

MODULE 5: EMERGENCY PROGRAMS

I. INTRODUCTION

The Office of Food for Peace's (FFP) Strategic Objective #1 (SO) for emergency food aid programs is stated as "Critical food needs of targeted groups met." This SO, in turn, directly supports the USAID strategic goal, "Lives saved, suffering associated with natural and man-made disasters reduced, and conditions necessary for political and/or economic development re-established". Therefore, PL 480, Title II-funded emergency food aid programs should be designed and implemented with this strategic objective in mind.

Title II emergency food aid is used largely for three types of humanitarian crises: natural disasters; complex emergencies; and post-emergency situations. Natural disasters are crises caused by nature, such as floods, earthquakes, flooding, or drought. Complex emergencies generally arise from prolonged civil strife, often exacerbated by climatic and other events, and are characterized by insecurity, failure or the inability of host governments to respond effectively to assist refugees, internally displaced persons (IDPs) and other vulnerable groups. In post-relief situations, food aid is used to help facilitate resettlement, reintegration of ex-combatants, and in rejuvenating local food production.¹ In accomplishing the latter objectives, private and voluntary organizations (PVOs) and other recipient organizations may -- with FFP approval -- monetize a portion of the food aid for local currency required for an emergency program.

By meeting the critical food needs of vulnerable groups when a natural, man-made, or civil disaster strikes, Title II emergency food aid can minimize human and economic losses and accelerate the return to normalcy. Emergency food aid can also be an important vehicle in building the capacity for longer-term food security during the post-relief period.

During the design of emergency food aid programs, Cooperating Sponsors (CS) and USAID endeavor to: (1) target food aid to reach the most vulnerable populations in a timely and cost-effective manner; (2) undertake interventions that do not disrupt local production and do not encourage aid dependency; and (3) incorporate capacity-building activities to ease the transition from crisis to recovery and eventually to longer term development. Guidelines to assist in the selection and use of food aid commodities in emergency programs are outlined below.

II. GUIDELINES FOR COMMODITY SELECTION FOR EMERGENCY PROGRAMS

This Module sets forth in five steps how to choose the most appropriate and cost-effective rations to accomplish emergency program objectives. This guidance is intended to be flexible enough to

¹ USAID/BHR/Office of Food for Peace Emergency Division, *PVO Guidelines for Title II Emergency Food Proposals and Reporting, 1999 (Draft)*

encourage the selection of food aid rations that are most appropriate for each emergency situation. Box 1 below identifies the five key steps in the commodity selection process:

Box 1: Five Steps for Selecting Food Rations:

- Step 1. Program Design
- Step 2. Suitability of Food Commodities
- Step 3. Ration Specifications (Energy Requirements)
- Step 4. Ration Calculations
- Step 5. Ration Ranking and Selection

STEP 1: PROGRAM DESIGN

The five key program design steps usually consist of the following: (1) conducting a needs assessment; (2) determining appropriate use of food aid; (3) identifying the target population; (4) developing program activity objectives; and (5) reaching decisions regarding the distribution mode and frequency. These components are key elements for the development of Title II Emergency Food Aid proposals. These guidelines are primarily for use in determining rations selection and are not meant to be rigidly proscriptive. For detailed guidelines on proposal development see FFP's *PVO Guidelines for Title II Emergency Food Proposals and Reporting (Draft)* available on line at www.usaid.gov/hum_response/ffp/emerg.htm. An explanation of each design component follows:

1. Conducting A Needs Assessment

All FFP emergency food aid requests must demonstrate the need for food as an appropriate response to the emergency. A needs assessment should be carried out in a participatory and timely manner. Frequently, an in-country needs assessment is carried out on a joint basis involving several different agencies, including the World Food Program and PVOs. This assessment is needed to determine the nature, extent, severity of the emergency (including, whenever possible, an indication of the degree of malnutrition), food accessibility and availability, and to identify factors that may impede effective utilization of food. The assessment should also describe the criteria for selecting the beneficiaries and geographic areas to be targeted. Key to the assessment are good estimates as to whether local foods may be used to supplement the food aid ration package, and how donor and implementing agencies will work together and what role U.S. food aid will play in satisfying the populations complete food need

Primary Data Collection: Data may be attained through primary sources such as food consumption surveys, nutritional status surveys, or rapid food security assessments. Qualitative data may be collected using techniques such as, in-depth interviews, focus group discussions, rapid appraisal techniques, and observation verification of self-reported behavior by participating households. Key informants might include local health authorities, community leaders, teachers, or other knowledgeable members of the population. Tips for collecting primary data are provided in USAID/CDIE's *Performance Monitoring and Evaluation Tips*, which are available online at www.dec.org/usaid_eval. Other resources can be found in the Resource List at the end of this module.

Secondary Data Collection: Secondary data are available from several sources including: the USAID/Africa Bureau-funded Famine Early Warning System (FEWS); UN Food and Agriculture

Organization (FAO) crop and food supply reports; UN World Food Program (WFP) food aid assessment reports; international and local PVO reports and other donor reports. Quarterly reports on the nutritional status of refugees and internally displaced persons can be obtained in hard copy or on the Internet from the Refugee Nutrition Information System (RNIS) of the United Nations Sub-Committee on Nutrition at <http://acc.unsystem.org/scn/>. The Health Information Network for Advanced Planning (HINAP) of WHO's Department of Emergency and Humanitarian Action provides baseline health information, which is updated during an emergency at www.hinap.org. Additional information can be collected from on-site from reports produced by the local government, the national health system, or other agencies.

The findings from the need assessments will naturally drive the program design process. Box 2 below contains examples of some possible general outcomes of an assessment.

Box 2- Examples of Assessment Outcomes

No Food Assistance When:

There is only minor disruption in crop production or marketing systems or despite a minor or localized crop shortfall, the populations concerned are able to cope with the situation, or other resource needs take priority.

Short-Term (Rapid Onset) Assistance When:

Some food stocks may be lost, normal food supply/marketing systems may be disrupted, and/or crops may be damaged. Examples include situations immediately following earthquakes, floods, storms, fires, and short-duration civil disturbances. The duration may be as little as a few days or until the next harvest or longer under certain circumstances.

Medium-Term Assistance When:

It is not possible for the affected populations to return to normalcy within a period of 12 months or less. This includes massive crop failures and the inability of refugees or internally displaced persons (IDPs) to return home for security, political and other reasons.

Longer Term Title II Development Assistance When:

Refugees and IDPs have returned to their home areas or when populations affected by drought, floods and other natural disasters can resume productive agricultural activities. However, in this type of a transition situation, it is advisable for cooperating sponsors to consult with FFP prior to designing a Pre-Development or Short Term Development Program or Development Program (DAP) proposal.

2. Determining the Appropriate Uses for Food Aid

The objectives of emergency food aid can vary. Some examples of objectives include: (a) to satisfy the nutritional requirements of vulnerable target groups; (b) to improve the nutritional status of malnourished individuals; (c) to enable affected households to maintain or resume livelihood activities; (d) to reduce sales of household assets to purchase food; and (e) to prevent mass migration out of areas affected by drought and other natural disasters. Naturally, each of these different activities will involve different targeting ratios, and exit criteria.

3. Identifying the Target Population

Plans for emergency food aid must include efforts to identify key characteristics of the recipient populations. The target beneficiaries may include entire populations of refugees, IDPs or persons who remain in their home communities. Other programs may be targeted only to extremely vulnerable groups within these populations, such as young children, lactating and pregnant women, the elderly, and certain livelihood groups or particular family units that have lost their source of income.

In emergency situations the size and circumstances of target groups can change quickly due to the movement of conflict zones, worsening drought conditions, encroaching floods, or other factors. These changing conditions naturally complicate planning and logistics, which can force changes to the size of the target group or the size of the ration, method of transportation or distribution or food storage arrangements.

4. Developing Program Activity Objectives

Although each CS will approach the achievement of FFP Strategic Objective No. 1 (Critical Food Needs of Targeted Groups Met) in different ways, it is urged that cooperating sponsors (CSs) review USAID's Managing for Results terminology (see Annex 1 (HYPERLINK)) prior to drafting the proposal. Program objectives will be result statements, that is, a description of the end result to be achieved through the food aid intervention. One results-oriented objective might be "Improved nutritional status of target population."

Each result statement should have at least one performance indicator to track progress. Performance indicators are variables with a particular characteristic or dimension to measure progress toward achievement of the stated result. For example, an indicator for the objective, "Improved nutritional status of target population" could be "average weight-for age- z-score within the target group". Sample food security and nutrition indicators may be found in Annex II. USAID/CDIE's *Performance Monitoring and Evaluation Tips*, available online at www.dec.org/usaidtheval, also provides guidance on how to develop result statements and performance indicators. For purposes of USAID humanitarian goal monitoring in emergency situations, changes in the wasting (weight for height) of children under five years of age and, if possible, the crude mortality rate are most important.

5. Determining the Distribution Mode and Frequency

Emergency food aid activities can generally be divided into two major categories: general food distribution and targeted food distribution.² General distribution programs often provide full nutritional support for emergency affected populations immediately after the onset of a humanitarian crisis. Food is distributed to all members of the population on a regular basis. Targeted food aid provides food to only a segment of the emergency affected population, to meet the particular needs of the most nutritionally vulnerable households or individuals. These groups often include children, especially those under five; orphans or unaccompanied children; pregnant and lactating women; the elderly, the ill; the handicapped; those who are malnourished; or those displaced from their homes.

The distribution of targeted food aid can take any of several different forms, depending on the characteristics of the targeted group and contextual circumstances. Common examples of targeted

² *US International Food Assistance Report, 1999*, p. 22 http://www.usaid.gov/hum_response/farpt1999

programs are supplementary feeding for malnourished children or pregnant and lactating women, therapeutic feeding for the severely malnourished, school feeding, and/or food-for-work.³ A combination of approaches may be necessary. For example, general feeding plus supplementary feeding for nutritionally vulnerable groups may be most effective in some situations. Programming should change over time to reflect positive or negative changes in circumstances that affect the population's ability to feed themselves. Similarly, the rations in a general feeding program may evolve from providing total daily requirements to providing only partial energy requirements and selected nutrients before being phased out completely in favor of targeted feeding for households least able to sustain themselves or food-for-work activities. In all phases of relief operations, the participation of affected populations, especially women, in ration determination, food distribution and monitoring is encouraged. This maximizes program efficiency and effectiveness and honors the dignity of the recipients.

There are two primary emergency food aid distribution methods:

- ◆ **On-Site (wet) Feeding:** In this type of distribution, recipients are provided prepared food for consumption on the spot. The most common examples of on-site feeding are therapeutic feeding of severely malnourished children and the feeding of children under two and a caregiver at community feeding centers. The advantage of on-site feeding is that food rations are eaten under supervision, which helps to ensure that the food supplement is actually consumed by the target population. To obtain maximum nutritional improvement, two meals or a meal and a snack, 365 days per year are suggested. The disadvantages are that on-site feeding is labor intensive and, therefore, not always feasible, and the likelihood is high that food may be withheld from beneficiaries at home because they have already eaten at a feeding center.

- ◆ **Take-Home (dry) Rations:** More commonly, uncooked food rations are distributed to be carried home for preparation and consumption. The advantages of take-home rations are that they are easier to administer, more cost-effective, less time consuming, and can reach larger numbers of people. However, dry rations may be consumed by family members (leakage) other than the intended beneficiary, if the program is targeted on special vulnerable groups, or it may be sold/exchanged in the market, thereby reducing their nutritional impact on the whole family. Yet, other critical needs of the household may be satisfied this way. In some cases, a pre-cooked emergency food such as a high energy, nutrient dense emergency relief biscuit or bar may be available. The advantage of these types of products includes ease of handling and a set nutrient profile. While convenient, these foods are not recommended for long term use. Refer to the specifications for these bars for their use and appropriateness.

When designing take-home rations for a targeted group, consideration must be given to the fact that other family members will almost always share take-home rations. Some ways of addressing intra-household food sharing include education, increasing the ration package to accommodate sharing, or selecting ration commodities that are more likely to be consumed exclusively by the targeted individuals. For example, blended cereals may be regarded as “baby food” and thus, less acceptable for consumption by other family members..

The mode and frequency of distribution should be based on the accessibility to the target population, commodity transport and distribution costs, the nutritional profile of the target group, and the type and

³ *US International Food Assistance Report, 1999, p. 22* http://www.usaid.gov/hum_response/farpt1999

quantity of rations. It is also important to consider the distance and travel time to and from the center required for caregivers to pick-up and carry the food or the opportunities lost by beneficiaries and caretakers while attending on-site feeding.

STEP 2: SUITABILITY OF FOOD COMMODITIES

Suitability is defined as those attributes of the individual ration recipient, target household, or community that will affect their utilization of the foods provided. Judgment of ration foods' suitability should take into account traditional diets, food taboos, nutritional content, physiological appropriateness, resources for preparing the food for consumption, and the population's ability to access other food. Food that is not accepted by the population or that cannot be readily prepared with resources available to the recipients will not be eaten, and, consequently, cannot effect the intended results.

It is critical that the design of an emergency program does not compromise the adoption of appropriate and recommended feeding and dietary practices including exclusive breast feeding for infants under six months of age. The eligibility criteria for recipients, quantities, commodity mix, and recommendations for use of the rations should be consistent with official government policies and with standard practices used by USAID and the UN. Detailed recommendations for appropriate feeding practices are available from USAID's LINKAGES Project series titled *Facts for Feeding* at www.linkagesproject.org.

Below are other key factors that should be examined carefully when choosing suitable ration commodities:

Cultural suitability: It is important to consider women's and children's traditional diets, taste preferences, food taboos, and feeding practices. Unfamiliar food may be made more acceptable through nutrition education, food processing, packaging, and/or by combining it with familiar foods in recipes.

Nutritional content: This refers to the energy, fat, protein, and micronutrient content of the rations. There are certain nutritional considerations for women and children that should be examined when designing food rations. Young children, especially those up to 24 months of age, suffer linear growth faltering (stunting) and delayed development that leaves permanent damage when they are not adequately nourished. Underweight children are also at much higher risk of death due to illness than are their well-nourished counterparts. Although energy (kilocalories) is the main predictor of height and growth, adequate micronutrients and protein for this age group are also important particularly vitamin A.⁴

Pregnant and lactating women need extra energy, protein, and micronutrients to support the growth of their fetus or infant and maintain their own health. Pregnant women need the extra nutrients for the growing fetus and to ensure a healthy and safe birth outcome without depleting her own reserves and putting herself and her child at greater risk. While frequent, on-demand breastfeeding helps to maintain the quantity of breastmilk, lactating mothers need extra energy and nutrients to produce optimal quality breastmilk, to protect their own health, and to assure that their nutritional stores are preserved or restored to support subsequent pregnancies.

⁴ WHO, Complementary Feeding of Young Children in Developing Country: a review of current scientific knowledge, 1998

People with **HIV/AIDS** suffer from appetite loss (anorexia), eat less food and have difficulty eating and therefore fail to meet their dietary requirements. HIV/AIDS also affects how the body uses the foods that are consumed and this results in nutrient malabsorption. Fevers and the infections that accompany an HIV infection also lead to greater nutrient requirements and poor use of the nutrients by the body. There are several illnesses that are common with people living with HIV/AIDS and that cause malnutrition. These include poor appetite or anorexia, losing weight, fever, diarrhea, frequent vomiting, oral thrush and other infections. Good nutrition for HIV affected people requires the consumption of an adequate amount of macronutrients such as proteins, carbohydrates and fats, and micronutrients, which include vitamins and minerals. A deficiency in macronutrients, also known as protein energy malnutrition manifests itself in the weight loss and wasting that is typical of AIDS patients. This weight loss and wasting occurs as a result of reduced food intake, nutrient malabsorption and changes in metabolism. Vitamin A for HIV affected people is important for growth, immune function and maintenance of the lining of the respiratory, gastrointestinal, and gastro-urinal tracts. Consuming micronutrients especially vitamin A, B6, B12, iron, and zinc are important for building a strong immune system and fighting infections. Consuming fortified foods like the cereal blends and vegetable oil fortified with vitamin A as well as taking micronutrient supplements at early stages of HIV infection can slow weight loss and disease progression. In the case of vitamin A there is the likelihood of reduced transmission between mother and child and slowing the progression of the disease in infected people. Refer to the FANTA publication on “*Nutritional Care and Support for Persons Living with HIV/AIDS and other Affected Household Members*” at www.fantaproject.org.

Physiological appropriateness: Young children and the elderly require food that can be easily chewed and digested. In particular, infants and young children are unable to meet their caloric needs through high-bulk foods, such as cereals and legumes, due to their limited gastric capacity.⁵ See Box 3 below for gastric capacity of children aged 6-24 mos. For example, infants between 9-11 months have a stomach capacity of 285 grams.⁶ If these infants are breastfed an average amount of breastmilk (659 kcal⁷), they would need 168 grams of CSB to meet their additional caloric needs (1,290 kcal⁸ - 659 kcal = 631 kcal). This amount of CSB yields about 1,400 grams of gruel (assuming the gruel is 12% CSB).⁹ If the infants are fed the gruel four times a day, they would need to consume 350 grams of gruel at each meal to meet their supplemental caloric needs with only CSB. This amount is too much for their stomach capacity. Therefore, to assure that the infant’s energy needs are met, either the infant must be fed less of this gruel more frequently or an energy-dense, low-bulk source of energy, such as sugar or vegetable oil, must be added to the gruel. Children who are undernourished have an even smaller stomach capacity.

⁵ ibid

⁶ ibid

⁷ WHO, Complementary Feeding of Young Children in Developing Country: a review of current scientific knowledge, 1998

⁸ Per reference values in UNHCR/WFP’s *Guidelines for Estimating Food and Nutritional Needs in Emergencies*, 1997 p. 7

⁹ Per Commodity Fact Sheets, CRG, Section I

Box 3- Stomach Capacity of Children 6 to 23 months**Well nourished:**

6-8 months	249 g
9-11 months	285 g
12-23 months	345 g

Growth retarded

6-8 months	192 g
9-11 months	228 g
12-23 months	273 g

Source: WHO, Complementary Feeding of Young Children in Developing Countries: a review of current scientific knowledge, p. 61.

The viscosity of prepared foods for children less than 24 months should also be considered. Cereals vary considerably in viscosity, and once prepared, can become thick and difficult for these young children to eat. When mothers dilute the cereals to make them more edible for their children, they are significantly reducing the density of energy, protein, and micronutrients, increasing the volume of intake that is necessary. For this reason, nutrient and energy dense soy-blended cereals are better choices for dilution than a one-grain cereal. Digestibility and/or food intolerance problems for this target group should also be taken into consideration as rations are selected.

Appropriateness to good feeding practices: The use of specific donated foods should be consistent with appropriate feeding guidelines including exclusive breast feeding for infants under 6 months of age and continued, frequent on-demand breast feeding to 24 months and beyond. For children 6 to 24 months, it is important to gradually increase food thickness and add variety as the child ages. However, care must be taken to ensure that these foods complement rather than replace breastmilk. In addition to breast milk, children over 6 months of age should be fed other foods with the following recommendations:

- Provide 6 to 8 month old infants *approximately* 280 kcal per day from complementary foods.
- Provide 9 to 11 month old infants *approximately* 450 kcal per day from complementary foods.
- Provide 12 to 24 month old children *approximately* 750 kcal per day from complementary foods.

Feeding frequency is another important consideration. By combining meals and snacks, children should be fed complementary foods with the following frequency:

- Feed complementary foods for 6 to 8 month old infants 2-3 times per day.
- Feed complementary foods for 9 to 11 month old infants 3-4 times per day.
- Feed complementary foods for 12 to 24 month old children 4-5 times per day.

Complementary foods can include the food aid commodity and should be programmed to ensure the young child has a diversified and nutritious diet. During illness, the child should continue to receive breast milk and receive frequent and active feeding. Any feeding activity should be designed that the

young child is feed directly, slowly and patiently. Children should not be forced to eat.

For more information on young child and adolescent feeding, refer to the LINKAGES Project series titled *Facts for Feeding* (www.linkagesproject.org/pubs.html).

Availability of processing and/or storage facilities: Consider factors that will affect households' ability to prepare the food, such as access (distance and affordability) to mills, household food storage capacities, access to fuel for cooking, and preparation time. The chosen foods should minimize preparation demands, especially fuel wood demands because of the potentially negative environmental impact.

Characteristics and availability of locally produced food: Determine the timing of harvests and seasonal availability and affordability of local foods, and the affected population's ability to access these foods. Imported Title II food aid should complement what is already available and accessible.

Food and cost effectiveness considerations: Ideally, the most cost-effective ration package to achieve the desired result should be selected. However, in rapid onset emergency situations, cost-effectiveness considerations may be overshadowed temporarily by the U.S. government's overarching humanitarian response objective, which is to save lives and reduce human suffering as quickly as possible.

STEP 3: RATION SPECIFICATIONS (ENERGY REQUIREMENTS)

1. General Food Distribution

Basic nutritional requirements for individuals vary according to age, sex and reproductive status. Nevertheless, for practical reasons, rations for general food distribution are usually distributed equitably for all persons, male and female of all ages. Therefore, the content of an individual ration package is based on the **average** per capita requirement. This presumes that the food can be redistributed within a household, which includes individuals some of whom have greater or lesser than average requirements. The average per capita energy needs can be calculated using the demography of the affected population and age/sex-specific energy requirements.

However, at the onset of an emergency rapid response is essential and, generally, the demography of the population is not known. Therefore, to enable planning for quick response, the key international humanitarian organizations have agreed to respond with rations that supply a default energy requirement of 2,100 kcal/person/day, if the population is totally dependent on outside sources of food¹⁰. This default value was not selected arbitrarily. It is the average need based on the demography of a "typical" developing country, and assumes that members of the population are of average (worldwide) body size, are engaged in light physical activity, and live in moderate climatic conditions. When planning for immediate response, the proposed ration package should meet this energy requirement. In extreme cases, additional energy to cover high activity or severe cold should be considered. (See Box 4.)

¹⁰ This value was initially recommended by the Institute of Medicine (IOM) of the US National Academy of Science and has been adopted by USAID, WFP, UNHCR, and their PVO partners. Refer to IOM's "Estimated Mean per Capita Energy Requirements for Planning Emergency Food Aid Rations" for the calculation of this default value.

As soon as possible after the onset of the emergency, the ration should be adjusted to reflect the true demography of the population being served, and any good estimates of other reliable sources of food. Typically, when beneficiaries are registered for food rations their age and sex are recorded, and within a few months after the emergencies' onset population breakdowns by relatively standard age/sex categories are available. Using these data, average per capita energy requirements for the population can easily be calculated using the following guidelines:

To calculate the average per capita energy requirement in a population of known demographics (by standard age/sex groups):

- Multiply the percentage of the population per age/sex group times the energy requirements for each group. For example, if the percentage of girls 0-4 is six percent (per demographic data available), multiply 0.06 times 1250 kilocalories. (The energy requirements for each age/sex group can be found in Table 1 below.) Do this for each age/sex group.
- Sum the calculations of percentage X per capita energy requirements for all age groups.
- Multiply the Total Sum by 1.05 to account for the high fiber content of typical food aid commodities (Atwater correction).¹¹

The final adjusted sum is theoretically the average per capita energy requirement across the population. From that point, the energy content of rations should be based on the results of these calculations, i.e., the default of 2,100 kcal/p/d should be replaced by the newly calculated average. Table 1 below provides a table for calculating the average energy requirement in a population of unknown demography.

¹¹ UNHCR/WFP. *Guidelines for Estimating Food and Nutritional Needs in Emergencies*. 1997

Table 1: Calculation of Average Energy Requirements in Population of Known Demography

Age/sex group	% of population	X	Requirement for Age/sex group (kcal/d)
Girls 0-4 yrs		X	1250 ¹ =
Boys 0-4 yrs		X	1320 ¹ =
Girls 5-9 yrs		X	1730 =
Boys 5-9 yrs		X	1980 =
Girls 10-14 yrs		X	2040 =
Boys 10-14 yrs		X	2370 =
Girls 15-18 yrs		X	2120 =
Boys 15-18 yrs		X	2700 =
Non-pregnant female 19-59 yrs		X	1990 =
Pregnant female 20+ years ²		X	2275 =
Male 19-59 yrs		X	2460 =
Female 60+ yrs		X	1780 =
Male 60+ yrs		X	2010 =
SUM	100%		3 =
X 1.05 (Atwater correction) = Average Requirement =			

¹ For breast fed children, part of this energy is for the mother and the rest for complementary feeding of the child

² A crude estimate for % pregnant females = 4% of all females aged 19-59 years
and for % non-pregnant females = 96% of all females aged 19-59 years

Other adjustments that reflect differences from assumed conditions (i.e., average body size, light activity, and temperate climate) should also be considered. Members of a population that are engaged in moderate or high activity (e.g., doing heavy manual labor or walking long distances to gather fuel), or are living in extremely cold climates, will need more energy. Simple formulas for adjusting the average per capita requirement are:¹²

- Add an extra 100 kcal/p/d for every five degrees below 20° C. (Note: this may be a seasonal adjustment)
- Add an extra 140 kcal/p/d for moderate activity levels and 350 kcal/p/d for heavy activity.

¹² WHO. *The Management of Nutrition in Major Emergencies*. Geneva, 2000

Adjustments based on extreme body size is also a consideration but will rarely be needed. The adjustment may be upward (for populations of extremely large individuals) or downward (for populations of extremely small individuals).¹³

Finally, not every assisted population needs food aid to supply all of their daily needs. Except during the most acute stages of an emergency, many have access to other food. For example, as a displaced population adjusts to their new environment or emergency conditions are mitigated, some find employment and can buy food, and others gain access to land to farm and produce food. In these cases rations can be reduced, but reductions should be according to the type and quantity of food otherwise accessed. There is no simple formula to apply such adjustments. Each individual situation should be analyzed in terms of food availability and the households' ability to access that food. This requires a careful assessment of the household economy and food security.

In summary, the per capita energy content of rations for general feeding should equal the average requirement based on demography (or default of 2100 kcal/p/d) + activity level and/or temperature adjustments +/- body size adjustment – energy provided by other food (see Box 4 below).

Box 4 - Formula for Determining Energy Content of and Individual Ration for A General Feeding Program

$$\text{Average Energy Requirement*} + \text{Activity Level/ Temperature Adjustments} \pm \text{Body size adjustment} - \text{Energy from other food} = \text{Total kilocalories per daily ration}$$

* From demography or default of 2,100 kcal/p/d, if demography is unknown

2. Targeted Food Distribution

Targeted food distribution is designed to target only a segment of the emergency affected population, to meet the particular needs of the most nutritionally vulnerable households or individuals. These groups often include young children, orphans or unaccompanied children, pregnant and lactating women, and those who are malnourished or displaced from their homes. Young children are most vulnerable to the cycle of malnutrition and infections and, therefore, should be the first target group to receive supplemental food. Targeted feeding generally include supplementary feeding and/or therapeutic feeding programs.

a) Supplementary Feeding

There are two types of supplemental feeding programs (SFPs): targeted and blanket. Targeted SFPs are aimed at rehabilitating moderately malnourished target groups, preventing moderately malnourished groups from becoming severely malnourished, reducing the mortality and morbidity of children under five, and providing food supplements to selected pregnant and nursing women and other individuals at risk. Targeted SFPs should be considered when:

¹³ WHO. *The Management of Nutrition in Major Emergencies*. Geneva, 2000

- There is a prevalence of 10-14 percent acute malnutrition among children (age 6 to 59 months) whose weight-for-height is below -2 Z scores or less than 80 percent of the median NCHS/WHO reference values and/or edema); or
- There is a prevalence of 5-9 percent acute malnutrition and widespread food insecurity and high rates of disease¹⁴

Blanketed SFPs are intended to prevent widespread malnutrition and excess mortality among at risk groups. Blanket food distribution is most often directed to all children under a given age, pregnant and nursing mothers, the handicapped or elderly. Blanket SFPs are needed when:

- At the onset of an emergency general food distribution is not adequately meeting energy deficits;
- The prevalence of acute malnutrition among children <5 years of age is equal to or greater than 15 percent;
- The prevalence of acute malnutrition among children <5 years is 10 - 14 percent, and there are aggravating factors, such as widespread food insecurity and/or disease;
- There is an increased rate of malnutrition due to seasonally induced epidemics; or
- There are cases of micronutrient deficiencies¹⁵

Guidelines for developing rations specifications for supplemental feeding programs are the same as for Maternal Child Health and Nutrition (MCHN) programs and can be found in *Module 1- MCHN Programs*. [HYPERLINK](#)

b) Therapeutic Feeding

Although it is not within the scope of the CRG to discuss details of therapeutic feeding, a brief mention may be useful here. The objective of therapeutic feeding programs (TFP) is to provide intensive curative care for severely malnourished recipients (primarily children with weight-for-height less than -3 Z score and/or edema). These programs should be closely supervised by qualified medical professionals. The establishment of centers for therapeutic feeding should be considered when the rate of malnutrition among under-fives exceeds 10% and the capacity of existing facilities is exceeded. For guidance on admission and practices of therapeutic feeding, see WHO's *The Management of Nutrition in Major Emergencies* (see Resource List).

3. Income Transfer Value.

Food is seldom used in lieu of cash as an incentive or partial payment for work for the entire duration of an emergency-feeding program. However, especially while phasing out of an emergency program, rations may be designed to serve as an income transfer. For example, some food commodities with a high monetary value on the local market may be provided in order to reduce household spending on food and thus free income to purchase other food or non-food essentials. However, in the light of cost

¹⁴ UNHCR/WFP Guidelines for Selective Feeding Programmes in Emergency Situations, 1999.

considerations, low value rations might also serve this purpose while reaching larger numbers of people. Rations of this type are most commonly provided through a food-for-work program. Commonly, the minimum wage paid for work that is available in the area is the basis for determining the type and quantity of food in the ration, i.e., the market value of the ration should approximate the minimum wage. (See *Module 2: Food for Work.*) [HYPERLINK](#)

STEP 4: RATION CALCULATIONS

After determining the energy requirements of the ration package, the following may be determined: (1) type of ration package; (2) type and quantities of food commodities; and (3) the total tonnage of commodities needed.

1. Defining the ration package

Energy is the main macronutrient and is of primary concern for survival. However, two other macronutrients that deserve consideration are protein and fat. Protein is important for growth and recuperation from disease. While a ration package composed of sufficient energy and a range of protein-rich commodities (cereals, blended foods, legumes) usually provides a sufficient amount of protein, it is important to ensure that ration packages provide sufficient protein for nutritionally vulnerable groups, such as young children and pregnant and lactating women. Fat is a rich source of energy and essential for health and the prevention of some diseases. Therefore, ration packages need to contain a minimum amount of fat.

Vitamins and minerals, referred to collectively as micronutrients, are essential to the health of people of all ages, but especially for growing children and women during their reproductive years. Below are some guidelines for defining the ration package by its nutritional content.

a) Macronutrients

For general rations: As with energy, the recommended protein and fat contents are averages of the needs across a typical population of diverse ages. WHO's recommendations are the following:¹⁶

- The ration should include a mixture of cereal and pulse that provides a minimum of 46 grams of protein daily per person.¹⁷
- To cover the requirements for certain essential fatty acids, 17-20 percent of the ration energy should be provided in the form of fats or oil, but no more than 10% of energy should come from saturated fatty acids (found in all animal fats and some vegetable oils).

For supplementary feeding: Ration content should reflect the protein and fat needs of the targeted portion of the population. However, remember that a supplementary ration, by definition, adds to food from other sources, which also contribute fat and protein to the beneficiaries' diets, i.e., the supplementary ration does not supply all of the requirements of fat and protein. With regard to fat and protein, guidance that should be considered in the design of ration packages for supplementary feeding targeted exclusively to children or women are that:

¹⁶ WHO. *The Management of Nutrition in Major Emergencies*. Geneva, 2000

¹⁷ This is described as a "safe" input, i.e., the amount required to prevent deficiency disease

- Fats and oils in the diet (including the supplementary ration plus other foods eaten) should provide 20% of total energy intake of women of reproductive age and 30-40% of total energy for children up to 2 years of age.
- The needs of pregnant and lactating women are higher than those of non-pregnant/non-lactating women (7-10 grams per day (g/d) more during pregnancy and 14-19 g/d during lactation). On the other hand, the overall protein needs of young children, are lower than the average in the population overall (only 25-35 g/d).

For more guidance on developing ration packages for women and children, refer to *Module 1- MCHN Programs*. For the elderly, refer to *Module 4- Non-Emergency Humanitarian Assistance Programs*.

b) Micronutrients (vitamins and minerals)

People who have little or no access to fresh foods, and thus, are dependent solely on unfortified emergency food rations are at risk of developing micronutrient deficiencies. While assuring that the population gain access to fresh food and vegetables by some other means than food aid is a more satisfactory way to avoid deficiencies, in many cases, this is not possible. Especially during the acute phases of emergencies, while markets are not functioning and cultivation is interrupted, it is necessary to cover as much of the daily requirements as possible by including fortified food commodities in the general ration. When deficiency disease has already been identified in the population, the provision of fortified foods is even more important. Objectives for supplementary feeding programs should include the assurance of adequate intake of micronutrients by the most vulnerable groups, especially young children and pregnant or lactating women (often because resources are not sufficient to provide for the whole population). Regardless, the accessibility of fresh foods and the adequacy of intake of key micronutrients by food aid beneficiaries should be examined carefully before designing emergency rations.

All refined vegetable oil provided through Title II is fortified with vitamin A, a nutrient essential for the protection of the health of any population, but particularly young children. Forty grams (40g) of fortified vegetable oil potentially satisfies children's full daily requirements and about 70% of adult requirements. However, if the oil is used in dishes requiring high temperature frying, especially repeated uses of the oil, the value of the vitamin A may be substantially less.

Whereas whole grain cereal, such as wheat and corn are not fortified, all processed food cereals provided by Title II, with the exception of parboiled rice, are fortified with B vitamins (thiamin, riboflavin, folic acid, and niacin), vitamin A, calcium, and iron. Blended cereals (corn-soy blend and wheat-soy blend) are further fortified with zinc, B12, pantothenic acid, iodine, magnesium, vitamin C, vitamin D, and vitamin E. Levels of fortification can be found in the Commodity Fact Sheets in Part I of the CRG. [HYPERLINK](#) However, the values of vitamins reaching participants could be substantially less depending on the storage and handling, and cooking. Losses of vitamin C in particular can be substantial when cooked in relatively dilute gruel.

In order to fully satisfy the requirements for vitamins critical to the prevention of deficiency diseases, which have been observed in populations dependent on food aid for extended periods (beriberi- the lack of thiamin and pellagra- the lack of niacin), general ration packages should include 200 grams per person per day (g/p/d) of blended food. This quantity is also adequate to protect against scurvy provided losses in storage and cooking are not excessive. (In areas with particularly high vulnerability

to scurvy, e.g., the Horn of Africa, other vitamin C sources should be given a high priority by programmers.) To offer protection against iodine deficiency disease, 300 g/p/d of blended food would be needed.

The micronutrient content of blended cereals (see the Commodity Fact Sheets found in Section II of the CRG) are estimates.¹⁸ Because some of these vitamins are lost during storage and cooking, they do not accurately reflect the quantities available to the body after consumption. For example, up to 40 percent of vitamin A is lost from fortified cereals that is exposed for several months to heat, light and air. Minerals are not subject to deterioration by environmental factors, however, their bioavailability in cereal can be greatly reduced by absorption inhibitors in the ration commodities or in other commonly consumed foods, like tea and coffee.

2. Choosing the type and quantities of food commodities:

a) General feeding rations: Initial response

Presented in Table 2 below are three combinations of the basic commodity types into daily per capita rations that meet the requirements for immediate response for general feeding in populations of unknown demography (hence the use of 2,100 kcal/p/d energy requirement). These sample ration packages have an appropriate balance of macronutrients (17-20% energy from fat and >46 g protein) and that provides essential micronutrients (although not 100% of requirements, except vitamin A).

The first selection is appropriate for populations that traditionally eat very little pulse, for example for some Asian populations that traditionally use pulses (legumes) only in desserts. The second selection is most appropriate where little cereal is eaten, for example where beans and tubers are the primary staples. The third selection is included only to accommodate the cases when blended food is simply not available. During an acute phase of an emergency, milled cereal or rice, not an unmilled cereal, should be provided because a population does not have access to milling facilities (either because of location or cost). This is especially relevant for displaced populations, who additionally do not have the equipment to hand mill the grain. Note that in the third selection, it is critical that the cereal provided is a fortified flour or meal as it does not include blended food.

¹⁸ However, U.S. manufacturers of dry food aid commodities are now required to produce fortified food with average lot values of not less than 80 percent of the vitamin values and 100 percent of mineral values as specified in Part One of the CRG. In refined vegetable oil, the vitamin A levels are mandated to be between 60 and 75 IU/gram.

Table 2: Three Combinations of Ration Packages**Selection 1- Ration Package with Fewer Pulses**

Amount	Commodity	Protein (g)	Fat (g)	Energy (kcal)
30 g	Fortified oil	0	30	270
100g	Blended food	17	7	376
350g	Cereal flour ¹⁹ or Rice	30-35	3.5-6	1,260
60g	Pulse	13	<1g	204
Total		60-65	41-44 ²⁰	2,100

Selection 2- Ration Package with Cereal and Legumes

Amount	Commodity	Protein (g)	Fat (g)	Energy (kcal)
35 g	Fortified oil	0	35	315
100g	Blended food	17	7	376
300g	Cereal flour ²¹ or Rice	25-30	3-5	1,080
100g	Pulse	22	<1g	340
Total		64-69	46-48 ²²	2,111

Selection 3- Ration Package with No Blended Foods

Amount	Commodity	Protein (g)	Fat (g)	Energy (kcal)
40 g	Fortified oil	0	40	360
400g	Fortified cereal flour ²³	35-40	4-7	1,440
90g	Pulse	20	<1g	306
Total		55-65	44-47 ²⁴	2,106

¹⁹ If an unmilled cereal other than rice is used, then 10% more should be included to account for difference in energy and another 10% for costs/losses during milling.

²⁰ 1g fat = 9 kilocalories

²¹ If unmilled cereal other than rice is provided, then 10% more should be added to account for the difference in calories and another 10% more for cost/losses during milling.

²² 1g fat = 9 kilocalories

²³ Without the blended food to supply micronutrients, only a fortified milled flour should be used.

²⁴ 1g fat = 9 kilocalories

Things to keep in mind when designing rations for general feeding are:

Protein:

- Cereal and pulse provide different types of protein, both of which are essential to a healthy diet. A diet that includes no animal protein must include both cereal and pulse to assure intake of all of the different amino acids needed for body growth and maintenance.
- In equal quantities of cereal and pulse, pulse carries about twice as much protein (about 22 g/100g of pulse versus 7-12 g/100g cereal).
- There are both cereal and pulse in blended foods, therefore, the protein they provide includes the full range of amino acids needed.

Fat:

- Among Title II commodities, fortified, vegetable oil is 100% fat and is the most dense source of energy (1g = 9 kilocalories).
- Blended foods also contribute fat Energy. (17% of calories from fat).

Micronutrients:

- Among the Title II commodities, blended foods are the best sources of micronutrients, except vitamin A.
- Fortified oil is the best source of vitamin A; 40 g of fortified oil potentially provides 100% of children's daily needs for vitamin A and about 70% of adults' needs, assuming shipping and storage times and cooking does not involve high temperature frying.

In some cases, micronutrient supplements may be provided by agencies in emergency situations. It is necessary to determine the amount, type and frequency of Vitamin A supplements to ensure that women and children are not provided excessive amounts. Check with the health and other providers to ensure a joint response to meeting vitamin A needs.

b) General feeding rations: After more is known

Once the acute phase of an emergency has passed and the demography of the population is assessed, adjustments to the ration content should reflect this knowledge, either increasing or decreasing the energy content accordingly. A presentation of the demographics and the calculation of average energy requirements should be included in proposals for general rations for emergency affected populations, except for cases of rapid response or when the population is too mobile or too remote for accurate assessment (e.g., for internally displaced within a zone of conflict).

As food production and market activity resumes, food needs may diminish in terms of energy. The compositional needs, in terms of protein, fat and micronutrients, should reflect deficits after determining the contributions of other foods. This will depend on the type and quantities of foods that are available locally and how well households in the beneficiary population are able to access that food. In proposals for rations of other than the recommended content of fat and protein or the absence of fortified foods, there should be some demonstration of knowledge about the other food accessed by the majority of targeted households that justifies the difference.

c) Supplementary feeding rations

The choice and quantities of food commodities for supplementary feeding programs for emergencies are similar to those in other contexts. See *Module 1-MCHN Programs* and *Module 4-Non-Emergency Humanitarian Relief* for more about the design of rations for this purpose.

3. Calculating the Total Amount of Food Commodities Needed

Once the ration package is determined, the total quantity of commodities to satisfy the needs of a population totally dependent of food aid can be calculated using the default energy requirement of 2100 kcal/person/day. To calculate the number of metric tons (MT) needed for each commodity in a general feeding or supplementary emergency ration package, use the following steps:

- ❑ Multiply the number of grams of the commodity per person per day times the total number of persons to receive the commodity.
- ❑ Multiply the total number of grams of the commodity times the number of days food will be provided to the target group.
- ❑ Determine the number of MT of commodity needed by dividing the total number of grams per program period by 1,000,000 (number of grams in a MT).
- ❑ Complete the same calculation for each commodity (vegetable oil, cereal, cereal blend, or legume) that comprises the ration.

Box 5 below provides an illustrative example of how to calculate the total amount of commodities needed to provide a general feeding emergency ration package to 100,000 people for six months. These amounts would be adjusted downward once reliable estimates of other sources of food available to the general population, and other factors shown in Box 4 can be estimated.

Box 5: Calculating Total Amount of Commodities Needed for a General Feeding Emergency Ration Package (Selection 1 from Table 2) to a Beneficiary Population of 100,000 for Six Months.

OIL

- 1) Multiply grams of vegetable oil per person times 100,000 times 180 days
 $30 \text{ g oil} \times 100,000 = 3,000,000 \times 180 = 540,000,000 \text{ grams}$
- 2) Divide the total number of grams of oil by 1,000,000 (the number of grams in a MT)
 $540,000,000 \text{ g.} \div 1,000,000 = \mathbf{540 \text{ MT of fortified, vegetable oil}}$

WSB

- 3) Multiply grams of blended wheat soy blend (WSB) cereal per person times 100,000 times 180 days.
 $100 \text{ g of WSB} \times 100,000 = 10,000,000 \times 180 = 1,800,000,000 \text{ grams}$
- 4) Divide the total number of grams of WSB by 1,000,000
 $1,800,000,000 \div 1,000,000 = \mathbf{1,800 \text{ MT of WSB}}$

RICE

- 5) Multiply grams of rice per person times 100,000 times 180 days.
 $350 \text{ g} \times 100,000 = 35,000,000 \times 180 = 6,300,000,000$
- 6) Divide the total number of grams of rice by 1,000,000
 $630,000,000 \div 1,000,000 = \mathbf{6,300 \text{ MT of rice}}$

PULSE

- 7) Multiply grams of pulses per person times 100,000 times 180 days.
 $60 \text{ g} \times 100,000 = 6,000,000 \times 180 = 108,000,000$
- 8) Divide the total number of grams of pulses by 1,000,000
 $108,000,000 \div 1,000,000 = \mathbf{108 \text{ MT of pulses}}$

STEP 5: RANKING AND SELECTION

Still taking into consideration the nutritional content and suitability of the commodities (Steps 2 and 3), the next most important consideration when choosing ration packages is cost-effectiveness and appropriateness for meeting program objectives. When examining the primary cost elements, the illustrative price list of commodities Annex V can be used. Other cost factors to consider are:

- **Minimizing Market Disruptions:** Even with emergency food aid programs, an analysis should be done, (the Bellmon determination) to confirm that local markets will not be disrupted. For example, it may be less disruptive to provide certain foods in the lean season rather than during the harvest season. In fact, every effort should be made to use Title II food aid to increase the productivity of the targeted groups (adequate food intake leads to improved health, which then leads to increased

productivity) and to promote local agricultural production. Guidance on conducting the Bellmon analysis may be found online at www.usaid.gov/hum_response/ffp/bellmon.htm.

- **Logistics, Packaging and Storage Considerations:** The Bellmon determination should include an assessment of in-country transportation and storage capacity. Some commodities may impose undue management or cost burdens due to unusual local conditions (e.g., transportation, storage, handling, pilferage, accounting costs, etc.), unsuitable packaging or a limited shelf life of the commodity.

The usual sources of data for considering potential market disruptions and logistical problems include past evaluations of similar programs, interviews with host government authorities, and local and international PVOs and discussions with international organizations (such as the World Bank and United Nations agencies), USAID missions, USDA Agricultural Attaches and Economic/Commercial Officers at U.S. Embassies.

The final step is to rank the alternative ration packages by nutritional value, cost, and other factors, such as potential market disruptions and logistical factors. Decisions to change ration packages are easier when alternative rations and their main attributes have been examined in advance.

III. RESOURCE LIST

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3. Food and Nutrition Technical Assistance (FANTA) Project, Academy for Educational Development, 1825 Connecticut Avenue, NW, Washington, D.C., 20009-5721. Tel: 202-884-8000 Fax 202-884-8432. E-mail: fanta@aed.org; Web site www.fantaproject.org. FANTA has the following guides:
 - *Agricultural Productivity Indicators Measurement Guide*. Patrick Diskin
 - *Anthropometry Indicators Measurement Guide (Draft)*. Bruce Cogill
 - *Food For Education Indicator Guide (Draft)*. Joy Miller del Rosso and Gilles Bergeron
 - *Food Security Indicators and Framework for Use in the Monitoring and Evaluation of Food Aid Programs*. Frank Riely, Nancy Mock, Bruce Cogill, Laura Bailey, and Eric Kenefick
 - *Improving the Use of Food Rations In Title II Maternal/Child Health and Nutrition Programs (Draft)*. Serena Rajabiun, Beatrice Rogers, Margarita Safdie, Anne Swindale
 - *Infant and Child Feeding Indicators Measurement Guide*. Mary Lung'aho
 - *Measuring Household Food Consumption: A Technical Guide*. Anne Swindale and Punam Ohri-Vachaspati
 - *Nutritional Care and Support for Persons Living with HIV/AIDS and other Affected Household Members*. (forthcoming)
 - *Potential Uses of Food Aid to Support HIV/AIDS Mitigation Activities in Sub-Saharan Africa*.
 - *Sampling guide*. Robert Magnani
 - *Water and Sanitation Indicators Measurement Guide*. Patricia Billig, Diane Benahmane and Anne Swindale
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16. UNHCR/WFP. *Guidelines for Selective Feeding Programs in Emergency Situations*. Rome. February 1999. Available online at: www.wfp.-org/OP/guide/PolGuideSelect.html.
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20. Woodruff & Duffield. *Assessment of Nutritional Status in Emergency-Affected Populations (Adolescents)*. July 2000 at www.acc.unsystem.org/scn/.