

Undernourishment around the world

Hunger and mortality

MILLIONS OF PEOPLE, including 6 million children under the age of five, die each year as a result of hunger. Of these millions, relatively few are the victims of famines that attract headlines, video crews and emergency aid. Far more die unnoticed, killed by the effects of chronic hunger and malnutrition, a "covert famine" that stunts their development, saps their strength and cripples their immune systems.

Where prevalence of hunger is high, mortality rates for infants and children under five are also high, and life expectancy is low (see map and graphs). In the worst affected countries, a newborn child can look forward to an average of barely 38 years of healthy life (compared to over 70 years of life in "full health" in 24 wealthy nations). One in seven children born in the countries where hunger is most common will die before reaching the age of five.

Not all of these shortened lives can be attributed to the effects of hunger, of course. Many other factors combine with hunger and malnutrition to sentence tens of millions of people to an early death. The HIV/AIDS pandemic, which is ravaging many of the same countries where hunger is most widespread, has reduced average life expectancy across all of sub-Saharan

Africa by nearly five years for women and 2.5 years for men.

Even after compensating for the impact of HIV/AIDS and other factors, however, the correlation between chronic hunger and higher mortality rates remains striking. Numerous studies suggest that it is far from coincidental. Since the early 1990s, a series of analyses have confirmed that between 50 and 60 per cent of all childhood deaths in the developing world are caused either directly or indirectly by hunger and malnutrition.

Relatively few of those deaths are the result of starvation. Most are caused by a persistent lack of adequate food intake and essential nutrients that leaves children weak, underweight and vulnerable.

As might be expected, the vast majority of the 153 million underweight children under five in the developing world are concentrated in countries where the prevalence of undernourishment is high (see graph on facing page).

Even mild-to-moderate malnutrition greatly increases the risk of children dying from common childhood diseases. Overall, analysis shows that the risk of death is 2.5 times higher for children with only mild malnutrition than it is for children who are adequately nourished. And the risk increases sharply along with the severity of malnutrition (as measured by their weight-to-age ratio). The risk of

death is 4.6 times higher for children suffering from moderate malnutrition and 8.4 times higher for the severely malnourished.

Common diseases often fatal for malnourished children

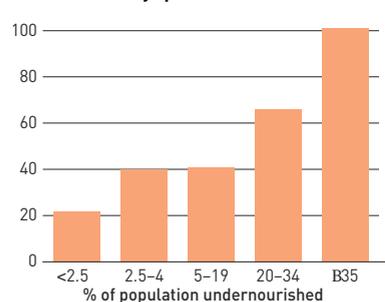
Infectious diseases are the immediate cause of death for most of the 11 million children under the age of five who die each year in the developing world. But the risk of dying from those diseases is far greater for children who are hungry and malnourished.

The four biggest killers of children are diarrhoea, acute respiratory illness, malaria and measles. Taken together, these four diseases account for almost half of all deaths among children under the age of five. Analysis of data from hospitals and villages shows that all four of these diseases are far more deadly to children who are stunted or underweight.

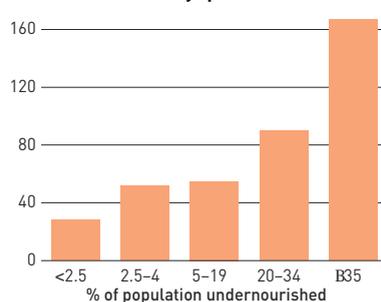
In the case of diarrhoea, numerous studies show that the risk of death is as much as nine times higher for children who are significantly underweight, the most common indicator of chronic undernutrition. Similarly, underweight children are two to three times more likely to die of malaria and acute respiratory infections, including pneumonia, than well-nourished children.

Mortality rates and life expectancy in countries grouped by prevalence of undernourishment, 2000

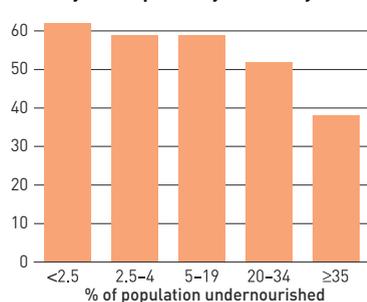
Infant mortality (per 1 000 live births)



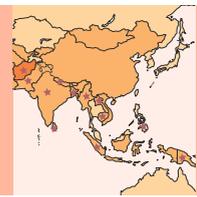
Under-five mortality (per 1 000)



Healthy life expectancy at birth (years)



Source: FAO/WHO/UNICEF



Lack of dietary diversity and essential minerals and vitamins also contributes to increased child and adult mortality. Iron deficiency anaemia greatly increases the risk of death from malaria, and vitamin A deficiency impairs the immune system, increasing the annual death toll from measles and other diseases by an

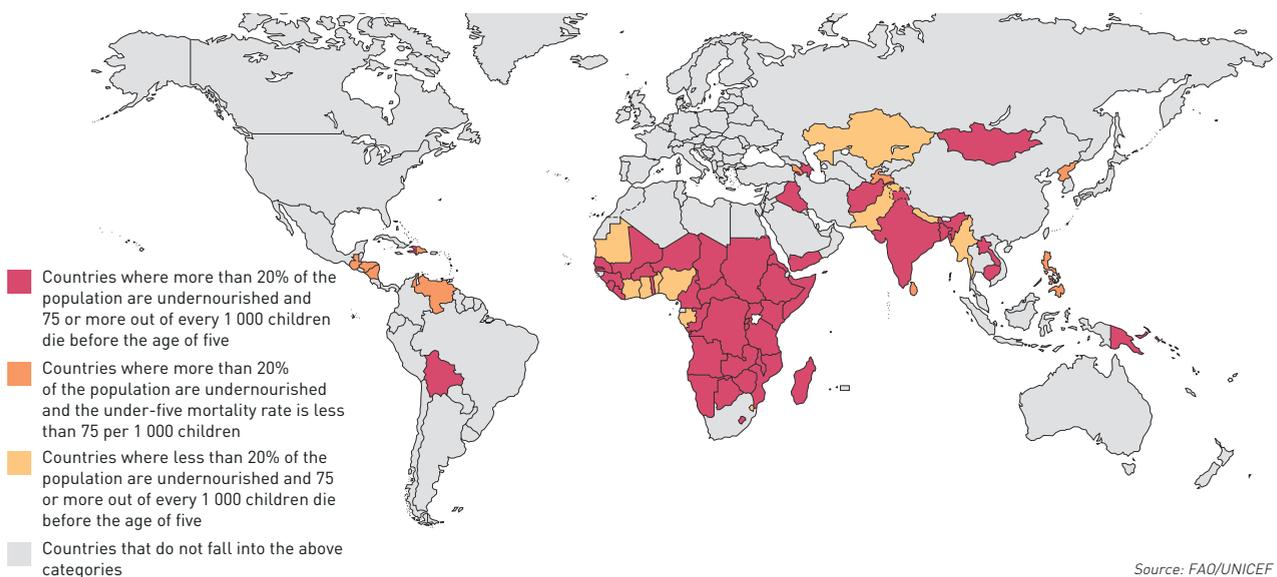
estimated 1.3–2.5 million children (see graph page 24).

Improving nutrition to save lives

The weight of evidence clearly argues that eliminating hunger and malnutrition could save millions of lives each year.

That conclusion has been confirmed by a study that examined factors that had helped reduce child mortality during the 1990s. Topping the list were the decline in the proportion of children who were malnourished and lacking access to adequate water, sanitation and housing.

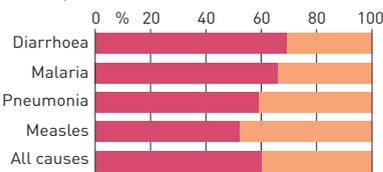
Correspondence between high rates of chronic hunger and childhood mortality, 2000



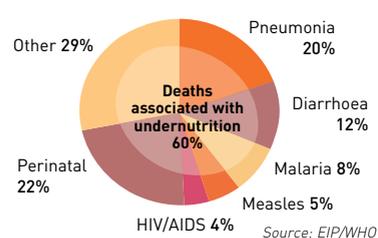
Source: FAO/UNICEF

Hunger and child mortality

Estimated contribution of undernutrition to under-five mortality worldwide, by cause, 2000

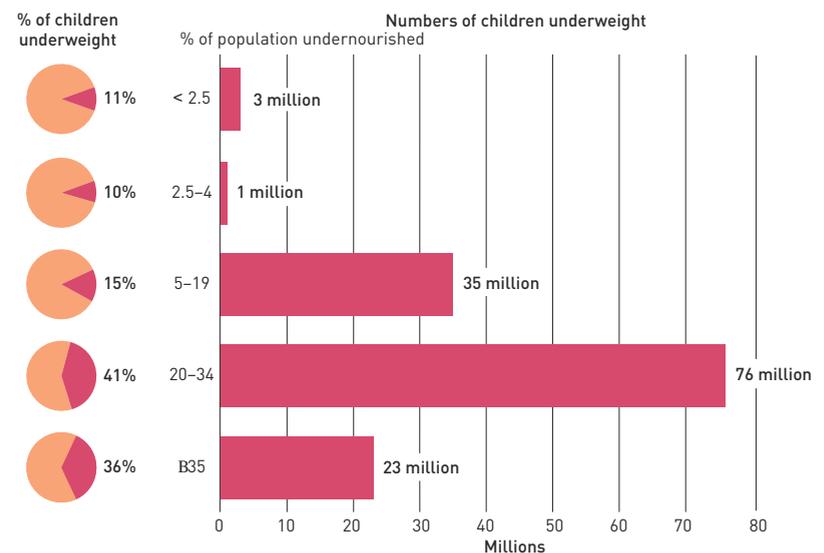


Major causes of death among children under five worldwide, 2000



Source: EIP/WHO

Proportion and number of underweight children, 1997–99



Source: FAO/UNICEF

Undernourishment around the world

Counting the hungry: latest estimates

FAO'S LATEST ESTIMATES of the number of undernourished people confirm an alarming trend – progress in reducing hunger in the developing world has slowed to a crawl and in most regions the number of undernourished people is actually growing.

Worldwide, the latest estimates indicate that 840 million people were undernourished in 1998–2000. This figure includes 11 million in the industrialized countries, 30 million in countries in transition and 799 million in the developing world. The latest figure of 799 million for the developing countries represents a decrease of just 20 million since 1990–92, the benchmark period used at the World Food Summit (WFS). This means that the average annual decrease since the Summit has been only 2.5 million, far below the level required to reach the WFS goal of halving the number of undernourished people by 2015. It also means that progress would now have to be accelerated to 24 million per year, almost 10 times the current pace, in order to reach that goal.

Closer examination reveals that the situation in most of the developing world is even bleaker than it appears at first glance. The marginal global gains are the result of rapid progress in a few large countries. China alone has reduced the number of undernourished people by 74 million since 1990–92. Indonesia, Viet Nam, Thailand, Nigeria, Ghana and Peru

Symposium examines methods of measuring undernourishment

The numbers, graphs and analysis presented here and in Tables 1 and 2 (pages 31–36) are based on FAO's estimates of the prevalence of undernourishment. These estimates are based on calculations of the amount of food available in each country (national dietary energy supply or DES) and a measure of inequality in distribution derived from household income/expenditure surveys.

As a contribution to discussion of how methods can be improved, FAO sponsored an international scientific symposium in June 2002. The symposium examined the FAO methodology as well as four other methods for measuring the prevalence or impact of hunger and malnutrition. The other four methods are differentiated by

the source of the data that they rely upon: household expenditure surveys; individual food intake surveys; anthropometric surveys on children and adults; and qualitative and indicative self-assessment surveys (such as the US Measure of Food Insecurity). The strengths and weaknesses of each method were actively debated and assessed in the context of producing global assessments of undernourishment.

The most important outcome of the symposium was the recognition that the five methods measure different aspects of food security and could be used in a complementary manner to improve both information about food insecurity and action to combat it. Proceedings of the meeting will be published at the end of 2002.

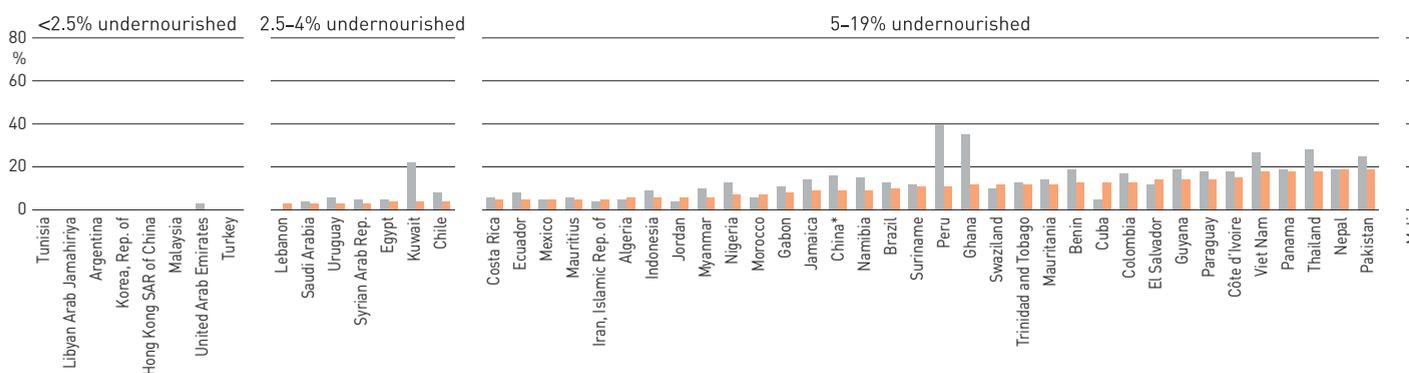
have all achieved reductions of more than 3 million, helping to offset an increase of 96 million in 47 countries where progress has stalled. But if China and these six countries are set aside, the number of undernourished people in the rest of the developing world has increased by over 80 million since the WFS benchmark period.

When the number of undernourished is considered as a proportion of a country's total population, the picture is somewhat more encouraging. In the majority of developing countries, the proportion has actually decreased since the WFS. In

26 of the 61 developing countries that achieved a proportional decrease in undernourishment, however, the absolute number of undernourished people has continued to rise as a result of rapid population growth. One of those 26 countries is India, where the ranks of the undernourished have swollen by 18 million, despite the fact that the proportion fell from 25 to 24 percent.

Sub-Saharan Africa continues to have the highest prevalence of undernourishment and also has the largest increase in the number of undernourished

Proportions of undernourished in developing countries, 1990–92 and 1998–2000





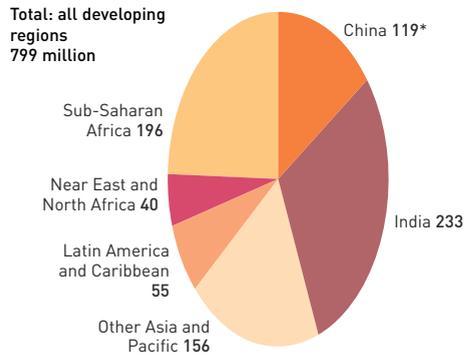
people. But the situation in Africa is not uniformly grim. Most of the increase took place in Central Africa, driven by the collapse into chronic warfare of a single country, the Democratic Republic of the

Congo, where the number of undernourished people has tripled.

West Africa, with Southeast Asia and South America, has reduced significantly both the prevalence and the number of

undernourished people. But prospects are troubling for Central America, the Near East and East Asia (excluding China), where both of these elements have increased.

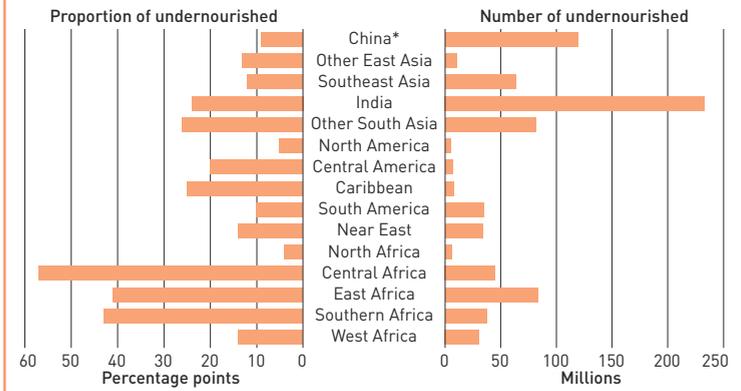
Undernourished, 1998–2000 (millions)



* including Taiwan Province of China

Source: FAO

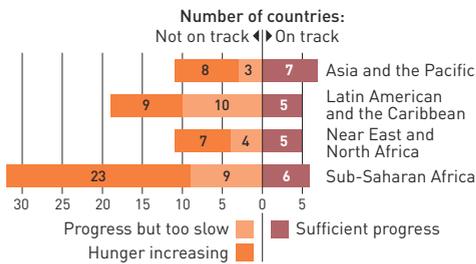
Number and proportion of undernourished, 1998–2000



* including Taiwan Province of China

Source: FAO

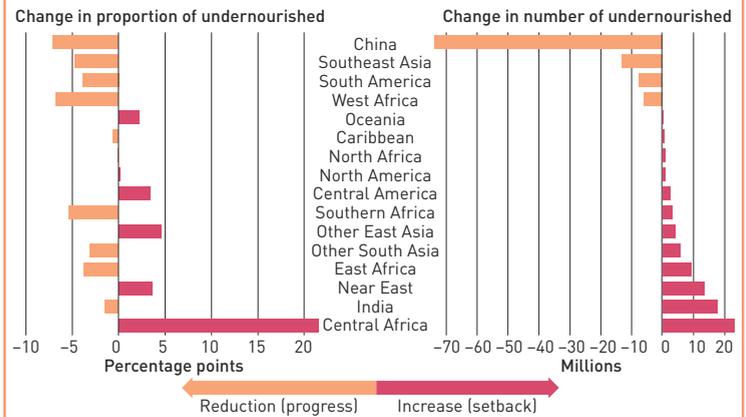
Towards the WFS goal at country level



Only 23 countries in the developing world are on pace to achieve the World Food Summit goal. In more than twice as many countries, the number of undernourished people is actually increasing.

Source: FAO

Change in undernourishment, 1990–92 to 1998–2000

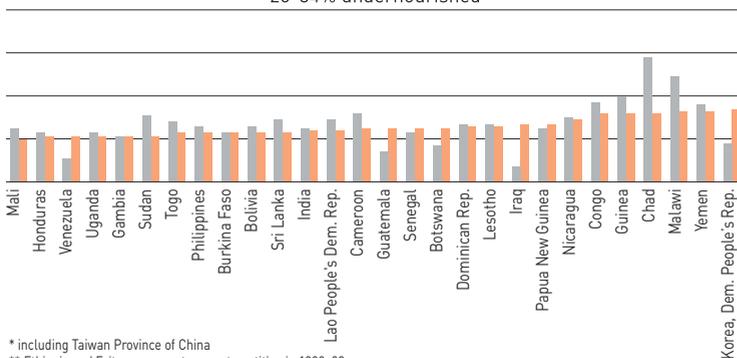


* including Taiwan Province of China

Source: FAO

Grey bars: 1990–92 Coloured bars: 1998–2000

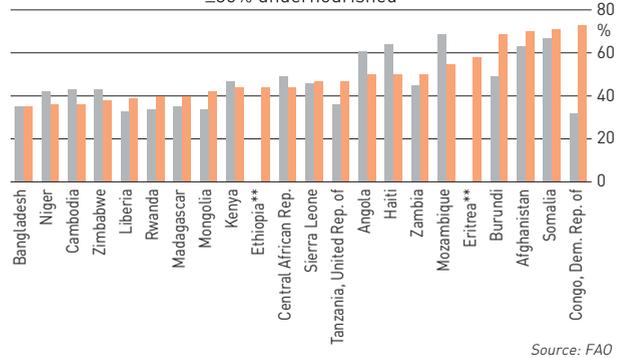
20–34% undernourished



* including Taiwan Province of China

** Ethiopia and Eritrea were not separate entities in 1990–92

≥35% undernourished



Source: FAO

Undernourishment around the world

Undernourishment, poverty and development

THE WORLD FOOD SUMMIT (WFS) in 1996 set the goal – to reduce the number of hungry people in the world by half before the year 2015. Four years later, that goal was echoed in the first of the Millennium Development Goals (MDGs), which set targets of reducing by half both the proportion of people who suffer from hunger and the proportion living on less than US\$1 per day.

These targets are closely related; neither can be achieved without the other, and achieving both is essential to success in reaching the rest of the MDGs.

Poverty and hunger – mutual causes, devastating effects

Measures of food deprivation, nutrition and poverty are strongly correlated (see graphs). Countries with a high prevalence of undernourishment also have high prevalences of stunted and underweight children. In these countries, a high percentage of the population lives in conditions of extreme poverty. In countries where a high proportion of the population is undernourished, a comparably high proportion struggles to survive on less than US\$1 per day.

While poverty is undoubtedly a cause of hunger, hunger can also be a cause of

poverty. Hunger often deprives impoverished people of the one valuable resource they can call their own: the strength and skill to work productively. Numerous studies have confirmed that hunger seriously impairs the ability of the poor to develop their skills and reduces the productivity of their labour.

Hunger in childhood impairs mental and physical growth, crippling the capacity to learn and earn. Evidence from household food surveys in developing countries shows that adults with smaller and slighter body frames caused by undernourishment earn lower wages in jobs involving physical labour. Other studies have found that a 1 percent increase in the Body Mass Index (BMI, a measure of weight for a given height) is associated with an increase of more than 2 percent in wages for those toward the lower end of the BMI range.

Micronutrient deficiencies can also reduce work capacity (see pages 24–25). Surveys suggest that iron deficiency anaemia reduces productivity of manual labourers by up to 17 percent. As a result, hungry and malnourished adults earn lower wages. And they are frequently unable to work as many hours or years as well-nourished people, as they fall sick more often and have shorter life spans.

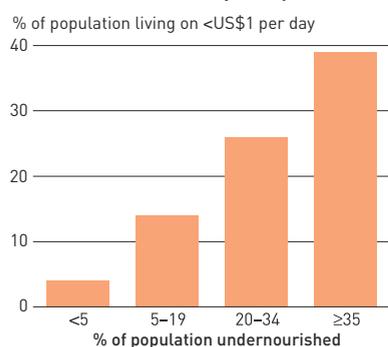
Hunger and the poverty of nations

Widespread hunger and malnutrition impair economic performance not only of individuals and families, but of nations. Anaemia alone has been found to reduce GDP by 0.5–1.8 percent in several countries (see graph). Studies in India, Pakistan, Bangladesh and Viet Nam estimated conservatively that the combined effect of stunting, iodine deficiency and iron deficiency reduced GDP by 2 to 4 percent. Recent calculations by FAO suggest that achieving the WFS goal of reducing the number of undernourished people by half by the year 2015 would yield a value of more than US\$120 billion. That figure reflects the economic impact of longer, healthier, more productive lives for several hundred million people freed from hunger.

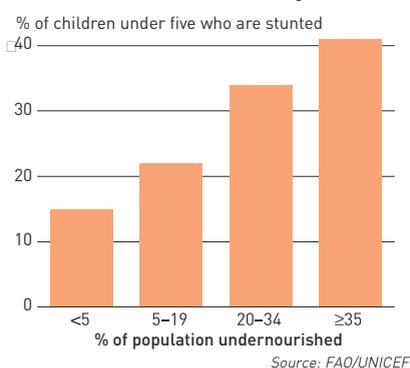
Nobel Prize-winning economist Robert Fogel has pointed out that hungry people cannot work their way out of poverty. He estimates that 20 percent of the population in England and France was effectively excluded from the labour force around 1790 because they were too weak and hungry to work. Improved nutrition, he calculates, accounted for about half of the economic growth in Britain and France between 1790 and 1880. Since many

Undernourishment, poverty and indicators for other Millennium Development Goals: 1995–2000

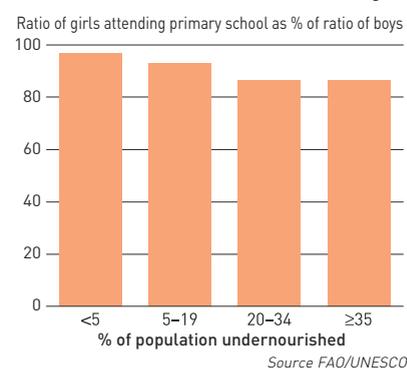
Undernourishment and poverty



Undernourishment and stunting



Undernourishment and female schooling





developing countries are as poor as Britain and France were in 1790, his analysis suggests reducing hunger could have a similar impact in developing countries today.

A key to Millennium Development Goals

Evidence clearly shows that failure to eliminate hunger will undermine efforts to reach the other MDGs as well (see box).

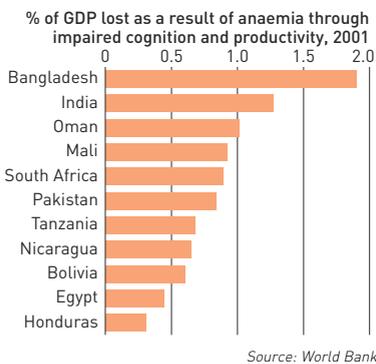
Hopes for achieving universal primary education and literacy, for example, will be thwarted while millions of hungry children suffer from diminished learning capacity or are forced to work instead of attending school. Low birth weight, protein energy malnutrition, iron deficiency anaemia and iodine deficiency are all linked to cognitive deficiencies. Hunger also limits school attendance. In Pakistan, a relatively small improvement in height for age increased school enrolment rates substantially: 2 percent for boys, 10 percent for girls. This steep increase for girls suggests one way in which reducing hunger would also accelerate another of the MDGs – promoting gender equality.

Data and analysis confirm that reducing hunger and malnutrition could have a decisive impact on reducing child mortality (see pages 6–7), improving maternal health (see pages 24–25), and on combating HIV/AIDS, malaria and other diseases (see pages 24–25).

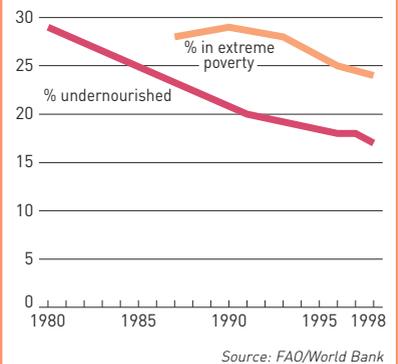
Hunger impacts other Millennium Development Goals

Goal	Selected indicators	Impact of hunger
Achieve universal primary education	<ul style="list-style-type: none"> net enrolment ratio literacy rate 	<ul style="list-style-type: none"> reduces school attendance impairs cognitive capacity
Promote gender equality	<ul style="list-style-type: none"> ratio of girls to boys in primary education 	<ul style="list-style-type: none"> may reduce school attendance more for girls
Reduce child mortality	<ul style="list-style-type: none"> under-five mortality rate 	<ul style="list-style-type: none"> associated with 60 percent of child deaths
Improve maternal health	<ul style="list-style-type: none"> maternal mortality rate 	<ul style="list-style-type: none"> greatly increases risk of maternal death
Combat HIV/AIDS, malaria and other diseases	<ul style="list-style-type: none"> HIV prevalence among pregnant women death rates associated with malaria 	<ul style="list-style-type: none"> spurs migratory labour that increases spread of HIV multiplies child death rates from two- to three-fold
Ensure environmental sustainability	<ul style="list-style-type: none"> proportion of land area covered by forest 	<ul style="list-style-type: none"> leads to unsustainable use of forest lands and resources

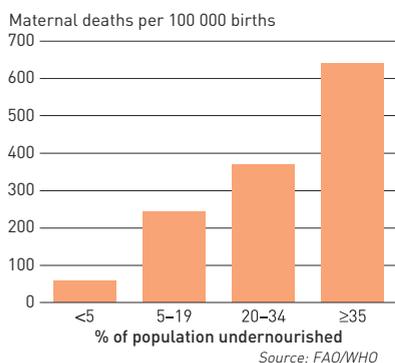
Estimated cost of anaemia



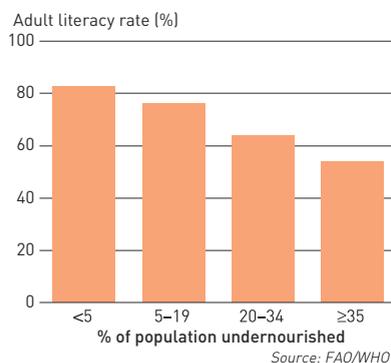
Undernourishment and poverty



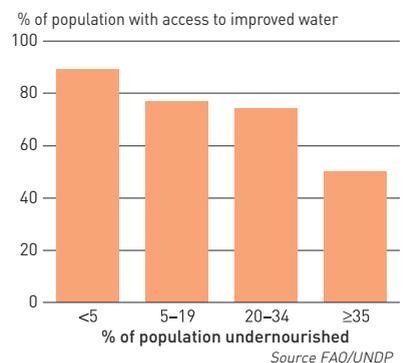
Undernourishment and maternal mortality



Undernourishment and literacy



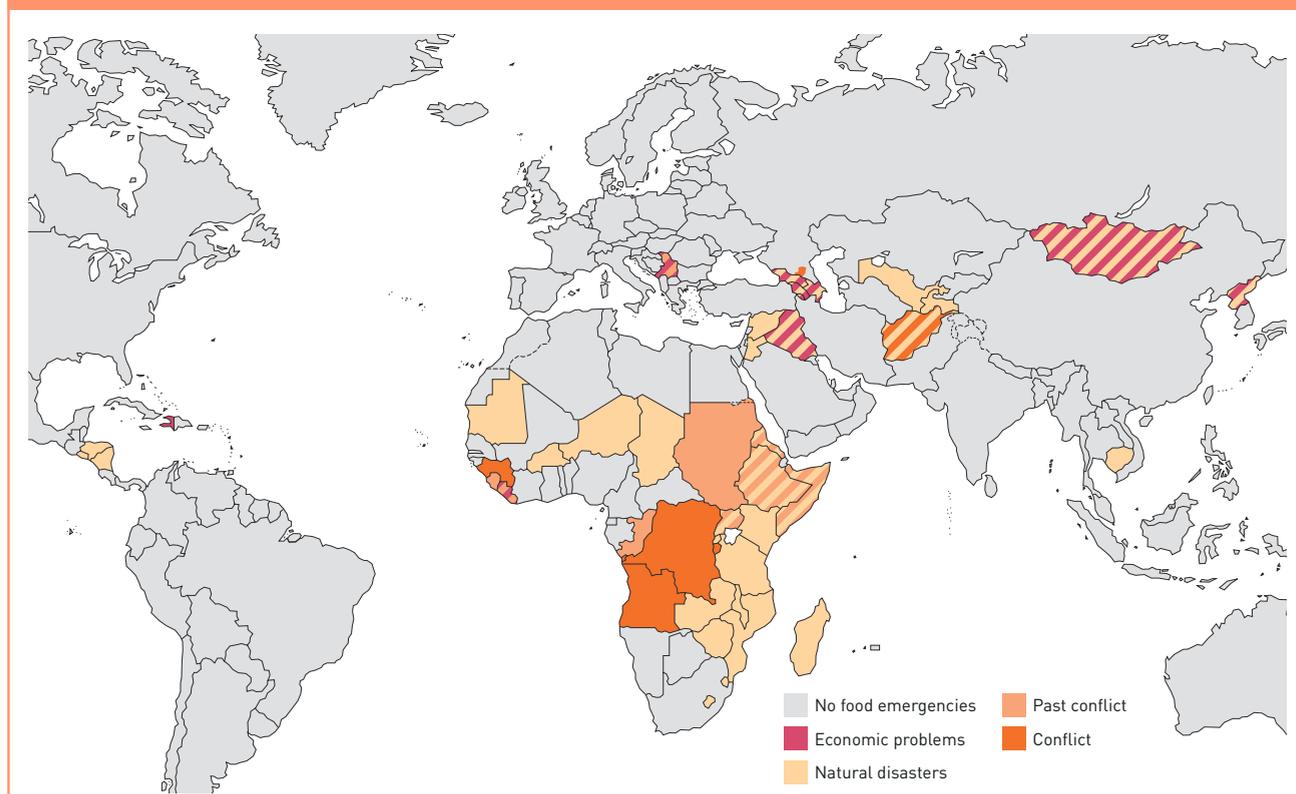
Undernourishment and improved water



Undernourishment around the world

Hunger hotspots

Locations facing humanitarian emergencies, 2001–02



MOST OF THE WIDESPREAD HUNGER in a world of plenty results from grinding, deeply rooted poverty. In any given year, however, between 5 and 10 percent of the total can be traced to specific events: droughts or floods, armed conflict, political, social and economic disruptions. Frequently, these shocks strike countries already suffering from endemic poverty and struggling to recover from earlier natural and human-caused disasters. The past year was no exception.

As this report was being completed in June 2002, 32 countries faced exceptional food emergencies, with an estimated 67 million people requiring emergency food aid as a result. Both the number of countries and the number of people affected remained almost identical to a year earlier, as did the causes and

locations of many of them. As in previous years, drought and conflict were the most common causes and Africa the most affected region.

Worldwide, drought and other unfavourable weather conditions triggered food shortages in 21 of the 32 countries facing emergencies. War, civil strife and the lingering effects of past conflicts sparked crises in 15 countries, including several also plagued by bad weather. General economic problems severely undermined food security in eight countries, frequently in combination with adverse weather.

Dry weather and excessive rains during the growing season devastated food crops in several countries in southern Africa for the second consecutive year (see story, next page). In addition, the effects of ongoing and past civil conflicts threaten

the food security of over 14 million people in 11 African countries.

Asia received the most World Food Programme emergency food aid in 2001, mainly because of continuing crisis in the Democratic People's Republic of Korea. Eight other Asian countries faced food shortages resulting from droughts and severe winter weather, compounded by economic decline in many countries of the Commonwealth of Independent States.

In Afghanistan, decades of civil strife and a series of droughts have exposed millions of people to extreme hardship (see story, next page).

In Central America, a severe drought that devastated crops in 2001, combined with a collapse in world coffee prices, left families in rural areas in several countries of the region dependent on food aid.



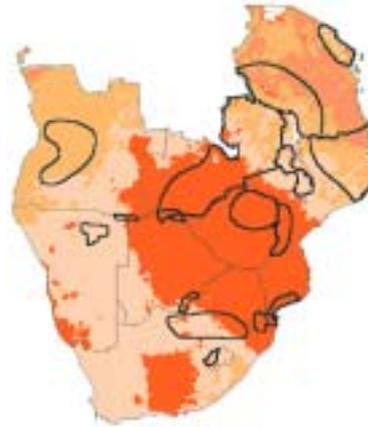
13 million people face food emergency in southern Africa

Southern Africa faces its worst food crisis since the devastating drought of 1992. Nearly 13 million people in the subregion require emergency food aid, after a combination of droughts, floods and economic dislocations reduced harvests in several countries to half their normal levels or lower.

Worst affected has been Zimbabwe, where an estimated 6 million people need emergency food aid. Until recently, Zimbabwe has been an exporter of maize. But over the past two years, bad weather, political conflict and economic problems have combined to cripple production and impede imports. Ongoing disputes over land redistribution have led to severely reduced plantings in the commercial sector. Maize output has plummeted to less than one-quarter of the level achieved just two years earlier. The country faces an unprecedented deficit of more than 70 percent of its cereal requirements, at a time when it has little foreign exchange to import food.

Maize production has also fallen sharply in several other countries of the region. After the first year of bad harvests in 2001, average prices spiked higher by 150 percent in Zambia, 300 percent in Zimbabwe and almost 400 percent in Malawi, seriously undermining access to food for large sections of the population.

Total maize import requirements in nine countries in southern Africa have been estimated at about 3.4 million tonnes. Of those, some 1.2 million tonnes are needed as emergency food aid for the most vulnerable groups. Many families have already exhausted their coping



- Maize-growing area
- Drought-affected area: rainfall < 70% normal, January-March 2002

Source: FAO

mechanisms after the poor harvest of 2001. In some areas, farmers did not gather any crop at all in 2002 and were eating tree stems and wild food at harvest time.

A major international effort has been launched to provide both relief food and seeds and other agricultural inputs for the next main planting season. The effort has been slow to get under way, however. As this report goes to press (end August 2002), only 25.5 percent of the joint WFP/FAO emergency appeal of US\$507.3 million has been pledged, and some already donated food (maize) has been rejected by one recipient country for being genetically modified.

Maize requirements in southern Africa, 2000/01 to 2002/03



Source: FAO

Afghan drought and conflict

Even before the events of 11 September 2001, Afghanistan was gripped by a serious food crisis. After a third year of drought, cereal output in 2001 fell to barely half the production in 1998. Livestock herds, which are critical to the country's economy and food security, had been reduced by an estimated 40 percent.

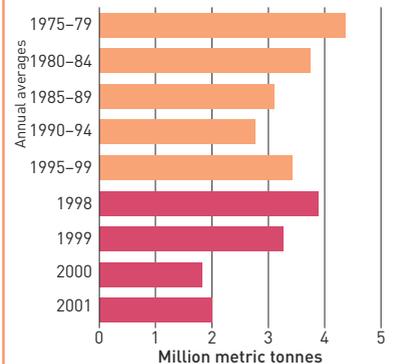
Requirements for food imports for 2001-02 reached a record level of 2.2 million tonnes, but commercial imports dropped sharply when warfare erupted. Food aid increased but not enough to meet the needs of almost 10 million people, entirely dependent on food assistance.

Hunger and malnutrition have increased sharply in a country where stunting of children was reported to be as high as 52 percent in 1998, even before drought set in and food production plummeted.

Cereal production has rebounded significantly in 2002, buoyed by increased rainfall and better access to agricultural inputs. Output is expected to surpass the poor levels of the past three years, although still falling short of the 1998 harvest.

Despite this recovery, millions of people remain in need of food assistance. After years of conflict and drought, many families have exhausted their assets, have suffered deaths and disabilities or have been driven from their homes. Many of the country's irrigation systems lie in ruins and about half of the irrigated area has gone out of use. Large-scale investment is urgently needed to repair rural infrastructure and restore crop and livestock production.

Afghanistan cereal production



Source: FAO