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Report to Congressional Requesters

May 2011

INTERNATIONAL FOOD ASSISTANCE

Better Nutrition and Quality Control Can Further Improve U.S. Food Aid

GAO-11-491

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Highlights

Highlights of GAO-11-491, a report to congressional requesters

Why GAO Did This Study

For more than 50 years, the United States—which accounts for about half of global food aid supplies—has played an important role in alleviating malnutrition and hunger, especially during emergencies. In fiscal year 2010, the United States spent about $1.5 billion on emergency food aid that reached about 46.5 million beneficiaries. To preserve the nutritional value of food aid, quality controls are in place throughout the supply chain. GAO was asked to assess U.S. efforts to (1) meet the nutritional needs of intended recipients and (2) maintain the quality of commodities throughout the food aid supply chain. GAO analyzed program data, interviewed agency officials and their implementing partners, and conducted fieldwork in the United States and four countries in Africa.

What GAO Recommends

GAO recommends that the Administrator of the U.S. Agency for International Development (USAID) and the Secretary of Agriculture issue guidance on how to address nutritional deficiencies that may emerge during protracted emergencies, evaluate the performance and cost-effectiveness of specialized food products, issue guidance on the use of these products, identify and systematically track key quality indicators, and evaluate food packaging specifications for durability. Both USAID and USDA generally concurred with our recommendations and provided examples of recent efforts to address them.

View GAO-11-491 or key components.
For more information, contact Thomas Melito at (202) 512-9601 or melitot@gao.gov.

What GAO Found

U.S. food aid provides crucial life-saving calories and nutrients to vulnerable populations during short-term emergencies, but food rations designed to address short-term food insecurity may not provide adequate nutrition during long-term food emergencies if the recipients rely solely on food aid. Furthermore, specialized food products designed for the most vulnerable groups are costly and difficult to target to the intended recipients. U.S. food aid provides essential calories and nutrients during short-term emergencies, but many food emergencies extend beyond 1 year, with multiyear feeding programs now accounting for more than half of U.S emergency food aid funding. To address the nutritional needs of vulnerable groups, including young children and pregnant and lactating women, specialized food products can be used in addition to the commodities normally used for general distribution. However, these products are also more costly than the commodities used for general distribution. As a result, U.S. agencies and implementing partners face challenges with the costliness of specialized food products and the trade-off between reaching more beneficiaries and improving nutritional outcomes for some. Within a fixed budget, distributing the more costly specialized products would reduce the overall number of beneficiaries served. The relatively higher cost of specialized food accentuates the importance of targeting efforts to ensure that the food reaches its intended recipients. However, USAID provided implementing partners with limited guidance on how to target the specialized food products to ensure they reach intended recipients.

The quality of blended and fortified U.S. food aid procured has generally improved; however, problems still occasionally arise, and vulnerabilities in quality controls—such as data collection and food packaging—make it difficult to ensure that the quality of commodities is maintained throughout the supply chain. In 2007, GAO found long-standing concerns about food aid quality, specifically with corn soy blend (CSB), a nutritionally enhanced product intended for vulnerable populations. To mitigate such quality problems, in September 2009, the U.S. Department of Agriculture (USDA) resumed quality assurance activities for CSB and wheat soy blend, including vendor facility inspections and commodity sampling and testing. According to FGIS officials, virtually all (approximately 99.5 percent) of CSB lots procured by KCCO in the first quarter of fiscal year 2011 met acceptable specifications and discount ranges. Even with testing, quality problems may still arise due to ineffective quality controls within the supply chain, particularly in data tracking and food packaging. U.S. agencies and implementing partners track data only on food aid damage and losses, even though they are an imperfect indicator for quality. Without systematically tracking key quality indicators, such as elapsed time between major points within the food aid supply chain, agencies and implementing partners may not be aware of the full extent of quality problems. Furthermore, quality problems and losses have resulted from food packaging that is not sufficiently durable for the rugged conditions encountered throughout the food aid supply chain.

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Abbreviations

CSB	corn soy blend
FDA	Food and Drug Administration
FFP	Office of Food for Peace
FGIS	Federal Grain Inspection Service
KCCO	Kansas City Commodity Office
NGO	nongovernmental organization
USAID	U.S. Agency for International Development
USDA	U.S. Department of Agriculture
WBSCM	Web-Based Supply Chain Management System
WFP	World Food Program
WSB	wheat soy blend

View GAO Components

Videos of the three-stage food aid supply chain

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United States Government Accountability Office
Washington, DC 20548

May 12, 2011

Congressional Requesters

In 2010, the United Nations' Food and Agriculture Organization estimated that a total of 925 million people worldwide are undernourished, of whom 88 percent live in Asia and sub-Saharan Africa.[1] Pregnant and lactating women and children under the age of 2 are among the most vulnerable groups at risk of undernourishment.[2] Inadequate nutrition in the first few years of life can result in irreversible damage to a person's health, mental development, and future labor productivity.

For more than 50 years, the United States has provided assistance to food insecure countries—serving as the largest food aid donor in the world and providing about half of all global food aid supplies. In fiscal year 2010, the United States spent almost $2.3 billion to provide a total of 2.5 million metric tons of food aid commodities to food-insecure countries. The majority of U.S. food aid, with funding authorized under the Food for Peace Act, is managed through the U.S. Agency for International Development's (USAID) Office of Food for Peace (FFP).[3] In fiscal year 2010, funding for USAID's Food for Peace food aid programs amounted to $1.9 billion, or 83 percent of the total food aid budget. Of the $1.9 billion, $1.5 billion (79 percent) represents USAID-administered emergency programs that reached about 46.5 million beneficiaries in fiscal year 2010. FFP uses indicators of food insecurity,[4] such as levels of malnutrition in

[1]United Nations, Food and Agriculture Organization, *The State of Food Insecurity in the World, Addressing Food Insecurity in Protracted Crises* (Rome, Italy, 2010).

[2]As defined by the United Nations Children's Fund, undernourishment means being underweight for one's age, too short for one's age (stunted), dangerously thin (wasted), or deficient in vitamins and minerals (micronutrient malnutrition).

[3]Section 3001 of Pub L. No. 110-246, the Food, Conservation, and Energy Act of 2008, changed the title of the underlying legislation from the Agricultural Trade Development Assistance Act of 1954, also known as P.L. 480, to the Food for Peace Act. Title II of the Food for Peace Act, administered by USAID, addresses donation of agricultural commodities for humanitarian purposes. Other U.S. food aid programs are administered through the U.S. Department of Agriculture, including Food for Peace Title I, Food for Progress, and the McGovern-Dole International Food for Education and Child Nutrition programs.

[4]Food insecurity exists when people do not have physical or economic access to sufficient food to meet their dietary needs for a productive and healthy life.

recipient countries, when prioritizing funding. FFP programs provide U.S.-grown agricultural commodities, such as wheat, corn, and sorghum, as well as other fortified products,[5] such as corn soy blend (CSB) a nutritionally-enhanced product intended for vulnerable populations, including pregnant and lactating women and children under the age of 5.

To preserve the nutritional value of food aid commodities and ensure that recipients realize their full nutritional benefit, food aid suppliers rely on quality controls[6] throughout the entire food aid supply chain.[7] U.S. and international entities have established quality standards and controls to assist food aid suppliers, transporters, ocean carriers, and distributors minimize losses and reduce quality problems during each phase of the supply chain. U.S. agencies rely on contractors, nongovernmental organizations (NGO),[8] and the World Food Program (WFP) to adhere to these standards and to address quality control problems when they occur. However, in 2007, we found that U.S. agencies and their partners were not coordinating adequately to respond to quality control problems.[9]

As part of our work on international food assistance,[10] you asked us to review the nutrition and quality control of U.S. food aid. In this report, we

[5]For the purposes of this report, processed, blended, or value-added commodities will be referred to as products. Specialized food products include enhanced versions of corn soy blend, micronutrient powders, lipid-based nutrient supplements, and ready-to-eat food in emergencies.

[6]For the purposes of this report, we define quality as the degree to which food aid commodities adhere to specifications. Quality problems are occurrences of spoilage, infestation, contamination, or damage to the commodity that can result from factors such as failure to meet product specifications, inadequate fumigation, poor warehouse conditions, and transportation delays. We define food spoilage as deterioration in the nutritional value of food that is primarily due to quality control problems. Quality controls are measures to maintain the original quality and quantity of the commodity.

[7]For the purposes of this report, we define the food aid supply chain as a three-stage process covering (1) the domestic phase of the food aid supply chain, including approval, procurement, bidding, decisions, production, and delivery; (2) the shipping phase, which entails ocean transportation from a domestic port to a foreign port; and (3) the foreign phase, which includes truck, rail, and barge transportation, and distribution.

[8]These are international humanitarian aid organizations that include, for example, Cooperative for Assistance and Relief Everywhere, Inc. and Catholic Relief Services, as well as local aid organizations such as the Relief Society of Tigray in Ethiopia.

[9]See GAO, *Foreign Assistance: Various Challenges Impede the Efficiency and Effectiveness of U.S. Food Aid*, GAO-07-560 (Washington, D.C.: Apr. 13, 2007).

[10]This includes reviews of the McGovern-Dole International Food for Education program (forthcoming, May 2011) and monetization of U.S. food aid (forthcoming, June 2011).

assessed U.S. efforts to (1) meet the nutritional needs of intended recipients and (2) maintain the quality of commodities throughout the food aid supply chain.

To address these objectives, we analyzed emergency food aid program data provided by USAID, the U.S. Department of Agriculture (USDA), and WFP. Our review focuses on USAID emergency food aid programs because approximately 79 percent of FFP food aid funding was for emergency programs in fiscal year 2010 and a majority of food aid recipients receive rations through FFP emergency programs.[11] However, since the United States provides many of the same commodities to both emergency and nonemergency food aid programs, and the commodities generally go through the same food aid supply chain, our findings may be applicable to both programs. We surveyed the 29 FFP country program offices that had active FFP emergency food aid programs in fiscal year 2010 and received an 86 percent response rate. In Washington, D.C., we interviewed officials from the Departments of State, the Treasury, and Transportation; the Office of Management and Budget; USAID; and USDA. In Kansas City, Missouri, we met with officials at USDA's Kansas City Commodity Office (KCCO), which is the entity that procures commodities for U.S. food aid programs. We also met with officials representing NGOs that serve as implementing partners[12] to USAID in carrying out U.S. food aid programs overseas; a freight forwarding company; nutrition experts; and international surveyors. In Rome, Italy, we met with officials from the U.S. Mission to the United Nations, the United Nations' Food and Agriculture Organization, and WFP. We also conducted fieldwork in three countries that receive emergency U.S. food aid—Djibouti, Ethiopia, and Zimbabwe—and met with officials from U.S. missions, implementing organizations, and relevant host government agencies. We visited a port in Jacintoport, Texas from which food is prepositioned and shipped; two food aid destination ports and prepositioning sites in Djibouti and South Africa; and several warehouses where U.S. food aid may be stocked prior to shipping, handling, or distributing to final recipients.

[11]Food for Peace Title II resources fund emergency and nonemergency programs. Emergency programs provide resources to meet the immediate food aid needs of those affected by the most severe crises. Nonemergency programs, also known as multiyear development programs, are approved to operate for 3 to 5 years and target chronically food-insecure populations.

[12]Implementing partners refer to WFP and NGOs that are awarded U.S. government grants to carry out the distribution of food aid.

We conducted this performance audit from April 2010 to May 2011 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. Appendix I provides a detailed discussion of our objectives, scope, and methodology.

In this report, we are recommending that the Administrator of USAID and the Secretary of Agriculture work together to (1) provide clear guidance to implementing partners on how to address nutritional deficiencies that may emerge when U.S. food aid is provided through general distribution programs during emergencies that extend beyond a year; (2) evaluate the performance and relative cost-effectiveness of new specialized food products in meeting the nutritional needs of the most vulnerable groups within appropriate program settings before they are included in the agencies' approved list of commodities; (3) provide clear guidance on whether and how best to use new specialized food products, including guidance to the agencies' implementing partners on targeting strategies to ensure that the products reach their intended recipients; (4) strengthen agencies' monitoring of commodity quality by identifying and tracking key quality indicators to ensure that agencies and implementing partners are aware of the full extent of quality problems, including emerging concerns, throughout the supply chain; and (5) evaluate packaging specifications to ensure food packaging is sufficiently durable for the rugged conditions encountered throughout the supply chain. Both USAID and USDA concurred with our recommendations and provided examples of recent efforts to address them.

Background

It is a stated policy of the United States, as promulgated in the Food for Peace Act,[13] to enhance the food security of the developing world through the use of U.S.-grown agricultural commodities to combat world hunger and malnutrition and their causes. Thus, as one element of a broader global strategy to enhance food security in developing countries, U.S. food aid is utilized as both a humanitarian response to alleviate malnutrition and address acute hunger in emergencies in the short term and a development-focused response to address chronic hunger in the longer

[13]See 7 U.S.C. 1691.

term. Similarly, the United Nations System High-Level Task Force on the Global Food Security Crisis, established in April 2008, also calls for a twin-track approach that responds to the immediate needs of vulnerable populations and contributes to longer-term resilience.[14]

Numerous International and U.S. Commitments and Actions Aim to Address the Food and Nutrition Needs of Undernourished Populations

In 1996, the United States and about 180 world leaders pledged to address global food insecurity and nutrition, specifically making a commitment to halve the number of undernourished people in the world by 2015. In 2000, they reaffirmed this commitment with the establishment of the United Nations Millennium Development Goals and, more recently, at the World Summit on Food Security held in Rome, Italy, in November 2009.

The global food price crisis in 2007 and 2008 spurred new initiatives to address the growing prevalence of hunger, and this year, high food prices are renewing concerns over their impact on food security and political stability in a number of developing countries around the world.[15] Among the international initiatives were two key studies that estimated the costs of preventing malnutrition and the benefits from such interventions. In the first study, the Copenhagen Consensus Center estimated that the use of specific micronutrients as supplements or fortification in food could result in economic benefits much larger than their costs, concluding that combating malnutrition in the 140 million children who are undernourished was the best investment the world can make.[16] In the second study, the World Bank estimated that $10.3 billion a year would be required to increase the delivery of a package of 13 proven nutrition interventions targeted to children up to 2 years of age—extending

[14]United Nations High-Level Task Force on the Global Food Security Crisis, *Updated Comprehensive Framework for Action* (New York, N.Y., September 2010).

[15]The Food and Agriculture Organization's recent estimate of 925 million people undernourished worldwide was higher in 2010 than before the food and economic crises in 2008. The Food and Agriculture Organization stated that the number of undernourished people in the world remained unacceptably high.

[16]Harold Alderman, Susan Horton, and Juan A. Rivera, *Copenhagen Consensus 2008 Challenge Paper: Hunger and Malnutrition* (May 2008). The Copenhagen Consensus Center is a research organization based in Denmark that advises governments and philanthropists about the best ways to spend aid and development money.

coverage from current levels to 100 percent of the target populations in 36 countries that carry 90 percent of the burden of stunting.[17]

As described in appendix II, U.S. agencies have also undertaken several initiatives to address global food insecurity and nutrition in recent years. For example, in 2007, USDA commissioned a nonprofit organization, the Sharing Science and Technology to Aid in the Improvement of Nutrition (SUSTAIN), to develop templates for food aid specifications, harmonize the specifications, and make recommendations on quality assurance.[18] In 2009, the administration announced the *U.S. Global Hunger and Food Security Initiative*, subsequently renamed *Feed the Future*,[19] which identified reducing undernutrition and increasing the impact of humanitarian food assistance among the areas of potential investment.[20] Most recently, in April 2011, USAID released the *Food Aid Quality Review*, a 2-year study conducted by Tufts University that recommended 35 changes to U.S. food aid products and programs to deliver improved nutrition.[21]

Funding for U.S. Food Aid Has Generally Increased since 2006 Due to Emergencies, and the Majority of the Food Aid Went to Africa

Over the last several years, funding for U.S. food aid programs has generally increased, and USAID projects that the demand for food will increase by 50 percent over the next 20 years. In 2010, the Food and Agriculture Organization identified 22 countries in crisis requiring external assistance for food, with the highest proportion of undernourished people residing in sub-Saharan Africa. As shown in figure 1, funding for U.S. food aid programs totaled $2.2 billion in fiscal year 2006, peaked at almost $3 billion in fiscal year 2009, and dropped to about $2.3 billion in fiscal year

[17]Jana Krystene Brooks, Susan Horton, Ajay Mahal, Christine McDonald, and Meera Shekar, *Scaling Up Nutrition, What Will it Cost?*, World Bank (Washington, D.C., 2010).

[18]In September 2008, SUSTAIN issued its report, including recommendations related to product specification templates and performance language.

[19]*Feed the Future* is the U.S. governmentwide strategy to address global hunger and food security. The strategy was developed pursuant to a U.S. pledge made at the G8 Summit in L'Aquila, Italy, to provide at least $3.5 billion for agricultural development and global food security over 3 years. In L'Aquila, Italy, and the subsequent G20 Summit in Pittsburg, Pennsylvania, other donors pledged about $18.5 billion, bringing the total to $22 billion. See *Feed the Future Guide* (May 2010), www.feedthefuture.gov.

[20]GAO, *Global Food Security: U.S. Agencies Progressing on Governmentwide Strategy, but Approach Faces Several Vulnerabilities*, GAO-10-352 (Washington, D.C.: Mar. 11, 2010).

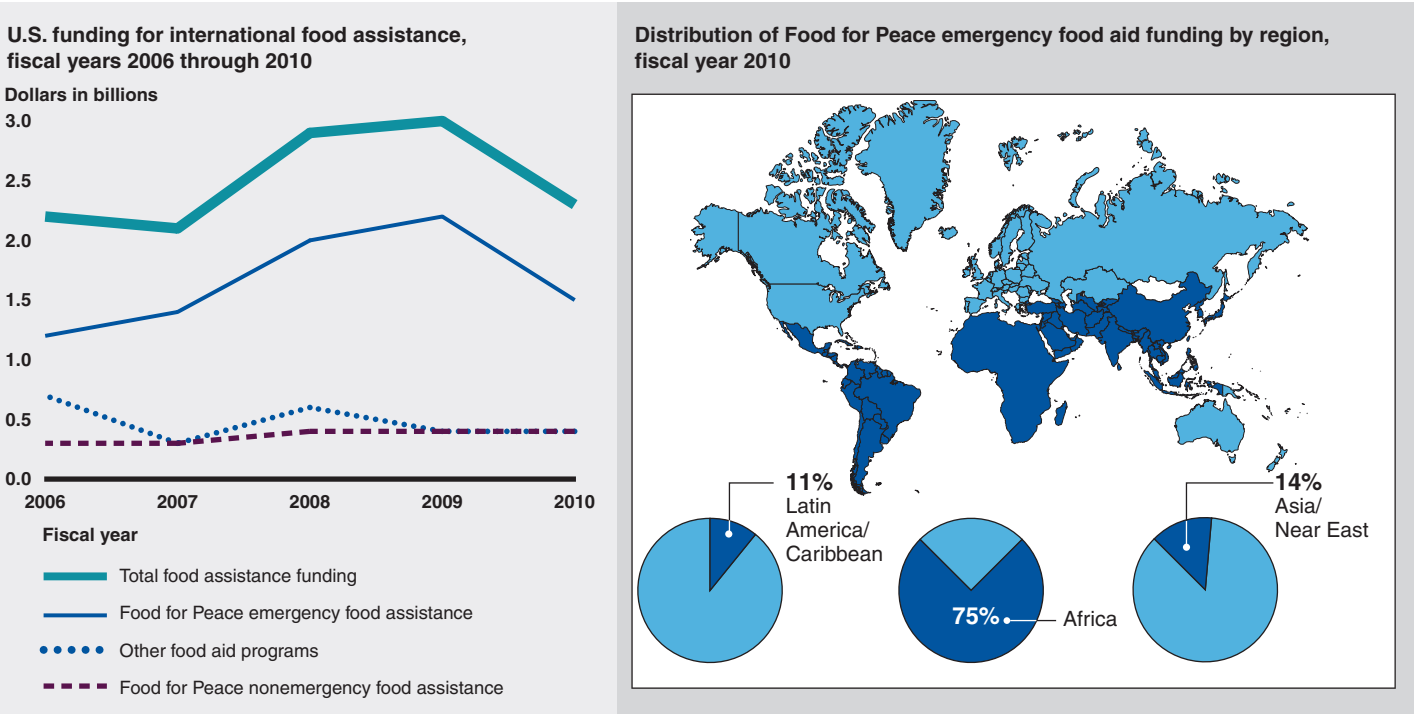
[21]USAID's *Food Aid Quality Review*: *Delivering Improved Nutrition: Recommendations for Changes to U.S. Food Aid Products and Programs* (April 2011).

2010—of which FFP emergency food aid represented 66 percent.[22] In fiscal year 2010, USAID's FFP emergency program provided almost 1.7 million metric tons of food aid commodities to alleviate malnutrition and hunger in 30 countries in response to two kinds of emergencies: (1) natural disasters, such as floods or droughts, and (2) complex emergencies, characterized by a combination of natural disaster, conflict, and insecurity. Approximately 75 percent of FFP emergency food aid funding was allocated to Africa, 14 percent to Asia and the Near East, and 11 percent to Latin America and the Caribbean.[23] Of the fiscal year 2010 emergency food aid funding for Africa, 34 percent went to Ethiopia, 24 percent to Sudan, and 9 percent to Kenya. WFP received 78 percent of all emergency U.S. food aid, the rest went to NGOs and prepositioned warehouses in fiscal year 2010.

[22]In addition to Food for Peace Act funding to USAID for emergency food aid, the U.S. government may provide funding for emergency food aid through other sources. For example, the Department of State's Bureau of Population, Refugees, and Migration (PRM) provides funding contributions to WFP for specific operations to purchase food locally and globally to remedy shortages in refugee feeding. WFP may use such funding to purchase specialized food products, but PRM does not specify what products to purchase. In fiscal year 2010, PRM provided just more than $25.6 million for WFP feeding operations.

[23]Seventeen of the 30 countries are in Africa, 9 in Asia, and 4 in Latin America and the Caribbean.

Figure 1: U.S. Funding for International Food Aid Programs, Fiscal Years 2006 through 2010, and Regions that Received Emergency Food Aid in Fiscal Year 2010



Sources: GAO analysis based on USAID Title II data; Nova Development (map).

U.S. Food Aid Commodities Target Different Groups of Recipients during Emergencies

USAID defines targeting as any method by which an intervention is designed or implemented so that benefits accrue selectively to only a portion of the overall population. Targeting can be by geographic concentration; eligibility requirements such as age, sex or health status; or by means tests that assess household income. To meet the requirements of targeted beneficiaries, implementing partners design and implement emergency food aid programs by relying on needs assessments that help determine the nature and scale of humanitarian crises and the type and scope of assistance required. These assessments inform the selection of geographic areas to be targeted with U.S. food aid as well as criteria for the selection of intended recipients. According to USAID's *Food Aid Quality Review*, targeting requires assumptions to be made regarding the quantity of product to be consumed daily by target beneficiaries, contribution of total nutrients consumed through that product in the overall diet, health status of the target consumer, and intrahousehold sharing of the products, among others. Figure 2 describes three types of

food distribution activities with different target groups of recipients: (1) general food distribution, (2) supplementary feeding, and (3) therapeutic feeding programs. Supplementary feeding programs address moderate acute malnutrition rates, whereas therapeutic feeding programs address severe acute malnutrition. Therapeutic feeding programs are not implemented with FFP funding and are usually supervised by qualified medical professionals.[24]

[24]USAID funds therapeutic feeding programs through other means such as the Office of U.S. Foreign Disaster Assistance, which in fiscal year 2009 provided more than $48 million to support emergency and preventive nutrition interventions in 15 countries around the world. These interventions included treatment for severe and moderate acute malnutrition, as well as infant and young child feeding, among others.

Figure 2: Food Distribution Activities to Target Different Recipients of Emergency Food Aid

Activity	Description	Target group	Examples
General distribution 	Food provided to a population or group	Entire population in a predefined area	• Food provided to an entire population affected by a disaster • Often, the food is provided dry and distributed in bulk, without cooking • Generally, several days or weeks' worth of supplies are provided and the food is shared by all family members
Supplementary feeding 	Food provided to meet additional nutritional needs or caloric requirements of certain groups	• Children under age 5 • Women who are pregnant or lactating • People living with HIV/AIDS	• Food provided to mildly or moderately malnourished children at community feeding centers • Food provided at health facilities to pregnant and lactating women • Food provided as part of home-based care for people with HIV/AIDS
Therapeutic feeding 	Food provided to severely malnourished population groups	Malnourished adults and children	Food programs that are part of intensive care for severely malnourished persons during emergencies

Source: GAO.

Over the past decade, wheat, corn, sorghum, rice, soy, vegetable oil, peas, beans, and lentils have made up the vast majority of U.S. food aid commodities. Wheat, corn, sorghum, rice, and soy are often processed, fortified, or enriched into products such as CSB, wheat soy blend (WSB), fortified wheat flour, fortified cornmeal, and vitamin-A fortified vegetable oil. CSB is often used to treat moderate malnutrition and micronutrient deficiencies in underweight children. CSB is the most commonly programmed specialized product in supplementary feeding programs.

According to USAID data, from 25 to 33 percent of U.S. food aid commodities are enriched, blended, or fortified with micronutrients annually, and these products comprise a minimum of 25 percent of the total tonnage of food aid commodities procured for emergencies. Macronutrients, such as fat and protein, are important for a well-balanced diet, but micronutrients, such as iron or vitamin A, address specific nutritional deficiencies of vulnerable and food-insecure populations.

Multiple Entities Are Responsible for Different Stages in the U.S. Food Aid Supply Chain

USAID and USDA share in the administration of all U.S. food aid programs. USAID's FFP is responsible for the administration of emergency and nonemergency food aid programs. USDA's Foreign Agricultural Service also administers two active food aid programs—Food for Progress and McGovern-Dole Food for Education and Child Nutrition Program—among others.[25] Under USDA's Farm Service Agency, KCCO manages the product standards, purchases, and delivery of all food aid commodities to domestic transfer points. FFP and the Foreign Agricultural Service direct KCCO to procure commodities for their implementing partners that are responsible for the distribution of food aid to intended recipients. KCCO procures a variety of commodities and products from several different vendors across the United States and enters into commodity contracts with vendors. When requested by KCCO contracting officers, USDA's Farm Service Agency conducts quality assurance surveillance, or verification of the vendor's quality control system's effectiveness and ability to deliver products that meet contract requirements. One branch of USDA—the Federal Grain Inspection Service—conducts quality reviews and certification of food aid products. An agency within USDA, the Commodity Credit Corporation pays for the commodities and transfers allocated funds to FFP to fund the movement of food aid from the United States to overseas locations. FFP then awards grants to implementing partners who enter into direct contracts with ocean carriers. The U.S. Department of Transportation's Maritime Administration is also involved in supporting the ocean transportation of food aid through a reimbursement process based on a percentage calculation of commodity and freight ratios.

These U.S. agencies and other entities play a role in three different stages of the food aid supply chain: domestic, shipping, and foreign stages. Figure 3 is an example of the processes involved in the three-stage food aid

[25]USDA also administers a local and regional procurement pilot project.

supply chain with an estimated time range of 4 to 6 months[26] to deliver food aid from vendor to village.[27] The interactive map features videos based on our field work that we developed for illustrative purposes. (See appendix III for the processes within each stage of the supply chain).

[26]According to USAID and USDA officials, some food aid deliveries take longer and others take shorter than 4 to 6 months. In at least 1 case, delivery took over a year from production to distribution in a recipient country.

[27]We visited three locations—Jacintoport, Texas; the port of Durban, South Africa; and the port of Djibouti, Djibouti—where USAID has food aid stocks prepositioned to be in close proximity to regions where emergency food aid has traditionally been provided. USAID uses the food stocks stored in its warehouse in Texas to respond to emergencies in the Caribbean and Central and South America; South Africa to respond to emergencies in the Southern African region, and Djibouti to respond to emergencies in Ethiopia, Sudan, and other countries in or near the Horn of Africa. In addition, USAID has prepositioned warehouses in Lomé, Togo to respond to emergencies in West Africa and one more warehouse in Colombo, Sri Lanka, to respond to emergencies in Southeast Asia and the Middle East.

Figure 3: Illustrative Example of the Three-Stage Food Aid Supply Chain, Including Processes within Each Stage and Estimated Time Range to Deliver Food from Vendor to Village[a]

Stage 1: Domestic
- Planning
- Delivery
- Procurement
- Decisions
- Production

Up to 2 months

Stage 2: Shipping
- Ocean transport

Up to 1 month

Stage 3: Foreign
- Discharge
- Inland transport
- Distribution

Up to 3 months

Stage 1A video
Domestic food production

Stage 1B video
Domestic delivery: load food at Jacintoport

Stage 2 video
Offloading food at Durban

Stage 3A video
Foreign discharge

Inland transport

Stage 3B video
Foreign distribution: Dire Dawa, Ethiopia

Multimedia instructions

Click on the word "**video**" to launch videos.
Hover your mouse over red dots for more info.

Sources: GAO based on information provided by USDA-KCCO, USAID, and Tufts University's *Food Aid Quality Review: Report to USAID;* video 3A courtesy of SDV, Inc., © 2011; and Map Resources (map).

U.S. Food Aid Provides Essential Calories and Other Nutrition during Short-Term Emergencies, but May Not Meet the Nutritional Needs of Vulnerable Groups

U.S. food aid provides crucial life-saving calories and nutrients, but food aid rations[1] designed to address short term food insecurity may not provide adequate nutrients in long-term food emergencies if the recipients rely solely on food aid. Pipeline breaks[2] can further impede implementing partners' ability to meet the nutritional needs of recipients in protracted emergencies. Newly developed specialized foods have the potential to better meet the nutritional needs of vulnerable groups,[3] but those foods are more costly than food aid commodities normally included in the general food distribution. As a result, U.S. agencies and their implementing partners may face challenges with the costliness of specialized food products and the trade-off between reaching more beneficiaries and improving nutritional outcomes for some. In addition, implementing partners may face difficulties in directing specialized foods to the targeted vulnerable populations.

U.S. Food Aid for Short-Term Emergencies May Not Be Adequate for Protracted Crises, and Various Factors Can Reduce Its Effectiveness

U.S. Food Aid for General Distribution Provides Essential Life-Saving Calories and Nutrients

U.S. food aid plays an important role in saving lives in emergencies by preventing starvation and addressing short-term food insecurity. Food aid emergency programs provide a general food distribution to affected populations with the primary goal of preventing food shortfalls that would contribute to mortality due to malnutrition. Access to food and the

[1]Food aid rations refer to the quantity and type of commodities included in the feeding programs. The rations can be defined by the type of recipients (individual ration or household ration), the length of time the food is intended for (weekly or monthly ration), or the purpose of the feeding program (general food or supplementary feeding rations).

[2]A pipeline break is an interruption to the funding or the flow of goods at a given point in the supply chain that leads to disruptions or delays to planned food aid distribution.

[3]Vulnerable groups or populations may include pregnant and lactating women; children under 5; and individuals who are elderly, handicapped, or afflicted with chronic diseases such as HIV/AIDS. This distinction varies by program. For the purposes of this report, we define vulnerable groups as those most at risk of undernourishment—children under the age of 2 and pregnant or lactating women.

maintenance of adequate nutritional status are critical determinants of people's survival in a disaster.

USAID's *Commodities Reference Guide* provides guidelines for implementing partners on how to develop rations and has set recommended levels of calorie and macronutrient requirements, such as fat and protein, to ensure nutrition in emergency feeding, based on international standards. (Appendix IV lists key documents that provide nutrition guidance and standards for U.S. food aid programs.) To enable planning for quick response at the onset of an emergency, international humanitarian aid organizations recommend setting a default energy requirement of 2,100 calories per person per day[4] for populations entirely dependent on food aid. USAID provides implementing partners with similar guidelines on calorie and macronutrient requirements.[5] Rations developed for general food distributions generally consist of grains (milled cereals or bulk grains); pulses; fortified blended foods, such as CSB; and oil.[6] Specifically, a ration should include a mixture of cereals, oil, and pulses that provides a minimum of 46 grams of protein daily per person. To cover the requirements for certain essential fatty acids, 17 to 20 percent of the ration's energy should be provided in the form of fats or oil. Implementing partners are recommended to take into consideration local dietary preferences and needs assessments to develop various acceptable rations using several different combinations and varying amounts of commodities, as shown in table 1. USAID officials told us that when they

[4]*Food and Nutrition Needs in Emergencies*, by the United Nations High Commissioner for Refugees, United Nations Children's Fund, WFP, and World Health Organization. These organizations have jointly developed the guidelines as a practical tool for assessing, estimating and monitoring the food and nutrition needs of populations in emergencies. The guidelines are aimed at field staff involved in planning and delivering a basic general food ration for emergency-affected populations.

[5]USAID's guidelines recognize the importance of micronutrients (vitamins and minerals), but do not specify the recommended levels of micronutrients in general food aid distributions.

[6]Bulk grains include unprocessed commodities such as corn, wheat, and sorghum. Milled cereals are usually fortified with micronutrients and include flours, cornmeal, and bulgur. Pulses include dried beans, peas, and lentils. CSB is a blend of partially cooked cornmeal, soy flour, salt, and vegetable oil, with vitamins and minerals. It is often used for weaning-age children in the form of a thin drinkable gruel. Besides grain, pulses, fortified blended foods, and oil, implementing partners can provide other commodities as part of the ration funded through other sources. Thirty-three of the 45 programs that responded to our survey reported providing additional items funded by other donors. For example, a WFP program in the Democratic Republic of the Congo provided salt and sugar funded by the European Commission and Japanese donors.

approve feeding programs, they monitor the proposed ration sizes and compositions to make sure the rations meet nutritional guidelines and are consistent with the needs assessments.

Table 1: Illustrative Emergency Food Rations Provided in General Food Distributions

	Rations		
Items	**Example 1**	**Example 2**	**Example 3**
Cereal (grams)	400	420	400
Pulse (grams)	60	50	100
Vegetable oil (grams)	25	30	30
Fortified blended food (grams)	60	50	0
Total (grams)	**545**	**550**	**530**
Total (calories)	**2,104**	**2,100**	**2,100**
Protein (grams)	49	49	49
Percentage of energy from fat	14%	14%	18%

Sources: Based on WFP Emergency Operations rations, and Camilla Chaparro and Kathryn G. Dewey, *Use of Lipid-Based Nutrient Supplements (LNS) to Improve the Nutrient Adequacy of General Food Distribution Rations for Vulnerable Subgroups In Emergency Situations (2009)*.

Notes: The cereal in examples 1 and 3 is rice. In example 2, the cereal is cornmeal. These examples illustrate rations containing varying quantities of food aid commodities. All three meet the minimum requirements for calories and protein, but only example 3 meets the minimum requirement for fat.

In practice, ration sizes can vary from the norm of 2,100 calories per person per day. Ration sizes could be adjusted as a result of a needs assessment, which was the case for 20 of the 45 programs that responded to our survey. For example, during our fieldwork in Zimbabwe USAID officials noted that recipients had access to other sources of food and thus received monthly food aid rations of about 1,550 calories a day. Additionally, respondents to our survey noted that logistical and other constraints, such as delays in food aid shipments, can reduce the quantity of food delivered, thereby lowering ration sizes. For example, WFP intended to provide 100 percent of the food needs in a program in the Democratic Republic of Congo, but logistical constraints to delivering food in vast and sparsely populated areas forced WFP to reduce the ration size to meet 76 to 99 percent of the daily needs of the recipients.

U.S. Food Aid for General Distribution Is Not Always Adequate during Protracted Crises

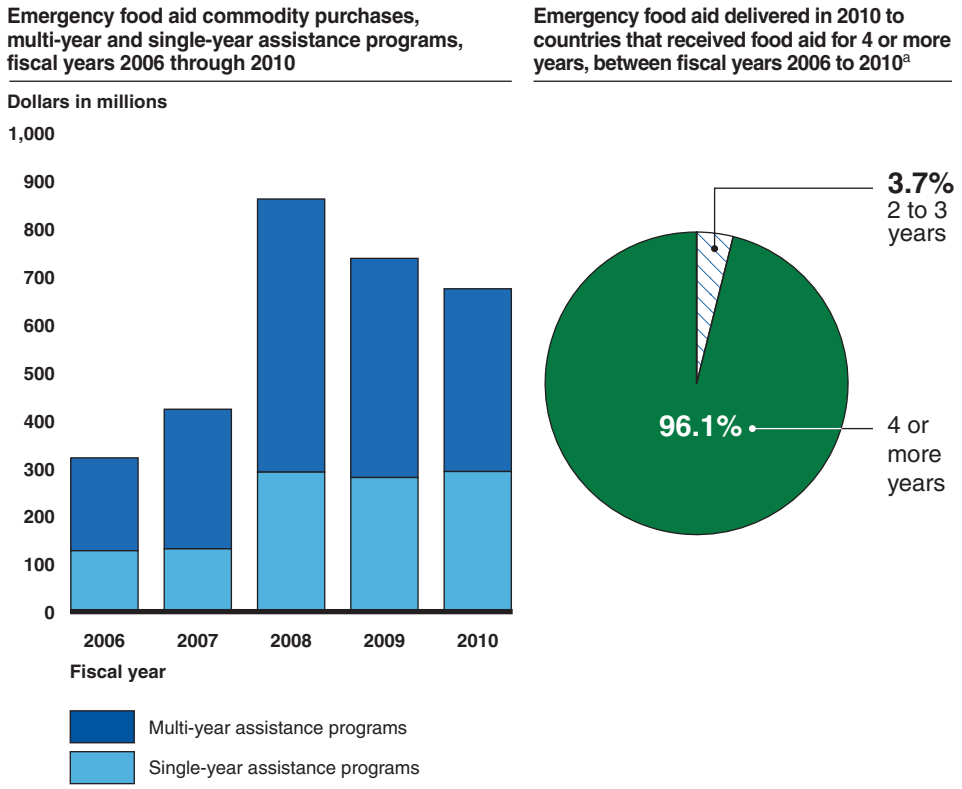
Even with the guidelines on nutrition, food aid rations for general distribution, which are meant to address short-term food insecurity, may not always meet the nutritional needs of the recipients in chronic emergencies when food aid is their sole source of nutrition for more than a year. Although FFP emergency funding is to address short-term food

insecurity, we found that more than half of FFP food aid emergency funding was spent on multi-year emergency programs. Approximately 96 percent of the food aid in fiscal year 2010,[7] or nearly 1.6 million metric tons, was delivered to 21 countries that have received U.S. food aid for 4 years or more during fiscal years 2006 through 2010 (see fig. 4).[8]

[7]In fiscal year 2010, 21 out of 30 countries received U.S. emergency food aid for 4 years or more. The 21 countries are Afghanistan, Burundi, Cameroon, Central Africa Republic, Chad, Colombia, Democratic Republic of Congo, Djibouti, Ethiopia, Haiti, Kenya, Nepal, Niger, Pakistan, Rwanda, Somalia, Sri Lanka, Sudan, Tanzania, Uganda, and Zimbabwe. Eight countries received emergency food aid for 2–3 years: Algeria, Congo, Ecuador, Guatemala, Madagascar, the Philippines, Tajikistan, and Yemen. One country (Laos) received emergency food aid for 1 year.

[8]For the purposes of this report, we use WFP's definition of protracted operations—emergencies that receive food aid for more than 24 months—and USAID's definition of prolonged emergencies—emergency programs that extend beyond a single year.

Figure 4: FFP Emergency Food Aid Commodity Purchases, Single-Year versus Multi-Year Programs, Fiscal Years 2006 through 2010



Source: GAO presentation of USAID data.

[a]Percentages in the pie chart are based on the amount (in metric tons) of food aid delivered in 2010 to countries that have received food aid for multiple years since 2006. The percentages do not add up to 100 percent in the pie chart because one country, which received food aid for 1 year and represented 0.2 percent of total emergency food aid in 2010, was not included in the pie.

When the food provided is not nutritionally varied, recipients can develop serious micronutrient deficiencies, especially during prolonged emergencies. This is particularly detrimental when recipients' nutritional status was already poor before the emergency started. For example, vitamin-A and iron deficiencies are widely endemic public health nutrition problems in many poor countries, and the problem can be exacerbated by food emergencies. All respondents to our survey noted at least one common micronutrient deficiency in their program's beneficiaries, including iron, vitamin-A and iodine deficiencies, most of which were in countries receiving food aid for more than 1 year (see table 2).

Table 2: Number of GAO Survey Respondents Reporting Common Micronutrient Deficiencies among Their Beneficiaries

Micronutrients	Number of respondents reporting this was a common deficiency among their beneficiaries, out of a total of 34 respondents
Iron	34
Vitamin A	28
Iodine	19
Vitamin C	6
Niacin	3
Thiamine	3

Source: GAO analysis of FFP officers' responses to GAO survey.

Supplemental feeding programs through maternal and child health and nutrition activities

Source: GAO.

Beyond the general food distribution, the needs of vulnerable groups are often met through selected feeding programs, which provide specific foods to only a segment of the population to meet the particular needs of the most nutritionally vulnerable households or individuals. Implementing partners typically carry out supplemental feeding programs through maternal and child health and nutrition activities that are intended to improve the nutritional status of young children and women.

Displaced populations in closed refugee camps that rely entirely on food aid for long periods of time are at a particularly high risk of developing micronutrient deficiencies. Epidemics of pellagra and beriberi as well as scurvy have broken out among food aid beneficiaries who were totally dependent on food aid.[9] For example, in an Angolan refugee camp in 1999, an outbreak of pellagra affected more than 900 individuals, most of whom were dependent on WFP food distribution. Large-scale outbreaks have become rare as humanitarian organizations pay closer attention to the recipients' micronutrient needs. However, USAID officials noted that it is important that emergency food aid continues to be able to provide adequately formulated micronutrient-rich foods to ensure that this risk has not increased.

Difficulties in designing precise rations and delays in food distribution can reduce the programs' effectiveness and negatively impact recipients' nutritional status during protracted crises. To simplify operations in the absence of an accurate assessment, implementing partners sometimes distribute household rations instead of individual rations, which may result in members of larger households receiving less than what they need. USAID told us that they have revised their instructions to implementing partners to better define the numbers of people who benefit from a

[9]Pellagra is a severe deficiency of vitamin B3 and can cause diarrhea, skin inflammation, and dementia. Beriberi is a severe deficiency in vitamin B1 and can cause pain and weakness in the legs and arms, nerve damage, edema (fluid under the skin), and irregular heart rate. Scurvy is a severe deficiency in vitamin C and can cause poor wound healing, fatigue, leg pain, rash on the legs, and gum disease.

household ration. In the past, USAID did not always know the number of people who benefited from a household ration. In addition, pipeline breaks can disrupt food distribution and negatively impact the recipients' nutritional status. Of the FFP feeding programs we surveyed, we found 32 of the 45 implementing partners experienced a pipeline break at least once a year. When a pipeline break occurs, food aid rations are reduced or completely stopped, and the recipients have to cope with the reduction in rations by skipping meals or eating less.

Specialized Food Products Are Being Formulated to Meet Nutritional Needs of the Most Vulnerable Groups, but Are Costly and Difficult to Direct to Intended Recipients

New Products Are Specially Formulated to Meet the Nutritional Needs of the Most Vulnerable Groups and Their Effectiveness Is Under Study

Food for Peace is supporting efforts to introduce new, nutrient-dense products specially formulated to meet the nutritional needs of vulnerable groups[10] and study how well these products achieve their desired outcomes. The ration for a general food distribution is tailored to meet the nutritional requirements of an entire population and thus does not meet the nutritional needs of certain individuals in vulnerable populations, especially very young children from 6 to 24 months old.

Malnutrition is of particular concern for very young children because as research has shown, children are at the greatest risk of irreversible long-term physical and mental damage in the first 2 years of life, the period of time that provides the best window of opportunity in which a child may benefit from nutritional interventions. For more than 30 years, fortified blended foods, such as CSB, have been utilized as the primary vehicle by which FFP programs have provided enhanced nutrition during emergencies.[11] In recent years, nutritionists have debated the

[10]For example, on March 30, 2011, USDA issued a request for proposals for the procurement of noncommercial emergency food products, such as ready-to-eat meal replacements, for use in various international food assistance programs.

[11]Thirty-six of the 45 programs that were covered by our survey reported including fortified food items in the general rations or providing them to high-risk groups.

appropriateness of using fortified blended foods to prevent and treat malnutrition in young children 6 to 24 months old, who have smaller stomachs, making it more difficult for them to eat enough of the product to obtain sufficient nutrients. The food has antinutrient properties that inhibit the uptake of certain vitamins and minerals. As a result, U.S. agencies, implementing partners, and private industry have developed several new products that aim to address the shortcomings of fortified blended foods and thus the specific nutritional needs of young children and other vulnerable groups.[12] Some of the new specialized products provide additional vitamins and minerals or alternative forms of these micronutrients that can be more easily absorbed than standard fortified blended foods. They include enhanced versions of CSB, micronutrient powders, lipid-based nutrient supplements,[13] and ready-to-eat food in emergencies.

USAID plans to make specially-formulated products available to implementing partners to provide a more diverse selection of products aimed at enhancing nutrition but USAID and its implementing partners lack all the information necessary to choose the most appropriate product to achieve the desired nutritional outcome for their programs. In order to make such a choices, they need to know how well the product performs in promoting nutritional health indicators, such as weight gain and growth, particularly in a program setting, and how well they perform in comparison to the existing products. The efficacy of the newly developed specialized products, such as CSB++ and lipid based products, or the extent to which these products promote desired outcomes, is still being studied by USAID, WFP, nutritionists, and other researchers.[14] Testing of several products has indicated potential effectiveness in treating severe malnutrition in a therapeutic setting. One NGO told us that it has

[12]For example, USAID's *Food Aid Quality Review* has recommended a number of improvements in fortified foods and programming to better meet the nutritional needs of recipients and minimize antinutrient properties.

[13]Lipid-based nutrient supplements refer to a range of products in which vitamins and minerals are embedded in fat-based food products and are generally composed of vegetable oil, peanut paste, milk powder, sugar, and micronutrients. Lipids are a broad group of naturally occurring molecules which includes fats. Although the term lipid is sometimes used as a synonym for fats, fats are a subgroup of lipids. A minimum amount of dietary fat is necessary to facilitate absorption of fat-soluble vitamins (A, D, E and K).

[14]USAID is supporting studies on lipid-based products in Guatemala, and a study comparing CSB++, Supplementary Plumpy®, and a soy-fortified ready-to-use spread for treatment of moderate acute malnutrition in Malawi.

successfully used some of these new products to treat severely malnourished children, as demonstrated by weight gain and other measures. Some studies on lipid-based products have also shown that the products are effective in preventing malnutrition in achieving some nutritional outcomes such as weight gain, but they do not demonstrate increases in height, which is another important measure of a child's nutritional health. In addition, our literature review found few studies that compared the new products to CSB to determine whether they perform better in achieving nutritional outcomes and according to a nutrition expert we interviewed, more research is needed in this area.

Specialized Products to Meet the Nutritional Needs of the Most Vulnerable Groups Are Costly

Specialized food products are generally more costly than food rations used in general distribution. Within a fixed program budget, providing more costly products would result in fewer numbers of beneficiaries served. As a result, implementing partners may be faced with a choice between the nutritional quality and quantity of the food provided. For example, a general food distribution ration comprised mostly of grain such as rice, cornmeal, wheat, or sorghum can range from $0.02 per day for a 6-month-old child to $0.09 per day for a 2-year-old child.[15] The more nutrients and energy a ration contains, the more expensive it becomes. Micronutrient powders are low-cost but contain no calories, so they would be used in addition to a daily ration, adding to the cost. A daily ration consisting primarily of CSB includes additional fortification and can cost between $0.06 and $0.12, depending on the size of the ration. Making improvements to the current CSB formulation results in higher costs as well. For example, WFP's new formulations for CSB+ at the upper end of the range cost more than CSB; and CSB++, at $0.24 per daily ration, is about two or three times the cost of CSB. Adding newly developed supplemental food products, such as Nutributter®, to enhance the nutritional value of the feeding can increase the total cost of the ration by several times, as shown in table 3. The cost of a recommended dose of ready-to-use supplementary food, such as Plumpy'Doz® ($0.20) and Supplementary'Plumpy® ($0.33), is two to three times more than the recommended ration for CSB ($0.06 to $0.12).

[15]The cost is for a grain-based ration that includes some CSB.

Table 3: Cost Comparison of Commodities for General Food Distribution and Specialized Products for Vulnerable Groups as of 2009

Type of product	Product[a]	Product description	Vulnerable population targeted	Calories recommended daily ration	Recommended ration or dose (in grams)	Cost of product per daily ration or dose
Grain-based representative rations	Representative complementary ration	Ration of grain, pulse, CSB, and vegetable oil	Children 6–8 months and 12–23 months old	202 and 548	51 and 139	$0.019 and $0.05
CSB-based rations[b]	CSB	Fortified blended foods made of processed cornmeal, soy flour, soybean oil, vitamins, and minerals	Small children and pregnant and lactating women	502–985	120–235	0.06–0.12
	CSB+	Similar to CSB but formulated with improved micronutrient profile	Small children and pregnant and lactating women	627–1,235	120–235	0.08–0.16
	CSB++	Similar to CSB+, but also contains milk powder, dehulled soy, oil, sugar, and tighter microbiological specifications	Young children, 6 months to 2 years old	840	200	0.24
Micronutrient powders[c]	Micronutrient powder—15 vitamins and minerals	Powders made of vitamins and minerals sprinkled on prepared food	Small children, school-aged children, and general population	Does not contain calories	1	0.03
	MixMe Plus™				5	0.04
Nutritional supplements	Nutributter®	Peanuts, sugar, vegetable oil, nonfat milk powder, whey, maltodextrin, vitamins, and minerals	Young children 6–24 months old	108	20	0.11
Ready-to-use supplementary foods	High energy biscuits	Wheat flour, vegetable shortening, sugars, soy flour, skimmed milk powder, vitamins, and minerals	Small children 6 months and older	450	100	0.12

Type of product	Product[a]	Product description	Vulnerable population targeted	Calories recommended daily ration	Recommended ration or dose (in grams)	Cost of product per daily ration or dose
	RUFC India	A chickpea-based product comparable to Supplementary' Plumpy® and Plumpy'Doz®	Young children 6 months and older	260	50	0.13
	Plumpy'Doz®	Paste of vegetable oil, sugar, peanuts, nonfat milk powder, maltodextrin, whey, cocoa, vitamins, and minerals	Young children 6-36 months	247	46	0.20
	Supplementary' Plumpy®	Paste of vegetable oil, sugar, peanuts, soy protein isolates, maltodextrin, whey, vitamins, and minerals	Young children 6 months and older	500	92	0.33
Ready-to-use therapeutic food (RUTF)	Plumpy'Nut®	Ready-to-use paste composed of vegetable oil, sugar, peanuts, nonfat milk powder, whey, maltodextrin, vitamins, and minerals	Children 6 months and older	500	92	0.41

Source: GAO analysis based on various studies.

Notes: The cost of different product rations in this report only represents the cost of the food product in a daily ration or dose. Transportation costs were not included in the calculations, but affect the overall cost. For example, the transportation cost for lipid-based products may be lower than for grain products since they are a smaller-sized product. The studies we reviewed include (1) Camilla Chaparro and Kathryn G. Dewey, *Use of Lipid-Based Nutrient Supplements (LNS) to Improve the Nutrient Adequacy of General Food Distribution Rations for Vulnerable Sub-Groups In Emergency Situations*, FANTA-2 Food and Nutrition Technical Assistance, University of California–Davis (July 2009); (2) Martin W. baBloom and Saskia De Pee, "Current and Potential Role of Specially Formulated Foods and Food Supplements for Preventing Malnutrition among 6- to 23-Month Old Children and for Treating Moderate Malnutrition among 6- to 59-Month Old Children," *Food and Nutrition Bulletin*, vol. 30 (Nov. 3, 2009) s434-s463; and (3)various WFP bulletins.

[a]These products can also be used to supplement the diet of pregnant and lactating women.

[b]WFP rations of CSB+ and CSB++ are high in kilocalories for young children. This amount is a typical ration and is provided in areas of high stunting levels and to target the vulnerable population in areas where possible sharing may occur.

[c]Micronutrient powders provide vitamins and minerals and are added to calorie-containing food to make a complete ration. Micronutrient powders, however, would not be used with a ration that has already been fortified. For example, they would not be used in a ration containing CSB because CSB is already fortified. Because most emergency rations include some CSB, the addition of micronutrient powders could result in too much of some micronutrients.

U.S. Agencies and Implementing Partners Face Difficulties in Targeting Specialized Food Products to Intended Recipients

Failure to effectively target more costly specialized food aid products to intended beneficiaries can undermine U.S. agencies' and implementing partners' efforts to improve beneficiaries' nutritional status. Implementing partners often use selective feeding programs to distribute specialized food aid products to vulnerable groups at the individual level by using a process known as targeting to direct specialized food to the intended recipient. Targeting involves assessments of needs, program planning to reach vulnerable households with adequate food, implementing the distribution of food, usually some education on nutrition, and monitoring these activities.

USAID does not track nutritional outcomes—such as maintenance or improvement of nutritional status, reduced stunting, or weight gain—for its emergency FFP programs unless the program has a specific nutritional objective, like a supplementary feeding program.[16] According to the *Sphere Handbook*, food aid distribution systems should be monitored to ensure that vulnerable groups are receiving their intended amount of food and that timely corrective action is taken when necessary.[17] A WFP official told us that WFP utilizes food aid monitors to conduct post delivery evaluations to determine food consumption patterns among targeted food aid beneficiaries and uses this information to revise rations, determine if WFP is targeting the wrong recipients, or strengthen targeting efforts to reach the intended recipients. However, according to nutrition experts who drafted USAID's *Food Aid Quality Review*, implementing partners rarely make adjustments to rations based on monitoring of local consumption patterns either before or after implementation to determine if target beneficiaries are receiving their intended share of a ration. Additionally, at the agency level, USAID does not have a database to track and aggregate maternal and child health nutrition activities supported by FFP emergency funding. Saving lives, rather than achieving nutritional outcomes, is the programmatic focus of emergency programs. Thus, nutritional outcomes are not tracked in these programs. According to USAID officials, when FFP does not provide all the resources for a program, it is difficult to determine the total number of recipients being served. Absent information on nutritional outcomes, and without a reliable

[16]According to USAID officials, the World Health Organization has not specified nutritional requirements for general distribution feeding programs.

[17]The *Sphere Handbook* is a handbook published by a group of humanitarian organizations, such as the Red Cross, which lists universal minimum standards in core areas of humanitarian assistance, including standards in food security, nutrition, and food aid.

number of recipients being served, FFP is not able to ensure sufficient utilization of food among intended recipients.

In the field, challenges in targeting the most vulnerable populations include difficulty in determining recipients' food requirements using needs assessments and in identifying specific vulnerable groups or individuals. For example, a recent assessment of FFP programs found that needs assessments typically lack detailed data on local consumption and nutritional needs of recipients. While 38 of the 45 programs we surveyed reported that needs assessments had been conducted to determine the food rations for general distribution, WFP officials agreed that needs assessments currently provide only some of the required information about the specific nutritional needs of beneficiaries. According to agency officials, needs assessments are not always useful when developing rations for food aid programs. Instead, WFP or NGOs often request specific food aid commodities based on their historical requests of the commodities available for FFP procurements rather than recipients' current needs, particularly in a rapid onset emergency.

Even when done well, targeting can be undermined at the recipient level by the cultural practice of sharing in local communities. Targeting specialized food products to appropriate beneficiaries is difficult when rations are shared among members of an entire household or community. As a result, the correct recipients may not receive the appropriate amount of food, and specialized foods may not reach vulnerable recipients. Our survey of FFP officers confirmed that recipients of CSB—which is intended to meet the specific nutritional needs of infants, young children, pregnant women, and lactating mothers—often share the commodity with their entire family. Twenty-six of the 30 programs we surveyed reported at least some sharing by recipients. Sharing of food within the household is widely recognized by implementing partners and some programs design their rations to take this practice into account. For example, some implementing partners may request higher quantities of specialized food products on the assumption that only 20 percent of the food provided will reach targeted recipients, whereas other implementing partners may not adjust rations for sharing at all. According to USAID officials we interviewed, food aid commodities are commonly shared not only within the household, but also among community members. For example, during fieldwork in Zimbabwe, food aid recipients with whom we met stated that they shared up to a third of the food aid they receive with other community members who had not qualified for food aid but were still in need. In addition, during a food aid distribution we witnessed in Ethiopia, the implementing partner's list of recipients specified three family

Recipients sharing CSB in Ethiopia

Source: GAO.

members eligible to receive CSB as part of a vulnerable group feeding program. However, members of the household told us that one family member qualified as vulnerable—defined as a child under 5 or a pregnant or lactating woman. The head of household explained that CSB is shared with all members of the family, especially elderly individuals and the male head of household, who needs extra energy to work in the field.

USAID officials acknowledged that more research is needed to better understand food aid sharing practices, so that FFP can provide implementing partners with more guidance on this issue. Currently, USAID provides implementing partners with limited guidance on how to target and use specialized food products to ensure they reach intended recipients. According to a lead author of USAID's *Food Aid Quality Review*, the packaging size of specialized food aid products, such as CSB and other fortified and blended foods, may contribute to sharing. CSB is packaged and shipped in bags that weigh 25 kilograms (55 pounds) and implementing partners distribute it to recipients by either repackaging or scooping it into carry-home containers or serving on-site. Once the original packaging has been removed, specialized products are less likely to be differentiated from other products consumed by the household. According to a nutrition expert, smaller packaging that depicts the intended beneficiary, such as a baby or a mother, would convey a clearer programming message to recipients about the intended beneficiary of the commodity and decrease the likelihood of sharing with other family members.[18] To decrease sharing, WFP plans to establish a standard packaging size of 1.5 to 6 kilograms (3.3 to 13.2 pounds) for delivering rations of CSB++. Some USAID officials thought that such changes could improve efforts to target food aid products to specific individuals but both USDA and USAID officials said smaller packaging could also be cost prohibitive.

[18]USAID's *Food Aid Quality Review* recommended that USAID reduce the packaging size of CSB and WSB from 25 kilogram (55 pound) sacks to monthly ration sizes of 6 kilograms to 10 kilograms (13.2 to 22 pounds) in order to reduce sharing at the household level. However, the study noted that the capacity and cost of smaller packaging, as well as the impact on consumption among targeted consumers, has not been fully evaluated under field conditions.

The Quality of Blended and Fortified U.S. Food Aid Has Generally Improved, but Quality Control of the Supply Chain Has Vulnerabilities

Overall, the quality of blended and fortified U.S. food aid commodities procured has improved with enhanced quality assurance activities; however, problems may still arise, and vulnerabilities in quality controls, such as data collection and food packaging, make it difficult to ensure that the quality of commodities is maintained throughout the food aid supply chain.

Overall Quality of Blended and Fortified U.S. Food Aid Has Improved due in Part to USDA's Renewed Quality Assurance Activities, but Quality Control Problems Still Occasionally Occur

USDA's Renewed Quality Assurance Activities Enhance the Quality of CSB and WSB Procured

Quality definitions

Quality is the degree to which food aid commodities adhere to their specifications from procurement through distribution to beneficiaries.

Quality problems are occurrences of spoilage, infestation, contamination, or damage to the commodity that can result from factors such as failure to meet product specifications, inadequate fumigation, poor warehouse conditions, and transportation delays.

Quality controls are measures to maintain the original quality and quantity of the commodity.

Due in part to renewed government quality assurance activities, the quality of CSB and WSB procured for U.S. food aid programs has improved. In 2007, we found long-standing concerns about food aid quality, specifically with blended and fortified foods such as CSB. We reported, for example, that in 2005 some shipments of CSB were overfortified with iron[19]—which can be toxic when consumed by vulnerable groups in large amounts—leading to more than 17,000 metric tons of CSB not being distributed to intended beneficiaries.[20] Furthermore, in 2008, an implementing partner in Haiti claimed that approximately 400 children had developed diarrhea after consuming CSB with fiber content that did not meet specified levels.[21] The absence of government quality assurance during procurement may have contributed to such problems. Prior to 1999, USDA's Federal

[19]U.S. agency officials said that subsequent laboratory tests revealed that the problem may have been caused by rancid full fat soy flour rather than overfortification of iron.

[20]GAO-07-560.

[21]According to USDA officials, the cause of diarrhea was never conclusively established. The fiber content determined by laboratory tests was slightly higher than the 2.5 percent allowed by CSB specifications. KCCO conducted research and was unable to establish a causal link between the fiber levels present and the illnesses experienced.

Grain Inspection Service (FGIS) sampled and tested CSB and WSB to verify that they were meeting product specifications. In 1999, however, USDA transitioned to a program called Total Quality Systems Audit[22] that, for approximately the next 10 years, relied solely on the vendors' own quality control system, including allowing vendors to self-certify the quality of their commodities. KCCO contract terms required vendors to provide a certificate of analysis verifying that the commodities met specifications—a practice similar to that of the commercial sector.[23] Two vendors we spoke with explained that certificates of analysis are a standard commercial practice in the U.S. food industry because market mechanisms—such as impact on reputation or loss of customers—penalize vendors if they produce poor-quality commodities.[24] However, KCCO was not able to rely on market mechanisms under Total Quality Systems Audit, even when multiple quality problems arose. For instance, one vendor was responsible for two high-profile quality problems with CSB, but KCCO continued procuring commodities from that vendor[25] because it submitted the lowest bids. In commenting on a draft of our report, USDA officials added that this vendor also had the largest capacity

[22]The Total Quality System Audit program involved inspecting the vendor's quality control system and relying on that system to assure the quality of the end product.

[23]A certificate of analysis is documentation of the laboratory analysis of the chemical, physical, functional, and microbiological characteristics of a product lot. When provided, a certificate of analysis should guarantee that the product characteristics are as stated in the specification and that when appropriately sampled and tested for verification, equivalent analytical results are obtained within the range of normal statistical error.

[24]An extensive federal regulatory system oversees the domestic food industry. For example, the Centers for Disease Control and Prevention determine whether food-borne disease outbreaks have occurred and, with other federal agencies, link those outbreaks to particular foods or vendors. Meanwhile, USDA (for meat, poultry, and processed egg products) and the Food and Drug Administration (FDA) (for all other food) have authority through the courts to seize, condemn, and destroy adulterated or misbranded food under their jurisdiction. Both agencies disseminate information about foods that are believed to present a danger to public health. In addition, on January 4, 2011, the FDA Food Safety Modernization Act gave FDA improved capacity to prevent food safety problems by requiring food manufacturers to abide by hazard analysis and risk-based preventive controls. The act also envisions a role for USDA and directs the Secretaries of Agriculture and Health and Human Services to develop a national agriculture and food defense strategy, and directs the Secretary of Health and Human Services to coordinate with the Secretary of Agriculture on targeting food inspection resources, among other things.

[25]KCCO primarily uses a type of procurement approach called "sealed bidding" to procure food aid commodities, an approach that was required by regulation (7 CFR 1496) until that regulation was eliminated in May 2009. The *Federal Acquisition Regulation* governing sealed bidding require selection of vendors based solely on price and price-related factors—not on technical factors such as a vendor's prior performance or quality controls.

to manufacture CSB, supplying approximately 40 percent of CSB per year. As a result, not purchasing CSB from it would have compromised USDA's ability to meet CSB demand.

To address such quality problems, KCCO, through FGIS, resumed quality assurance activities at the source of production for CSB and WSB in September 2009,[26] including facility inspections and commodity sampling and testing.[27] Government quality assurance activities are meant to prevent the entry of poor-quality commodities into the supply chain.[28] According to KCCO officials with whom we spoke, KCCO contracts stipulate government sampling and testing to ensure that a product meets specifications before acceptance.[29] When FGIS quality assurance activities resumed in September 2009, FGIS discovered that considerable amounts of food aid samples were not, in fact, meeting specifications as indicated by their certificates of analysis. For example, in December 2009, FGIS took CSB samples from one vendor and discovered quality problems such as the presence of salmonella and insects. According to KCCO officials, KCCO required the vendor to halt shipment and replace the commodities. As another example, in the second quarter of fiscal year 2010, more than 9 percent of all CSB samples collected and tested by FGIS failed to meet the acceptable specification and discount ranges for fiber content; more than 7 percent failed to meet specification and discount ranges for the standard

[26]KCCO also determined at this time that elements of the Total Quality Systems Audit program were not compliant with the *Federal Acquisition Regulation*, specifically its prequalification requirement. Certificates of analysis were not in violation of the *Federal Acquisition Regulation*, and continue to be used for certain commercial commodities.

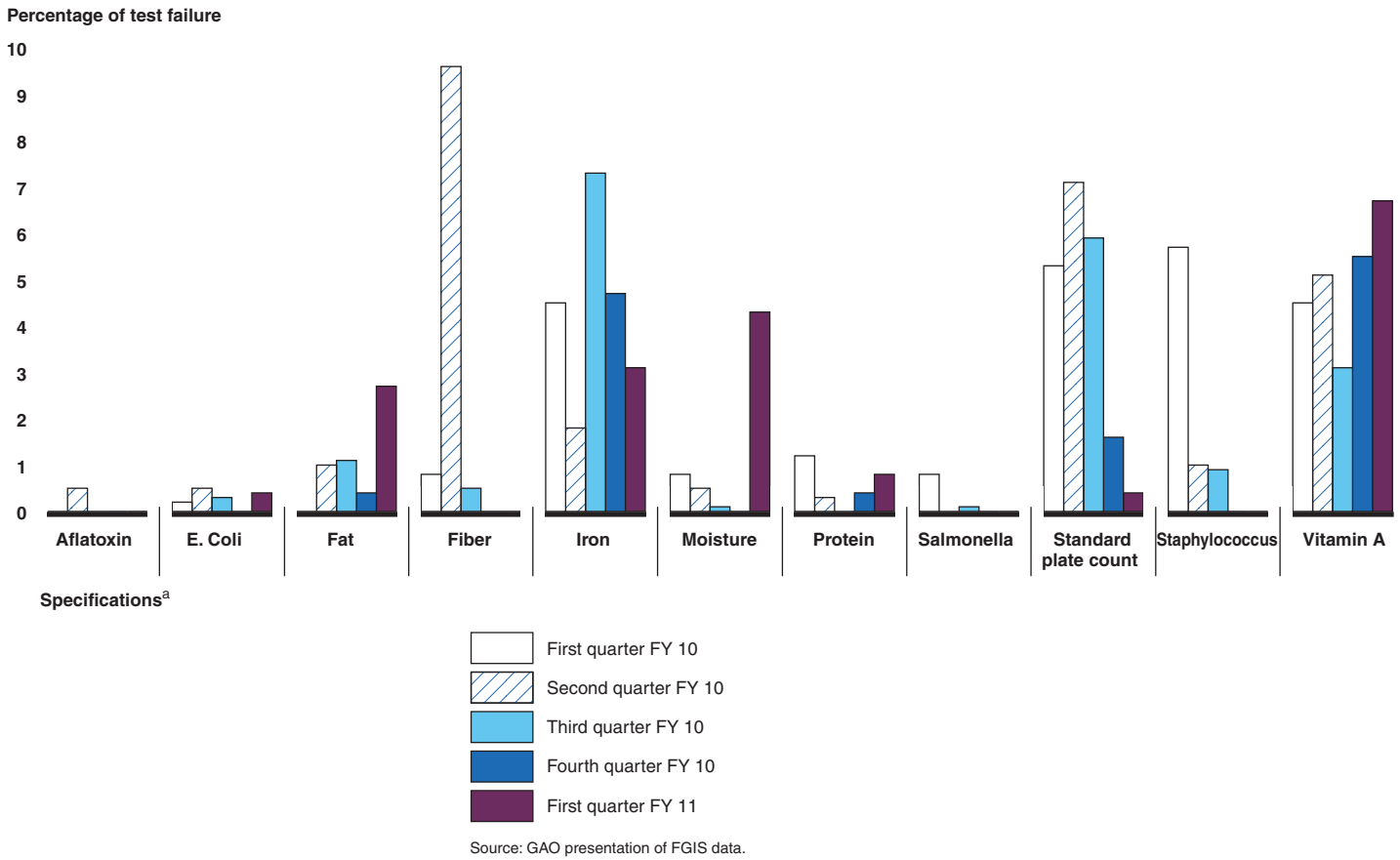
[27]FGIS samples and tests wheat, corn, sorghum, soybeans, rice, beans, peas, lentils, and buckwheat commodities for which federal grading standards exist. Testing of CSB, and WSB is conducted pursuant to KCCO contract requirements. For flour, bulgur, cornmeal, and vegetable oil, KCCO still relies on certificates of analysis from vendors.

[28]However, USDA officials noted that FGIS sampling and testing procedures do not test for potential rancidity, so CSB products that are already rancid at the point of manufacture may still enter the supply chain.

[29]Acceptable product ranges include the specification range and the discount range. KCCO procures commodities that fall within the specification range at full price, and procures commodities that fall within the discount range at a discounted price. However, KCCO does not consider commodities that fall within discount ranges poor-quality. For example, the specification range for fiber content in CSB is between 0 and 2 percent. If a CSB sample contains 2.01 to 2.5 percent fiber, KCCO will still procure the commodity, but at a discounted rate. If the CSB sample contains more than 2.5 percent fiber, the sample falls outside both the specification and discount range and will not be procured.

plate count test; and more than 5 percent failed to meet the specification and discount ranges for vitamin A content (see fig. 5).

Figure 5: Percentage of CSB Samples Tested by FGIS that Failed Acceptable Product Specification and Discount Ranges, First Quarter of Fiscal Year 2010 through First Quarter of Fiscal Year 2011



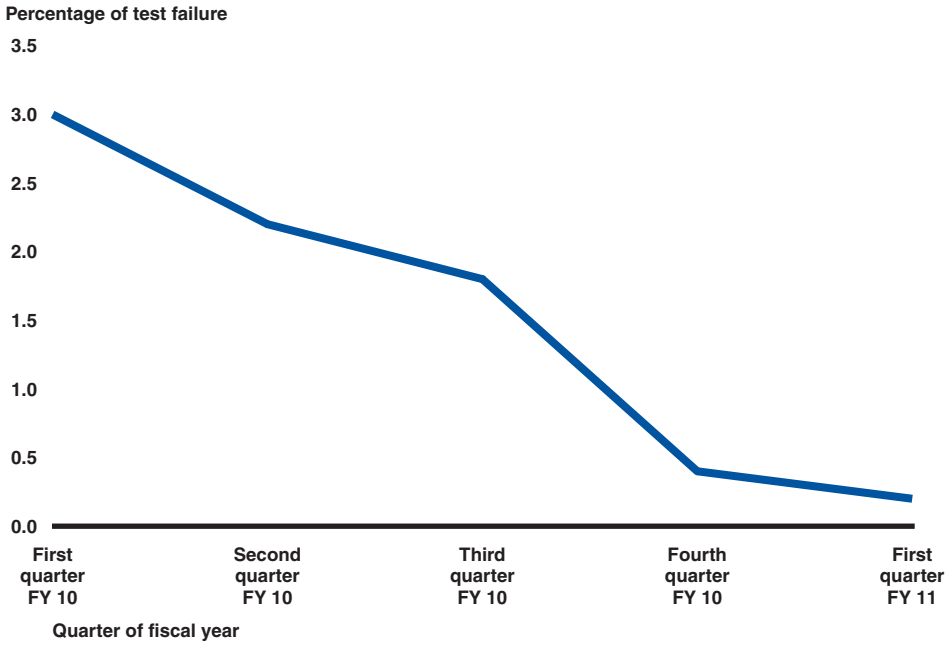
Source: GAO presentation of FGIS data.

[a]Since e. coli, salmonella, standard plate count (a measure of the density of bacteria in a product), and staphylococcus are all microbial food safety indicators, there are no acceptable specifications or discount ranges. If a sample contains any amount of these microbes, the entire lot is rejected. For aflatoxin, samples are permitted to contain up to 20 parts per billion, with no discount range.

According to FGIS officials, data show that, due to such quality assurance activities, virtually all (approximately 99.5 percent) of CSB lots procured by KCCO in the first quarter of fiscal year 2011 met acceptable

specification and discount ranges.[30] KCCO and FGIS officials told us that increased government oversight has also led to a decrease in the number of CSB samples failing FGIS tests for food safety problems (see fig. 6), because vendors are more vigilant about their own internal quality control practices when they know that their products are going to be tested by FGIS. For example, shortly after FGIS first resumed testing in September 2009, 3 percent of all CSB samples collected and tested by FGIS were found to have food safety problems; however, by the first quarter of fiscal year 2011, this number was down to less than 0.5 percent.

Figure 6: Percentage of CSB Samples that Did Not Meet Microbial Specifications for Food Safety, First Quarter of Fiscal Year 2010 through First Quarter of Fiscal Year 2011



Source: GAO presentation of FGIS data.

[30]For the remaining 0.5 percent of commodities not meeting specifications, KCCO negotiated with the CSB vendor over price when the samples showed levels of iron or vitamin A, among other nutrients, that fell outside the acceptable ranges. KCCO does not negotiate with vendors over price when its samples reveal moisture or food safety specifications outside the acceptable ranges.

U.S. and foreign government officials, vendors, implementing partners, and recipients with whom we met said that the commodities procured for food aid programs are of high quality and are generally delivered to beneficiaries in sound condition. For example, various implementing partners, vendors, and food aid recipients with whom we met in Bangladesh, Djibouti, Ethiopia, Mozambique, and Zimbabwe said that the quality of U.S. food aid commodities generally is high. According to the results of a 2009 survey conducted by an NGO in Ethiopia, 98 percent of food aid recipients rated the quality of U.S. food aid as "good" or "very good." Moreover, reported losses of all food aid commodities that occurred after loading at the domestic port average 1 percent or less per year—comparable to commercial sector benchmarks.[31]

Furthermore, under a 2009 revision of regulations governing commodity aquisitions (48 CFR 470), KCCO can now utilize other procurement approaches, and has begun transitioning away from sealed bidding to a negotiated procurement approach that will enable KCCO to consider a variety of factors—other than just price—during procurement. For instance, new solicitation language states that technical evaluation factors, such as quality controls and past performance, are significantly more important than commodity price. KCCO published four draft requests for proposals in July 2010 and published answers to vendor questions about the requests for proposals in October 2010.[32] KCCO published its final requests for CSB and CSB+ in March 2011 and expects to award its first contract in May 2011.

However, KCCO's ability to ensure ongoing government quality assurance activities is uncertain due to unpredictable funding levels and funding sources, according to KCCO officials. KCCO requested approximately $13 million for government quality assurance activities to sample and test all food aid noncommercial commodities in fiscal year 2011, but was only apportioned $2.5 million for CSB, CSB+ and WSB in October 2010. KCCO was able to secure the remaining $10.6 million in late March 2011 through a different budget line item, which restricts expenditures to private sector

[31]According to one port operator we met with, the commercial benchmark for marine losses is 0.5 percent for containerized shipments. Similarly, according to the *Global Humanitarian Food Aid Risk Assessment Summary for Fiscal Year 2008*, "excessive losses" are losses greater than 0.5 percent for containerized shipments and 1 percent for bulk shipments.

[32]The four requests for proposals covered corn products, sorghum, vegetable oil, and wheat products.

sampling and testing firms, in order to test all other noncommercial items, such as vitamin-A fortified vegetable oil. However, KCCO officials told us that they are unsure about future funding levels.[33] However, Office of Management and Budget officials have expressed concerns about the cost-effectiveness of sampling and testing food aid commodities given the current fiscal environment. In the case of insufficient funding, KCCO officials told us that they may have to return to a reliance on vendor-provided certificates of analysis.

Quality Control Problems Still Occasionally Arise and Can Be Time-Consuming and Costly to Resolve

Despite these recent improvements in the sampling and testing of food aid commodities, quality control problems still occasionally arise and can be time-consuming and costly to resolve. According to our survey results, the most commonly cited challenges to improving quality were extreme weather conditions, poor product management, poor storage facilities, inadequate port facilities, and lack of mission capacity for monitoring.[34] In the past 2 years, three major quality control problems occurred that led to food aid deterioration.[35] These involved CSB that was (1) bitter in taste, (2) infested with rodents, and (3) contaminated with mycotoxins:

- *Bitter CSB.* WFP officials spent almost a year and spent an estimated $223,000 to dispose of U.S. food aid that was rancid, acidic, and unpalatable. In October 2009, USAID officials informed WFP and other implementing partners about the possible bitter taste of a delivery of CSB. WFP advised its country teams in four countries to stop all distribution of the product until further notice. WFP country teams subsequently segregated all deliveries of CSB. USAID agreed with WFP's proposal to test the CSB in Kenya where by mid-November 2009, focus groups

[33]Four different funding sources are available to support quality assurance activities. Funds made available to the USDA Commodity Credit Corporation to implement Section 11 of the Commodity Credit Corporation Charter Act support FGIS quality assurance activities, and funds made available to implement Section 4(g) of that act support private contractor sampling and testing. In addition, USAID could use Food for Peace funds to pay for sampling and testing, or the vendor could pay for sampling and testing through higher commodity prices. However, U.S. agency officials have noted that the two latter options would result in fewer beneficiaries being fed.

[34]Eight of the 25 missions that responded to our survey reported that they oversaw NGO programs, and the challenges to quality reported are based on their responses.

[35]Food deterioration includes changes in perceived quality, nutritional value, food safety, aesthetic appeal, color, texture, and flavor. Factors that cause food to deteriorate include microorganisms such as bacteria, yeast, and molds; infestations by insects, parasites, and rodents; inappropriate temperatures during processing and storage; loss or gain of moisture; physical stress or abuse; and time, among others.

declared 60 percent of the 36 sublots tasted "moderately" or "very" bitter. By February 2010, more thorough lab results revealed that the CSB was rancid, acidic, and unpalatable. At that time, WFP requested a formal agreement for disposal from USAID. By May 2010, USAID agreed to allow WFP to destroy the CSB and asked WFP to provide guidance to other implementing partners on how to dispose of the product. In August 2010, WFP field staff in Ethiopia started the disposal process. In September 2010, we observed several stacks of the bitter CSB quarantined by another USAID implementing partner in a warehouse in Dire Dawa, Ethiopia, awaiting its disposal.

- *Rodent infestation.* WFP spent 11 days and almost $16,000 on operational costs identifying and segregating rat urine-marked bags at a foreign port after the problem was identified at a domestic port. On January 22, 2010, a U.S.-flag vessel began loading food aid to be delivered to various implementing partners and WFP in Kenya and Ethiopia. A few days prior to the completion of operations, when approximately one-third of the cargo had been loaded, WFP was informed that USDA's appointed loading inspector had found evidence of rodent infestation in one particular warehouse where CSB and cornmeal were being stored prior to loading.[36] WFP was told that extra measures had been taken to verify that the rest of cargo was free of rodent contamination, but no attempt had been made to unload what was already on board. WFP later learned that no physical separation had been made inside the ocean vessel to distinguish between the infested and noninfested commodities. The vessel sailed with all cargo on board. Prior to arrival at the foreign port, WFP was informed that the infestation was broader than initially ascertained. To handle the situation, members of WFP's Food Safety Unit identified blacklighting devices and devised a method for bag inspection, which included enhanced screening of the suspect commodities in dedicated warehouses. Approximately 9.7 metric tons, or about 1.2 percent of the total quantity checked, was identified in urine-marked bags and destroyed.

[36]In response to the concerns of U.S. food aid providers regarding the sanitation and security of agricultural commodities temporarily stored and handled in U.S. warehouses in preparation for transport overseas, on March 15, 2011, USDA issued a request for comment proposing to extend the United States Warehouse Act licensing program to port and transload facility operators that handle or store export food aid commodities. This voluntary program would require that licensees' warehouses meet basic sanitation and cleanliness requirements. Currently, USDA issues licenses under the U.S. Warehouses Act (7 U.S.C. 241-256) for agricultural products stored or handled for the purposes of interstate or foreign commerce.

- *Mycotoxin contamination.*[37] One of USAID's implementing partners halted distribution of CSB for up to 6 months and spent at least $35,000 on quality inspections after mycotoxins were found in CSB delivered to Guatemala. In September 2009, the implementing partner's country officers in Guatemala commissioned the sampling and testing of a delivery of CSB after complaints by beneficiaries about its taste. Lab results revealed the presence of mycotoxins.[38] To respond, the implementing partner requested and received guidance from USAID. In May 2010, the implementing partner started investigating various mycotoxins' potential effects on human health. Concerned about the effects of mycotoxin ingestion, particularly in infants and young children, the implementing partner also began sampling and testing the CSB it also received in Burundi and Haiti. In October 2010, laboratory results confirmed the presence of mycotoxins above the Food and Drug Administration's (FDA) advisory levels in the CSB samples drawn from deliveries in Haiti, resulting in the implementing partner's decision to suspend all CSB distribution until USAID provided further guidance. This suspension affected the distribution of the remaining stocks of the 47,725 metric tons of CSB that had already been delivered to eight countries in 2010. Meanwhile, USAID and FDA officials met and decided that USAID and USDA would not pursue the testing of mycotoxins in food aid commodities because FDA had not established limits for mycotoxin levels in domestic food products, except for aflatoxin.[39] USAID provided the implementing partner with procedures to resample and test the CSB, established new testing protocols for cases where the percentage of mycotoxins found in samples exceeded the FDA's advisory levels, and provided information about accredited labs where sampling and testing can take place. After testing CSB in seven countries, the implementing partner resumed distribution in all countries by March 2011. Approximately 4,180 metric tons of CSB in the seven countries were affected by these procedures.

[37]Mycotoxins are toxic metabolites produced by certain fungi that can infect and proliferate on various agricultural commodities in the field or during storage. The occurrence of these toxins on grains, nuts, and other commodities susceptible to mold infestation is influenced by environmental factors such as temperature, humidity, and extent of rainfall during the preharvesting, harvesting, and postharvesting periods.

[38]The mycotoxins found in the samples included Ochratoxin A, a fungal metabolite, and Fumonisin, a natural toxin.

[39]USDA's FGIS tests all CSB for Aflatoxin, a metabolic product of mold. According to CRS officials, the samples drawn from Haiti had other mycotoxin levels exceeding FDA's "advisory," but not "actionable," levels.

In February 2011, the Food Aid Consultative Group established a Food Safety and Quality Assurance Working Group to allow food aid program stakeholders the opportunity to work together and address a variety of issues related to the safety and quality of food aid commodities, including mycotoxins and infestations.

Quality Control of the U.S. Food Aid Supply Chain Has Vulnerabilities in Data Tracking and Packaging

U.S. Agencies Do Not Systematically Track Data on Quality throughout the Supply Chain

Example of food aid losses

Source: GAO.

This photo shows several bags of U.S. food aid that were damaged by ocean water in Durban, South Africa, in September 2010.

While U.S. agencies collect data on the quality of some commodities during procurement, they do not systematically track data on damage and loss through the remainder of the food aid supply chain. WFP does not routinely share its data with USAID, despite recent efforts to improve food aid information systems and processes. Prior to procurement, FGIS collects data on the quality of the commodities it tests. As we reported in 2007,[40] however, U.S. agencies and implementing partners only systematically track damage and losses throughout the remainder of the supply chain—even though damage and losses are an imperfect indicator for quality because they include many nonquality problems such as theft and exclude other quality problems that do not ultimately result in damage or loss.[41] For example, according to WFP officials in Ethiopia, U.S. commodities sometimes exceed acceptable moisture content levels—which can be problematic in humid climates because commodities with high moisture content can spoil more quickly—but if WFP is able to salvage the wheat by drying it out, this quality problem will not be reflected in WFP's loss data. In addition, before FGIS resumed sampling and testing CSB in September 2009, several implementing partners complained to USAID about low vitamin-A levels in fortified foods such as CSB—but low vitamin A levels do not constitute damage or loss, so this quality problem was not reflected in loss data. Moreover, U.S. agencies do not systematically track data on shipping and delivery times. For example, KCCO does not track the time elapsed between the date that food aid commodities arrive at the domestic port and the date that the food is off-

[40]GAO-07-560.

[41]For example more than 75 percent of WFP losses were unrelated to commodity quality problems in 2009, according to our analysis of WFP data.

loaded in the recipient country or delivered to beneficiaries. Because U.S. agencies and implementing partners do not systematically track data on quality throughout the entire supply chain, they may not be aware of the full extent of quality problems and may not be able to identify emerging concerns.

U.S. agencies and implementing partners are developing information systems and processes to better capture data on food aid commodities, but U.S. agencies will continue to systematically track data only on damage and losses. For example, USDA launched the new Web-Based Supply Chain Management System (WBSCM) on April 1, 2011 that integrates multiple existing data systems and tracks food aid commodities throughout the supply chain. With WBSCM, vendors and implementing partners will eventually be able to voluntarily log complaints, including quality problems. In addition, USAID is developing an information system called Quarterly Web Interfaced Commodity Reporting that enables NGOs to submit their damage and loss reports electronically, although there is currently no plan to make NGO usage of this system mandatory. USAID has also drafted standard operating procedures to resolve food quality complaints—also known as the feedback loop—including a complaint log designed as a reporting tool to document food quality complaints. However, the log is currently kept informally and is not a reliable source of information on quality problems, according to USAID officials. (See appendix V for more details about USAID's quality incident feedback loop.) None of these agencies' information systems or processes is expected to track data on quality problems, other than those that result in damage or loss. Furthermore, although WFP—which received 78 percent of all emergency U.S. food aid in fiscal year 2010—recently procured a food quality management software that will enable it to better track food quality and food safety indicators directly throughout the supply chain, it does not routinely share its data with USAID unless requested.[42]

Packaging Specifications May Not Be Appropriate For Rugged Conditions Encountered throughout the Supply Chain

According to U.S. and foreign government officials, implementing partners, and vendors, food aid packaging remains one of the biggest quality problems—particularly for tin oil cans used for vegetable oil and paper bags used for commodities such as CSB and cornmeal—despite

[42]WFP releases an annual report summarizing losses, but it does not disaggregate losses by donor nation. USAID officials explained that, upon request, WFP has always worked with USAID to provide additional information on U.S. commodity losses. However, it is USAID policy not to regularly request additional reports from multinational organizations such as WFP.

recent packaging improvement initiatives by U.S. agencies. For example, four of the eight FFP officers overseeing emergency food aid distributed by NGOs whom we surveyed cited damage to tin oil cans as a quality problem.[43] A survey conducted by Tufts University also revealed that more than half of the programs surveyed reported that CSB bags frequently arrived damaged. Several U.S. agency officials agree that U.S. food aid supply chain conditions are more rugged than conditions facing commercial food products, so commercial benchmarks for packaging may be insufficient. During our fieldwork in Djibouti, Ethiopia, South Africa, and Texas, we witnessed hundreds of boxes stained with vegetable oil from ruptured cans, as well as ruptured CSB bags (see fig. 7).[44]

Figure 7: Examples of Vegetable Oil and CSB Packaging Problems

Source: GAO.

Improper handling and stacking can impact food quality. The photo on the left shows leaking vegetable oil stored within cardboard boxes in a warehouse in Dire Dawa, Ethiopia. The photo on the right shows a ruptured package of CSB as observed in Jacintoport, Texas.

Despite the importance of packaging for quality management, packaging materials currently used for CSB and vegetable oil may not be durable

[43]On a 5-point scale ranging from "never," to "very often," three of eight respondents indicated that damage to tin oil cans occurred sometimes and one indicated that it occurred often. The other four respondents indicated that this problem occurred rarely or never.

[44]Some damage during transit is normal; however, USAID does not have benchmarks for damage rates or systematically track data on damaged commodities, so it is not clear whether damage levels fall within acceptable ranges.

enough to withstand conditions encountered throughout the supply chain. When packaging is compromised, commodities may spoil, deteriorate, or become infested. For instance, when the fat content in commodities such as CSB and vitamin-A fortified vegetable oil are exposed to heat or oxygen, they may become rancid and unpalatable. One port operator in South Africa said that although food aid bags are designed to be handled three or four times, packaged commodities are actually often handled eight or more times before they reach a final distribution point. During the loading of food aid commodities in Jacintoport, Texas, we observed full paper bags being dropped up to 20 feet (see fig. 8), with some of them bursting upon impact.

Figure 8: Loading of U.S. Food Aid Commodities at Jacintoport, Texas

Source: GAO.

This photo shows port operators handling and stacking bags of U.S. food aid into an ocean vessel's hold in Jacintoport, Texas, in February 2011.

Several implementing partners and vendors we interviewed also said that when vegetable oil cans are shipped break bulk[45] they are often dropped, thrown, or stacked beneath heavier commodities causing some of the cans to rupture. Moreover, USAID officials told us that due to space constraints in foreign warehouses, U.S. officials told us that bags and tin cans may be stacked higher than commodity guidelines permit, resulting in ruptured bags and vegetable oil cans.[46]

Although port operators and implementing partners may try to salvage commodities through reconstitution, this process may introduce other quality risks. According to one KCCO official we spoke with, implementing partners usually do not order extra bags or tin oil cans, because vessel owners may then claim that the implementing partners anticipated losses and refuse to cover reconstitution expenses.[47] As a result, the implementing partner may resort to taping bags, buying local bags which lack the requisite markings and labels, or using plastic cans to reconstitute vegetable oil (see fig. 9). Furthermore, several implementing partners and U.S. agency officials said that reconstitution may introduce contaminants.

[45]Break bulk vessels carry nonuniform items, such as bagged commodities, that are secured within interior holds of the ship.

[46]Although USAID's *Commodities Reference Guide* states that paper bags should not be stacked more than 20 layers high and tin oil cans more than 8 layers high, we frequently saw stacks exceeding these limits during our fieldwork.

[47]According to KCCO data, from fiscal years 2007 through 2009 more than $190,000 was spent on reconstitution at the foreign country discharge port, excluding shipments to WFP. Reconstitution costs are not tracked after commodities depart the discharge port.

Figure 9: Reconstituting Damaged Bags and Cans

Source: GAO.

The photo on the left shows taped CSB bags in Djibouti City, Djibouti, and the photo on right shows containers used to reconstitute vegetable oil in Dire Dawa, Ethiopia.

U.S. agencies have taken steps recently to address packaging complaints, but it is too early to assess their effectiveness. For example, the Food Aid Consultative Group Packaging and Transportation Working Groups have introduced several packaging alternatives, such as the "bliss box" container and plastic vegetable oil containers in 2010.[48] Furthermore, USDA plans to move away from specifying packaging characteristics toward specifying desired performance outcomes for vegetable oil cans to allow vendors more flexibility and be compliant with the *Federal Acquisition Regulation*. For example, in 2009, USDA eliminated the specification requiring a spout on the top of vegetable oil containers—which a vendor and agency official have identified as a structural deficiency—and now only requires a sound, leak-proof seal. However, according to several USDA officials, USDA has not updated performance language for packaging durability in more than 10 years, and changes to packaging performance language is limited to vegetable oil containers. As a result, it is unclear whether some packaging designs are still appropriate for current conditions throughout the supply chain.

[48]The "bliss box" is a cardboard container designed to increase the amount of vegetable oil that can be shipped in a 20-foot container by 25 percent and reduce losses during transport.

Conclusions

U.S. food aid programs have taken steps to improve nutrition and quality controls since we last reviewed these issues in 2007; however, opportunities for further improvement remain. With regard to nutrition, the prevelence of multiyear emergency food aid programs highlights the need for strategies and guidance that addresses nutritional deficiencies that may emerge over time through the reliance on products designed for short-term food insecurity. Furthermore, within a fixed budget, while specialized food products offer new opportunities to meet the nutritional needs of the most vulnerable groups, the high cost of these products would reduce the number of recipients fed. Information on how well the products perform in promoting desired nutritional outcomes and the relative cost of these products is essential to USAID and its implementing partners when making a choice of the products and weighing the complex trade offs between nutritional outcomes, quantity of food aid, and number of recipients who can be served. In addition, difficulties in targeting vulnerable groups, including the absence of guidance on whether and how to use these new products, could hamper efforts to ensure that intended populations receive these specialized foods.

With regard to quality controls, recent initiatives by the agencies, especially a renewed commitment to testing, have reduced quality concerns; however, existing vulnerabilities in current agency practices contribute to remaining quality control issues. For example, agencies limited tracking of key quality indicators for food aid commodities does not systematically provide essential information about the condition of commodities throughout the supply chain, especially upon arrival at overseas destinations. Furthermore, even if U.S. agencies procure high-quality commodities, they may still suffer damage or loss during transit and storage due to outdated packaging that is not sufficiently durable for the rugged conditions encountered throughout the supply chain.

U.S. food aid is a vital component of U.S. overseas humanitarian assistance and foreign policy, especially in response to natural disasters and complex, often protracted emergencies, such as conflict. However, the rising cost of food increases both the cost of U.S. food aid and the number of people requiring food assistance. As such, the agencies should explore every opportunity to continue to improve the efficiency and effectiveness of U.S. food aid programs.

Recommendations for Executive Action

To enhance U.S. food aid programs' efforts to meet the nutritional needs of intended recipients, we recommend that the Administrator of USAID and the Secretary of Agriculture work together to take the following three actions:

1. for U.S. food aid that provides the sole source of diet for recipients of emergency programs that extend beyond a year, provide clear guidance to implementing partners on how to address nutritional deficiencies that may emerge;

2. for new specialized food products designed to meet the nutritional needs of the most vulnerable groups, evaluate the performance and cost-effectiveness of the products in achieving their nutritional goals in an appropriate program setting before they are included in the agencies' approved list of commodities; and

3. provide clear guidance on whether and how best to use new specialized food products, including guidance to the agencies' implementing partners on targeting strategies to ensure that the products reach their intended recipients.

To improve U.S. food aid programs' efforts to maintain the quality of commodities throughout the food aid supply chain, we recommend that the Administrator of USAID and the Secretary of Agriculture work together to take the following two actions:

1. strengthen agencies' monitoring of commodity quality by identifying and tracking key quality indicators to ensure that agencies and implementing partners are aware of the full extent of quality problems, including emerging concerns, throughout the supply chain, and

2. evaluate packaging specifications to ensure food packaging is sufficiently durable for conditions encountered throughout the supply chain.

Agency Comments and Our Evaluation

USAID and USDA—the two principal U.S. agencies to whom we directed our recommendations—provided written comments on a draft of this report. We have reprinted their comments in appendixes VI and VII. These agencies, along with the Department of State, the Office of Management and Budget, and WFP, also provided technical comments and updated information, which we have incorporated throughout this report, as appropriate. The Departments of Transportation and the Treasury, and the Office of Management and Budget did not provide written comments.

USAID and USDA generally concurred with our recommendations. Both agencies provided examples of recent or ongoing efforts to address our recommendations to enhance U.S. efforts to meet the nutritional needs of intended recipients. USAID, for example, expects to enhance the nutritional impact of food aid rations in both emergency and development settings by implementing the recommendations of USAID's *Food Aid Quality Review*. USAID is also in the process of field-testing new fortified blended foods, evaluating the feasibility of reformulating milled grains and fortified vegetable oil, and establishing guidance to provide to implementing partners on how to address nutritional deficiencies in these new products. Although emergency programs are largely under the purview of USAID, USDA agreed to support USAID's efforts through changes in commodity procurement and program coordination. USAID also recently developed and tested the nutrition of new ready-to-use food products and expects them to be ready for shipment in October 2011. Both USAID and USDA agreed to review these new specialized food products' relative cost-effectiveness and evaluate the results of field testing in order to determine if they should be included in future programs, but USAID said additional funding and authorizations may be necessary. Lastly, USAID issued two papers as guidance to implementing partners on targeting strategies,[49] and created a new program to assist implementing partners with assessment, monitoring, and evaluation of programs so that they may identify and achieve desired nutritional outcomes.

USAID and USDA also provided examples of how they can address our recommendations to improve U.S. efforts to maintain the quality of commodities throughout the food aid supply chain. For example, both agencies agreed to consider ways to collaborate with relevant agencies and stakeholders to determine the cost-effectiveness of developing a comprehensive quality control system that tracks quality indicators of food aid programs within the context of a constrained budget environment. USDA noted that it works with relevant agencies to minimize instances of quality problems and continues to strive for greater accountability in food aid contracts. Concerning the durability of food aid packaging, both USAID and USDA agreed to review specifications and determine what further actions can be taken to improve packaging. USAID also noted that it recently approved, and made available to implementing

[49]USAID Office of Food for Peace, Occasional Paper 6, *Emergencies in Urban Settings: A Technical Review of Food-based Program Options* (August 2008); and USAID and Food and Nutrition Technical Assistance, Technical Note No.12, *Introducing a Simple Measure of Household Hunger for Cross-Cultural Use* (February 2011).

partners, specific changes to vegetable oil packaging that may reduce damage in handling and distribution, as recommended by the packaging working group of the Food Aid Consultative Group.

We are sending copies of this report to interested members of Congress; the Administrator of USAID; the Secretaries of Agriculture, State, Transportation, and the Treasury; and relevant agency heads. The report is also available at no charge on the GAO Web site at http://www.gao.gov.

If you or your staffs have any questions about this report, please contact me at (202) 512-9601 or melitot@gao.gov. Contact points for our Office of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix VIII.

Thomas Melito
Director, International Affairs and Trade

List of Requesters

The Honorable Debbie Stabenow
Chairwoman
The Honorable Pat Roberts
Ranking Member
Committee on Agriculture, Nutrition and Forestry
United States Senate

The Honorable Frank D. Lucas
Chairman
The Honorable Collin C. Peterson
Ranking Member
Committee on Agriculture
House of Representatives

The Honorable Howard L. Berman
Ranking Member
Committee on Foreign Affairs
House of Representatives

The Honorable Donald M. Payne
Ranking Member
Subcommittee on Africa, Global Health,
and Human Rights
Committee on Foreign Affairs
House of Representatives

The Honorable Saxby Chambliss
United States Senate

The Honorable James P. McGovern
House of Representatives

Appendix I: Objectives, Scope, and Methodology

Our objectives were to assess U.S. efforts to (1) meet the nutritional needs of intended recipients and (2) maintain the quality of commodities throughout the food aid supply chain.

To address these objectives, we analyzed emergency food aid program and budget data provided by the U.S. Agency for International Development (USAID), the U.S. Department of Agriculture (USDA), and the World Food Program (WFP). We determined that the data obtained were sufficiently reliable for our purposes. Our review focuses on USAID emergency food aid programs administered by USAID's Office of Food for Peace (FFP). Approximately 79 percent of FFP food aid funding was for emergency programs in 2010. However, since the United States provides many of the same commodities to both nonemergency and emergency food aid programs, and the commodities generally go through the same food aid supply chain, our findings may be applicable to both types of programs.

We sent survey questionnaires to the 29 countries with active FFP emergency food aid programs in fiscal year 2010 and received responses from 25 of them. Our survey included two sets of questions about the nutritional content and quality of USAID emergency food. We developed and pretested our instrument between August and November 2010, and administered it in late November 2010. In total, the 25 countries that responded to our survey were responsible for 45 programs. Twenty-four of the 25 countries had WFP programs, of which 7 also reported having nongovernmental organizations (NGO) programs. One country reported only having NGO programs. As a result, a total of eight countries reported having NGO programs and completed the sections on the quality of U.S. food aid. We requested that officials from FFP country program offices answer questions on quality only for programs administered by NGOs and asked officials at WFP headquarters to answer similar questions. We conducted follow-up by email with FFP officers to determine the completeness, accuracy, and reliability of the information provided within their written responses to the survey.

In Washington, D.C., we interviewed officials from USAID; USDA; the Departments of State, Transportation, and the Treasury; and the Office of Management and Budget. We also met with officials representing NGOs that serve as implementing partners to USAID in carrying out U.S. food aid programs overseas; a freight forwarding company; nutrition experts; and international surveyors. In Rome, Italy, we met with officials from the Food and Agriculture Organization, the International Fund for Agricultural Development, U.S. Mission to the United Nations, and WFP, and conducted a roundtable with bilateral donors. We also conducted

fieldwork in three countries that receive emergency U.S. food aid—Djibouti, Ethiopia, and Zimbabwe—and met with officials from U.S. missions, implementing organizations, and relevant host government agencies. We visited Jacintoport, Texas from which food is prepositioned and shipped; two food aid destination ports and prepositioning sites in Djibouti and South Africa; and several warehouses where food aid may be stocked prior to shipping, handling, or distribution to final recipients.

To provide context and background, we analyzed total food aid budget and tonnage data for fiscal years 2006 to 2010 provided by USAID. We did not assess the reliability of the data that we used for background purposes. We also reviewed international standards, program authorities, and regulations to determine nutrition and quality control requirements in food aid programming.

To assess U.S. food aid programs' efforts to meet the nutritional needs of intended recipients, we reviewed U.S. government documents, including USAID's program guidance and strategic plans for Food for Peace Title II emergency programs. We interviewed officials from NGOs, USAID, USDA, WFP, and other research institutions. We examined data gathered from our survey to analyze the nutritional content of the rations provided to emergency food aid programs. We analyzed external studies on the costs and effectiveness of new specialized food products developed for use in food aid programs that were conducted by universities and research institutions, such as the University of California–Davis. Our review focused on new products developed to treat or prevent mild to severe malnutrition among small children 6 to 24 months of age. The scope of the report did not include nonemergency nutritional interventions, such as nutrition education programs. In addition, we did not try to estimate the cost and benefits that would be obtained by reducing malnutrition. We reviewed internal evaluations conducted by USAID and WFP, including those related to needs assessments and targeting. We incorporated information from our past reports as appropriate.

To assess U.S. food aid programs' efforts to maintain the quality of commodities throughout the food aid supply chain, we reviewed numerous U.S. government documents, including U.S. agencies' food aid product specifications, rules and regulations, a commodity complaint logs, quality control guidelines, audit reports, and draft documents concerning how to respond to food quality problems. We also conducted interviews with and reviewed reports by commodity suppliers; recipient governments; and officials from the Kansas City Commodity Office (KCCO), NGOs, USAID, USDA's Federal Grain Inspection Service (FGIS),

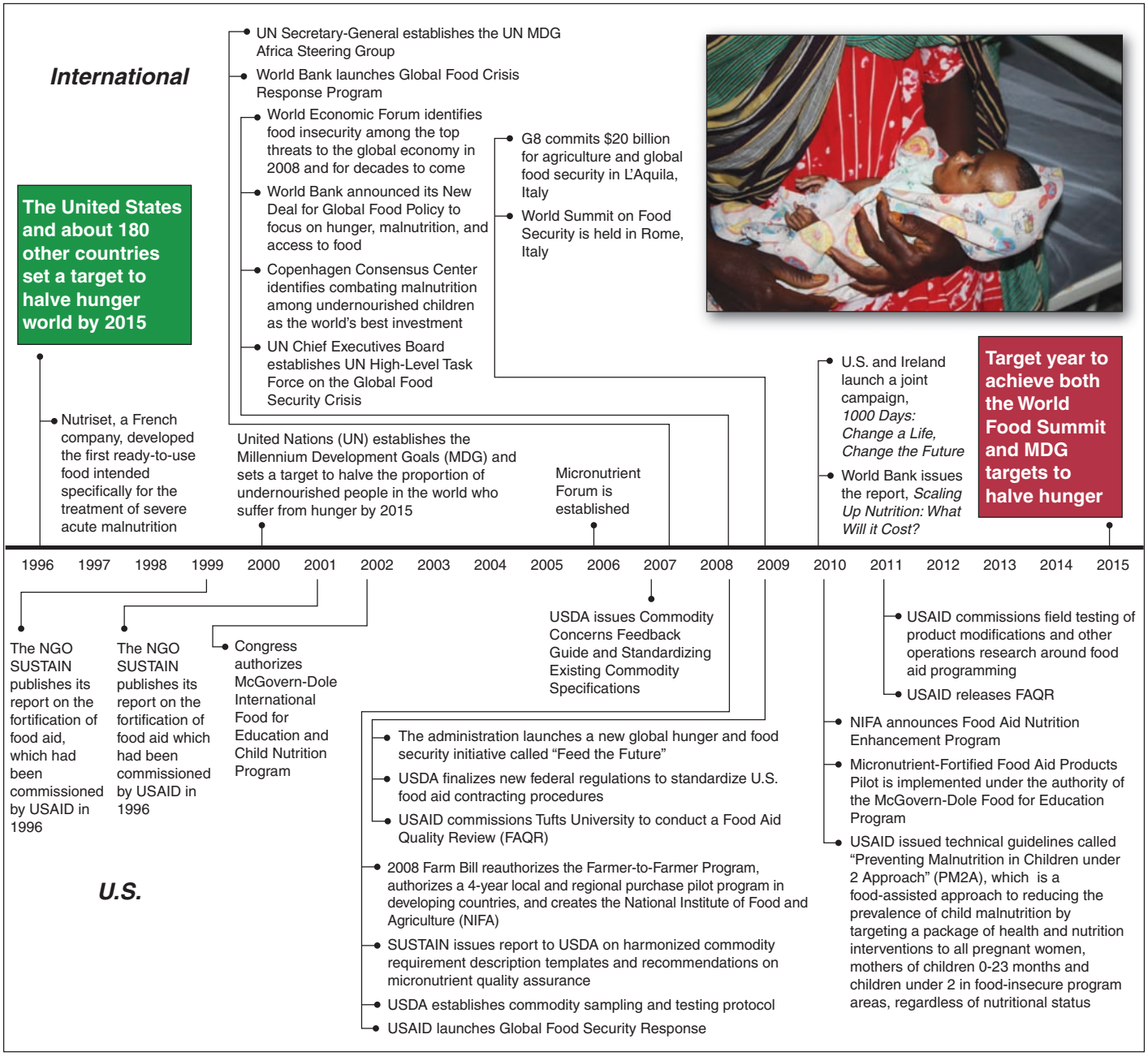
and WFP. We also analyzed and conducted data reliability assessments for (1) commodity loss data provided by KCCO and WFP, (2) sampling and testing data provided by FGIS, and (3) food aid procurement data provided by USAID and KCCO. We examined the KCCO and WFP commodity loss data for reliability through interviews with agency officials that manage the data and found the data to be sufficiently reliable to represent trends in food aid commodity losses. We examined FGIS sampling and testing data of corn soy blend to determine the percentage of corn soy blend samples not meeting specifications since 2009, and determined the data to be sufficiently reliable for our purposes. We also observed the loading of food aid onto the Myra, a foreign-flag vessel, in Jacintoport, Texas, and the unloading of food aid from the Noble Star, a U.S.-flag vessel, in Durban, South Africa. Lastly, we incorporated information from our past audits, as appropriate.

We conducted this performance audit from April 2010 to May 2011 in accordance with generally accepted U.S. government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evident to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: International and U.S. Commitments and Actions to Address Food Security and Nutrition

As shown in figure 10, both the international donor community and the U.S. government have made commitments and have undertaken a number of key actions over the years in their efforts to address global food security and nutrition.

Figure 10: International and U.S. Commitments and Actions to Address Food Security and Nutrition, 1996 through 2015



Source: GAO.

Appendix III: Processes within Each Stage of the Food Aid Supply Chain

The following table outlines the processes within each stage of the food aid supply chain depicted in figure 3.

Table 4: Processes within Each Stage of the Food Aid Supply Chain

Stage 1: Domestic
Planning
• The World Food Program (WFP) or a nongovernmental organization (NGO) submits a food order proposal designed to meet program objectives to Food for Peace (FFP) or the U.S. Department of Agriculture's (USDA) Foreign Agricultural Service in the new Web-Based Supply Chain Management System (WBSCM). Food orders are based upon a preapproved program budget. • FFP or the Foreign Agricultural Service reviews the order to ensure its suitability for the program and country area with regard to the quantity and type of commodity requested. Once approved, the commodity request is forwarded to the procurement office, USDA's Farm Service Agency, and USDA's Kansas City Commodity Office (KCCO). • USDA-KCCO collects commodity orders with like delivery dates for placement on a solicitation. USDA-KCCO reviews orders to ensure no incongruities with established commodity and packaging specifications, considers the food industry's capacity, and consults with administering agencies with regard to priority of orders, before finalizing and issuing a solicitation.
Procurement

• USDA-KCCO issues a solicitation for commodity vendors to offer their products for sale to USDA. Concurrently, administering agencies, WFP, or freight forwarders for NGOs issue a solicitation for ocean freight services to deliver these commodities to overseas destinations.
• Ocean carriers submit offers electronically through WBSCM. Administering agencies review the ocean offers to identify programmatic issues, such as ensuring rates are fair market prices and considering achievement of cargo preference flagging requirements year-to-date.
• Commodity vendors enter offers electronically through WBSCM. KCCO reviews offers to ensure they are responsive to the terms of the solicitation.
• Responsive offers are evaluated by a linear program to determine the combination of commodity and ocean carrier offers that together provide for the lowest landed cost. Lowest landed cost is determined through successive linear program runs to apply statutory and regulatory requirements within port capacity limits, and commodity or freight vendor minimum and maximum quantities, as follows:
  • allocating up to 25 percent of tonnage to Great Lakes ports without regard to vessel flag,
  • applying 75 percent U.S.-flag preference,
  • awarding required quantity to mandatory AbilityOne source, and
  • applying other socioeconomic program set-asides, such as HUBZones, Small Business Administration's 8(a) Business Development Program, Service-Disabled Veteran Owned small business, and other small business set-asides.

Decisions
• USDA-KCCO coordinates with FFP or the Foreign Agricultural Service as to the results of the lowest landed cost evaluation. • FFP or the Foreign Agricultural Service gives authorization to proceed with procurement in consideration of their program needs and budgets. • USDA-KCCO then awards commodity contracts. Administering agencies determine how to proceed with any commodity orders not awarded. • USAID's Transportation Division provides WFP or NGOs with a procurement plan to inform them of the ocean carriers that resulted in the lowest landed cost. WFP and NGOs award ocean transportation contracts on the basis of this procurement plan, provided the vessels can meet their programmatic needs. • USAID's Transportation Division, with confirmation from the U.S. Department of Transportation's Maritime Administration, recommends the fair and reasonable rate for the ocean carrier to WFP and NGOs in those cases where a fair and reasonable rate guideline is required.

Production
• Commodity vendor receives contract and begins production to meet the contracted shipping schedule.   • Government contract quality assurance takes place to ensure compliance with contract specifications. For corn soy blend and wheat soy blend, USDA's Federal Grain Inspection Service samples and tests commodity at source. For other blended, fortified products, commodity suppliers sample and test their own products and certify the results. For products with established U.S. grade standards, including bulk grains, contractors are required to obtain official Federal Grain Inspection Service grading certificates.
Delivery

• Commodity vendor delivers products into the care and custody of the ocean carrier at the contracted delivery point. This may be at the vendor's facility, a bridge location, or a domestic load port.
  • If the contracted delivery point is the vendor's facility, the commodity vendor is responsible for stuffing products into intermodal containers provided by ocean carriers; the ocean carrier then transports the containers to the domestic load port.
  • If the contracted delivery point is at a bridge location, stevedores transload the product from railcars and trucks into containers which are transport by the ocean carrier to domestic load ports.
  • If contracted the delivery point is "free along side" vessel at a domestic load port, stevedores unload products from railcars and trucks for loading onto ocean vessels. If the ocean vessel has not arrived, the product is placed into short-term storage in port warehouses until the vessel arrives.
• Port operators and stevedores load food aboard the ocean vessel or stuff containers on behalf of the ocean carrier.
• USDA-KCCO-hired vessel loading observation contractor observes the stuffing of containers and loading of vessels to ensure that proper loading procedures are followed, damaged bags are not loaded, and quantities of damaged product are documented for USDA-KCCO claims actions.

Stage 2: Shipping
Ocean transport
• Ocean vessel departs from the domestic port. • Ocean vessel arrives at the foreign port.
Stage 3: Foreign
Discharge
• Port operators and stevedores unload food from the ocean vessel, bag it (if in bulk), and load it into a warehouse or truck. • USDA's independent marine cargo surveyor or a surveyor hired by WFP or a NGO counts the cargo as it is being offloaded from the vessel. If a quality issue is noted, the surveyor may be requested to take samples for further quality testing at an accredited lab. USDA, on behalf of the NGOs, pays for a second cargo survey (count) either at the discharge port or delivery at the final destination. WFP independently conducts survey sampling and testing. • Some host government officials conduct quality inspections by sampling and testing food. • WFP or an NGO takes possession of the food either at the ocean vessel or at its final destination. • WFP or an NGO (or USAID's warehouse contractor if the food's destination is a prepositioning warehouse) manages reconstitution and rebagging of damaged commodities and inspects warehouses and food stocks at least once a week so that prompt action can be taken if problems occur, such as physical damage, staining caused by water, or evidence of theft.
Inland transport
• WFP or an NGO (or the ocean carrier if the terms of the contract are "through bill of lading") transports the food to its final destination.
Distribution
• WFP or an NGO distributes the food to recipients. • WFP or an NGO provides documentation of tonnage delivered to USDA-KCCO in WBSCM. • WFP or an NGO (or USDA on behalf of some NGOs) files claims against ocean carriers for lost quantities of food.

Source: GAO.

Appendix IV: Nutrition and Quality Control Guidance and Standards for U.S. Food Aid Programs

Several key government and implementing partner documents provide guidance and standards for U.S. food aid programs (see table 4). For example, USAID's *Commodities Reference Guide* provides guidance to implementing partners on commodity selection during emergency programs, needs assessments, the appropriate use of food aid, targeting beneficiaries, and developing program activity objectives. Table 4 describes each document that provides standards and/or guidance for U.S. food aid programs.

Table 5: Nutrition and Quality Control Guidance and Standards

Nutrition guidance and standards	
Commodities Reference Guide	USAID's *Commodities Reference Guide*, last updated in January 2006, provides guidance to implementing partners on commodity selection during emergency programs, conducting needs assessments, determining the appropriate use of food aid, targeting beneficiaries, and developing program activity objectives. Guidance on commodity selection during emergency programs includes the following five steps for selecting food rations: (1) program design, (2) suitability of food commodities, (3) ration specifications, (4) ration calculations, and (5) ration ranking and selection.
Sphere Handbook	A group of NGOs, including the Red Cross, published the Humanitarian Charter and Minimum Standards in Disaster Response (commonly referred to as the Sphere Handbook) in 2000, which lists universal minimum standards in core areas of humanitarian assistance, including minimum standards in food security, nutrition, and food aid. The *Sphere Handbook* sets standards for nutritional issues relating to programs that prevent or correct malnutrition and provides guidance on nutritional requirements for food aid provisions.
The Codex Alimentarius	The United Nations' Food and Agriculture Organization and World Health Organization established the Codex Alimentarius, a collection of internationally recognized standards, codes of practice, guidelines and other recommendations relating to foods, food production, and food safety.
Quality control guidance and standards	
Master Solicitation for Commodity Procurements	KCCO's Master Solicitation for Commodity Procurements document, last updated on April 1, 2011, lists all solicitation provisions and contract clauses that pertain to international food aid, including provisions specific to KCCO, *Federal Acquisition Regulation*, and Agriculture Acquisition Regulations. This document has been updated 24 times since it was first published in September 2005.
Commodity Requirement Document	USDA's Commodity Requirement Document specifies commodity specification requirements, such as quality assurance, quality discounts, and performance specifications, as well as container, packaging, and marking requirements for each commodity or product.
22 CFR 211 (Regulation 11)	USAID's Regulation 11 implements the Food for Peace Act, which authorizes USAID to transfer food commodities for use in disaster relief, economic development, and other assistance. Regulation 11 designates program procedures including obligations of implementing partners and requirements for processing, repackaging, labeling, handling, disposing, and assigning liability for loss of food aid commodities.

Source: GAO based on USDA, USAID, and internationally recognized standards.

Appendix V: USAID Quality Incident Feedback Loop

In 2009, a subgroup of the Food Aid Consultative Group—including officials from USAID, USDA, and external stakeholders—drafted a flow chart of standard operating procedures to resolve food quality complaints, also known as the feedback loop. As of August 2009, USDA officials had incorporated into the draft feedback loop additional details concerning halting food distribution and shortening the response time. According to the most recent draft feedback loop, depending on the magnitude of the quality control problem, it can take up to 3 months to work through the required steps to resolve a food quality complaint. Table 6 outlines the steps required for reporting and resolving quality control problems to FFP.

Table 6: Steps Required for USAID FFP Title II Food Aid Commodity Quality Feedback Loop

Step	Requirement	Days (range)
1	Implementing partner field staff send urgent information, such as packaging contract numbers, lot numbers, and photos of packaging and product, on a questionnaire to implementing partner headquarters and FFP staff at the mission or embassy in that country and in Washington, D.C.	5 hours to 1 day
2	FFP and USDA designate a media point-of-contact for collaboration and reporting to the implementing partner.	1–2
3	FFP (in Washington, D.C.) initiates a tracking spreadsheet and disseminates incident report to all stakeholders.	1–2
4	USDA, USAID, and experts determine if product distribution should be halted and quarantined.	1–5
5	If consensus is reached to continue distribution, USAID and USDA media point-of-contact conveys guidance to implementing partner and documents the incident in a quality complaint spreadsheet for status reporting.	1–5
6	If consensus is reached to halt and quarantine distribution, USDA, USAID, and experts collaborate to draft and finalize initial public quarantine advisory with the new expert committee; notify the mission or embassy staff, as well as the implementing partner headquarters, which notifies its field office; and disseminate the quarantine notice to the field office.	1–2
7	USAID and USDA collaborate with experts to disseminate follow-up guidance on quarantine advisory. If distribution is resumed, skip to step #13.	1–5
8	If distribution was halted and quarantined, USAID and USDA collaborate with experts to develop a sampling protocol with reporting requirements for review by USAID, USDA, and experts, including producers or millers and new expert committee.	10–15
9	If USAID and USDA approve an expert lab analysis, USAID and USDA review lab analysis report with USAID Food Technologist and Nutrition Advisor and expert committee. USAID shares written report with implementing partners' headquarters. Implementing partners' headquarters forwards the report to field staff. Or, if implementing partner arranges an analysis, it is forwarded to USAID.	1–14
10	USAID and USDA officials consult with independent expert to determine if commodity is fit for human consumption.	1–30
11	If FDA or other expert consultation is required, USAID, in coordination with USDA, the implementing partner, and the expert committee, requests approval to proceed with additional expert analysis. USAID apprises the media and the implementing partner's headquarters notifies its field offices. Skip to step #13.	1–30

Step	Requirement	Days (range)
12	If further consultation is not necessary, USAID determines when the quarantine can be lifted. The implementing partner submits a final disposition plan and associated costs to USAID for approval and determines that the implementing partner may resume distribution. USAID collaborates with USDA on final public advisory notice and written report to the Food Aid Consultative Group. Skip to step #15.	5
13	If additional consultation is necessary, USAID shares final second analysis report with USDA and communicates results to media. USAID then coordinates with implementing partner's headquarters regarding additional costs for testing.	5
14	USAID-FFP updates the final disposition in tracking spreadsheet for reporting to the Food Aid Consultative Group.	1
15	USAID seeks guidance from Food Technologist and Nutrition Advisor, USDA, and experts and consults the Food Aid Consultative Group on ways to avoid recurrences or make systematic improvements in the supply chain for final reporting to the Food Aid Consultative Group.	1
Total (Maximum)		**81 days**[a]

Source: GAO based on USAID Title II Feedback Loop Guide.

[a]According to USAID, each food aid commodity quality issue is different and steps to resolve the issue will vary from case to case. Dates and time frames are best- and worst-case scenarios, depending upon the magnitude of the quality issue.

Appendix VI: Comments from the U.S. Agency for International Development

Thomas Melito
Director, International Affairs and Trade
U.S. Government Accountability Office
Washington, DC 20548

Dear Mr. Melito,

I am pleased to provide the U.S. Agency for International Development's formal response to the GAO draft report entitled "International Food Assistance: Better Nutrition and Quality Control Can Further Improve U.S. Food Aid" (GAO-11-491).

The enclosed USAID comments are provided for incorporation with this letter as an appendix to the final report.

Thank you for the opportunity to respond to the GAO draft report and for the courtesies extended by your staff in the conduct of this audit review.

Sincerely,

Sean Carroll
Chief Operating Officer
U.S. Agency for International Development

Enclosure: a/s

USAID COMMENTS ON GAO DRAFT REPORT No. GAO-11-491

I. General Comments

USAID welcomes this GAO report and its recommendations on food aid programming nutrition and quality control. USAID has recently taken several steps to address the recommendations made in this report.

In December 2010, USAID's Office of Food for Peace issued a draft report from a two-year Food Aid Quality Review (FAQR) undertaken with Tufts University Friedman School of Nutrition, and in consultation with industry, PVOs, technical experts, UN agencies, and others. The review aimed to identify ways to better match the nutritional quality of Title II food aid with the nutritional requirements of vulnerable populations overseas. The FAQR focused on the formulation of food aid products, how programs use food aid products and product quality assurance.

The final summary FAQR report was issued in April 2011 and Food for Peace has begun implementing the review's recommendations which include reformulating fortified, blended foods; improving composition and use of fortified vegetable oil; improving fortified cereals used in general food distributions; use of ready-to-use products when appropriate; modification of programming guidance; and revision of the process for approving new products. The entire FAQR report will be available in July 2011. USAID expects that the implementation of these recommendations will dramatically enhance the nutritional impact of food aid rations in both emergency and development settings.

II. Recommendation Comments

Recommendation 1: To enhance U.S. efforts to meet the nutritional needs of intended recipients, we recommend that the Administrator of USAID and the Secretary of Agriculture work together to take the following three actions:

1. For U.S. food aid, provided through general distribution programs during emergencies, provide clear guidance to implementing partners on how to address nutritional deficiencies that emerge when such programs extend beyond a year;

   USAID Management Response: As part of our implementation of the FAQR, USAID is evaluating the feasibility of reformulating our milled grains and fortified vegetable oil to better address micronutrient deficiencies in malnourished populations. USAID is also working to develop and field

test a new fortified blended food which includes dairy protein specifically to meet the needs of older infants and young children. If realized, these changes will go a long way towards reducing nutrition deficiencies in populations relying on food aid for more than a year. Guidance for implementation partners will accompany any new products.

2. For new specialized food products designed to meet the nutritional needs of the most vulnerable groups, evaluate the products' performance in achieving nutritional goals within program settings and their relative cost-effectiveness before they are included in the agencies approval list of commodities;

   USAID Management Response: USAID and USDA, with support from the Institute of Medicine, FANTA-2 and U.S. Army Natick Research, Development, and Engineering Center have recently developed new ready-to-use food products for the first stages of an emergency. These products will enhance USAID's ability to respond to crises around the world, providing a means of delivering ready-to-eat food quickly to populations that do not have immediate access to food or means of cooking because of an emergency. USAID plans to pre-position these new products so they can be moved as needed to provide the U.S. first line response to disaster. USAID expects these new products will be ready for shipment in October 2011. These new emergency products all received extensive nutritional testing prior to their solicitation. Subject to Title II resource availability and flexibility, any new specialized foods developed as a result of the FAQR will also receive nutritional testing and be evaluated for cost effectiveness and potential impact. Additional programming evaluation research would also prove invaluable but would require additional funding and authorizations.

3. Provide clear guidance on whether and how best to use new specialized food products, including guidance to the agencies' implementing partners on targeting strategies to ensure that the products reach their intended recipients.

   USAID Management Response: USAID agrees on the importance of guidance on new food aid product usage and beneficiary targeting. USAID currently issues guidance for implementing partners, providing extensive information on targeting and nutrition in emergency situations. Recent guidance has included "Emergencies in Urban Settings: A Technical Review of Food-Based Program Options" and "Household Hunger Scale: A Cross-

Cultural Method to Measure Household Hunger." Additionally, the Technical and Operational Performance Support (TOPS) Program was recently created to advance networking among Title II emergency and development partners through training and information sharing on best practice and lessons learned. TOPS will provide guidance to implementing partners to assist them with assessment, monitoring, and evaluation efforts that are critical to ensuring that their programs identify and achieve the desired nutritional outcomes. Also, as previously noted, any new specialized foods developed as a result of the FAQR will be accompanied by guidance to implementing partners.

Recommendation 2: To improve U.S. Efforts to maintain the quality of commodities throughout the food aid supply chain, we recommend that the Administrator of USAID and the Secretary of Agriculture work together to take the following two actions:

1. Strengthen agencies' monitoring of commodity quality by identifying and systematically tracking key quality indicators to ensure that agencies and implementing partners are aware of the full extent of quality problems, including emerging concerns, throughout the supply chain;

   USAID Management Response: Development of a comprehensive quality control system for food aid programs will require extensive collaboration amongst agencies and stakeholders to determine cost-effectiveness and ability to develop uniform quality indicators, and an automated, systematic way of measuring and reporting. USAID welcomes this suggestion and will make future decisions on this issue within the context of the new, constrained budget environment, and budgetary implications of researching, developing and implementing such a structure.

2. Evaluate packaging specifications to ensure food packaging is sufficiently durable for conditions encountered throughout the supply chain.

   USAID Management Response: As indicated in the report, all USG food aid meets commercial packaging standards. However, USAID agrees that the unique nature of the food aid supply chain may require additional specifications for durability. Under the Food Aid Consultative Group, USAID established a packaging working group to look at packaging weaknesses and improvements for existing packaging, and design ways to

introduce and pilot new packaging prototypes with USDA and other experts. Most recently, this working group recommended changes to vegetable oil packaging that may reduce the amount of damage in handling and distribution. These recommendations were approved and the new packaging is now available to implementing partners during the call forward process.

Appendix VII: Comments from the U.S. Department of Agriculture

United States Department of Agriculture

Farm and Foreign Agricultural Services

Foreign Agricultural Service

1400 Independence Ave. SW
Stop 1001
Washington, DC 20250-1001

Mr. Thomas Melito
Director, International Affairs and Trade
United States Government Accountability Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Melito:

The U.S. Department of Agriculture (USDA) appreciates this opportunity to provide a substantive response to the Government Accountability Office (GAO) draft report "Better Nutrition and Quality Control Can Further Improve U.S. Food Aid" (GAO-11-491). In this draft, GAO offers specific recommendations to the Secretary of Agriculture and the Administrator of the U.S. Agency for International Development (USAID) regarding attention to nutritional deficiencies during protracted emergencies, evaluation and guidance concerning the performance and costs of specialized food products for vulnerable populations, tracking quality indicators, and a review of packaging specifications for durability. USDA agrees with the GAO recommendations and will work with USAID to take the necessary actions to address them.

USDA is committed to providing nutritious and high-quality products through its food aid programs that meet the needs of recipients. USDA is pleased that the GAO acknowledges improvements that already have been accomplished in the quality of food aid products. Over the past four years USDA and USAID have invested substantial resources to review the quality and nutritional content of food aid products, and to make improvements. The recommendations made in the recent SUSTAIN and Tufts University studies are also being considered and will be used to guide appropriate, cost-effective actions.

Meeting the Nutritional Needs of Recipients

The report recommends that USDA and USAID improve guidance provided to implementing partners in emergency feeding programs, particularly where the need to maintain nutritional content is concerned. Though emergency programs are largely under the purview of USAID, USDA will support USAID's efforts through changes in commodity procurement and program coordination. In recognition of micronutrient concerns, USDA and USAID already have taken several measures to improve the quality of food rations and commodities.

The Tufts University study recommended that a commodity review group be established to determine the cost effectiveness and appropriateness of new commodities in food aid programs. USDA will join USAID in exploring the possibility of establishing such a group.

USDA also will review the performance and relative cost effectiveness of newly-developed micronutrient-fortified products, as the GAO recommends. USDA is currently funding the development and field testing of a dairy protein paste, UltraRice, and lipid-based products. In 2012 USDA will evaluate the results of this field testing to determine if those products should be included in future programs.

Food Aid Quality Controls

USDA believes strongly in maintaining quality controls for food aid products. To ensure that high commodity standards are met, USDA's Farm Services Agency, FAS, and USAID staff regularly communicate and exchange information about any commodity quality issues that may arise. USDA generally agrees with the GAO recommendation to establish and track quality indicators throughout the supply chain. USDA will explore the feasibility and cost options of implementing this recommendation.

The GAO draft report notes several instances of food aid quality problems. In addition to this written response to the draft report, USDA provided the GAO with several technical comments about individual quality issues. The technical comments provide background and clarification regarding specific situations, especially as they relate to corn soy blend. Explanations of past quality issues are not easily summarized in this letter because of complexities related to the inclusion of multiple inputs, fats, and micronutrients. USDA continues to work with USAID and the Federal Grain Inspection Service to reduce the instances of future quality problems. USDA also continues its efforts to compel greater accountability for performance from those operating under USDA food aid contracts.

Finally, USDA with USAID will continue to review packaging specifications. USDA recognizes that packaging must withstand harsh environments and has worked within the Food Aid Consultative Group, which includes private industry partners, to develop high-quality packaging. USDA will review the recommendation from the GAO, along with similar findings in the Tufts University study, to determine what actions can be taken to improve packaging.

USDA thanks the GAO for its helpful review of food aid nutrition and quality control. The GAO's comments and recommendations will be taken into account when making future program decisions and will provide a basis for further program consultations with field experts. It remains a top priority at USDA to continually improve the quality and nutrition of food aid products.

Sincerely,

John D. Brewer
Administrator
Foreign Agricultural Service

Appendix VIII: GAO Contact and Staff Acknowledgments

GAO Contact

Thomas Melito, (202) 512-9601 or melitot@gao.gov

Staff Acknowledgments

In addition to the individual named above, Joy Labez (Assistant Director), Julia Ann Roberts, Carol Bray, Ming Chen, Debbie Chung, Martin De Alteriis, Mark Dowling, Etana Finkler, Heather Jensen, Nancy Meyer, and Jena Sinkfield made key contributions to this report. Other contributors include Pedro Almoguera, Ann Baker, Kenneth Bulle, Sharon Dooley, Brian Egger, Kendall Helm, Amanda Hinkle, Erin Lansburgh, Marya Link, Douglas Manor, Sarah McGrath, John Miller, Susan Offutt, Ernest Powell, Jerome Sandau, Phillip Thomas, Ryan Vaughan, and Bill Woods.

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