



Rebalancing Globally

Chapter 4

CHAPTER SUMMARY

The United States responds directly to hunger and malnutrition in the developing world with food aid and agricultural development assistance.

U.S. food aid programs and agricultural development assistance are increasingly focused on pregnant and lactating women and children younger than 2. Even brief episodes of hunger among people in these vulnerable groups are cause for alarm. A third of all child deaths are attributable to malnutrition, while survivors face lifelong physical and/or cognitive disabilities.

The United States should strengthen its traditional role as the largest provider of food aid, while also moving quickly to improve its nutritional quality. New mothers, young children, and other vulnerable people, such as those living with HIV/AIDS, can benefit from highly nutritious forms of food aid now available. These cost more than the foods normally included in U.S. food aid, but it is possible to reduce costs by purchasing in or near the countries where they are needed and by phasing out the inefficient practice of monetizing food aid to conduct development projects.

The United States should strengthen its commitment to Feed the Future, the innovative U.S. Global Hunger and Food Security Initiative critical to long-term progress against hunger and malnutrition. Feed the Future represents the U.S. government's strongest support in decades for agricultural development in poor countries. The focus on agriculture is especially valuable because the vast majority of poor people in developing countries earn their living by farming, and the majority of these farmers are women.

The United States must make larger investments in agricultural research to help meet the global need to produce crops that can feed a growing population, respond to shifts in dietary patterns, and adapt to changes in climate. Current funding for both U.S. research institutions and the international network of agricultural research centers is hardly adequate to meet these challenges.

All poverty-focused development assistance is instrumental in helping poor countries achieve the Millennium Development Goals. Cuts to U.S. foreign assistance, including USAID's operating budget, would harm efforts to make foreign assistance more effective, efficient, and sustainable.

Recommendations

- The United States should strengthen its traditional role as the largest provider of food aid, while also moving quickly to improve its nutritional quality.
- The United States should strengthen its commitment to Feed the Future, the innovative Global Hunger and Food Security Initiative that is critical to sustainable progress against hunger and malnutrition.



Richard Lord

1,000 Days

The U.N. Millennium Development Goals (MDGs) treat hunger and poverty as interdependent problems. The first MDG—dramatically reducing hunger and poverty—measures progress against hunger by gauging how many children remain chronically undernourished.

“Hunger” seems like a simpler concept than “undernutrition,” but it’s most accurate to say that it’s the effects of undernutrition that kill children or limit their potential for the rest of their lives. Young children need calories to grow and gain weight, but vitamins and minerals matter every bit as much. In developing countries, one-third of all children are stunted or underweight as a result of undernutrition; it is the leading cause of child mortality. Reducing the high rate of undernutrition among children in the developing world is one of the greatest challenges in global health.

The most critical period in human development is the 1,000 days starting at pregnancy and lasting through a child’s second year.¹ Healthy development, particularly brain development, depends on getting the right foods at this critical time in life. Hunger during this time is catastrophic, because the resulting physical and cognitive damage is lifelong and largely irreversible. Early

hunger and malnutrition is associated with later problems such as chronic illness and poor school attendance and learning. As adults, the survivors have lower productivity and lifetime incomes, which costs developing countries an estimated 2 to 3 percent of their economic output (Gross Domestic Product).²

Until recently, international development programs did not focus much attention on improving the nutritional status of young children. But that has changed since 2008, when a series of reports on early childhood appeared in the leading medical journal *The Lancet*. The series emphasized the connection between nutrition during the 1,000 days and development outcomes, and showed how practical, inexpensive interventions during this “window of opportunity” can dramatically alter the arc of a person’s life.



Laura Elizabeth Pohn

Healthy development, particularly brain development, depends on getting the right foods during the early years of life.

0.6%

of the federal budget is spent on poverty-focused development assistance.

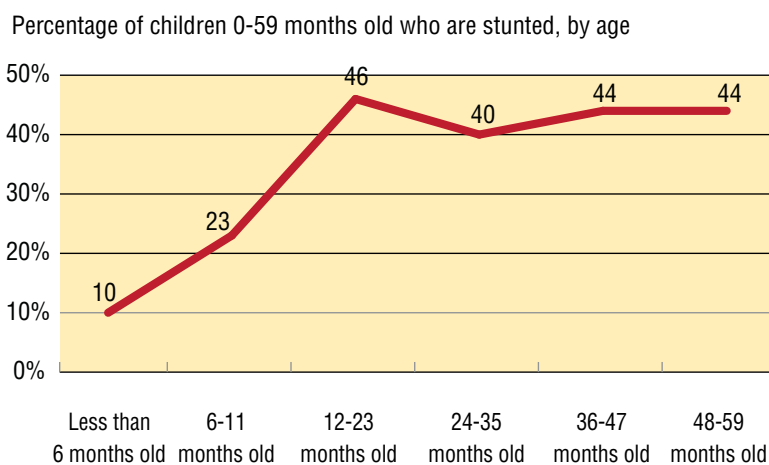
The Food and Agriculture Organization of the United Nations (FAO) estimates that if women had the same access to productive resources as men, they could **increase yields** on their farms enough to **reduce the number of hungry people** in the world by **12–17%—up to 150 million people**.

The Lancet series appeared at the height of a global hunger crisis driven by dramatic spikes in the prices of staple foods, which forced an additional 100 million people into hunger and led to rioting in a number of countries. In the aftermath, the United Nations formed a High-Level Task Force on Global Food Security. In addition, representatives of the governments and civil societies of dozens of countries came together to prepare a framework for nutrition action based on *The Lancet* reports. From this effort came the Scaling Up Nutrition (SUN) movement to support the action plan.

During a U.N. summit on the MDGs in September 2010, Secretary of State Hillary Clinton and her Irish counterpart launched the “1,000 Days: Change a Life, Change the Future” initiative. 1,000 Days and SUN seek to make nutrition an integral component of development programs. SUN’s plan for accomplishing this has been endorsed by national governments, multilateral institutions such as the World Bank and other international development banks, civil society organizations, development agencies, academics, and philanthropic bodies.³ During the U.N. event, David Beckmann, president of Bread for the World, and Tom Arnold, CEO of Concern Worldwide, committed to convening a follow-up meeting of SUN. This meeting was held June 13, 2011, in Washington, DC, and drew government and civil society representatives from both SUN countries and developed countries. Bread for the World and Concern Worldwide continue to be instrumental in keeping policymakers focused on SUN and the critical importance of the 1,000 day window.

The United States has two development programs, Feed the Future and the Global Health Initiative, that put nutrition front and center. Bread for the World Institute’s 2011 Hunger Report, *Our Common Interest: Ending Hunger and Malnutrition*, focused on Feed the Future, an agricultural development initiative designed to address the root causes of hunger in developing countries. Feed the Future is the first U.S. global food security program of this magnitude—and the only one to focus both on nutrition

Figure 4.1 Stunting is Largely Irreversible after Age 2



Note: Analysis is based on data from 40 countries covering 56% of children under 5 years old in developing countries. Prevalence estimates are calculated according to the NCHS reference population, as there were insufficient data to calculate estimates according to WHO Child Growth Standards.

Source: DHS and National Family Health Survey, 2003-2009, with additional analysis by UNICEF.



About \$1.5 billion

The amount the United States spent in fiscal year 2010 on emergency food aid that reached about **46.5 million beneficiaries.**

1,000 days

From pregnancy to age 2 is the “window of opportunity” to prevent malnutrition from causing irreversible damage.

BOX 4.1 UNDERSTANDING MALNUTRITION AND RESPONDING EFFECTIVELY

by *Rebecca J. Vander Meulen*
 Director of Community Development,
 Anglican Diocese of Niassa, Mozambique

Children under the age of 5 are most at risk of death from malnutrition. As Figure 4.2 shows the odds of death from diarrhea, pneumonia, malaria, and measles are higher for children under 5 who are malnourished compared to those who are properly nourished.⁴

Children who lack adequate energy and protein suffer from what is known as “protein-energy malnutrition.” Children suffering from chronic protein-energy malnutrition become “stunted”—shorter than they should be for their age. “Wasting” occurs when children suffer from acute food shortage (such as famine). Wasting is what we see in photographs of emaciated children, such as the shocking images from Somalia in 2011.

Severe malnutrition poses an immediate threat to a child’s life, but more children die every year because of mild or moderate malnutrition.⁵

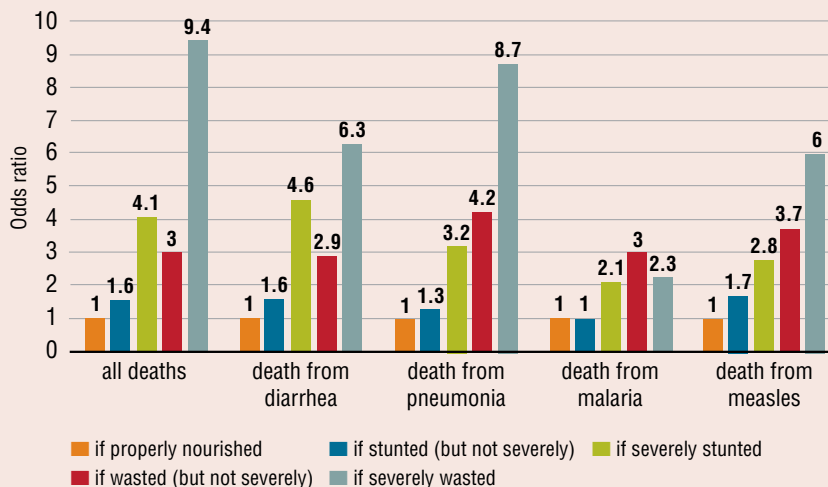
Humans also need micronutrients (vitamins and minerals) to lead a healthy and productive life. Micronutrient malnutrition may not always have obvious

signs, but left untreated the consequences are serious. Zinc and Vitamin A deficiencies, for example, put children at increased risk of dying from diarrhea and malaria.⁶

Childhood death is not the only potential danger from malnutrition; multiple extended studies have shown that early childhood malnutrition also shapes lifelong development. Guatemalan adults who had been given a protein-enhanced nutrition supplement through age 2 were found to have better intellectual functioning than adults who had been given a sugar-sweetened nutrition supplement.⁷ Improvements in nutritional status through age 2 have lifelong impacts: studies in Brazil, Guatemala, India, the Philippines, and South Africa found that healthy weight gain until age 2 was associated with more years of schooling and lower risk of failing a grade—yet improvements made in a child’s nutritional status between ages 2 and 4 had little relationship to schooling outcomes.⁸

Maternal malnutrition also affects a child’s nutrition and health. Women who are underweight before pregnancy and who gain little weight during pregnancy are particularly at risk of giving birth to babies of low birth weight. Even excluding those born prematurely, babies who are born at low birth weight are more likely to die as newborns than babies born at a healthy weight. Babies born between 4 pounds, 6 ounces and 5 pounds, 8 ounces are 2.8 times as likely to die as newborns than heavier babies. This figure rises to 8.1 times as likely for full-term babies born between 3 pounds, 5 ounces and 4 pounds, 6 ounces.⁹

Figure 4.2 **Relative Odds of Death for Children Under Age 5, Based on Nutritional Status**



Source: *The Lancet* (2008).

and who gain little weight during pregnancy are particularly at risk of giving birth to babies of low birth weight. Even excluding those born prematurely, babies who are born at low birth weight are more likely to die as newborns than babies born at a healthy weight. Babies born between 4 pounds, 6 ounces and 5 pounds, 8 ounces are 2.8 times as likely to die as newborns than heavier babies. This figure rises to 8.1 times as likely for full-term babies born between 3 pounds, 5 ounces and 4 pounds, 6 ounces.⁹

Inadequate levels of maternal iodine during pregnancy can cause

brain damage in the child.¹⁰ Populations with high rates of chronic iodine deficiency have dramatically lower IQ scores—an average of 14 points lower.¹¹

A malnourished mother can produce breast milk containing all of the fat, protein, and carbohydrates (macronutrients) a baby needs. Only under famine or near-famine conditions would the macronutrient content of the milk be affected.¹² Babies given partial or no breastfeeding in the first few months of life are nearly 2.5 times as likely to die as babies who are breastfed exclusively.¹³ However, if a mother experiences certain micronutrient deficiencies, she requires micronutrient supplements in order to pass these micronutrients on to her baby.

Nutrition is critical throughout life, but nutrition from pregnancy to age 2 has dramatic potential to shape the trajectory of a child's life. To reduce child mortality, interventions must cover all malnourished children, not simply those experiencing severe forms of malnutrition. Simple, cost-effective nutrition interventions would not only save millions of children from illness or death, it would also improve their health, intelligence, and productivity for the rest of their lives.

Because investing in the nutrition of children under age 2 has such a multiplier effect, agricultural development and food aid should focus particularly on targeting benefits to young children and pregnant mothers. Well-nourished young children become productive adults who have the potential to improve the outlook of entire nations.

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outcomes and agricultural development, two issues that are inseparable.

Food aid is another tool the United States uses to respond to hunger crises. Most of this assistance is devoted to supplying food and other essentials directly to people trapped in humanitarian emergencies. Food aid is also used to improve food security in food-deficit countries where people are chronically hungry. While food aid is not a sustainable long-term solution to hunger and malnutrition, it can and should complement agriculture and food security programs such as Feed the Future.

Rural Mozambique: Constantia, Gustavo, and Their Neighbors

Mozambique is a southern African country of 23 million people, most of whom (81 percent) live below the international poverty threshold of \$1.25 per day.¹⁴ In the Mozambican village of Cobue, Constantia and her family farm a small plot of maize and cassava. They are subsistence farmers who eat what they grow themselves. Most rural Mozambican farmers have neither fertilizer nor formal training in agricultural techniques or management. A hoe and machete are the tools of their trade.

Constantia's experience with her firstborn child, Gustavo, is all too common here and in other villages around the world where a large share of people are hungry and poor. Gustavo developed normally until he was a year old, but then he contracted malaria. Constantia stopped breastfeeding him out of fear that her milk was contributing to his illness. But this weakened Gustavo's immune system and he developed other infections that stole his appetite.

As advised by her family and neighbors, Constantia fed him a thin porridge of maize flour and salt. The porridge kept Gustavo from becoming dehydrated, but it also worsened his malnutrition by filling his stomach without giving him the nutrients he needed. He had no appetite and began to refuse all food.

Gustavo then gained some weight back—but this was bad news because it meant his body was retaining water. At 18 months, Gustavo weighed only 17 pounds—including the water weight. His condition, known as edema, put him in mortal danger.

In addition to medical care, Gustavo needed food aid. Constantia brought him to a clinic, where she learned how to feed him a fortified milk formula with a syringe and then did so, every two to three hours around the



Rebecca Vander Meulen

Only a year after Gustavo's brush with death, he is a healthy 2-year-old thanks to food aid. He is shown here with his mother, Constantia, whose persistent dedication to feeding him paid off.

clock. The formula was specially designed to maximize the toddler's absorption of energy, protein, and micronutrients.

Gustavo's appetite slowly returned and finally he could be coaxed into eating solid foods. He was given Plumpy'nut, a high-protein therapeutic food served as a paste. Though he rejected the other protein-rich foods he was offered, Gustavo found Plumpy'nut tasty and he ate it voluntarily.

Now, a year later, Gustavo is able to eat the same food as the rest of his family. Although his attending physician had suspected he would die, the little boy runs and plays with other children in the village. But the whole family still lives on the edge of hunger.

Quantity versus Quality: How Does Food Aid Do the Most Good?

For decades, the United States has been the world's leading provider of food aid to vulnerable and malnourished people. Under the International Food Aid Convention, the country agreed to provide a minimum of 2.5 million metric tons of food per year.¹⁵ Over the years, the United States and other donor countries have delivered many millions of tons of food aid.

In theory, food aid is distributed according to the needs of a targeted population, but more often than not it is distributed according to what is available, which may not be appropriate nutritionally. Providing food aid is complex because it must respond to the complex, intertwined problems of famine, food insecurity, and malnutrition. Each year, tens of millions of people rely on food aid as their primary—sometimes their only—source of sustenance. This means that food aid donors must provide the right food—with the right nutrients.

No single food will meet the nutritional needs of all food aid recipients. In fact, studies show that a combination of different foods contributes more to overall nutrition than a combination of nutrients in a single food aid product.¹⁶ Similarly, no single approach to providing food aid will work in all circumstances. Food aid may be provided at community feeding centers, as in Gustavo's case, or through home-based care programs or at health facilities.

Vulnerable groups, particularly severely malnourished children, need food aid that is specially designed to boost caloric intake and/or meet specific nutritional needs. This “targeted” food aid is usually intended for children younger than 5, women who are pregnant or lactating, or people living with HIV/AIDS or other chronic illnesses.

“Therapeutic feeding” is part of an emergency response to treat severely malnourished children; it includes foods high in fats, proteins, and vitamins and minerals (micronutrients). Milk-based therapeutic products, with formulas developed by UNICEF and the World Food Program, have been commonly used in therapeutic settings. Newer products have also become available that deliver precise, measurable quantities of nutrients to severely malnourished children.

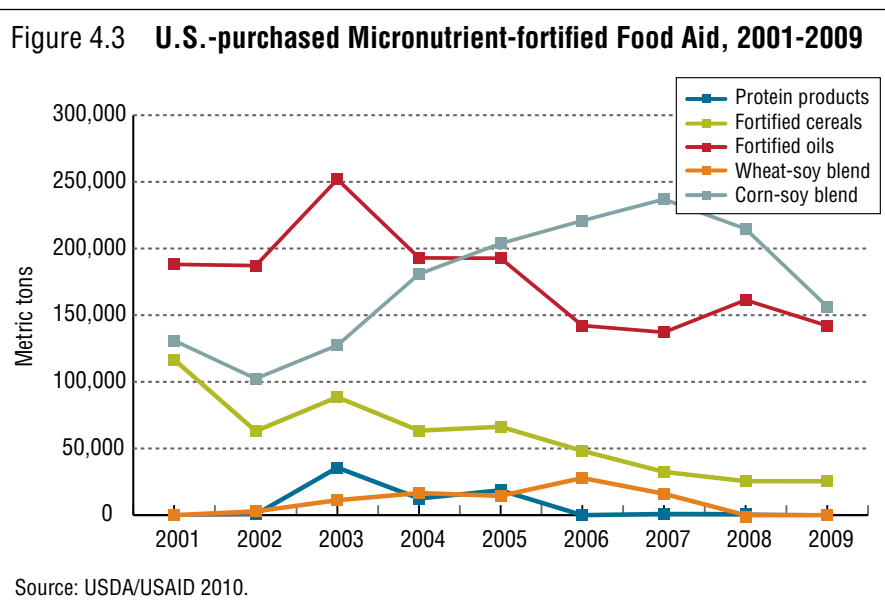
Food aid for general distribution, provided to meet the needs of an entire population, is generally a dry commodity distributed in bulk. It can be forti-

fied with micronutrients, either at the production plant or in the field, but usually whole grains (rice, corn, wheat, sorghum) are not fortified. Fifteen commodities account for the majority of food aid provided by the United States, although the list of approved products is much larger.¹⁷ U.S. food aid is made up mostly of cereal-based products (see Figure 4.3). Corn Soy Blend (CSB) is made of cornmeal, soy flour, salt, and vegetable oil, fortified with micronutrients. Other formulations of CSB include powdered milk protein, which helps the body absorb nutrients. Some types of CSB include additional micronutrients, milk powder, de-hulled soybeans, vegetable oil, and/or sugar, giving them nutritional content similar to the newer lipid (fat)-based products. CSB is now sometimes available in the form of nutrition bars. The newest CSB products have not yet been tested with large numbers of at-risk people.

Clean water—whether from an improved water source, boiled, or treated—is a necessity anywhere cereal-based food aid is distributed, because these food products must be mixed with water. Food-borne and water-borne diseases, such as cholera and dysentery, are leading causes of illness and death in developing countries. The World Health Organization estimates that about 2.2 million people, most of them children, die from diarrhea each year.

People who are malnourished or have weakened immune systems are more susceptible to contracting food-borne and water-borne diseases and more likely to die from them.

The general distribution food aid commodities fall short of meeting the nutrition needs of pregnant and lactating women, small children, and people with compromised health. This is especially true in chronic food shortage emergencies, where food aid is the main source of nutrition for more than a year. More than half the food aid provided by the United States is for multi-year programs (see Figure 4.4). According to the U.S. Government Accountability Office (GAO), 21 of the 30 countries that received U.S. emergency food aid in fiscal year (FY) 2010 had been receiving it for four or more years.



Developments in Food and Nutrition Science Focus Attention on Improving the Quality of Food Aid

New food aid products are improving the health of those suffering from both moderate and severe levels of malnutrition. Probably the best known is Plumpy’nut, developed by the French company Nutriset. Plumpy’nut has garnered a great deal of attention in the mainstream media; it’s sometimes called a “miracle drug” for its ability to bring children wasted from malnu-

trition back from the brink of death. A recent study in Niger showed that feeding Plumpy'nut to severely malnourished children under age 2 was associated with a reduction in mortality of roughly 50 percent.¹⁸

Plumpy'nut and products like it are known as lipid-based nutritional supplements (LNS). Lipids are fats—key ingredients in food aid since they promote rapid weight gain, which is precisely what malnourished children need. LNS can be made from legumes (peas, lentils), peanuts, chickpeas, sesame seeds, maize, and/or soybeans.

LNS products have revolutionized the use of ready-to-use supplemental and therapeutic foods in treating malnutrition. They are also being tested as a complementary food for general distribution to food aid recipients. LNS are normally available in the form of a spreadable paste. In packaged form, they can be safely stored for extended periods, even in tropical climates, and children can eat them directly from the package with little assistance and no further preparation or cooking. LNS can also treat adults with chronic malnutrition, HIV/AIDS, and/or long-term illnesses. The packaging, storability, and design of LNS promote home-based therapy, which is less expensive since patients don't need to travel to feeding centers.

LNS can also be manufactured with simple technology available in developing countries. Dr. André Briend, the French pediatrician who invented

Plumpy'nut, demonstrated by whipping up batches in a home blender.¹⁹ There are still some quality and safety concerns about local production, mainly related to preventing bacterial contamination. For example, in-country testing must be done to ensure that the foods can be produced without being contaminated by aflatoxin, which can come from mold growth on peanuts and corn—particularly because exposure to aflatoxin causes malnutrition and suppresses the immune system.²⁰ But where solutions to such risks have been developed, local production and distribution of LNS can cut costs significantly.

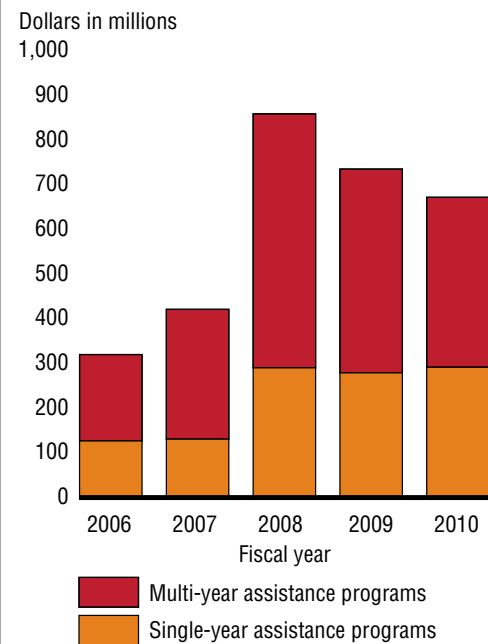
Another group of nutritional supplements that show promise in treating moderate and severe malnutrition is micronutrient powders, which can be formulated to address specific micronutrient deficiencies and can be added as a complement to home meals or to other types of food aid to boost nutritional content. The World Food Program has successfully introduced micronutrient powders in South Asia but noted that packaging and labeling must make it clear that, for example, a supplement is for pregnant women or for babies and toddlers.²¹ These supplements are low-cost and, as with lipid-based products, they can be produced locally.

The cost of different types of food aid varies widely. In 2011, the GAO determined the cost ranges of one day's worth or one dose of a product to be: grain-based food aid, 2-5 cents; micronutrient powders, 3-4 cents; corn-soy blend, 6-24 cents; and lipid-based, 12-41 cents.²² Clearly, the cost determines the number of

people who can be assisted for a given amount of money.

U.S. food aid fills many empty bellies, but it hasn't made nutrition the priority it should be. Policymakers should identify and implement the most

Figure 4.4 Emergency Food Aid Commodity Purchases, Multi-year and Single-year Assistance Programs, FY2006 through 2010



Source: GAO presentation of USAID data.

effective and rapid ways to change the situation. One starting point: a review of the quality of U.S. food aid by researchers from Tufts University, commissioned by USAID, outlined ways to enhance its quality and effectiveness. The Tufts review affirmed the importance of nutrition during the 1,000 day window of opportunity between pregnancy and age 2; identified how food aid can improve nutritional outcomes in older infants, young children, and pregnant and lactating women;²³ and recommended reformulating food aid products to take advantage of developments in nutrition science.

These new developments are, in fact, fueling discussions at both the policy and program levels about improving the quality of food aid.²⁴ Additional studies are needed to assess the effectiveness of new food aid products in actual field settings. In the absence of a substantive body of evidence on nutrition outcomes, cost considerations are likely to carry disproportionate weight. But it's quite clear that the nutritional quality of U.S. food aid can be improved by fortifying and targeting various types of foods and by including a wider range of foods.

Food Aid is Vital for People with HIV/AIDS

Veronica lives in the village of Ngofi in Mozambique, where families live on what they grow on their farms. She, her husband Marcos, and their four children had a herd of goats; they were wealthier than most of their neighbors since goats are worth 400 pounds of maize each.

Marcos fell ill and, on a visit to the hospital in neighboring Malawi, discovered that he had HIV. It's not necessary for everyone with HIV to begin treatment immediately after diagnosis, but Marcos needed to go on antiretroviral therapy right away. He had to make regular trips across Lake Niassa by ferry to get medical checkups and pick up medication. Each time, he had to pay for food and lodging in addition to the ferry fee, because the ferry ran only once a week. Veronica and Marcos had to sell a goat every couple of months to get the money.

Veronica and Marcos quickly depleted their resources, including the goats. The family went from being one of the wealthiest in their village to one of the poorest. After Marcos began treatment, Veronica was also diagnosed as HIV-positive, although she was not in immediate need of treatment. Both needed extra calories to help sustain their immune systems, working at full throttle against HIV. They also needed sufficient vitamins and minerals—important to the body's struggle against opportunistic infections—but normally their meals centered on cassava or maize, staple foods that filled them up and provided calories but had little nutritional value.

Their health deteriorated after they exhausted their resources. Production plummeted on the family farm because Marcos was too weak to work.



Rebecca Vander Meulen

Thanks to HIV medication and food aid, Veronica is healthy and well-nourished. She is shown here with her son.

Veronica, though still physically able to work, spent much of her time and energy caring for her husband. Eventually Marcos died from an opportunistic illness and Veronica, much weaker by now, was left with the children and little food.

Just as she was selling the last of the goats, a medical facility opened closer to home, which made it possible for her to begin antiretroviral treatment. Veronica made the trip with fellow villagers who also needed HIV treatment. She received food aid along with her medication. The food she was given—flour, oil, and sugar—enabled her to make an enriched porridge and regain her strength. She added the oil and sugar to the porridge while it was cooking in order to increase its caloric density. The maize flour was fortified with protein and fat by the addition of ground beans and peanuts.

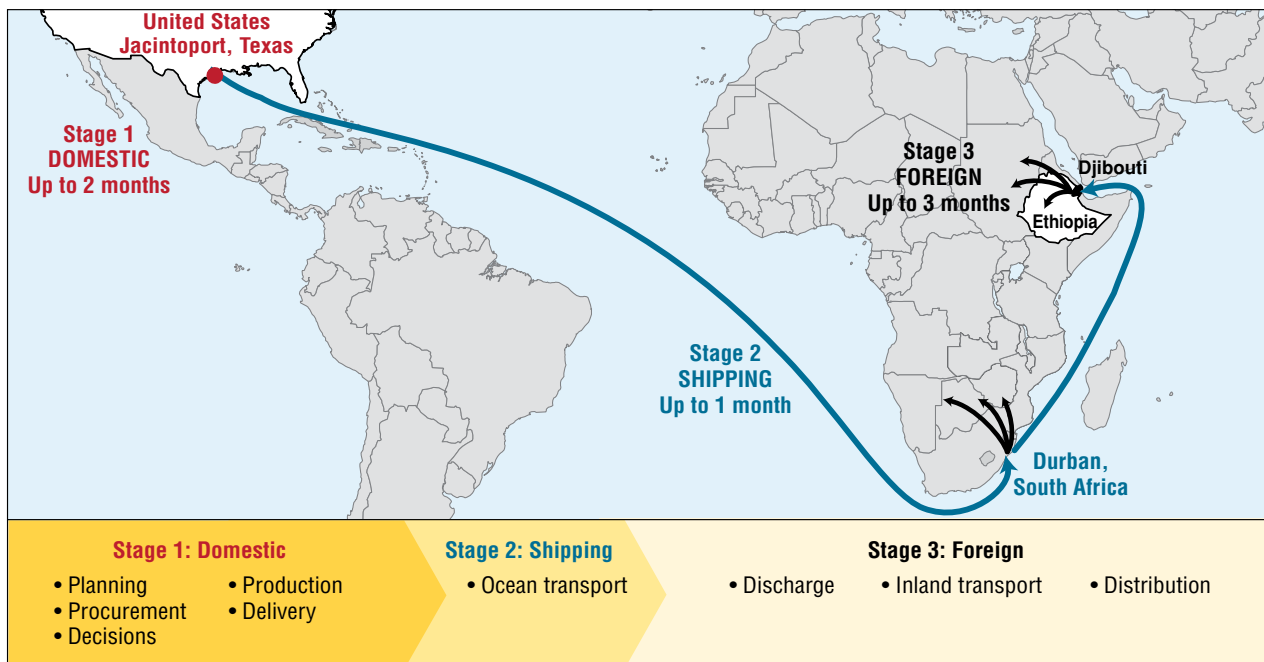
With the combination of HIV medication and food aid, Veronica recovered to the point where she could work on her farm and feed herself and the children. Other families in her village—including those not affected by HIV—also started to mix beans and peanuts into their porridge whenever possible.

Going the Distance: The Food Aid Supply Chain

U.S. food aid passes through three stages between farmers and food aid recipients.²⁵ Each offers opportunities to improve efficiency, thus enabling the program to provide higher-quality foods and/or serve more people.

- **Procurement.** The Office of Food for Peace at USAID and the Foreign Agricultural Service of USDA fill orders for food aid placed by the World Food Program and nongovernmental organizations such as World Vision, Catholic Relief Services, and Mercy Corps. The raw

Figure 4.5 The Food Aid Supply Chain



Source: GAO based on information provided by USDA-KCCO, USAID, and Tufts University's *Food Aid Quality Review: Report to USAID*.

commodities are then sent for milling and fortification. There is a strict protocol for quality control, but a 2011 GAO report noted several concerns, including instances of failure to meet vitamin content specifications, the presence of salmonella and insects, rodent infestation, and poor data tracking through various stages of the supply chain.²⁶ To their credit, government offices in charge of quality control processes have taken steps to address problems. But they themselves admit that quality assurance would be jeopardized if funding cuts force the elimination of services.²⁷

- **Transport.** U.S. policies require that 75 percent of food aid must be shipped on U.S.-flagged vessels,²⁸ so there is little room to economize under current law. However, shipping from the United States uses up as much as 50 percent of the total food aid budget²⁹ and takes four to six months.³⁰ Thus, no area presents a greater opportunity to save money than the reform of “cargo preference” laws.
- **Distribution.** When the food aid arrives, the World Food Program or another implementing partner takes possession of it and distributes it to the recipients. This is the end of the supply chain, but it would improve the process if there were also an evaluation of nutritional outcomes. After all, improving people’s nutritional status is the whole purpose of food aid, and no one can know whether the goal is being met without evaluation. Evaluation would also provide information to help identify problems at the end of the supply chain—for example, is food aid at risk of contamination from being mixed with unclean water?



Displaced Pakistanis pull a cartload of rations distributed by the U.N. World Food Program after massive floods in 2010.

Cost-Effective Improvements in the Quality of U.S. Food Aid

Improving the nutritional quality of U.S. food aid is a daunting challenge in the context of a shrinking federal budget. Cost will significantly affect how quickly U.S. food aid can be changed to better meet the nutritional needs of the most vulnerable groups. Bulk commodities and unfortified cereal products cost less per ton than fortified or processed foods with enhanced nutritional value. Yet efforts to strengthen nutritional status, particularly those that supply people with more micronutrients,³¹ yield an extraordinarily high return on investment: they enable people to live longer, more productive lives.

As a wider range of new and/or reformulated foods become available, understanding and evaluating the tradeoffs is increasingly complex. When food aid costs are calculated on a per ton basis, the real value of these new and improved products is not apparent. But considering the cost of each

improvement in nutritional status is a different approach that leads to a different verdict. This is particularly true of food aid designed for very young children and pregnant women. As mentioned earlier, undernutrition before age 2 leads to irreversible damage to growth and brain development. It causes stunting and wasting.³² Women who are malnourished during pregnancy face a greater risk of dying in childbirth and of giving birth to a low birth weight baby.

The U.S. government and implementing partners should begin taking steps immediately to move effective nutrition interventions “to scale” so they reach more of those who could benefit. Here are some ways to cut down on the cost of such initiatives:

1. *Adopt local and regional purchase (LRP).* Under this arrangement, implementing partners receive cash grants to purchase food aid commodities from nearby areas with surpluses rather than procuring them in the United States. This not only reduces transport fees but helps get food to people in need more quickly.

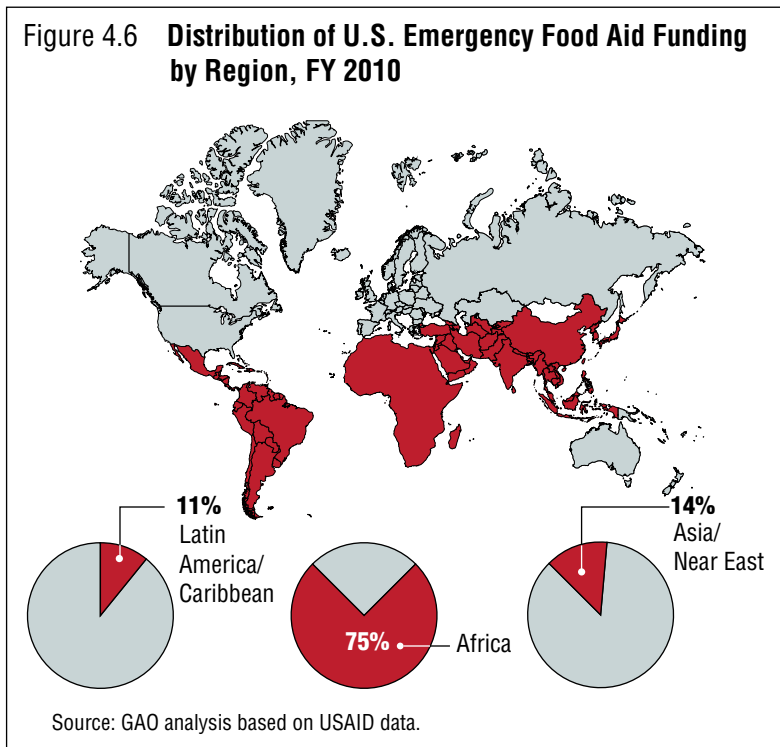
LRP is coming into widespread use. For fiscal year 2011, USDA has eight LRP projects and USAID’s Food for Peace Office has 13, valued at \$11.5 million and \$98 million respectively. The World Food Program and other bilateral donors also purchase food aid locally and regionally. Of the 3.2 million tons of commodities that the World Food Program purchased in 2010, more than 78 percent came from developing countries.³³ Donor use of LRP increased from 13 percent of total food aid in 1994 to 50 percent in 2009.³⁴ LRP projects continue to evolve and yield additional information on reducing costs and working more efficiently.

2. *Preposition food aid closer to where it is most likely to be needed.* USAID has scaled up its efforts to do this; it now has six sites around the world where food aid is stockpiled.³⁵ The World Food Program also

maintains advance-purchase facilities so that food aid is closer to areas that frequently face food shortages.

3. *Coordinate more effectively.* A Food Aid Consultative Group, consisting of multiple government agencies and stakeholders, should update policy recommendations for best practices and help offices coordinate with each other. Several offices in USDA, USAID, and the State Department develop and guide the implementation of U.S. food aid policy regulations. The current division of labor has USDA approving food aid commodities and arranging their purchase and delivery to port, after which USAID receives, transports, and distributes food aid in the field.

Figure 4.6 Distribution of U.S. Emergency Food Aid Funding by Region, FY 2010



4. *Report nutrition outcomes.* Current end-of-year reporting by implementing partners does not include reporting on nutrition.³⁶ A simplified Country Progress Report on nutrition outcomes will provide timely information on program successes and needed changes.
5. *Seek advice from experts.* Outside expertise on nutrition is widely available and should be weighed when the time comes to make decisions. In particular, the USDA/USAID food aid coordination group should consult with research institutions in the United States, such as Tufts University, as well as comparable institutions in developing countries.
6. *Reform the Food Aid Convention.*³⁷ The Food Aid Convention is a multilateral treaty set up to guarantee a minimum annual disbursement of food aid, thus enabling the international community to better respond to emergencies and build global food security. The United States, as the largest food aid donor, needs to lead an effort to reform the treaty. (See Box 4.2, next page.)

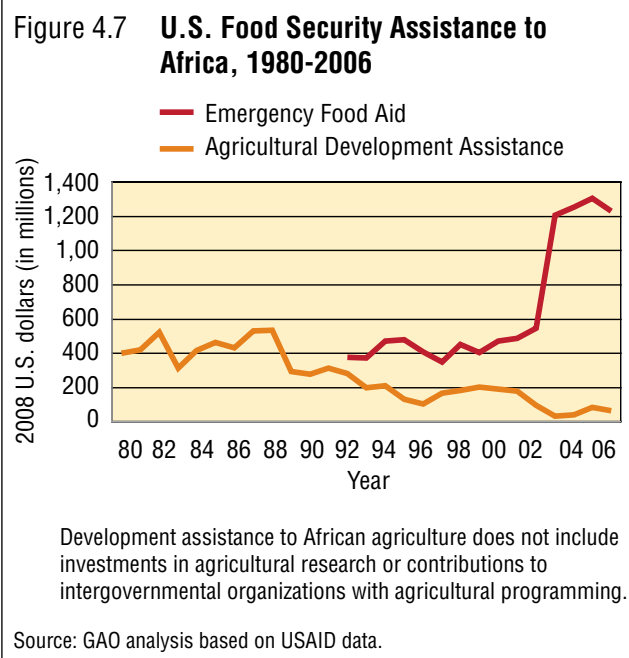
Phasing Out Monetization

Not all U.S. food aid is distributed directly to hungry people. Every year, hundreds of millions of dollars' worth of food aid is "monetized"—sold in recipient country markets for cash to pay for development projects. The practice started in the 1980s and has grown steadily. It has been used primarily to improve long-term food security—for example, providing technical training to farmers or improving the infrastructure farmers need to gain access to markets.³⁸

Monetization has been widely criticized as an inefficient way of funding development projects. Research by the GAO in 2011 is one of many reports showing that monetization costs significant amounts of money that would otherwise go to programs for hungry and poor people. Of \$722 million in food aid that was monetized between 2007 and 2009, \$508 million was spent on development programs, while \$219 million (30 percent) paid for freight charges to ship food aid commodities from the United States, transportation to bring the commodities to markets in the recipient countries, and other costs of monetization. U.S. cargo preference policies accounted for most of this lost funding.³⁹

In addition to being inefficient, as the GAO report notes, monetization can also displace or crowd out of the market the products of domestic farmers. Ironically, flooding the market with food aid hurts the sales of the same people the commodities were intended to help—the smallholder farmers who count on domestic markets for their livelihoods.

There's a general consensus that long-term food security depends on new investments in agricultural development.⁴⁰ But for too long, the principal source of U.S. assistance for agricultural development was—in another striking irony—food aid. For most of the last 30 years, there has been little interest in agriculture's role in development. (See Figure 4.7.) U.S. agricultural



assistance plummeted from \$400 million in the 1980s to \$60 million by 2006,⁴¹ while World Bank lending for agricultural assistance fell from 30 percent of all loans to 8 percent over the same timeframe. Governments of aid-recipient countries followed the international community and slashed their own support for agriculture.

With donors slashing agricultural assistance and using food aid as their preferred mode of conducting food security policy, monetizing food aid kind of made sense: otherwise, development organizations simply had no resources to support smallholder farmers. But this is no longer the case. In 2009, the U.S. government launched Feed the Future, a new agricultural development program, starting with 20 countries, and President Obama pledged \$3.5 billion over three years to support agricultural development initiatives. The United States also called on other developed countries to prioritize agriculture, and several donors pledged resources at the 2009 G-8 meeting in L'Aquila, Italy.

Although no one can promise that funding for Feed the Future—or any government program—will be allo-

cated in coming years, its establishment signals a major shift in U.S. government policy on global food security. Feed the Future is the first initiative of its kind to explicitly focus on overcoming long-term food security challenges. It should mean that it is no longer necessary to monetize food aid to obtain resources for long-term food security programs. Food aid is still a valuable tool, but now there's a division of labor: food aid can be used for humanitarian emergencies and protracted food shortages while Feed the Future promotes longer-term food security.

The need to improve the nutritional quality of food aid, discussed earlier, is one major reason to reassess U.S. food aid policy. Another is the need to phase out the practice of monetization as Feed the Future and multilateral initiatives make more resources available for agricultural development. The two areas of change dovetail quite well: saving hundreds of millions of dollars per year in monetization costs would make it possible to fund significant efforts to improve the nutritional quality of food aid.

BOX 4.2 A MOMENT OF UNCERTAINTY ON FOOD AID

by Trans Atlantic Food Assistance Dialogue (TAFAD)

The Food Aid Convention (FAC) was established in 1967 as a multilateral instrument under the International Grains Agreement. Every year member states commit to provide a minimum flow of food and food-related resources to recipient countries. Since the last renegotiation in 1999, the FAC has guaranteed 5 million tons per year of food assistance.

As yet, there has been no discussion of a new commitment on guaranteed tonnage in the ongoing FAC negotiations scheduled to be completed in December 2011. Overall assistance will likely be the sum of individual member pledges in whatever form is convenient (in tonnage or in cash). The risk of the absence of a collective commitment is that governments will have no binding target to reach, thereby making food assistance to recipient countries less predictable.

Abandoning the tenet of a guaranteed floor on food assistance would greatly undermine the value of the

treaty. The FAC should not become another donor coordination mechanism. The treaty must continue to guarantee an adequate and predictable minimum amount of food assistance. This assistance is vital in responding to food emergencies such as the current East African Food Crisis and supporting food safety net programming.

Many countries and observers have called for the new FAC to be needs-based rather than resource-based. A real needs-based convention should therefore ensure a collective commitment every year. There should be a way to reconcile cash and food commitments in a common unit. If the collective commitment were lost in the current negotiations, the FAC would be a weaker instrument of food assistance and therefore less useful as an element of a global food security strategy.

TAFAD is a coalition of 11 major food aid programming NGOs from Europe, Canada, and the United States.

Aligning Food Aid and Feed the Future

“We will design and implement programs that enable the rural poor to participate in and contribute to food security,” reads the Feed the Future Guide, the initiative’s official implementation strategy.⁴² The guide describes Feed the Future’s goals; what stands out are the “two key objectives of accelerating inclusive agriculture sector growth and improving nutritional status.”⁴³

Directly linking improvements in nutrition with agriculture-led growth makes Feed the Future more sophisticated than previous U.S. approaches to food security. Similarly, an approach that recognizes that progress against hunger and poverty requires full partnership with poor people themselves is much more likely to be successful. The governments of developing countries are also essential partners. Sustainable progress requires taking ownership of development initiatives. An encouraging sign in Africa, for example, is the formation of the Comprehensive Africa Agriculture Development

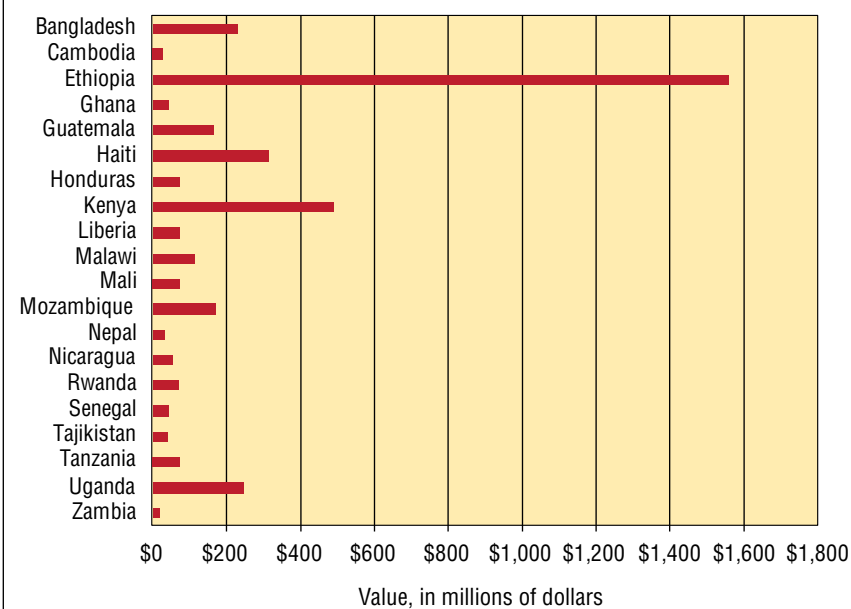
Program (CAADP), which brings together leaders from a number of African countries who have pledged to increase their funding for agriculture and to improve regional integration of their agricultural sectors.

In theory, food aid comes first, development later. In practice, the two frequently co-exist, which is why food aid programs and Feed the Future need to be coordinated. Of Feed the Future’s initial 20 partner countries, some are beginning to realize steady growth in their agricultural sectors, while others are major recipients of U.S. food aid. (See Figure 4.8.) One way to coordinate the two is through local and regional purchase (LRP) of food aid commodities.

Sadly, it is unlikely that humanitarian emergencies in poor countries—whether caused by war, drought, floods, or one-off natural disasters such as earthquakes—will abruptly cease. Food aid will continue to be essential. One possible silver lining is an increased demand for local crops from LRP of food aid commodities. In this way, farmers in the country or region where food aid is needed will benefit from supplying it. Enabling farmers to sell more of their crops in markets will, in turn, help build stronger local economies—precisely the point of Feed the Future’s focus on agriculture-led growth as a way to build resiliency among rural poor people.

In a comprehensive analysis of LRP programs around the world, most of them operated by the World Food Program, GAO concluded, “While the pri-

Figure 4.8 Total U.S. Food Aid to Feed the Future Countries, 2005-2009



Source: USDA, Foreign Agricultural Service, Food Aid Reports.



mary purpose of LRP is to provide food assistance in humanitarian emergencies in a timely and efficient manner, a potential secondary benefit is contributing to the development of the local economies from which food is purchased. This can be accomplished by increasing the demand for agricultural commodities, thereby increasing support for all levels of the commodity value chain.”⁴⁴

GAO found reasons why in some countries LRP might not be an efficient alternative to shipping food aid commodities from the United States—for example, a shortage of reliable suppliers, poor infrastructure, or the inability of processors to meet food safety requirements. However, Feed the Future is oriented toward resolving such problems. In 2010, at the

Smallholder farmers carry out most of their trade in village markets, such as the one shown here in Bangladesh. U.S. agricultural development assistance helps farmers gain greater access to markets.

International Food Aid and Development Conference in Kansas City, MO, Ann Tutwiler, then USDA’s coordinator of Feed the Future, used similar terms to describe the initiative as GAO had used for LRP: “Feed the Future seeks to develop the entire value chain: production, storage and handling, transport and rural infrastructure, and finally increasing market access.”⁴⁵

In spite of its potentially significant benefits, LRP does not enjoy universal support among people involved in U.S. food aid. A report by the Congressional Research Service summarizes two objections: “Critics... maintain that allowing non-U.S. commodities to be purchased would undermine the coalition of agribusinesses, private voluntary organizations, and shippers that participate in and support the U.S. food aid program, and would reduce the volume of U.S. commodities provided as aid.”⁴⁶

It is often very difficult to change the status quo, even in a representative democracy. But policymakers should focus on outcomes and efficiency. Sustainable solutions to hunger depend on the capacity of countries to meet their own food security challenges. Feed the Future can help countries build their capacity, while food aid policies such as local and regional purchase can support the infrastructure necessary to respond more quickly to humanitarian crises.

Feed the Future in Mozambique

Mozambique, like other Feed the Future countries, is poor but committed to taking ownership of its own development. As mentioned earlier, four of every five people live in poverty and spend a large portion of their incomes on food; soaring food prices led to riots in the capital city of Maputo in fall 2010. The country’s turbulent past includes a 16-year civil war that ended in 1992.

U.S. food aid and development assistance work well together in Mozambique, as Ambassador Amelia Matos Sumbana explained to participants in the 2011 International Food Aid and Development conference in Kansas City, MO: “In the 1990s, in the aftermath of 16 years of armed conflict, [U.S. food aid programs] helped our country recover and transition to a more stable and inclusive democracy. Food distribution helped meet immediate

needs, and in a short period of time the program shifted to a developmental focus.”⁴⁷ Mozambique continues to rely on U.S. food aid but is also well on its way to self-sustaining agricultural production. It works with both Feed the Future and the U.S. Millennium Challenge Corporation (through a five-year development compact signed in 2007).

With a resource base of rich soil, abundant water, relatively low population density, and a smallholder-dominated farm sector, the agriculture sector would seem to have great potential to jump-start the nation’s economy and drive it into rapid development. Mozambique is also in a key regional trade location—on the Indian Ocean and bordering five southern African countries.

Feed the Future supports partnerships that provide Mozambican farmers with technical assistance. For example, Ikuru is the country’s largest farmer-owned business, with more than 22,000 members. It’s in Nampula Province in the north, one of the poorest regions of the country, where 43 percent of children are stunted and 51 percent are underweight. Ikuru’s main crop and source of income is groundnuts (peanuts). In 2004, group members sold just 300 metric tons of groundnuts. Production began to rise once the farmers were receiving technical support from USAID and its implementing partners, primarily Michigan State University and the Cooperative League of the USA. By 2009, the volume of nuts sold had reached 2,250 metric tons—an increase of more than 700 percent in just five years. Feed the Future hopes to cultivate more of these types of partnerships in Mozambique.⁴⁸

The technical support available to U.S. agriculture is one of the reasons it is so productive. Much of it is offered to farmers through USDA’s cooperative extension service. Such technical support is much less common in developing countries. Through partnerships with U.S. land grant universities and the private sector, USAID has been able to offer extension services in Mozambique and other developing countries. Ikuru is just one of the farmers’ groups that have made substantial gains in productivity in a short time.

Although Feed the Future supports research and technology innovation, many of the solutions to the problems that limit agricultural production do not require sophisticated technology. In another of Mozambique’s poorest regions, Zambezia, 61 percent of smallholders harvest mangos, but only 5 percent are able to market them. Fruit production in Mozambique is marred by post-harvest loss—25-40 percent of production⁴⁹—because most of the country’s farmers lack access to basic storage facilities that protect their fruit from bugs and rodents.

In Chapter 1, we were introduced to Arlyn Schipper, an Iowa corn and soybean farmer, who has visited developing countries with other U.S. farmers to offer his assistance to smallholders. U.S. farmers would be providing more



Mozambican farmers clear land by hand. Most Mozambican farmers grow food without mechanical tractors or animal traction.

help to smallholder farmers by sharing what they know about farming than by selling a small fraction of their own harvests to U.S. food aid programs. Knowledge-sharing trips are also an important way to build public understanding in the United States of the conditions and struggles of smallholder farmers overseas and of what U.S. development assistance tries to achieve. But opportunities for U.S. farmers to do this are scarce.

Farmers in developing countries do need access to better technologies, but even more important are effective policies and strong support from their governments, and commitment and true partnership from donor countries. Continued U.S. support for Feed the Future is a vital part of what will help them build stronger local economies and stronger families.

Protecting Today's Investments, Looking Toward Tomorrow

The world is not producing enough food to keep pace with increasing demand.⁵⁰ There is no doubt that this is everyone's problem: the consequences of failing to solve it will affect us all. Nothing fuels global instability like hungry people taking their frustration to the streets of capital cities, as we've seen in recent years when food prices spiked.

It will take a concerted effort by governments and the private sector to turn the situation around so that global food production is on track to meet human needs. Developed countries have more influence over the outcome than others. They must come forward and lead because they have the greater share of resources to bring to bear on the problem.

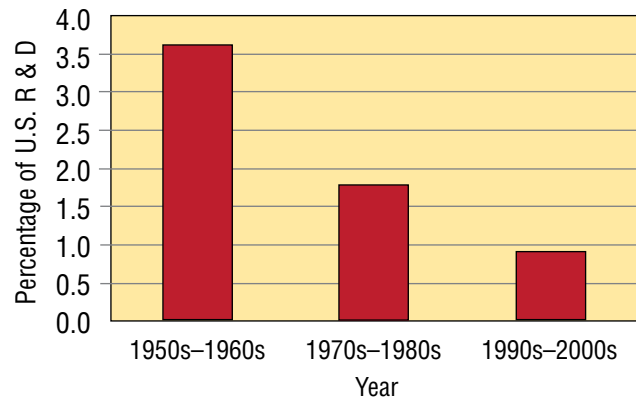
The agricultural challenge is exacerbated by the effects of climate change. The most recent news is quite alarming: if climate change continues at its current rate, child malnutrition rates will increase by 20 percent by 2050.⁵¹ This forecast is based on existing data and scientific models which extrapolate from that data. For example, the model combines data on the increasing

severity of droughts with research from West Africa showing that children born during drought years are 72 percent more likely to be stunted.⁵² Adapting to climate change would be hard enough with a set population, but in fact, world population increases every day. By the end of the century, the number of mouths to feed is expected to reach 10 billion. Agricultural productivity must be increased quickly enough to stay ahead of climate change and population growth combined.

Developing countries are experiencing the destructive effects of climate change now—before many of the developed countries have truly mobilized to help slow the changes. Most developing countries are in southern latitudes whose higher temperatures create environments that are inherently difficult for agricultural

production. In parts of sub-Saharan Africa, where rain-fed agriculture employs 70 percent of the population, drier conditions are producing smaller harvests or none at all, posing a grave threat to already-fragile food security

Figure 4.9 Agricultural Research Spending Slowdown (Public Sector)



Source: Alston, Andersen, James, and Pardey analysis of USDA data.

BOX 4.3 A U.S. – UGANDAN RESEARCH PARTNERSHIP

by *Laura Elizabeth Pohl*
Bread for the World

The hoe falls in a rhythmic “thud, thud, thud” as Jane Sabbi and her sister-in-law hack at the undergrowth on Sabbi’s shaded, fertile vegetable farm. The sun is still rising in Kamuli, Uganda, and Sabbi has already cooked breakfast, washed the dishes, cleaned the goat and pig pens, and laid out several pounds of beans to dry. Still ahead: pounding amaranth, harvesting bananas, shelling beans, feeding the animals, and cooking lunch for her husband and seven children.

“I want to work hard, get enough money to educate the children to the university level and attain degrees,” said Sabbi. “That’s my hope and desire in life.”

Back in 2004, Sabbi was like many other farmers in Uganda: working hard, subsisting on her harvests, and generating a small income. Then she joined Volunteer Efforts for Development Concerns (VEDCO), a Ugandan civil society group. She learned updated farming methods and began planting more nutritious crops, such as beans.

In a country where, according to USAID, one in five people is undernourished and two in five children are malnourished, helping farmers like Sabbi improve food and nutrition security is crucial to a healthy future. That’s why, at about the same time Sabbi joined, VEDCO began a partnership with Makerere University—Uganda’s top college—and Iowa State University. VEDCO benefits from research and development, as well as on-the-ground training, conducted by the two universities. In turn, the universities benefit from VEDCO’s cadre of members willing and eager to improve their agricultural practices and to test different approaches to sustainable development.

“If you say, ‘We’re going to dictate the terms of this,’ then that doesn’t work,” said Professor Robert Mazur, associate director of Iowa State’s Center for Sustainable Rural Livelihoods. “But if you’re learning together and raising questions together, I think you not only have a better chance of being able to introduce change but to make change.”



Laura Elizabeth Pohl

Although women do the majority of the agricultural work in many countries, they often face higher rates of malnutrition than men, due partly to their lower social status. So in 2008, VEDCO, Makerere, and Iowa State launched a four-year nutrition project focused on helping women grow high-quality beans for both consumption and sale.

So far, the project has field-tested various beans to determine which are hardiest, improved market access for the bean growers, and developed fast-cooking bean flour.

Jane Sabbi used to grow beans only for cooking as a sauce and mixing with other foods. Now she harvests high-quality beans for the market. She earns 2,500 shillings (about \$1) per kilo for her improved beans, versus 800 shillings per kilo for regular beans.

“Sometimes I go to the farms and I ask about the production system, ‘Who clears the land?’ ‘The women.’ ‘Who plants the seeds?’ ‘The women.’ ‘Who does the weeding?’ ‘The women.’ ‘Who does the harvesting?’ ‘The women,’” said Dr. Dorothy Nakimbugwe, a food technology and nutrition professor at Makerere who develops bean-related food products. “So, women actually do the majority of the work of farm production and ensure food security for their families.”

Laura Elizabeth Pohl is a writer and multimedia manager at Bread for the World. She visited Uganda and this project in May 2011.

situations.⁵³ In coastal regions, climate change is producing more frequent and severe cyclones, leading to flooding and outbreaks of disease.

Some of the countries facing the most alarming climate change impacts are partners in the U.S. Feed the Future initiative. Mozambique's National Disaster Management Institute reports, "The exposure to natural disaster risk will increase significantly over the coming 20 years and beyond," as more severe cyclones hit the coast.⁵⁴ Even Mozambique's "normal" exposure to natural disaster risk can bring significant damage; for example, severe flooding in 2000 cost the country \$550 million and lowered the national GDP by 1.5 percent.⁵⁵ In our era of rapid change, building the resilience

of families and communities is arguably the best way to help them. Feed the Future investments are focused on improving food security and reducing poverty; families with greater access to resources will be better able to help themselves adapt to climate change.

Climate change is no longer avoidable. The only questions are how soon, and by how much, we allow it to happen. The last decade was the hottest on record; the one before that was the second-hottest. Residents of developed countries have more choice than others about when and how to get serious about containing the damage caused by climate change. The surest way to slow climate change is to reduce greenhouse gas emissions. Because agriculture itself contributes one-third of all greenhouse gas emissions,

the agricultural sector must become more sustainable while simultaneously becoming more productive.

The United States has tools to raise productivity in sustainable ways that poor countries don't. One of these is a sophisticated research and development (R&D) sector. Historically, U.S. public investments in agricultural R&D have paid off handsomely, with cost-benefit ratios of 20:1 or even higher.⁵⁶ The United States also contributes to global agricultural R&D, primarily through the Consultative Group on International Agricultural Research (CGIAR). Established in 1971, CGIAR is a network of research centers around the globe, all focused on innovations to support poor farmers in developing countries—something that the private sector tends to neglect. Investments in CGIAR have a comparable track record, with a rate of return on investments estimated up to 17:1.⁵⁷

U.S. support to CGIAR peaked in the early 1980s and then declined steadily for more than two decades. One reason for this, according to The Chicago Council on Global Affairs, was "the erroneous impression that the world's food problems had been solved. It seemed to some that support for more productivity was no longer needed; food problems came to be understood in some circles as only problems of distribution."⁵⁸ 2008 brought a



UN Photo

Climate change poses a serious threat to food production in sub-Saharan Africa. The region experiences the highest risk of drought of anywhere in the world.

rude awakening as food prices surged and a global hunger crisis ensued. At the height of the crisis, U.S. support to CGIAR was only a quarter of what it had been in the early 1980s.⁵⁹

In 2011, when CGIAR turned 40, the global agricultural system appeared eerily similar to the way it had looked in 1971 when the center was founded. At the time, Malthusian predictions of a world growing too fast to keep up with the demand for food were influential. The Green Revolution that spread across Asia and Latin America stilled those voices for a time. But, as described earlier, global leaders became complacent, and investments in both agriculture and agricultural R&D fell off.

This chapter raises many questions that cannot be answered without additional agricultural research and development, and therefore more funding for it. Just one example: How can agriculture most effectively improve nutrition in countries with high malnutrition rates? Agricultural R&D questions are not academic, but immediately relevant to human problems. In the past decade, the magnitude of the threat that climate change poses to agricultural productivity has become much clearer to researchers and policymakers. We also know more now about the importance of delivering the right nutrition at the right time in life, and about effective ways to do this. All of this is knowledge gained because of investments in R&D.

R&D rarely pays off quickly; it usually takes more than a decade to realize returns on investment. But the results are well worth waiting for, as many examples show.⁶⁰ Instead of restricting R&D funding, we must urge policymakers and the private sector to stay focused on making the investments that are necessary to solve the urgent problems of global hunger and poverty.



USAID has supported various agricultural research programs to improve crop production and incomes for farmers in Mexico.

SAFE-FARMING: CROP INSURANCE FOR SMALLHOLDERS

by Stephanie Hanson

Director of Policy and Outreach, One Acre Fund

Trophus Nyaga is a smallholder farmer in Kamwana, a village in eastern Kenya. He has two acres of land, where he plants maize, beans, millet, and sorghum. He also has avocado trees. Last year, Trophus planted maize for the short planting season, and the rains failed. He harvested less than one bag of maize, not even enough to pay for seed and fertilizer for the next planting season.

But Trophus had purchased crop insurance for the first time that season, and in March 2011, he received a payout. He immediately used that money to purchase maize seeds for the long planting season, which began in March.

Unfortunately, the rains for the long planting season were irregular, and Trophus' germination rate was disappointing. When I met him, at the end of June, he was surprisingly sanguine. "If I do not harvest maize, I will get money for replacing the seeds," he told me.

Trophus had only been an insurance customer for a year, but he was fully convinced of its benefits, as are many of the farmers in his area that have purchased the

same insurance, a product called Kilimo Salama, which means safe farming in Swahili.

Nancy Njeii said that she tripled the quantity of maize seed that she planted because she was confident that she would receive compensation if the rains failed. Before the insurance, she would only plant part of her land, in an attempt to minimize her potential loss.

"There is a hope," a farmer named Enos Ngondi told me. "Either you will be paid if the rains fail, or you will have a good harvest."

Kenyan smallholder farmers are not used to having the kind of hope that crop insurance brings. Though the majority of farmers in Kenya, and across sub-Saharan Africa, depend on rain-fed agriculture, if the rains fail, they traditionally have no way to recover from the loss. They bear 100 percent of the risk.

Farmers in the United States also must contend with the vagaries of the weather. In America, however, crop insurance is universally adopted. Every farmer has it. In fact, the U.S. government highly subsidizes the cost of crop insurance for farmers. It is one of the few agriculture subsidies that the World Trade Organization permits.

But insuring an American farmer with thousands of acres of land is much easier than insuring an African farmer with two acres of land. There is an abundance of historical weather data available in the United States, which makes it possible to calculate risk, and transaction costs are manageable for large farmers. Until recently, these two challenges prevented the spread of crop insurance in sub-Saharan Africa.

Kilimo Salama, the insurance product that Trophus, Nancy, and Enos all purchased, is showing that it is possible to measure risk and administer insurance at a reasonable cost for smallholder farmers.

The product's cost is kept low by technology. Farmers can purchase the insurance at a local agrodealer when



One Acre Fund

SAFE-FARMING: CROP INSURANCE FOR SMALLHOLDERS

they purchase their seed and fertilizer. They receive the insurance policy by text message. Over the course of the agriculture season, Kilimo Salama uses solar-powered weather stations to measure rainfall levels and determine whether the farmers in a particular district should receive a payout. If rainfall levels are either too low or too high during certain critical periods of the growing season, the insurer automatically disburses a payout to every insured farmer in the district. There is no need to check each farmer's fields, or even to write a check to each farmer; the payout is distributed by mobile phone.

Kilimo Salama was developed by the Syngenta Foundation for Sustainable Agriculture in 2009 and was piloted with 200 farmers. In 2011, it is insuring over 21,000 smallholder farmers in Kenya (with plans to reach 50,000 in 2012), in partnership with the Kenyan insurance company UAP. The foundation is looking at offering crop insurance products in other African countries.

One Acre Fund, the agriculture organization that I work for, partners with Syngenta to offer Kilimo Salama to all of our farmers in Kenya who live in districts with its weather stations. We offer the crop insurance as part of our financing package—farmers receive inputs on credit, and the cost of crop insurance is included in the cost of the loan. Because farmers have never had access to crop insurance before, we make it incredibly easy for them to adopt; it is packaged with their loans.

Expanding crop insurance across the continent is particularly important as global food prices rise ever higher. Africa's smallholder farmers have the potential to significantly increase their agriculture production, but without a tool for mitigating risk, most farmers won't be willing to invest in improved seed and fertilizer. Increasing their own production will protect these farmers against further food price increases, but it will also help stabilize global food prices by increasing the overall supply of



One Acre Fund

food. There are roughly 500 million smallholder farmers in the world; in sub-Saharan Africa and southeast Asia, they produce 80 percent of food.

If more of the world's smallholder farmers had crop insurance, they would feel more confident trying new agriculture techniques to improve their productivity. Some of the farmers insured by Kilimo Salama are already doing this. Now that Trophus has crop insurance, he wants to plant different crops and see if he can increase the profitability of his land. "I want to try new things and then I will see the outcome," he said.

Stephanie Hanson is director of policy and outreach at One Acre Fund, an agriculture organization that serves over 55,000 smallholder farmers in East Africa through a complete service model that includes farm inputs, financing, training, and market facilitation. In 2010 and 2011, One Acre Fund won the Financial Times/IFC Sustainable Finance Award for Achievement in Basic Needs Financing.