

Global Food Security: Overview

Food insecurity in many low-income countries is projected to intensify, and unequal distribution of food within countries exacerbates the situation. Significant increases in export earnings leading to larger food imports can improve food security positions, but the gains are not uniform across countries. This implies that in addition to trade, internal performance of the food production systems of the low-income countries will be critical in improving food security. [Shahla Shapouri]

Food Insecurity Grows Over Time

The broad trends in global food production and prices indicate an improvement in food security and a decline in the proportion of people who do not have access to adequate food.

The aggregate figure, however, masks the variation in food security among regions, countries, and income groups. The nature of food security problems also differs both in magnitude and in causes among countries. In lower income countries, inadequate resources, both physical and financial, are the root causes of the food security problem. In higher income, developing countries, food insecurity stems from the unequal distribution of food resulting from wide disparities in purchasing power. The differences in the causes of food insecurity influence the assessment of the amount of food needed and strategies required to achieve food security.

The future food security position of the 67 developing countries included in this study is evaluated by projecting the gaps between food consumption (domestic production, plus commercial imports, minus nonfood use) and two different consumption targets through the next decade. It should be emphasized that the availability of food aid is excluded in these projections. The two consumption targets are: 1) maintaining per capita consumption at 1996-98 levels (also referred to as status quo) and 2) meeting minimum recommended nutritional requirements (see box "How Food Security Is Assessed"). The estimated nutritional gap only measures the gap in calorie consumption and does not consider other factors such as poor utilization of food due to inadequate consumption of micronutrients and lack of health and sanitary facilities.

These national level analyses mask the impact of unequal incomes on food security. People in lower income groups have larger nutrition gaps than wealthier people. The distribution gap is the amount of food required to raise food consumption for each income group to the level that meets the nutritional requirement.

What Is New in This Report...

This report focuses on 67 lower income developing countries, one country—North Korea—more than was included in the 1998 Food Security Assessment report. All historical and

projected data have been updated. The food production estimates for 1999 are based on USDA data as of October 1999. The most significant changes in projection results are due to the use of the latest United Nations population projections that show a much faster decline in population growth than their earlier projections (see box "Population Estimates").

In this report, we have included an accelerated export growth scenario that examines the implications of faster export earnings growth on food security of the study countries (see box "Accelerated Export Growth Scenario").

This report also includes an overview section on the issues important to developing countries with respect to upcoming trade liberalization rounds. Trade issues that are particularly important for Sub-Saharan Africa, lower income Latin America, and South Asian countries are highlighted in separate articles.

Lower Population Growth Reduces the Size of the Food Gaps

The long term food gaps for the 67 countries are lower than those reported in last year's assessment, principally due to lower rates of population growth. The regional pattern of food insecurity, however, remains the same. Slow production growth continues to be a threat to the food security of countries facing foreign exchange constraints that limit their ability to use food imports to compensate for production shortfalls. The status quo food gaps (or food needed to maintain per capita consumption at the 1996-98 base level) are estimated at 13 million tons for 1999. The food gaps to meet minimum nutritional requirements are estimated at 15 million tons. Weather-related production shortfalls account for about 62 percent of the status quo and 9 percent of nutritional gaps in 1999.

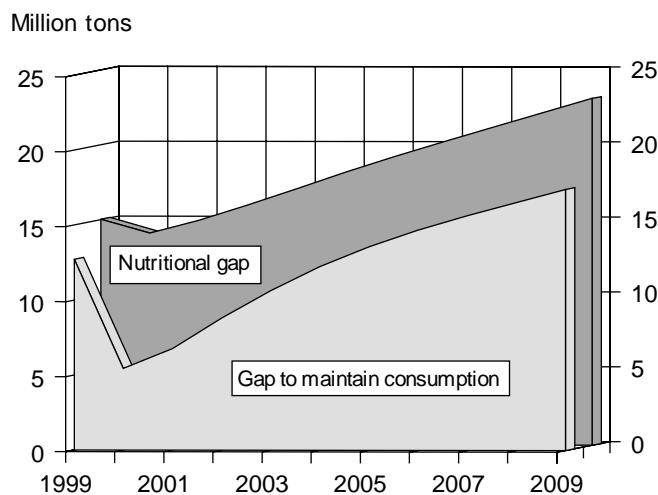
Depending on the future availability of food aid, a portion or all of the projected food gaps can be eliminated. For example, in 1998 roughly 7.1 million tons of food aid were distributed globally. If the same amount is provided in 1999, it would fill more than 70 percent of the calculated gap to maintain per capita consumption and nearly half of the nutritional gap. The latest forecast for 1999 global food aid is much higher, 9.65 million tons, but the amount going to low-

Table 1--Food Availability and Food Gaps for 67 Countries

Year	Grain production	Root production (grain equiv.)	Commercial imports	Food aid receipts (grains)	Aggregate availability of all food	Population
			---1,000 tons---			Million
1990	359,382	48,863	29,893	10,136	558,363	2,141
1991	374,218	52,856	30,353	10,638	577,435	2,188
1992	378,099	55,535	42,585	10,189	597,221	2,262
1993	386,545	57,389	44,549	8,224	619,280	2,310
1994	395,402	58,559	46,570	7,757	625,951	2,358
1995	397,171	59,428	54,204	6,117	656,991	2,406
1996	419,032	61,053	48,269	5,516	668,989	2,454
1997	406,284	60,912	56,816	4,690	697,155	2,503
1998	423,931	61,318	68,143	5,034	706,255	2,552
Projections				Food gap*		
				SQ NR 12,709 15,023	(w/o food aid)	
1999	423,891	62,609	62,534	12,245 18,204	694,736	2,600
2004	472,056	67,726	69,179	17,427 23,141	766,722	2,847
2009	514,343	73,213	78,561		840,095	3,090

*SQ stands for *status quo* and describes the amount of grain equivalent needed to support 1996-98 levels of per capita consumption and NR stands for *nutritional requirements* and describes the amount needed to support minimum nutritional standards (see box "How Food Security Is Assessed.")

Figure 1
Food Gaps in All 67 Countries, 1999-2009



income, food-deficit countries is estimated to be below 7 million tons, less than half of the estimated nutritional gap.

The long term projections indicate growing food gaps with respect to both consumption targets in the 67 countries. Forty-five of the countries are expected to face a declining per capita consumption trend through the next decade. Food consumption is projected to fall short of nutritional requirements in 30 countries in 2009.

When the impact of unequal incomes is taken into account, the estimated results show food consumption in the lowest income quintile to be much lower than the national average. For example, the lowest income quintile in the Latin American countries—the region with the most skewed income distribution—is estimated to consume only 79 percent of the nutritional requirement in 1999, compared to 126 percent in the highest income quintile. The distribution gap (the amount of food need to raise consumption of each income group to meet the minimum nutritional requirement) in all study countries is projected to increase more than 17 percent during the next decade, exceeding 33 million tons in 2009. This gap is 43 percent wider than the regions' average national nutrition food gap.

Based on the estimated distribution gaps, we calculated the number of people (in each income quintile) whose consumption falls short of the minimum nutritional requirement in each country. For the 67 countries, the number of people failing to meet the nutritional target is projected to grow less than 13 percent during the next decade, reaching 978 million by 2009. (It should be noted that in the 1998 Food Security Assessment Report, this number was higher because of the higher population growth projections—1.14 billion for 2008). The results also indicate that the estimated growth of the distribution gap—17 percent—surpasses the growth in the number of people becoming food insecure. This means distribution-related nutritional problems will intensify more than they will spread.

Table 2--Ratio of Food Consumption to Nutritional Requirements

Region	Year	Income quintiles				
		Lowest	Second	Third	Fourth	Highest
North Africa	1999	1.10	1.18	1.24	1.30	1.41
	2009	1.21	1.27	1.32	1.37	1.48
Sub-Saharan Africa	1999	0.81	0.90	0.96	1.03	1.19
	2009	0.80	0.88	0.95	1.01	1.17
Asia	1999	0.95	1.02	1.07	1.13	1.23
	2009	0.97	1.04	1.10	1.15	1.27
Latin America & Caribbean	1999	0.79	0.94	1.02	1.10	1.26
	2009	0.83	0.93	1.01	1.08	1.28
NIS 1/	1999	0.78	0.88	0.93	0.99	1.08
	2009	0.96	1.05	1.11	1.18	1.30

1/ Based on average regional income distribution.

Sub-Saharan Africa Remains the Most Vulnerable Region

Sub-Saharan Africa (37 countries) is projected to account for about 50 percent of the food gap to maintain consumption and 70 percent of the total nutritional gap (of the 67 study countries) in 2009. Despite significant growth in Sub-Saharan Africa's agricultural production, relatively high population growth, and limited financial resources that constrain imports, will lead to declining per capita consumption. Projected production growth of 2.1 percent per year through the next decade is slightly lower than the projection included in the 1998 assessment because of slower growth in the availability of labor, the principal input in production. It should be noted that in the Food Security model, the marginal productivity of labor is assumed constant over the projection period. For the Sub-Saharan countries, this may be an overestimation because the decline in population growth is in part due to the spread of AIDS, which affects the most productive segment of the population, those aged 15 to 45. This age cohort comprises nearly 50 percent of the region's population. Their deaths lead to a disproportionately high number of old people and children, including millions of orphans, who are less productive members of the economy.

The decline in per capita consumption is reflected in an almost twofold increase in the status quo food gap and a 44-percent increase in the region's nutrition gap over the next decade. Of the 37 countries covered in the study, on average, per capita food consumption is projected to rise in only 8 countries, and 15 countries should be able to supply adequate food to meet their nutritional requirement in 2009.

The distribution gap, which incorporates the impact of skewed income distribution, is projected to rise from more than 15 million tons in 1999 to more than 21 million tons in 2009, 33 percent higher than the national average nutrition gap. Based on the estimated distribution gap, the number of people in different income quintiles who fail to meet their nutritional requirement is projected to jump 40 percent to

438 million in 2009. This increase is roughly triple the rate of the 67 countries as a whole.

The 1999 estimates of food gaps are highly influenced by production variability, either weather-related or due to civil strife. Food aid shipments to these countries have declined through time, from 8.1 million tons or about 50 percent of total food imports in the early 1980s, to roughly 2 million tons or 13 percent in 1998. Without a significant increase in food aid, per capita food consumption will certainly decline for the next decade.

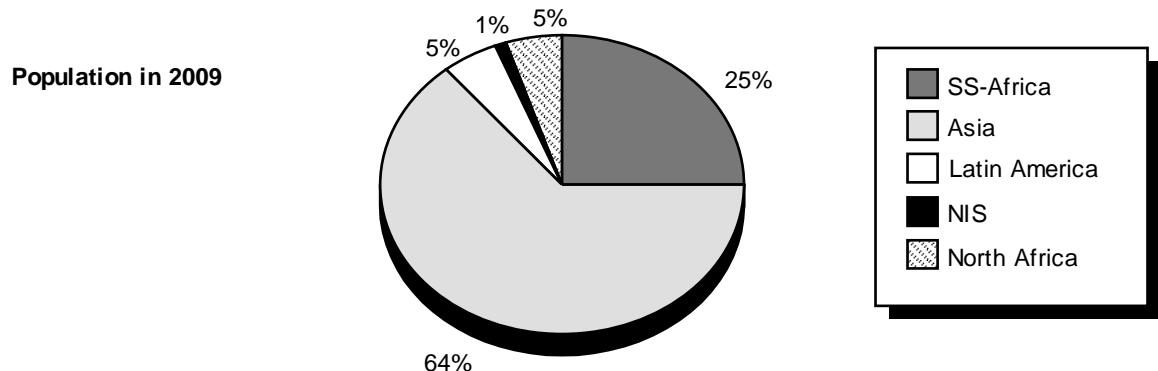
Low-income Asia and Latin America Face Consumption Declines and Distribution Problems

The 10 countries in the Asian region studied here are projected to face declining per capita consumption levels, on average, and the food required to maintain per capita consumption and the minimum nutritional standard is projected to double during the next decade. Afghanistan, Bangladesh, and North Korea account for all of the region's nutrition gaps during the projection period. The region's distribution gap is projected to decrease 11 percent between 1999 and 2009, and the number of people who cannot meet their nutritional requirement is projected to decline 19 percent over the next decade. However, the region is still projected to account for nearly half of the people who cannot meet their nutritional requirement in the study countries in 2009.

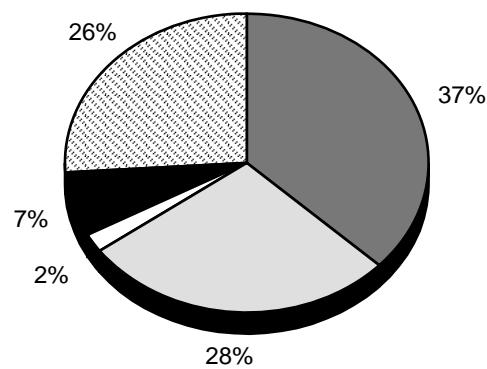
Per capita food consumption in the lower income Latin American and Caribbean countries (eleven countries) is expected to stagnate over the next decade. Despite a relatively slow increase in food production of 1.7 percent per year, strong commercial import growth of 2.1 percent will raise food supplies sufficiently to keep up with population growth. The average regional performance masks the individual country situation. Among countries, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Nicaragua, and Peru are projected to experience declining per capita consumption

Figure 2

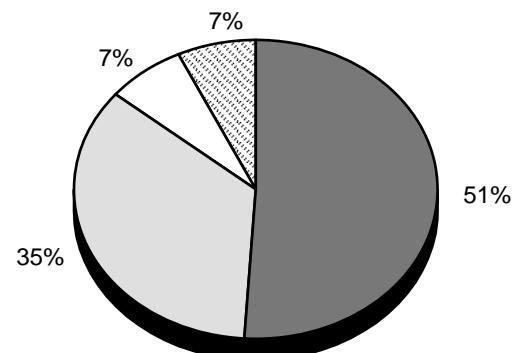
Sub-Saharan Africa Has Only 25 Percent of the Population of the 67 Countries, But Accounts for 75 Percent of the Nutritional Gap in 1999



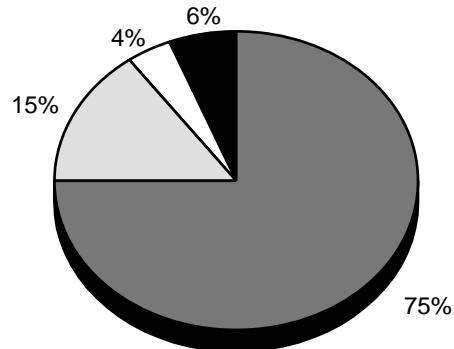
1999--Status Quo Gap



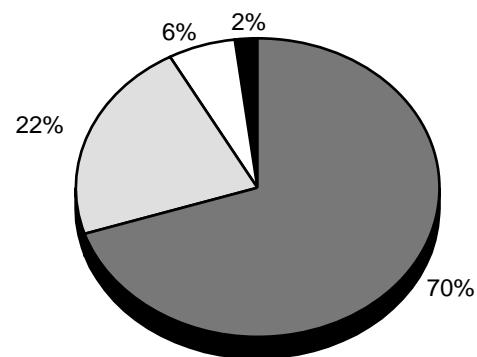
2009--Status Quo Gap



1999--Nutritional Gap



2009--Nutritional Gap



How Food Security Is Assessed

The commodity coverage in this report has been expanded from the Food Security Assessment published in 1998. In addition to grains and root crops, the commodity coverage includes a group called "other." The three commodity groups in total, account for 100 percent of all calories consumed in the study countries. This report projects food consumption and access in 67 lower income developing countries—37 in Sub-Saharan Africa, 4 in North Africa, 11 in Latin America and the Caribbean, 10 in Asia, and 5 in the NIS (see appendix 2 for a list of countries and appendix 1 for a detailed description of the methodology). The projections are based on 1996-98 data. The periods covered are 1999 (current), 2004 (5 years out), and 2009 (10 years out). Projections of food gaps for the countries through 2009 are based on differences between consumption targets and estimates of food availability, which is domestic supply (production plus commercial imports) minus nonfood use. The estimated gaps are used to evaluate food security of the countries.

The **food gaps are calculated using two consumption targets:** 1) *maintaining base per capita consumption or status quo (SQ)*, which is the amount of food needed to support 1996-98 levels of per capita consumption, and 2) *meeting nutritional requirements (NR)*, which is the gap between available food and food needed to support a minimum per capita nutritional standard (for definitions of terms used see the methodology in appendix 1). Comparison of the two measures either for countries, regions, or the aggregate, indicates the two different aspects of food security: consumption stability and meeting the nutritional standard.

The aggregate food availability projections do not take into account food insecurity problems due to food distribution difficulties within a country. Although lack of data is a major problem, an attempt was made in this report to project food consumption by different income groups based on income distribution data for each country. The concept of the income-consumption relationship was used to allocate the projected level of food availability among different income groups. The estimated "*distribution gap*" measures the food needed to raise food consumption of each income quintile to the minimum nutritional requirement. Finally, based on the projected population, the number of people who cannot meet their nutritional requirements is projected.

The common terms used in the reports are: *domestic food supply*, which is the sum of domestic production and commercial imports; *food availability*, which is food supply minus nonfood use such as feed and waste; *import dependency*, which is the ratio of food imports to food supply, and *food consumption* which is equal to food availability.

levels. The distribution gap that stems from highly skewed purchasing power intensifies food insecurity in Latin America and the Caribbean. The projected distribution gap for the region in 2009 is more than two times the average national nutritional gap. Based on the estimated distribution gap, the number of people who cannot meet their nutritional requirement is projected to increase 32 percent between 1999 and 2009.

The food import dependency of the 11 countries in the region is growing. During the 1980s, the import share of food supplies averaged around 30 percent. In 1999, it is estimated at 45 percent and is projected to reach 47 percent in 2009. This means foreign exchange availability to support food imports will play an important role in the region's food security over the long term.

North Africa and NIS Faced With Risk of Financing Imports

Food imports make up about 42 percent of North Africa's consumption needs and this level is projected to continue through 2009. Financing this level of imports in the next decade may be difficult. The region's two largest food importers, Egypt and Algeria, are, to varying degrees,

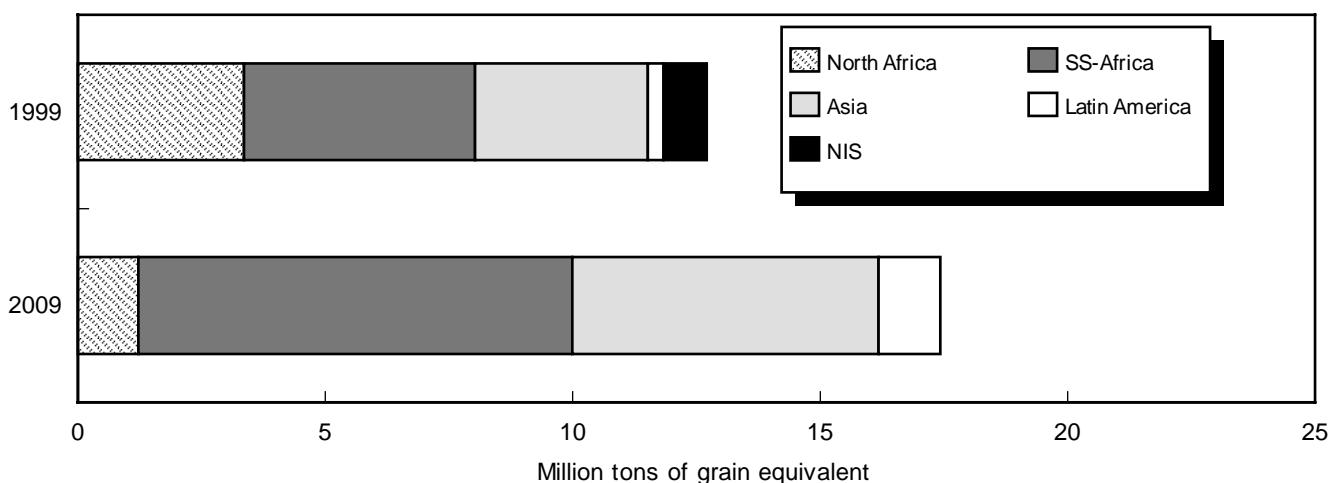
dependent on oil and gas revenues (directly through exports and also indirectly for Egypt through worker remittances from neighboring OPEC countries). With the real prices of oil and gas recovering, these countries should be able to cover their import needs.

Per capita consumption in Algeria, and to a lesser extent Egypt, is projected to fall short of the base (1996-98) level during the entire projection period. Drought in Morocco in 1999 will reduce food supplies significantly unless food imports are increased 3 million tons above their normal level. The two dominant features of food production in the region are scarcity of physical resources and highly variable output due to erratic rainfall (except in Egypt where irrigation is prevalent).

Of the five NIS countries covered in this report, only Tajikistan is vulnerable to food insecurity in the long term. Consumption in the four other countries is projected to rise during the next decade, assuming continued peace. Political and economic uncertainty is a major issue in the region. Armenia and Azerbaijan have had an uneasy truce over the Karabakh region for a few years now, and Azerbaijan and Turkey continue their trade embargo of Armenia. Georgia

Figure 3
Food Gaps

Gap To Maintain Consumption Levels in 1999 and 2009



Nutritional Gap in 1999 and 2009



has on-going internal tensions. Recently, Kyrgyzstan has been battling rebels in the southern part of the country. In Tajikistan, despite its recent peace agreement, there are ongoing concerns of rebel activity. In each instance, there is a possibility that conflicts could re-emerge and disrupt agricultural production and trade.

Demand for Food Aid Is Increasing

Food aid, although valuable to food-insecure countries, remains inadequate both in terms of availability and distribution to alter the food security prospects of low-income countries. Food aid shipments for 1998/99 are estimated at roughly 9.5 million tons, about 52 percent larger than the previous year. The main source of the hike in donations was the United States, but the European Union and Japan increased their allocations as well. Although this is the largest food aid donation during the last 5 years, the quanti-

ties allocated to low-income, food-deficit countries did not increase much.

The allocation of the available food aid is not necessarily based on nutritional needs. Other factors such as political instability, collapse of internal marketing systems, and financial difficulties that disrupt commercial imports can play an important role in food aid allocations among countries. For example, in 1999, the bulk of the increase in U.S. food aid was allocated to Russia. Indonesia, which is facing internal political problems, is the third largest recipient of food aid (900,000 tons) after Bangladesh. The share of food aid going to Sub-Saharan Africa—the most food insecure region according to our estimates—is only 23 percent. This food aid will cover only 20 percent of the region's estimated nutritional gap in 1999.

Population Estimates

This year's analysis was based on the 1998 Revision of UN population estimates and projections. The highlights of those estimates include:

World population reached 6 billion in 1999. Between 1995 and 2000, the world population is projected to grow at 1.3 percent per year, considerably less than the 2 percent per year achieved in 1965-70. In mid-1998, 80 percent of the world's population was living in the less developed regions, and Asia accounted for 61 percent of the world total. Africa's population of almost 750 million has surpassed Europe's (730 million). Latin America and the Caribbean are estimated to exceed 500 million. Ninety-seven percent of the world population increase takes place in the less developed regions.

In the 1998 Revision, population estimates and growth rates are lower than estimated a couple of years ago. The difference is in part due to lower fertility rates in Eastern Europe, but mainly to the devastating impact of AIDS, especially in Sub-Saharan Africa, where 29 countries were studied. In those 29 countries, life expectancy declined to 47 years in 1995-2000 whereas it could have reached 54 years in the absence of AIDS. The region's population growth rate projections have declined from 2.8 percent to 2.5 percent. According to the UN Children's Fund, Sub-Saharan Africa accounts for 48 percent of the world's AIDS cases. The disease has surpassed armed conflict as the number one killer in the region. AIDS killed 1.4 million people in East and Southern Africa in 1998 and left 6 million children orphaned.

What impact does the change in population estimates have on our food security assessment?

This year's food gap projection for 2009 is based on population estimates that are almost 2 percent lower than estimated in last year's report. Latin America and the Caribbean is the only region where population estimates were revised upward (by 2.5 percent). Sub-Saharan Africa shows the most drastic decline, where our 37 countries are projected to have 7 percent less people by 2009 than previously projected. Consequently, food gaps are projected to be lower there, as available food has to be divided among fewer people.

The latest Food Aid Convention, which set the minimum food aid commitment in July 1999, will be implemented for a period of 3 years. Under this latest convention, there is increased flexibility in the list of eligible commodities and distribution methods. The new commodity list includes some products that are part of the diet of the low-income, vulnerable countries such as root crops, cassava, potatoes, and sugar. These products, however, should be limited to less than 20 percent of each donor's commitment, and each individual commodity should not exceed more than 3-7 percent of each donor's total commitments. Under the new convention, the total volume of food aid that the donors have committed to provide is less than the 1995 level, 4.895 million tons versus 5.35 million tons. Although this figure represents a minimum commitment for the donors, it may be an indicator of future trends. If this is the case, future food aid allocations cannot be expected to rise significantly and therefore, certainly not play a role in closing the food gaps for the most vulnerable countries.

Food Security Response to Increased Export Earnings

Since the conclusion of the last multinational trade negotiations, the issue of food security of low-income, food-importing countries, has been the subject of frequent debate. One major concern for developing countries is their ability to finance food imports. Food import dependency among developing countries has grown through time and global

agricultural liberalization is expected to reduce food aid availability as export subsidies fall and food import prices rise. Between 1980 and 1998, grain imports accounted for 43 percent of food supplies in North Africa, on average. The Latin America region was close behind with an import share of 34.3 percent. Sub-Saharan Africa and Asia relied on imports to a much lesser extent, with dependency ratios of 6.3 and less than 3 percent. The low growth of food imports in Sub-Saharan Africa stems from its financial problems, while Asia's policy of self-sufficiency dampens its imports.

A reduction in trade barriers, the subject of multilateral trade negotiations, is expected to boost global trade. In this report, we examined the likely impact of increased export earnings—above projected levels—of the countries on food security (see box "Accelerated Export Growth Scenario"). The accelerated export growth scenario resulted in a 28-percent jump in commercial imports for all the countries combined by 2009. As for the implications for food security, 2009 status quo gaps are projected to fall 35 percent and nutritional gaps by 10 percent, on average, under this scenario. The number of people who fail to meet their nutritional requirement is reduced 9 percent, or 89 million people, by 2009 compared to the baseline projection.

The greatest impact, with respect to a reduction in the nutrition food gap, is expected in the NIS region, 40 percent, followed by Latin America, 33 percent, and Asia, 11 percent. In Sub-Saharan Africa, commercial imports remain small

relative to overall food supplies despite the fact that they are 33 percent higher in this scenario. Consequently, the reduction in the nutrition gap is small, measuring only 7 percent.

In sum, the analysis clearly shows that improved export performance can enhance the food security of the countries, but the impact is much less in the lowest income countries. In many cases, the export growth needed to boost import capacity enough to close the food gaps is simply unrealistic. For example, in Sub-Saharan Africa, commercial food imports must grow nearly 10 percent annually to close the average nutritional gap by 2009.

The parameters used in the model assume that the response of food imports to changes in foreign exchange availability is less than one-to-one (in the range of 0.5 to 0.8, varying by country, with estimates based on cross-country data). This means that, everything being equal, to achieve a 1-percent

growth in food imports, foreign exchange availability must grow 1.3 to 2 percent. Foreign exchange earnings are the sum of net flow of credit and export earnings.

For Sub-Saharan Africa, exports would have to grow about 13 percent per year to achieve the 10-percent growth requirement for imports (assuming net inflow of credit also grows at this rate). Clearly, achieving such a high growth in export earnings in this region is unlikely. Export earnings growth in Sub-Saharan Africa has been very slow through the 1990s. Export volumes have increased marginally, on average, and prices for the commodities exported by the region have not rebounded from their peaks in the early 1980s. This also means that ensuring food security in the poor countries is a complicated task and requires a comprehensive strategy to both increase export earnings and domestic production.