Just how deep is the hunger suffered by the world’s more than 800 million undernourished people? The second edition of *The state of food insecurity in the world* introduces a new tool for assessing the severity of want: the depth of hunger. This measure of how much food the hungry lack rounds out the picture of food deprivation.

This edition also presents the latest estimates of the numbers of hungry people around the world. It finds that 826 million people do not get enough to eat – 792 million people in developing countries and another 34 million in industrialized countries and countries in transition – essentially no change since the last count. This is a sad indictment of the world’s failure to respond adequately in a time of unprecedented plenty.

FAO estimates that the number of hungry people in developing countries was declining by 8 million a year in the first half of the 1990s. But if we are to fulfill the pledge made at the 1996 World Food Summit, that number must reach 20 million a year.

Some progress is on the horizon, however. FAO projections to 2015 suggest that, due to slowing population growth and increases in productivity and income, more people will escape the prison of hunger.

But hungry people cannot wait another 15 years. The many causes of undernourishment – from poverty and conflict to poor infrastructure and limited investment in agriculture – will require sustained attention everywhere, from the village to the international community. In a world enjoying record wealth, it is a moral imperative to ensure that every person on the planet realizes their right to be free from hunger.
food insecurity:
when people live with hunger
and fear starvation

The state of food insecurity in the world 2000
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- Rachel Sauvinet-Bedouin and Sumiter Broca, Agriculture and... and Robert Weisell, Food and Nutrition Division, ES;  Jan Johnson and Ron Maine, Fisheries Industries Division, Fisheries Department, Ergin Ataman and Gillian Bunting, Research, Extension and Training Division, Sustainable Development Department, and David Seid, Regional Office for Europe;  Jan Johnson and Ron Maine, Fisheries Industries Division, Fisheries Department, Ergin Ataman and Gillian Bunting, Research, Extension and Training Division, Sustainable Development Department, and David Seid, Regional Office for Europe;  Jan Johnson and Ron Maine, Fisheries Industries Division, Fisheries Department, Ergin Ataman and Gillian Bunting, Research, Extension and Training Division, Sustainable Development Department, and David Seid, Regional Office for Europe;  Jan Johnson and Ron Maine, Fisheries Industries Division, Fisheries Department, Ergin Ataman and Gillian Bunting, Research, Extension and Training Division, Sustainable Development Department, and David Seid, Regional Office for Europe; 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- Jan, Johnson and Ron Maine, Fisheries Industries Division, Fisheries Department, Ervin Ataman and Gillian Bunting, Research, Extension and Training Division, Sustainable Development Department, and David Seals, Regional Office for Europe.

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Acronyms

AIDS acquired immunodeficiency syndrome

BMI body mass index

CGIAR Consultative Group on International Agricultural Research

CIS Commonwealth of Independent States

DES dietary energy supply

FAO Food and Agriculture Organization of the United Nations

FIVIMS Food Insecurity and Vulnerability Information and Mapping System

GDP gross domestic product

HIPC heavily indebted poor countries

IFAD International Fund for Agricultural Development

IITA International Institute of Tropical Agriculture

LIFDCs low-income food-deficit countries

NGO non-governmental organization

PPP people’s participation programme

SOFI State of food insecurity in the world

WHO World Health Organization
About this report

The state of food insecurity in the world, now in its second edition, reports on global and national efforts to reach the goal set by the 1996 World Food Summit: to reduce by half the number of undernourished people in the world by the year 2015.

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- “Nutritional status and vulnerability” advances last year’s discussion of malnutrition through the use of the body mass index and the study of women’s special nutritional needs. It also illustrates cases of food insecurity through an examination of sample diets and the ongoing research into the causes of vulnerability in different livelihood groups.
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The state of food insecurity in the world draws on FAO’s ongoing work of monitoring the nutritional status of populations worldwide and analysing their degree of food insecurity and vulnerability. This work represents part of FAO’s contribution to the Food Insecurity and Vulnerability Information and Mapping System (FIVIMS) initiative, which is being established at the global and national levels.

Food Insecurity and Vulnerability Information and Mapping System

On behalf of members of the Inter-Agency Working Group (IAWG) on FIVIMS, it is my pleasure to associate the IAWG with this second edition of SOFI. This publication represents a substantial contribution to the objectives of FIVIMS, namely, to:

• increase global attention to problems of food insecurity;
• improve data quality and analysis through the development of new tools and capacity building in developing countries;
• promote effective and better targeted action aimed at reducing food insecurity and poverty;
• promote donor collaboration on food security information systems at the global and country levels;
• improve access to information through networking and sharing.

Although IAWG-FIVIMS members are a diverse group, we are united by a shared commitment to reduce food insecurity and vulnerability and its multidimensional causes rooted in poverty. Development agencies and countries need solid information on the food insecure, and where they are located, what their livelihood systems are, and why they are in this situation. With answers to these questions, development partners at all levels can combine their efforts to reduce food insecurity and poverty through better policies and better targeted interventions.

Before the launching of FIVIMS in 1997, IAWG member institutions were already working to improve food security information systems around the world. We still are. Through FIVIMS, we are also increasing efforts within our institutions to reduce duplication and ensuring that our collective work is efficient and complementary. As part of the IFs reorganization process, we also aim to collaborate more effectively at the country level within the UN Development Assistance Framework. Deep in the inevitable institutional challenges, FIVIMS is making significant progress based on solid technical foundation enhanced by new computational and communication technologies.

IAWG members congratulate the FAO team on this year’s report. And we stand committed to making even more substantial contributions in the future to The state of food insecurity in the world.

Peter Matlon, UNDP, Chair, IAWG-FIVIMS

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Foreword

Towards the World Food Summit target

Within every society, rich and poor, there are children too hungry to concentrate in school, underweight mothers who give birth to sickly children and chronically hungry adults who lack the energy to raise their families above the subsistence level. Where hunger is widespread, it is also a basic development issue impeding national economic growth and keeping millions trapped in poverty.

The state of food insecurity in the world (SOFI) was created to track progress towards ending this profound obstacle to human rights, quality of life and dignity. It was spurred by the 1996 World Food Summit in Rome, where leaders of 186 countries pledged to reduce by half the number of hungry people in the world by 2015.

In this, the second edition, we introduce a new tool for measuring the severity of want: the depth of hunger. This is a measure of the per person food deficit of the undernourished population within each country. Measured in kilocalories, it aims to assess just how empty people’s plates are each day.

Measurements of the depth of hunger demonstrate that undernourishment is far more debilitating in some places than in others. In the industrialized nations and the countries in transition (those in Eastern Europe and the former Soviet Union), the number of undernourished remains the same: 34 million children, women and men. In a world of unprecedented wealth, these levels of need are disgraceful.

To realize the Summit target, we need to build foundations for sustainable, longer-term economic growth and poverty reduction. Our story on Thailand shows that economic growth and specific policies to reduce poverty and improve nutrition levels are still achievable by the poorest countries. We must set priorities. Countries and their development partners must target the people who are suffering the deepest hunger. Safety nets – from cash transfers to school lunch programmes – must be in place to protect the most vulnerable.

Can we direct our efforts to get “on track” for reducing hunger by 50 percent? The World Food Summit goal is reachable, just as other seemingly impossible aims have been met, such as the eradication of polio or putting a person on the moon.

What we need to do is adopt more urgent, targeted measures quickly.

Revised point estimates made in 2000

FAO estimates of the number of undernourished people in the world are necessarily based on imperfect information. As better data become available the estimates are revised retrospectively. The revised estimates therefore provide a more reliable illustration of the number of undernourished people over time. The estimated ranges for past, projected and target years are based on a range of 5 percent above and below the point estimates made at the World Food Summit in 1996. Within these ranges, the most recently calculated point estimates are shown.

Highlights short-term and long-term measures that together offer possible solutions to hunger:

- We must address conflict, the cause of the deepest hunger in most of the poorer countries. Conflict resolution and peacekeeping activities must be seen as vital tools in fighting hunger.
- We must make the investment needed to build foundations for sustainable, longer-term economic growth and poverty reduction. Our story on Thailand shows how undernourishment was greatly reduced over 15 years as a result of economic growth and specific policies to reduce poverty and improve nutrition levels.
- We must set priorities. Countries and their development partners must target the people who are suffering the deepest hunger. Safety nets – from cash transfers to school lunch programmes – must be in place to protect the most vulnerable.
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Towards the World Food Summit target

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To realize the Summit target, we have to achieve a reduction of at least 20 million people every year between now and 2015. The actual rate of decline, of slightly fewer than 8 million per year since the early 1990s, is woefully inadequate. We cannot sit by and hope that hunger will decrease simply as a by-product of rising incomes and slower population growth. Under that “business as usual” scenario we would reduce global hunger by slightly less than one-third, not one-half.

Can we direct our efforts to get “on track” for reducing hunger by 50 percent? The World Food Summit goal is reachable, just as other seemingly impossible aims have been met, such as the eradication of polio or putting a person on the moon. What we need to do is adopt more urgent, targeted measures quickly.

As in last year’s edition, SOFI 2000 highlights short-term and long-term measures that together offer possible solutions to hunger:

- We must address conflict, the cause of the deepest hunger in most of the poorest countries of the world. Conflict resolution and peacekeeping activities must be seen as vital tools in fighting hunger. Once peace is achieved, war-shattered economies must be rebuilt.
- We must make the investment needed to build foundations for sustainable, longer-term economic growth and poverty reduction. Our story on Thailand shows how undernourishment was greatly reduced over 15 years as a result of economic growth and specific policies to reduce poverty and improve nutrition levels.
- We must set priorities. Countries and their development partners must target the people who are suffering the deepest hunger. Safety nets – from cash transfers to school lunch programmes – must be in place to protect the most vulnerable.
- We must orient agricultural research towards improvement of agricultural commodity production, which helps the poor in the cities as well as in the countryside. This is illustrated by our story on the research efforts that vastly increased cassava production in Ghana and Nigeria. FAO and its partners will continue to monitor progress towards the goal of reducing chronic undernourishment by half by 2015. In this era of global abundance, why does the world continue to tolerate the daily hunger and deprivation of more than 800 million people? We must work together, and quickly. I am convinced we will see the day when FAO ceases to publish a report titled The state of food insecurity in the world because the world will have lived up to its promise to end hunger.

Jacques Diouf
Director-General
FAO
Meaningful action to end hunger requires knowledge of not just the number of hungry people around the world but also of the depth of their hunger. Knowing the number of kilocalories missing from the diets of undernourished people helps round out the picture of food deprivation in a country. Where the undernourished lack 100 kilocalories a day, the situation is more dire than in a country where the average shortfall is 100 kilocalories. The greater the deficit, the greater the susceptibility to nutrition-related health risks. A weak, sickly person cannot fulfill her or his individual potential. A nation of weak, sickly people cannot advance.

The state of food insecurity in the world regularly reports on the latest estimates of the number and prevalence of chronically hungry people (see pages 8-9). This measurement indicates how deeply the dietary energy intake of undernourished people falls short of their minimum needs.

Where the average kilocalorie deficit is very high, many people's diets are deficient in everything, including the starchy staple foods (carbohydrate-rich maize, rice, wheat and cassava) that provide most energy. But where the deficit is more moderate, people generally get enough of the storable foods. What they often lack is a variety of other foods that make up a nutritionally diverse diet: legumes, meat, fish, eggs, dairy products, vegetables and fruit that provide protein, fat and micronutrients as well as energy. Rounding out their diets is crucial to food security.

Lack of cash income is one of the most important factors hindering both urban and rural people from obtaining the diverse foods needed for an adequate diet. In addition to increasing susceptibility to disease, chronic hunger means that children may be illiterate and unable to concentrate in school, mothers may give birth to underweight babies and adults may lack the energy to fulfill their potential.

In terms of sheer numbers, there are more chronically hungry people in Asia and the Pacific, but the depth of hunger is clearly the greatest in sub-Saharan Africa. There, in 46 percent of the countries, the undernourished have an average deficit of more than 300 kilocalories per person per day. By contrast, in only 16 percent of the countries in Asia and the Pacific does the undernourished suffer from average food deficits this high.

The depth of hunger is measured by the average dietary energy deficit of undernourished people – not of the population as a whole – expressed in kilocalories per person per day. The deeper the number, the deeper the hunger.

Improving the quantity and quality of diets: an example from China

When dietary intake is adequate, the variety of foods is generally greater, providing more energy and better nutrition. When dietary intake is adequate, the variety of foods is generally greater, providing more energy and better nutrition.

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**Undernourishment around the world**

Estimates and projections of hunger

Latest estimates indicate that 806 million people remained undernourished in 1996-98, 792 million people in the developing world and 36 million in the developed world. These figures represent no change from 1995-97, the previous reporting period. Information shown in the charts and figures reveals that the overall picture at regional level has also altered little. But short-term events are not necessarily indicative of long-term trends, and new projections for 2015 and 2030 show some promising course. The number of undernourished people in the developing world is expected to fall to around 580 million by 2015—an improvement, but still far short of the World Food Summit goal of a reduction by half, to about 600 million people. Projections indicate that the 630 million figure will not be reached until 2030. The figures for 2015 indicate that the overall proportion of the developing countries’ population that is undernourished will be half what it was in 1990-92. The goal was applied regionally, South and East Asia would be on track to approach it by 2015. Sub-Saharan Africa and the Near East would remain far from the target, and Latin America would be in between. Overall, these outcomes would reflect the continuation of long-term declines in the prevalence of undernourishment in Asia, which began in 1969-71 in East Asia and a decade later in South Asia. In the world’s two largest countries – China and India – slowing population growth and strong economic growth would bring significant increases in per capita food availability between 1996-98 and 2015. For these two countries combined, the prevalence of undernourishment is projected to decline from 16 percent in 1996-98 to 7 percent in 2015. Together they represent more than one-third of the world’s population, so any change in their levels of undernourishment has a large effect on world averages.

Sub-Saharan Africa faces greater challenges. This region is home to most of the world’s poorest countries, where prevalence of undernourishment is high and prospects for immediate and rapid economic growth limited. The central, southern and eastern parts of the continent are especially hard-hit.

Although the prevalence of undernourishment in sub-Saharan Africa is projected to decline from 34 percent of the population in 1996-98 to 22 percent in 2015, high population growth rates mean that the actual number of undernourished people could increase slightly between now and 2015 before beginning to decline. Some very poor countries in East Asia, the Caribbean and the Near East have similar characteristics and also have poor prospects for achieving the Summit target. As explained further throughout this report, the countries and regions where progress is slow are caught in a trap of poverty and hunger that requires particular attention. But, as the successes achieved in other parts of the world demonstrate, a concerted, focused effort can make a difference and prove the projections wrong.

**Total population and number of undernourished, by region, 1996-98**

**Number of undernourished, by region, 1996-98 (millions)**

**Proportion of population undernourished by region and subregion, 1996-98**

**Projected trends in undernourishment**

**Proportion of population undernourished in developing countries, by prevalence category, 1990-92 and 1996-98**

**Number and proportion of undernourished, by region and subregion, 1996-98**

**Proportion of population undernourished by prevalence category and region, 1996-98**

**Number and proportion of undernourished, by region and subregion, 1996-98**

**Proportion of population undernourished by prevalence category and region, 1996-98**

**Number of undernourished, by region, 1996-98 (millions)**

**Projections and trends in undernourishment in 2015 and 2030**

**Projected trends in undernourishment, by region and subregion, 1996-98**

**Number of undernourished, by region, 1996-98 (millions)**

**Proportion of population undernourished by prevalence category and region, 1996-98**

**Proportion of population undernourished in developing countries, by prevalence category, 1990-92 and 1996-98**

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**Proportion of population undernourished by prevalence category and region, 1996-98**

**Proportion of population undernourished in developing countries, by prevalence category, 1990-92 and 1996-98**
### Undernourishment around the world

#### Estimates and projections of hunger

Lately, estimates indicate that 826 million people remained undernourished in 1996-98, compared to 863 million in the developing world and 36 million in the developed world. These figures represent no change from 1995-97, the previous reporting period. Information shown in the charts and figures reveals that the overall picture at regional level has also altered little. But short-term events are not necessarily indicative of long-term trends, and new projections for 2015 and 2030 show some promising courses. The number of undernourished people in the developing world is expected to fall to around 580 million by 2015—an improvement, but still far short of the World Food Summit goal of a reduction by half, to about 450 million people. Projections indicate that the 600 million figure will not be reached until 2030.

The figures for 2015 indicate that the overall proportion of the developing countries’ population that is undernourished will be halved what it was in 1990-92. If the goal were applied regionally, South and East Asia would be on track to approach it by 2015, Sub-Saharan Africa and the Near East would remain far from the target, and Latin America would be in between.

Overall, these outcomes would reflect the continuation of long-term declines in the prevalence of undernourishment in Asia, which began in 1969-71 in East Asia and a decade later in South Asia. In the world’s two largest countries – China and India – slowing population growth and strong economic growth would bring significant increases in per capita food availability between 1996-98 and 2015.

Although the prevalence of undernourishment in sub-Saharan Africa is projected to decline from 34% percent of the population in 1996-98 to 23 percent in 2015, high population growth rates mean that the actual number of undernourished people could increase slightly between 1996 and 2015 before beginning to decline. Some very poor countries in East Asia, the Caribbean, and the Near East have similar characteristics and also have poor prospects for achieving the Summit target.

As explained further throughout this report, the countries and regions where progress is slow are caught in a trap of poverty and hunger that requires particular attention. But, as the successes achieved in other parts of the world demonstrate, a concerted, focused effort can make a difference and prove the projections wrong.

#### Projected trends in undernourishment

<table>
<thead>
<tr>
<th>Region/Countries</th>
<th>1996-98</th>
<th>2015</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-Saharan Africa</td>
<td>34</td>
<td>22</td>
<td>15</td>
</tr>
<tr>
<td>Near East / North Africa</td>
<td>15</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>10</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>China* and India</td>
<td>11</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Other Asia</td>
<td>10</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Developing countries</td>
<td>18</td>
<td>10</td>
<td>6</td>
</tr>
</tbody>
</table>

The state of food insecurity in the world 2000

The prevalence and depth of hunger are calculated undernourishment or moderate prevalence and high depth of undernourishment. High prevalence and moderate depth of undernourishment. Moderate prevalence and low depth of undernourishment. Low prevalence and low depth of undernourishment. The prevalence and depth of hunger are calculated by estimating the prevalence of undernourishment and the depth of hunger. The prevalence of undernourishment is calculated by dividing the number of undernourished people by the total population. The depth of hunger is calculated by subtracting the average dietary energy intake of undernourished people from their minimum energy requirement (expressed in kilocalories per person per day) to get the average dietary energy deficit of the undernourished. This is the depth of hunger.

Degree of food deprivation: Charting hunger, 1996–98

Prevalence and depth of hunger trends in five food deprivation groups

Degree of food deprivation

Group Description

1. Low (5%)

Moderate prevalence and low depth of undernourishment.

2. Moderate (11%)

Moderate prevalence and moderate depth of undernourishment.

3. High (20%)

High prevalence and moderate depth of undernourishment or low prevalence and high depth of undernourishment.

4. Very high (30%)

Low prevalence and high depth of undernourishment.

5. Not assessed: countries with populations under 1 million or insufficient data.

Calculating food energy requirements

How much people need to eat each day – their daily dietary energy requirement – depends on their weight, height, age, sex and activity level. The table gives examples of light, moderate and heavy activity levels and the amount of food energy required for such activities by men and women of different body weight. The energy requirements for elderly people are somewhat less, and those for children are much less.

Calculating food energy requirements

The prevalence and depth of hunger are calculated using the minimum daily energy requirements of the different sex and age groups in a population. The minimum requirement for each group is based on the lowest acceptable weight for the typical height of the group in a country and the light activity norm.

Physical activity norms for adults

- Light activity: Actively associated with sitting at a desk or behind a counter with reliance on automated appliances.
- Moderate activity: Continual light physical activity such as in light industry or during off-season farm work.
- Heavy activity: Heavy and occasionally strenuous work (e.g. agricultural production, mining or steel work).

Approximate daily energy requirement for adults

Men (height 1.71 m)

<table>
<thead>
<tr>
<th>Activity Level</th>
<th>Weight (kg)</th>
<th>Calories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light activity</td>
<td>60</td>
<td>2365</td>
</tr>
<tr>
<td>Moderate activity</td>
<td>70</td>
<td>2766</td>
</tr>
<tr>
<td>Heavy activity</td>
<td>80</td>
<td>3177</td>
</tr>
</tbody>
</table>

Women (height 1.50 m)

<table>
<thead>
<tr>
<th>Activity Level</th>
<th>Weight (kg)</th>
<th>Calories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light activity</td>
<td>50</td>
<td>1846</td>
</tr>
<tr>
<td>Moderate activity</td>
<td>60</td>
<td>2135</td>
</tr>
<tr>
<td>Heavy activity</td>
<td>70</td>
<td>2527</td>
</tr>
</tbody>
</table>

* Requirements would be higher for taller people and lower for shorter people.

The state of food insecurity in the world 2000
Undernourishment around the world

Food deprivation: prevalence and depth of hunger

The state of food insecurity in the world 2000

To get the most accurate picture possible of how hungry people are, FAO has combined the estimates of both prevalence and depth of hunger (presented on pages 6–9) into five food deprivation groups. Shown by country on the map, the groups range from the least deprived (Group 1 – low prevalence of undernourishment in the population and low dietary energy deficit among the undernourished) to the most deprived (Group 5 – high prevalence of undernourishment and high energy deficit). The 23 countries in Group 5 face the most pressing and difficult problems in feeding their people. Chronic instability and conflict, poor governance, erratic weather, endemic poverty, agricultural failure, population pressure and fragile ecosystems go hand in hand with deep, widespread and persistent hunger.

Eighneen countries in sub-Saharan Africa, nearly half the African nations covered in this report, are in this group. So are Afghanistan, Bangladesh, Haiti, Mongolia and the Democratic People’s Republic of Korea. At the other extreme are the 52 countries in Group 1 – all of the industrialized countries, 11 countries in transition (see pages 12–13 for details) and 15 relatively high-income developing countries. Peace and economic prosperity characterize all these countries.

The World Food Summit target is to reduce the overall number of undernourished people around the world. However, significant improvement could also be achieved by concentrating first on lessening the depth of hunger.

In this scenario, a country with higher prevalence of undernourishment and a daily dietary energy deficit of over 300 kilocalories per person would strive to reduce the depth of hunger as a top priority. This strategy might not permit a country to report an immediate decrease in the number of undernourished people, but it would mean the undernourished were not as hungry as they had been. Their susceptibility to nutrition-related health risks would therefore decline, and the country would be on the path to a sustainable reduction in hunger prevalence.

Degree of food deprivation: Charting hunger, 1996–98

Prevalence of undernourishment and dietary energy deficit by country

<table>
<thead>
<tr>
<th>Group</th>
<th>Description</th>
<th>Number of countries, colour-coded by group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low prevalence and low depth of undernourishment</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>Moderate prevalence and low depth of undernourishment or low prevalence and moderate depth of undernourishment</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>Moderate prevalence and moderate depth of undernourishment</td>
<td>25</td>
</tr>
<tr>
<td>4</td>
<td>High prevalence and moderate depth of undernourishment or low prevalence and high depth of undernourishment</td>
<td>26</td>
</tr>
<tr>
<td>5</td>
<td>High prevalence and high depth of undernourishment</td>
<td>18</td>
</tr>
</tbody>
</table>

Degree of food deprivation

Calculating food energy requirements

The table gives examples of light, moderate and heavy activity levels and the amount of food energy required for such activities by men and women of differing body weight. The energy requirements for elderly people are somewhat less, and those for children are much less.

The prevalence and depth of hunger are calculated using the minimum daily energy requirements of the different age and sex groups in a population. The minimum requirement for each group is based on the lowest acceptable weight for the typical height of the group in a country and the light activity norm.

Calculating food energy requirements

<table>
<thead>
<tr>
<th>Light activity (male)</th>
<th>Moderate activity (male)</th>
<th>Heavy activity (male)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,326</td>
<td>2,482</td>
<td>3,119</td>
</tr>
<tr>
<td>Highest acceptable body weight (73 kg)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,766</td>
<td>3,119</td>
<td>3,775</td>
</tr>
<tr>
<td>Lowest acceptable body weight (57 kg)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,864</td>
<td>1,961</td>
<td>2,256</td>
</tr>
<tr>
<td>Highest acceptable body weight (73 kg)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2,223</td>
<td>2,337</td>
<td>2,978</td>
</tr>
</tbody>
</table>

* Requirements would be higher for taller people and lower for shorter people.

Approximate daily energy requirement for adults

Prevalence of undernourishment

The World Food Summit target is to reduce the overall number of undernourished people around the world. However, significant improvement could also be achieved by concentrating first on lessening the depth of hunger.

In this scenario, a country with higher prevalence of undernourishment and a daily dietary energy deficit of over 300 kilocalories per person would strive to reduce the depth of hunger as a top priority. This strategy might not permit a country to report an immediate decrease in the number of undernourished people, but it would mean the undernourished were not as hungry as they had been. Their susceptibility to nutrition-related health risks would therefore decline, and the country would be on the path to a sustainable reduction in hunger prevalence.
Undernourishment around the world

Locating the hungry in countries in transition

Less than ten years after the break-up of the Soviet Union in 1991, undernourishment remains a persistent challenge in many of the successor countries now part of the Commonwealth of Independent States (CIS). By contrast, the Eastern European and Baltic countries have largely managed to escape this problem. These findings emerged from FAO’s first estimates of the number and proportion of undernourished people in countries in transition (for more details, see Table 1, page 32). In nine of the 12 CIS countries, at least 5 percent of the population is undernourished. In four countries – Armenia, Azerbaijan, Georgia and Tajikistan – at least 20 percent of the population suffers from undernourishment. Only one country, Belarus, has a level of undernourishment comparable to levels found in the industrialized world (less than 2.5 percent of the population). Seven CIS states – Armenia, Azerbaijan, Georgia, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan – with a combined population of 53 million, are now classified by the United Nations as low-income food-deficit countries, with an annual gross national product of less than US$1,000 per capita.

A number of reasons are commonly cited to explain this difficult situation. Economic transition in the CIS countries has been accompanied by far-reaching political and administrative changes that have disrupted previous trade and exchange relations and led to serious foreign exchange shortages. In addition, there has been a breakdown of agricultural production and marketing systems, spiralling inflation, temporary bread shortages and, in several instances, outright conflict. The gross domestic product has plummeted along with the purchasing power of large numbers of ordinary citizens. In most CIS countries, levels of production are now only a fraction of what they were in 1991, and levels of unemployment and underemployment are quite high, although often disguised because of work in the informal sector.

But the data for Eastern Europe and the Baltic countries, where similar disruptions have occurred, illustrate that economic transition need not diminish food security. As of 1996-98, only five of the 12 Eastern European and three Baltic countries were experiencing undernourishment levels of more than 5 percent of the population, and in none were more than 20 percent undernourished.

The risk of undernourishment in the CIS countries has also faltered since 1999, although not as far as in Eastern Europe and the Baltic states. Agricultural market liberalization and privatization of agricultural production have led to improved food distribution in most of the countries. Control of grain and bread prices has largely been lifted, the role of private trade has increased and shortages have mostly disappeared. As a result, emergency food aid programmes have been terminated in most CIS countries.

By 1997, the majority of farm commodities in most CIS countries were produced in the private sector. Private producers were marketing as much as 30-40 percent of their production, usually directly to consumers for cash payment.

For many countries these data are weak. In the CIS the problem is further complicated by the difficulties associated with ongoing changes in data collection systems. In the centrally planned system, data were obtained mainly from administrative records. To replace them, sample surveys must be implemented, but this work is still at an early stage. Therefore the estimates of the number and proportion of undernourished people in the CIS should be read with particular caution.

As the reliability of current data in many CIS countries is uncertain, experts working in the field supplement quantitative data with qualitative assessments. Field evidence supports the data, finding that a substantial number of people are living in hardship as a result of low purchasing power, lack of employment, dietary inadequacies and insufficient fuel, shelter, transport and health facilities.

For many countries these data are weak. In the CIS the problem is further complicated by the difficulties associated with ongoing changes in data collection systems.

Vulnerability to food insecurity in CIS countries

| Category 1: | <2.5% undernourished | 1.8 million people |
| Category 2: | 2.5-4% undernourished | 0.0 million people |
| Category 3: | 4-6% undernourished | 18.5 million people |

Focus: Azerbaijan

Although food is available in both urban and rural markets, the purchasing power of the bulk of the country’s 7.4 million inhabitants remains low. Costing on average US$48 per month for a family of five, food continues to account for around 70 percent of total expenditures among the most economically vulnerable. Humanitarian assistance has been provided since the early 1990s. Nearly 500,000 people (half of whom have fled the areas affected by political conflict with Armenia) still need this help. By now, most have sold any valuable possessions and have little margin of security left.

A survey of internally displaced families conducted in 1998 found that 30 percent showed some signs of malnutrition.

Focus: Georgia

Rural incomes have remained practically stagnant despite rapid growth in the agricultural sector since 1995. Income disparity has increased greatly, and a large proportion of the country’s population of 5.1 million remains poor. Expenditures on food absorb 60-70 percent of the average family budget.

The social safety net system remains relatively ineffective, with very low pensions and benefits and long arrears in payments. The elderly, disabled, unemployed and geographically isolated remain highly vulnerable to food insecurity.

Although there is no officially recognized level of malnutrition, a slow but clear increase of malnutrition among children is being observed, despite targeted distribution of supplementary food aid.

Less than ten years after the break-up of the Soviet Union in 1991, undernourishment remains a persistent challenge in many of the successor countries now part of the Commonwealth of Independent States (CIS). By contrast, the Eastern European and Baltic countries have largely managed to escape this problem. These findings emerged from FAO’s first estimates of the number and proportion of undernourished people in countries in transition (for more details, see Table 1, page 32). In nine of the 12 CIS countries, at least 5 percent of the population is undernourished. In four countries – Armenia, Azerbaijan, Georgia and Tajikistan – at least 20 percent of the population suffers from undernourishment. Only one country, Belarus, has a level of undernourishment comparable to levels found in the industrialized world (less than 2.5 percent of the population). Seven CIS states – Armenia, Azerbaijan, Georgia, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan – with a combined population of 53 million, are now classified by the United Nations as low-income food-deficit countries, with an annual gross national product of less than US$1 505 per capita. A number of reasons are commonly cited to explain this difficult situation. Economic transition in the CIS countries has been accompanied by far-reaching political and administrative changes that have disrupted previous trade and exchange relations and led to serious foreign exchange shortages. In addition there has been a breakdown of agricultural production and marketing systems, spiralling inflation, temporary bread shortages and, in several instances, outright conflict. The gross domestic product has plummeted along with the purchasing power of large numbers of ordinary citizens. In most CIS countries, levels of production are now only a fraction of what they were in 1991, and levels of unemployment and underemployment are quite high, although often disguised because of work in the informal sector.

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Under the risk of undernourishment in the CIS countries has also fallen since 1999, although not as far as in Eastern Europe and the Baltic states. Agricultural market liberalization and privatization of agricultural production have led to improved food distribution in most of the countries. Control of grain and bread prices has largely been lifted, the role of private trade has increased and shortages have mostly disappeared. As a result, emergency food aid programmes have been terminated in most CIS countries. By 1997, the majority of farm commodities in most CIS countries were produced in the private sector. Private producers were marketing as much as 20-40 percent of their production, usually directly to consumers for cash payment.

Focus: Azerbaijan
Although food is available in both urban and rural markets, the purchasing power of the bulk of the country’s 7.6 million inhabitants remains low. Costing on average US$84 per month for a family of five, food continues to account for around 70 percent of total expenditures among the most economically vulnerable. Humanitarian assistance has been provided since the early 1990s. Nearly 500,000 people (half of whom have fled the area) affected politically conflict with Armenia still need this help. By now, most have sold any valuable possessions and have little margin of security left.

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Although there is no officially recognized case of malnutrition, a slow but clear increase of malnutrition among children is being observed, despite targeted distribution of supplementary food aid.

The FAO estimate of the number of undernourished people is derived from available data on population, food production, trade and distribution of food or income within the population. For many countries these data are weak. In the CIS the problem is further complicated by the difficulties associated with ongoing changes in data collection systems. In the centrally planned system, data were obtained mainly from administrative records. To replace them, sample surveys must be implemented, but this work is still at an early stage. Therefore the estimates of the number and proportion of undernourished people in the CIS should be read with particular caution. As the reliability of current data in many CIS countries is uncertain, experts working in the field supplement quantitative data with qualitative assessments. Field evidence supports the data, finding that a substantial number of people are living in hardship as a result of low purchasing power, lack of employment, dietary inadequacies and insufficient fuel, shelter, transport and health facilities.

Proportion of undernourished in countries in transition, by prevalence category, 1996-98

<table>
<thead>
<tr>
<th>Category</th>
<th>Undernourished People</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1: &lt;2%</td>
<td>1.8 million</td>
<td>100.0 million</td>
</tr>
<tr>
<td>Category 2: 2.0-4.9%</td>
<td>8.0 million</td>
<td>100.0 million</td>
</tr>
<tr>
<td>Category 3: 5.0-14%</td>
<td>18.5 million</td>
<td>100.0 million</td>
</tr>
<tr>
<td>Category 4: 20-34%</td>
<td>62.2 million</td>
<td>100.0 million</td>
</tr>
</tbody>
</table>

Source: Special Report: FAO/World Food Programme Crop and Food Supply Assessment Mission to Azerbaijan, December 1999

Source: Crop and Food Supply Situation in Georgia, FAO/Global Information and Early Warning System on Food and Agriculture, December 1999
The state of food insecurity in the world

The spectrum of malnutrition

Variety in the diet: adding foods to boost micronutrient intake

Undernutrition among children under five in developing countries

Interpreting the body mass index

From deficiency to excess: the BMI spectrum in adults

The state of food insecurity in the world

The state of food insecurity in the world
Nutritional status and vulnerability

The spectrum of malnutrition

The spectrum of malnutrition encompasses the entire range of problems that can occur when dietary energy and/or nutrient intake are insufficient, excessive or simply imbalanced.

At one end of the energy malnutrition spectrum is the problem of undernourishment and undernutrition, often described in terms of macronutrients. Low dietary energy supply, wasting, stunting, underweight and low body mass index (BMI) are all used to identify the problem. This energy deficit leaves its victims prone to illness and early death; it also makes them listless and unable to concentrate.

At the other end of the spectrum is the problem of overnourishment, leading to overweight and obesity. A high BMI is one indicator of the problem. Already a well-known phenomenon in developed countries, obesity is increasing among new urban dwellers in the developing world. This issue has not been given much attention in developing countries because of the more compelling problems at the other end of the scale. However, the consequences of obesity—which decreases productivity and increases the risk of heart disease, hypertension, diabetes and certain cancers—can be as serious as the consequences of underweight.

The figures on these pages show the energy spectrum and related physical manifestations in adults, as well as the latest information on children’s undernutrition. Nutritional status of adult women is discussed on pages 11-12. A diet unbalanced in macronutrients, the energy-providing food components, is also a cause for concern even when total energy intake is adequate. However, the healthy range of macronutrient intake, expressed as a percent of total energy, can be broad: 55-75 percent from carbohydrates, 15-35 percent from fats and 10-15 percent from proteins.

Superimposed upon the energy intake spectrum is the global problem of micronutrient malnutrition. Micronutrients – minerals and vitamins – are needed for proper growth, development and function. Deficiencies are particularly common among women of reproductive age, children and people with compromised immune systems, such as people with AIDS.

Micronutrient deficiencies invariably affect people whose energy intake is low, but those consuming too much energy can also be victims. The following are some common micronutrient deficiencies:

- Iron deficiency anaemia affects approximately 1.5 billion people, mostly women and children.
- Iodine deficiency disorders affect about 760 million people worldwide.
- Vitamin A deficiency blindness affects around 2.8 million children under five years old. More than 200 million people are considered vitamin A deficient.
- Calcium deficiency in pregnant and lactating women can affect the development of their children, and appears as osteoporosis later in life.
- Severe vitamin C deficiency, scurvy, is mostly a problem in very deprived and refugee populations.

Specific requirements have been established for most micronutrients. In most cases, deficiencies can be corrected by consuming a well-balanced diet. Variability is the key.

Interpreting the body mass index

Body mass index (BMI) is an anthropometric standard for defining the body composition of men and women. Initially it was used to measure obesity in developed countries, but it is now applied to underweight and overweight adults in countries throughout the world.

BMI provides a simple, convenient and relatively inexpensive indicator for assessing whether a person is taking in too little or too much energy. BMI is a crude measure of nutritional status; additional information is needed to determine a person’s health status. Thresholds may have to be adapted for specific groups of adults, such as adolescents, pregnant women and the elderly.

A diet unbalanced in macronutrients, energy spectrum and related physical manifestations in adults, as well as the latest information on children’s undernutrition. Nutritional status of adult women is discussed on pages 11-12. A diet unbalanced in macronutrients, the energy-providing food components, is also a cause for concern even when total energy intake is adequate. However, the healthy range of macronutrient intake, expressed as a percent of total energy, can be broad: 55-75 percent from carbohydrates, 15-35 percent from fats and 10-15 percent from proteins. Superimposed upon the energy intake spectrum is the global problem of micronutrient malnutrition. Micronutrients – minerals and vitamins – are needed for proper growth, development and function. Deficiencies are particularly common among women of reproductive age, children and people with compromised immune systems, such as people with AIDS.

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- Severe vitamin C deficiency, scurvy, is mostly a problem in very deprived and refugee populations.

Specific requirements have been established for most micronutrients. In most cases, deficiencies can be corrected by consuming a well-balanced diet. Variability is the key.

Undernutrition among children under five in developing countries

Because they are growing rapidly, infants and young children, especially under two years old, need rich foods in energy and nutrients. Poor diets prevent children from achieving their full genetic potential. Severe malnutrition can cause early death, permanent disabilities and increased susceptibility to life-threatening illnesses. The growth of children is a good indicator of their overall health status. The graph below shows the prevalence of undernutrition among young children in developing countries.

Interpreting the body mass index

BMI score

From deficiency to excess: the BMI spectrum in adults

Physical symptoms that become more pronounced as BMI declines

Physical symptoms that increase in frequency as BMI increases
The state of food insecurity in the world 2000

Nutritional status and vulnerability

Women: different needs, greater risks

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The result of recent research on men’s and women’s requirements for some nutrients is shown in the table below. Looking at daily requirements alone, however, can present a misleading picture of the actual needs of women.

In most cases, a woman requires a higher intake of vitamins and minerals in proportion to total dietary energy intake than a man. For example, a woman needs 2.5 times more iron than a man. Translated into units of food energy in the context of her smaller intake, her requirement is 3.5 times greater. Women and men need the same amount of calcium and vitamin C, but women’s diets need to be 40 percent richer in these nutrients.

When women are pregnant or lactating, their needs for energy and nutrients. During pregnancy a woman needs an additional 300 kilocalories per day after the first trimester and 500 kilocalories more while her baby is breastfeeding. During pregnancy she requires almost as much protein as a man (60 vs. 63 g/day) and more when lactating (85 g/day). A pregnant woman needs up to four times more iron, 1.5 times more folate and 20 percent more calcium than a non-pregnant woman. During lactation, she needs 40 percent more vitamin A and C, at least 15 percent more vitamin B12 and extra levels of micronutrients.

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</tr>
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The figure climbed to 53 percent when the mother’s BMI dropped below 16. Likewise, an obese woman runs a much higher risk of complications during pregnancy and of having a difficult delivery.

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Diet of hungry people

U
ndernutrition is typically reported in terms of the percentage of a population with inadequate diets, but what does it mean for an individual to live day in and day out without enough food? These profiles present actual diets of three chronically hungry people – a Bolivian man, a Zambian boy and a recently married Pakistani adolescent girl.* These individuals face continuous nutritional vulnerability because they live in households lacking the resources to produce, buy and prepare enough food for a healthy diet, although meals may vary by day and by season. Even when a country has enough to feed its population adequately, some groups within a society may be vulnerable to food insecurity. Within communities, some families are at greater risk of malnutrition than others, and within families some members are at greater risk than others. Young children and pregnant and lactating women are the most vulnerable groups (for more details see pages 11–12). But undernutrition cuts across all of society; it means a child of school age may not gain the full benefits of education, a labourer may be less productive and a young woman may risk miscarriage.

The Zambian diet demonstrates how a person can be adequately fed in one season and undernourished in another, especially dangerous for a growing child, as it can lead to stunting and other problems. This diet also shows that important nutrients can be lacking even when dietary energy is sufficient.

The Bolivian diet is an example of the importance of indigenous foodstuffs, which often do not appear in official statistics on food supply. Yet even with these nutritious traditional foods, people can be seriously undernourished.

The Pakistani diet illustrates concern about poor nutritional status in adolescent mothers, a factor contributing to high levels of infant and maternal mortality in many parts of the world.

The diets discussed here show how these individuals ate during two 24-hour periods and are presented to illustrate common eating patterns. They are not statistically representative of the diets of the larger population.

* Individuals’ names have been changed.

How diets are studied

In conducting diet studies, project staff collect information about the ways foods are prepared, the size of servings consumed and the frequency of consumption. Information is generally collected for one day, but since meals vary and one day may not be representative of the overall diet, it is preferable to obtain information for three days or even a full week. Some studies look at seasonal changes in diets. The next step is an analysis of the nutrient values of the foods consumed. These calculations reveal the sources and total amounts of dietary energy and nutrients in the diet.

Zambian boy

Seven-year-old Mumba Mwansa lives in northern Zambia near a lake on which his father fishes in the employ of another man. Mumba’s mother grows vegetables such as sweet potato, spinach, pumpkins and groundnuts. He father grows cassava during the rainy season, when the lake is close to flooding. During the dry season, Mumba has boiled sweet potato with some roasted groundnuts in the morning. He takes a snack of roasted cassava to eat at school, and in the afternoon he shares a family meal of cassava nshima (a thick porridge) and boiled fish. At night, he has a fresh pot of nshima with sauce made of peper and boiled fish.

Thanks to fish and cassava flour, Mumba’s dry-season diet is above minimum requirements in terms of carbohydrates and protein. However, he does not get enough fat, iron or calcium, all necessary for growth and health. The weaner season is more difficult. Mumba’s parents go to the fields early, so he either eats out of his own funds or goes without breakfast. In the afternoon, Mrs. Mwansa prepares nshima and a virity of vegetables and groundnut flour. The boy snacks on three small mainages in the morning and again in the afternoon, the Mwansa do not have an even meal.

At this time of year, Mumba’s diet does not provide enough energy for daily activities, health and growth. At this age, the child needs 1,800 kilocalories each day, yet on this day, he only consumed 1,121 kilocalories.

Seasonal hunger and risk of undernutrition. The Zambian diet demonstrates how a person can be adequately fed in one season and undernourished in another, especially dangerous for a growing child, as it can lead to stunting and other problems. This diet also shows that important nutrients can be lacking even when dietary energy is sufficient.

Belgian man

Pierre Quispes, 35, supports four children and his wife by working on a farm near Lake Titicaca in Bolivia. Sunday marriage being the day with a meal of boiled maize, some n启 (a preserved potato) and fish fritters. Two or three times a week, his wife serves him tequeños, a soup made of carrot fish from the lake plus potatoes, onions, peppers (a type of chilly), lettuce and potatoes. He Quispes walks an hour to get to the fields. After working for several hours he has a snack of chuño eaten with sauce made of queens (3 tablespoons), chicken and tomatoes.

On his return home in the evening his wife serves him soup made of rice, potatoes, onions, carrots, lentils and salt. The soup is eaten with a paste called quispina made from a grain (Chenopodium quinoa) indigenous to the Andean Highlands. He enjoys a cold barley drink, called coca, she unlike rice with water and sugar.

Quispes needs a lot of energy to do agricultural work, walk long distances and do the heavy tasks that his wife cannot do in the home. He estimated that a man in the mountainous region needs at least 2,500 kilocalories per day to maintain his level of activity and health. Yet Mr. Quispes’s diet provides only 170 percent of the dietary energy he requires because he consumes too little fat and carbohydrates.

Because his diet is poor, he also lacks calcium and vitamin C.

Macronutrients in Mr. Quispes’s diet, in kilocalories

<table>
<thead>
<tr>
<th>Protein</th>
<th>Fat</th>
<th>Carbohydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>With boiled maize for breakfast</strong> (1,984 kilocalories, day 1)</td>
<td>122</td>
<td>71</td>
</tr>
<tr>
<td><strong>With fish soup for breakfast</strong> (2,125 kilocalories, day 2)</td>
<td>127</td>
<td>79</td>
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An adequate diet for Mr. Quispes (2,800 kilocalories)

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<tr>
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<tr>
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Mr. Quispes’s diet as percent of requirement

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<tr>
<td>100%</td>
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Dry season

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</table>

Bolivian man

Tahira Khan is a newly married 15-year-old in an isolated hill community in Pakistan. She and her mother-in-law spend most of the day on household chores. In the afternoon Tahira takes a nap, a light meal with, potato and eggplant flavored with tomatoes, onions and red pepper, cooked in ghee. When the men return from the fields, Tahira serves their evening meal and then eats hers. Another chapel and mixed vegetables cooked in ghee.

As the village is difficult to reach, the family depends on their garden for most of their food, so the worrying is limited. Tahira’s diet contains nearly adequate levels of protein, but his low quality because it consists mainly from wheat. Pulses improve the quality of the protein but she does not get enough of them. Her diet particularly deficient in the quantities of sufficient carbohydrates.

Her limited diet is a concern because she is still growing. In particular, she needs more calcium to nourish her future children and he to strengthen her later years. If Tahira were pregnant, she and her infant will at risk because of her diet. Poor nutritional status contributes to high levels of infant and maternal mortality in Pakistan.

Macronutrients in Tahira’s diet, in kilocalories

<table>
<thead>
<tr>
<th>Protein</th>
<th>Fat</th>
<th>Carbohydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Without egg (1,557 kilocalories)</strong></td>
<td>110</td>
<td>60</td>
</tr>
<tr>
<td><strong>With egg (1,662 kilocalories)</strong></td>
<td>116</td>
<td>64</td>
</tr>
</tbody>
</table>

An adequate diet for Tahira (2,200 kilocalories)

<table>
<thead>
<tr>
<th>Protein</th>
<th>Fat</th>
<th>Carbohydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>240</td>
<td>88</td>
<td>1,100</td>
</tr>
</tbody>
</table>

Macronutrients as percent of requirement

<table>
<thead>
<tr>
<th>Vitamin A*</th>
<th>Vitamin C</th>
<th>Calcium</th>
<th>Iron</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>20%</td>
<td>15%</td>
<td>35%</td>
</tr>
</tbody>
</table>

Dry season

<table>
<thead>
<tr>
<th>Vitamin A*</th>
<th>Vitamin C</th>
<th>Calcium</th>
<th>Iron</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>20%</td>
<td>15%</td>
<td>35%</td>
</tr>
</tbody>
</table>

How diets are studied

In conducting diet studies, project staff collect information about the ways foods are prepared, the size of servings consumed and the frequency of consumption. Information is generally collected for one day, but since meals vary and one day may not be representative of the overall diet, it is preferable to obtain information for three days or even a full week. Some studies look at seasonal changes in diets. The next step is an analysis of the nutrient values of the foods consumed. These calculations reveal the sources and total amounts of dietary energy and nutrients in the diet.
Diet of hungry people

Zambian boy

Seven-year-old Mumba Mwansa lives in northern Zambia near a lake on which his father fishes to support his family. Mumba’s mother grows vegetables such as sweet potato, spinach, peanuts and groundnuts. Her husband grows cassava during the rainy season, when the lakes are closed to fishing.

During the dry season, Mumba’s mother prepares breakfast with some boiled groundnuts in the morning. He takes a snack of roasted cassava to eat at school, and in the afternoon she serves a family meal of cassava naalma (a stir fry) and boiled fish. At night, he has a fresh piece of naalma with fish meal.

Thanks to fish and cassava flour, Mumba’s dry-season diet is above minimum requirements in terms of carbohydrates and protein. However, he does not get enough fat, iron or calcium, all necessary for his growth and health.

An adequate diet for Mr Quispe (2,800 kilocalories)

Pedro Quispe, 35, supports four children and his wife by working on a farm near Lake Titicaca in Bolivia. Sensitive to altitude, he begins the day with a meal of boiled maize, some soup (in preserved potatoes and dried broad beans). Two or three times a week, his wife serves him vanilla, a soup made of caraff fish from the lake plus potatoes, onions, peppers (ají amarillo), rice, an orange and bread. She and her mother-in-law prepare this for every meal. She and her mother-in-law alternate most of the day on household chores. In the afternoon, Mr Quispe works in a small farm, a light white bread, with potato and适当 spiced floured with tomatoes, onions and red pepper, cooked in ghee. When the men return from the fields, Mrs. Quispe serves them evening meal and then makes hers; an evening meal of rice, rarely any vegetables.

The Zambian diet demonstrates how a person can be adequately fed in one season and undernourished in another, especially dangerous for a growing child, as it can lead to stunting and other problems. This diet also shows that important nutrients can be lacking even when dietary energy is sufficient.

The Bolivian diet is an example of the importance of indigenous foodstuffs, which often do not appear in official statistics on food supply. Yet even these nutritious traditional foods, people can be seriously undernourished. The Pakistani diet illustrates concern about poor nutritional status in adolescent mothers, a factor contributing to high levels of infant and maternal mortality in many parts of the world.

The diets described here show how these individuals ate during two 24-hour periods and are presented to illustrate common eating patterns; they are not statistically representative of the diets of the larger population.

How diets are studied

In conducting diet studies, project staff collect information about the ways foods are prepared, the sizes of servings consumed and the frequency of consumption. Information is generally collected for one day, but some studies vary and one day may not be representative of the overall diet. It is preferable to obtain information for three days or even a full week. Some studies look at seasonal changes in diets. The next step is analysis of the nutrient values of the foods consumed. These calculations reveal the sources and total amounts of dietary energy and nutrients in the diet.

Belgian man

With fish soup for breakfast (2,125 kilocalories, day 2)

An adequate year-round diet for Mumba (1,786 kilocalories)

Mr Quispe walks one hour to get to the fields. After working for several hours, he has a snack of chuño eaten with sausage made of papayas (mellona), onions and tomatoes.

His return home in the evening his wife serves him soup made of rice, potatoes, onions, carrots, lentils and bread. The soup is eaten with a paste called green pepper made from a grain (Chenopodium quinoa) indigenous to the Andean Highlands. He enjoys a cold drink of milk, called chicha de maíz, made from maize and water.

Mr Quispe needs a lot of energy to do agricultural work, walk long distances and do the heavy tasks that his wife cannot do in the home. It is estimated that a man in the mountainous region needs at least 2,800 kilocalories per day to maintain his level of activity and health. Yet Mr. Quispe’s diet provides only 15 percent of the dietary energy he requires because he consumes too little fat and carbohydrate.

Because his diet is poor, he also lacks calcium and vitamin C.

Wet season (2,200 kilocalories)

With chicken and chilli, rice and lentils cooked in ghee (2,160 kilocalories, day 2)

To see whether foods are sufficiently nutritious, the study compared the diets with the requirements in terms of carbohydrates and protein. However, he does not get enough fat, iron or calcium, all necessary for his growth and health.

An adequate diet for Tahira (2,200 kilocalories)

At this time of year, Mumba’s diet does not provide enough energy for daily activities, health and growth. Also, his diet needs 1,800 kilocalories each day, yet on this day, he only consumed 1,121 kilocalories.

Seasonal hunger and lack of some essential foods throughout the year contribute to the high levels of stunting found in the area where Mumba lives. Seasonal hunger and lack of some essential foods throughout the year contribute to the high levels of stunting found in the area where Mumba lives.

Dry season (2,149 kilocalories)

The diets described here show what these individuals ate during two 24-hour periods and are presented to illustrate common eating patterns; they are not statistically representative of the diets of the larger population.

* Individuals’ names have been changed.
In the battle against global hunger a new tool has emerged to help decision-makers direct interventions to people most vulnerable to food insecurity. “Vulnerable group profiling” is a means of identifying who in a given population is hungry, why, and by implication, what can be done about it. This analytical method has been developed as part of the Food Insecurity and Vulnerability Information and Mapping System (FIVIMS) initiative. It can be applied alone or in combination with other vulnerability assessment methods. The results can be used to inform and should provide powerful impetus to action. For instance, in Benin a profiling exercise showed that almost half the population is vulnerable to food insecurity; FAO estimates that about a third of these vulnerable people are already undernourished (see pages 17-18).

Determined the vulnerable groups in a country requires extensive consultation. A good starting point is a national brainstorming session that engages a broad group of stakeholders, including representatives of academic institutions, business associations, cooperatives, farmers’ groups, government ministries and agencies, local authorities, non-governmental organizations, tribal groups, and women’s associations. Such a session was held in Benin in May 1999 with 45 participants representing all regions and sectors of society. Chosen for their practical knowledge and experience of food security conditions in the country, the participants identified eight livelihood groups and three demographic groups vulnerable to food insecurity.

In an exercise that can be replicated around the world, the participants’ varied perceptions and experiences allowed them to identify:

- who in the country is vulnerable;
- where they live;
- the foods they typically eat;
- factors making them vulnerable to hunger and malnutrition.

There are as many ways to classify hungry people as there are causes for their hunger. A particularly useful means of classification is by primary source of livelihood, since it is easy to apply and integrates the multiple factors underlying food insecurity. Other bases for classification can also be effective provided that they are comprehensive and can be applied across the country without double-counting.

Census data and other survey results can then be used to calculate the proportion of the national population represented by each vulnerable group. Groups that are broadly defined initially may have to be broken into distinct subgroups to ensure that food security actions are appropriate. As shown in the framework, each profile should contain information on the factors that influence livelihoods and, thus, the food security of those being profiled. These factors include:

- the variety of assets controlled by the households or to which they have access;
- mediating factors, such as laws, policies and regulations directly affecting the households, development programmes and projects operating in the area, and local attitudes and beliefs;
- external factors, such as demographic trends, the condition of the natural resource base, and national macroeconomic performance;
- the probability of shocks, such as falling commodity prices, drought, conflict and catastrophic illness.

Artisanal (small-scale) fisherfolk are an example of a livelihood group that is relatively homogenous, common throughout the world and becoming increasingly vulnerable to food insecurity. For these reasons and because of the availability of relevant data, artisanal fishers were the first livelihood group to be profiled using the new FIVIMS approach. Between April and June 2000, a general review of conditions contributing to the vulnerability of this group was conducted, and vulnerability profiles were developed for artisanal fishers in Benin, Guatemala and Viet Nam. To develop these profiles, FAO turned to secondary literature and consulted people with knowledge of artisanal fishing communities. In the cases of Guatemala and Viet Nam, light surveys were required to supplement the information.

Finding out who is hungry: profiling vulnerable groups

Vulnerable livelihood groups in Benin

Common characteristics of artisanal fishers

Comprising about 8 million people, or more than half the seagoing fishers worldwide, artisanal fishers work from unmonitored boats without docks and cast large nets from the beach. Unlike large-scale fishing fleets that remain at sea for days or weeks at a time, most return to shore each day.

Coastal artisanal fishing is a communal activity centred around the village landing site, from which boats cast nets or fish for days and return each day. Villagers and sailors congregate at the landing site, near-by, women clean and smoke or dry part of the catch. Artisanal fishing communities are closely knit social units, often comprising one or a few extended families who are proud of their fishing tradition. However, these communities are often isolated from the rest of society and thus tend to be marginalized. Artisanal fishers constitute one of the weakest livelihood groups in terms of market power and political influence.

Specific factors that contribute to their vulnerability and indicate possible priorities for action include:

- poor fisheries management;
- competition with tourism and nature reserves for access to beachfront and near-shore waters;
- dangerous working conditions (including exposure to weather extremes) which lead to high mortality rates;
- apprenticeship system of acquiring skills, which requires boys to leave school at an early age;
- lack of skills transferable to more productive sectors;
- lack of investment capital and detrimental effects on productivity;
- lack of extension services, training and advice;
- seasonal variations in income and employment.

Finding out who is hungry: profiling vulnerable groups

Vulnerable group profiling is used to gather information about the multiple factors underlying the food insecurity of relatively homogeneous groups: their assets, external factors that affect their lives, their actions, the resulting intermediate outcomes and the final food insecurity status.

Criteria for classifying food-insecure and vulnerable groups, with examples

- Livelihood (artisanal fishers in Viet Nam);
- Location (marginal urban dwellers in Guatemala);
- Relation to environment (forest dwellers in Turkey);
- Demographics (children under five in Benin);
- Culture (San bushmen in Namibia);
- Social condition (refugees from Sierra Leone in Liberia);
- Physical condition (handicapped people in Chad);
- Social capital (distinctive fishing communities in Mauritania).

Source: Results of national brainstorming sessions held in 1999 in the countries mentioned.
Finding out who is hungry: profiling vulnerable groups

In the battle against global hunger a new tool has emerged to help decision-makers direct interventions to people most vulnerable to food insecurity. “Vulnerable group profiling” is a means of identifying who in a given population is hungry, why, and, by implication, what can be done about it. This analytical method has been developed as part of the Food Insecurity and Vulnerability Information and Mapping System (FIVIMS) initiative. It can be applied alone or in combination with other vulnerability assessment methods. The results can be used and should provide powerful inputs to action. For instance, in Benin a profiling exercise showed that almost half the population is vulnerable to food insecurity; FAO estimates that about a third of these vulnerable people are already undernourished (see pages 17-18).

Determining the vulnerable groups in a country requires extensive consultation. A good starting point is a national brainstorming session that engages a broad group of stakeholder, including representatives of academic institutions, business associations, cooperatives, farmers’ groups, government ministries and agencies, local authorities, non-governmental organizations, tribal groups, and women’s associations. Such a session was held in Benin in May 1999, with 43 participants representing all regions and sectors of society. Chosen for their practical knowledge and experience of food security conditions in the country, the participants identified eight livelihood groups and three demographic groups vulnerable to food insecurity.

In an exercise that can be replicated around the world, the participants’ varied perceptions and experiences allowed them to identify:
- who in the country is vulnerable;
- where they live;
- their main sources of livelihood;
- the foods they typically eat;
- factors making them vulnerable to hunger and malnutrition.

There are as many ways to classify hungry people as there are causes for their hunger. A particularly useful means of classification is by primary source of livelihood, since it is easy to apply and integrates the multiple factors underlying food insecurity. Other bases for classification can also be effective provided that they are comprehensive and can be applied across the country without double-counting.

Census data and other surveys can then be used to calculate the proportion of the national population represented by each vulnerable group. Groups that are broadly defined initially may have to be broken into distinct subgroups to ensure that food security actions are appropriate.

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To develop these profiles, FAO turned to secondary literature and consulted people with knowledge of artisanal fishing communities. In the cases of Guatemala and Viet Nam, light surveys were required to supplement the information.

The state of food insecurity in the world 2000
The state of food insecurity in the world 2000

Source: Results of national brainstorming sessions held in 1999 in the countries mentioned.
Artisanal fishers and their families number nearly 400,000, or 8 percent of Benin's population. Among the most food insecure are full-time sedentary fishers without land. They live in small fishing communities on the seacoast, where sandy soil precludes agricultural activity. Fishing is the main source of family income. The worst-off in this group owns equipment or gear, receives very low wages as members of fishing crews and have limited cash to cover basic expenses.

These pages present a profile of the typical characteristics of artisanal fisher households, particularly the poorest, which was developed in a workshop in Benin in May 1999. Each variable shown has been assessed as to its potential for creating either risk or opportunity. The box on page 18 elaborates on the most pressing food security concerns identified in this profile and indicates actions to address them.

**LIVELIHOOD ASSETS**

**Human capital**

A typical household has two income earners, one male and one female, and four to five dependents, of whom at least one is under five years.

All year round, at least one household member is likely to be suffering from malaria.

School enrolment and ages of children are variable.

Children's school fees are usually paid.

**Gender roles are clearly defined.**

- The mother cares for children, maintains their kitchen garden and provides food other than fish.
- The father provides fish as well as cash for expenses such as school costs, clothes, medicines and gifts.

**Social capital**

The mother is a member of a tontine, a traditional social insurance and microcredit society for women.

The father has strong ties with other members of the fishing unit.

**Natural capital**

Access to sea and to landing areas on the beach is free.

Raw materials used for cooking and smoking fish; coves (fishing tracks) are used for fishing.

**Physical capital**

The household lives in a shelter made of sea grasses.

The mother keeps a kitchen garden in which she grows tomatoes, onions and green vegetables for home consumption and sale.

The household does not own any animals.

The father does not own anything other than fishing equipment.

The fishing activities are mostly coastal and near shore.

**Health-capital is rarely used.**

There is no road along the coast.

Money/credits available from within the village.

**Financial capital**

The household has no savings.

The mother owns a stake in the revolving fund of the tontine.

The household has no private savings.

**MEETING FACTORS**

**Policies**

There are regulations restricting overuse of fishing grounds.

**Programme/projects**

A regional project to support artisanal fishing in coastal West Africa, funded by the United Kingdom, has just started.

**Laws**

None observed.

**Beliefs/attitudes**

None known for the village or region other than fishing and from eating fish to avoid “bad luck.” These beliefs drive indiscriminate overfishing.

**LIVELIHOOD STRATEGIES**

**Income-generating activities**

Dry season (May-November): March

- Each day, the main earner goes fishing, a small share of cash earned from sale of the day's catch is earned.

- Mother earns cash from fish, keys, smoke and meat.

Rural land tenancy (March): April to August

- Father migrates with fishing crew to look for work in Cotonou port and occasionally sends back small remittances.

- Mother sells garden produce and prepares and sells coconut oil and artisanal salt.

- Father migrates with fishing crew to look for work in Cotonou port and occasionally sends back small remittances.

- Rainy season fishing is a seasonal activity.

**Expenditures**

Dry season

- Food, loan repayments, tenancy payments, other (alcohol, school costs).

Rainy season

- Food, loan repayments, other (alcohol, school costs, health costs).

**DIET AND FOOD SOURCES**

Dry season

- Meat, vegetables, fish, wood from villages.

- Vegetables consumed in quantity are usually cooked in sauce or smoked.

Rainy season

- Cassava and sauce of tomatoes, palm oil, rice, greens, vegetables, fish, usually cooked in sauce or smoked.

**NUTRITION**

- Rainy season: Cassava and sauce of tomatoes, palm oil, rice, greens, vegetables, fish, usually cooked in sauce or smoked.

**HOUSEHOLD FOOD DISTRIBUTION**

- Eating habits

- Mother and children eat together, father eats on his own. All eat the same foods.

**MEASURABLE OUTCOMES**

- Income: 0 information available.

- Health status

- Incidence of malaria, head colds and diarrhea is high among children under five years.

- Shocks

- Short-term coping mechanisms

- None known for the village or region other than fishing and from eating fish to avoid “bad luck.” These beliefs drive indiscriminate overfishing.

**HEALTH-RIGHT ACTIVITIES**

**Care practices**

- Infants are breastfed, weaning starts too soon, at three months, with a maize porridge.

**Health and hygiene practices**

- Potable water is not boiled.

**FORCES OF CHANGE**

**Trends**

- Depilation of fish-stock and destruction of natural sea habitats.

**SHELTER**

- Grand Popo

- Each day boat owner gives the father a small share of cash earned from sale of the day's catch and some fish.

- March

**Income-generating activities**

**Sedentary coastal fishers**

- Migrant coastal fishers

- Lagoon fishers

- Inland fishers

- Sedentary artisanal fishers in Benin have access to good fishing waters near shore, and their landing sites are located near a road leading to urban markets.

- Mangroves provide fuelwood for cooking and smoking fish; coco trunks are used for shelter.

- There are regulations restricting overuse of fishing grounds.

- Discriminatory behaviour

- None observed.

- Policies

- There are regulations restricting overuse of fishing grounds.

- None observed.

- Beliefs/attitudes

- None known for the village or region other than fishing and from eating fish to avoid “bad luck.” These beliefs drive indiscriminate overfishing.

- Laws

- None observed.

- Key concerns and possible actions emerging from the profiling exercise

- **HEALTH RISKS**

- Health risks constitute a major vulnerability factor for marine artisanal fishers in Benin. Malaria is endemic and diarrhoea and respiratory infections are common, especially in the rainy season when people are weakened by food shortages. Although basic health care is available, vulnerable household members rely on it. Life is often a battle to look for work or water or ascertain other hygiene practices that help prevent disease. Available foods are inadequate; but foods are available to early and weaning foods do not provide adequate nutrition.

- Depletion of fish stocks and destruction of natural sea habitats threaten the sustainability of the small-scale fishers’ livelihoods. These factors threaten the sustainability of the small-scale fishers’ livelihoods.

- **INDEBTEDNESS AND LACK OF CAPITAL**

- Lack of financial and physical capital is a major problem for vulnerable fishing households. A fisher’s wage is based on the amount of capital he brings to the boat crew. A crew member, who does not own at least a share of the fishing boat and other gear, earns very low wages. In the rainy season, when the husband migrates to Cotonou port for work, the income from fishing work in Cotonou, the remittances he sends home are paltry. During the rainy season the wife is the only source of income for the sale of artisanal products without products from her garden. Other fishers are not enough to cover basic needs and she must resort to the use of credit to buy food. The result is greater indebtedness and hunger.

- Women in coastal communities of Benin belong to tontines, traditional social insurance and microcredit societies for women, to which they contribute and from which they can borrow in times of need. These constitute a useful small capital asset which could be strengthened to provide funds for investment in small-scale, income-generating enterprises.

- **RURAL RESOURCE MANAGEMENT**

- Sedentary artisanal fishers in Benin have access to good fishing waters near shore, and their landing sites are located near a road leading to urban markets.

- Mangroves provide fuelwood for cooking and smoking fish; coco trunks are used for shelter.

- There are regulations restricting overuse of fishing grounds.

- Discriminatory behaviour

- None observed.
Artisanal fishers and their families number nearly 400,000, or 8 percent of Benin’s population. Among the most food insecure are full-time sedentary fishers without land. They live in settled fishing communities on the seacoast, where sandy soil precludes agricultural activity, and fishing is the main source of family income. The worst-off in this group-own no equipment or gear, receive very low wages as members of fishing crews and have limited cash to cover basic expenses.

These pages present a profile of the typical characteristics of artisanal fisher households, particularly the poorest, which was developed in a workshop in Benin in May 1999. Each variable shown has been assessed as to its potential for creating either risk or opportunity. The box on page 18 elaborates on the most pressing food security concerns identified in this profile and indicates actions to address them.

**Key: Impact on food security**
- Potentially adverse
- Neutral
- Potentially positive
- No information

**Coastal, inland and industrial fisheries***

**LIVELIHOOD ASSETS**

**Human capital**

A typical household has two income earners, one male and one female, and four to five dependents, of whom at least one is under five years.

All are gainfully employed and at least one household member is likely to be suffering from malaria.

School attendance and school-age children are variable.

Children enrolled in school irregularly.

Gender roles are clearly defined.

- The mother cares for children; maintains a kitchen garden and prepares food for other than fish.
- The father provides fish as well as cash for expenses such as school costs, clothes, and other gifts.

**Social capital**

The mother is a member of a tontine, a traditional social insurance and microcredit society for women.

She hires a strong man to work as a member of the fishing unit.

**Natural capital**

Access to sea and to landing areas on the beach is free.

Plants provide fuelwood for cooking and smoking fish; coconut trees are used for shelter.

**Physical capital**

The household lives in a shelter made of wood frames.

The mother keeps a kitchen garden in which she grows tomatoes, peppers, and green vegetables for home consumption and sale.

The household does not own any animals.

The father does not own any fishing equipment.

The mother owns all household goods and clothing.

The health center is rarely used.

There is a road along the coast.

Access to the sea is not easy.

**Financial capital**

The household owns no private savings.

The mother owns a stake in the revolving fund of the tontine.

**MEDIATING FACTORS**

**Policies**

There are regulations restricting overfishing of large fish.

Programmes/projects

A regional project to support artisanal fishing in coastal West Africa, funded by the United Kingdom, has just started.

Each of the research project groups increasing numbers of NGOs is perceived as a problem.

Beliefs/attitudes

The mother cares for children rather than fishing and from eating fish to avoid “bad luck.” This helps to diminish overfishing.

**HOUSEHOLD FOOD DISTRIBUTION**

**Diet and food sources**

Dry season

- Food, loan repayments, tontine payments, other (alcohol, health costs).

Rainy season

- Food, loan repayments, tontine payments, other (alcohol, health costs).

**Expenditures**

Dry season

- Food, loan repayments, tontine payments, other (alcohol, health costs).

Rainy season

- Food, loan repayments, tontine payments, other (alcohol, health costs).

**Household food distribution**

**Eating habits**

Mother and children eat together, father eats on his own. All eat the same foods.

**Short-term coping mechanisms**

There are regulations restricting overuse of natural sea habitats.

Water is available from wells in the village.

**LIVELIHOOD STRATEGIES**

**Income-generating activities**

Dry season (fishing season): December to March.

- The boy’s mother earns fish from a small share of cash earned from sale of the fish, and from onion and garlic.
- The mother earns cash from sale of she, smoked, and smoked.

Rainy season (fishing season): April to August.

- Father migrates with fishing crew to look for work in Cotonou port and occasionally sends back small remittances.
- Mother sells garden produce and prepares and sells coconut oil and artisanal salt.

**Expenses**

Dry season

- Food, loan repayments, tontine payments, other (alcohol, health costs).

Rainy season

- Food, loan repayments, tontine payments, other (alcohol, health costs).

**Household food distribution**

**Health-related activities**

**Care practices**

Infants are breastfed, weaning starts too soon, at three months, with a mixture of porridge.

**Health and hygiene practices**

- Health care is not fully covered.

**FORCES OF CHANGE**

**Trends**

Depletion of fish stocks and destruction of natural sea habitats.

- Shocks

- Social/cultural shocks: Cotonou port is closed on January 1999 caused many boat owners’ costs to increase substantially and many wholesale prices of fish. To compensate, they now take a greater share of the fish catch, leaving less for crew.

- Market shocks: Cassava and sauce of tomatoes, palm oil, vegetables, smoked fish are in short supply. The price of fish is lower.

- Eaten more variety of fish, fish processed goods.

- Annual income is the sale of artisanal products and food from her garden. Often this is not enough to cover basic needs and she must resort to the use of credit to buy food. The result is greater indebtedness and hunger.

- Malaria eradication, a global WHO priority, would be of great benefit.

- Other possible actions include programmes that support improved weaning practices, supplementary foods to be managed locally to avoid uncoordinated and duplicated actions that demand too much of the intended beneficiaries’ time.

**MEASURABLE OUTCOMES**

**Income**

There is no information available.

**Health status**

Incidence of malaria, head colds and diarrhea is high among children under five years.

**Nutrition status**

Measuring the height for age of children one-year-old children under five years in coastal areas of Benin is problematic.

In administrative districts on the coast, 50 percent of children under two years suffer from vitamin deficiency and 50 percent are anemic.

**MEDIATING FACTORS**

**Policies**

No laws with food security impact reported.

**Programmes/projects**

- A regional project to support artisanal fishing in Cotonou, funded by the United Kingdom, has just started.

**Key concerns and possible actions emerging from the profiling exercise**

**HEALTH RISKS**

- Lack of financial and physical capital is a major problem for vulnerable fishing households. A fisher’s wage is based on the amount of capital he brings to the boat crew. A crew member who does not own a boat is at least a share of the fish catch and other gear earns very low wage. In the rainy season, when the husband migrates to the coast to fish, the remittances he sends home are paltry. During the dry season the wife is the only source of income. In the sale of artisanal products and fish from her garden. Other fish is not enough to cover basic needs and she must resort to the use of credit to buy fish. The result is greater indebtedness and hunger.

- Women in coastal communities of Benin belong to a Women’s Natural Resource Management, traditional social insurance and microcredit societies for women, to which they contribute and from which they can borrow in times of need. These constitute a useful small capital asset which could be strengthened to provide funds for investment in small-scale, income-generating enterprises.

**INDEBTEDNESS AND LACK OF CAPITAL**

Sederean artisanal fishers in Benin have access to goal-fishing permits near shore, and their landing sites are located near a road leading to urban markets. Mangrove and cash crops provide food, shelter and supplementary income and freshwater is readily available. Weather patterns determine a major risk.

- However, although customary practices and regulations need to prevent overfishing, traditional methods of fishing management are known, regulations are not enforced and industrial fisheries, which are not managed by local communities, threaten the sustainability of the small-scale fishers’ livelihoods. Here, as elsewhere, local incomes will be affected only if they are accompanied by increased efforts to control overfishing in international waters.

**NATURAL RESOURCE MANAGEMENT**

Benin is benefiting from a major programme to strengthen community-based fishery management procedures, financed by the United Kingdom with technical support from FAO.
The state of food insecurity in the world 2000

**Dynamics of change**

The dividends of food security

In most poor, food-insecure countries, the two greatest potential resources are the people and the productivity of the land. To defeat chronic hunger and poverty, investments have to be made in both people and productivity.

Investing in people will need to come in the form of education, clean water and sanitation, health and social services and, in some cases, direct food and nutrition support. In rural areas, such expenditures are essential if the corresponding investment in agriculture and in productive subsidies are to pay off. Those who argue that people-oriented development is expensive should remember that leaving people hungry is also expensive in terms of economic growth foregone, so recent FAO-sponsored research shows.

FAO projections for the next 15 years indicate that, if agricultural innovation continues at a reasonable rate, food production can increase by 2 per cent per year in the developing world without this growth, the World Food Summit goals cannot be met. But overall growth is not enough. It must be directed to the hungry.

For countries that are still largely rural, investment in small-scale agriculture is one way to target growth that benefits the poor. The importance of putting resources into the production and post-production processes is well recognized. But funding for agricultural research is also vital, particularly for commodities and farming systems that can provide growth opportunities for the poor.

If the natural resource base offers good potential for agricultural development, supporting agricultural research can bring big benefits in reducing food insecurity and malnutrition. One case in point is the story of the multiple payoffs obtained from cassava research in West Africa (pages 21-22).

Even if the anticipated growth in food production is achieved, nearly 600 million people will remain undernourished in 2015 unless the growth takes place in areas where food insecurity is worst and unless public policies are implemented that make elimination of food insecurity their primary objective.

Participation in community action programmes by the poor is a powerful mechanism for ensuring that policies of this kind are implemented. Traditional rural development policies focused on infrastructure and services. The poor were not consulted because it was assumed that the benefits of growth would “trickle down.”

FAO’s experience indicates that small, self-reliant groups of people engaged in similar activities can contribute effectively to their own development.

The story of Thailand’s successful experience with community-based action to reduce poverty and malnutrition illustrates the potential of community initiatives (pages 23-24). Even small experience with community-based action to reduce poverty and malnutrition illustrates the potential of community initiatives (pages 23-24). Even small.

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The state of food insecurity in the world 2000

19

The dividends of food security

In most poor, food-insecure countries, the two greatest potential resources are the people and the productivity of the land. To defeat chronic hunger and poverty, investments will have to be made in both people and productivity.

Investing in people will need to come in the form of education, clean water and sanitation, health and social services and, in some cases, direct food and nutrition support. In rural areas, such expenditures are essential if the corresponding investments in agriculture and to productive subsets are to pay off. Those who argue that people-oriented development is expensive should remember that leaving people hungry is also expensive in terms of economic growth foregone, so recent FAO-sponsored research shows.

The dividends of food security

Reducing hunger has not only humanitarian justification but also strong economic rationale. The economic cost of hunger and malnutrition is estimated to be significant in low-income countries. death rates and, in some cases, extremely high. Reduction in infant mortality significantly lowers physical ability, cognitive development and earning achievement, resulting in lower productivity. It is not only injurious to the health and well-being of nations, but also reduces the return on investment in social and economic progress.

The economic benefits of ending hunger

In recent years, the development community has called for investments that improve agricultural productivity and nutritional well-being. The research found that all countries with average dietary energy supply (DES) below the minimum requirement in 1960 had eliminated hunger by having average per capita DES of 2,770 kilocalories per day, their GDP growth rates would have been significantly higher. This growth can be quite large. Using the graph below, the researchers estimated that per capita GDP in sub-Saharan Africa could have reached nearly US$14,000 in 1985 if food insecurity had been eliminated.

Benefits of international agricultural research

A recent study has emphasized the benefits of international agricultural research in reducing undernourishment among children by improving crop variety and productivity. The study was performed by the Impact Assessment and Evaluation Group of the Consultative Group on International Agricultural Research (CGIAR).

Reducing hunger through basic crop research

In 1990, FAO launched its People’s Participation Programme (PPP) to support community action groups. The benefits of such programmes include:

- Job creation, through skills-training programmes by the poor is a powerful mechanism for ensuring that policies of this kind are implemented. Traditional rural development policies focused on infrastructure and services. The poor were not consulted because it was assumed that the benefits of growth would “trickle down”. FAO’s experience indicates that small, self-reliant groups of people engaged in similar activities can contribute effectively to their own development.

- Increased employment. Participants had higher output per hectare, which generated demand for more farm labour. Higher rural savings. This savings required by PPP groups is substantial. These funds by the Impact Assessment and Evaluation Group of the Consultative Group on International Agricultural Research (CGIAR).

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The benefit of people’s participation

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Safety nets: a foundation for development

Safety nets protect livelihoods and ensure the survival of vulnerable people. Safety nets that protect food security include community support systems, direct public transfers and indirect public transfers.

Community support systems. In traditional communities, kinship networks and religious groups protect people facing hard times. Associations that link urban dwellers with families in rural areas create new forms of support, as are charities.

Direct transfers. Public transfers that provide food or cash directly to needy people are commonly referred to as food assistance schemes. These include emergency food relief, supplementary feeding programmes, food-for-work and food ration schemes.

Indirect transfers. Many kinds of welfare transfers provide their benefits indirectly. Examples of indirect transfers that protect food security include:

- Regulatory measures, such as minimum wage laws, price controls and financial and labour market regulations, backed up by food security reserves.
- Subsidies and credit programmes, including targeted food subsidies, consumer credit programmes and community savings and loan schemes.
- Job creation, through skills-training programmes, placement services and publicly backed employment guarantees for schemes.
- Publicly backed insurance schemes, such as crop insurance, unemployment benefits, pension funds and social welfare programmes.

Between 1970 and 1995, international agricultural research centres released a large number of new crop varieties resulting from their breeding programmes on staple food crops – wheat, rice, maize, sorghum, pearl millet, cassava, potatoes, barley and lentils. According to the study, this represented 70 to 100 new varieties every year and led to additional productivity gains of 0.5 percent per year.

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Cassava research: boosting food security in Ghana and Nigeria

Ghana and Nigeria are among the few countries in the world that managed to reduce the prevalence of undernourishment by more than 30 percentage points between 1979-81 and 1996-98. In Ghana, the number dropped from 62 percent to 10 percent and in Nigeria from 46 percent to 18 percent.

An important underlying factor was the rapid increase in the supply of cassava products during the period, which especially benefited the poor and undernourished. Cassava roots are an excellent source of energy, while the leaves are rich in vitamins A and C, iron and calcium, as well as being a source of protein.

Farmers were able to exploit new market opportunities for cassava thanks to an aggressive cassava research and market promotion programme carried out by the International Institute of Tropical Agriculture (IITA) at Ibadan, Nigeria. In 1996, following more than ten years of research, IITA introduced improved varieties with many advantages. These new varieties:

- yielded up to 55 tonnes per hectare, compared with about 10 tonnes per hectare from traditional varieties;
- matured early;
- were highly resistant to disease, particularly cassava bacterial blight and the African cassava mosaic;
- were suitable for processing into flour and starch;
- developed a broad leaf canopy, thus optimizing both weed control and yield potential;
- had compact root shapes, facilitating harvest and allowing the mature root to retain quality while remaining in the soil for long periods;
- contained low levels of cyanide, a naturally occurring toxic that is poisonous if consumed in large quantities.

The availability of the new varieties was very timely. Widespread crop failure following a major drought over much of Africa in 1982-83 had caused many farmers to turn to cassava because it tolerates drought and grows in relatively poor soils. It can also remain in the ground for up to three years prior to harvest, thus providing an easily maintained food reserve.

Farmers initially introduced cassava as a food security crop in places where it had not previously been grown, especially in dry areas and marginal lands. However, with the growing acceptance of cassava as a staple food for urban dwellers, more farmers also began to grow it as a commercial crop.

In West Africa cassava is eaten most commonly as gari, toasted coarse cassava flour granules that are cooked and used like rice. Gari is eaten with various sauces, both at home and as a street food. Growing demand for gari in the rapidly expanding cities of the region has been an important factor in encouraging farmers to produce more cassava.

In Nigeria, the big jump in production occurred between 1983 and 1992, when per capita consumption doubled — from 63 kg to 129 kg annually. Estimates suggest that improved varieties made possible the production of an additional 1.6 million tonnes of gari in 1991 compared with the amount that could have been produced using traditional varieties. By 1998, production from new varieties had more than doubled to 3.6 million tonnes of gari equivalent. As a result, new varieties as a share of total production increased from 8 percent to around 30 percent of a much larger total.

Cassava’s success in Nigeria is made possible by deliberate policy measures, growing urban demand, government investment in distribution of planting material and the availability of mechanized equipment, which overcame the problem of labour shortages during post-harvest processing. Production has now begun to slow, perhaps representing a new equilibrium between supply and demand.

In Ghana, the cassava boom came later, although the pattern of growth was similar. New high-yielding varieties from IITA had to be adapted to local climatic and soil conditions before they could be released for widespread adoption. But production grew rapidly beginning in the early 1990s, following the inception of a government programme to promote roots and tubers as well as a shift in economic policy that encouraged the spread of cassava production. Between 1990 and 1998, annual consumption of cassava increased from 126 kg to 232 kg per capita.

Cassava is now the major source of carbohydrates and an inexpensive source of food energy for the majority of Ghanaians. People of all social classes eat it, mainly as gari and fufu (boiled and pounded cassava). The consumption of these foods reaches a peak during the “hunger season” just before the harvest, when crops such as maize are in short supply or too expensive to purchase.

Cassava is now the largest agricultural commodity produced in Ghana and, in 1998, represented 22 percent of agricultural GDP. Large areas of central and southern Africa are suitable for growing cassava. Most of the expansion in production between 1961 and 1991 occurred in humid areas, where most of the large cities offering the best market prospects are located. These zones are likely to dominate the future expansion of cassava production.

Meanwhile, cassava is expanding into drier mid-altitude zones, reflecting its growing importance as a food security crop in drought prone areas. In response, new varieties particularly suited to semi-arid areas are being developed by IITA using parent varieties from South America.

The strategy aims to promote products with good market potential, including cassava flour as an ingredient for home cooking and industrial use; prepared foods such as fufu, cooked leaves and boiled fresh roots; animal feed; alcohol for chemical industries; glue; starches for sizing textiles and paper; and industrial sweeteners. The strategy also calls for broadening the recognition of cassava’s important role in food security.

At a forum in April 2000 hosted by FAO and IFAD, the strategy was endorsed by participants from 20 countries representing private companies, farmers’ groups, NGOs, researchers and donor agencies. Various research and market promotion activities were devised, and plans for their implementation were outlined.

**Areas suitable for cassava production in Africa**

The suitability of a zone for growing cassava depends on climate, terrain and soil conditions. Areas that are particularly good for cassava production in Africa include humid tropical zones, moist savannah zones and drier mid-altitude zones where soils have medium to coarse textures and are sufficiently deep and well drained. And not too acidic. Additional of lime are generally needed to overcome the acidity of soil in humid tropical and moist savannah zones, where the majority of cassava in Africa is grown.

**Increase in production in cassava growing zones of sub-Saharan Africa, 1961–1991**

Source: FAO/ITAP

**Cassava: trends in yield and supply, 1974–98**

Source: FAO/ITAP

**The global cassava strategy**

Since 1998, the International Fund for Agricultural Development (IFAD) has led a collaborative effort aimed at developing a global strategy to promote cassava as an important staple food and income source for its producers. One important goal of the effort is to spur rural industrial development that will increase work opportunities and raise incomes of producers, processors and traders.

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Source: Land suitability maps for rainfed cropping, FAO, 2000
Dynamics of change

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An important underlying factor was the rapid increase in the supply of cassava products during the period, which especially benefited the poor and undernourished. Cassava roots are an excellent source of energy, while the leaves are rich in vitamins A and C, iron and calcium, as well as being a source of protein.

Farmers were able to exploit new market opportunities for cassava thanks to an aggressive cassava research and market promotion programme carried out by the International Institute of Tropical Agriculture (IITA) at Ibadan, Nigeria. In 1996, following more than ten years of research, IITA introduced improved varieties with many advantages. These new varieties:

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The state of food insecurity in the world 2000

The state of food insecurity in the world 2000

Thailand, 1998

Source: The Poor Thai, Chulalongkorn University, Bangkok,

National

Urban 21.8 18.2 12.7 9.6 5.8
Bangkok metropolitan 8.0 6.9 3.6 2.4 1.9
South 32.5 27.6 19.7 17.3 11.5
Northeast 48.4 43.1 39.9 28.6 19.4
West 32.0 26.4 13.1 12.5 9.3
Central 32.9 20.7 15.4 7.2 6.2
North 32.0 23.2 22.6 13.2 11.2
Mild

Moderate

Underweight

Reduction in percent of people living in poverty, 1988-96

Source: FAO

MALAYSIA

Thailand: Concentration of poverty and malnutrition, 1982

Fostering interaction between the levels

Policy formulation

Setting of goals/indicators

Strategies implementation

Institutional arrangements

Training and support system

Monitoring/evaluation

Adapting action plans

Tracing and support services

Implementing actions

Monitoring/evaluation

Participation and social realization

Adapting action plans

Implementing actions

Monitoring/using basic minimum needs indicators

Source: FAO

Reducing risk and vulnerability over time (see table) and has brought about significant progress in reducing the percentage of underweight pre-school children. In fact, within ten years, the more severe forms of malnutrition were virtually eliminated among those children. Between 1982 and 1998, cases of mild malnutrition were reduced from 35 to 8 percent of this age group, moderate malnutrition from 13 to less than 1 percent and severe malnutrition from 2 percent to an insignificant level.

Beginning in 1990, the government adjusted the programme to ensure maintenance of the gains already achieved and to address a wider array of issues. Institutional arrangements were reorganized to strengthen collaboration among relevant government ministries from the national level down to the communities. While the community remained at the heart of the programme, a stronger partnership role was built in for public service managers at district and national levels. The scope of actions was also broadened. Having brought protein-energy malnutrition under control, the government was able to give attention to a wider range of food and nutrition issues and to make other improvements to the quality of life.

The approach has led to a steady reduction in poverty over time (see table) and has brought about significant progress in reducing the percentage of underweight pre-school children. In fact, within ten years, the more severe forms of malnutrition were virtually eliminated among those children. Between 1982 and 1998, cases of mild malnutrition were reduced from 35 to 8 percent of this age group, moderate malnutrition from 13 to less than 1 percent and severe malnutrition from 2 percent to an insignificant level.

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The state of food insecurity in the world 2000

Thailand, 1998

Source: The Poor Thai, Chulalongkorn University, Bangkok,

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</tbody>
</table>

Reduction in percent of people living in poverty, 1988-96

The approach has led to a steady reduction in poverty over time (see table) and has brought about significant progress in reducing the percentage of underweight pre-school children. In fact, within ten years, the more severe forms of malnutrition were virtually eliminated among those children. Between 1982 and 1998, cases of mild malnutrition were reduced from 35 to 8 percent of this age group, moderate malnutrition from 13 to less than 1 percent and severe malnutrition from 2 percent to an insignificantly low level.

In 1990, the government adjusted the programme to ensure maintenance of the gains already achieved and to address a wider array of issues. Institutional arrangements were reorganized to strengthen collaboration among relevant government ministries from the national level down to the communities. While the community remained at the heart of the programme, a stronger partnership role was built in for public service managers at district and national levels.

The scope of actions was also broadened. Having brought protein-energy malnutrition under control, the government was able to give attention to a wider range of food and nutrition issues and to make other improvements to the quality of life.

The expanded programme has seven elements:
- Production of diversified foods for home consumption;
- Skills development and credit schemes for commercially viable food processing and marketing activities;
- Fortification of Thai instant noodles seasoning with vitamin A, iron and iodine;
- Mandatory nutrition labelling of food products;
- Dissemination and promotion of nine healthy diets, with special advice for age-specific vulnerable groups such as infants and young children, adolescent girls and pregnant women;
- Free or highly subsidized health care;
- A monitoring, surveillance and special feeding programme for children under five years, and children in primary school.

The Thai experience is unique in its systematic implementation in every community in the country. It provides a model for a food safety net programme that not only meets the immediate needs of the food-insecure but also lays the foundation for their permanent escape from the hunger trap.
### Glossary

**Anthropometry**
Use of human body measurements to obtain information about nutritional status.

**Body mass index (BMI)**
A ratio of weight for height often used to estimate body fat. It is obtained by dividing the weight (in kilograms) by the square of the height (in meters). BMI is not appropriate for assessment of growing children. It is also a poor indicator within the very elderly individuals, or women who are pregnant or breastfeeding.

**Dietary energy deficit**
The difference between the average daily dietary energy intake of an undernourished population and its average minimum energy requirement.

**Dietary energy intake**
The energy content of food consumed.

**Dietary energy requirement**
The amount of dietary energy required by an individual to maintain body functions, health, and normal activity.

**Dietary energy supply**
Food available for human consumption, expressed in kilocalories per person per day (local/person/day). At country level, it is calculated as the food remaining for human use after deduction of all non-food consumption (exports, animal feed, industrial use, seed and wastage).

**Degree of food deprivation**
A measure of the overall food insecurity situation in a country, based on a classification system that combines prevalence, chronicity, and degree of food insecurity. The degree of food deprivation is a value between 0 and 1, with 0 indicating no food insecurity and 1 indicating severe food insecurity.

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**Energy content**
The energy provided by food, expressed in calories or kilocalories.

**Energy density**
The amount of energy provided per unit of weight.

**Energy requirements**
The amount of energy needed by an individual to maintain normal body functions, health, and normal activity.

**Food security**
The state of food insecurity in the world.

**Food intake**
The amount of food consumed by an individual.

**Food insecurity**
A situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

**Growth and development**
The process by which individuals grow and change size and form over time.

**Health status**
The state of physical, mental, and social well-being, and not merely the absence of disease or infirmity.

**Hunger**
A deprivation of food that results in a condition of physiological and metabolic imbalance.

**Malnutrition**
The physiological state of an individual that results from the relationship between nutrient intake and requirements and from the body’s ability to digest, absorb and use these nutrients.

**Overnourishment**
Food intake that is in excess of dietary energy requirements continuously.

**Overweight and obesity**
Body weight that is above normal as a result of an excessive accumulation of fat. It is usually measured by means of overweight or obesity.

**Stunting**
Low height for age, reflecting a sustained past episode or episodes of undernutrition.

**Undernourishment**
Low weight for height, generally the result of weight loss associated with a recent period of starvation or disease.

**Wasting**
Low weight for height, generally the result of weight loss associated with a recent period of starvation or disease.

### The State of Food Insecurity in the World 2000

#### Local action

Even if well-targeted, can only be effective if the policy environment at both national and international levels offers food-insecure countries and their people a set of choices to help them move beyond the margin of survival. The Plan of Action of the World Food Summit of 1996 indicates the way ahead.

At the same time, countries must also take up this task. Systematic collection of reliable data on the state of food insecurity in every nation is crucial if they are to follow through on the promises made at the Summit.

Action is particularly urgent in 82 low-income, food-deficit countries. Many of them have neither the capacity to produce all the food they need nor the foreign exchange to import it. Many of them are also heavily indebted to foreign creditors, which drains away the foreign resources available to invest in development. The burden of debt servicing and repayment severely limits their options both for meeting the urgent needs of their deprived populations and for making lasting improvements that lift people out of hunger.

However, there is some good news. The international financing institutions and the donor community have recently given much greater emphasis to the use of debt relief in the fight against poverty. In particular, the debt relief initiative of the World Bank and the International Monetary Fund for the heavily indebted poor countries (HIPC), launched in 1996, was further strengthened this year to provide substantially more relief. Under the initiative, eligible countries are relieved of debt servicing obligations – subject to the condition that the money saved is channelled to poverty reduction and other social investments for the poorest segments of their societies.

Many food-insecure people live in rural areas, where they are dependent on agriculture and related industries for their livelihoods. Debt relief can spur progress towards reducing hunger, provided the resources freed up are used, not only to feed the hungry now, but also to put countries and communities on to a longer-term path of sustainable development by investing in food security. SDPI (2000) shows that creating sustainable productivity improvements and building on the strengths of community action constitute a way forward that will benefit the poor in the countryside as well as in the cities. At its most basic level, the way ahead is a matter of creating the conditions that enable people to secure their right to adequate food in a dignified manner. The immediate goal must be to lift the constraints and open up new livelihood opportunities. This can be achieved if individual countries and the international community act consciously on the commitments they made at the World Food Summit. The way forward will be long and challenging. The time to strengthen the resolve is now.
The state of food insecurity in the world 2000

The state of food insecurity in the world 2000

Helping the hungry

The highly indebted poor countries (HIPC) initiative fortuitously assists the low-income food-deficit countries (LIFDCs) where undernourishment is highest.

A situation that exists when people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active and healthy life. It may be caused by the unavailability of food, insufficient purchasing power, inappropriate distribution, or inadequate use of food at the household level. Food insecurity, poor conditions of health and sanitation, and inappropriate care and feeding practices are the major causes of poor nutritional status. Food insecurity may be chronic, seasonal or transitory.

Anthropometry
Use of human body measurements to obtain information about nutritional status.

Body mass index (BMI) A ratio of weight for height often used to estimate body fat. It is obtained by dividing the weight (in kilograms) by the square of the height (in meters). BMI is not appropriate for assessment of growing children. It will not indicate visibly slender individuals, or women who are pregnant or breastfeeding.

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Degree of food deprivation A measure of the overall food insecurity situation in a country, in a based classification system that combines prevalence of under nourishment, i.e. proportion of the total population suffering from dietary energy-deficit, and depth of undernourishment, i.e. magnitude of the dietary energy deficit of the undernourished population.

Food insecurity A situation that exists when people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active and healthy life. It may be caused by the unavailability of food, insufficient purchasing power, inappropriate distribution, or inadequate use of food at the household level. Food insecurity, poor conditions of health and sanitation, and inappropriate care and feeding practices are the major causes of poor nutritional status. Food insecurity may be chronic, seasonal or transitory.

Food security A situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

Glossary

The way ahead

Accelerating the pace of progress

The state of food insecurity in the world 2000

The state of food insecurity in the world 2000

Local action, even if well-targeted, can only be effective if the policy environment at both national and international levels offers food-insecure countries and their people a set of choices to help them move beyond the margin of survival. The Plan of Action of the World Food Summit of 1996 indicates the way ahead.

At the same time, countries must also take up this task. Systematic collection of reliable data on the state of food insecurity in every nation is crucial if they are to follow through on the promises made at the Summit.

Action is particularly urgent in 82 low-income food-deficit countries. Many of them have neither the capacity to produce all the food they need nor the foreign exchange to import it. Many of them are also heavily indebted to foreign creditors, which drains away the few resources available to invest in development. The burden of debt servicing and repayment severely limits their options both for meeting the urgent needs of their deprived populations and for making lasting improvements that lift people out of hunger.

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Nutritional status
The physiological state of an individual that results from the relationship between nutrient intake and requirements and from the body’s ability to digest, absorb and use these nutrients.

Overnourishment
Food intake that is in excess of dietary energy requirements continuously.

Overweight and obesity
Body weight that is above normal as a result of an excessive accumulation of fat. It is usually measured in terms of body mass index. Overweight is defined here as BMI >25-30 and obesity as BMI >30.

Stunting
Lowweight for age, reflecting a sustained past episode or episodes of undernutrition.

Undernourishment
Food intake that is insufficient to meet dietary energy requirements continuously.

Undernutrition
The result of undernutrition, poor absorption and/or poor biological use of nutrients consumed.

Underweight
Low weight for age in children, and BMI <18.5 in adults, reflecting a current condition resulting from inadequate food intake, past episodes of undernourishment or poor health conditions.

Vulnerability
The presence of factors that place people at risk of becoming food insecure or malnourished, including those factors that affect their ability to cope.

Vulnerable group
A group of people with common characteristics, a high proportion of whom are food insecure or at risk of becoming food insecure.

Wasting
Low weight for height, generally the result of weight loss associated with a recent period of starvation or disease.
### Table 1: PREVALENCE OF UNDERNOURISHMENT in developing countries and countries in transition

<table>
<thead>
<tr>
<th>Region, subregion</th>
<th>Total population of people (millions)</th>
<th>Number of people undernourished (millions)</th>
<th>Proportion of population (%)</th>
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### Table 1, cont.: PREVALENCE OF UNDERNOURISHMENT in developing countries and transition countries

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### Notes
- Figure for missing country category = 0.0, and total population undernourished in 1990-92 = 0.0.
- Data refers to the most recent year for which data are available.
- Proportion of the population undernourished in 1996-98 is 0.0.
- All data is expressed as a percentage.
- Table does not include countries with population of less than one million or having insufficient data.
- Data is from the FAO's "The State of Food Insecurity in the World 2000" report.
Table 1. PREVALENCE OF UNDERNOURISHMENT in developing countries and countries in transition

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Notes:
- Figure Missing country name
- Category refers to prevalence category
- Proportion of the population undernourished in 1990-92
- Undernourished populations

Table 2. PREVALENCE OF UNDERNOURISHMENT in developing countries and countries in transition

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<th>Undernourished in total population</th>
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The state of food insecurity in the world 2000

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The state of food insecurity in the world 2000

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The state of food insecurity in the world 2000
### Table 2: Food Availability and Depth of Undernourishment in Developing Countries and Countries in Transition, 1996–98

|| Region, subregion, country | Food Availability | Depth of Undernourishment | Diet Composition |
|---|---|---|---|
| | Dietary energy supply | Dietary energy supply of the undernourished | Minimum energy requirement | Food deficit of the undernourished | Share of cereals and roots and tubers in total DES* |
| | (kcal/person/day) | (kcal/person/day) | (kcal/person/day) | (kcal/person/day) | (%) |
| **DEVELOPING WORLD** | | | | | |
| **ASIA AND PACIFIC** | | | | | |
| | | | | | |
| **EAST ASIA** | | | | | |
| China** | 3,290 | 1,630 | 1,670 | 250 | 62 |
| Korea, DPR (3) | 2,990 | 1,580 | 1,680 | 260 | 64 |
| Korea, Rep (1) | 3,050 | 1,790 | 1,800 | 130 | 67 |
| Mongolia (5) | 2,940 | 1,670 | 1,690 | 180 | 63 |
| **OCEANIA** | | | | | |
| Papua New Guinea (4) | 2,130 | 1,530 | 1,600 | 260 | 66 |
| **SOUTHEAST ASIA** | | | | | |
| Cambodia (5) | 2,500 | 1,780 | 2,110 | 270 | 79 |
| China, H. K. SAR (1) | 2,900 | 1,620 | 1,700 | 220 | 78 |
| Malaysia (5) | 2,890 | 1,690 | 1,730 | 240 | 77 |
| Myanmar (3) | 2,850 | 1,630 | 1,730 | 280 | 78 |
| Philippines (2) | 2,550 | 1,610 | 1,790 | 270 | 77 |
| Thailand (3) | 2,500 | 1,790 | 1,870 | 210 | 77 |
| Vietnam (5) | 2,160 | 1,560 | 1,740 | 220 | 77 |
| **SOUTH ASIA** | | | | | |
| Bangladesh (5) | 2,550 | 1,660 | 1,770 | 280 | 77 |
| India (3) | 2,780 | 1,870 | 1,970 | 340 | 78 |
| Nepal (3) | 2,710 | 1,630 | 1,770 | 280 | 77 |
| Pakistan (1) | 2,450 | 1,760 | 1,880 | 230 | 76 |
| Sri Lanka (3) | 2,330 | 1,570 | 1,730 | 260 | 75 |
| **LATIN AMERICA AND CARIBBEAN** | | | | | |
| | | | | | |
| **CENTRAL AMERICA** | | | | | |
| Costa Rica (3) | 2,500 | 1,790 | 1,870 | 240 | 80 |
| Guatemala (5) | 2,490 | 1,870 | 1,930 | 240 | 79 |
| Honduras (3) | 2,360 | 1,690 | 1,750 | 270 | 79 |
| Nicaragua (5) | 2,390 | 1,710 | 1,780 | 250 | 79 |
| Panama (5) | 2,340 | 1,590 | 1,620 | 230 | 78 |
| **EASTERN AMERICA** | | | | | |
| Argentina (1) | 3,130 | 1,840 | 1,940 | 190 | 76 |
| Belize (3) | 2,950 | 1,770 | 1,860 | 230 | 75 |
| Chile (3) | 2,920 | 1,760 | 1,860 | 190 | 76 |
| Colombia (5) | 2,360 | 1,590 | 1,730 | 230 | 77 |
| Ecuador (3) | 2,590 | 1,450 | 1,690 | 240 | 78 |
| Guyana (3) | 2,350 | 1,600 | 1,740 | 260 | 78 |
| Paraguay (5) | 2,950 | 1,750 | 1,850 | 230 | 77 |
| Suriname (3) | 2,690 | 1,720 | 1,860 | 260 | 78 |
| **SOUTH AMERICA** | | | | | |
| Brazil (3) | 2,960 | 1,650 | 1,800 | 250 | 75 |
| Colombia (5) | 2,990 | 1,660 | 1,800 | 250 | 75 |
| Costa Rica (3) | 2,740 | 1,750 | 1,840 | 230 | 74 |
| El Salvador (3) | 2,600 | 1,590 | 1,750 | 230 | 74 |
| Guatemala (5) | 2,540 | 1,590 | 1,750 | 230 | 74 |
| Honduras (3) | 2,280 | 1,510 | 1,730 | 230 | 73 |
| Uruguay (3) | 2,860 | 1,700 | 1,860 | 230 | 73 |
| Venezuela (5) | 2,610 | 1,740 | 1,840 | 230 | 73 |
Table 2: FOOD AVAILABILITY AND DEPTH OF UNDERNOURISHMENT in developing countries and countries in transition, 1996-98

<table>
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<tr>
<th>Region, subregion, country</th>
<th>FOOD AVAILABILITY</th>
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<th>DIET COMPOSITION</th>
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<td>Share of cereals and roots and tubers in total DES* (%)</td>
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<td>China, H. Kong SAR (1) 3 200 1 600 1 910 140 32</td>
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</tr>
<tr>
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<td>Korea, DPR (3) 1 840 1 580 1 890 340 44</td>
<td>Korea, Rep (1) 3 120 1 790 1 920 130 55</td>
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<tr>
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<td>China, H. Kong SAR (1) 3 200 1 600 1 910 140 32</td>
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food insecurity: when people live with hunger and fear starvation

The state of food insecurity in the world

Just how deep is the hunger suffered by the world’s more than 800 million undernourished people? The second edition of The state of food insecurity in the world introduces a new tool for assessing the severity of want: the depth of hunger. This measure of how much food the hungry lack rounds out the picture of food deprivation.

This edition also presents the latest estimates of the numbers of hungry people around the world. It finds that 826 million people do not get enough to eat – 792 million people in developing countries and another 34 million in industrialized countries and countries in transition – essentially no change since the last count. This is a sad indictment of the world’s failure to respond adequately in a time of unprecedented plenty.

FAO estimates that the number of hungry people in developing countries was declining by 8 million a year in the first half of the 1990s. But if we are to fulfil the pledge made at the 1996 World Food Summit, that number must reach 20 million a year.

Some progress is on the horizon, however. FAO projections to 2015 suggest that, due to slowing population growth and increases in productivity and income, more people will escape the prison of hunger.

But hungry people cannot wait another 15 years. The many causes of undernourishment – from poverty and conflict to poor infrastructure and limited investment in agriculture – will require sustained attention everywhere, from the village to the international community. In a world enjoying record wealth, it is a moral imperative to ensure that every person on the planet realizes their right to be free from hunger.