
THE HUNGER REPORT: 1990



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Robert S. Chen, General Editor

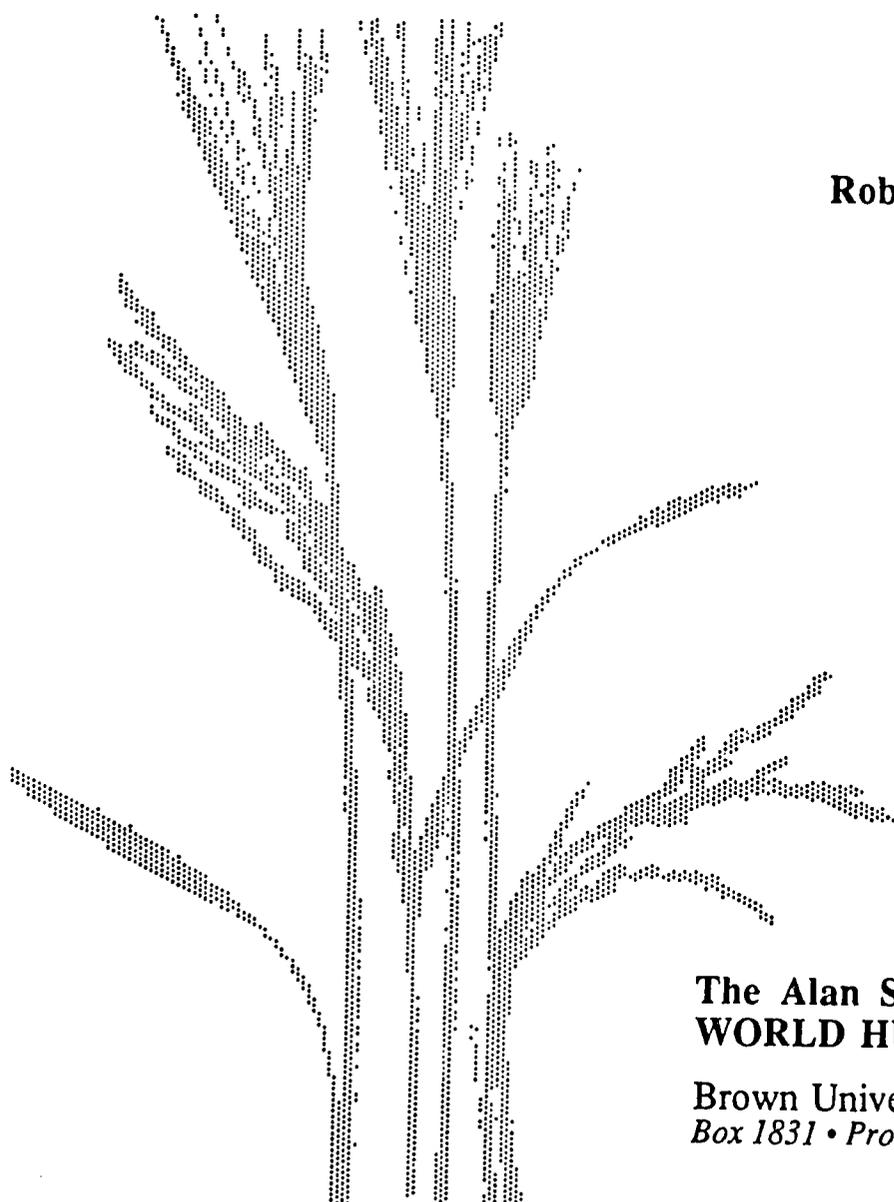
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June 1990

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Errata to *The Hunger Report: 1990*

Page 4, Table 1.2: The date of the first food-shortage indicator, "Dietary Energy Supply Less Than Nutritional Requirements," should be "1984-86" instead of "1985-87," and the names of the indicators should be italicized (see below).

Table 1.2 Profile of National Food Shortage.

<i>National Populations in Countries with Food Shortages</i>	
FOOD-SHORTAGE INDICATOR	TOTAL POPULATION
<i>Dietary Energy Supply Less Than Nutritional Requirements, 1984-86</i>	1570 million people 31% of world population
<i>Dietary Energy Supply Less Than Usual Consumption, 1989-90</i>	510 million people 10% of world population
<i>Famines Reported, 1989</i>	89 million people 2% of world population

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ISBN 0-944960-05-7

ISSN 1040-3604

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ACKNOWLEDGMENTS

The World Hunger Program gratefully acknowledges the contributions of many different individuals and organizations in the development of this report. We especially thank a number of U.N. and U.S. agencies for data and advice, including the Food and Agriculture Organization, the World Food Programme, and the World Food Council in Rome; the Office of the U.N. High Commissioner for Refugees, the World Health Organization, and the U.N. Disaster Relief Organization in Geneva; the United Nations Children's Fund in New York; and the U.S. Agency for International Development and the U.S. Department of State in Washington, D.C. The editor and authors also thank Jeanne Kasperson, Viola Haarmann, Joy Csanadi, Barbara DeMaio, Fatima Kane, Tanvi Nagpal, and Shreedevi Thacker for their wide-ranging assistance in the preparation, editing, and production of this report. The views expressed in this report are those of each author and do not necessarily represent the views of Brown University or those individuals and organizations who assisted us.

This work was completed with partial support from the Bureau for Food for Peace and Voluntary Assistance of the U.S. Agency for International Development under Grant OTR-0702-G-SS-9222-00.

ACRONYMS AND ABBREVIATIONS

ACC/SCN	Advisory Committee on Coordination-Subcommittee on Nutrition
AIDS	Acquired Immune Deficiency Syndrome
BMR	Basal Metabolic Rate
BOSTID	Board on Science and Technology for International Development (NRC)
CFS	Committee on World Food Security (FAO)
DSM	dried skim milk powder
EEC	European Economic Community
FAO	Food and Agriculture Organization of the United Nations
FAPRI	Food and Agricultural Policy Research Institute, Iowa State University
FEWS	Famine Early Warning System Project (USAID)
g/l	grams per liter
GIEWS	Global Information and Early Warning System (FAO)
HIV	Human Immunodeficiency Virus
ICIPE	International Centre for Insect Physiology and Ecology
ICRC	International Committee of the Red Cross
IEFR	International Emergency Food Reserve (WFP)
IFPRI	International Food Policy Research Institute
IIASA	International Institute for Applied Systems Analysis
IIED	International Institute for Environment and Development
INCAP	Institute of Nutrition of Central America and Panama
INTERFAIS	International Food Aid Information System (WFP)
IPCC	Intergovernmental Panel on Climate Change
JNSP	Joint WHO/UNICEF Nutrition Support Programme
mg	milligrams
mnt	millions of metric tons
LRCS	League of Red Cross Societies
NCHS	National Center for Health Statistics (U.S.)
NGOs	non-governmental organizations
NRC	National Research Council (U.S.)
NYT	<i>The New York Times</i>
ODA	Official Development Assistance
OECD	Organization for Economic Co-operation and Development
ORT	oral rehydration therapy

ACRONYMS AND ABBREVIATIONS (continued)

PRB	Population Reference Bureau, Inc.
U.N.	United Nations
UNBRO	United Nations Border Relief Operation
UNDP	United Nations Development Program
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNRWA	United Nations Relief and Works Agency for Palestine Refugees in the Near East
UNU	United Nations University
U.S.	United States
USAID	U.S. Agency for International Development
USCR	U.S. Committee for Refugees
USDA/ERS	U.S. Department of Agriculture, Economic Research Service
WARMI	Women's Organization of Independencia, Peru
WFC	World Food Council (U.N.)
WFP	World Food Programme (U.N.)
WIDER	World Institute for Development Economics Research (UNU)
WRI	World Resources Institute

EXECUTIVE SUMMARY

At the beginning of the 1990s, hunger continues to plague more than 1 billion people around the world. Although the number of people at risk of death due to *famine* has decreased dramatically in recent decades, more than 1.5 billion people live in countries where total food supplies are inadequate to meet nutritional needs and 500 million people or more live in countries where substantial fluctuations in food supplies still occur. Nearly 500 million people are too poor to obtain enough food for adult subsistence and child growth and an equal number more are too poor to obtain enough food to support their labor. Almost one-third of all children under five years old—more than 150 million children—are significantly underweight for their age, and one in six infants weighs no more than 2.5 kilograms (5.5 pounds) at birth. An estimated 700 million people suffer from iron-deficiency anemia and more than 200 million from iodine deficiency, including both goiter and cretinism. More than 15% of the world's children suffer from vitamin A deficiency, which can lead to blindness, illness, and death (Chapter 1).

A disproportionately large number of the hungry live in Sub-Saharan Africa, where two of the three famines reported by *The New York Times* in 1989 occurred, all associated with civil war and violent conflict. More than four out of five people in this region live in countries lacking sufficient supplies of food to meet their nutritional requirements, and nearly one in three live in countries where total food supplies in the 1989/90 crop year fell below usual levels of consumption. Nearly half of the population is too poor to obtain enough food for work, and one-quarter cannot obtain enough food for adult subsistence and child growth (Chapter 1).

Aid to the hungry provided by the developed world is substantial yet still far short of need. Food aid provides 15% of the food imported by low-income, food-deficit countries but constitutes only one-quarter of what would be needed to meet aggregate nutritional needs and only half of what is needed to meet temporary shortfalls. However, with world stocks of cereals at extremely low levels and with rising deliveries of food aid to Eastern European countries, the total quantity of food aid provided to the developing world is not likely to increase in the near future and could well decrease. Over the next decade, food aid needs are expected to increase by 50% or more (Chapter 3).

The greatest obstacle to the delivery of food aid and other forms of assistance remains violent conflict and the use of food as a weapon. "Food wars" continued in at least a dozen countries in 1989 with disruptions to food production and distribution, destruction of natural resources and economic infrastructure, displacement of millions of people, interference with food and medical assistance, and other forms of violence and intimidation (Chapter 2). The number of international refugees continues to increase rapidly, reaching at least 15 million in 1990, and many millions more may be uprooted within their own countries. At least 8 million people receive assistance from international agencies but often at only minimal levels of survival—and scattered reports indicate that hunger may be increasing among these groups (Chapter 4).

On a more positive note, there is growing evidence of success in preventing and alleviating many different forms of hunger—and growing consensus that new initiatives that build on these successes are needed (Chapter 6). The international community has helped to prevent many deaths due to famine in recent years, and, as illustrated by last year's Operation Lifeline Sudan, can help many people despite violent conflict (Chapter 1). New opportunities exist to increase international condemnation of the use of food as a weapon, to strengthen protection of the rights of victims of war to food, and to pressure conflicting parties to allow delivery of humanitarian aid in zones of conflict. Targeted programs show considerable

Executive Summary

promise for eliminating debilitating nutritional deficiencies among hundreds of million people and for promoting the use of oral rehydration therapy and breastfeeding to prevent child deaths due to diarrhea (Chapters 1 and 5).

An ambitious set of goals for the next decade has been identified by a diverse set of groups, including the Task Force for Child Survival, the United Nations World Food Council, and a group of scholars, planners, and advocates who met in Bellagio, Italy in late 1989. These goals call for significant reductions in many different forms of hunger, including deaths due to famine, malnutrition among small children, and several different micronutrient-deficiency diseases (Chapter 6). Moving beyond the establishment of goals into action will require new resources—but, more important, widespread commitment to work together on the part of many diverse communities, close collaboration between governmental and grassroots organizations, and careful design and targeting of strategies to meet the diverse needs of the hungry. Achieving these goals will also require constant attention to demographic and health trends, economic policies and conditions, and environmental fluctuations to ensure that “new” hunger does not spread among those not already hungry (Chapters 1 and 6). Nevertheless, as stated in the Bellagio Declaration (Appendix 6.1), “it is possible and imperative... (to) end half of the world’s hunger in the 1990’s.” With hundreds of millions of people suffering from hunger every day, this goal cannot be met too soon.

1 THE STATE OF HUNGER IN 1990

Robert S. Chen

As a new decade begins—the last decade not only of this century but also of this millennium—the world is undergoing fundamental changes in its economic, social, and political landscape. These changes are certain to have profound effects on the hungry and poor of the world—but whether their conditions will improve or worsen as a result is difficult to foresee.

Perhaps the most striking change of all is the marked relaxation of East-West tensions and the shift of many if not most centrally planned economies towards more market-oriented economic strategies. One major consequence of this shift is the unprecedented loss of job security for many workers in these transitional economies. How this will affect their vulnerability to hunger in both the short- and long-term—and whether they would have been better or worse off in the absence of change—remains to be seen.

A second major consequence is the potential for a so-called “peace dividend,” as the United States, the Soviet Union, and their allies cut back on military expenditures in favor of other priorities. The opportunity exists for significant additions to the attention and resources devoted to alleviating hunger in both developing and developed countries—but competing needs and interests, ranging from budget deficit reduction in the U.S. to basic economic reform in eastern Europe to new environmental initiatives worldwide, are already emerging. As discussed in more detail in Chapter 6 of this report, a critical need is therefore to define a coherent strategy for hunger reduction that identifies the opportunities for making significant progress in reducing hunger and clarifies the resources needed to realize them.

But no matter how the peace dividend is allocated, the changing world political climate has also created new avenues for reducing hunger significantly in the 1990s that may not require substantial new outlays. These include greater cooperation by the international community in resolving regional conflicts and providing timely humanitarian aid, focused attacks on nutritional problems such as diarrhea and vitamin A and iodine deficiencies, strengthening of systems already in place for famine early warning and refugee care, and careful planning to avoid creating “new” hunger in implementing new economic and social policies.

Unfortunately, many obstacles still remain. Violent conflict in Afghanistan, Ethiopia, Mozambique, and the Sudan continues to uproot millions of people and to disrupt both their own efforts to avoid hunger and the efforts of the international community to assist them. Drops in global food production in 1987 and 1988 have contributed to the lowest levels of world cereal reserves in six years, volatile and rising food prices, and constrained supplies of food aid. Political and economic crises in Eastern Europe, Latin America, Africa, and Asia may have increased the vulnerability of many countries to external and internal shocks, whether due to natural or human causes. The world lingers at a point where many paths diverge, but their destinations are murky.

In this report, we take stock of the world hunger situation at the end of the 1980s and the start of the 1990s. Building on our two previous reports (Kates *et al.*, 1988, 1989), we again present a *Hunger Profile*, designed to provide a multidimensional assessment of hunger for the world as a whole. The 1990 Hunger Profile still includes ten variables arranged into three categories—*food shortage*, *food poverty*, and *food deprivation*.¹ In addition, as a first step towards refining the Hunger Profile to reflect differences in the

prevalence of hunger in different regions of the world, we also present for Sub-Saharan Africa a special profile of hunger that incorporates the indicators used at the global level. Additional information on global levels of food shortage, attention to hunger, and efforts to alleviate and prevent hunger is also provided.

Assessing Hunger: A Multidimensional Profile

The Hunger Profile incorporates a range of indicators adapted primarily from existing estimates of hunger and hunger vulnerability developed by international and national institutions. Grouped into the three categories of food shortage, poverty, and deprivation, these indicators reflect the three major areas of attention given to hunger: food production and availability, distribution and entitlement, and the consequences of inadequate food consumption. Together, they give a broad, multidimensional picture of the numbers of people who may already be hungry or who may be especially *at risk* of hunger due to inadequate access to food at national, community, household, or within-household levels. Keeping track of those at risk—that is, those whose “food security” is in jeopardy—is especially important in considering actions and activities such as providing early warning of famine that are designed to prevent hunger.

Use of a profile recognizes that no single number can fully capture the complexity of trends in hunger and the factors and situations associated with hunger. Even with adequate food production, entitlement and physical access to food may vary greatly, resulting in hunger despite optimistic aggregate indicators of supply. Even when it appears that most households may have adequate food calories on an annual basis, hunger may arise due to the seasonality of harvests, micronutrient deficiencies, or mismatches between need and distribution within households. Moreover, some indicators may well improve while others worsen, reflecting different rates of progress and retreat, lags and interactions among types of hunger, or just poor data quality. Indeed, given the many different limitations inherent in most indicators—including wide variations in data sources, limited ability to track changes over time, and numerous assumptions and extrapolations—reliance on any single number could prove deceptive.

Global Food Shortage

Global food production dropped noticeably in both 1987 and 1988, in part due to adverse weather in many parts of the world. In terms of aggregate food calories, some 5% fewer calories were produced in 1988 than in 1986—and these calories were divided among a world population nearly 4% larger. If distributed according to need, the total primary food supply—consisting of vegetative food products and range-fed animal production—would have provided an adequate diet for only about 5.5 billion people, or only 8% more than the 1988 world population (Table 1.1).² Given modest improvements in average diets comparable to what many South Americans eat today, this supply would have been adequate to feed only about 3.7 billion people, less than three-quarters of the world's population. For a full-but-healthy diet that incorporates richer and more varied foods, the 1988 production level would have fed only about 2.8 billion people or slightly more than half of the world's population. Of course, more food probably could and would have been produced if more people had the means to purchase it—but at the same time, such increased production would itself have entailed additional inputs of labor and resources and additional impacts on the environment.

Forecasts by the Food and Agriculture Organization (FAO) of the United Nations indicate that world cereal production in the 1989/90 crop year will likely regain the level of 1986/87, increasing 7% over 1988/89 for the world as a whole. However, world stocks of cereals, based on total national carryovers at the end of national crop years, have declined to a level

Table 1.1 Profile of Global Food Shortage.

<i>Population Potentially Supported by 1988 Primary Food Supply</i>	
FOOD-SHORTAGE INDICATOR	TOTAL POPULATION
<i>Basic Diet</i> (principally vegetarian)	5.5 billion people 108% of world population
<i>Improved Diet</i> (about 15% of calories from animal products)	3.7 billion people 72% of world population
<i>Full-But-Healthy Diet</i> (about 25% of calories from animal products)	2.8 billion people 54% of world population

of less than 300 million metric tons (mmt), 17% of annual world cereal consumption and the minimum level FAO considers "safe" from the viewpoint of world food security. FAO's preliminary forecasts for the 1990/91 harvest are optimistic, but little replenishment of stocks is foreseen, and "adverse weather in the coming months could result in sharply higher prices on international markets and jeopardize world food security" (FAO, 1990c:1).

These aggregate figures conceal significant variations among regions and crops. For example, total cereal production and stocks have fallen much more drastically in developed countries than in developing countries since 1987. Aggregate carryover stocks of rice have increased by 12% from 1988/89 to 1989/90 after good harvests in 1989 in Bangladesh, India, and Indonesia. For 68 low-income, food-deficit countries,³ per capita cereal production is forecast to increase by 1.6% from 1988/89 to 1989/90, and cereal imports are expected to decline by 12% (FAO, 1990c:2-5).

Food-Short Countries

The Hunger Profile incorporates three different indicators of food shortage—the scarcity or unavailability of food relative to need within a bounded region such as a country—based on estimates available for most developing countries (Table 1.2). These indicators reflect three progressively lower standards for judging food shortage at the national level: the amounts of food needed to meet the nutritional requirements of a country's entire population, to maintain current levels of food consumption, and to prevent outright starvation and famine.

The first indicator utilizes the basic nutritional requirements established by the World Health Organization (WHO), FAO, and United Nations University (UNU) for food calories (WHO, 1985). Aggregate national needs are computed based on estimated or assumed distributions of national population by age, sex, body weight, activity level, and other factors (WRI/IED, 1988:250-61). These needs may be compared with data on dietary energy supply by country prepared by the FAO, which reflects the total number of food calories available at the retail level after allowing for most feed and seed uses, storage and transportation losses, and waste and for imports and exports of food (FAO, 1989). Estimates for the three-year period 1984-86 indicate that 1,570 million people, 31% of the world's population, lived in 49 countries where the total dietary energy supply was less than that required for health, growth, and productive work.⁴

Table 1.2 Profile of National Food Shortage.

<i>National Populations in Countries with Food Shortages</i>	
FOOD-SHORTAGE INDICATOR	TOTAL POPULATION
Dietary Energy Supply Less Than Nutritional Requirements, 1985-87	1570 million people 31% of world population
Dietary Energy Supply Less Than Usual Consumption, 1989-90	510 million people 10% of world population
Famines Reported, 1989	89 million people 2% of world population

The second indicator is based on the amount of food needed to maintain the *status quo* in national food supplies, recognizing that this level is likely to be inadequate from the standpoint of nutritional needs. At the end of 1989, the U.S. Department of Agriculture's Economic Research Service (USDA/ERS, 1989a,b) estimated that developing countries will need to import a total of 17 mmt of cereals to maintain their usual levels of consumption in the 1989/90 crop year, roughly the same level as in 1988/89 (see Figure 3.5 of Chapter 3).⁵ An estimated 920 million people (18% of the world's population) live in the 45 countries where such import needs existed. Preliminary projections for the 1990/91 crop year, assuming cereal production in 1990/91 to be on trend, indicate a slight decrease in status quo needs, to slightly more than 16 mmt needed by 42 countries with a total population of 750 million people. A more conservative measure, used in the Hunger Profile, is the number of people who live in those countries where crop production, beginning stocks, and total import capacity are insufficient to provide usual levels of consumption. For the 1989/90 crop year, a total of 510 million people, nearly 10% of the world's population, reside in 36 countries where this is the case.⁶

The third indicator focuses on the most visible hunger situation, that of *famine*. This is the least stringent standard in the sense that the populations affected and the amounts of food needed to prevent starvation and death due to famine are the smallest. Last year, as reported in *The New York Times* (NYT), three countries—Afghanistan, Ethiopia, and the Sudan—failed to prevent famine within their territory. These three countries had a combined population of 89 million people in 1989, or slightly less than 2% of the world's population.⁷ All three were also plagued by violent conflict between their national governments and insurgent groups.

Clearly, the most difficult famines to prevent or alleviate are those created or exacerbated by violent conflict and war. The good news is that the total number of wars—defined as conflicts with more than 1,000 deaths per year—has decreased from a peak of 27 in 1987 to 22 in 1988 and as few as 15 as of mid-1989 (Sivard, 1989). But, as discussed in more detail in Chapter 2, most of the remaining wars still involve significant disruptions to food production and distribution systems, either as intentional acts of aggression or as side effects of violent conflict.

Table 1.3 Profile of Household Food Poverty.

<i>Population in Developing-Country Households Too Poor to Obtain Dietary Energy</i>	
FOOD-POVERTY INDICATOR	TOTAL POPULATION
<i>Energy Insufficient for Work, 1989</i>	1,045 million people 20% of world population
<i>Energy Insufficient for Minimal Adult Activity and Healthy Child Growth, 1989</i>	465 million people 9% of world population

Last year, for example, the ongoing conflicts in the Sudan continued to keep millions of people from their homes and severely hampered international relief activities. A U.N.-sponsored effort known as Operation Lifeline Sudan (OLS) succeeded in delivering over 100,000 tons of emergency food aid to more than 100,000 people at risk of starvation in southern Sudan, but during the operation a number of convoys were attacked, numerous drivers and escorts killed, and many others injured (Shaw, 1990). In addition, a Sudanese government plane carrying three people from Médecins sans Frontières (Doctors without Borders) and one technician from the U.N. World Food Programme (WFP) was shot down in December 1989, killing all four (NYT, 1989c). Efforts to continue Operation Lifeline Sudan with a second phase in 1990 (OLS II) were delayed due to protracted negotiations with the government of Sudan and the Sudanese People's Liberation Army, but as of mid-April 1990 the relevant parties had agreed on a plan to provide 100,000 tons of food to some 4.5 million people (FAO, 1990b). However, it appears that only relief flights, not rail and barge shipments, had begun to selected towns in early April (Lewis, 1990a), and the delivery of the needed volumes of food may turn out to be difficult before the seasonal rains block the major transportation routes (FAO, 1990b).

Food-Poor Households

Food poverty reflects the inability of households to obtain sufficient food to meet the nutritional needs of their members due to inadequate income, poor access to productive resources, or lack of other entitlements to food. It may take the form of unemployment, underemployment, or low wages; high taxes or rents; insufficient or poor quality land; poor prices for produce or handicrafts; denial of access to household or community resources (e.g., due to displacement during violent conflict); or failure of customary food-security entitlements. The numbers of food-poor households may swell when natural or human-induced disasters strike or when food shortages—even shortages in distant lands with greater purchasing power—drive up food prices. Even countries with more than enough food to meet basic nutritional requirements may have extensive food poverty, if many households have inadequate production, income, or other entitlements.

Unfortunately, no indicators exist that fully capture the variety of food-poor households nor the diversity of reasons behind their food poverty. A particular problem is to find indicators that provide consistent estimates across different countries and through time.

Box 1.1: Counting the Food Poor

Developing consistent estimates of the number of people who may have inadequate access to food is a difficult task. The problem may be divided into at least three parts: 1) determining the overall availability of food calories at national levels, 2) assessing the distribution of food calories among households, and 3) determining a threshold level for access to food in caloric terms below which a household is considered to be "food poor." Part 2) is especially problematic because few nationally representative surveys of food consumption exist, so that complex methods are needed to infer food-calorie distributions from data on household expenditure and income. Even with such methods, the underlying sources of data are still poor in spatial and temporal coverage (Figure 1.1). Controversy also continues over what threshold levels are adequate for adults and children under different circumstances and how to compute them (e.g., Waterlow, 1989). Additional technical complications arise in putting the three parts together due to poor demographic and social data, inconsistencies in definitions and time periods, and widely varying data sources (Naiken, 1990).

The two major estimates published in the 1980s by the FAO and the World Bank differ both in their method for estimating within-country distributions of food and in the thresholds used. The 1986 World Bank study utilized two threshold levels, 80% and 90% of the nutritional requirements established in 1971 by a FAO/WHO committee (WHO, 1973). Both of these levels are higher than the cutoff points of 1.2 and 1.4 BMR used by the FAO: according to one calculation, the two World Bank thresholds yield an average 1,840 and 2,060 calories/person/day, respectively, versus 1,460 and 1,620 calories/person/day for the FAO thresholds (Naiken, 1988b). However, significant differences in computing distributions of food within countries lead to "low" estimates of the proportions undernourished that are quite close, even though the World Bank's "high" estimate remains significantly higher than the FAO's (Figure 1.2).

Fortunately, prospects are good for significant improvements during the next few years in the underlying data sets and methods. For example, the FAO, as part of its Sixth World Food Survey, is planning to acquire detailed data from existing surveys of food expenditures in a number of large countries (Trkulja *et al.*, 1990; Naiken, 1990). The World Bank has undertaken numerous household-level surveys throughout the developing world as part of its Living Standards Measurement Survey Program and is actively working to expand and strengthen the use of household-level survey methods in many countries of Sub-Saharan Africa as part of its Social Dimensions of Adjustment program (Farmer, 1990). These efforts should make it possible to produce more accurate, up-to-date, and consistent estimates of food poverty by region and to develop indicators that can track changes over time. The World Hunger Program plans to review these opportunities to improve the methods and data for estimating food poverty in the near future.

Perhaps the most widely used indicator of food poverty is the estimate of the incidence of undernutrition produced by the FAO for its occasional World Food Surveys. This indicator attempts to quantify the number of households whose expenditures for food fall below some threshold level based on the nutritional requirements of household members (see Box 1.1). Information published by the U.N. Advisory Committee on Coordination/Subcommittee on Nutrition (ACC/SCN) indicates that, in 1983-85, some 360 million people in 93 developing countries lived in households where average caloric intake fell below the amount needed for the basic subsistence of adults (1.2 times the basal metabolic rate, or BMR) and the healthy growth of children (ACC/SCN, 1987a). Updating these estimates with 1989 population figures for the developing world—but not current food availability estimates—and adding a rough estimate of food poverty in China, we estimate that about 465 million people, or 9% of the world population, lived in households too poor to obtain the energy sufficient for minimal activity among adults and for the healthy growth of children in 1989 (Table 1.3).⁸

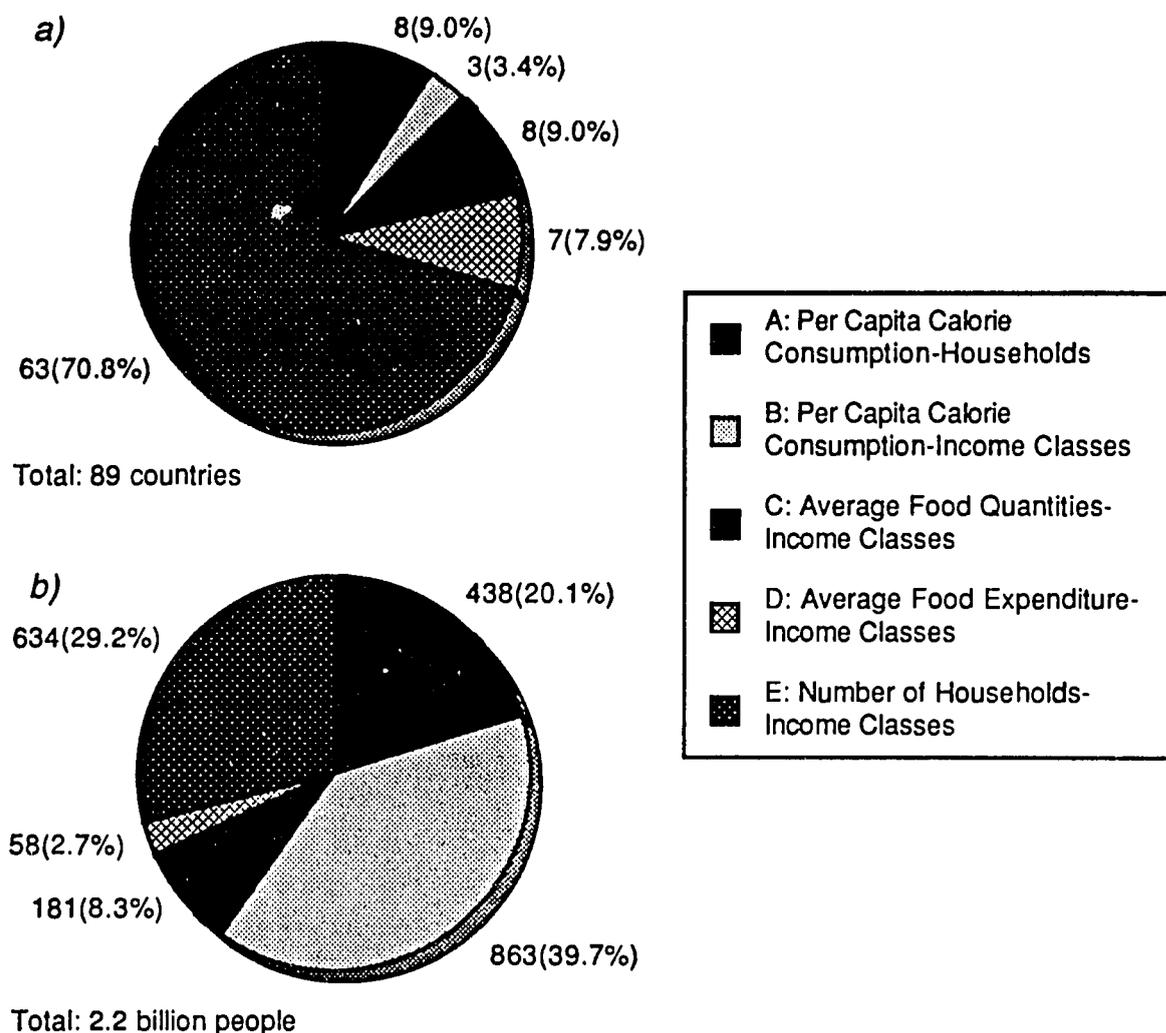


Figure 1.1 Household survey data used in the Fifth World Food Survey: a) by number of countries; b) by total country population. Source: Ay and Naiken (1990). Categories correspond to the data categories A-E given in the Fifth World Food Survey (FAO, 1987:64).⁹

Figures published in a recent FAO study *World Agriculture Toward 2000* (Alexandratos, 1988) permit extension of this estimate to a cutoff point of 1.4 times the BMR, a level which allows for some adult activity. These figures, derived from the same basic data and methods used in the ACC/SCN report, indicate that more than 500 million people in 89 developing countries had average caloric intakes below 1.4 BMR.¹⁰ Updating this figure to 1989 populations and correcting for China yields an estimate of about 685 million people, or slightly over 13% of world population.

A second indicator developed by the World Bank employs a threshold considered adequate for work—90% of the 1971 FAO/WHO requirements (WHO, 1973)—and a method for estimating the distribution of food based on income classes. According to this indicator, in 1980 about 35% of the population of 87 developing countries (excluding China) had incomes that were too low to obtain energy sufficient for work (World Bank, 1986).

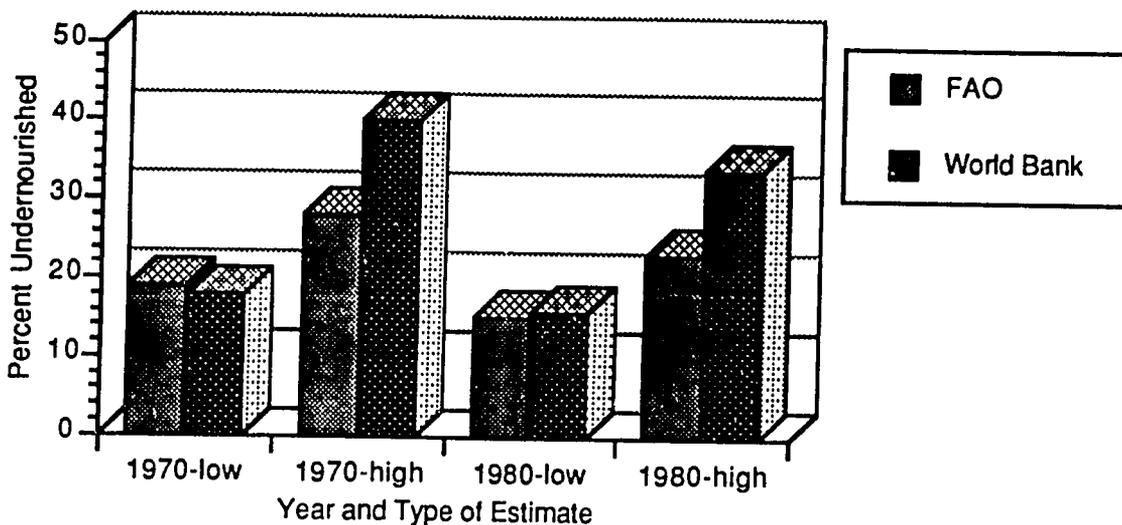


Figure 1.2 Comparison of FAO and World Bank estimates of the proportion of total population undernourished. Source: Naiken (1988b).¹¹

Applying this proportion to the 1989 population of the developing world, and adding a current estimate of China's food-poor population (70 million), we estimate that 1,045 million people, or 20% of the world population, could not obtain enough energy for work in 1989.⁷

It is important to recognize that both of these indicators are insensitive to recent fluctuations in food poverty since neither the proportions of food-poor households nor the levels of calorie availability have been updated. Increases in the absolute numbers from previous values reported in *The Hunger Report* (Kates *et al.*, 1988, 1989) simply reflect the rate of population growth in the developing world.

The concept of food poverty may also be used to identify more directly those groups of households that may have inadequate access to food. For example, it is clear that those displaced from their homes both across international borders and within their own countries are at high risk of food poverty. As noted in Chapter 4, more than 19 million people have been identified as international refugees and many millions more may be displaced internally. Of these, at least 8 million depend greatly on food and other assistance from U.N. agencies. Unfortunately, it appears from operating experience and scattered nutritional assessments that such assistance may not in the long term be adequate to prevent hunger and nutritional deficiencies among refugee households (see Chapter 4).

In the long run, it is probably desirable to develop explicit country-by-country assessments of the numbers of food-poor households that take into account the many different sources of food insecurity. Among other things, this may be valuable as a way to ensure early warning of potential famines and to improve targeting of assistance when famine does threaten, since food-poor households are likely to be among the most vulnerable and earliest affected. Initial efforts to identify food-poor groups for early warning purposes are being undertaken as part of the vulnerability assessment component of the U.S. Agency for International Development's (USAID) Famine Early Warning System (FEWS) Project, which focuses on seven countries in the Sahel region of Africa (Downing, 1990; Downing and May, 1990). Similar activities are also under way in conjunction with the U.N.'s famine early warning effort, the Global Information and Early Warning System (GIEWS) of FAO (FAO, 1990d).

Table 1.4 Profile of Individual Food Deprivation.

<i>Adults and Children Affected by Food Deprivation</i>	
FOOD-DEPRIVATION INDICATOR	TOTAL POPULATION
<i>Infants Born Underweight, 1990</i>	24 million infants 16% of the world's infants
<i>Children Underweight for Age, 1988</i>	168 million children 31% of the world's children less than 5 years old
<i>Iodine Deficiency, 1990</i>	210 million people 4% of world population
<i>Iron Deficiency, 1990</i>	700 million people 13% of world population
<i>Vitamin A Deficiency, 1988</i>	42 million children 15% of the world's children less than 5 years old

Food-Deprived Individuals

Food deprivation results from the inability of individuals to obtain sufficient food to meet their nutritional needs, whether due to overall household food poverty or to a distribution of food within households that is not proportionate to the nutritional needs of all members. The latter situation may arise when special needs exist, as for pregnant and lactating women (Rasmussen and Habicht, 1989); when diseases or parasites impair nutrient intake, retention, or absorption; when food access or choice is constrained for ethnic, religious, logistical, or other reasons; when individuals choose to diet or fast; when needs are not understood; or when neglect or abuse occurs.

Food deprivation may especially affect infants and children, both through the undernutrition of their mothers during pregnancy and lactation, as the result of insufficient and poor quality foods during critical growth periods, and because of high vulnerability and sometimes exposure to disease, parasites, and poor sanitary conditions. Evidence for these effects can be found in the high prevalence of low birthweights and underweight children, the large numbers of deaths due to diarrhea, and high rates of blindness and neurological disorders stemming from micronutrient deficiencies (Table 1.4).

Surveys conducted up to about 1982 indicate that some 10-17% of children were born underweight (defined as less than 2,500 grams or 5.5 pounds) in Africa, 7-12% in Central and South America, 17% in southeast Asia, and 31% in South Asia. This compares with incidence rates of 6-7% in industrialized countries and West and East Asia (Grant, 1987; WHO, 1984:207). Assuming that the regional 1982 rates apply to the estimated number of

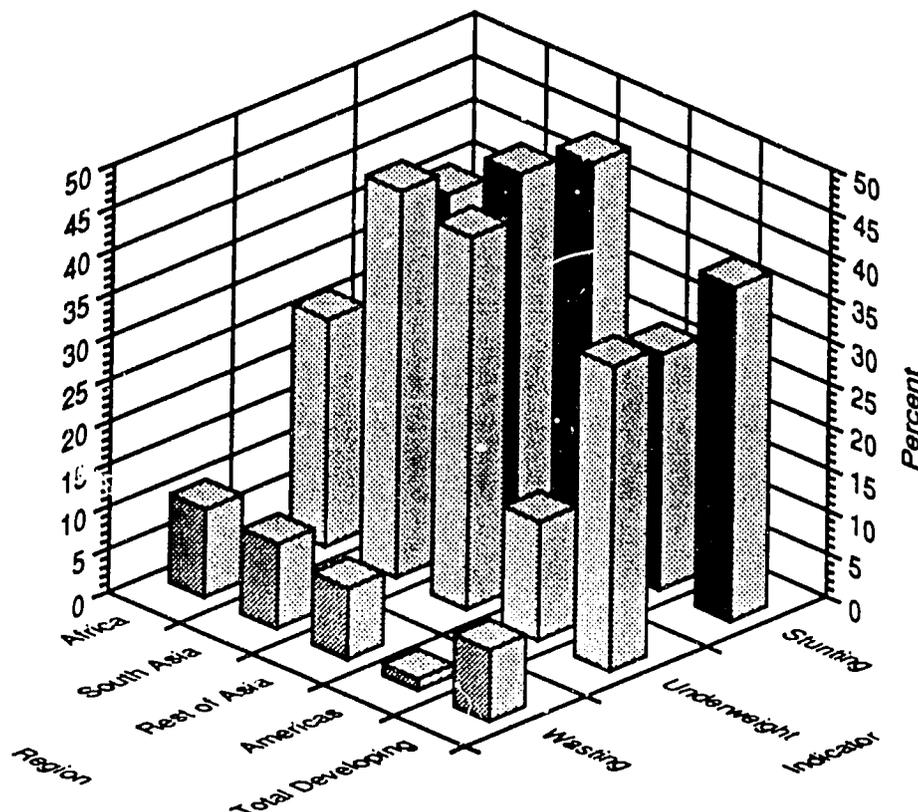


Figure 1.3 Prevalence of malnutrition in children under five in developing countries (excluding China).¹² Source: Carlson and Wardlaw (1990). See text for definition of indicators.

births in 1990 (PRB, 1990), we estimate that on the order of 24 million children may be born underweight this year, or about 16% of all infants born in 1990.¹³

A recent review of child malnutrition by the United Nations Children's Fund (UNICEF) estimated that, in 1988, about 36% of all children under five, or about 150 million, were underweight for their age in the developing world excluding China (Figure 1.3; Carlson and Wardlaw, 1990).¹⁴ Adding in an estimated prevalence of 18% for China yields a world total of 168 million children underweight, or about 31% of all children under five. This total incorporates an estimate for the prevalence of underweight children in South Asia that is lower than that used in previous editions of *The Hunger Report* (Kates *et al.*, 1988, 1989); if the previous set of rates had been applied to 1988 population figures, the total would have been 180 million children, or about one-third of all children under five. Whether this decrease in prevalence represents an actual trend or some difference in underlying data or the reference standard used is difficult to determine, especially since all of these estimates utilize surveys from a wide range of time periods.¹⁵ However, a recent review of data for 33 developing countries found no consistent trends in the prevalence of underweight children in Africa, Latin America, and Asia through about 1987 (ACC/SCN, 1989a).

The UNICEF study also found that one-sixth of all malnourished children, or about 23 million children under five in the developing world (excluding China), were *severely* malnourished, defined as a weight-for-age 3 standard deviations below the median of the reference population. About 39% of children, or some 163 million, are estimated to have suffered from stunting (low height-for-age) in 1988 and about 8%, or 35 million, from wasting (low weight-for-height). Stunting is an indicator of growth faltering from a history of

chronic malnutrition, whereas wasting reflects current acute malnutrition, generally resulting from weight loss. Prevalences of children underweight and stunting were higher in rural areas than in urban areas in almost all countries examined.

More than 800 million people are at risk of iodine deficiency, most located in Asia. Of these, it has been estimated that, in the mid-1980s, about 190 million suffered from goiter, the enlargement of their thyroid glands, which may be accompanied by reduced mental function, lethargy, and increased fetal and infant mortality. More than 3 million people suffer from overt cretinism, which entails irreversible neurological damage (ACC/SCN, 1987a; Hetzel, 1988). Assuming an overall prevalence rate of 4%,¹⁶ we estimate that about 210 million people suffer from iodine deficiency in 1990.

Anemia affects more than three-fifths of all pregnant women in Africa and South Asia, half or more of children under 13 in these regions, and one-fourth of adult males and nearly one-half of adult females in the developing world. The worldwide prevalence of anemia is thought to have been about 30%, or about 1,300 million people, in 1980 (DeMaeyer and Adiels-Tegman, 1985). A conservative estimate is that less than half of this anemia stems from iron deficiency due to low intestinal absorption of iron or inadequate iron intake.¹⁷ Iron-deficiency anemia is thought to affect learning ability and work performance and may be linked to lowered resistance to infection (ACC/SCN, 1987a; Pollitt *et al.*, 1989; Tomkins and Watson, 1989). Applying a worldwide prevalence of iron-deficiency anemia of 12% to the present world population (PRB, 1990), we estimate that at least 640 million people suffer from iron-deficiency anemia in 1990.

About 15% of small children are thought to suffer from mild-to-moderate deficiency in vitamin A in 34 different countries identified by the WHO. Applying this prevalence rate to population data for these countries published by UNICEF (Grant, 1990), we estimate that about 42 million children under five suffered from vitamin A deficiency in 1988. Vitamin A deficiency may also affect older children and adults, especially pregnant and lactating women, though the extent of the problem for these groups is not well understood. Severe cases of vitamin A deficiency may lead to death or to partial or total blindness and constitute the single largest cause of blindness around the world (Mason, 1987; ACC/SCN, 1987a). Vitamin A deficiency also appears to be associated with elevated risk of respiratory infection and the incidence of complications in measles, and may affect the risk and severity of diarrheal disease (Forman, 1989; Chandra and Vyas, 1989; Tomkins and Watson, 1989).

The Hunger Profile: 1990

Drawing on the data described above, we have again assembled a "hunger profile" designed to provide a comprehensive picture of hunger at present and in the recent past (Figure 1.4). This profile incorporates ten different measures of *food shortage*, *food poverty*, and *food deprivation* and reflects the diverse ways in which hunger affects people around the world.

- *Food shortage* affects the 2% of the world's population who live in countries that have recently experienced famine within their borders; the 10% of the world's population who live in countries that faced a shortage relative to usual consumption in 1989-90 unless met by food aid; and the 31% of the world's population who in 1984-86 lived in countries where the average total food supply failed to meet nutritional requirements.
- *Food poverty*—depending on the standard selected—affects as little as 9% or as much as 20% of the world's population who live in households that are too poor to obtain a minimal diet either for survival or for work;
- *Food deprivation* affects the 16% of the world's infants who are born underweight each year; the 31% of the world's small children who are underweight for their age; the 4% of the world's population who suffer from iodine deficiency; the 13% who suffer from iron-deficiency anemia; and the 15% of small children who suffer from vitamin A deficiency.

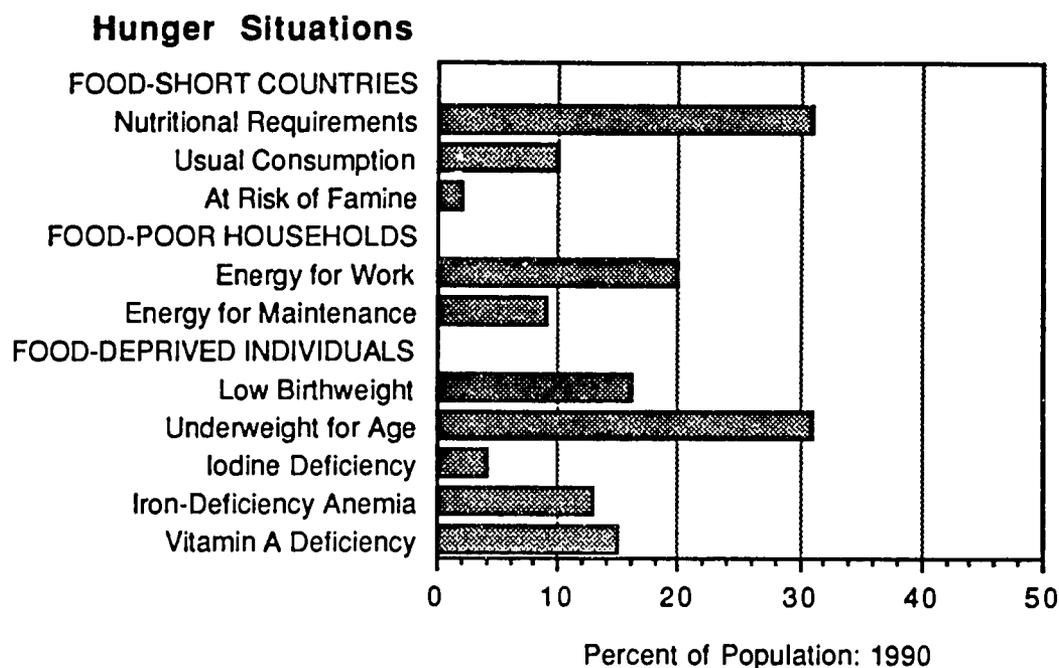


Figure 1.4 The Hunger Profile: 1990. See Tables 1.2, 1.3, and 1.4 and text for definitions of indicators and population groups to which the percentages apply.

Sub-Saharan Africa

It is also possible to develop *regional* hunger profiles to highlight differences in mix of hunger-related problems experienced in different parts of the world. An initial effort to create such a profile for Sub-Saharan Africa is presented in Table 1.5 and Figure 1.5. It is important to emphasize that region-specific estimates may be even less reliable than world estimates and should be treated only as order-of-magnitude indicators.¹⁸

This regional profile illustrates that the problems of hunger in Sub-Saharan Africa are generally much more severe in percentage terms than for the world as a whole. Two out of the three famines reported in 1989 occurred in the region, all associated with violent conflict. More than four out of five Africans live in countries where the dietary energy supply in the mid-1980s was less than the aggregate nutritional requirements of the population, and nearly one in three where it was less than status-quo consumption levels in 1989-90. Slightly less than half of the population live in households too poor to obtain enough energy for work and one-quarter in households too poor to obtain enough energy for minimal adult activity and healthy child growth. One-fourth of all children under five are underweight for their age, and one-seventh of all infants are born underweight. Micronutrient deficiencies affect at least one in five people.

This grim picture illustrates the broad range of hunger-related problems facing the countries of Sub-Saharan Africa and underscores the pervasive burdens with which the bulk of the population must live. Indeed, the large proportions of people afflicted by hunger or hunger-related impairments—including many children who will never achieve their full physical and mental potential—highlight the degree to which poor health and nutrition may themselves be major impediments to long-term development and progress in the region.

Table 1.5 Profile of Food Shortage, Poverty, and Deprivation for Sub-Saharan Africa.¹⁹

<i>National Populations in Countries of Sub-Saharan Africa with Food Shortages</i>	
INDICATOR	TOTAL POPULATION
<i>Dietary Energy Supply Less Than Nutritional Requirements, 1984-86</i>	430 million people 85% of total population
<i>Dietary Energy Supply Less Than Usual Consumption, 1989-90</i>	145 million people 29% of total population
<i>Famines Reported, 1989</i>	74 million people 14% of total population
<i>Population in Sub-Saharan African Households Too Poor to Obtain Dietary Energy</i>	
<i>Energy Insufficient for Work, 1989</i>	235 million people 44% of total population
<i>Energy Insufficient for Minimal Adult Activity and Healthy Child Growth, 1989</i>	140 million people 26% of total population
<i>Adults and Children in Sub-Saharan Africa Affected by Food Deprivation</i>	
<i>Infants Born Underweight, 1990</i>	4 million infants 15% of all births
<i>Children Underweight for Age, 1988</i>	29 million children* 27% of all children less than 5 years old
<i>Iodine Deficiency, 1990</i>	43 million people 8% of total population
<i>Iron Deficiency, 1990</i>	110 million people 20% of total population
<i>Vitamin A Deficiency, 1988</i>	9 million children 15% of all children less than 5 years old

* Estimate for all of Africa.

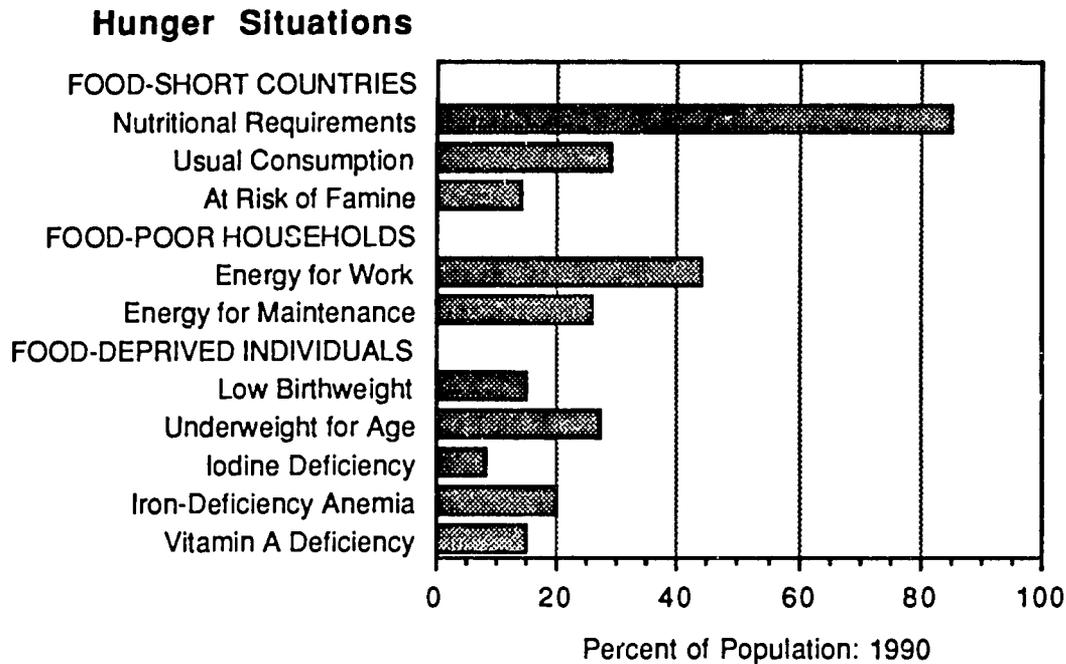


Figure 1.5 The Hunger Profile for Sub-Saharan Africa: 1990. Note change in scale of horizontal axis from Figure 1.4. See Table 1.5 and text for definitions of indicators and population groups to which the percentages apply.

Hunger Attention and Advocacy

A startling set of events have occurred in 1989 and early 1990, including the dismantling of the Berlin Wall, rapid relaxation of tensions between the United States and the Soviet Union, democratic elections in many Eastern European countries, political crisis and retrenchment in China, the freeing of Nelson Mandela in South Africa, and environmental disaster in Alaska. These developments underscore the degree to which initiatives to alleviate hunger will likely compete in the coming decade with other pressing and often quite dramatic issues. As quickly as nuclear war has dropped from the public agenda, other issues such as concern over the fate of the world's environment are rising to replace it.

Attention to hunger takes many forms. One is the attention given by the public media to hunger-related issues. In 1989, famine in the Sudan received by far the most attention in *The New York Times*, in part because of the publicity surrounding Operation Lifeline Sudan and the protracted problems of dealing with the conflicting factions. Sudan and Ethiopia also received considerable press attention due to the deaths of U.S. Congressman Mickey Leland and 15 others in a plane crash in western Ethiopia in August 1989. Leland, chair of the Select Committee on Hunger of the U.S. House of Representatives, was on a fact-finding mission to a refugee camp on the Sudan-Ethiopia border.

Another form of attention consists of public recognition of efforts to reduce hunger. Such recognition has continued in 1989 and 1990 through three major international awards: the *The Africa Prize for Leadership of The Hunger Project*, the *World Food Prize* established by the General Foods Corporation and now being continued by the John Ruan Foundation and the State of Iowa (Schneider, 1990), and our own *Alan Shawn Feinstein World Hunger Awards* (Table 1.6). Other awards include the annual *World Hunger Media Awards*, given by World Hunger Year to recognize outstanding media efforts to publicize hunger problems and potential solutions, and the U.S. *Presidential End Hunger Awards*, which recognizes

Table 1.6 Major Hunger-Related Awards in 1986-90.

SPONSOR/PRIZE	YEAR	RECIPIENT(S)
The Hunger Project <i>Africa Prize for Leadership</i>	1987	President Abdou Diouf, Senegal Thomas R. Odhiambo, ICIPE, Kenya
	1988	President Robert Mugabe, Zimbabwe
	1989	President Quett K.J. Masire, Botswana Bernard Lédéa Ouedraogo, Burkina Faso
General Foods Corporation <i>World Food Prize</i>	1987	M.S. Swaminathan, India
	1988	Robert Chandler, Jr., United States
	1989	Vergese Kurier, India
John Ruan Foundation/State of Iowa <i>World Food Prize</i>	1990	John S. Niederhauser, United States
Brown University <i>Alan Shawn Feinstein</i> <i>World Hunger Award</i>	1986	A.T. Ariyaratne, Sri Lanka
	1987-88	Communal farmers of Zimbabwe
	1988-89	James P. Grant, UNICEF
	1989-90	Bangladesh Rural Advancement Committee
<i>Feinstein Merit Award for Public Service</i>	1987-88	Select Committee on Hunger, U.S. House of Representatives
	1988-89	Bread for the World Band Aid Trust
	1989-90	Women's Organization of Independencia, Peru (WARMI)
<i>Feinstein Merit Award for Research</i>	1986	International Centre of Insect Physiology and Ecology (ICIPE), Kenya
	1987-88	Leobardo Jiménez Sánchez, Mexico
	1989-90	Amartya Sen, Harvard University

achievements by individuals and groups in government, business, education, research, the voluntary sector, and other areas.

Many efforts to bring attention to the problems of hunger of course lead directly into advocacy regarding potential solutions and the resources needed to make such solutions possible. At the global level, a number of governmental and nongovernmental organizations have proposed new initiatives to reduce hunger in the 1990s. These include UNICEF's plans for a World Summit for Children in September 1990, the World Food Council's Cairo Declaration, and an effort initiated by the World Hunger Program known as the Bellagio Declaration. These activities and their goals are described in more detail in Chapter 6. Many issues related to hunger will also be highlighted at the International Conference on Environment and Development, scheduled for mid-1992 in Brazil, and the International Conference on Nutrition, planned for late 1992 or early 1993 in Italy.

Hunger Alleviation

Efforts to alleviate hunger include measures taken to provide food and other humanitarian aid on a continuing or emergency basis to those living in food-short regions; food aid, rations, or subsidies to those living in food-poor households; and supplementary foods and other targeted nutrition and health interventions to individuals suffering from food deprivation.

Food Aid

As discussed in greater detail in Chapter 3, food aid is an important source of food for food-deficit countries, constituting 40-60% of total imports by the least developed countries in recent years and 8-12% of total official development assistance in the 1980s. Total food aid in 1989/90 amounted to more than 12 mmt, consisting of 11 mmt of imported cereals, 1 mmt of non-cereal food aid, and 0.2 mmt of local purchases. One-fifth of total food aid was provided for emergency relief activities, including protracted refugee operations; nearly one-third to development projects, including support for agricultural and rural development, school feeding, nutritional interventions, and establishment of food reserves; and the remainder to governments in the form of "non-project" or "program" food aid. The U.S. provided the bulk of cereal food aid (see Figure 3.2 of Chapter 3), followed by the European Economic Community (EEC) and its members.

Slightly less than half (44%) of all aid went to Africa, of which about half reached countries in Sub-Saharan Africa (Figure 3.3 of Chapter 3). The remainder was divided among Asia (28%), Latin America and the Caribbean (17%), and Poland (11%). In 1990, increasing amounts of food aid are being allocated to Eastern Europe, in most cases financed from funds outside of regular food aid budgets (FAO, 1990a:21). However, it does appear that total quantities of food aid for developing countries could remain stable or even decline in the near future.

Flows of food aid have consistently fallen well below the levels needed to meet nutritional needs at the national level and in recent years have also been insufficient to maintain national status-quo needs. For example, in 1988/89, food aid shipments *for the world as a whole* amounted to only 29% of nutrition-based needs and 58% of status-quo needs of the 55 developing countries covered by the USDA/ERS need estimates (see Figure 3.5 of Chapter 3). In 1989/90, food aid shipments to the 55 USDA/ERS countries are expected to meet only 26% of nutrition-based needs and 51% of status-quo needs—in other words, food aid to these countries would have to *double* above expected levels to meet their status-quo needs and *quadruple* to meet their nutrition-based needs. For the 33 Sub-Saharan African countries included in the USDA/ERS estimates, food aid deliveries in 1989/90 would need to increase by 75% or 1.8 mmt to meet status-quo needs and by 400%, or nearly 10 mmt, to meet nutrition-based needs.²⁰ Similarly, the FAO (1990b) reported that, as of mid-April 1990, only 3.2 mmt of food aid commodities had been pledged against an estimated total requirement of 4.2 mmt on the part of the 46 developing countries in Sub-Saharan Africa.²¹ Actual deliveries as of mid-April were only 1.4 mmt, or one-third of estimated requirements—even though the marketing year had already ended for at least one Sub-Saharan country. The large gap between the pressing needs of African countries and food aid pledges and shipments has led to claims of growing "aid fatigue" on the part of donor countries (Lewis, 1990b).

Deliveries of food aid to refugees and displaced persons have increased modestly in recent years, reaching 1.5 mmt in 1989/90, or almost 13% of all food aid (see Chapter 4). As of early March 1990, it appeared that most of the basic food needs of the 6.5 million people receiving assistance from the U.N. High Commissioner for Refugees (UNHCR) would be met during 1990. However, severe budget pressures on the UNHCR and on other international agencies concerned with refugees threaten their ability to prevent hunger and related

Table 1.7 Hunger Alleviation: Food Aid and Targeted Programs.

<i>Food Aid Deliveries and Donations Compared with Estimated Requirements</i>	
HUNGER ALLEVIATION INDICATOR	PERCENTAGE OF REQUIRED AID
<i>Expected Shipments of Food Aid, 55 Developing Countries, 1989/90</i>	26% of requirements to meet nutritional needs 51% of requirements to meet status quo needs
<i>Expected Shipments of Food Aid, 33 Countries of Sub-Saharan Africa, 1989/90</i>	20% of requirements to meet nutritional needs 62% of requirements to meet status quo needs
<i>Actual Deliveries of Food Aid, 46 Countries of Sub-Saharan Africa, as of Mid-April 1990</i>	33% of requirements to meet normal food supply needs²¹
<i>Success of Targeted Programs</i>	
HUNGER ALLEVIATION INDICATOR	PERCENTAGE TREATED
<i>Treatment of Diarrhea in Small Children Using Oral Rehydration Therapy</i>	36% of children under 5 with diarrhea

nutritional deficiencies and diseases among large populations that depend almost entirely on international assistance for their food (see Chapter 4).

As noted previously, violent conflict and war remain the most important obstacles to hunger alleviation in regions of potential or emerging famine. In 1989 and early 1990, violence interfered with deliveries of food aid in a number of countries, including Afghanistan, Ethiopia, Mozambique, Somalia, and the Sudan (e.g., Burns, 1989; NYT, 1989b; FAO, 1990b; Lewis, 1990a; USCR, 1990). In Somalia, evidence that the government was arming and drafting refugees to fight against rebel forces, along with poor security and lack of international monitoring of food distribution, led to partial withdrawal of U.N. aid in early 1989 (NYT, 1989a; USCR, 1990:45). On a somewhat more positive note, the establishment of "corridors of tranquillity" as part of Operation Lifeline Sudan did permit delivery of the targeted levels of food, despite the casualties sustained among drivers and escorts (Shaw, 1990). Similarly, government and guerilla forces in El Salvador agreed to several "days of tranquillity" in 1985 and 1986 in order to permit vaccination of hundreds of thousands of women and children (Grant, 1987:52). As discussed in Chapters 2 and 6, new initiatives under discussion include efforts to increase international condemnation of the use of food as a weapon and to strengthen affirmation of the human right to food and exploration of the use of international peacekeeping forces to guarantee safe passage of humanitarian aid.²²

In the long run, significant increases in worldwide levels of food aid will almost certainly be required to ensure that even the minimal status quo and nutritional needs of hundreds of millions of people in the developing world are met (e.g., BOSTID, 1989). Whether such increases will be feasible—especially given recent declines in world food stocks and surpluses along with competing demands from Eastern European countries—is open to question. One option, as discussed in Chapter 3, is to focus food aid more directly than at present on alleviating hunger; another is to increase use of local or regional surpluses through local purchases, swaps, and triangular transactions. Donors of food aid are showing increasing interest in the latter option (e.g., FAO, 1990b; Ingram, 1990), but actual amounts transferred in this manner are still relatively small. As of mid-April 1990, for example, arrangements had been made to utilize only about 0.6 mmt out of 1.6 mmt of exportable cereal surpluses available in 13 African countries (FAO, 1990b:4-6). More explicit assessment of the costs and benefits of such transactions and more careful planning and consideration of trade and food-security implications may well be needed before this form of food aid can be expanded significantly (Martens, 1990; Clay and Benson, 1990).

Targeted Programs

A range of programs exist that target specific aspects of household food poverty and individual food deprivation. These include supplementary feeding programs, food-for-work projects, nutrition education efforts, nutrient fortification and supplementation, and selective subsidies and distribution programs for specific foods, vulnerable groups, regions, and/or time periods (Brown University Faculty Seminar, 1990). Past experience with targeted programs suggests that careful selection of geographic focus, screening of participants for need, community participation and education, and strategies that focus on household needs and preventive approaches can make such interventions more effective from the standpoint of improving nutrition (Kennedy and Alderman, 1989; Underwood, 1989; Horwitz, 1989).

One of the most successful targeted activities has been the effort to promote the use of oral rehydration therapy (ORT) throughout the developing world. UNICEF estimates that ORT use has more than tripled since 1984, to some 36% of all children under five with diarrhea,²³ and that it is now being used by one-third of all families in the developing world (Grant, 1990:23). According to UNICEF, expanded use of ORT has helped to reduce child mortality by 20%—from 5 million to 4 million deaths per year. Diarrheal disease now accounts for slightly more than one in four of all deaths of children under five, down from more than one in three in 1986 (Grant, 1987:111, 1990:17).

Another contributor to reduced infant mortality is the practice of breastfeeding, which is generally recognized to provide protection against illness and better nutrition and hygiene than bottle-feeding, especially in developing countries (e.g., Grant, 1990; Dualeh and Henry, 1989; Tomkins and Watson, 1989). As reported in Chapter 5, breastfeeding declines reported in the 1970s appear to have halted or even reversed in many developing countries in the 1980s. Efforts to promote breastfeeding and limit sales of commercial infant formula in developing countries may have contributed to this reversal. WHO and UNICEF have recently initiated a program to encourage “Ten Steps to Successful Breastfeeding” in every health facility that provides maternity services and newborn care around the world (Grant, 1990).

Efforts to combat micronutrient deficiencies have also met with some success. Programs to provide iodized salt, iodine capsules, and iodized oil injections have reached populations in Bhutan, Bolivia, Brazil, China, India, Indonesia, Nepal, and Papua New Guinea, in some cases leading to significant reductions in rates of goiter and cretinism (Grant, 1990:36; ACC/SCN, 1987b). Programs to prevent xerophthalmia through vitamin A supplementation have been initiated in a number of countries including Brazil, Costa Rica, Guatemala, Haiti, Honduras, India, Indonesia, and Tanzania (Grant, 1990:38; INCAP, 1989). However, links between vitamin A deficiency and child morbidity and mortality remain controversial

(Martorell, 1989; Forman, 1989), and alternatives to high-dose capsules may be appropriate in some cases (Underwood, 1989; Shrimpton, 1989). Efforts to address iron-deficiency anemia are at an earlier stage of development, but consensus is growing on the need for worldwide action (e.g., ACC/SCN, 1987a; Pollitt *et al.*, 1989).

Hunger Prevention

Hunger *alleviation* addresses the problems of hunger after hunger is already evident; hunger *prevention* focuses on the *causes* of hunger, including not only the “proximate” events or conditions that appear to trigger food shortage, poverty, or deprivation, but also the basic forces that set the stage for hunger—population growth, agricultural and economic development, social and political competition, and environmental and resource fluctuation (Newman, 1990).

Throughout history, humans have attempted to prevent hunger by increasing and diversifying food production, by storing and trading food surpluses, and, when necessary, by migrating or limiting individual growth, activity, or reproduction (Millman and Kates, 1990:19-21). Present-day efforts to prevent hunger in the long term range from efforts to enhance food production through sustainable agricultural methods, new techniques of agrobiotechnology and genetic manipulation, and economic and agricultural policy reform to programs to provide assistance and education in nutrition, family planning, and food storage.

One indicator of progress in hunger prevention is the rate of increase in food production compared with population growth. Between 1977 and 1988, food production per capita measured in terms of value *increased* an average of 0.5% per year or more in 32 countries with 71% of the developing world's population.²⁴ Included in this estimate are several large Asian countries such as China and Indonesia, which experienced cumulative increases of one-third or more in the value of their food production during this period, and India and Pakistan, which had more modest increases of 7-8%. Only eight countries in Sub-Saharan Africa, with less than 10% of the region's population, achieved this rate of growth in per capita food production. In contrast, the food production index *decreased* an average of 0.5% per year or more in 54 countries with 17% of the developing world's population. Nearly half (25) of these countries are located in Sub-Saharan Africa, and they contain about half of the region's population.

Recent news about population growth is discouraging: the United Nations Population Fund (UNFPA) reports that “progress in reducing birth rates has been slower than expected” and “the world...is now on course for an eventual total that will be closer to 11 billion than to 10 billion” (Sadik, 1990:2). Much of this increase in expected future population comes from slow progress in reducing fertility levels in South Asia, where the overall growth rate is projected at 2.3% per year in 1990-95 and the U.N. now expects total population to surpass 2 billion by 2025 (Figure 1.6). Other developing regions will also continue their high rates of growth. The U.N. expects that African growth rates will peak at 3% per year in the 1990s and its population will more than double to 1.5 billion people by 2025. Each year, there will be 10-15 million more people to feed on the continent. Latin America's population is expected to increase from 448 million at present to 760 million by 2025 (Sadik, 1990).

An important issue for the long-term prevention of hunger is how to keep “new hunger” from appearing, for example, as a side effect of social or economic reform, as a consequence of shifting demographic and health patterns, or as a result of global environmental change—or even worldwide efforts to prevent such change (e.g., Millman, 1990). Whatever progress made to help those *already* hungry could easily be swamped should significant new economic, social, or environmental burdens fall upon the hundreds of millions of others who are now only *vulnerable* to hunger.

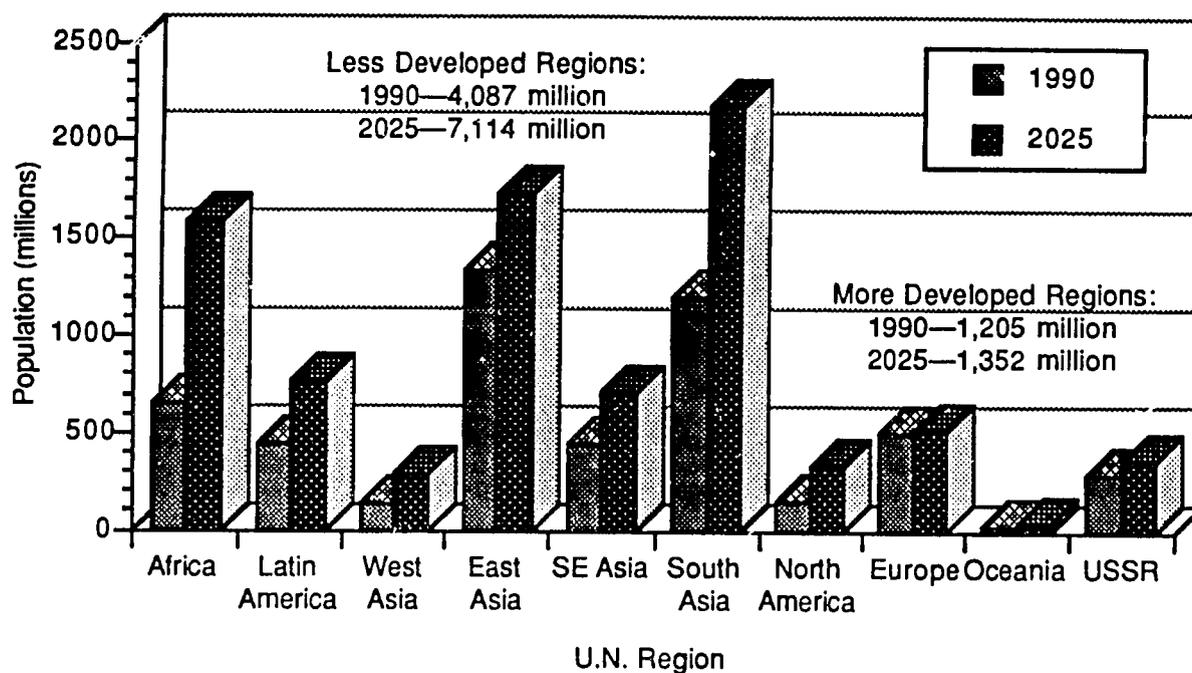


Figure 1.6 U.N. population estimates by region, 1990 and 2025. Source: Sadik, 1990.

One troubling example of this is the spread of Acquired Immune Deficiency Syndrome (AIDS) in Africa. Data on the prevalence of human immunodeficiency virus (HIV) indicate that five countries—the Congo, Côte d'Ivoire, Rwanda, Uganda, and Zambia—had rates of HIV seroprevalence of 10% or more among urban adults aged 15-49 around 1987 (Bongaarts and Way, 1989). One of every three or four infants born to women infected with HIV may be infected during pregnancy or birth (Grant, 1990:62). In Uganda, one adult in four in urban areas and one adult in eight in rural areas—a total of about 900,000 people—are believed to have been infected with HIV around 1987 (Bongaarts and Way, 1989). The toll in terms of the loss of productive adults and the burden of orphaned children could become enormous (e.g., Perlez, 1990).

A different concern is the potential for global environmental change resulting from releases of carbon dioxide, methane, chlorofluorocarbons, and other radiatively active "greenhouse" gases associated with such human activities as fossil-fuel consumption, deforestation, rice and cattle production, and refrigeration. Consensus is increasing in international scientific and policy arenas that significant climate warming could well occur by the middle of the next century and that substantial efforts to reduce greenhouse gas emissions may be warranted (e.g., IPCC, 1990a,b,c). Certainly the "worst case" scenarios of environmental change are alarming from the viewpoint of hunger: hundreds of millions of farmers in the developing world could be adversely affected by changes in rainfall patterns; tens of millions of people along low-lying coasts might have to move in the face of rising sea levels or more intense tropical storms; and forests and crops around the world could be damaged by drought, increased ultraviolet radiation, and pest outbreaks (e.g., Sadik, 1990; IPCC, 1990b). Conversely, actions in the near term to reduce emissions could themselves cause hardships among the hungry and poor, if, for example, efforts to halt deforestation lead to reduced access by the landless to common resources, or if "carbon taxes" raise energy prices without providing compensation or less expensive alternatives, or if limits are placed on livestock or wet-rice production. Although the likelihood of the most extreme scenarios may be low, it is clear that both environmental change and responses to its threat could well have important effects on future food production and food security that should not be ignored.

The long-term future of hunger thus seems quite uncertain. Even if significant progress can be made towards reducing existing hunger during the next decade and beyond, there is no guarantee that the gains will be permanent or that new forms and sources of hunger will not arise. It is clear that efforts to combat hunger must proceed on many fronts, if the "state of hunger" in the year 2000 or later is to improve significantly over the present.

Notes

1. For more detailed discussion of these categories, see Millman and Kates (1990) and Millman (1990).
2. See footnotes to Kates *et al.* (1989) for details on derivation of these estimates.
3. Includes all food-deficit countries with per capita income below U.S. \$1,070 in 1988, the cutoff used by the World Bank to determine eligibility for International Development Association assistance.
4. The dietary energy supply figures do not allow for losses between the retail level and actual food consumption, nor for the distribution of food calories within countries in ways that do not match the nutritional needs of the entire population. The estimate for this indicator is the same as that reported last year in *The Hunger Report: Update 1989*, since updated dietary energy supply estimates were not available.
5. Unfortunately, due to the discontinuation of the *World Food Needs and Availabilities* publication by the USDA/ERS, updates to these figures for the current and next crop years are not expected (USDA/ERS, 1989b:1). The "status quo" estimate of need is based on the average per capita food use of the 4 most recent years that deviate less than 1 standard deviation from the mean of the most recent 8 years (1981/82 through 1988/89). See USDA/ERS (1989a,b) for details on derivation.
6. The USDA/ERS estimates of "additional needs" given in *World Food Needs and Availabilities* do not include all stocks and potential imports. This calculation assumes that, in an emergency situation, existing stocks would be drawn down to negligible levels and the maximum import capacity would be exploited.
7. The World Hunger Program's "FAMINDEX" consists of the total estimated population residing in countries in which a famine has been reported during the year of the famine's occurrence. For further details on its derivation and limitations, see Kates *et al.* (1988, 1989).
8. The food poverty estimates assume that, in 1988, 35 million Chinese fell below 1.2 BMR and 70 million below the 90% requirement level. These were assumed to grow in proportion to China's total population in 1989. Population data are from PRB (1989). See Kates *et al.* (1989) for further details.
9. Category A: countries with household-level data on energy intake, food expenditure, and total income or expenditure. Category B: countries category A data, but only groups of households classified by income or expenditure. Category C: countries with no energy intake data but with food expenditure and income data as in category B. Category D: Countries with no energy intake or food expenditure data but with income or total expenditure data. Category E: Countries lacking any distributional data. Source: (FAO, 1987).
10. Both sets of figures rely on the distributional estimates from the period 1979-81 used in the Fifth World Food Survey (FAO, 1987) combined with updated calorie availabilities from 1983-85.
11. See Box 1.1 for details. Note that the terms "low" and "high" apply simply to the range of the estimates published by the two organizations, not to a consistent threshold level.
12. South Asia includes Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka.
13. Very few nationally representative surveys of low birthweights have been conducted since 1982 in developing countries, according to a recent WHO compilation of anthropometric indicators (WHO, 1989).
14. This study was based on nationally representative data for about 76 countries representing 83% of the developing world population under five (excluding China). Half of the countries had data from 1985 or later and half from 1975-84. Children are defined as underweight if their weight falls two standard deviations or more below the median value for the reference population, usually the U.S. National Center for Health Statistics (NCHS) reference population adopted by the WHO as the international reference for child anthropometry.

Notes (continued)

15. The UNICEF study reports a prevalence of 41% for underweight children based on a cutoff of 75% below the median of the Indian reference population and on 1982 data for eight Indian states. The ACC/SCN (1987a:16-18, 48-50), in contrast, reports a prevalence of 67% for all of South Asia in 1983/85 based on an indirect method (ordinary least squares regression) that uses data for a sample of countries to estimate regional prevalences of underweight children relative to the NCHS standard. It is not clear how much data for India, if any, was included in this estimate. As noted in previous editions of *The Hunger Report* (Kates *et al.*, 1988, 1989), controversy still exists over whether Western standards for growth are entirely appropriate for judging growth impairment in developing country populations. In this vein, the ACC/SCN has recently attempted to distinguish between "the process of becoming small" and "the state of being small" vis-à-vis concerns about present and past health and nutritional status (ACC/SCN, 1989b).
16. The estimates for iodine deficiency appear to have been based on population estimates for about 1985 (e.g., Hetzel *et al.*, 1987).
17. This is based on the assumption that anemia in adult males, estimated at 18% worldwide, generally does not result from iron deficiency, except when calorie intakes are extremely low. The remaining 12% can therefore be attributed to iron deficiency anemia (DeMaeyer and Adiels-Tegman, 1985:315).
18. For example, as suggested by DeMaeyer and Adiels-Tegman (1985), the estimate for iron-deficiency anemia was derived by subtracting the 20% prevalence rate for anemia among African adult males from the overall prevalence rate of 40% for Africa computed from their Table 5. See note 14 for additional details on the derivation of these estimates.
19. Food-shortage indicators have been estimated directly from the country-level data and populations, as for the global indicators. Food-poverty indicators are based on region-specific estimates of the proportions undernourished in Sub-Saharan Africa along with recent population data. Food-deprivation indicators for the most part use estimated prevalence rates for Sub-Saharan Africa or Africa as a whole, applied to recent population data. The exception is the measure for vitamin A deficiency, which is based simply on the reported worldwide prevalence rate for children.
20. In 1989/90, some countries are expected to receive more food aid than required to meet their status-quo or nutrition-based needs as computed by the USDA/ERS, but these excess amounts are smaller than in past years and do not significantly affect the aggregate unmet needs reported here.
21. Total requirements consist of structural food aid plus "exceptional" requirements arising from crop failures, natural disasters, influxes of refugees, or other temporary fluctuations in food supply or demand and reflect the amount of food needed to assure a "normal" food supply based on recent trends or averages (FAO, 1990b:66). Exceptional requirements as of mid-April were 1.7 mmt.
22. The latter topic was addressed in a special session of the third annual Hunger Research Briefing and Exchange, held at Brown University on 5 April 1990. Two of the participants in that session, Thomas Weiss of Brown University and Larry Minear of Church World Service/Lutheran World Relief, are completing a study of Operation Lifeline Sudan to be published in September ("Humanitarianism Under Siege: A Critical Review of Operation Lifeline Sudan") and are helping to organize further discussions of the issue as part of the follow-up to the Bellagio Declaration.
23. Note that this indicator is slightly different from that listed in *The Hunger Report: 1988* (Kates *et al.*, 1988).
24. Based on the FAO index of food production per capita for 1977 and 1988 (FAO, 1989). This index is based on the *value* of production in constant dollars, not the total number of calories produced. A cumulative increase or decrease of 5.6% between 1977 and 1988 was taken as the cutoff for determining an average increase or decrease of 0.5% per year. Country populations are based on 1990 population data (PRB, 1990) for countries with FAO index data. Although total world production in 1988 was below trend, production in developing countries had recovered from 1987 lows (FAO, 1990c).

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2 FOOD WARS: HUNGER AS A WEAPON OF WAR

Ellen Messer

The use of hunger as a weapon of war is as old as our earliest written records. In Western tradition, the Bible cites drought, siege, and warfare as sources of starvation (Genesis 12:10; Genesis 41ff; Deuteronomy 28:52-57). In Eastern tradition, Sun-tzu and other Chinese military strategists taught destruction of grain supplies as a military tactic (Griffith, 1963). Laying waste the fields of adversaries and butchering their flocks, sabotaging agricultural and marketing infrastructure, and raiding other sources of livelihood have also been common. Alternatively, armies have "lived off the land," bringing death and desolation to inhabitants. With improvement in the technology of war and enlargement of scale of the hinterland from which food supplies have been drawn, sieges have expanded into blockades, salt has been replaced by incendiaries and chemical defoliants, and the numbers of present and future civilian casualties of war have escalated. War—and the use of hunger as a weapon—remains one of the most important obstacles to ending famine, as the combined destructiveness of new and old techniques and the destruction or interdiction of food supplies continue to keep thousands hungry.

In a broad sense, all wars can be considered "food wars," in that they disrupt present food systems, and, in most instances, threaten future livelihoods and food supplies. At a global level, both East and West lament that forty years of "Cold War" politics and the arms race have slowed down socioeconomic progress, widened the gap between the developed and developing countries, diverted scientific minds from peaceful pursuits, and, through both conventional and high technology military activities, increased the probability of environmental and economic destruction that can contribute to hunger (Brandt, 1986; Khozin, 1988).

On a regional or national scale, governments and insurgents divert resources to armaments and military activities and therefore have less to spend on peaceful development of economic and environmental resources, human resources, infrastructure, nutrition, and public health. Military spending in the developing nations over the past year has been estimated to amount to U.S. \$145 billion—an annual expenditure that if allocated instead to food, health care, clean water, and education might end absolute poverty and poverty-related hunger over the next ten years (Grant, 1990:1). Even after conflict has technically ceased, war may continue to menace hunger, as the maintenance of armed forces drains manpower away from more productive survival and development activities, and the national budget for defense continues to divert allocations away from nutrition and health care with resulting increases in infant deaths. War-related hyperinflation and accompanying government austerity programs, as in Central America, reduce the purchasing power and contribute to the ongoing food poverty of the war's civilian victims. Additionally, the social disruptions that take place in war, even those that do not directly and intentionally use the food deprivation of combatants and non-combatants as a tactic, wreak economic and social havoc, through involuntary resettlement, loss of livelihood, disease, and death, all of which contribute to ongoing hunger.

Moreover, war creates conditions where the special needs of the vulnerable—especially women, children, and the elderly who are left to fend for themselves as boys and men are drawn off to war—may not be met, where illness can flourish and exacerbate nutritional problems, and where flows of food cannot meet special nutritional needs. Children suffer especially as health centers and schools, agricultural and marketing systems, and basic public services become war targets. As a case in point, the United Nations Children's Fund has estimated that an extra 140 per thousand children under five years of age have been dying in

war-torn Angola and Mozambique as a result of war-related hunger, illness, and malnutrition (Grant, 1988:54). More generally, war and government policies that exacerbate socioeconomic inequities and political unrest contribute to the “quiet” or “silent violence” of hunger in women and children that can also be attributed to Cold War politics, and almost constant civil strife—as well as misguided and mismanaged development policies in many affected areas (Hartmann and Boyce, 1983; Watts, 1983).

National, ethnic, religious, occupational, and gender perspectives that classify the opposition, or vulnerable groups, as somehow less than human, also facilitate the use of hunger as a weapon. In Africa and Asia, the roots of contemporary hunger can be found in colonial policies which resulted in highly specialized and vulnerable economies, which favored commercial over local subsistence production, and which have continued in the form of military and economic support for national elites who have used starvation as a weapon against warring factions (e.g., Shawcross, 1984; Jacobs, 1987; Messer, 1989a). Underlying such policies has been also the acceptance that violence, including the quiet violence of hunger, is somehow permissible against those of another group, gender, or age category. In Vietnam, diseases and malnutrition among non-combatants were an unintentional by-product of the way Americans waged the war, but “the more we define our opponents as subhuman, the smaller the step from an indirect effect to a deliberate policy” (Polgar, 1968). Starvation and forcing captive populations to eat filth have also served as tactics for dehumanizing the opposition and as rationalizations for further violence, as in Stalin’s massacre in the Ukraine, ethnic strife in Southeast Asia, and more generally, in hunger-related crimes of genocide (e.g., Conquest, 1986; Khare, 1989; Kuper, 1985; Ramos-Horta, 1987). While analysts of warfare’s decline and universal human rights’ advance are hopeful that the time may not be distant when all people will respect the humanity of all others, the failure to classify all others as humans remains perhaps the biggest stumbling block to ensuring universal freedom from hunger, especially in zones of armed conflict (Wilkinson, 1980; Alston, 1989; Messer, 1989b).

Almost all inter- and intra-social conflicts in the past decade may be classified as food wars (Box 2.1), although the intent with which nations have used hunger as a weapon has varied.

Hopeful Signs

As we enter the 1990s, one hopeful sign has been the willingness of international legal and diplomatic circles to outlaw certain types of destructive behavior by international convention and covenant. Such covenants have a long history,¹ as do efforts by international organizations to provide humanitarian aid in zones of armed conflict.² The most recent (1977) legislation (Box 2.2), while presently unenforceable, nevertheless presents a set of possibilities for limiting the destructiveness of warfare and provides aspirations for more humanitarian behaviors.

Even in the absence of widespread ratification of these conventions, the 1980s have witnessed the willingness of belligerents in El Salvador, the Sudan, Afghanistan, and Sri Lanka to suspend hostilities temporarily for the purpose of allowing children to be immunized. Additionally, dialogues continue with all sides of the conflicts in Ethiopia, the Sudan, and Afghanistan to allow the passage of essential food and medical supplies to prevent more widespread starvation and death in war-torn zones (Grant, 1990).

Another hopeful sign is the lessening of conflict in the Cold War, which presents an opportunity for East and West to cooperate in limiting, rather than escalating, the destructive use of food as a weapon. Possible areas of cooperation include activities to limit arms and destructive weapons and to rebuild food production, ensure storage and safe passage of emergency food, and support economic restoration in former zones of combat.

Box 2.1: The Legacy of Food Wars in 1989³

Afghanistan (1978-89). Civil war (Marxist vs. Islamic factions) destroys agricultural lands and infrastructure; siege is a major tactic.

Angola (1975-89). Civil war, fanned by Cuban and American interventions, causes widespread devastation of environmental and human resources and hunger.

Burma (1985-89). Civil war creates possible disruption in food production and marketing, as refugees from zones of conflict and hundreds of thousands of others face involuntary resettlement.

Cambodia (1975-88). Civil conflict, beginning with U.S. and North Vietnamese intervention, followed by Pol Pot's Khmer Rouge massacre, and subsequent civil war (insurgents, Khmer Rouge vs. North Vietnamese-supported government), cause widespread death, destruction, dislocation, and famine.

Chad (1980-87). Civil war (northern vs. southern factions) contributes to acute food shortage.

El Salvador (1979-89). Civil war (government vs. guerrillas) contributes to destruction of food production and marketing capacity, rampant inflation, and food poverty.

Ethiopia (1974-89). Civil war (Eritrean and Tigrean insurgents vs. the government), added to the government's policy of forced resettlement in agricultural cooperatives, contributes to frequent famine. Both sides interrupt the flow of humanitarian food aid.

Guatemala (1966-89). Civil war (military vs. guerillas and the indigenous populations thought to harbor them) results in widespread dislocation and destruction of villages.

Indonesia vs. East Timor (1975-89). The Indonesian government causes widespread death, dislocation, and famine in East Timor.

Iraq vs. Iran (1980-88). Armed conflict lays waste cities and countryside, rendering zones uninhabitable and destroying food system infrastructure.

Mozambique (1981-89). Famine is worsened by civil war, as food production and marketing are disrupted; children and women especially suffer food deprivation.

Nicaragua (1981-88). In civil war (U.S.-backed Contras vs. the Sandinista government), Contras burn fields and destroy food-system infrastructure. The costs of war, plus government mismanagement, contribute to rampant inflation and widespread food poverty.

Peru (1983-89). "Shining Path" insurgents destroy peasant crops, upset communications, energy, and the transportation network—all contributing to widespread food poverty.

Philippines (1972-89). Civil war (government vs. Muslim and Communist guerillas) contributes to widespread food poverty.

South Africa (1985-87). The government's repressive policy toward black minorities, including restrictive access to productive resources and income and forced resettlement, contributes to widespread food poverty and malnutrition.

Sri Lanka (1984-89). Civil war (government vs. Tamil and Sinhalese guerillas) threatens famine and food poverty due to interference food production, storage, and marketing.

Sudan (1984-89). Civil war (Islamic government vs. tribal populations) and inter-tribal raiding contribute to famine and to the disruption of food production and marketing and the provision of food aid.

Uganda (1971-87). Idi Amin's massacres and subsequent civil wars (army vs. people) cause widespread death, dislocation, food shortage, and food poverty.

Vietnam (1965-75). Although the war of the United States and South Vietnam against North Vietnam ends in 1975, the widespread destruction of the economy, especially of agricultural lands, continues to contribute to food shortage and food poverty.

An additional hopeful sign, according to some analysts (e.g., Sivard, 1989:23), is the lessening in the number of wars—from a high of 27 in 1987 to as few as 15 in 1989—and the increasing activities of nongovernmental organizations that put ending hunger and other humanitarian objectives above other political and economic goals (see, e.g., Independent Commission on International Humanitarian Issues, 1986).

Zones of Concern

Nevertheless, as we enter the 1990s, we identify the following zones of armed conflict and note the ongoing use of hunger as a weapon.

Asia

Afghanistan enters another year of its lengthy civil war that has included siege and interdiction of food flows and that will continue unless the superpowers, and other interested parties, take advantage of the cooling of global conflict to work towards peace. The national government reports a food and fuel emergency, children suffer from lack of nutritional and health care, and the agricultural and pastoral resources have been destroyed. In the wake of withdrawal of Soviet troops, many expected movement in the peace process by interested leaders. But this has been thwarted by growing ethnic conflict and new coalitions among Communists and fundamentalist guerilla groups, as warring factions vie for power, amidst Pakistani support for certain Islamic fundamentalist group objectives and ongoing American and Soviet reluctance to surrender all hands of manipulation (Crossette, 1990).

Refugees from *Vietnam* continue to pour out of that nation, seeking escape from the poverty and devastation of the 1960s war and from the limitations of current ill conceived political economic policies and ongoing adverse weather.

In *Cambodia* (Kampuchea), the legacy of forced resettlement and mined paddy fields of Pol Pot's Khmer Rouge regime continues to disrupt food production and distribution and to maim human beings. Refugees in camps along the Thai-Cambodia border continue to be menaced by the Khmer Rouge (Human Rights Watch, 1989).

The government of *Burma* may be initiating a tactic similar to that of the Khmer Rouge in Cambodia, as it threatens to relocate forcibly 500,000 people out of urban areas and into satellite towns in the countryside, removing their source of livelihood and increasing the possibilities for food poverty. Numerous inhabitants have already been reported to have fled to the hills—and to hunger (Erlanger, 1990).

In *Sri Lanka*, conflicts between Tamils and the government threaten to disrupt production and distribution of rice.

In the *Philippines*, demands by Moslem and Communist insurgents, in the context of government military demands and substantial socioeconomic inequities, exacerbate food poverty.

Africa

In Africa, with the independence of Namibia and a change in government in South Africa come additional hopes for peace, if opportunities are not squandered. But much will depend on what *South Africa* does with its continued economic stranglehold on the region (e.g., Brooke, 1990).

Box 2.2: Global Efforts in International Law to Protect Rights to Food of Victims of War

Constraints on limiting the use of hunger as a weapon are provided in the international sphere of law and diplomacy, especially the U.N. Doctrine and Conventions on Human Rights. These have been viewed as having been generated in three stages: 1) a first generation of basic political rights; 2) a second generation of economic and social rights; and 3) a third generation of so-called derivative rights (that treat issues such as the environment). The sum of these rights relating to freedom from hunger were stated in the 1974 Universal Declaration on the Eradication of Hunger and Malnutrition at the World Food Conference in Rome and supplemented by specifics.

Contributing to the formulations of war-related protections on rights to food have been a series of general conventions relating to war: 1) the Hague Convention of 1899, which states that "The right of belligerents to adopt means of injuring the enemy is not unlimited"; and 2) The Geneva Convention of 1949, with 1977 additions, which declares that "it is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment." This is supplemented by specific conventions protecting the rights of a) prisoners of war (Geneva Convention Relative to the Treatment of Prisoners of War, Geneva Convention III, 12 August 1949), and b) citizenry caught in zones of armed conflict (Geneva Convention Relative to the Protection of Civilian Persons in Time of War, Geneva Convention IV, 12 August 1949).

These conventions have been supplemented by two Protocols Additional to the Geneva Conventions of 12 August 1949, one Relating to the Protection of Victims of International Armed Conflicts (Protocol I, Geneva, 10 June 1977) and the other to Non-International Armed Conflicts (Protocol II, Geneva, 10 June 1977). Both state specifically that 1) "Starvation of civilians as a method of warfare is prohibited" and 2) "It is prohibited to attack, destroy, remove, or render useless objects indispensable to the survival of the civilian population such as foodstuffs, agricultural areas for the production of foodstuffs, crops, livestock, drinking water installations and supplies and irrigation works." Both conventions also state that relief societies are to be allowed to feed a civilian population that is suffering hunger. As early as 1948, there had been a special convention on the Prevention and Punishment of the Crime of Genocide. Refugees also had already received special consideration in the Statute of the Office of the U.N. High Commissioner for Refugees, General Assembly Resolution 428 (V) of 14 December 1950 and following. A separate Declaration on the Protection of Women and Children in Emergency and Armed Conflict, passed by the General Assembly Resolution 3318 (XXIX) of 14 December 1974, had already declared their rights to shelter, food, and medical care as inalienable rights. Although cynics might view such declarations, conventions, and protocols unworkable—after all, the Nigerians starved out the Biafrans as their only possible hope for conquest—they nevertheless indicate a willingness on the part of international legal experts and diplomats to engage in the process of writing legal documents that can serve as models for the behaviors of nation-states.

Source: Tomaševski (1987).

In *Angola*, reduction of Cuban troops from 50,000 in 1989 to closer to 19,000 by early 1990 and the proposed total pullout by July 1991 suggest lessening of armed conflict on one side, but UNITA continues to blow up bridges and water supplies, contributing to the ongoing disruptions in life and food supply (Brooke, 1990). Forced conscription and food thefts continue on the part of both UNITA and government forces (Africa Watch, 1989).

In *Mozambique*, news correspondents continue to report on the violence and destruction in the countryside—a war of food deprivation and psychological terror against the peasants,

particularly children (Jarriel, 1990). In both Angola and Mozambique children continue to suffer the consequences of purposeful interference with food supply.

In *Ethiopia*, after fits and starts, emergency food aid is again being moved toward the estimated million starving peasants in rebel-held areas—an effort which has received the consent of both Ethiopia's Soviet-backed government and the rebel Tigray People's Liberation Front. This represents some advance, since throughout 1989 both government and rebel forces interfered with the flow of emergency food. But there has been no cease-fire, and there is no end in sight for the civil war (Reuters, 1990).

In the *Sudan*, the Moslem government in the north continues to try to starve or otherwise root out rebel tribal groups in the south, interfering consistently with the flow of humanitarian food and medical aid. Local warlords also raid various communities, prey on refugees, and loot relief columns (O'Brien and Gruenbaum, 1990).

In *Somalia*, the government contributes to widespread hunger through killings, massive displacements of civilians, and harsh conditions of detention for refugees (Africa Watch, 1990). Evidence that the government was drafting Ethiopian refugees to fight in the Civil War in northern Somalia led to partial withdrawal of U.N. and bilateral aid (NYT, 1989).

In *Mauritania*, powerful Moorish interests, attempting to appropriate riverine Mauritanian lands made more valuable by irrigation, have provoked interethnic rioting. As ethnic conflict heightened, members of Black ethnic groups have been uprooted and expelled across the border to Senegal, exposing victims to new forms of food poverty and deprivation (Noble, 1989). That has resulted in counter interethnic rioting in *Senegal*, that deprives Moorish elements of life and livelihood (Horowitz, 1989).

Latin America

The use of hunger as a weapon also refers to the continued economic deprivations and resulting food poverty caused by war itself or aggravated by other forms of economic mismanagement. This is particularly evident in Central America. Even if we accept Sivard's calculations that the numbers of nations at war have dropped to 15 in the past year (Sivard, 1989), this does not mean that strife and killings and the hunger sufferings of war have ended in the nations no longer counted.

Nicaragua showed an increase in military activity, although until November 1989 the government observed a unilateral cease-fire. Contras continued to kill peasants and attack cooperatives—although the numbers of victims may not have reached Sivard's critical cut-off of 1,000 deaths in that year (Sivard, 1989). Although the decrease in military activity on the part of the government as part of a generally vigorous structural adjustment program allowed a reduction in hyperinflation rate to about 1,200% in 1989, down from 33,000% in the previous year, it has been calculated that overall, average real wages fell more than 90% over the period 1980-89, while price levels were rising astronomically. Such figures do not, however, capture the returns to home production in the countryside and to income from activities in the informal sector that increased as a result of the deteriorating economic conditions and continued overall conditions of food poverty linked to war (U.N. Economic Commission on Latin America and the Caribbean, 1989).

In *El Salvador*, President Arena declared a structural adjustment program in June, 1989, as expenditures on armaments continue. Market basket estimates in November 1989 indicate an increase in the cost of food close to 800% over 1978 baseline figures (Dirección General de Estadística y Censo, 1989). War taxes and casualties are extracted from civilians by both government and rebel forces; "food runs out as bullets fly" (Gruson, 1989). Refugees uprooted to Honduras during the fighting still face difficulties in returning and restoring life and livelihood (Green, 1990).

In *Guatemala*, indigenous peoples suffer the legacy of President Rios Montt's scorched earth and "Beans and Guns" policy that first uprooted populations and destroyed their agricultural livelihoods and then fed those who resettled under government control. The military continues to create refugees, prevent its populace from returning to their homelands to cultivate, damage the agricultural system, and oversee further disinvestment in the primary health care system (Falla, 1988; Manz, 1988).

Newly elected governments in *Nicaragua* and *Peru* in 1990 promise to put an end to hostilities, but to placate warring factions they must rebuild war-torn economies—not a simple task.

Eastern Europe

Eastern Europe is in flux, moving away from impoverished communist regimes toward some form of market system. In 1989, we read of food blockades of Armenians in Azerbaijan and food poverty used against its citizens by the now deposed leadership of Romania. We also learned of food shortage in Poland—an artifact of the political economic system, rather than of any specific use of food as a weapon. And ethnic strife threatens to disrupt the economy and food production in the tumultuous early months of independence on the part of many heretofore Soviet republics.

* * * * *

Thus, on balance, we observe a lessening in conflict and a widening sense of human community and responsibility to ensure rights to food at a global level, but continuing fragmentation and the use of hunger as a weapon of war within national borders. Neighboring nations continue to absorb refugees at peril to their own food security and political stability.

In the face of such challenges, humanitarians continue to launch new initiatives to condemn interdiction of safe passage of food in refugee and war zones, to implement new channels for safe delivery of humanitarian aid, and to contest the right of nations to deny food to citizens or insurgents within their borders. Such efforts aim to apprise people everywhere of their human rights to food and freedom from hunger, and to create the global context and international institutions to implement such rights.

Notes

1. The history of war is also the history of sporadic efforts—largely ineffective—to limit abuses and violence toward the civilian population, prisoners of war, and the environment. In the 15th-16th centuries, we can already see some canon law restricting violence against women and children that officially forbade harm to non-combatants. But the rules only applied to wars with Christians, and often only to Knights, not to common soldiers. The 17th century witnessed new heights of inhumanity in the practice of warfare, despite such suggested restrictions (Luard, 1987:335-36,344). Since the 18th century, there have been some efforts to humanize the practice of war, although for the most part, these did not derive from agreements among governments until the following two centuries. Individual governments sometimes issued codes of conduct for armies in the field, proscribing certain types of behaviors toward civilians, including that they not destroy arable fields, meadows, and gardens (a rule that might also serve the interests of a conquering army that wanted to live off the land). Rules also began to suggest greater discipline of forces in the treatment of civilians, the conditions for prisoners, and for treatment of the sick and wounded and of hospitals, more generally, in besieged cities. Frederick the Great proposed restraints on the brutalization of non-combatants and on the destruction of crops. But these efforts were largely unsuccessful or not widespread (Luard, 1987:353-54, 376), as starving out one's opponents, and destroying their upcoming sources of food and livelihood, proved a very effective tactic.

2. The history of humanitarian rescue efforts, including emergency feeding of civilian populations, has modern origins in the 19th century in Europe and the United States, with the founding of the International Commission of the Red Cross and the First Geneva Convention that guaranteed humane treatment for the wounded and sick. With World War I, their work expanded into issues dealing with the repatriation of refugees. In 1929, two new conventions were drafted on the treatment of prisoners, and in the 1930s, another convention on the treatment of civilians. But in what proved to be an ill omen, diplomacy failed to ratify the conventions before the next World War.

UNICEF was created in 1946 to meet the needs of children and was expanded in 1950 to meet the needs of mothers (Shawcross, 1984:106-107). In 1949, the first of three Geneva Conventions reviewed the treatment of prisoners of war, and added a fourth protecting civilians in wartime from all forms of violation of basic human rights (see Box 2.2).

3. This list is restricted in that we follow Sivard's definition of war as armed conflicts causing 1,000 or more deaths per year. We have not included, for example, hostility-related hunger in Haiti, food riots in Eastern or Central Europe, South America, or Africa—all situations in which food was also used as a weapon, and in which shortage or the rising prices of food contributed to, and may also have been signs of, political instability.

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3 FOOD AID AND HUNGER

William H. Bender

Current Food Aid Flows

Cereal food aid in 1989 totalled slightly more than 11 million metric tons (mmt), about 0.6% of world cereal production and 5% of world trade in cereals (FAO, 1990b:2; WFP, 1990b, Table 1). This food aid is exceedingly important to many developing countries, providing 15% of imports to low-income, food-deficit countries, and 44% of imports to the least developed countries, down from a high of 60% of imports to this latter set of countries in the 1985/86 marketing year (WFP, 1990a, Table 9).¹ An additional 1.0 mmt of non-cereal food aid was delivered in 1989, and primarily consisted of oils and fats, dairy products, and pulses.

As seen in Figure 3.1, food aid forms a significant portion of total official development assistance (ODA). Total 1988 food aid flows were valued at \$3.8 billion, or 8% of total development assistance.

Figure 3.2 illustrates that the United States (57%), the European Economic Community (EEC) and its member countries (20%), and Canada (10%) provide the vast majority of food aid. Figure 3.3 shows the regional distribution of food aid deliveries, fairly evenly divided among Sub-Saharan Africa, Asia and the Pacific, Latin America and the Caribbean, and North Africa and the Middle East. The U.S. alone provides the vast majority of the latter two regions' food aid, while other donors place greater emphasis on the former two regions. Low-income, food-deficit countries account for 79% of food aid receipts, whereas 34% of food aid is delivered to the least developed countries.

Food Aid and Hunger

In food-deficit countries, food aid is a development resource that is largely substitutable for financial aid. Food aid has traditionally been viewed as a resource available for short-term consumption stabilization and augmentation. Other than short-term emergencies, there is an increasing consensus that monetization is desirable.² It is certainly desirable to turn attention in the use of food aid from the direct provision of food towards programs that increase the long-term access to food of the most vulnerable population groups. Food aid has a natural connection to hunger, and there is considerable scope for utilizing food aid for the long-term eradication of hunger. Indeed, the use of food aid to combat hunger is a specific objective in a number of food aid programs, including those of the World Food Programme, the Netherlands, Norway, and the EEC (WFP, 1988). As food aid is increasingly monetized and used for general development purposes, it is desirable that the explicit connection between food aid and hunger not be lost. There are a number of ways in which this can be avoided, and in which monetized food aid can contribute to long-term food security. These include *a)* increasing effective demand for food among the hungry through employment generation and asset creation, *b)* supporting food market restructuring and food price policy reform, and *c)* rural infrastructure development specifically targeted towards vulnerable groups.

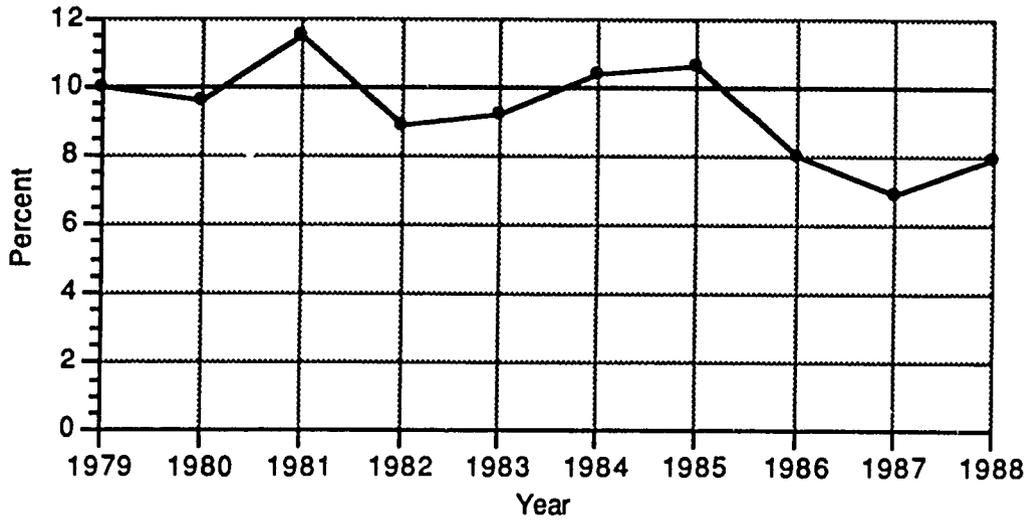


Figure 3.1 Value of food aid as a percentage of total official development assistance, 1979-88. Source: WFP (1990a, Table 10).

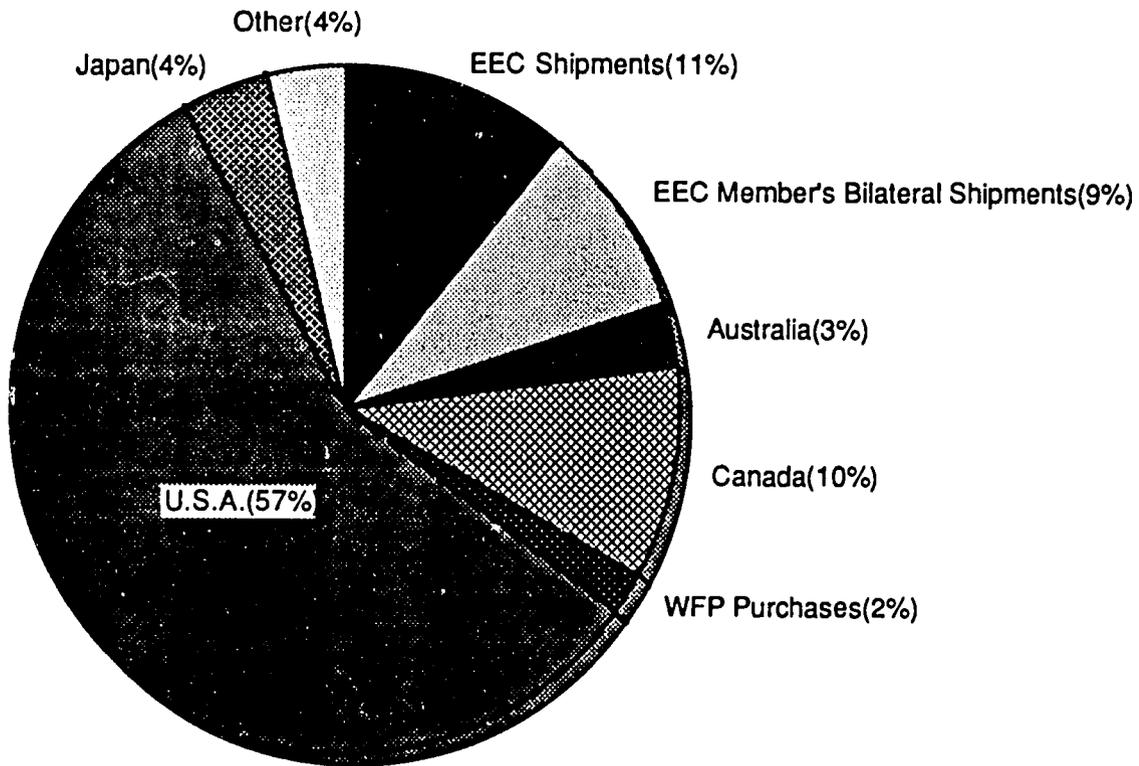


Figure 3.2 Worldwide shipments of cereal food aid, July 1988 to June 1989. Source: WFP (1990a, Table 7).

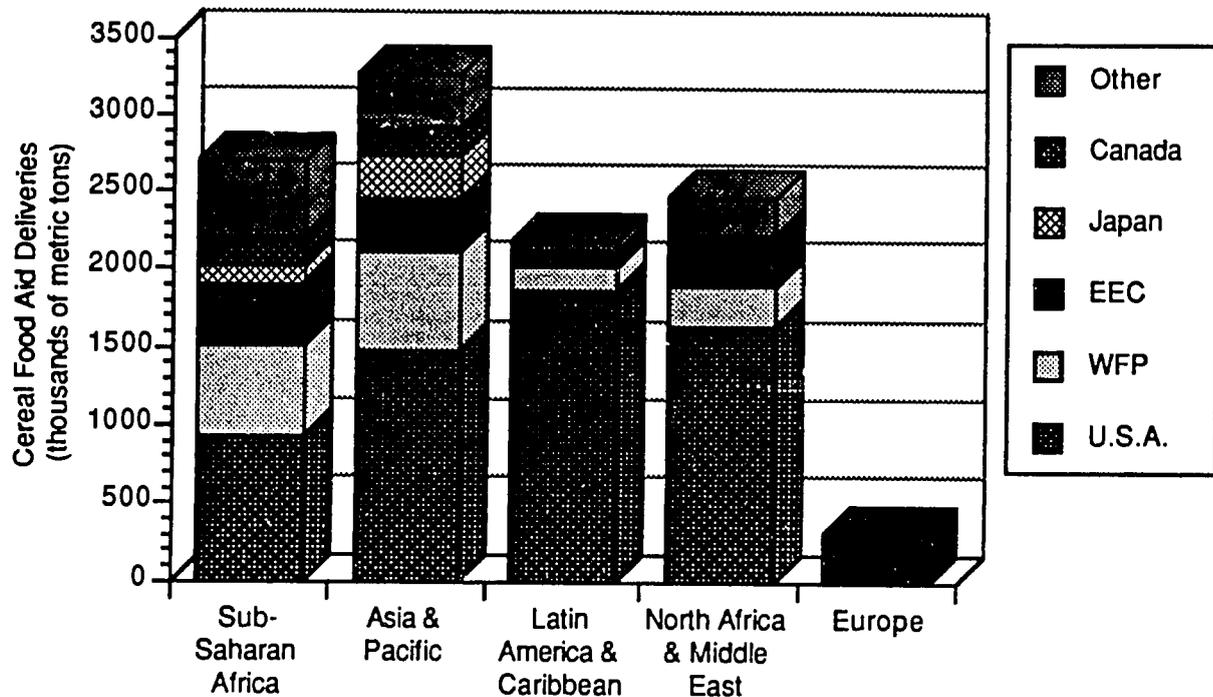


Figure 3.3 Cereal food aid deliveries by region and donor, 1989. Source: WFP (1990a, Table 1).

In order to assess and monitor the use of food aid in alleviating hunger, there are three aspects of the food aid situation that must be examined:

- 1) Worldwide availability of food aid;
- 2) International allocation of food aid; and
- 3) Domestic allocation and use of food aid.

Each of these aspects will be examined in turn in the following sections.

Worldwide Availability of Food Aid

As seen in Figure 3.4, cereal food aid flows have generally increased since the low in 1973/74, although they are still well below the peak of approximately 16 mmt in the mid-1960s. As discussed below, food aid needs are expected to increase throughout the 1990s even if food security generally increases in developing countries, so an average growth rate of at least 10% per year must be maintained to the year 2000.³ Food aid donations are dependent upon world cereal prices since many donations are budgeted in value rather than quantity terms. Food aid decreased in 1988 due to low production and firm cereal prices. Current world stocks of cereals are at their lowest levels since 1972/73. As a result, 1990 cereal prices will be very sensitive to this year's production, and consequently food aid flows can be expected to be dependent upon world cereal production.

Food aid to Eastern Europe is rapidly increasing, with nearly 2.3 mmt already allocated for 1990. Although to date this has largely been financed from funds additional to donors' normal food aid budgets (FAO, 1990b:21), it masks an actual decrease in food aid availability for developing countries to only 9.3 mmt from 11.1 mmt the previous year.

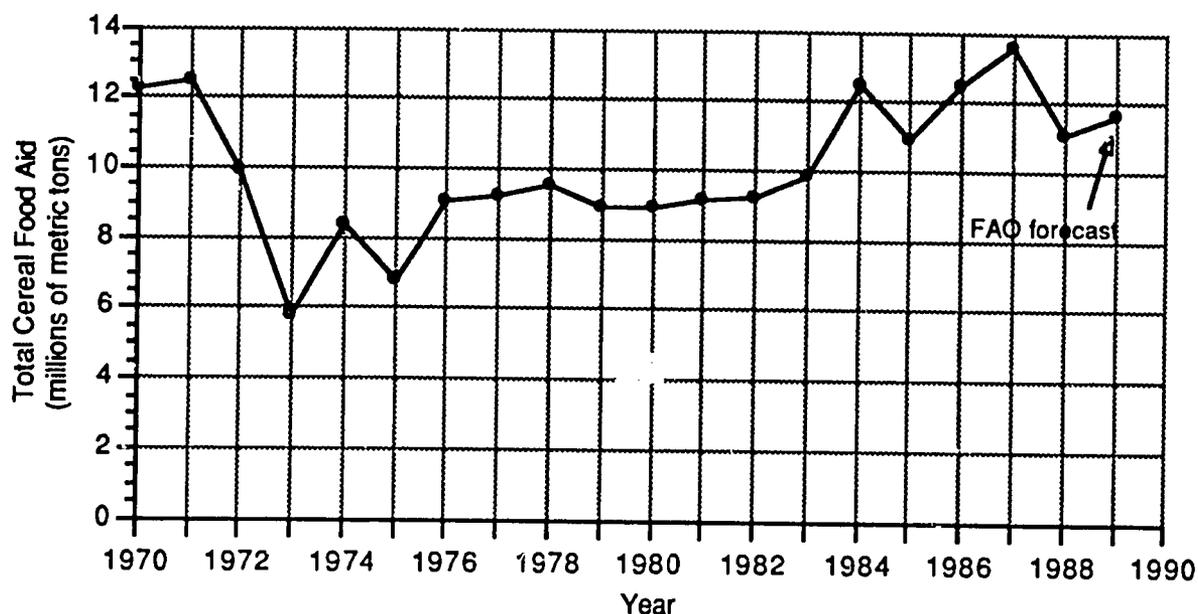


Figure 3.4 World flows of cereal food aid, 1970-89. Source: FAO data tape 1970-85; WFP (1990a, Table 7); FAO (1990b:2).

Current food aid pledges are insufficient to meet needs in a number of countries. Twenty-eight African countries have 2.1 mmt of unmet food aid needs, and pledges are lagging 12% behind those of last year. Although 1.6 mmt of African surpluses are available for export, donor support is required for the surpluses to fulfill needs elsewhere in Africa (FAO, 1990a:8-9).

Figure 3.5 illustrates the relationship between current food aid availability and food aid needs as calculated by the Economic Research Service of the U.S. Department of Agriculture (USDA/ERS). A combination of drought, high cereal prices (which reduce the ability of countries to commercially import food), and reduced foreign exchange availability increased status quo needs considerably in the last three years.⁴ Status quo needs are those required to maintain average consumption at levels equivalent to the recent past, given changes in a country's domestic production and ability to commercially import food. In the past three years, total food aid deliveries have fallen below these needs. Current food aid flows for the world as a whole are only sufficient to meet about one-third of the nutrition-based needs of just the USDA/ERS countries.⁵

International Allocation of Food Aid

In order for food aid to play a pivotal role in the reduction of hunger, it must be internationally allocated to countries with the greatest need. There is, however, a potential conflict between short- and long-term food security. If food aid is directly allocated in proportion to objective measures of hunger in order to augment consumption, a variety of disincentives may be created which diminish long-term food security. These can arise both on an individual level, allowing individuals to reduce work effort (labor disincentive), or nationally, by allowing governments to avoid painful or politically difficult policy changes which may be necessary for long-term food security (policy disincentive). The discussion below focuses upon short-term food security needs. In particular countries where major policy reforms are required to ensure food security, food aid allocations may be justifiably modified in support

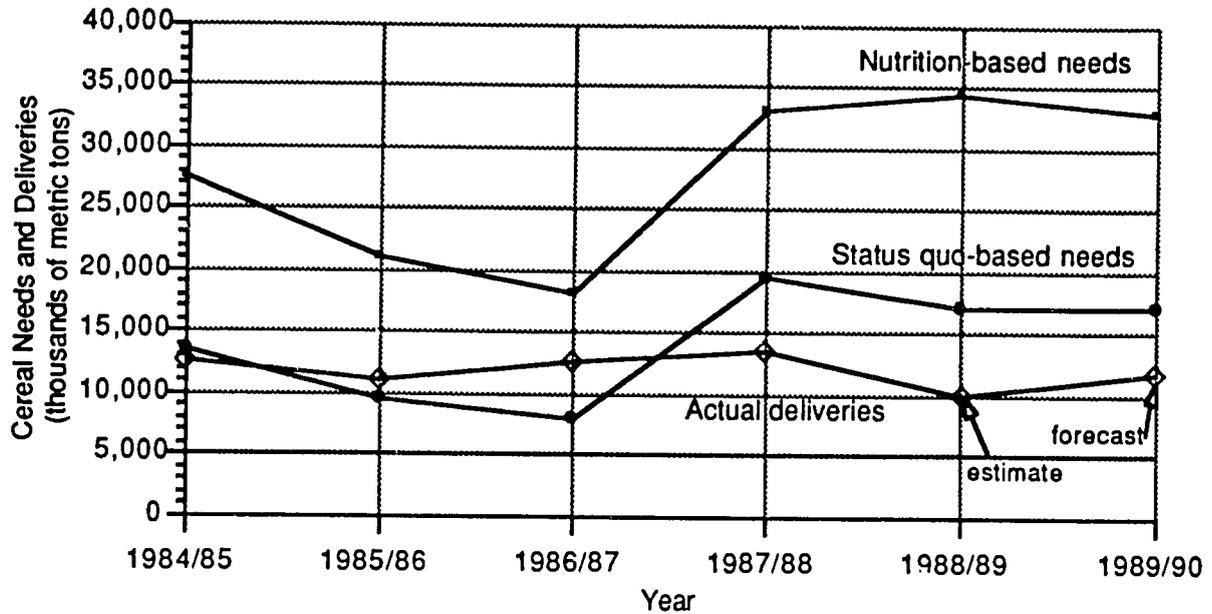


Figure 3.5 Food aid needs and deliveries, 1984-90. Source: USDA/ERS (1987, 1988, 1989a); FAO (1989:36); FAO (1990b:2). Actual deliveries include all shipments of food aid, including large amounts to countries not covered by the USDA/ERS assessments of need.

of such reforms. Several donors (e.g., Canada and the U.S.) consider a country's food policy when allocating food aid. However, this criteria for food aid allocation is exceedingly difficult to quantify and monitor.

Two major projects attempt to estimate food aid needs on a country-by-country basis. These are:

- 1) The Global Information and Early Warning System (GIEWS) of the FAO;
- 2) The USDA/ERS, which until 1990 produced the regular report *World Food Needs and Availabilities*.

These projects use a balance-sheet approach to estimate the gap between domestic supply and "normal" domestic demand. Domestic supply is estimated from *a*) production and *b*) estimates of commercial imports, which are based upon foreign exchange availability and world food prices. Inherent in these projects is the argument that production variability is the primary cause of consumption variability, and that food aid can be used to stabilize consumption (Sahn and von Braun, 1987; Diakosavvas, 1989; Ezekiel, 1988).⁶

Two factors create considerable variation between the different estimates. First, there are slightly different assumptions and procedures in the different systems. Second, up-to-date forecasts require hasty estimates of developing country production and financial data, which can result in large variations in the data input into the balance sheets. For 33 countries in Sub-Saharan Africa, estimates of 1989/90 food aid needs prepared by GIEWS and the USDA/ERS have a correlation coefficient of 0.89, whereas this figure was 0.95 in 1987/88.⁷ Although estimated needs in one-third of the countries vary by more than a factor of two, total estimated needs for the 33 countries are within 4%.⁸

Despite the considerable effort invested in these food needs assessment projects, food aid deliveries are still heavily based upon historical precedent. The exception to this is Sub-Saharan

Table 3.1 International Allocation of Total Cereal Food Aid.

	Correlation Coefficient ^a
<i>Correlation with previous year's allocations^b</i>	
1985 shipments and 1986 shipments	0.95
1986 shipments and 1987 shipments	0.96
1987 deliveries and 1988 deliveries	0.90
1988 deliveries and 1989 deliveries	0.93
<i>Correlation with USDA/ERS estimated needs^c</i>	
1987 shipments and 1987 status quo needs	0.73
1986 shipments and 1986 status quo needs	0.79
1987 shipments and 1987 nutrition based needs	0.54
1986 shipments and 1986 nutrition based needs	0.57
<i>Correlation with estimated needs: Sub-Saharan Africa</i>	
1987 shipments and 1987 status quo needs	0.95
1987 shipments and 198 / FAO needs estimates	0.94
1987 shipments and 1987 nutrition based needs	0.87

^a See note 7.

^b Shipment data refer to July to June marketing year starting in the year listed. Deliveries refer to calendar year. Source: 1985 and 1986 shipments, FAO data tape; 1987 shipments, FAO (1989:52-55); 1987 to 1989 deliveries, International Food Aid Information System (INTERFAIS) of the WFP.

^c Needs estimates are those produced by the USDA/ERS at the beginning of the 1987/88 marketing year. See text and note 5 for definitions of status quo and nutrition-based needs.

Africa, where food aid flows have been adjusted in line with needs estimates. Table 3.1 illustrates that each year's total food aid deliveries are very highly correlated with the previous year's deliveries, but are only loosely correlated with USDA/ERS food needs estimates. On the other hand, food aid flows to Sub-Saharan Africa fluctuate in accordance with estimated needs, but at a level below estimated needs.⁹

This lack of correlation with need is primarily due to the allocation of food aid to countries without any overall food aid need. Fully 44% of total food aid is delivered to countries beyond their minimum nutritional needs, as calculated by the USDA/ERS (Table 3.2). There certainly can be widespread hunger within countries with adequate average food availabilities, but disincentive effects become more likely and extreme care is required. With global food aid availabilities limited to just over one-third of that required to meet minimum nutritional needs, allocations of food aid to countries without an overall nutritional need must be heavily scrutinized. These can be justified only if it is clearly targeted for either short or long-term generation of effective demand for food of those too poor to currently obtain access to food, or for reasons unrelated to the reduction of hunger. Internal redistribution, funded either domestically or by financial aid, would often be more appropriate than food aid.

There is still considerable scope for improvements in the international allocation of existing food aid supplies.

Table 3.2 Countries with Largest Excess Food Aid Deliveries, 1987/88.

Countries	Quantity of cereal food aid exceeding minimum average nutritional requirement ^a (metric tons)
Egypt	1,645,700
Pakistan	657,400
Philippines	476,900
Tunisia	414,700
Morocco	339,600
Indonesia	319,100
Dominican Republic	278,100
Costa Rica	235,100
Guatemala	232,100
Jamaica	208,200
Sri Lanka	158,500
Peru	138,400

Source: FAO (1989:52-55); USDA/ERS (1987).

^a Actual deliveries less USDA/ERS estimates of nutrition-based needs.

Domestic Allocation of Food Aid

Food aid is generally categorized into emergency, project, and program (or non-project) food aid. In emergency situations, which absorb an average of about 20% of total food aid flows, it is often desirable to directly provide food to those in need. Project food aid accounts for about one-fourth of food aid flows, and is utilized to support development projects such as mother and child feeding at health clinics and school feeding. Excluding emergency food aid, about 5% of total food aid is specifically targeted upon vulnerable groups (WFP, 1989:7). Program food aid is given directly to the recipient government, who then generally sells the food aid at market prices. However, the distinction between project and program food aid is blurring. Receipts from the sale of program food aid are often utilized for particular development projects not unlike those funded by project food aid, whereas project food aid is sometimes monetized.

In non-emergency situations, there are often strong reasons *not* to provide food directly to poor people. It is easy to create labor disincentives, and it is senseless to transport food aid to rural areas using public resources when there is often a simultaneous private movement of food from those same rural areas to the cities.¹⁰ However, there *are* good reasons to utilize food aid as a resource specifically targeted to the elimination of hunger.

Food aid can be domestically utilized in the reduction of hunger in three distinct ways:

- 1) Consumption and price stabilization;
- 2) Short-term hunger alleviation (targeted food aid); and
- 3) Long-term hunger alleviation (investment).

The challenge is to achieve these goals while avoiding the major possible disincentives, including *a*) policy disincentives, *b*) price disincentives, and *c*) labor disincentives (Fitzpatrick and Storey, 1989:241).¹¹ The first goal is highly dependent upon the international allocation

of food aid. If needs can be properly assessed and donors are able to respond promptly, food aid can stabilize domestic supplies of food, and thereby stabilize consumption.¹² This is of direct benefit to large proportions of the hungry in many countries. A proper gauge of the success of this strategy and of the avoidance of price disincentives is to monitor the relationship of domestic food prices in relation to world food prices (Ezekiel, 1988:1379).

The second goal, short-term hunger alleviation, can be addressed with food aid by specifically targeting vulnerable groups. Much has been learned about methods of efficiently targeting these groups. Monetized food aid can be used to target hunger with food stamps or subsidies on "self-targeting" foodstuffs (e.g., root crops), whereas either monetized food aid or food aid itself can be used for mother and child feeding, food rations, or food-for-work (World Bank, 1986; Fitzpatrick and Storey, 1989; Pinstrup-Andersen, 1988; Reutlinger, 1988; Edirisinghe, 1987). If these programs are efficiently targeted, they will increase total food demand in the market. This offsets possible price disincentives from importing food aid. The more efficiently the food aid is targeted, the greater the quantity that can be imported without price disincentives. Food-for-work is not only self-targeting, but also has the advantage of avoiding the labor disincentive.

The third goal, long-term hunger alleviation, encompasses a wide variety of development approaches. The provision of food aid itself can be used as a carrot to encourage agricultural and food price policy reform, which in many countries is essential to any long-term success in hunger alleviation. Proceeds from food aid monetization can be utilized to create rural infrastructure and assets in regions containing large proportions of vulnerable groups. This can be particularly effective in the long-term alleviation of hunger where the long-term creation of labour intensive employment is a specific goal. However, all of these approaches to the long-term alleviation of hunger require careful planning and evaluation. Food aid projects and programs have often not been subjected to rigorous planning and evaluation procedures which would normally be expected if financial aid were used, but there is no valid justification for this oversight.

Despite considerable advances, there is still little concrete data concerning the effectiveness of alternative domestic allocations of food aid. The alleviation of hunger can be accelerated by careful research and close monitoring of current food aid allocations within individual countries.

Future Food Aid Needs

Whereas food aid flows have been declining since reaching a two-decade peak in 1987, needs are expected to increase rapidly in the decade of the 1990s. In many countries, rising per capita incomes, combined with growing populations, will increase food demand considerably faster than local production is likely to grow, increasing the demand for cereal imports. This is particularly true if targeted food aid programs increase the effective demand for food of vulnerable population groups (Ezekiel, 1988; Dearden and Ackroyd, 1989). Foreign exchange availability will continue to be limited in most developing countries, resulting in an increasing need for food aid to maintain or improve nutritional standards. If commercial imports are insufficient, supply and demand are equated by rationing, or by rising food prices, which reduce the food consumption of the poor sufficiently for supply and demand to balance. Furthermore, the more efficiently food aid and monetized food aid are used to support consumption of the poor, thereby raising food demand, the more likely that the short-term need for food aid will grow. A variety of institutions have produced estimates of need, which range from a low of 19 mmt to a high of 74 mmt annually (Table 3.3).

These estimates are highly sensitive to the assumptions inherent in each of the models. Most of these models project total import needs of the developing countries, and utilize current

Table 3.3 Projected Global Annual Food Aid Needs for 1990-2000.

Institutional Source	Projected Annual Food Aid Needs (millions of metric tons of cereal equivalents)		
	Low	Average	High
International Food Policy Research Institute (IFPRI) ^a	39	56	74
International Institute for Applied Systems Analysis (IIASA)/Basic Linked System ^b		30	50
U.S. Department of Agriculture	21 ^c	29 ^d	56 ^e
Cornell University ^f	30	42	55
Food and Agricultural Policy Research Institute (FAPRI), Iowa State University ^g		34	
U.N. Food and Agriculture Organization (FAO) ^h	19	30	38
World Bank ⁱ	19	23	32

Source: BOSTID (1989:7, 41-43).

- ^a Based on 85 low-income countries, excluding China, India, Nigeria, and Brazil. The "low" estimate represents needs in the year 2000 of countries with less than \$800 in Gross National Product, the "average" estimate those of countries with less than \$1,500 in GNP, and the "high" estimate those of all countries (Ezekiel, 1989:72).
- ^b Model projection of food aid or other subsidized imports to the year 2000. The high estimate represents the nutritional deficit based on an assumption of 400 million hungry people.
- ^c 1976-85 trend extrapolated to 2000.
- ^d Status quo current annual amount projected to grow at 3.8% per year to 2000.
- ^e Annual nutritional needs of 69 countries projected to grow at 3.8% per year to 2000.
- ^f Estimate of nutritional needs by P. Pinstrup-Andersen based on IFPRI figures, using alternative assumptions about numbers of food-deficient people and substitution of food aid for current consumption. Note discrepancy between figures reported in Tables 1 and 7 of BOSTID (1989).
- ^g Estimate for 1995 based on difference between net exports from industrial countries and net average imports by less developed countries.
- ^h Based on percentage of food aid imports in 1984-86 for low-income, food-deficit countries. "Low" estimate represents an optimistic scenario for cereal production in developing countries.
- ⁱ 10% of projected net exports of wheat, coarse grains, and rice by industrial countries for low-demand, base, and high-demand cases (Mitchell, 1989:135). Not included in the BOSTID (1989) summary table.

ratios of food aid to total imports to project total food aid needs. The IFPRI model attempts to assess more directly the food aid needed to directly address hunger. The domestic allocation of food aid, as well as domestic policy reform, can dramatically affect the estimates of food aid required to alleviate hunger. Food aid can never be perfectly targeted towards hungry people, and the proportion of food aid "leakage" directly affects total requirements. However, much of this "leakage" may in fact stabilize domestic prices and therefore be directly useful in maintaining or improving nutritional standards.

In order to halve hunger during the 1990s, food aid flows will need to increase by more than 10% annually. More than two-fifths of current global food aid supplies goes to countries without aggregate nutritional needs. Hunger would be more efficiently targeted if much of this was reallocated towards countries with unmet needs. Finally, many lessons have been learned in the 1980s about the domestic allocation of food aid. The full implementation of these strategies could considerably increase the effectiveness of food aid in reducing hunger. This combination of increased food aid, improved international allocation, and improved domestic allocation could help significantly reduce hunger before the year 2000.

Notes

1. Low-income, food-deficit countries include food deficit countries with per capita income below the level used by the World Bank to determine eligibility for International Development Association assistance (U.S. \$1070 in 1988). These countries are given priority in the guidelines adopted by the Committee on Food Aid Policies and Programmes, the governing body of the World Food Programme. Food aid as a percentage of total imports are provisional data for the 1988/89 marketing year. Least developed countries are as designated by the U.N.
2. Monetization is the sale of food aid at market prices in local markets. Generally, the subsequent local currency proceeds are earmarked for particular development needs.
3. An increase from 11 mmt annually in 1990 to 30 mmt in the year 2000 implies a 10.6% annual growth rate.
4. The number of countries included in these estimates decreased from 69 to 55 between 1987/88 and 1988/89. The 14 countries dropped from the analysis accounted for less than 5% of status quo needs and 2.9% of nutrition-based needs estimates for 1987/88 (USDA/ERS, 1988:iii).
5. Nutrition-based needs are the additional food required to raise a country's per capita caloric intake to FAO's minimum requirements. However, the provision of this quantity of food is certainly not sufficient to eliminate hunger. Some countries cannot absorb this quantity of food logistically or administratively. In those countries that can, the food aid or monetization proceeds would need to be perfectly targeted to eliminate hunger. Not only is this impossible, but it could have serious disincentive effects which would increase short-term food security at the expense of long-term food security.
6. The Food Needs Assessment Project of the Food for Peace Office of the U.S. Agency for International Development has also developed a balance sheet methodology and corresponding software for food needs assessment. However, to date they have not regularly calculated and presented food needs estimates for a variety of countries.
7. A correlation coefficient is on a scale from -1 to 1. A value of 1 indicates that the two sets of data are perfectly linearly correlated, a value of 0 indicates no correlation, whereas a value of -1 indicates a perfect negative correlation.
8. Of 26 countries with positive USDA status quo needs, 9 varied by more than a factor of two from GIEWS estimates. USDA estimates of status quo needs which include stock changes are not as closely correlated to GIEWS estimates; the correlation coefficient is 0.76, and the variation in total estimated needs is nearly 11%. Data are from USDA/ERS (1989a, 1989b) and FAO (1990a:12).
9. For 44 Sub-Saharan African countries, total 1987/88 food aid flows were 80.3% of food aid needs as estimated by FAO at the beginning of the year. For 40 countries, total 1987/88 food aid flows were 93% of status quo needs (including stock changes) estimated by the USDA at the beginning of the year. The regression coefficients for a simple linear regression between actual shipments and estimated needs are 0.66 for FAO estimates and 0.88 for USDA estimates. The correlation between successive annual needs estimates between 1986/87 and 1987/88 is 0.88. Source of data: FAO (1987, 1989), USDA/ERS (1986, 1987).
10. What is lacking in this case is effective market demand in the rural areas. If income is transferred to those without enough money to buy food in the market, the food would stay in the rural region. This can be done by selling food aid in urban areas, and using the proceeds to effectively transfer income to those in need in the rural areas. However, the provision of food and income may have different effects. See Pinstrip-Andersen (1988:9-10) and references therein for more discussion of the income/food trade-offs.

Notes (continued)

11. A policy disincentive arises if the availability of food aid allows a government to neglect its own agricultural sector. A price disincentive arises if food aid increases the domestic food supply sufficiently to depress prices available to farmers, thereby discouraging production. A labour disincentive results if free or low-cost food is a sufficiently large income transfer to individuals or households that they reduce their labour time or effort.
12. See Borton (1989) for a discussion of response times.

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4 REFUGEES AND HUNGER

Robert S. Chen

Refugees constitute a large and rapidly growing population group likely to be extremely vulnerable to hunger. Whether fleeing from violent conflict, political turmoil, or economic disruption, millions of refugees must rely at least in part on their host populations, their host governments, or international agencies for food and other basic necessities after leaving their homes.

More than 19 million people have been identified as refugees in 1989 by the U.N. High Commissioner for Refugees (UNHCR), the U.S. Committee for Refugees (USCR), or the U.S. State Department's Bureau for Refugee Programs (Table 4.1 and Appendix 4.1, Table 4.5).¹ This total includes about 2.2 million refugees now located in developed countries. However, it does not include 750,000 people who left East Germany in 1989, 250,000 ethnic Turks who have left Bulgaria for Turkey, 2-4 million migrants from Central America and Haiti, and 1 million or more additional Palestinians scattered through the Middle East and other regions (USCR, 1990a).

Moreover, this total reflects only those who have crossed international borders and does not include the millions of people who have been displaced by war or famine within their own countries. For example, the USCR reports that there may be 2-3 million internally displaced people in the Sudan, 2 million in Afghanistan, and up to about 1 million each in Angola and Lebanon (USCR, 1990a).² If those forced to relocate within their own countries by their own governments are counted, such as an estimated 3.5 million South Africans, the total number of internally displaced people could well approach the number of international refugees (e.g., Zolberg *et al.*, 1989).

Between 1988 and 1989, the total number of international refugees grew by at least 1.7 million, or more than 13% in a single year, according to UNHCR estimates (UNHCR, 1988, 1989).³ This included a net increase of about 500,000 refugees in Africa, 200,000 in Asia, and 860,000 in Latin America. The USCR reports an increase of 50% in the total number of refugees over the past five years (USCR, 1990a). The actual number of *new* refugees is somewhat larger, since these figures include several hundred thousand refugees who are repatriated each year. For example, in Africa alone, some 2.5 million refugees have returned to their home countries with UNHCR assistance or knowledge during a 17-year period (Figure 4.1).

In 1989, there were at least 100,000 voluntary repatriations and perhaps another 100,000 involuntary returns, according to the USCR (1990a). The voluntary returnees included 41,657 people from 40 different countries who returned to Namibia from June to September 1989 under UNHCR auspices as called for in the plan for Namibian independence established by U.N. Security Council Resolution 435 (UNHCR, 1989). Many of these returnees had been exiled for as long as 15 years and brought children with them who had never been to Namibia. Involuntary repatriation, though prohibited by international convention, nevertheless does occur, in many instances before those seeking asylum can apply or register for refugee status (USCR, 1990a; Walton, 1990).

More than 8 million refugees currently receive food and other support from the U.N. World Food Programme (WFP), the UNHCR, the U.N. Relief and Works Agency for Palestine

Table 4.1 Refugee Populations by Region, 1989.

Region ^a	Reported Refugee Populations 1989		
	U.S. Committee for Refugees	U.N. High Commissioner for Refugees	U.S. State Department ^b
World	15,093,900	14,772,050	13,988,707
More Developed Countries	468,600	2,222,250	358,857
Less Developed Countries	14,625,300	12,549,800	13,629,850
<i>Africa</i>	4,524,800	4,585,800	4,067,350
North Africa	872,800	916,600	789,400
West Africa	146,000	15,700	13,650
East Africa	2,829,000	3,130,400	2,508,400
Middle Africa	374,500	488,250	441,150
Southern Africa	302,500	34,850	314,750
<i>Asia</i>	9,941,600	6,768,300	9,398,400
Western Asia	2,689,800	87,100	2,634,300
Southern Asia	6,685,800	6,114,200	6,149,700
Southeast Asia	507,800	260,700	587,400
East Asia	58,200	306,300	27,000
<i>North America</i>	123,400	1,380,200	95,286
<i>Latin America</i>	152,800	1,193,100	156,300
Middle America	133,200	1,163,400	131,900
Caribbean	4,600	6,700	100
Tropical South America	12,700	9,400	10,100
Temperate South America	2,300	13,600	14,200
<i>Europe</i>	343,200	740,350	262,371
Northern Europe	51,000	280,500	35,481
Western Europe	250,200	430,500	181,475
Eastern Europe	27,000	0	13,000
Southern Europe	15,000	29,350	32,415
<i>Oceania</i>	8,100	104,300	9,000

Sources: UNHCR (1989); USCR (1990a); Bureau for Refugee Programs (1989). See Appendix 4.1 for country estimates and other details.

^a For countries in each region, see PRB (1989).

^b Reported as of 31 December 1988 except for Palestinian refugees registered with the UNRWA as of 1 July 1988.

Refugees in the Near East (UNRWA), and the U.N. Border Relief Operation (UNBRO). In conjunction with the WFP, the UNHCR provides food and other necessities to about 6.5 million refugees, primarily in Africa and Asia (Table 4.2). The UNRWA assists 764,000 Palestinians in refugee camps in the West Bank and the Gaza Strip, runs schools for 351,000 refugee children, and provides additional assistance to nonrefugees in these territories (Schiff, 1990). UNBRO provides assistance to more than 300,000 Kampuchean along the border between Thailand and Kampuchea (UNHCR, 1989). In most cases, refugees are not permitted to seek outside employment or to establish permanent settlements.

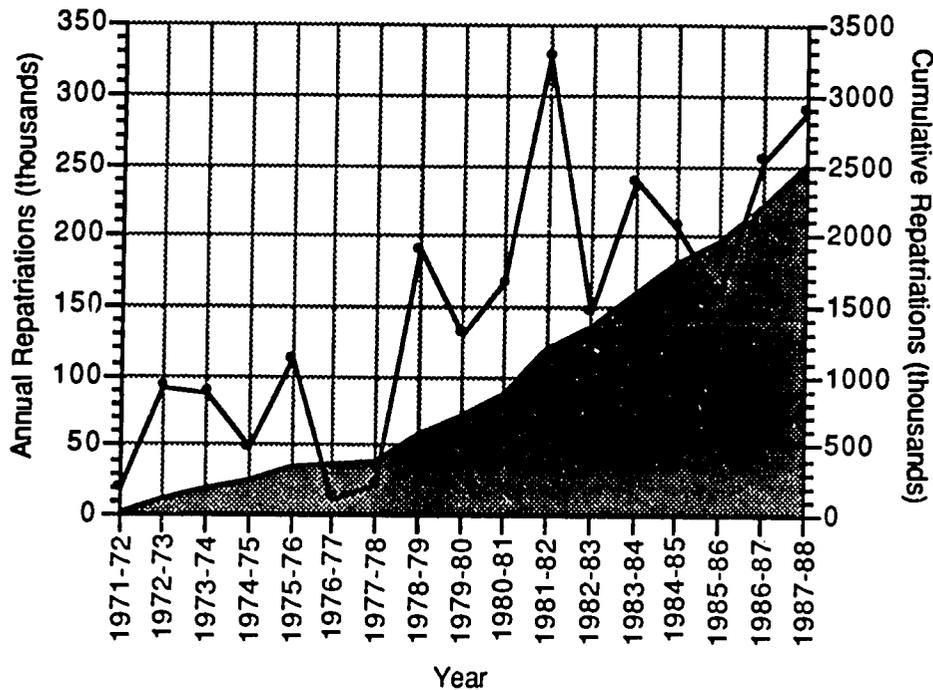


Figure 4.1 African repatriations reported by the UNHCR, 1971-88. Source: Rogge and Akol (1989).

Other refugees generally receive help to varying degrees from their host governments or from nongovernmental organizations, local populations, and relatives. In the Sudan, for example, it is estimated that only about 20-25% of Ethiopian refugees are located in the 26 organized settlements that receive direct international support, whereas 70% have spontaneously settled in border areas and 5% are in urban areas (Wendie, 1989). The latter two groups undoubtedly compete with local populations in the local economy, leading to higher food prices and lower wage rates.

Vulnerability to Hunger

Not all refugees are vulnerable to hunger. Indeed, in some instances refugees fleeing violence or persecution may be quite well off, at least relative to their host populations. Those most vulnerable to hunger are probably the millions of refugees and displaced people who receive little or no help from international agencies or their host countries. Unfortunately, information about these groups is extremely limited.

Somewhat more is known about the refugees who depend almost entirely on food rations provided by international aid agencies such as the WFP and the UNHCR. These refugees remain highly vulnerable to hunger for a variety of reasons, including the inadequate and unreliable rations they receive and their own special needs and characteristics.

Minimal Rations

Due to severe logistic and budgetary constraints on the part of the agencies charged with their care, refugees often receive only minimal diets for extended periods of time. A standard ration for one person for one day typically consists of only 400-500 grams of cereals (roughly 1 pound), 20-30 grams of oil (about 1 ounce), 40-60 grams of pulses (1-2 ounces),

Table 4.2 Beneficiaries Receiving Aid from the U.N. High Commissioner for Refugees, 1990.

Region/Country	UNHCR Beneficiaries 1990	Percent of Total Beneficiaries	1989 Host Population ^a (thousands)	Percent of Host Population
World	6,487,976	100.0	5,233,824	0.1
Less Developed Countries	6,487,976	100.0	4,027,777	0.2
<i>Africa</i>	3,124,431	48.2	646,389	0.4
Northern Africa	271,611	4.2	141,996	0.2
Western Africa	212,380	3.3	200,107	0.1
Eastern Africa	2,522,540	38.9	194,439	1.3
Middle Africa	49,450	0.8	65,793	0.1
Southern Africa	68,450	1.1	44,054	0.2
<i>Asia</i>	3,288,000	50.7	3,060,517	0.1
East Asia	46,500	0.7	1,320,987	*
Southeast Asia	169,500	2.6	444,508	*
Southern Asia	3,072,000	47.4	1,166,178	0.3
<i>Latin America</i>	71,645	1.1	437,805	*
<i>Oceania</i>	3,900	0.1	26,458	*
Countries				
Algeria	80,000	1.2	24,946	0.3
Angola	6,500	0.1	8,534	0.1
Benin	380	*	4,664	*
Botswana	450	*	1,241	*
Burundi	2,000	*	5,456	*
Cameroon	2,500	*	10,817	*
Costa Rica	7,500	0.1	2,954	0.3
Cote d'Ivoire	60,000	0.9	12,097	0.5
Djibouti	1,000	*	394	0.3
Ethiopia	770,000	11.9	49,763	1.6
Guatemala	5,000	0.1	8,935	0.1
Guinea	80,000	1.2	7,086	1.1
Honduras	36,145	0.6	4,982	0.7
Hong Kong	46,500	0.7	5,709	0.8
Indonesia	7,500	0.1	184,583	*
Iran	372,000	5.7	53,867	0.7
Malawi	815,000	12.6	8,737	9.3
Malaysia	20,000	0.3	17,407	0.1
Mauritania	22,000	0.3	1,969	1.1
Mexico	23,000	0.4	86,740	*
Mozambique	146,500	2.3	15,248	1.0
Namibia	45,000	0.7	1,817	2.5

* Less than 0.05%

^a For countries in each region, see PRB (1989).

Table 4.2 (continued)

Country	UNHCR Beneficiaries 1990	Percent of Total Beneficiaries	1989 Host Population (thousands)	Percent of Host Population
Pakistan	2,700,000	41.6	110,407	2.5
Papua New Guinea	3,900	0.1	3,905	0.1
Philippines	28,000	0.4	64,907	*
Rwanda	1,100	*	6,989	*
Senegal	50,000	0.8	7,171	0.7
Somalia	600,000	9.3	8,248	7.3
Sudan	191,611	3.0	24,484	0.8
Swaziland	23,000	0.4	763	3.0
Tanzania	18,150	0.3	26,343	0.1
Thailand	99,000	1.5	55,552	0.2
Uganda	46,800	0.7	17,008	0.3
Vietnam	15,000	0.2	66,821	*
Zaire	40,450	0.6	34,853	0.1
Zambia	37,990	0.6	8,148	0.5
Zimbabwe	84,000	1.3	10,119	0.8

Source: UNHCR Supplies and Food Aid Service (1990); PRB (1989).

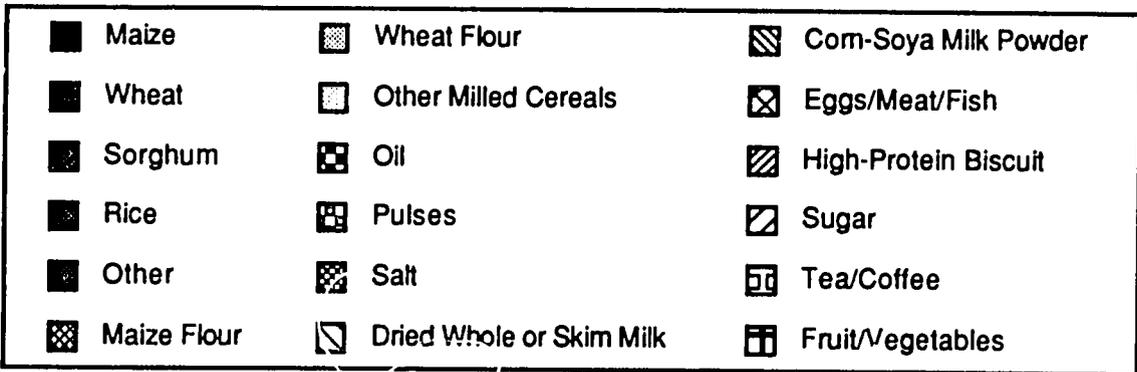
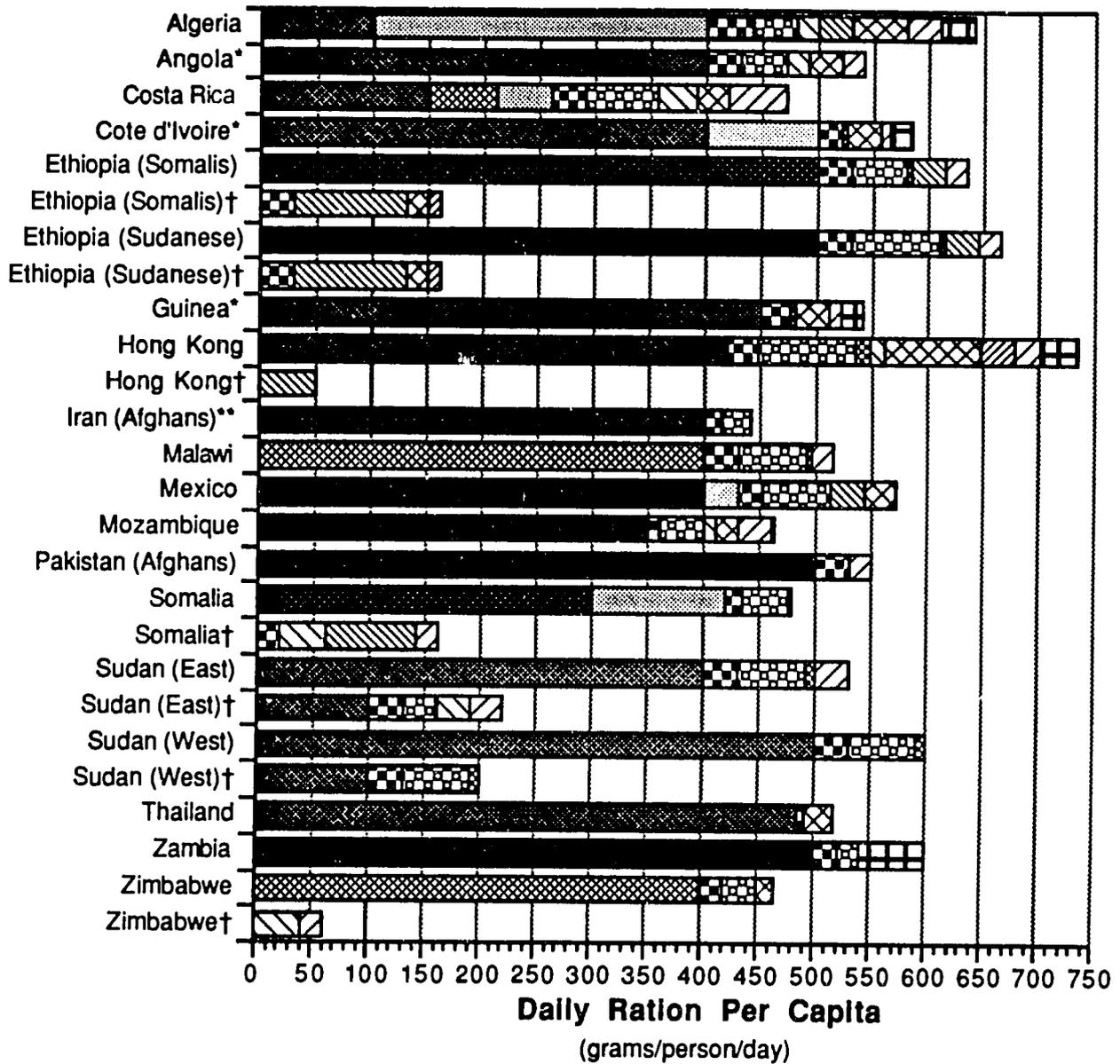
* Less than 0.05%.

and perhaps a few grams of salt and 10-30 grams of milk powder, meat or fish, and sugar. The precise mix of foods varies greatly among countries (Figure 4.2), and for practical reasons the food is generally distributed to households rather than to individuals.

The standard food basket generally provides between 1,800 and 2,700 calories per person per day. However, during acute emergencies, the total calorie content of distributed rations may drop as low as 1500 calories/person/day, only enough for adult survival according to international standards (Brown and Berry, 1987). Recent discussions suggest that a minimum of 1,900 calories/person/day is needed for long-term maintenance of sedentary populations, with additional allowances advisable for more active populations, for groups exposed to cold and wind, and for groups at risk of malnutrition (WHO/UNHCR, 1988; ACC/SCN, 1989).

The standard ration of cereals, oil, and pulses provides little or no vitamin A or C, minimal amounts of usable iron, one-fourth of the recommended daily allowances for calcium, and inadequate amounts of other vitamins such as niacin and thiamin (Brown and Berry, 1987). Fortified foods are occasionally provided for supplementary feeding programs, but fortification adds expense, may reduce the shelf life of the commodities, and necessitates additional tracking and separate handling of fortified food products (UNHCR Technical Support Service, 1989; Ingram, 1989a).

It is worth noting that the use of dried skim milk powder (DSM) continues to be controversial, due to the potential dangers of its use with contaminated water or as a substitute for breastfeeding. A recent meeting has recommended that other sources of protein be used whenever possible; but if DSM is to be provided as part of general rations, it should be pre-mixed with cereal or other commodities at a central location away from the distribution point. DSM is necessary only when used as part of a high-energy milk diet for treatment of severe protein-energy malnutrition (Gillespie, 1989).



* Partial year only
 † Supplementary feeding
 ** Rice for transit camps only

Figure 4.2 Rations for UNHCR refugees in selected countries, 1990. Source: UNHCR Supplies and Food Aid Service (1990).

Supply Problems

Unfortunately, even the basic rations are difficult to provide on a consistent basis. Problems range from inadequate supplies provided by donor countries to the rapidly changing and hard-to-estimate numbers of refugees needing assistance (see Appendix 4.1) to the many logistical difficulties of delivering supplies on a timely basis to remote populations. In mid-1988, for example, the WFP was forced to draw heavily on 1989 pledges in order to ensure supplies to long-term refugees in late 1988 and early 1989 (Ingram, 1990). Certain commodities such as beans and oil, which are particularly important for preventing crippling nutritional deficiencies, tend to be in especially short supply and are sometimes of poor quality. In Malawi, the UNHCR reports that some beans delivered in early 1989 required 6-10 hours to cook, making them impractical for the recipients to use, and that later in the year no funds were available to pay for grinding of maize. Throughout 1989, actual rations distributed to refugees in Somalia were reportedly as much as one-third less than the targeted ration quantities. Similar shortages have been experienced in the Sudan, Zambia, Ethiopia, Mexico, and Pakistan (Bakhet, 1989; Berry-Koch, 1990).

A key constraint is that in many countries there are no continuing buffer stocks designed to tide refugee populations over when deliveries are delayed, canceled, of poor quality, or insufficient quantity, or when the number of hungry refugees suddenly swells. When emergencies arise, the WFP will often draw on in-country stocks intended for development projects to ensure that initial needs are met in a timely fashion (Ingram, 1990). However, this option is not practical on a regular basis for protracted feeding operations. Local food purchases are also impractical in most cases because of the limited cash reserves of the WFP and UNHCR, because appropriate foods may not be readily available near refugee populations, or because such purchases can have adverse impacts on food prices in local markets (Ingram, 1990; Berry-Koch, 1990; Harrell-Bond, 1986). Thus, without on-site buffer stocks, food supplies become quite sensitive to the vagaries of both nature and humans, including the interdiction or destruction of food shipments in zones of conflict.

Special Needs

Another major problem is that refugee populations typically include many individuals with special nutritional needs. Assuming that refugee populations have a "normal" demographic distribution for a developing country, it has been estimated that refugee camps and settlements include some 1.5 million children under five years of age, 3-4 million children under 15 years of age, and 700,000-800,000 pregnant and lactating women. At observed rates of malnutrition, it is likely that several hundred thousand of these children are malnourished and therefore need supplemental feeding with special foods (Bakhet, 1989). Recommended calorie allowances for catch-up growth are as much as double the normal allowance for a severely malnourished 5-year old child—1200-1600 calories/day versus 800 (Nieburg *et al.*, 1988). These foods must also be high in protein and easily digestible, characteristics that are not typical of the standard ration (e.g., Sandler and MacLean, 1987).

Of course, the demographic distribution and health status of people in refugee camps are likely to be anything but "normal," with disproportionately high numbers of children, the sick and handicapped, widows, and the malnourished. Supplemental feeding is frequently needed for new refugees whose condition may be especially poor after traveling for long distances under adverse conditions. The ability to absorb and digest food may be impaired by parasites, diarrhea, and inadequate grinding and cooking of foods (e.g., Harrell-Bond, 1986). Access to food may vary greatly depending on the social and political structure of refugee settlements, with the most vulnerable having the least access (Stein, 1987; Camus-Jacques, 1989). Many refugees are likely to have originated from countries or regions with especially poor nutritional levels (e.g., Edmonston, 1990).

Hunger among Refugees

Not surprisingly, the minimal—and too often erratic and poor quality—rations supplied to refugee populations for extended periods of time appear to have led to increased levels of malnutrition among refugee populations, as well as to outbreaks of pellagra, scurvy, anemia and other deficiency diseases. In turn, high levels of malnutrition may lead to increased morbidity and mortality due to measles, malaria, diarrhea, and other diseases.

Unfortunately, data on the nutritional and health status of refugees are poor, especially for those who receive little or no international assistance. Nevertheless, reports from field personnel and scattered epidemiological surveys do provide some indication of recent trends in malnutrition and nutrient-deficiency diseases, at least for large refugee settlements aided by the UNHCR or other outside groups.

Malnutrition

Levels of child malnutrition, defined as less than 80% of the median weight-for-height in a "standard" population, are reported to exceed 10% in refugee groups in Ethiopia, Malawi, Pakistan, Somalia, the Sudan, and Zambia, with some groups approaching 30%—levels typically observed during famines (Bakhet, 1989). In Somalia, for example, reports indicate an increase in malnutrition rates from under 12% in 1988 to as high as 27-30% in southern and northwestern camps. In two camps of Somali refugees in eastern Ethiopia, Save the Children Fund (UK) found malnutrition levels among children under 5 as high as 26-30% in March 1989, with 4-5% of the surveyed children showing signs of severe malnutrition, defined as less than 70% of the median weight-for-height (WHO, 1990). Subsequent efforts to improve regular distribution of rations have reportedly decreased malnutrition rates to less than 7% in at least one of these camps later in the year (Amar, 1989).

In Malawi, malnutrition rates of 10-15% are reported to exist in many areas in February 1989 (Bakhet, 1989). This contrasts with relatively low levels of malnutrition (2-6%) observed among Mozambican refugee children in two districts of Malawi in June-July 1988 (WHO, 1989b).⁴

In refugee camps in the southern Darfur region of the Sudan, malnutrition among children under 5 appears to have declined from 25-43% to 5-10% between May 1988 and February-March 1989. However, it is possible that this apparent decline was an artifact of the high mortality rates among the most severely malnourished children—the observed monthly mean death rate for children under 5 was as high as 19 per 1000 children in April 1988 and was still 6 per 1000 in January 1989 (El Amin *et al.*, 1989; Nieburg *et al.*, 1988).

Pellagra

Some 1400 cases of pellagra—a debilitating and eventually fatal disease resulting from the lack of niacin (vitamin B3) in the diet—were reported in Zimbabwe in early 1989, and more may have occurred later in the year. These resulted directly from shortages of both beans and oil, which forced the refugee populations to subsist almost entirely on maize for months at a time. About 600 cases reportedly occurred in just one refugee camp in Malawi in mid-1989. Other cases have been noted in Angola and Swaziland (Bakhet, 1989; Berry-Koch, 1990).

Symptoms of pellagra include skin rashes, diarrhea, and mental deterioration. Pellagra has not previously been observed in refugee populations. It can be prevented with 15-20 mg of niacin daily (Crisp, 1990; Sandler and MacLean, 1987).

Scurvy

Scurvy resulting from vitamin C deficiency has been reported in Ethiopia, Somalia, and the Sudan. In Somalia, outbreaks have occurred regularly in about 15-25% of refugees over the past 5 years, usually mid-year when fresh foods are scarce (Seaman and Rivers, 1989; UNHCR Technical Support Service, 1989; WHO, 1989a). In one camp in eastern Ethiopia, the prevalence of clinically diagnosed scurvy among Somali refugees was found to be 1-2% in January-February 1989 (WHO, 1990). The prevalence of scurvy tends to increase with length of residence in camp—in a Sudanese camp in 1985, for example, the prevalence of scurvy increased from about 4% of new arrivals to 30% of residents who had been in the camp for 4 months or longer. Scurvy was significantly more prevalent among pregnant or lactating women compared with other women in two of three Somali refugee camps in July 1987 (Desenclos *et al.*, 1989).

Symptoms of scurvy include swollen joints leading to reduced mobility, bleeding gums resulting in loss of teeth, and internal bleeding leading to death. In combination with anemia, scurvy may exacerbate the likelihood of maternal mortality during childbirth. Scurvy can be prevented by as little as 6-10 mg per day of vitamin C in the diet, although 30-60 mg per day is generally recommended by nutritionists (WHO, 1989a; Sandler and MacLean, 1987; NRC, 1980).

Anemia

Anemia and other nutritional deficiencies are endemic problems among developing country populations, and refugees are of course no exception. Iron-deficiency anemia is common among refugees due to low consumption of vitamin C and high consumption of plant fibres, which lead to reduced absorption of iron, and due to minimal meat and fish consumption. Anemia is associated with poor work performance and may lead to irreversible retardation in children. Individuals are considered anemic if the hemoglobin levels in their blood fall below 110 grams per liter (g/l) for small children and pregnant females, 120 g/l for older children and non-pregnant adult females, and 130 g/l for adult males. Anemia is considered severe at levels below about 80 g/l (DeMaeyer and Adiels-Tegman, 1985).

An unpublished UNHCR survey of camps in northwest Somalia (dated 1987) found that between one-fifth and one-sixth of children aged 9-36 months had hemoglobin levels below 70 g/l. Hemoglobin levels among pregnant women were in the range 83-98 g/l (Seaman and Rivers, 1989; UNHCR Technical Support Service, 1989). A level of 30 g/l can result in congestive heart failure and necessitates blood transfusion. Both during and after labor and delivery, anemic women are especially vulnerable to hemorrhage or even congestive heart failure. For example, in late 1987, 95% of maternal deaths in two camps in northwestern Somalia were associated with severe anemia. For pregnant women, a supplemental dose of 400 mg per day of ferrous sulfate or an equivalent is required to replenish iron stores in the body (Gloyd and Gove, 1987; Sandler and MacLean, 1987; Seaman and Rivers, 1989).

Other

The UNHCR reports that vitamin A deficiency leading to xerophthalmia also appears to be increasing in prevalence, although data are very limited. If not treated with a high dose of vitamin A, xerophthalmia can lead to permanent blindness and death. It may also be associated with elevated morbidity and mortality due to respiratory and diarrheal infections and measles complications (Forman, 1990). One survey of Ethiopian refugees in the Sudan in January 1985 reported that xerophthalmia existed among 6.7% of children (UNHCR Technical Support Service, 1989).

Beriberi, which results from inadequate thiamin intake, has been reported in camps in south-east Asia, according to UNHCR staff, but no systematic data are available (UNHCR Technical Support Service, 1989). It occurs most often when diets consist primarily of polished rice or starchy staple foods such as cassava. "Dry" beriberi is associated with limb paralysis, whereas "wet" beriberi can lead to congestive heart failure. Infants are susceptible to a severe and rapidly developing form of beriberi that can result in congestive heart failure. An intake of 1 mg per day of thiamin is required to prevent beriberi (Sandler and MacLean, 1987).

Current Food Aid Flows to Refugees

The era of plentiful food aid ended in 1988 with the North American drought and the general tightening of world food supplies. As reported in Chapter 3, the total quantity of food aid provided to the developing world appears to be decreasing, primarily due to rising cereal prices but also because of competing commitments to Eastern Europe and increased shipping and transportation costs.

Despite these overall declines, food aid for refugees appears to have increased modestly during the past two years. The WFP reports shipments of 1,465,000 tons of food aid to refugees in the 1988/89 marketing year, 12% of all food aid. In the 1989/90 marketing year, this has increased by about 5% to 1,537,000 tons, or nearly 13% of all food aid and 14% of aid designated for the developing world (WFP, 1990c).⁵ These totals include both cereal food aid (in grain equivalent tonnage) and non-cereal food commodities and both food imports and local purchases.

Slightly less than half of all food aid for refugees was provided by the WFP in calendar year 1989 (Table 4.3). The next largest donor was Japan, followed by the European Economic Community (EEC) and the United States. Non-governmental organizations (NGOs) provided less than 1% of the total. More than 60% of Japanese food aid went to refugee populations in 1989, compared with only 13% of EEC food aid and 2% of U.S. food aid. Many donors channeled large amounts through multilateral agencies such as the WFP and the UNHCR.

World Food Programme Food Aid Flows

One-third of the WFP's total food aid shipments go to refugee populations. Prior to 1990, most of this aid was handled through the WFP's International Emergency Food Reserve (IEFR). Refugee operations have drawn an increasing share of the IEFR, averaging nearly two-thirds of the total usage by value during 1979-88 and reaching 78% in 1989. Many of these operations have continued for more than a decade, even though they were treated as "emergencies" requiring yearly approval. Provision of food aid from the IEFR on a year-to-year basis has inhibited long-term planning, limited the variety of foodstuffs that could be offered, and constrained aid to host populations. Indeed, these demands on the IEFR have detracted from the WFP's ability to respond as quickly as in the past to "traditional" natural disasters (WFP, 1990b; Ingram, 1990).

The unique aspects of feeding refugees have led the WFP to establish a separate mechanism for handling protracted refugee operations. Under this new program, 22 projects, providing protracted assistance to some six million international refugees and 830,000 internally displaced people, were approved in late 1989 for 1990 support. Together, these projects entail commitments of some 857,000 tons of food valued at U.S. \$266 million, including about 55,000 tons (\$30 million) of food from the WFP's regular resources (Ingram, 1990; FAO, 1990). As of early March 1990, pledges had been received for about 70% of these commitments (Szynalski, 1990). This new mechanism should in the long run provide more

Table 4.3 Refugee Food Aid by Donor, 1989.

Country or Organization	Refugee Food Aid, 1989		
	Amount Provided (tons, cereal equivalent)	Percent of Total Food Aid Provided by Donor Country	Percent of All Refugee Food Aid
WFP	657,716	33.17	44.29
Japan	272,570	62.16	18.35
EEC	177,291	12.76	11.94
USA	115,051	2.02	7.75
Canada	68,820	16.91	4.63
West Germany	43,084	23.06	2.90
United Kingdom	33,000	39.34	2.22
France	29,193	9.45	1.97
Netherlands	26,360	45.29	1.78
Saudi Arabia	14,541	70.05	0.98
All NGOs	11,426	18.10	0.77
Italy	10,342	15.28	0.70
Switzerland	9,538	39.54	0.64
Australia	6,982	4.06	0.47
Belgium	4,500	18.92	0.30
Austria	3,000	21.91	0.20
Sweden	1,355	3.28	0.09
Denmark	108	0.31	0.01
Norway	96	7.41	0.01
Luxembourg	47	100.00	0.00
Total	1,485,020	—	100.00

Source: WFP (1990b:67).

flexibility to adapt food aid to the special needs of refugees, displaced people, and their host populations and permit better coordination with other agencies such as the UNHCR (WFP, 1989; Ingram, 1990).

UNHCR Refugees and Food Aid

In 1990, the 6.5 million refugees directly supported by the UNHCR are estimated to require about 1,097,000 tons of cereals (Table 4.4). This includes provisions for buffer stocks in only 4 countries (Algeria, Malawi, Sudan, and Uganda) plus small amounts for supplementary feeding of some refugees in 6 countries (Botswana, Mauritania, Namibia, Rwanda, the Sudan, and Uganda). Opening stocks as of 1 January 1990 were estimated to be only 66,000 tons.

Table 4.4 Food Aid Needs of UNHCR Refugees, 1990, Estimated as of 9 March 1990.

Food Aid Commodity (metric tons)	Estimated Total Requirements ^a	Estimated Opening Stocks ^b	Pledges and Deliveries ^c	Net Need ^d	Adjusted Need ^e
Cereals	1,097,319	66,298	1,011,554	19,467	49,393
Pulses	69,902	11,504	45,827	12,571	14,323
Oils	66,322	7,664	59,055	-397	3,195

Source: UNHCR Supplies and Food Aid Service (1990).

^a Including basic rations, supplementary and therapeutic rations, and buffer stock needs.

^b As of 1 January 1990.

^c Recorded as of 9 March 1990. Includes unconfirmed EEC pledges.

^d Estimated total need less estimated opening stocks and pledges and deliveries.

^e Total national-level deficits (ignoring surpluses).

As of early 1990, pledges and deliveries, including some unconfirmed commitments, totaled 1,012,000 tons, slightly over 80% to be provided by the WFP. The projected net outstanding need for cereals was therefore only about 19,000 tons. If it is assumed that surpluses in one country cannot be used to make up for shortfalls in other countries, the deficit rises to nearly 50,000 tons, still less than 5% of total needs. Twelve countries were short by at least one-fourth of total needs, but only in half of these countries were the absolute deficits greater than 1,000 tons. The largest deficits exist in Africa and Asia; projected supplies in Latin America appear to be adequate. In many cases, funds will be needed for grinding of grains in order to supply flour at the targeted ration levels, and some substitutions among different cereal commodities may be necessary.

The 6.5 million refugees will also require 70,000 tons of pulses and 66,000 tons of oils in 1990 (Table 4.4), including amounts designated for buffer stocks and supplementary feeding. Stocks amounted to an estimated 11,500 tons of pulses and 7,700 tons of oils at the beginning of the year, and pledges and deliveries totaled 46,000 and 59,000 tons, respectively, as of early 1990 (including some unconfirmed commitments), of which 75-80% are to be provided by the WFP. The projected net outstanding need for pulses is therefore 12,500 tons, and a small surplus of about 400 tons is anticipated for oils. Assuming no balancing of supplies between countries, the deficit for pulses rises slightly to 14,000 tons, or about 20% of need, and the surplus of oils becomes a 3,000-ton deficit, about 5% of need. Ten countries were short by at least one-fourth of their total need for pulses, and 15 for oils; but in both cases, only 7 of these countries had absolute deficits of more than 100 tons.

Projected net deficits in other commodities include 2,500 tons of salt, 3,000 tons of corn-soya milk, 6,200 tons of meat or fish, 900 tons of high-protein biscuit, and 5,500 tons of sugar. A net surplus of more than 3,000 tons of DSM, due in part to a large surplus in Pakistan, conceals unmet needs of about 700 tons in 11 countries.

It is important to note that these estimates, based on a recently developed UNHCR data base, provide only a general indication of the degree to which food aid deliveries and pledges were expected—as of 9 March 1990—to meet aggregate needs during the course of the year. Updates to the data base, including revised numbers of beneficiaries, additional pledges, and corrected stock estimates, could change the projected deficits significantly. Moreover, as mentioned earlier, in practice there are many uncertainties in delivery schedules, difficulties

in predicting the precise number and mix of people receiving food, and constraints on balancing surpluses and deficits between countries, commodities, and seasons. Diversions of supplies do occur on occasion, as in late 1989 when 20,000 tons of wheat already in transit were redirected to Afghanistan via Finland and the Soviet Union (Ingram, 1990). However, efforts to shift or trade off surplus stocks or pledges from one area or group to another can be hampered by donor requirements, transportation and storage problems, differing food needs, and other problems. These considerations greatly complicate the task of preventing hunger among refugees throughout the year.

Multilateral Food Aid Flows to Refugees

The WFP is the largest multilateral source of food aid for refugees—and also handles the logistics for a large proportion of food aid shipments. However, other multilateral agencies also act as intermediaries in arranging food aid transactions.

The UNHCR channeled some 472,000 tons of food aid commodities in 1989. More than half of this aid originated with the EEC and Japan (WFP, 1990b:80). Actual purchases by the UNHCR are a relatively small proportion of this total.⁶

Food aid quantities handled by other multilateral agencies are smaller. According to WFP data, for example, the UNRWA channeled 13,000 tons of food commodities to Palestinian refugees in 1989, down from 33,000 tons in 1987 (WFP, 1989, 1990a). Data reported by the U.N. Food and Agriculture Organization (FAO) indicate somewhat higher levels, with 46,000 tons of food commodities shipped annually in 1987-88, above the level of 23,000-26,000 tons in 1984-86, but less than half that shipped in the late 1970s (FAO, 1989:122).⁷ The International Committee for the Red Cross (ICRC) handled only about 20,000-60,000 tons of food aid per year during 1986-88, down from its 1985 peak of more than 200,000 tons. Shipments by the League of Red Cross Societies (LRCS) showed a similar pattern but at about half the level of the ICRC (FAO, 1989:126-28).

Surviving the 1990s

At the start of the 1990s, the international system responsible for the welfare of millions of refugees has reached a critical turning point. Indeed, some analysts suggest that the system is “on the verge of collapse” (Taft, 1990). Rapid growth in the numbers of refugees, continued dependency of large refugee populations on international aid for long periods of time, and the recent tightening supplies of food aid have set the stage for what is clearly a dangerous situation—one in which the lives of millions of people depend on the timely delivery of just enough food to provide each person with the barest minimum of diets. How close the system is to catastrophe is difficult to determine, in part because no effective means for continual monitoring of nutrition and health among refugee populations exists (c.g., Shears and Lusty, 1987)—but the scattered reports of increased malnutrition and new outbreaks of deficiency diseases in the past two years suggest that tens if not hundreds of thousands of people may be at high risk.

Inadequate International Support

A critical short-term concern is the worsening financial situation of the agencies charged with caring for refugees. The UNHCR, in particular, is in severe trouble. Over the past five years, the agency's budget has not kept pace with the rapid growth in the number of refugees, rising only 25% compared with a 50% increase in the number of refugees (Winter, 1990b). For fiscal year 1989, the UNHCR reports a deficit of U.S. \$38 million, up from \$7 million in 1988 and projected to increase to more than \$150 million in 1990. A reserve of about \$85 million has been exhausted. Total resources available in 1990 are expected to fall more than 20% short of projected needs (Lewis, 1990).

These large deficits are forcing the UNHCR to cut by 20-33% all "non-life-saving" expenses—including supplementary foods, education programs, and some supplies such as blankets, tents, and heating and cooking fuel. Efforts to improve infrastructure—e.g., in the area of water supply—and to encourage local settlement and income generation will also be reduced (Bakhet, 1990; USCR, 1990b). The agency will have to rely to a greater degree on donor contributions of supplementary and fortified foods and will have even less flexibility to deal with delays, shortfalls, and other logistical problems. Its technical and field staff, already thinly stretched in many areas such as food aid coordination and nutritional assessment, are threatened by layoffs and travel limitations (Taft, 1990).

Perhaps the most disturbing aspect of these resource constraints is that the UNHCR will most certainly be less able to act quickly to prevent or accommodate new flows of refugees, to improve significantly the nutritional levels of those already in its care, to expand its assistance to the millions of hungry refugees who do not yet receive international aid, and to work aggressively to repatriate or resettle current refugees. For example, the USCR reports that the UNHCR is not prepared to deal with any new influx of refugees from Ethiopia, and would have to depend on a less timely response from the international community (USCR, 1990b). Activities to discourage new flows of refugees have been stalled due to lack of funds (e.g., Taft, 1990:8). Pressure exists to *cut*—not raise—the already minimal rations even further in some countries (UNHCR Technical Support Service, 1989). Efforts to coordinate more effectively with other agencies such as the WFP in order to combat deficiency diseases, improve registration and enumeration procedures, obtain better nutrition and health information, and overcome logistical and other difficulties may be jeopardized.

A major factor in the growing deficits has been the relatively modest growth in U.S. contributions during recent years. Between 1985 and 1989, total U.S. contributions to the UNHCR, UNRWA, and the Intergovernmental Committee for Migration increased an average of 7.2% per year, or a total of 32%, compared with an average increase of 9.7% per year, or a total of 45%, on the part of the next 17 largest donors. Although the U.S. is still the largest contributor in absolute terms, it ranked only ninth in contributions per capita in 1989, down from fifth place in 1985 (USCR, 1986, 1990a). It provides only about one-sixth as much support per capita as Norway and Denmark.⁸ The U.S. share of the UNHCR's budget fell from more than 30% in 1982 to less than 20% in 1989 (Taft, 1990).

One reason for this drastic decline has been increased spending on refugee admissions into the United States, especially for emigrants from the Soviet Union and Southeast Asia. The U.S. government spends about \$4,700 per refugee admission compared with \$12 or less per international refugee (Taft, 1990:9). The U.S. House Select Committee on Hunger reports that overseas assistance funds from the U.S. Migration and Refugee Account—a major source of aid for refugees—dropped by 22% between 1984 and 1990 (USCR, 1990b). Even U.S. officials involved in refugee affairs admit that funding levels are inadequate (Moore, 1989; Lafontant, 1990; USCR, 1990b).

The UNHCR is not the only international agency to suffer from budgetary problems. U.S. contributions to the ICRC have decreased by half as a percentage of its budget in recent years (Moore, 1989). The UNRWA and the UNBRO have also been affected (Taft, 1990). At the end of 1989, pledges to the WFP's regular resources amounted to less than three-fourths of its target of \$1.4 billion for the 1989-90 biennium. Only one-fourth of the pledged amounts were in cash, below the required proportion of one-third (Ingram, 1990).

Emerging Challenges

Even if current funding problems can be overcome, many other challenges will remain. Recent turmoil in eastern Europe and the Soviet Union has the potential to generate new flows of refugees in the developed world that could severely drain resources needed for the

survival of refugees in the developing world. Efforts to resolve refugee problems in Southeast Asia have faltered (Winter, 1990a). The elimination of internal frontiers in the European Community in 1992 will necessitate development of more coordinated European policies towards refugees (Loescher, 1989; Rudge, 1990; Cels, 1989). Basic questions persist about the long-term effectiveness of the current international refugee system to protect the rights of refugees and find durable solutions to their plight (e.g., Coles, 1989; Gallagher, 1989; Goodwin-Gill, 1989; Hocké, 1989; Independent Commission on International Humanitarian Issues, 1988; Widgren, 1989). And new problems—such as the threat of “environmental” refugees due to land degradation, chemical or nuclear contamination, or large-scale environmental change (Jacobson, 1988)—loom on the horizon.

Nevertheless, there is some room for long-run optimism about the plight of refugees during the coming decade. Recent reductions in east-west tensions, significant progress in resolving many regional conflicts, projected cuts in military spending, the ongoing development of democratic institutions throughout the world, and increasing recognition of the “common future” of all humanity are some of the encouraging trends that could form the basis for more effective and long-lasting solutions to the problems of refugees.

In the short term, however, the international refugee system—and the millions who depend on it—will need significantly increased support simply for survival during the 1990s. With luck, the present system may be able to stave off any major famines—but it is not now able to prevent widespread hunger and suffering even among the millions under its direct care. It will take extraordinary commitment and vision to improve the system to ensure that all refugees and displaced people receive the basic assistance and protection that are their right.

Notes

1. This estimate reflects the sum of the *larger* numbers of refugees reported by the three organizations for each country (UNHCR, 1989:22-23; USCR, 1990a:30-31; Bureau for Refugee Programs, 1989:126-46).
2. Also see Perlez (1989:E3).
3. Note that the total refugee populations by continent given in the pie chart included with the 1988 UNHCR map yield a somewhat lower total than figures reported on the map itself.
4. Even with these low rates of malnutrition, however, some 16-18% of refugee children in these districts were reported to have had diarrhea (WHO, 1989b:199).
5. Beginning in 1989/90, Poland received 1.3 million tons of food aid.
6. e.g., see FAO (1989:123).
7. The FAO and WFP food aid data bases are not entirely consistent in how shipments are categorized and reported, making reliable comparisons difficult.
8. Indirect contributions, e.g., via the WFP, are not taken into account in these data.

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Appendix 4.1 Counting Refugees.

Keeping track of the number of refugees is an important but difficult task. It is important because those charged with assisting and protecting refugees—both in the field and in management and policy positions—need realistic numbers to provide appropriate levels of supplies and other services on a timely basis. It is difficult because, among other things, definitions of refugees differ, refugee flows are irregular and hard to predict, refugees often mix with local populations and are hard to distinguish from them, and refugees move, give birth, and die (e.g., Crisp, 1989; Ingram, 1989a; Rogge, 1987). Moreover, the process of counting refugees can be hampered by disagreements between host governments and international agencies, security problems, limited resources, and inadequate preparations (e.g., Bureau for Refugee Programs, 1989:12-14).

Major sources of refugee data are the UNHCR, the USCR, and the U.S. State Department (Table 4.5). The UNHCR, as a multilateral agency, generally uses refugee estimates provided by host-country governments. Although UNHCR staff work with governments to ensure that official numbers are as accurate as possible, there are often pressures either to overstate the numbers in order to increase the aid received or to understate the numbers if they might be politically embarrassing in some way. In addition, the UNHCR's working definition of who is a refugee may vary; in Africa, for example, it conforms to the broader definition of refugees established by the Organization of African Unity, rather than that of the U.N. Convention and Protocol on Refugees applicable in other regions (USCR, 1990a). It also does not track those who fall under the jurisdiction of other agencies such as the UNRWA and UNBRO. In practice, the UNHCR assists large populations, mostly in Africa, who are not necessarily recognized by their host governments (cf., Tables 4.1 and 4.2).

The USCR uses a more restrictive definition of who is a refugee, including only those who require "international protection and/or assistance" and who are "unable or unwilling to repatriate due to fear of persecution and violence in their homelands or to be permanently settled in other countries" (USCR, 1990a:30). On the other hand, it is not constrained by the need to use official government figures, and it includes estimates for Palestinian refugees and for some internally displaced groups. Beginning in 1989, the USCR counts those who have applied for asylum in the past year; however, these figures are much lower than the UNHCR's estimates, which include those who have been granted permanent asylum, e.g., in western Europe, Canada, the United States, and Australia (USCR, 1990a; Rogge, 1987).

The U.S. State Department's annual refugee report provides statistics on individuals needing protection and assistance as well as those seeking asylum. For the most part it includes those considered to be refugees by the host government and/or the UNHCR. In the case of Saudi Arabia, it lists more than 250,000 expatriates in refugee-like circumstances (Bureau for Refugee Programs, 1989:62; USCR, 1990a:86). The most recent report as of this writing, issued in September 1989, includes refugee estimates for 31 May and 31 December 1988 (or for 1 July 1987 and 1 July 1988 in the case of UNRWA-registered Palestinian refugees), along with figures on asylum seekers in calendar or fiscal year 1988.

Despite the major differences in definitions and sources, all three groups agree on an aggregate world estimate of 14-15 million refugees in 1989. However, as Table 4.1 illustrates, estimates by region and country vary greatly. Taking the *larger* values for each country listed in Table 4.5 yields a total of about 19.8 million people who have been identified as refugees by one or more group. This figure clearly incorporates some overestimates of refugees in some countries (e.g., Somalia), but it still excludes millions of people who are displaced within their own countries or whose status as refugees remains undetermined.

Clearly, not all of these refugees are hungry or even vulnerable to hunger. However, counting those who need material assistance is an even more difficult problem, since more detailed information about their nutritional and health status is required. Obtaining such information is usually only possible when refugee populations are concentrated in distinct settlements—and even then surveys and censuses can be difficult and expensive, in part because the UNHCR and other relief agencies have limited responsibilities and expertise in nutrition and health monitoring (e.g., Shears and Lusty, 1987; Ingram, 1989b). And given how quickly refugee situations can change, the resulting numbers may soon become outdated.

Table 4.5 Refugee Populations by Country, 1989.

Country	Host Country Population 1989 (thousands)	Reported Refugee Populations 1989		
		USCR	UNHCR	US ^a
World	5,233,824	15,093,900	14,772,050	13,988,707
Algeria	24,946	170,000 ^b	170,000	55,100
Angola	8,534	26,500	91,150	92,000
Argentina	31,930	2,100 ^b	13,600	13,600
Australia	16,820	0	90,900	0
Austria	7,617	22,800	17,400	15,233
Belgium	9,886	8,000	23,000	4,855
Belize	176	5,100 ^b	30,100	4,300
Benin	4,664	900	1,200	1,200
Bolivia	7,086	200	0	0
Botswana	1,241	800	2,100	2,000
Brazil	147,393	200	5,300	500
Burkina Faso	8,707	300	0	300
Burundi	5,456	90,200 ^b	267,500	100,400
Cameroon	10,817	4,200	51,200	6,800
Canada	26,311	21,700	380,200	34,550
Central African Rep.	2,806	2,800	3,100	3,050
Chile	12,960	100	0	0
China	1,103,923	0	284,300	0
Colombia	31,192	700	700	700
Congo	2,228	2,100	2,100	2,100
Costa Rica	2,954	33,400 ^b	278,600	37,500
Cote d'Ivoire	12,097	55,800	800	800
Cuba	10,450	3,000	2,000	0
Cyprus	695	1,000	0	400
Denmark	5,133	4,600	27,300	4,668
Djibouti	394	46,500	1,300	1,500
Dominican Republic	7,018	1,600 ^b	4,700	100
Ecuador	10,450	700	750	700
Egypt	54,778	7,500	1,600	1,100
El Salvador	5,125	500	20,300	400
Ethiopia	49,763	740,000	679,500	730,900
Finland	4,953	0	1,100	64
France	56,123	60,000	184,500	34,352
French Guyana	95	10,000	0	7,500
Gambia	1,132	100	0	600
Gaza	596	469,400	0	459,000 ^c

^a Reported as of 31 December 1988. Includes persons applying for asylum during calendar year 1988.

^b USCR reports that key sources differ significantly.

^c Includes UNRWA-registered refugees as of 1 July 1988.

Table 4.5 (continued)

Country	Host Country Population 1989 (thousands)	Reported Refugee Populations 1989		
		USCR	UNHCR	USA ^a
Ghana	14,566	100	0	150
Greece	10,031	0	8,000	8,424
Guatemala	8,935	4,400 ^b	223,100	3,100
Guinea	7,086	13,000	0	0
Honduras	4,982	34,900 ^b	237,100	37,000
Hong Kong	5,709	55,400	15,400	25,800
Hungary	10,569	27,000	0	13,000
India	835,035	260,800 ^b	6,600	121,300
Indonesia	184,583	8,000	2,400	2,300
Iran	53,867	2,825,000 ^b	2,850,000	2,420,000
Iraq	18,074	60,000 ^b	0	30,000
Ireland	3,547	0	0	49
Italy	57,558	7,000	11,000	7,550
Japan	123,200	2,000	6,600	500
Jordan	3,971	899,800	0	870,200 ^c
Kenya	24,097	15,500 ^b	12,500	12,000
Lebanon	3,301	298,700	4,400	290,500 ^c
Lesotho	1,724	4,000 ^b	3,950	250
Liberia	2,476	200	0	250
Luxembourg	376	0	0	44
Macao	436	400	0	400
Malawi	8,737	812,000	628,150	623,000
Malaysia	17,407	19,900	104,400	104,200
Mali	8,918	0	0	50
Malta	350	0	0	46
Mauritania	1,969	22,000	0	0
Mexico	86,740	46,300 ^b	356,400	46,200
Morocco	25,606	800	0	600
Mozambique	15,248	400	0	400
Namibia	1,817	25,000 ^b	0	30,000
Nepal	18,700	12,000	0	100
Netherlands	14,850	14,000	26,000	7,486
New Zealand	3,372	0	4,200	700
Nicaragua	3,503	7,400	16,000	900
Nigeria	115,316	5,100	5,200	5,100
North Yemen	6,942	56,700 ^b	78,200	32,100
Norway	4,225	4,400	11,000	6,600
Pakistan	110,407	3,588,000 ^b	3,257,600	3,608,300
Panama	2,370	1,200	1,800	2,500

^a Reported as of 31 December 1988. Includes persons applying for asylum during calendar year 1988.

^b USCR reports that key sources differ significantly.

^c Includes UNRWA-registered refugees as of 1 July 1988.

Table 4.5 (continued)

Country	Host Country Population 1989 (thousands)	Reported Refugee Populations 1989		
		USCR	UNHCR	US ^a
Papua-New Guinea	3,905	8,100	9,200	8,300
Peru	21,449	700	650	700
Philippines	64,907	26,300	21,100	20,700
Portugal	10,406	0	800	252
Rwanda	6,989	20,500 ^b	22,200	21,500
Saudi Arabia	14,733	0	0	261,100 ^d
Senegal	7,171	48,000	5,000	5,100
Sierra Leone	4,064	100	0	300
Singapore	2,681	300	0	200
Somalia	8,248	350,000 ^b	834,000	364,500
South Africa	38,509	201,000 ^b	0	250,000
South Korea	43,093	200	0	100
Spain	39,193	0	8,700	14,000
Sudan	24,484	694,300 ^b	745,000	732,500
Swaziland	763	71,700 ^b	28,800	32,500
Sweden	8,462	32,000	139,800	19,600
Switzerland	6,607	24,400	29,600	16,326
Syria	12,080	272,800	0	265,800 ^c
Taiwan	19,980	200	0	200
Tanzania	26,343	266,200	265,150	264,700
Thailand	55,552	436,600	107,800	435,000
Togo	3,449	500	3,500	400
Tunisia	7,916	200	0	100
Turkey	55,356	233,000 ^b	4,500	39,200
Uganda	17,008	170,500 ^b	102,000	87,300
United Kingdom	57,265	10,000	101,300	4,500 ^e
United States	248,806	101,700	1,000,000	60,736 ^f
Uruguay	2,989	100	0	600
Venezuela	19,149	200	2,000	0
Vietnam	66,821	16,700	25,000	25,000
West Bank	na	398,400	0	386,000
West Germany	61,462	121,000	150,000	103,179
Yugoslavia	23,701	8,000	850	2,143
Zaire	34,853	338,800	340,700	336,600
Zambia	8,148	131,700	143,600	141,900
Zimbabwe	10,119	185,500 ^b	174,500	160,300

Source: UNHCR (1989); USCR (1990a); Bureau for Refugee Programs (1989); PRB (1989).

^a Reported as of 31 December 1988. Includes persons applying for asylum during calendar year 1988.

^b USCR reports that key sources differ significantly.

^c Includes UNRWA-registered refugees as of 1 July 1988.

^d Includes persons legally resident but not granted refugee status.

^e Estimate based on 1987 data.

^f Applications for asylum during fiscal year 1988 (October 1987-September 1988).

5 UPDATE ON BREASTFEEDING TRENDS

Sara R. Millman

Concerns over possible widespread abandonment of breastfeeding in Third World countries are pervasive and persistent, reflected most recently in the 1990 report of the United Nations Children's Fund on the state of the world's children (Grant, 1990). The concern is rooted in the acknowledged contributions of the practice to birth spacing and to children's growth and survival, in the greater importance of these benefits in circumstances (e.g., poverty, illiteracy, and contaminated water supplies) that make the proper use of substitutes especially difficult, and in the vast body of literature purporting to demonstrate the decline of breastfeeding in one or another Third World setting. Although much of the evidence presented as demonstrating declines in breastfeeding has been less than convincing, the conclusion may well have been correct as recently as the 1970s. Recent evidence, however, shows that breastfeeding decline in developing countries is now the exception rather than the rule (Millman, 1986, 1987; Sharma *et al.*, 1990; Trussell *et al.*, 1990). For instance, one study comparing proportions of children ever breastfed in the 1970s and the 1980s found increases in nine of the eleven countries considered, although a tendency toward earlier weaning was apparent even in some of the countries in which the percent ever breastfed increased.

Until recently, empirical investigations have been handicapped by the scarcity of data documenting infant feeding practices in comparable terms for comparable groups at more than one point in time. Such data are now available from a series of international survey efforts over the 1970s and 1980s. Of these, the first was the World Fertility Survey project; the second, the Contraceptive Prevalence Surveys; and the most recent the Demographic and Health Surveys. In none of these was infant feeding a central focus. However, each obtained basic information for nationally representative samples of recent births in a large number of developing countries, permitting calculation of precisely comparable summary measures of breastfeeding patterns. Thus, change over time can now be documented for those populations participating in two or all three of the survey programs. In addition, a handful of countries have collected breastfeeding data outside of these international programs. As a result, trends in breastfeeding are now known for a total of 24 developing countries in Africa, Asia, and Latin America, and will be known for several more when analyses of existing data have been completed.

The picture that emerges is certainly not one of universal decline. Indeed, it is very mixed, ranging from precipitous decline sustained over a period of almost two decades in Taiwan to clear and substantial increase in Trinidad and Tobago. Some sense may be made of this diversity by arraying trend evidence according to the period to which it applies. Most cases in which trend can be documented up through the 1970s do show decline. In contrast, a picture of stability or even increase is common during the 1980s.

The picture is both complicated and clarified by consideration of within-country variation in feeding patterns. For country after country, breastfeeding is less common in urban areas than in rural areas, and for relatively well-educated women as compared to those with little or no education. Encouragingly, it tends to be those for whom safe use of alternative feeding methods is relatively feasible who are choosing not to breastfeed at all or to wean their children earlier. On the other hand, nontraditional behaviors that eventually become widespread are often observed first in cities and for elite groups. Thus, this pattern of cross-sectional variation has been interpreted as suggesting the imminence of breastfeeding decline among the less-advantaged groups for which it would be more serious.

When recent national trends in breastfeeding are disaggregated along these same lines, it is the low-breastfeeding groups for which we see the sharpest increases. Indeed, in some countries breastfeeding durations were increasing in urban areas and decreasing in rural areas over the same period. Thus, patterns of breastfeeding within countries are becoming more homogeneous. The increasing breastfeeding in innovator groups, by the same logic that has alarmed observers of cross-sectional variation, suggests the possibility that any declines among others will be arrested or even reversed as the process of diffusion continues. Nonetheless, it must be recognized that recent declines in breastfeeding are concentrated among those population subgroups for which it is most likely to be consequential.

Several explanations have been offered for breastfeeding declines in developing countries. These range from the incompatibility of traditional infant feeding practices with modern patterns of female employment and the influence of Western ideas in general to the promotion of commercial formula. We now know, however, that the pattern of change requiring explanation is not one of universal decline. Hardship associated with "structural adjustment" policies has been suggested as a factor in a resurgence of breastfeeding: according to this scenario, women who would otherwise have chosen to use commercial formula are finding they cannot afford it, and are therefore forced to breastfeed. The fact that increases in breastfeeding are concentrated among the better-off casts doubt on this interpretation. Alternatively, changes in public perception of the advantages and disadvantages of different infant feeding methods may have occurred, and patterns of variation in change within countries may track the diffusion of these new views. Breastfeeding promotion efforts are under way in much of the Third World. Consciousness-raising effects of the international consumer movement of the 1970s against the promotion of commercial infant formula in the Third World, as well as the changes it generated in promotional efforts, may be major factors in recent breastfeeding trends there.

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6 HALVING HUNGER IN THE 1990S

Robert W. Kates

As reported in Chapter 1 of this volume, perhaps 20% of the world's population, a billion people, experience hunger during a year. The imprecise numbers that take measure of the hungry tell us that a billion people live in households too poor to obtain the food they need for work; half a billion live in households too poor to obtain the food they need to move around; one child in six is born underweight; and one in three is underweight by age 5. Hundreds of millions of people suffer anemia, goiter, and impaired sight from diets with too little iron, iodine, or vitamin A.

Progress in Overcoming Hunger

Over the last three decades, there has been worldwide progress in reducing the proportion of the population that goes hungry. Nonetheless, the numbers of hungry, by various measures, have not decreased and probably have grown. Indeed, using one method of estimating hunger, expected rates of population growth, and recent progress in reducing hunger, it may take until the end of the century before the absolute numbers of hungry in the world begin to diminish, and not until the middle of the next century would the proportion of hungry people drop to a minimal 3% (Kates *et al.*, 1988:32).

The Progressive 60s and the Lost 80s

The estimated *proportion* of hungry people in the world was almost halved during the 1960s and the early 1970s, but further reduction has slowed since then (Grigg, 1985:50). In that period, per capita available food supplies in the developing countries increased by more than 10% and per capita national incomes grew by more than 40%. At the same time, the *number* of hungry people, estimated by a minimal standard of energy sufficiency (1.2 times the basal metabolic rate, or BMR), has remained almost constant, fluctuating around a half billion. And this rough estimate is relatively insensitive to the worsening in recent years of economic conditions in Africa and Latin America.

Conventional wisdom attributes the recent lack of progress against hunger to the worldwide slowdown of economic growth and development and to the failure of growth, where it has occurred, to benefit the poorest segments of society. The enormous increase in Third World debt has brought about a *reversal* of net resource transfers to developing countries.¹ Structural adjustment of economies in Africa and Latin America has almost invariably been accompanied by reductions in health, nutrition, and welfare programs. In Africa, issues of agricultural decline, population growth, armed conflict, and environmental degradation are cited as well for the lack of progress. Taken together, the decade of the 1980s has been characterized as the "lost 80s" in hunger reduction and poverty elimination.

Encouraging Developments

Yet some encouraging developments in the past decade also present new opportunities to overcome hunger in the 1990s. These include fresh understanding of the origins of hunger, lessons learned from efforts to subsidize or to distribute food, the evolution of a worldwide logistical system to provide emergency food aid, rapid progress against childhood and

nutritional diseases, the maturation of grassroots development groups, and reduced international tensions.

A growing consensus cites poverty as the origin of most hunger, with subsidiary roles for other causal factors such as natural disasters, war, disease, and feeding practices. There is widespread agreement that untargeted food subsidies are ineffective or cannot be sustained because of their high costs, but that careful targeting could reduce much of extreme food poverty. Experience with national and international relief systems has shown that they can help prevent deaths due to famine by distributing food, providing it at reduced cost, offering opportunities for needed income, and providing necessary medical care for those at risk of malnutrition and disease. The synergism between hunger and disease in small children has been diminished by successes in immunization and in treating diarrhea. Low-cost technologies for dealing with the nutritional diseases of vitamin A and iodine deficiencies have been developed, and these have been utilized in different parts of the world. Grassroots organizations have emerged in all parts of the world, providing a voice for poor and hungry people and a new source of leadership, service provision, and income-increasing activities. The end of the "Cold War" has brought promise of new resources released from the trillion-dollar global armaments budget.

Planning for the 1990s

As the decade of the 1980s has come to a close, frustration with the slow rate of progress has deepened in the communities concerned with hunger, while at the same time the new opportunities beckon. But coming to a consensus of what could and should be done is difficult. The different communities concerned with the issue appear to diverge greatly in their perspectives and prescriptions for policy—whereas some approach the many pressing problems incrementally, activity by activity, others attempt to tackle the greater context, promoting fundamental social change as a requirement for long-term solutions. And even within these alternative approaches, opinions differ as to which strategies and efforts have been most productive—or counter-productive—and where fundamental change is needed. These differences in approach do not simply reflect ideological or stylistic conflicts—although these are surely evident. Rather, they originate in deeply held convictions, which in one case is motivated by the desire to "light a candle, rather than curse the darkness" and in the other by great frustration over continuing human suffering and loss. Still, a search for "common ground" has begun to take place in a variety of fora: the "think tanks" and research institutes related to agriculture, hunger, nutrition, and poverty; the specialized national and international aid and development agencies; and the emerging networks of non-governmental and voluntary organizations.

From the think tanks have come both new ideas and syntheses of experience. The United Nations University-World Institute for Development Economics Research (UNU-WIDER) undertook a review of famine (Drèze, 1988) and hunger problems which has culminated in a forthcoming volume by Drèze and Sen (1990) on *Hunger and Public Action*. Continuing studies at the International Food Policy Research Institute (IFPRI) have highlighted the roles that agricultural development can play in reducing hunger (Mellor, 1988) and have analyzed the impacts of food subsidies (Pinstrop-Andersen, 1988), commercial crop production (e.g., Kennedy and Cogill, 1987; von Braun *et al.*, 1989), and related issues on hunger prevalence. Susan George (1988) at the Transnational Institute has completed a searching examination of the debt crisis and its impacts on hunger and poverty. The Cornell University Food and Nutrition Policy Program has reviewed the efforts to improve child survival and to go beyond them. We at the World Hunger Program have reviewed some of the opportunities for overcoming hunger in the 1990s (Brown University Faculty Seminar, 1990) and have helped to bring together some of the major theorists and analysts in a concerted search for areas of agreement.

Ideas and analyses are not the sole province of research groups. Within the specialized agencies of the United Nations, many important analyses have been undertaken. The U.N. Administrative Committee on Coordination/Subcommittee on Nutrition (ACC/SCN) has assessed the prevalence of hunger (ACC/SCN, 1987a, 1989a), examined the state-of-the-art in reducing nutritional diseases (West and Sommer, 1987; Hetzel, 1988), evaluated the efficacy of nutrition education (Hornik, 1985), and reviewed the synergism between malnutrition and infection (Tomkins and Watson, 1989). Studies of nutrition-relevant policies in the 1980s and estimated flows of external resources related to nutrition are forthcoming (Horwitz, 1989; Mason, 1990). The United Nations Children's Fund (UNICEF) examined the impact of structural adjustment on the poor and particularly children's health and nutrition (Cornia *et al.*, 1987, 1988). The World Bank issued its landmark study on *Poverty and Hunger* (World Bank, 1986) and its review of its major exploratory efforts to reduce malnutrition (Berg, 1987). The World Bank and the World Food Programme (WFP) conducted a joint study on the use of food aid in Africa (World Bank, 1988). Under the World Food Council's (WFC) Cyprus Initiative, the staff examined what had transpired in the 15 years since the 1974 World Food Conference, assessing, in particular, country experiences with targeted food, nutrition, and health programs (WFC, 1989). The U.S. National Research Council assessed food aid requirements for the 1990s for the U.S. Agency for International Development (BOSTID, 1989).

Nongovernmental organizations (NGOs) and voluntary agencies tend to be more action-oriented but can be reflective as well. The Swedish Red Cross conducted a landmark study that probed the underlying societal causes of natural disasters and famines and what might be done to prevent them (Hagman *et al.*, 1984). A series of reflective studies has identified changing roles for NGOs, recognizing both expanded contributions beyond relief and small-scale development projects and the realities of the rapid emergence of NGOs in developing countries (Drabek, 1987; Durning, 1989).

An important set of studies and consultations has focused on initiatives for the 1990s. The World Food Council's Cyprus Initiative Against Hunger in the World (WFC, 1989) seeks to reinvigorate progress towards eliminating hunger with a program of cooperative action. The World Health Organization (WHO) and the ACC/SCN have proposed respectively ten-year programs to prevent vitamin A and iodine deficiencies (WHO, 1985; ACC/SCN, 1987b). UNICEF and WHO have collaborated on a joint health and nutrition strategy for the 1990s (WHO, 1988) and have participated in a Task Force for Child Survival that also included the Rockefeller Foundation, the United Nations Development Program (UNDP), and the World Bank (see below). The World Bank has sought to address hunger and food security in Africa (World Bank, 1988a). Larger developmental goals for the 1990s have been addressed in the context of the U.N. Fourth Development Decade (North South Roundtable, 1988). From this mix of study and consultation, at least three major sets of achievable goals for the 1990s have emerged.

Achievable Goals

Task Force for Child Survival

In March 1988, a Task Force consisting of the Rockefeller Foundation, UNDP, UNICEF, the World Bank, WHO, health ministers, and leaders of bilateral aid agencies met in Talloires, France and adopted a comprehensive list of goals for "Protecting the World's Children: An Agenda for the 1990s." These served as the basis for a set of joint "WHO-UNICEF common goals for Health Development of Women and Children by the year 2000," which were recently revised and affirmed in Bangkok in March 1990 by a meeting of the original Task Force for Child Survival (1990).

The *Affirmation of Bangkok* calls for the halving of maternal mortality rates, reduction in infant and under-five mortality rates by a third or more, and efforts to address the needs of women for education, family planning, and prenatal and obstetric care. It sets major goals for the elimination of poliomyelitis and neonatal tetanus, a massive reduction in measles, a halving of deaths from diarrhea among children under five, and a one-third reduction in deaths from acute respiratory diseases. It calls for improved water and sanitation access for all. And specifically it calls for better nutrition through:

- Reduction of the rate of low birthweight (2.5 kilograms) to less than 10%.
- Empowerment of women to breastfeed their children exclusively for the first four to six months of life and to continue breastfeeding with complementary foods well into the second year.
- Reduction of severe and moderate malnutrition among under-five children by one-half of 1990 levels.
- Virtual elimination of iodine deficiency disorders.
- Virtual elimination of vitamin A deficiency and its consequences including blindness.
- Reduction of iron deficiency anemia in women by one-third of 1990 levels.

In September 1990, the first *World Summit for Children* of national leaders will be held in an effort to mobilize support for these and similar goals. Also, after ten years of detailed negotiations, the *Convention on the Rights of the Child* has been completed. This Convention sets minimum standards for children's survival, health, and education, and provides explicit protection against exploitation at work, against physical and sexual abuse, and against the involvement of children in war and armed conflict. Efforts to ratify the new Convention will continue throughout the decade.

World Food Council

In May 1989, the 36 member states of the WFC declared in Cairo that they would "make all efforts to achieve, during the next decade, the elimination of starvation and death caused by famine; a substantial reduction of malnutrition and mortality among young children; a tangible reduction in chronic hunger; and the elimination of major nutritional diseases." As to the means of achieving these goals, the Council referred to the Programme of Co-operative Action of the President (U.N. General Assembly, 1989:7-14).

The Programme provides a menu of "economic and social measures to increase access to food by the poorest and most vulnerable groups...providing the poor with access to food not only through more equitable distribution of food, but by implementing a set of targeted employment generating projects that enable the poor to earn sufficient income to meet their basic needs." It identified "measures to protect and improve the nutritional levels of the poor" by addressing "the most common constraints to good nutrition...insufficient access to food, infectious diseases, lack of knowledge and high rates of childbirth." It suggested key elements in policies for raising food production in the context of national food strategies. Finally, it discussed measures to redirect part of economic growth efforts in support of social programs and to lessen the impacts of debt and trade constraints on developing countries.

Bellagio Conference

In November 1989, 24 advocates, planners, and scientists from 14 countries met in Bellagio, Italy and concluded that it is possible to end half the world's hunger before the year 2000. At that meeting, we created a concise agenda of opportunity based upon the promising programs and policies that have already successfully reduced hunger in many places, stating:

We believe that it is possible and imperative in the 1990's (1) to eliminate deaths from famine, (2) to end hunger in half of the poorest households, (3) to cut malnutrition in half for mothers and small children, and (4) to eradicate iodine and vitamin A deficiencies. Together, they comprise a comprehensive yet still practical program that can end half of world hunger in the 1990's (Overcoming Hunger in the 1990s, 1989; see Appendix 6.1 for complete text).

Leading this agenda of opportunities was the virtual elimination of deaths due to famine among the 15-35 million people annually at risk, through implementing existing early-warning and famine-prevention systems and continuing efforts to provide safe passage of food in zones of armed conflict.

Seen as equally capable of eradication are two of the three major nutritional diseases. By iodizing salt or injecting iodized oil, most of the 190 million cases of goiter could be eliminated by the end of the century (Hetzl, 1988). A capsule given twice-a-year to the 280 million children at risk of vitamin A deficiency could virtually eliminate the disease in the crucial ages between 1 and 4 years (West and Sommer, 1987).

A third major goal adopted at Bellagio was to cut malnutrition among women and children in half. The impact of disease on the wasting and stunting of hungry children is already being reduced by the rapid progress in immunizing infants and providing simple, home-based treatment of diarrhea (Grant, 1989). Breastfeeding of infants is continuing or even increasing in many developing countries, perhaps as a result of efforts to encourage it and to discourage formula feeding (see Chapter 5). Innovative programs in Africa and Asia combine growth monitoring by weighing children with supplemental feeding if needed (Berg, 1987; JNSP, 1989). These activities could be combined with efforts to ease the burden on already overworked mothers and to reduce the nutritional anemia found in half of all women of reproductive age (DeMaeyer, 1989).

Finally, the group recognized that, although most hunger is rooted in poverty, the hunger of at least half of the very poorest households could still be ended. Extensive experience with food subsidies, coupons, ration shops, and feeding programs has demonstrated that careful targeting and effective application of such measures could reduce much urban food poverty (Pinstrup-Andersen, 1988; Reutlinger, 1988). In rural areas, providing wage and food income in return for labor to construct needed agricultural and environmental improvements reduces food poverty immediately while increasing long-term agricultural productivity and income (Ezekiel, 1988, n.d.; Mellor, 1988). Also valuable are programs that provide self-sustaining sources of credit, especially to women, to start small businesses or to produce local products and services (Katona-Apte, 1987; Hossain, 1988).

Food-poor households that raise their own food must cope with the deterioration of their natural resources, the loss of crucial access to common resources, and restriction to all but the most ecologically marginal land (BOSTID, 1983a). There are important opportunities for redistributing land that is little used to smallholders and for introducing a variety of low-cost techniques that can sustain productivity, provide fuelwood, limit soil erosion, and increase food and income (BOSTID, 1983b; Kang *et al.*, 1984; Tull *et al.*, 1987; Harrison, 1987).

This four-point systematic assault on the hunger problem in the 1990s would require additional flows of money and food aid from the rich to the hungry and poor—and a limitation of the flows that are now in the opposite direction. A realistic program to combat hunger in the 1990s might require U.S. \$5-\$10 billion per year in new resources, or about a 10-20% increase or reallocation of global foreign-aid disbursements. Even more important are the needs for renewed social energy and political will, the creative employment of local institutions and underutilized resources, and increases in the level of public attention and support.

Nongovernmental and private voluntary organizations are particularly important in reaching the hungry and poor, and at their best they embrace hungry people acting in their own behalf. Most of the goals identified at Bellagio could be accomplished in different ways. The most promising ones, the Declaration emphasizes, are those that empower people to assess their own condition and to act in their own behalf, that provide short-term hunger relief while addressing deeply rooted causes, and that can be sustained over the long-term.

Issues

Thus as we move into the decade, there is an emerging consensus on what might be achieved if we were to renew the effort to overcome hunger in the 1990s and on what major activities and resources are needed. To move beyond agreement on goals and needs—to halve hunger in the 1990s—I see at least three major issues: commitment, organization, and evaluation.

A Place for the Hungry

The most important issue is the commitment to halve hunger. At the Bellagio Conference, a participant told of the Swahili maxim “when elephants fight, the grass dies”—and then, wryly noting the end of the Cold War, she observed that “when elephants make love, the grass also dies.” Between the portentous events in Eastern Europe, Southern Africa, and Central America and the growing worldwide concern for the environment, making room at the table for the hungry of the world may become increasingly difficult.

Part of the solution is to link the new opportunities for grassroots action to overcome hunger with the ongoing wave of participation, pluralism, and democracy and to join those concerned with the fate of the hungry with those concerned with the fate of the earth. Part of it is to call for a global “peace dividend” to address the most desperate human needs for development. The achievable goals of the various declarations provide one concrete set of activities to place and to keep on the public agenda. But most of all, the communities concerned with hunger need to further pursue their common ground, to set aside their distinctive differences in missions and programs, and to come together with a single voice—but in many tongues—to keep hunger on the local, national, and global agendas of concern.

Tops, Sides, and Bottoms

A major cause for optimism in renewing the effort to overcome hunger is the emergence and prominence of nongovernmental and voluntary organizations, particularly grassroots groups in the developing world and populist pressure groups in the industrialized world. The grassroots groups not only offer new channels for services and education—as for example, in their role in Bangladesh in disseminating oral rehydration therapy—but most important, they represent authentic voices of the hungry and the poor speaking on their own behalf. The populist pressure groups have created for the first time a voice for the hungry and the poor in the parliaments and media of the industrialized world to compete with the usual array of developed-country special interests.

At the same time, as obvious from the initiatives to create an agenda for the 1990s, the process is still very much “top-down,” a coming together of specialized agencies in Talloires and Bangkok, of governments in Cyprus and Cairo, and a broader, independent, but still “expert” group at Bellagio. Leadership for efforts to implement programs and to mobilize resources still has to come from governments. No more important example of their potential can be found than in the remarkable achievement of the three “Cs” of Latin America—Chile, Costa Rica, and Cuba. Each of these countries had governments with profoundly different concepts of how to govern, yet each—because they consciously decided to do so—achieved equally remarkable progress in improving child health and nutrition throughout the hard times of the 1980s. Thus, while considerable rhetoric is devoted to the virtues of “bottom-

up" approaches employing grassroots institutions, the emphasis must still be on governments. "Participation" by local groups is often seen as important for implementation but not essential to leadership. Much more needs to be known about how the grassroots can be meaningfully coupled to global goals and governmental efforts while still maintaining their own initiative.

The tension over linking the summit and the grassroots is also matched by the "side-by-side" pulls to link hunger reduction to sectoral needs for education, water supply and sanitation, and family planning and to larger issues of economy, poverty, and environment. Is it possible to achieve the ambitious goals of eliminating the most extreme forms of deprivation and halving others without addressing issues of women's literacy, water supply, or birth spacing? (For example, a 1989 UNICEF report lists more than 20 sectoral goals). But in so doing, are we returning to a "basic needs" approach with its long list of sectoral basic needs that must compete with each other for funds and attention and make the problems seem insurmountable? And beyond these immediate linkages are the larger ones of peace, economy, poverty, and environment, and the degree to which a successful hunger-reduction strategy depends on what develops in each of these spheres of concern.

Doing Good—How Do We Know?

An underlying premise of the efforts to halve hunger in the 1990s is that it can be done by using interventions, technologies, and policies that exist and are known to work—"success stories" that emerged in the 1980s. The stories are heartening but their spread and multiplication requires continuing evaluation and adaptation to new circumstances. The achievements of rural income schemes in a state of India or a community growth monitoring program in a region in Tanzania may not transfer easily even between states or regions of the same countries, let alone between countries and continents. Thus, halving hunger requires a continuing effort to identify successes, to tell their story, to draw their lessons, to encourage their adaptation to new circumstances, and to build in ongoing participatory evaluation of new efforts. And for some problems, there may be few success stories upon which to draw. Perhaps the most pressing example is the safe passage of emergency food in zones of armed conflict.

Is it also not too soon to ask how we can measure progress in achieving the goals of halving hunger? There is considerable promise of much improved data for these purposes in the 1990s. More rapid and universal assessment measures are being developed, such as the three key indicators of birthweight, weight-for-age, and height-at-school-entry proposed for continuing measurement by a WHO-UNICEF working group (ACC/SCN, 1989b). And much more detailed data is forthcoming in the increase in representative national surveys of income, consumption, health, and nutrition (See, for example, Grootaert and Kanbur, 1989).

The Half-Life of Hunger

In nature, the rate of decay of radioactive elements is often described by a time period called a "half-life." Hunger too can be given a half-life in the time remaining in this century. Famine, goiter, and vitamin A blindness can be eliminated. The wasting of small children, the anemia of their mothers, the hunger of their families—all can be cut in half. It can be done using programs and policies that already work and all for less than 1% of the cost of the present global armaments budget. Halving hunger in the 1990s—what a way to start a new millennium!

Notes

1. Developing countries *received* net resource transfers of U.S. \$147 billion through long-term lending from 1978-82 but from 1983-87 *lost* a net total of \$85 billion, primarily in the middle-income developing countries (World Bank, 1988b:29-30; also see World Bank, 1989:18 and Wheeler, 1988:45-47).

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Appendix 6.1 The Bellagio Declaration: Overcoming Hunger in the 1990s.

The Bellagio Declaration was produced and adopted by a group of 24 planners, practitioners, opinion leaders, and scientists meeting at the Rockefeller Foundation Study and Conference Center in Bellagio, Italy, on November 13-16, 1989. Participants came from 14 countries, both North and South. They are affiliated with 9 national or international agencies, 8 advocacy and grassroots organizations, and 5 universities and research institutes, but participated as individuals sharing their expertise and concern. The Declaration reflects the content of the original background document for the meeting and the views expressed in different rounds of discussion during the conference. It represents the consensus emerging at the meeting but not necessarily the individual views of each participant.

It is possible to end half the world's hunger before the year 2000. We have only imprecise numbers to take measure of the hungry, but those numbers tell us that: (1) a billion people live in households too poor to obtain the food they need for work; (2) half of those are too poor even to obtain the food they need to maintain minimal activity; (3) one child in six is born underweight and one in three is underweight by age 5; and (4) hundreds of millions of people suffer anemia, goiter, and impaired sight from diets with too little iron, iodine or vitamin A. In a world of potential food plenty, we have collectively failed more than one billion of our people.

Hunger wears many faces. It may be acute or chronic, visible or hidden, food or disease related, but it is typically rooted in poverty and in the economic and social processes that perpetuate it. The elimination of hunger, therefore, is formidable and a long term undertaking. Recognizing this, we still believe that reducing hunger by half in the 1990's is a realistic objective for the world. We can act meaningfully to end hunger in the short run without losing sight of the continuing need in the long run to address its basic causes.

The decade now ending has been described as "the lost 80's," a time when efforts to overcome hunger have been grossly inadequate in the face of deteriorating economic conditions in Africa and Latin America, persistent hunger in South Asia, and increased incidences of hunger in wealthy countries. Overall, the 1980's has been a period of growing realization that most development efforts have failed the hungry and poor in the Third World and that current uses of natural resources are unsustainable. Less visible, but more encouraging trends in the 80's include a fresh understanding of the origins and causes of hunger, lessons learned from recent attempts to improve nutrition, the evolution of a worldwide logistical system to provide emergency food aid, rapid progress against childhood and nutritional diseases, and the maturation of grassroots movements and development groups.

As we turn into the 1990's the world is in great ferment. Fears of imminent worldwide economic collapse have abated. Peace and efforts for peace are emerging in all regions of the world. In many coun-

tries, both industrialized and developing, a wave of democratization, participation, and pluralism is evident. On the other hand, unequal trade relations between the North and the South, growing and already heavy debt burdens, environmental degradation, and continued rapid population growth make life miserable and particularly difficult for poor people in Third World countries.

It is against this background of new opportunity and persistent problems that organizations—governmental, intergovernmental and nongovernmental—concerned with hunger have begun to identify needed directions for the 1990's and to propose new initiatives for public action. Specifically, the Bellagio Declaration proposes four achievable goals for the 1990's.

ACHIEVABLE GOALS

We believe that it is possible and imperative in the 1990's (1) to eliminate deaths from famine, (2) to end hunger in half of the poorest households, (3) to cut malnutrition in half for mothers and small children, and (4) to eradicate iodine and vitamin A deficiencies. Together, they comprise a comprehensive yet still practical program that can end half of world hunger in the 1990's.

These goals are achievable because they build on the best experiences with programs and policies for overcoming world hunger. The most promising ones are those that empower people to assess their own condition and to act in their own behalf, that provide short-term hunger relief while addressing deeply-rooted causes, and that can be sustained over the long term.

1. Eliminate famine deaths

An attainable target by the year 2000 is the virtual elimination of deaths due to famine among the 15 to 35 million people at risk of famine in any year through improvement of early warning and response systems and international efforts to provide safe passage of food in zones of armed conflict.

Many of the tools needed to prevent deaths due to famine are already in place. Efforts to cope with drought, flood, war, and famine in the 1980's have led to major improvements in the global system for

providing emergency food aid. Some developing countries have created early-response mechanisms to take advantage of early warnings. Continued effort must be made to improve these programs by taking into account local indicators of increased vulnerability among groups at particular risk.

Another achievement growing out of experience with the famines of the 1980's is the widespread awareness of the need for relating short-term relief measures to longer term development objectives. Although emergency food aid often is the most critical intervention, agencies and organizations engaged in famine relief now know that they need to couple it with measures to reduce dependency on such aid and to promote self-reliance.

The major obstacle to eliminating famine remains the destruction or interdiction of civilian food supplies in zones of armed conflict. The rudiments for international protection of civilian rights to food exist in international law, most specifically in the 1977 protocols to the Geneva Conventions of 1949 that prohibit starvation of civilians as a means of combat. More recently, there is renewed interest in an international or regional covenant for the sanctity of civilian food supplies and the safe passage of emergency food relief. Such a covenant could bind nations to provide safe passage and might permit convoy by United Nations peacekeeping forces within their national territory.

2. End hunger in one half of the poorest households

Also attainable is the goal of augmenting purchasing power and food production levels so as to enable half the hungry people in the world to buy or grow enough to eat.

For many poor farmers in the Third World, a key need is maintaining access to the natural resource base and the inputs needed for cultivating, herding, or fishing in the face of growing population and increased competition for land. Increasingly, poor households have had to cope with the deterioration of their resources, the loss of crucial access to common resources, and restriction to all but the most ecologically marginal land. The task of rehabilitating degraded ecosystems and restoring to the most vulnerable groups their access and control of productive resources of land, forest, and water must be accelerated. A variety of sustainable agricultural and forestry techniques with demonstrated ability to sustain productivity, provide fuelwood, limit soil erosion, and increase food and income can also be applied.

Measures to increase small farm agricultural production and to create new income and work activities could end hunger for a third to a half of the roughly 450 million people who now live in rural households too poor to minimally feed themselves. Pro-

grams that provide wage and food income in return for labor to construct needed agricultural infrastructure and to restore degraded resources show particular promise. They reduce poverty in the short run through direct supplementation of incomes and in the long run through sustained increases in agricultural productivity and income. Programs that have provided self-sustaining sources of credit, especially for women, to start small businesses or produce local products and services have also proven quite effective in many countries.

Food-security programs, given targeting and effective application, could by the end of the decade end hunger for half or more of the 150 million people in urban households too poor to minimally feed themselves in present circumstances. There is widespread agreement that untargeted food assistance, carried out by means of price control, overvalued exchange rates, import controls, or cash subsidies is ineffective or cannot be sustained because of its high costs. Yet ample experience with food-security programs demonstrates that careful targeting can be accomplished by subsidizing foods that are consumed primarily by the poor and by distributing food and coupons in poor neighborhoods and to vulnerable groups such as mothers and children. The use of existing marketing networks to distribute food can often lower costs and improve participation. Community-organized mass feeding programs are also effective, low-cost ways to target and distribute food.

3. Cut malnutrition among women and children in half

Women of reproductive age and children under five years of age are particularly vulnerable to malnutrition. Although many of the measures listed above will help improve their situation in the decade to come, special measures are still needed to reduce their special vulnerabilities. Sustained breastfeeding, expanded supplemental feeding, and growth monitoring, in combination with limiting the effects of childhood illness, could reduce by half the common forms of childhood wasting and stunting. The prevalence of breastfeeding is stable or even increasing in many developing countries, perhaps assisted by continuing efforts to encourage and maintain it. Innovative programs that combine monitoring of child growth through regular weighing to detect wasting with supplemental feeding hold promise to address the weight loss of children with recurrent bouts of illness and the difficult weaning transition from breast to the adult diet.

Many such initiatives for the benefit of children place an increased burden on already overworked mothers, even though they may be somewhat compensated by the reduced care required of healthy children. Community-based programs that include child-care and other supports can lessen this burden

while enhancing mothers' efforts. Reducing by at least half through iron supplements the nutritional anemia endemic in women of reproductive age can further strengthen mothers. Continued promotion of improved birth spacing will benefit both children and mothers.

4. Eradicate iodine and vitamin A deficiencies

Through the use of current techniques, most of the 190 million cases of goiter could be eradicated and the 280 million children at risk of vitamin A deficiency protected by the end of the century. Selected regions and countries have made major progress in eliminating iodine deficiency disorders—marked by goiter, mental impairment, and, in the extreme, cretinism—and the visual impairment of vitamin A deficiency diseases. For goiter, most countries can provide iodized salt to most areas endemic with the disease and injections of iodized oil for inhabitants of more remote mountain and desert regions. For vitamin A deficiency, a capsule taken two or three times a year can protect a child throughout the critical ages of one to four years. Evidence is also increasing for wide-ranging health benefits beyond eye protection from vitamin A therapy.

STRATEGIES AND RESOURCES

Any strategy to overcome hunger in the 1990's must be conceived and implemented in full awareness of the array of fundamental changes and trends that will characterize the coming decade and shape the context in which hunger persists. Indeed, if we fail to relate efforts to end hunger to these broader forces—which represent both obstacles and opportunities—short-term gains may well be swamped by long-term increases in hunger.

The outstanding situation that must be recognized as we move into the 1990's is the inequitable economic relationship between the North and the South, which withdraws net capital from the South, diverts agriculture in developing countries from producing food to meet local needs, creates contentious food trade barriers, underprices food commodities, and often encourages capital investment that undermines rather than advances sustainable uses of agriculture and resources.

No less challenging than the worldwide economic picture is the precarious state of the global environment. Deforestation, desertification, soil erosion, water shortage and salinization, chemical contamination, and global warming will adversely affect the sustainable food production capacity of the planet. But embedded in this threat is also an opportunity. Worldwide attention, from heads of state to the general public, is now strongly focused on the endangered planet. We who combat hunger must put a human face on the environmental issue: unless we restore and maintain viable ecosystems

and ecological cycles, we will increasingly threaten our ability to feed humanity. Opponents of hunger must embrace their environmentalist allies in a common cause.

Exacerbating the environment/hunger problem is the continued growth of the world's population. During the 1990's, the world will need to feed another billion mouths, most living in the very countries where the ability to curb hunger is already severely strained. Family planning programs that have slowed the overall rate of population growth in the world must persist and expand with international support to reduce the vulnerability of the poor to hunger and famine.

A particularly welcome evolution has been the rapid chain of events in Eastern Europe and the Soviet Union. This has reduced tension between the East and the West and opens up new opportunities for trade and investments. These opportunities for cooperation on a global scale should be used to strengthen North-South cooperation, rather than diverting the already diminishing flow of resources for the poor and hungry of the South. For instance, a social compact might be agreed upon whereby funds that become available through reduction of East-West arms expenditures would be used to assist both Eastern Europe and the South.

From the perspective of these anticipated global trends, what then are the strategies to overcome hunger that will be most effective?

Particularly important is the creation of new opportunities for the hungry themselves, together with their leaders, advocates, mass movements, and local organizations and resources. In this context, it is especially important to empower women who grow most of the Third World's food and feed its families. More needs to be known about the full development potential of the wide range of non-governmental organizations, especially for the multiplication and aggregation of grassroots initiatives and the advocacy of needs and interests of people who normally find no ways of expressing their demands through formal government channels. But much more needs to be done even by well-intentioned governments and aid agencies to incorporate into their modes of operation greater sensitivity to modes of participation that enable people to act on their own behalf.

Although many governments in developing countries are under severe financial pressure and often lack capacity to implement extensive programs, they must play a growing role in a renewed effort to combat hunger. Decisions to decentralize responsibility to lower echelons of administration and to local government institutions or to use the distributive capacity of the market that gained momentum in the 1980's must continue. Such local level agencies can play a major role in developing and

restoring necessary rural infrastructure and services. To make these investments worthwhile, however, governments must also take important steps toward the creation of an enabling environment in which citizens and their organizations can make more effective contributions to overcoming hunger.

Finally, an achievable reduction in hunger in the 1990's will require substantial new financial resources above and beyond the maintenance of current levels of donor and national support. The costs of the achievable goals range from a high of \$25 per person to provide famine relief or to build rural infrastructure through food-for-work programs to 57¢ per person to provide the vitamin A and iodine supplementation needed to prevent blindness and goiter. Much of these costs are already partly met in current national and international expenditures. Thus, a realistic program to combat hunger in the 1990's might require U.S.\$ 5 to 10 billion per year in new or reallocated funds.

The most common source proposed for additional resources is a substantial reduction in the annual military expenditures, currently nearly U.S.\$ 1 trillion worldwide, as great power rivalry and conflict diminish and serious efforts are made to resolve regional disputes. A reduction of one percent in these annual expenditures could more than fund a comprehensive program to overcome hunger in the 1990's. Additional food aid, if properly used, can not only meet emergency needs in extreme deficit situations, but when carefully marketed, can provide new sources of funds for local initiatives. Other new sources of funds could include the "swapping" of actions against hunger in exchange for outstanding debts, the redirection of existing development expenditures by identifying poor people rather than poor countries as the relevant target of interventions, and the linking of efforts to overcome hunger with those to improve health care, enhance poor people's access to productive resources, and promote sustainable environmental development.

Although the objectives of the program to end half the world's hunger before the year 2000 are global, strategic emphasis will differ between regions and countries. In sub-Saharan Africa priority may be given to strengthening early-response systems to famine, including exploration of an accord, sanctioned by the Organization of African Unity, on safe passage for relief supplies; targeted support for increased production by the poor, including efforts to control pests that significantly reduce harvests and stored food; and efforts to break the disease-undernutrition nexus. In Asia, where the food problem is often less a matter of production than redistribution, priority may be given to restoring and increasing access and control by the poor of necessary resources and to encouraging development strategies that are socially just and environmentally sustainable. In Latin America priority may be given

to alleviating the disproportionate share of the debt burden that is currently carried by wage earners and the self-employed in the informal sector; reforming food systems so that they better meet the needs of vulnerable groups of women, urban poor, indigenous populations, and small farm households; and improving the health and nutrition infrastructure to enable governments and other organizations to meet the targets for mothers and children and for the major nutritional deficiency diseases.

CALL FOR ACTION

An ambitious program to attack hunger in the 1990's requires most of all the mobilization of public support for this cause both in developed and developing countries. In most of these, the hungry and the poor do not have natural allies in their governments. Their needs are considered and their voices heard only to the extent that they are mobilized into their own organizations or that their cause is adopted by others. The last decade has witnessed a slow emergence of new public voices for the hungry and impoverished in rich countries based in churches, development organizations, and populist groups. Such groups have mobilized constituencies for the hungry, utilized the mass media, and developed long-term relationships with governments wherever appropriate. In developing countries, opportunities for influence have been different. Mass media and lobbying efforts have been less important than efforts by religious and political organizations. These emerging voices need to be strengthened, particularly in countries where the voices of the hungry are faint.

Faced with potentially competitive concerns, the call for ending hunger must be strengthened. But the clarity of the message needs to be strengthened as well, reminding constituencies of the enormity of the need, creating alternatives between the acceptance of hunger as always with us and the postponement of action until the world can be set fully right, and weighing in with promise on the fine balance between hope and despair. Pragmatic as well as altruistic arguments need to be used. The billion hungry people are effectively outside of markets for anything but the lowest-valued food-stuffs. It is in the long-term interests of economies that live by trade to help those households move beyond the threshold of hunger. By placing political leaders at all levels under constructive pressure to consider overcoming hunger as both an achievable goal and an inescapable concern of the 1990's, individuals and organizations can make a lasting contribution toward the emergence of a new political vision and a renewal of social energy to ensure places at the table for the hungry of the world.

For the first time in human history, the end of famine is achievable. The worst forms of hunger in both rural and urban areas can be halved. Most

nations, even poor ones, could provide for the minimum nutritional needs of mothers and children. Goiter can be relegated to a glandular disorder of the few rather than the iodine-starvation of the many. Blindness can be prevented in the 42 million chil-

dren with vitamin A deficiency. A focused attack on these four faces of hunger—drawing on new resources and combining the better and best of efforts that have worked well for the poor—can end half the world's hunger over the next decade.

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