

# North Africa

*Morocco had the largest food gap in the region in 1999 (estimated at 3 million tons), due to a harvest that was 39 percent below trend. Algeria is projected to have the largest food gap over the next decade as there is doubt about its ability to commercially import the grain volumes necessary to sustain current per capita consumption. [Michael Kurtzig and Michael Trueblood]*

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Over the next decade, average per capita food consumption throughout North Africa is projected to remain above nutritional requirements. However, a relatively small food gap to maintain per capita consumption (2 percent, or about 1.2 million tons) is projected in the region by 2009, primarily in Algeria and to a lesser extent Egypt. Algeria's problems are more political, which has affected the performance of all sectors of the economy. Egyptian grain production growth is expected to slow from a very high rate (5 percent) in the historical period (1980-98). Such productivity gains result from improved seeds and area expansion and are not likely to be sustained. Between 1980 and 1997, North Africa was the most import-dependent region in this study, with imports contributing 44 percent of food supply, on average. This trend is projected to continue during the next decade.

Short term production shortfalls continue to cause food security problems for North Africa, where grain production varies more than in any other region (see appendix 3). Egypt is an exception because most of its crops are irrigated. Morocco's 1999 grain harvest is estimated 44 percent lower than in 1998, and is expected to lead to a food deficit of about 3 million tons based on 1996-98 per capita consumption levels. A country that has become less reliant on food aid in the last few years, Morocco has to double its commercial imports from the 1996-98 average to fill this gap.

***Algeria May Be Able To Sustain Current Consumption Levels***—While our projection shows a decline in per capita consumption in Algeria, there are signs that the economic situation may improve because of the recently improved political climate. The new government's recent peace agreement with the Islamic opposition may reduce civil strife, which has plagued the country for years. Still, pressing economic problems persist, including high unemployment and a

burdensome foreign debt. The turnaround in oil prices is a positive development because outside the country's hydrocarbon sector, foreign investment remains weak. Algerian agriculture suffers from low yields, inadequate inputs, lack of credit, confusing land reform regulations, insufficient irrigated area, and high dependence on rainfall. As a result, a food gap based on 1996-98 per capita consumption levels is projected for both 2004 and 2009. Closing this food gap from production alone is unlikely. Alternatively, the food gap could be filled by imports if the current growth in oil prices continues, thereby improving the country's financial situation. Currently, imports contribute more than half of food consumption and import dependency is projected to grow in the next decade.

***Improvement in Export Performance Could Enhance Food Security***—This year's report considers the potential impact of trade liberalization on import capacity. Under the higher export earnings scenario, imports as a share of aggregate availability of all food increase from 42 percent to 48 percent and commercial imports rise about 19 percent, from 24.8 million tons to 29.4 million. Under this scenario, the food gap that is projected in Algeria, with a baseline deficit estimated at 1.1 million tons by 2009, would be eliminated. The higher export earnings can become a reality because all countries in the region have been liberalizing their trade in recent years and have become more outward oriented. Egypt, Morocco, and Tunisia are members of the World Trade Organization; Algeria has applied for accession and currently has observer status. Trade in the region could be affected by the recent Association Agreement with the European Union (AAEU) since the EU has accounted for about 50-80 percent of the export market of the four North African countries in recent years. The AAEU offers trade openings and is a catalyst for trade growth in the region.

**Table 3--Food Availability and Food Gaps for North Africa**

Year	Grain production	Root production (grain equiv.)	Commercial imports	Food aid receipts (grains)	Aggregate availability of all food
---1,000 tons ---					
1990	21,261	988	13,277	2,604	36,710
1991	26,890	1,162	13,219	1,345	39,293
1992	20,765	1,085	15,013	831	38,884
1993	19,082	1,053	16,731	418	39,710
1994	24,645	945	19,083	239	41,968
1995	19,881	1,318	19,656	249	47,412
1996	33,105	1,476	16,268	204	45,047
1997	22,440	1,201	20,446	169	46,350
1998	26,990	1,266	20,000	65	45,755
<b>Projections</b>				<b>Food gap</b>	
				SQ	NR (w/o food aid)
1999	24,206	1,382	20,680	<b>3,360</b>	<b>0</b>
2004	29,562	1,507	22,355	<b>1,047</b>	<b>0</b>
2009	31,946	1,639	24,761	<b>1,223</b>	<b>0</b>

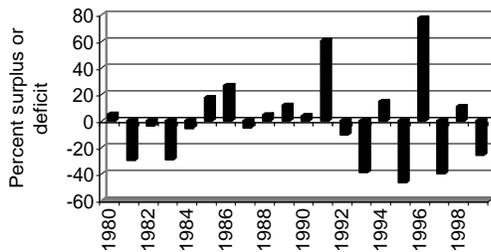
**North Africa:**  
135 million people

North Africa's per capita food consumption is projected above the nutritional requirement level. Major production fluctuations disguise the region's growing import dependency.

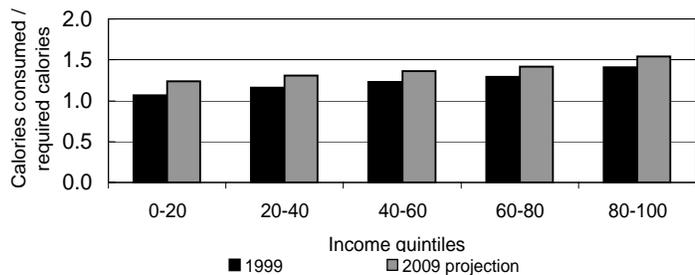
Morocco's low harvest in 1999 will create a food gap of 3.4 million tons based upon recent consumption levels. Algeria faces the most serious food gap over the next decade (1.1 million tons).

There are regional concerns about future export earnings, which are heavily dependent on unstable sources such as oil, tourism, and worker remittances.

**North Africa's Grain Production Deviations From Trend (Excludes Egypt)**



**North Africa's Average Food Consumption Levels Meet Nutritional Requirements**



**Impact of Accelerated Export Growth Compared to Baseline in 2009**

	Commercial grain imports		Nutritional food gap	
	High-export scenario	Baseline	High-export scenario	Baseline
-----1,000 tons-----				
<b>North Africa</b>	<b>30,213</b>	<b>24,761</b>	<b>0</b>	<b>0</b>
Algeria	7,346	6,206	0	0
Egypt	15,415	12,564	0	0
Morocco	4,959	3,951	0	0
Tunisia	2,493	2,040	0	0

# Sub-Saharan Africa

*Sixty percent of this region's population is projected to consume below the minimum nutritional requirement in 2009. Even an assumption of accelerated export growth rates, resulting from a new round of trade negotiations, would leave commercial imports too low to compensate for production shortfalls. Increases in domestic agricultural productivity are also needed to close food gaps. [Stacey Rosen]*

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Per capita consumption in Sub-Saharan Africa stagnated during the last two decades even though annual agricultural production grew 2.5 percent—a rate that met or exceeded that of all the other regions included in this report, except North Africa. With limited financial resources constraining imports, this growth was not sufficient to offset the high population growth rate of more than 2.8 percent per year. While food aid has often played a key role in augmenting food supplies—raising per capita consumption 5-10 percent in many years—it has not been able to accelerate the per capita consumption trend. Moreover, food aid as a share of total imports declined from roughly 50 percent in the early 1980s to 25 percent in more recent years despite the fact that, of all the regions, food aid has played the most significant role in Sub-Saharan Africa. This declining trend is reflective of overall trends in global food aid allocations to food-deficit countries.

The region's production growth is projected to slow to about 2 percent per year through the next decade, slightly lower than the projection included in the 1998 assessment. The main reason for the slower growth is the cut in the population growth rate which lowers the availability of labor. In Sub-Saharan Africa, labor is the principal input in production. In the model, the marginal productivity of labor is assumed constant for the projection period. In Sub-Saharan Africa, this may be considered an overestimation because AIDS is the principal reason for the slower population growth. This being the case, the disease reduces productivity of the most productive segment of a population, those aged 15-45. Nevertheless, the growth in yields is expected to more than double during the projection period relative to the historical period (1980-98). Sub-Saharan Africa's grain yields remain the lowest in the world and with increased use of fertilizer and improved seed varieties, yields could improve considerably. During the historical period, most of the production growth stemmed mainly from an increase in area planted, but that is projected to slow considerably as the land suitable for agriculture diminishes and population pressures limit the potential for expansion.

The region's poor financial position has long constrained the capacity to import and compensate for inadequate production. In the base period (1996-98), imports accounted for only 12 percent of food supplies. In addition to export earn-

ings, net flow of credit is an important determinant of import capacity in the region. During 1980-98, almost half of the region's import bill was supported by external assistance. For the projection period, this inflow is assumed to remain constant. This means that higher export growth will be needed to raise imports.

Although Sub-Saharan Africa's commercial imports are projected to rise 2.6 percent annually through 2009, the import share of food supplies will reach only 16 percent. Therefore, performance of the agricultural sector remains key to the region's food security. Given that production growth is projected to fall short of population growth, per capita consumption will decline 0.3 percent annually through 2009.

The decline in per capita consumption is reflected in the growing status quo food gap, which measures the amount of food needed to maintain per capita consumption at base levels. The gap is estimated at 4.7 million tons in 1999, and increases nearly twofold by 2009. The region's nutrition gap, which measures the amount of food needed to maintain the minimum nutritional requirement, is projected to rise from 11.2 million tons in 1999 to 16.2 million in 2009. The nutrition food gap is projected to exceed commercial imports by 17 percent in 2009.

Poverty and skewed income distribution exacerbate the food insecurity of the region by limiting purchasing power. While the two food gaps mentioned above measure food security at the aggregate level, the "distribution gap" measures food security across five income groups within a country. This gap, which measures the amount of food necessary to raise consumption of each income group to the minimum nutritional target, is projected to rise from more than 15 million tons in 1999 to 21.5 million in 2009, 33 percent higher than the nutrition gap. Examining per capita consumption by income group, the projections indicate that consumption in only the two highest income groups will exceed the minimum nutritional target in 2009. Consumption in the second highest group barely exceeds the target at 101 percent. Fifty-four percent of the region's population is estimated to consume below the nutritional requirement in 1999. This figure is projected to jump to 60 percent (or 438 million people) in 2009.

**Table 4--Food Availability and Food Gaps for Sub-Saharan Africa**

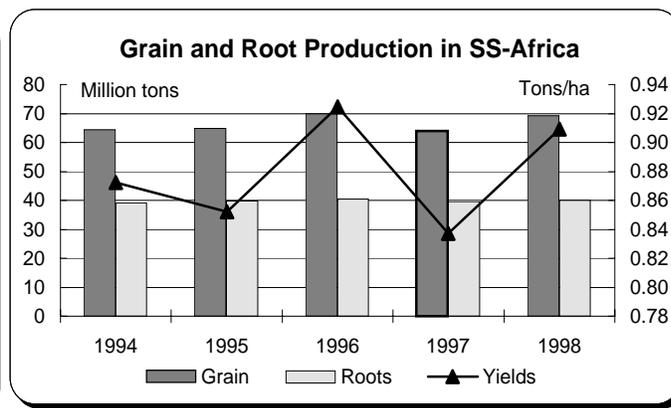
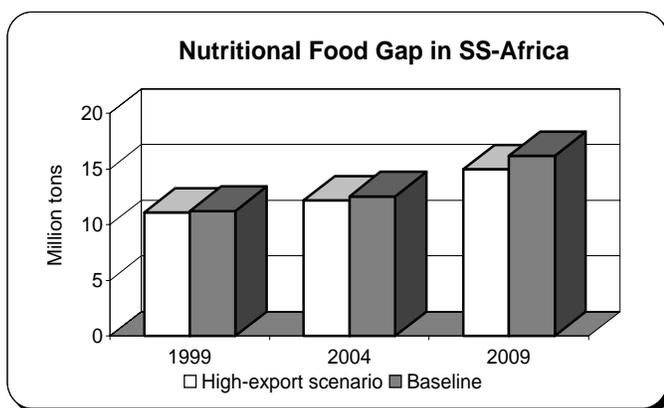
Year	Grain production	Root production (grain equiv.)	Commercial imports	Food aid receipts (grains)	Aggregate availability of all food
			---1,000 tons---		
1990	53,026	31,012	4,661	3,586	107,988
1991	59,185	34,512	5,292	4,756	116,527
1992	57,345	36,283	6,597	5,687	118,380
1993	61,122	38,123	7,681	3,485	126,047
1994	64,370	39,199	8,029	3,040	130,280
1995	64,872	39,727	7,285	2,091	134,070
1996	69,804	40,397	7,383	2,159	139,242
1997	63,880	39,486	9,352	1,857	138,207
1998	69,242	39,973	12,215	1,789	147,216
<b>Projections</b>				<b>Food gap</b>	
				SQ	NR (w/o food aid)
1999	69,224	41,425	10,935	<b>4,664</b>	<b>11,222</b>
2004	80,715	45,104	12,136	<b>5,254</b>	<b>12,542</b>
2009	89,724	49,066	13,875	<b>8,769</b>	<b>16,175</b>

**Sub-Saharan Africa**  
574 million people in 1998.

Only eight of the 37 countries are projected to have rising per capita consumption trends through the next decade.

While Sub-Saharan Africa will have only 25 percent of the population of the study countries in 2009, it is projected to account for 70 percent of the total nutrition gap.

Sixty percent of the region's population is projected to consume at levels below the minimum nutritional requirement in 2009.



**Impact of Accelerated Export Growth Compared to Baseline in 2009**

	Commercial grain imports		Nutritional food gap	
	High-export scenario	Baseline	High-export scenario	Baseline
			-----1,000 tons-----	
<b>SSA</b>	<b>18,559</b>	<b>13,875</b>	<b>15,647</b>	<b>16,175</b>
Angola	632	443	742	1,001
Cameroon	431	326	0	106
Kenya	3,066	2,150	0	0
Lesotho	366	295	0	42
Madagascar	227	166	567	635
Tanzania	656	538	585	733

The model results for 1999 are based on actual data and therefore reflect the current situation in these countries. Unfavorable weather conditions and civil strife continue to hinder agricultural output for many countries in 1999. In Ethiopia, inadequate rainfall in some areas and untimely rainfall in other areas have contributed to a smaller harvest. Output in Somalia has been severely affected by the long-term civil war and little rainfall. In an area of the country known for its sorghum production, output of the crop for 1999 is estimated at only 20 percent of pre-war production in the mid-late 1980s. In Kenya, inadequate rainfall has led to dry conditions and a smaller crop. Production of corn, the country's staple crop, is estimated to have fallen 20 percent below the recent average and consequently, food prices have risen. Continued civil strife in Southern Sudan has disrupted agricultural activities and prompted a need for relief assistance. Fighting in parts of the Democratic Republic of Congo has heightened insecurity and created food shortages. Despite favorable weather conditions in Angola, the food supply situation is precarious as renewed fighting in December 1998 has displaced farmers and interrupted food distribution.

With the exception of Sierra Leone, West Africa has escaped the ravages of war and unfavorable weather conditions in 1999. As a result, food prospects are good. Bumper crops were harvested in 1998 in Burkina Faso, Chad, Mali, and Niger, and the 1999 harvests are expected to be above average as well.

Depending on the responsiveness of import capacity to export earnings and the importance of imports in food supplies, the boost to exports stemming from trade liberaliza-

tion could significantly affect food security in Sub-Saharan Africa. Export earnings have grown slowly in the region through the 1990s. Export volumes have increased marginally, on average, and prices for the commodities exported have not rebounded from their peaks in the early 1980s. The low level of export earnings has constrained import capacity. The import share of food supplies averaged just over 12 percent in the base period and is projected to rise only marginally through 2009. Despite the fact that commercial imports under the high export scenario (see box "Accelerated Export Growth Scenario") exceed those under the base scenario by 34 percent in 2009, the impact of this change on food security is minimal. The import share of food supplies remains relatively small (9 percent in 2009) and the nutritional food gap is projected to be only 7 percent smaller in this scenario than that of the base scenario in 2009.

It should be noted that the assumption of significant increases in export earnings for this region is highly optimistic. Most studies indicate that the gains will be small following global trade liberalization unless additional investment is made in the export sector (see article "Trade Liberalization and the Sub-Saharan African Countries.") The countries in this region need to make significant policy changes that will promote export growth. Diversification of exports is one possible answer in that the region would be less dependent on a small number of commodities and less vulnerable to the price variability of those commodities. Another possibility is to encourage output of manufactured goods where price variation would be less of a consideration than agricultural exports.

# Asia

*The number of people in this region who are consuming below the nutritional target is projected to decline nearly 20 percent during the next decade. The region's most nutritionally vulnerable countries are Afghanistan, Bangladesh, and North Korea. [Stacey Rosen and M.S. Deepak]*

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Ten countries constitute the Asian region for this study—Afghanistan, Bangladesh, India, Indonesia, Nepal, North Korea, Pakistan, Philippines, Sri Lanka, and Vietnam. The region faces increasing food insecurity in selected countries during the next decade as the amount of food needed to maintain consumption at the base (1996-98) level—also known as the status quo food gap—is projected to nearly double, reaching more than 6 million tons in 2009. The nutrition food gap, the amount of food needed to raise consumption to the minimum nutritional standard, is projected at 5.2 million tons in 2009.

Throughout the projection period, the nutritional food gap is forecast to be smaller than the food gap to maintain consumption. In all other regions (except North Africa) in this study, the opposite is true. The results are principally driven by Pakistan, where the nutrition gaps are zero, but the gaps to maintain consumption are projected to grow nearly threefold between 1999 and 2009. Despite the fact that the country has no nutrition gap, this increase in the status quo gap represents a decline in the standard of living.

Results vary considerably by country. North Korea (included in this study for the first time), Afghanistan, and Bangladesh are the only countries in the region projected to have both nutritional and status quo food gaps. In each case, the nutrition gap is the larger gap, meaning that base consumption levels are below the minimum nutritional target. In Afghanistan, grain output is projected to follow pre-war trends, but the growth is not adequate to keep pace with the high population growth, which averages 3.8 percent per year through 2009. While Bangladesh is projected to face food gaps, they are quite small relative to overall food supplies as growth in grain output and commercial imports are nearly sufficient to meet food requirements. For example, the nutrition food gap as a share of aggregate food availability is projected at only 4 percent. By comparison, this share in Afghanistan measures 52 percent. North Korea's agricultural sector continues to be depressed, suffering from a lack of fertilizers, old machinery, and energy shortages. Grain output in 1999 is estimated at about 40 percent of the 1990 level. The small harvest and limited commercial import capacity resulting from a stagnant economy are expected to create large food gaps. While grain output is projected to grow through the next decade, the rate of growth will be slow and food gaps will widen as commercial imports will remain quite small.

India and Vietnam are projected to be able to maintain base consumption levels and meet minimum nutritional targets through 2009. In other words, the gaps for both countries are zero. In both India and Vietnam, growth in grain output is not expected to match the high rates achieved in the historical period (1980-98). However, domestic food supplies will be sufficient to meet food requirements due to a considerable slowing of the population growth rate.

The common thread among Indonesia, Nepal, Pakistan, the Philippines, and Sri Lanka is that these countries will face food gaps to maintain consumption, but not to meet minimum nutritional requirements. This means that they are projected to have an adequate supply of food with respect to the nutritional standard, but not necessarily enough to maintain recent per capita consumption levels. Pakistan is projected to have the largest status quo gap—rising from an estimated 505,000 tons in 1999 to about 1.4 million tons in 2009. A slowdown in the growth in grain area relative to the historical period, and a 2.5-percent annual population growth rate are the main factors behind the widening gap.

Unequal access to food due to skewed income distribution intensifies food insecurity in several countries. This is reflected in the difference between the region's nutrition gap and the "distribution gap," which measures the amount of food needed to raise consumption in each income group to the minimum nutritional target. Asia's distribution gap is projected to be 8.2 million tons in 2009, 3 million tons higher than the nutrition gap. While India, Nepal, and Sri Lanka are projected to have no nutritional gaps at the aggregate level, they will face distribution gaps as consumption in the lowest income groups in these countries is projected to fall short of the minimum nutritional target.

The depth of food insecurity is clearly illustrated in Afghanistan and North Korea, where consumption in every income group is projected to fall below the nutritional target in 2009 in the absence of external assistance and/or significant gains in agricultural performance. As a result, distribution gaps in these countries will be higher—roughly 10 percent—than the aggregate level nutrition gaps. Conversely, consumption is projected to exceed the nutritional target across all income groups in Indonesia, Pakistan, the Philippines, and Vietnam in 2009, assuming no major political disruptions. This means that distribution gaps in these countries will be zero.

### *Accelerated Export Growth Scenario*

The Uruguay Round of multilateral trade negotiations, which took place during 1986-94, is projected to have significant positive implications on global trade. Global market liberalization is expected to increase market access for exports from developing countries and generally enhance market efficiency. The trade gains will vary by country, and larger countries with diversified exports are in a better position to benefit than the small countries that are dependent on only a few export commodities.

To reflect this possible impact on food security of the study countries, we used the Food Security model and assumed a very optimistic export growth path. In this scenario, export growth rates were increased over the base scenario rate by 25 percent for the first 5 years of the projection period and by 50 percent during the last 5 years. For example, if export earnings grow 4 percent per year in the base scenario, the growth rate under this export scenario would be 5 percent for the first 5 years and 6 percent for the last 5 years. It is important to note that this is a highly optimistic scenario, particularly for the lower income countries.

The expected result of the higher export growth is an increase in commercial import capacity of the countries. In the food security model, commercial imports are specified to respond positively to an increase in commercial import capacity, which is assumed to be the sum of export earnings and net flow of credit (see appendix 1). A 1-percent increase in foreign exchange earnings is projected to lead to a 0.5- to 0.8-percent increase in commercial imports (estimated based on cross-country times series of 60 of the study countries). It is important to note that based on this assumption we have ignored the internal multiplier impact of growth in export earnings and any changes in the policy responses of the countries.

The impact of changes in export growth on food security of the countries also depends on their baseline export growth projections and the extent of their food import dependencies. For example, if the baseline export growth rate is 2 percent, a 25-percent increase raises the annual rate to 2.5 percent in the scenario. On the other hand, when the baseline rate is 8 percent, the 25-percent increase generates a 10-percent growth rate. Similarly, if half of the food availability consists of imports, a 1-percent growth in imports will increase total food availability by 0.5 percent. If the import share is smaller, say 10 percent, a 1-percent increase in food imports will increase food availability by only 0.01 percent.

It is worth noting that the distribution gap for the region as a whole shrinks between 1999 and 2009, reflecting some convergence in food consumption among income groups. Consistent with this finding is the decline in the number of hungry people in the region during the next decade. It is estimated that 548 million people—32 percent of the region's population—are food insecure in 1999. This number is projected to fall to 442 million—or 22 percent—in 2009.

The accelerated export growth scenario (see box “Accelerated Export Growth Scenario”) results in a 33-percent jump in commercial imports in 2009 as compared with the base scenario. Consequently, the food gap to maintain

consumption is projected to fall by almost half while the nutrition gap falls 11 percent. Bangladesh, India, Pakistan, the Philippines, and Vietnam have the greatest import response to the higher export earnings. This result can be attributed to a combination of already high export growth and, in most cases, a higher responsiveness of import capacity to changes in foreign exchange availability. In the case of Vietnam, commercial imports jumped roughly 50 percent. Because of the higher imports, status quo food gaps were eliminated in Indonesia, Pakistan, and the Philippines. Commercial imports in Afghanistan and North Korea increased only marginally in this scenario, and therefore the impact on food security was negligible.

**Table 5--Food Availability and Food Gaps for Asia**

Year	Grain production	Root production (grain equiv.)	Commercial imports	Food aid receipts (grains)	Aggregate availability of all food
			---1,000 tons ---		
1990	271,078	14,370	7,950	2,522	385,781
1991	274,715	14,717	7,429	2,721	393,738
1992	285,767	15,563	11,147	1,859	402,754
1993	291,725	15,248	11,264	1,792	416,880
1994	293,315	15,363	10,728	1,952	416,878
1995	299,597	15,133	17,790	2,231	437,115
1996	302,485	15,932	14,560	1,798	445,704
1997	305,950	16,764	15,885	1,962	472,909
1998	313,692	16,617	23,282	2,367	471,575
<b>Projections</b>				<b>Food gap</b>	
				SQ	NR (w/o food aid)
1999	302,931	16,387	18,457	<b>3,495</b>	<b>2,225</b>
2004	331,774	17,488	21,058	<b>5,049</b>	<b>4,260</b>
2009	363,683	18,659	24,617	<b>6,185</b>	<b>5,160</b>

**Asia**

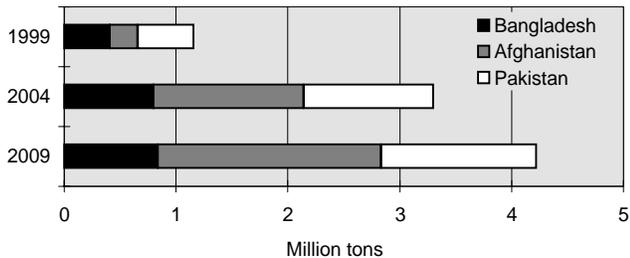
1,650 million people

By 2009, Asia's population--64 percent of the population of the 67 study countries--is projected to account for 22 percent of the nutritional food deficit.

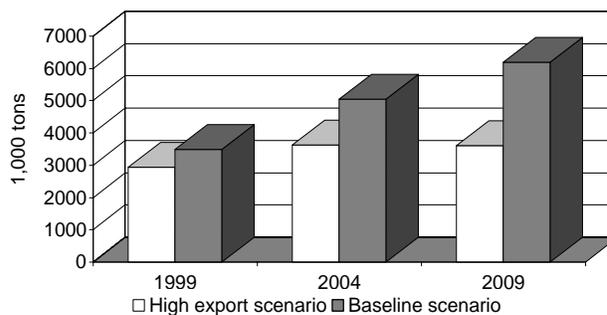
As food production growth slows and food aid to the region shrinks, commercial imports become increasingly important in feeding the burgeoning population.

By boosting their export earnings, Asian countries can augment their food imports to cut their collective nutritional gap 25 percent and their status quo gap 50 percent by 2009.

**Status Quo Gaps in Selected Asian Countries**



**Status Quo Food Gap in Asia**



**Impact of Accelerated Export Growth Compared to Baseline in 2009**

	Commercial grain imports		Nutritional food gap	
	High-export scenario	Baseline	High-export scenario	Baseline
			-----1,000 tons----	
<b>Asia</b>	<b>32,799</b>	<b>24,617</b>	<b>4,569</b>	<b>5,160</b>
Bangladesh	2,269	1,785	709	1,263
India	3,513	2,539	0	0
North Korea	280	263	1,239	1,263
Pakistan	5,249	4,026	0	0
Philippines	7,462	5,470	0	0
Vietnam	1,262	863	0	0

# Latin America and the Caribbean

*Commercial grain imports will become even more crucial in providing food security to the region. However, for the five countries with food gaps—Bolivia, Guatemala, Haiti, Honduras, and Nicaragua—increasing domestic production by investment in the agricultural sector is the more promising path to food security [Birgit Meade].*

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Average per capita food consumption in the eleven Latin American and Caribbean countries<sup>1</sup> is projected to stagnate over the next decade. Despite relatively slow increases in food production of 1.7 percent per year, strong commercial import growth of 2.8 percent will increase food supply enough to keep pace with population growth.

Among individual countries, however, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Nicaragua, and Peru will experience declining per capita consumption. Among that group, all except for Ecuador but also Bolivia face status quo and/or nutritional food gaps over the next decade. Four of these countries were severely affected by Hurricane Mitch in 1998. The destruction of crops, plantations, and infrastructure will have a long-lasting impact on agricultural production and export earnings.

Of the five countries with nutritional food gaps, (Bolivia, Guatemala, Haiti, Honduras, and Nicaragua) all but Haiti have the resources to close the food gap during the next decade provided they adopt policies to attract investment in the agricultural sector. Domestic production still provides the bulk of food consumption. Historical annual growth in grain yields in these countries ranged from -0.4 percent in Haiti to 1.6 percent in Bolivia. Much higher growth is required to satisfy food needs. To simply keep up with population growth, food production must grow 2.4 to 2.8 percent per year in these countries. Closing food gaps requires even higher growth rates.

Between 1980 and 1998, per capita consumption increased less than 1 percent per year. Because food production did not keep up with population growth, rising imports prevented declines in per capita consumption in all countries, except Nicaragua. Not all food imports are commercial. During the 1980s, imports consisted to a large extent of food aid. In 1987, food aid's share of total imports reached a high of 42 percent. This share dropped dramatically to 2 percent by 1998, in response to improved commercial import capacity in the region and declining food aid availability. Improved import capacity driven by rising export earnings has made Latin America and the Caribbean one of the most import-dependent regions in the world. During the

1980s, imports' share of food supplies averaged around 30 percent. By 1999, it has increased to 45 percent and is projected to reach 47 percent in 2009.

In the accelerated export growth scenario (see box "Accelerated Export Growth Scenario") imports' share of food supplies is projected to reach 53 percent by 2009, which translates into a 3.4-million-ton increase in commercial grain imports, compared to the baseline scenario. The food gaps would be reduced on average by about half a million tons. The increase in regional commercial imports is projected to be much larger than the decline in gaps because the impact of the accelerated export growth is most dramatic in countries without food gaps. Those countries tend to start out with a relatively high percentage rate in export growth, thus giving more weight to the high-export scenario. Furthermore, the impact is stronger in the import-dependent countries.

By contrast, the five countries with nutritional food gaps are precisely those whose imports provide the smallest shares of total supplies. Commercial imports by the five countries would average less than 30 percent, while the other group's share reaches 53 percent in 1999 and is projected to exceed 60 percent by 2009.

In Latin American countries, the most difficult dimension of food security is the distribution of food within countries. Poverty is widespread and income distribution is more unequal than in other parts of the world. For this reason our projection shows that the number of people unable to consume the nutritional minimum will increase from 57 to 75 million by 2009. The problem becomes more severe in Guatemala, Honduras, and Nicaragua, where food insecurity will affect larger parts of the population if current trends persist.

The amount of food necessary to raise consumption of each income group to the minimum nutritional target, the "distribution gap", is projected to reach about 3 million tons by 2009. The distribution gap would therefore be twice as big as the nutritional gap, which measures nutritional needs on an average national level. Close to 75 percent of this distribution gap arises in Bolivia, Guatemala, Haiti, Honduras, and Nicaragua, even though they comprise only one-third of the population. Haiti has the largest distribution gap of 670,000 tons. Without any food aid, Haiti's lowest income group is projected to consume only half the nutritional requirement.

<sup>1</sup>The countries studied here are four Central American countries: El Salvador, Guatemala, Honduras, and Nicaragua; three Caribbean countries: the Dominican Republic, Haiti, and Jamaica; and four South American countries: Bolivia, Colombia, Ecuador, and Peru.

**Table 6--Food Availability and Food Gaps for Latin America and the Caribbean**

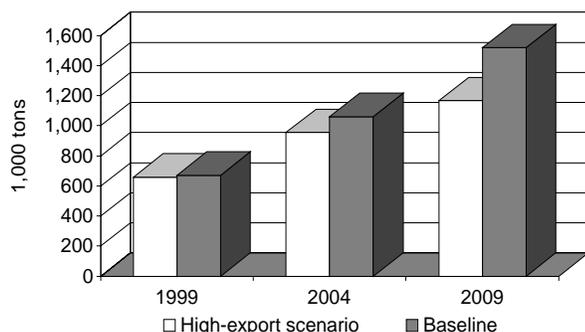
Year	Grain production	Root production (grain equiv.)	Commercial imports	Food aid receipts (grains)	Aggregate availability of all food
			---1,000 tons---		
1990	9,947	2,493	4,005	1,423	27,884
1991	9,614	2,465	4,413	1,817	27,878
1992	10,423	2,369	5,609	1,335	29,123
1993	11,065	2,720	5,727	1,371	29,247
1994	10,161	2,802	7,569	1,002	30,547
1995	10,013	2,960	8,623	434	32,459
1996	9,941	2,941	9,328	294	32,947
1997	9,761	3,133	9,673	360	32,932
1998	9,853	3,080	11,240	255	34,816
<b>Projections</b>				<b>Food gap</b>	
				SQ	NR (w/o food aid)
1999	10,497	3,089	11,136	<b>316</b>	<b>632</b>
2004	10,901	3,273	12,156	<b>883</b>	<b>992</b>
2009	11,821	3,467	13,581	<b>1,249</b>	<b>1,391</b>

**Latin America and the Caribbean**  
135 million people

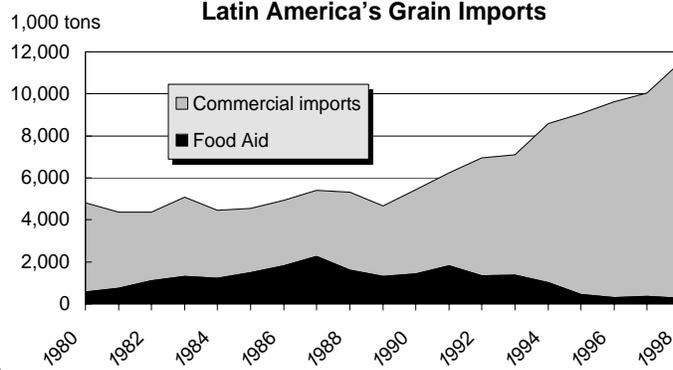
In 1999, agricultural infrastructure and consequently, food security continued to be negatively affected by the long-lasting repercussions of Hurricanes Mitch and Georges, which hit the region late in 1998.

Besides natural catastrophes, the region continues to struggle with poverty and hunger due to a very skewed income distribution. The distribution food gap, which measures the amount of food necessary to prevent hunger in all income groups, is projected to exceed 3 million tons by 2009--twice as much as the nutritional gap.

**Nutritional Food Gap in Latin America**



**Latin America's Grain Imports**



**Impact of Accelerated Export Growth Compared to Baseline in 2009**

	Commercial grain imports		Nutritional food gap	
	High-export scenario	Baseline	High-export scenario	Baseline
<b>Latin America &amp; Caribbean</b>	<b>17,007</b>	<b>13,581</b>	<b>934</b>	<b>1,391</b>
Bolivia	247	216	143	186
Guatemala	1,206	969	0	196
Haiti	330	322	554	565
Honduras	532	427	86	254
Nicaragua	228	201	151	190
Colombia	6,206	4,718	0	0

-----1,000 tons-----

# New Independent States (NIS)

*In 1999, there are food gaps for all of the NIS countries, reflecting below average harvests or chronic food deficits. Tajikistan is the only NIS country projected to have food gaps over the next decade. The regional outlook will continue to depend on political stability, oil and gas developments, and responses to the Russian ruble situation. [Michael Trueblood]*

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This report monitors the food security of five New Independent States: Armenia, Azerbaijan, Georgia, Kyrgyzstan, and Tajikistan. Food gaps based on current consumption levels are estimated for the 1999 in all five countries. However, only Tajikistan is projected to have sizable short run and long run nutrition-based food gaps due to widespread poverty and recovery from war. The other NIS countries are expected to reduce poverty and hunger with economic growth over the longer term, assuming continued peace. In the short run, though, lower income groups in several of these countries are projected to consume below nutritionally recommended levels.

Most of the NIS countries have achieved macroeconomic and agricultural stability in recent years. Inflation has been brought under control compared to previous years with many of the countries achieving positive economic growth. The dramatic contraction of the livestock sector related to the removal of subsidies, which affected the feed sector, may be leveling off. Grain used for human consumption has remained somewhat stable on a per capita basis in recent years, despite all the economic and agricultural changes, in part due to food aid. The challenge remains to improve domestic agricultural productivity and increase the capacity to commercially finance food imports in order to achieve pre-reform consumption levels and improve nutrition for vulnerable groups without relying on food aid.

***Political and economic uncertainty is a major issue in the region***—There are three sources of uncertainty that are expected to significantly affect economic growth, food production, and food consumption in the short- and medium-run: the Russian currency devaluation, questions about political stability, and the progress and speed of oil and gas developments.

The Russian currency devaluation in August 1998, had important direct and indirect effects on the former Soviet republics. As a direct effect, the devaluation hurt Russian purchasing power, thereby depressing demand for these countries' exports and lowering their export earnings. Indirectly many countries suffered because they still rely heavily on trade with Russia and the other NIS states (ranging from 41 percent of total trade in Armenia to 77 percent in Georgia). The devaluation pressured several of these countries to devalue their currencies to maintain their export

competitiveness, which led to a short run inflationary surge in a few countries as import prices rose. In the case of Armenia, remittances from Russia were severely reduced. The devaluation appears to have worked its way through most of the NIS economies, but fears of another devaluation are having an important psychological effect on investment and may be inducing capital flight. The episode also has highlighted the vulnerability of some countries that are largely dependent upon trade with other NIS countries.

Questions about peace persist in each of these five NIS countries. Armenia and Azerbaijan have had an uneasy truce over the Karabakh region for a few years now, but Azerbaijan and Turkey continue their trade embargo of Armenia. Georgia has on-going internal tensions, with President Shavardnaze surviving two assassination attempts in recent years. The current military battles between Russia and Chechna/Dagestan also are potentially destabilizing to these Caucasus countries. Recently, Kyrgyzstan has been battling rebels in the southern part of the country. Tajikistan has managed to move forward with its peace agreement, but there are on-going concerns of rebel activity and fears of potential refugees coming from Afghanistan. In each instance, the possibility exists that conflicts could re-emerge and disrupt agricultural production and trade.

The future of oil and gas discoveries in the Caspian Sea will have strong economic implications for Azerbaijan and have spillovers to the rest of the region. However, there are several question marks and layers of intrigue. One question is the actual size of reserves, as recent drilling has led to mixed results. Another contentious issue has been the negotiation of acceptable pipeline routes between countries. At least four different routes have been proposed for the pipeline (going over Turkey, Georgia, Russia, or Iran), complicated by environmental (earthquake) concerns. Another obstacle is the financing of such a large venture among large companies, possibly backed by government credit guarantees by unstable governments. Additional questions have been raised regarding the long term downward trend for oil and gas prices and what that could mean for these investments. A final issue, most relevant to this report, is whether the potential wealth will be distributed among some of the lower income groups and lead to improved economic and food security.

**Table 7--Food Availability and Food Gaps for NIS**

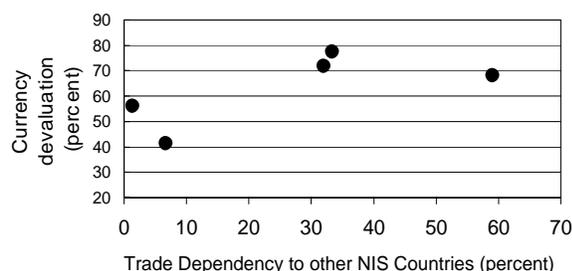
Year	Grain production	Root production (grain equiv.)	Commercial imports	Food aid receipts (grains)	Aggregate availability of all food
			---1,000 tons---		
1990	4,070	---	---	---	---
1991	3,814	---	---	---	---
1992	3,799	---	4,219	---	---
1993	3,551	246	3,147	1,159	7,396
1994	2,911	250	1,160	1,524	6,279
1995	2,808	291	851	1,112	5,935
1996	3,697	308	730	1,061	6,049
1997	4,254	328	1,460	342	6,758
1998	4,154	382	1,407	558	6,893
<b>Projections</b>				<b>Food gap</b>	
				SQ	NR (w/o food aid)
1999	3,582	326	1,325	<b>874</b>	<b>945</b>
2004	4,741	353	1,474	<b>13</b>	<b>410</b>
2009	5,074	382	1,727	<b>0</b>	<b>415</b>

**NIS**

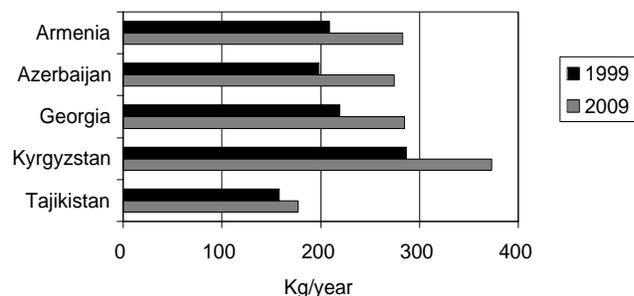
27 million people

Production in 1999 is down throughout the region, leading to short run food gaps in each country based on recent consumption levels. Tajikistan is projected to have on-going nutrition-based food gaps as it continues to recover from war. Food security in the short and medium term will depend on lingering Russian currency devaluation effects, political stability, and oil and gas developments. Tajikistan would benefit in terms of food security from trade liberalization, but it has not even begun the WTO application process.

**NIS Countries' Currencies Devalued To Keep Exports Competitive After Russian Devaluation**



**NIS Current and Projected Average Per Capita Grain Consumption Levels**



**Impact of Accelerated Export Growth Compared to Baseline in 2009**

	Commercial grain imports		Nutritional food gap	
	High-export scenario	Baseline	High-export scenario	Baseline
<b>NIS</b>	<b>2,275</b>	<b>1,727</b>	<b>251</b>	<b>415</b>
Armenia	380	296	0	0
Azerbaijan	823	609	0	0
Georgia	467	357	0	0
Kyrgyzstan	137	103	0	0
Tajikistan	468	363	251	415

-----1,000 tons-----

Short run food gaps exist throughout the region, but only Tajikistan is projected to have long run nutrition-based food gaps—Tajikistan, which is still recovering from war, is estimated to have a relatively small food gap in 1999 based on current consumption levels (about 10 percent below requirements), but relatively large nutrition-based food gaps through the next decade (about 33 percent below requirements). However, data used in this analysis are very weak. Last year's grain production appears to have been substantially overestimated as some land reportedly sown to wheat was diverted to cotton. Nonetheless, Tajikistan's poverty and low food consumption levels extend to the upper income groups, resulting in consumption that is much below recommended nutrition levels. Over the next 10 years, the nutrition-based food gap is projected to narrow but remain a problem (the only NIS country with this projection outcome).

Production is down this year in the other four NIS countries, which is expected to lead to short-run food gaps based on recent per capita consumption levels. Armenia's grain pro-

duction is down about 22 percent from the previous years due to a poor harvest. Azerbaijan's production is down almost 27 percent, reflecting growing import competition, inadequate marketing channels, and land privatization, which has led to greater household food production. Georgia's production is about the same as last year, but the modest food gap highlights the role that food aid has played in meeting previous per capita consumption levels.

***Trade liberalization will have a limited impact on NIS food security***—At this time, only Kyrgyzstan has been accepted into the World Trade Organization, while Armenia and Georgia have been making good progress to join. Azerbaijan's negotiations are not as far along. The country that would benefit the most in terms of food security from increased export earnings in trade liberalization modeling scenarios—Tajikistan—has not even started the process of joining. The other NIS countries are projected to eliminate their food security gaps with economic growth, even without trade liberalization.

### ***Food Aid for Russia***

In 1999 the Russian grain harvest will again be relatively low, keeping alive concerns about the country's food security. Despite the disappointing harvest, food grain production should be sufficient to maintain per capita consumption of bread products on a par with average levels during the past decade. Russian agricultural officials are in fact arguing that the country does not need food grain or other foodstuffs, but rather animal feed, to help stem the severe contraction of the livestock sector that began during the reform period. Adding to concerns about low output is the distribution problem that grain surplus-producing regions are restricting outflows to deficit regions, which can result in local shortages.

According to September 1999 USDA figures, Russian grain output in 1999 is projected at 55 million metric tons, following 48 million in 1998, the country's worst harvest in decades. These figures compare to an average output of 70 million tons over the last 5 years.

However, the critical variable affecting human consumption is the output of food grain. During the reform period, Russian food grain consumption averaged no more than 20 million tons a year. In 1998, Russia's food grain production was only slightly below this level, and the quality was high. Another factor that mitigated the poor 1998 harvest is that Russia carried over large stocks of grain from the bountiful 1997 crop of 88 million tons. Although by mid-1999 Russian grain stocks had been drawn down to less than 2 million tons (according to USDA figures), food grain output will again be close to 20 million tons, and quality once more will be good.

Russian agricultural officials have publicly stated in 1999 that the country does not need more food aid (that is, aid in the form of food grain or other foodstuffs for human

consumption), and rather are requesting additional aid in the form of animal feed. They have expressed specific interest in feed wheat, corn, soybeans, and soybean meal. Since reform began in the early 1990s, the Russian livestock sector (both animal inventories and production) has contracted by about half, and the downsizing continues. Preliminary Russian figures indicate that from August 1998 to August 1999 Russian production of meat and milk fell by about 8 and 4 percent.

A mitigating point concerning how the livestock sector's downsizing is affecting food security is that the contraction can be viewed as a necessary and inevitable part of market reform. Livestock production and consumption drop to levels more consistent with the country's real wealth and income. In 1990, per capita meat consumption in Russia was about twice as high as in other countries with the same level of per capita GNP, and equal to consumption in rich OECD nations. Reform has substantially reduced the large producer and consumer subsidies that were necessary to support the artificially high levels of livestock production and consumption.

However, a point that justifies any additional grain to Russia (whether food or feed grain) is that stocks have fallen to low levels. Adding to this concern is that most grain surplus-producing regions within Russia are restricting the outflow of foodstuffs, which can prevent deficit regions from obtaining necessary supplies.

In 1998/99 the United States and EU gave Russia food aid packages, with wheat and meat being the main commodities provided. The United States agreed to give 3.2 million tons of commodities worth \$1.1 billion (with \$520 million being a trade credit), and the EU 1.8 million tons of products worth \$470 million. [William Liefert]