzania and Uganda between 2008 and 2009 reduced maize flows to neighboring Kenya by 46 percent, contributing to a 170 percent increase in the number of food insecure people in Kenya.²⁷

According to some estimates, eliminating export bans during the crisis would have helped to stabilize price levels by up to 30 percent.²⁸ In addition to the short-run impacts of price spikes, increased market volatility, and decreased global supply, export bans decrease incentives for farmers to invest in agriculture, which is a long-term engine of growth for so many economies. Under the provisions of the Uruguay Round Agreement on Agriculture, member countries that consider enacting food export restrictions must “give due consideration to the effects of such restrictions on importing Members’ food security.”²⁹ Although developing countries are not required to give

26. Ibid.

27. See Food and Agriculture Organization, *FAO and Emergencies—Consolidated Appeals 2010: Kenya*, available at <http://www.fao.org/emergencies/tce-appfund/tce-appeals/consolidated-appeals-2010/kenya10/en/>.

28. Joachim von Braun et al., “High Food Prices: The What, Who, and How of Proposed Policy Actions,” International Food Policy Research Institute, *IFPRI Policy Brief* (May 2008), p. 8.

29. See World Trade Organization, http://www.wto.org/english/tratop_e/agric_e/ag_intro05_other_e.htm.

Box 3. Large Land Purchases

In the wake of rising food and fuel prices, countries dependent upon food imports—and private companies looking for business opportunities—sought out investments in developing countries, purchasing large tracts of land for cultivation. According to a study by the International Food Policy Research Institute, between 2006 and 2009, there were 18 proposed deals between foreign governments and African countries for land purchases and 8 such deals in Asia. Private sector companies attempted to make deals with six African nations.¹

These investments have the potential to generate benefits, such as creating jobs and improving economic welfare, increasing productivity of unused or underused arable land, modernizing agricultural systems and infrastructure, improving access to capital, and harnessing market linkages that attract additional complementary investment. However, if not managed extremely carefully, such sales carry significant risks, including loss of property rights and displacement of local people, decreasing ability of a country to develop or maintain its agricultural productivity, increased corruption, environmental degradation, and decreased food security of the host nation.

In order for all parties to benefit from land investments, these sales must be constructed and managed in a way that promote transparent governance and decisionmaking, provide opportunities for public debate, and respect and protect local land and resource rights. The World Bank and other international agencies (Food and Agriculture Organization, United Nations Conference on Trade and Development, and International Fund for Agricultural Development) are in the process of developing and institutionalizing a set of principles for responsible agricultural investment. Such principles, combined with multilateral discussions, information sharing, and ongoing monitoring, can provide guidance for governments and investors to work toward large land purchases connected to broader efforts to increase economic and agricultural development, improve legal and regulatory capacity, and protect local people and the environment.

¹ Ruth Meinzen-Dick and Joachim von Braun, "'Land Grabbing' by Foreign Investors in Developing Countries: Risks and Opportunities," International Food Policy Research Institute, IFPRI Policy Brief 13 (April 2009), <http://www.ifpri.org/sites/default/files/publications/bp013all.pdf>.

notice of export restrictions, formal national and regional frameworks for consultation and warning systems for countries could have a positive effect by reducing the level of panic and providing better market information, which would help temper market distortions.

Future Trade Liberalization Efforts. As the United States and other countries seek to engage in multilateral and bilateral trade agreements, focusing on the Doha Round is an important area for attention. In addition to reduced export restrictions, increased market access, and more appropriate domestic support, developing countries could also benefit from trade facilitation assistance. Although the Doha Round is not likely to come to conclusion quickly, President Obama committed in his January 2010 State of the Union address to move forward on the round and reengage with key trade relationships. The negotiations that have led to the current status of Doha were lengthy and the achievements hard-won, including agreement to eliminate export subsidies and substantial reductions in tariffs and trade-distorting domestic support. Stepping back from the progress made through the round would not only risk the achievements made thus far, but would also call into question the U.S. commitment to improving opportunities for developing countries.

The CSIS Task Force on Food Security explored ways in which the United States can leverage trade policy to improve U.S. foreign policy and development goals. We recognize that the trade

agenda will require time, attention, and political will, but believe it is vitally important for making long-term improvements in food security. We recommend the following areas for focus:

- **Renew the role of trade and economics as a primary tool of U.S. foreign policy.** The U.S. trade agenda is our primary foreign policy agenda in many areas of the world, especially in Asia. To move forward in our foreign policy and development agenda, the president will need to engage on trade and make the case to the American people that improved trade and economic relations set the stage for better foreign relations and improved U.S. economic ties.
- **The United States should make trade capacity building—especially in the agriculture sector—a priority to address the needs of developing country and regional stakeholders.** Specific areas in which U.S. assistance should be concentrated include addressing policy and regulatory barriers; improving customs procedures; providing training to help producers meet sanitary and phytosanitary (SPS) standards; and supporting better market information systems. Physical investments should focus on agricultural processing facilities, warehouses and storage facilities, communications and information technology, roads, railways, water and sanitation, and energy supply.
- **The United States should target efforts to increase regional cooperation.** The administration should ensure that a substantial portion of trade capacity assistance and infrastructure building targets regional efforts, including Africa’s Regional Economic Communities. Such projects could encourage countries to remove their own barriers to improve regional cooperation and reduce intra-country and intra-regional trade barriers—both physical and institutional.
- **The United States, including the MCC, should work with the World Bank and other donors to coordinate infrastructure investments at the regional level to reduce post-harvest food loss and ensure that crops get to markets.** Because infrastructure needs are enormous and very costly, coordination could greatly enhance the overall impact of investments. This could be done as part of the Enhanced Integrated Framework for Least-Developed Countries (EIF), which is being established to support least-developed countries in building trade capacity and integrating trade strategies into national development strategies.
- **Reform U.S. trade preference programs.** The United States should enact reforms to make its trade preference programs simpler and permanent or long-lasting for all UN-designated least-developed countries. Areas where important gains could be made include the following: extend duty-free, quota-free treatment to all products—including all agricultural goods; simplify rules of origin and cumulation requirements; clarify eligibility requirements; and lengthen the term, or make permanent, the benefits of preference programs to create stable investment climates and encourage private sector investment.
- **Continue progress on improving emergency food assistance and increasing the level of local and regional purchase of food stocks.** Although the United States has authorized a small increase in funding for local purchase of food aid, it continues to be important to expand the percentage of emergency funds available for local and regional purchase. Additionally, the United States should work with other international donors to better coordinate emergency response, build global emergency food stocks, and better meet the nutritional needs of the food insecure.
- **The United States should promote an “exporters’ code” that would encourage countries to self-limit the use of agricultural export bans and restrictions.** The United States should take

a leadership role to raise greater awareness of the harm of export bans and support the creation of a system to reduce the impact of export bans and restrictions through early alerts, effective communication, and consultations.

- **Leverage U.S. global leadership to reinvest international energy and commitment to the Doha Development Round.** Movement on the Doha Round is important to U.S. credibility. Without a concerted effort on trade negotiations, U.S. efforts to improve food security will be undermined. U.S. leadership could inject new energy and commitment into the negotiations. If the Obama administration and other key nations in the developed and developing world bring new life into the talks, it will increase the credibility of the global trading system and connect expenditures intended to raise food security with the subsidy cuts that ultimately will be necessary to sustain it.

4

CONCLUSION

The recent crisis in Haiti provided powerful proof that American empathy does not end at our shores. In the days of the earthquake, despite a still-uncertain economy, Americans donated nearly \$200 million to help save lives and begin Haiti's recovery.

People around the world took notice of these efforts. They saw Haitians chanting "USA!" as American search-and-rescue teams pulled survivors from the rubble. They saw America using its strength for the sake of those in need. It was a chance for the United States to reassert itself as a moral leader. The American people's response to the Haitian earthquake was an inspiration around the world.

But we must admit the truth: there are hundreds of millions of hungry people who will never appear on a front page. Television newscasters will never embed themselves in their cities. Most Americans may never know they exist, much less send millions of dollars to their aid.

The United States has a tremendous opportunity to bring to bear its expertise, its human resources, and its commitment to feed people worldwide to set the world's food system on a path toward long-term security. As Senator Lugar said, "The United States has always stood for big ideas—from the founding of the Republic on the basis of freedom to President Kennedy's vow to put a man on the moon. One of today's big ideas should be the eradication of hunger. We can bring America's dedication to science, innovation, technology and education together to lead an effort devoted to overcoming the obstacles to food security."³⁰ It is an opportunity to lead the way forward in a world hungry for progress. It is an opportunity to plant the seeds of global stability and prosperity and to cultivate goodwill around the world.

30. Richard Lugar, "Lugar Floor Statement Global Food Security Act of 2009," Senate Floor Statement of Senator Lugar, February 5, 2009, <http://lugar.senate.gov/press/record.cfm?id=308523>.



APPENDIX A

CSIS TASK FORCE ON GLOBAL FOOD SECURITY

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APPENDIX B

MEETINGS OF THE CSIS TASK FORCE ON GLOBAL FOOD SECURITY

The CSIS Task Force on Global Food Security met to discuss and develop policy approaches on trade, productivity, and agricultural research and development that could be used to enhance global food security.

APPROACHES TO BOOST AGRICULTURAL PRODUCTIVITY

Technology and Agricultural Productivity

Speakers

Dr. Robert Paarlberg, Wellesley College
Mr. Huntington Hobbs, Millennium Challenge Corporation

NERICA and New Horizons for Research and Technology

Speaker

Dr. Monty Jones, Forum for Agricultural Research in Africa (World Food Prize laureate)

Research, Productivity, and Opportunities in South Asia

Speaker

Dr. Usha Barwale Zehr, Maharashtra Hybrid Seeds Company

RESEARCH AND DEVELOPMENT

Innovations in Agricultural Research

Speaker

Dr. Gebisa Ejeta, Purdue University (World Food Prize laureate)

The State of U.S. Agricultural Research and Development

Speakers

Dr. Katherine Kahn, The Bill & Melinda Gates Foundation
Dr. Kay Simmons, U.S. Department of Agriculture

Public-Private Partnerships in Agricultural Research

Speakers

Dr. Jonathan Bryant, BASF Plant Science, North America
Dr. Josette Lewis, U.S. Agency for International Development

THE ROLE OF TRADE IN FOOD SECURITY

Summary of Doha Round Negotiations and Status

Speaker

Dr. Joseph Glauber, U.S. Department of Agriculture

Doha Options and Regional Approaches

Speakers

Ms. Charlotte Hebebrand, International Food & Agricultural Trade Policy Council

Mr. Anthony Carroll, Manchester Trade, Ltd.

Mr. Stephen Lande, Manchester Trade, Ltd.

Conference on Trade and Food Security (cohosted with the International Food & Agricultural Trade Policy Council)

Speakers

Senator Ron Wyden (D-OR)

Dr. Ashok Gulati, International Food Policy Research Institute

Dr. Jikun Huang, Centre for Chinese Agricultural Policy, Chinese Academy of Sciences

Dr. Robert Thompson, University of Illinois

Ms. Ann Tutwiler, U.S. Department of Agriculture

Dr. J.B. Penn, John Deere & Company

Mr. Ajay Vashee, Southern African Confederation of Agricultural Unions

Ambassador Donald Yamamoto, U.S. Department of State