United Nations System
Standing Committee on Nutrition (SCN)

5th Report on the World Nutrition Situation

Nutrition for Improved Development Outcomes

5th Report on the World Nutrition Situation — March 2004 — Nutrition for Improved Development Outcomes

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foreword

The 5th Report on the World Nutrition Situation is part of a series of SCN reports initiated in the mid-1980s on the nutritional status of populations in developing countries. These reports are intended to provide a comprehensive source of data and ideas for the many individuals, communities, civil society movements, institutions, governments and nongovernmental organizations who are working to accelerate reductions in malnutrition.

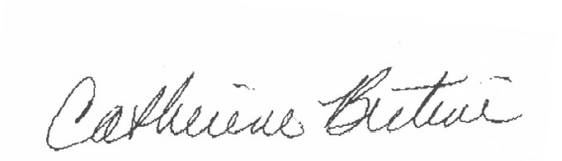
The 5th Report continues the tradition of reporting on trends in nutrition throughout the life cycle and of challenging the nutrition community. But instead of asking the question: *how is nutrition affected by global changes?* the 5th Report asks the question more proactively: *how can a nutrition perspective accelerate the attainment of a comprehensive set of development goals?* Inspired by the commitments made at the Millennium Summit of the United Nations in September 2000, translated into a series of Millennium Development Goals (MDGs), the 5th Report makes the case that the role of nutrition in development goes far beyond providing an indicator of progress towards the MDGs.

Specifically, the 5th Report outlines how reducing malnutrition is central to the achievement of the MDGs, citing evidence that links nutrition to a range of other development outcomes. It highlights how a nutrition perspective can strengthen key development mechanisms and instruments such as poverty reduction strategies, health sector reform, improving governance and human rights, and trade liberalization. The Report makes specific suggestions about how nutrition can be engaged in a practical programme and policy context. This contribution is timely, as progress towards the 2015 MDG targets has been slower than anticipated.

It is hoped that nutritionists and others working in nutrition as well as development practitioners and planners will find the 5th Report useful in their efforts to engage with those beyond their usual boundaries.

The 5th Report contains good and bad news. The good news is that malnutrition is being reduced steadily in much of the world and that several countries in Sub-Saharan Africa have been able to reduce malnutrition rates under difficult circumstances. The bad news is that the rate of decline in malnutrition outside of Sub-Saharan Africa is slowing and that for Sub-Saharan Africa, at a regional level, nearly all the nutrition indicators are moving in the wrong direction.

The 5th Report ends on a positive note. The potential of the nutrition community to serve broader development goals is clear—nutrition status is not merely an indicator of the attainment of the MDGs, it also represents a foundation for their attainment. Of equal importance, the potential of the broader development community to mobilize resources for malnutrition reduction is readily apparent. For this 'win-win' situation to materialize, the nutrition community needs to assume its leadership role as the custodians of technical knowledge and practical experience in nutrition, ready to work in partnership with others to realize the shared goals of a world free of hunger, malnutrition, and poverty.



Chair
United Nations System
Standing Committee on Nutrition

Highlights

Nutrition as a foundation for development

Nutritional status as a key Millennium Development Goal (MDG) indicator of poverty and hunger is an important first step in recognizing that policies, programmes and processes to improve nutrition outcomes have a role to play in global development.

The role of nutrition in development goes far beyond providing an indicator of progress towards the MDGs. A nutrition perspective can strengthen key development mechanisms and instruments such as poverty reduction strategies, health sector reform, improved governance and human rights, and trade liberalization. Nutrition can be engaged in a practical programme and policy context in each of these areas.

Integrating nutrition can accelerate improvements in non-nutrition development objectives. It also situates direct efforts to improve nutrition closer to non-nutrition capacity, commitment and resources, allowing increased leverage for an acceleration of malnutrition reduction.

Nutrition's contributions to the attainment of the MDGs

Goal 1:Eradicate extreme poverty and hunger
Malnutrition erodes human capital, reduces resilience to shocks and reduces productivity (impaired physical and mental capacity).
Goal 2: Achieve universal primary education
Malnutrition reduces mental capacity. Malnourished children are less likely to enroll in school, or more likely to enroll later. Current hunger and malnutrition reduces school performance.
Goal 3: Promote gender equality and empower women
Better-nourished girls are more likely to stay in school and to have more control over future choices.
Goal 4: Reduce child mortality
Malnutrition is directly or indirectly associated with more than 50% of all child mortality. Malnutrition is the main contributor to the burden of disease in the developing world.
Goal 5: Improve maternal health
Maternal health is compromised by an anti-female bias in allocations of food, health and care. Malnutrition is associated with most major risk factors for maternal mortality.
Goal 6: Combat HIV/AIDS, malaria, and other diseases
Malnutrition hastens onset of AIDS among HIV-positive. Malnutrition weakens resistance to infections and reduces malarial survival rates.

Nutrition and the Millennium Development Goals

Improved nutrition status can help to attain the MDGs as shown in the Box above. Both nutritional status and the policies, programmes and processes by which it is attained have much to offer those who seek to advance a broad range of development goals. Good nutrition underpins progress towards each of the first six MDGs. The evidence suggests that good nutrition status reduces poverty by boosting productivity throughout the life cycle and across generations (Goal 1), that it leads to improved educational outcomes (Goal 2), that dealing with malnutrition typically empowers women (Goal 3), that malnutrition is associated with over 50% of all child mortality (Goal 4), that maternal malnutrition is a direct contributor to poor maternal health (Goal 5), and that good nutrition status slows the onset of AIDS in HIV-positive individuals, increases malarial survival rates (Goal 6) and lowers the risk of diet-related chronic disease (related to Goals 1, 4 and 6).

An acceleration of malnutrition reduction is needed, especially in Sub-Saharan Africa, where trends in child malnutrition, household food insecurity and poverty are all moving in the wrong direction. Nonetheless, in some countries in the region (e.g. Nigeria, Niger, Angola, Malawi, Madagascar, Ghana and Tanzania) and in other regions of the developing world, progress is being made, although the rates of progress could be accelerated. In all but the poorest countries, a trend towards increasing fat consumption, among other things, is contributing to a global epidemic in diet-related chronic diseases.

world nutrition situation: key points

- *Low birthweight:* 30% of all babies born at term in South Asia have low birthweights, with rates of 14% in Sub-Saharan Africa, 15% in the Middle East and North Africa, 10% in Latin American and the Caribbean and 8% in East Asia and the Pacific.
- *Maternal underweight*: Of 10 African countries with trend data, only three show decline in the rate of severe maternal malnutrition (BMI less than 16).
- For Sub-Saharan Africa, the prevalence of *preschool underweight* is increasing and will continue to do so unless strategic moves to improve the situation are implemented. Steady progress is being made in South-Central Asia. *Preschool stunting* shows similar patterns.
- The locus of *preschool malnutrition* is steadily shifting from Asia to Africa, although the majority of the world's malnourished children still live in Asia.
- The prevalence and numbers of *wasted* (low weight-for-height) *preschoolers* are projected to increase in every African region.
- Asia is making good progress towards the MDG target of halving *child underweight* from 1990 to 2015. However, much of this progress—but not all—is driven by improvements in China.
- *The preschool malnutrition trends in Africa* reflect the deteriorating situation in many Sub-Saharan African countries, where the poverty rate has increased, HIV/AIDS has devastating impacts, conflict persists, and gains in agricultural productivity as a key driver of overall economic growth remain elusive.
- *The Sub-Saharan Africa child malnutrition picture is not all bleak*. Some countries show improvement under difficult circumstances (for example, Nigeria, Niger, Angola, Ghana, Malawi, Madagascar and Tanzania). More analysis is needed on these positive trends in Africa.
- *Food insecurity:* As measured by FAO, Central Africa, the Near East and Central America are posting the largest increases in the number of food insecure individuals. China and the Caribbean are showing the largest declines in the number of food insecure.
- *Diet composition:* China is experiencing the most rapid and largest increase in the share of fats in the food supply, followed by the rest of Asia.
- *Malnutrition, mortality and morbidity*: (a) malnutrition is the largest contributor to disease in the world, (b) childhood and maternal underweight alone are responsible for 138 million disability adjusted life years (DALYs) lost or 9.5% of the global burden of disease, (c) in low mortality developing countries, diet-related risk factors for chronic disease are responsible for a large share of the burden of disease.
- Nearly two billion people (35.2%) worldwide have *inadequate iodine* nutrition.
- *Vitamin A*: Extrapolations from the best available data suggest that 140 million preschoolers and more than 7 million pregnant women suffer from vitamin A deficiency every year.
- *Iron deficiency anaemia* among pregnant women is associated with an estimated 111,000 maternal deaths each year.

Nutrition and development mechanisms and instruments

It is crucial to move beyond links between nutrition and the MDGs and to focus on how a nutrition perspective can strengthen key development mechanisms and instruments such as poverty reduction strategies, health sector reform, improved governance and human rights, and trade liberalization.

Nutrition for improved governance

The nutrition community has been at the forefront of both community-based (now community-driven) development and rights-based development. These areas are generating insights about governance that promote voice, capacity, accountability and transparency. Examples of what the nutrition community can contribute in a practical programming and policy context include: the use of the legislature, the judiciary and the media to give voice and strengthen accountability of government, along with the development of nutrition maps to assist diagnosis, action and accountability at the sub- and supra-national level.

Nutrition for strengthened health sector reform

The huge and largely unappreciated role that malnutrition plays in the global burden of disease, together with a range of cost-effective health sector interventions to improve nutrition, makes nutrition activities among the best ways to improve the efficiency and quality of health services. Since malnutrition affects the poor and most vulnerable (women and children) most, addressing malnutrition also addresses inequities in health. Practical ways to engage nutrition in health sector reform include: using a nutrition perspective in the analysis of health policy, using nutrition tools and methods, identifying and using nutrition models that can strengthen health services, investing in the development of nutrition capacity, and integrating nutrition strategies into other health interventions.

Nutrition for more effective poverty reduction strategies

Insights from nutrition include recognition that there is a window of opportunity to improve the nutrition status of women before and during pregnancy and to improve the nutrition status of infants in the first two years of life. Both boost the lifetime well-being of the individual and weaken the intergenerational cycle of poverty. In addition, a focus on malnutrition inevitably involves a focus on individuals who are socially disadvantaged and especially vulnerable to risk. In a practical context, nutrition components play a crucial role in much larger anti-poverty conditional cash transfer programmes. There is a potential role that a nutrition perspective can play in the Poverty Reduction Strategy process by bringing life cycle, intergenerational and multisectoral strategies to the table. There is also the potential for nutrition indicators to serve as less controversial development indicators of poverty reduction.

Nutrition for more pro-poor trade liberalization

A nutrition perspective leads to a better understanding of the impact of trade on human well-being through employment conditions and their effects on child care and through the safety and quality of the food supply. Adding a nutrition dimension to the analysis of trade policies requires a focus not just on the quantity of trade but on its quality, not on the aggregate level but at the level of the individual and household. Ensuring that the benefits of trade liberalization are equitably distributed and do not have inadvertent or unexpected health effects is in everyone's interest and can be accomplished by enforcing the existing rules, designing mitigating interventions within the existing rules, or changing the rules altogether.

Moving forward

Incorporating perspectives from the international nutrition experience will enhance the capacity of a range of development strategies to meet their own objectives. As a driver of development, nutrition offers many different sectors a feasible investment opportunity that would advance their own sectoral goals.

Much remains to be done to eradicate the scandal of malnutrition in the context of a world that has seen global GDP double in real terms in the past 20 years. Malnutrition in Sub-Saharan Africa must receive priority attention.

The strategic incorporation of nutrition will not only enhance other development processes in their own right, having a multiplier effect on development, but will increase resources and capacity for malnutrition reduction, thus accelerating nutritional progress.

Incorporating nutrition will be challenging. It will require a greater awareness of the substantive links between nutrition and other development issues, and renewed efforts to forge partnerships with other development professionals. This will call for a readiness and capacity of nutrition professionals to engage with broader development policy processes.

The potential of the nutrition community to serve broader development goals is clear—good nutrition is a fundamental prerequisite and foundation for, not merely an indicator of, the attainment of the MDGs. Of equal importance, the potential of the broader development community to mobilize resources for malnutrition reduction is readily apparent. For this 'win-win' situation to materialize, the nutrition community needs to assume its leadership role as the custodians of technical knowledge and practical experience in nutrition, ready to work in partnership with others to realize the shared goals of a world free of hunger, malnutrition, and poverty.

acknowledgements

The 5th Report is the result of a partnership between a Task Force convened by the SCN and the many UN and other agencies that provided access to data and expertise. At the 2001 SCN meeting in Nairobi, the Task Force commissioned a series of background papers that were presented at the 2002 SCN Berlin meeting. The outline and messages of the 5th Report were presented at the SCN Chennai meeting in 2003, and the final Report was launched at the 2004 SCN meeting in New York. The Report would not have been possible without the intellectual advice and valuable contributions of a large number of colleagues and organizations—the broad base of collaboration confirms and reflects the breadth of the nutrition field itself.

The Report was prepared by a Task Force composed of lead authors—Lawrence Haddad (International Food Policy Research Institute), Jay Ross (Academy for Educational Development), with contributions from Arne Oshaug (Akershus University College, Norway), and Liv Elin Torheim (Akershus University College, Norway); in collaboration with—Bruce Cogill (Food and Nutrition Technical Assistance Project), Kathleen Kurz (International Center for Research on Women), Milla McLachlan (World Bank), and Sonya Rabeneck (SCN Technical Secretary until June 2003).

The Report reflects four especially commissioned background papers which were discussed at a consultation in Berlin in 2002—*Making Nutrition a Part of Social Sector Reform: Challenges and Opportunities* by Mickey Chopra and David Sanders (University of the Western Cape, South Africa) and Roger Shrimpton and Andrew Tomkins (Institute of Child Health, University of London); *Nutrition, Development, and Social Policy: The Need for Holistic Poverty Reduction Approaches* by Arjan de Haan (DFID); *Empowerment and Governance: Basic Elements for Improving Nutriitonal Outcomes* by Tim Frankenberger, Richard Caldwell and John Mazzeo (Tango International); and *Trade Liberalization and Malnutrition* by Corinna Hawkes, Tim Lang and Martin Caraher (Centre for Food Policy, Thames Valley University, London). These background papers were kindly reviewed in 2002 by: Ivonne Antezana, Mohamed Ag Bendech, Friederike Bellin-Sesay, Geoffrey Cannon, Purna Chandra Wasti, Ian Darnton-Hill, Lindsay Edouard, Stuart Gillespie, Lawrence Haddad, Uwe Kracht, Tom Marchione, Zeina Sifri, Dr Soekirman, Julia Tagwireyi, Marti van Liere, and Doris Wiesmann.

We are most grateful to: Hamid Ahmad, John Aluma, Mahtab Bamji, Ralph Blanchfield, Malcolm Bourne, Mickey Chopra, Mercedes de Onis, Wenche Barth Eide, Henrik Friis, Stuart Gillespie, Ian Gillson, Ted Greiner, Rainer Gross, Caren Grown, Andrew Hall, Corinna Hawkes, John Hoddinott, Charlotte Johnson-Welch, Eileen Kennedy, George Kent, Jim Levinson, Simon Maxwell, Barry Popkin, V. Prakash, Pekka Puska, Vinodini Reddy, John Roberts, David Sanders, Hans Schoeneberger, Kavita Sethuraman, Meera Shekar, Lisa Studdert, Kraisid Tontisirin, Veronica Triana, and Ricardo Uauy for their candid and speedy reviews of the draft Report.

Advice and data for the annexes were generously provided by Maria Andersson, Bruno de Benoist, Monica Bloessner, Elaine Borghie, Jesus Bulux, Laura Caulfield, Susan Chang-Lopez, Hernan Delgado, Lesley Drake, Steven Fishman, Philip James, Urban Jonsson, Uwe Kracht, Rachel Leach, Celia Maier, Altrene Mukuria, Chizuru Nishida, Mercedes de Onis, Gojk Roglic, Mark Rosegrant, Isatou Jallow Semega-Janneh, Alfred Sommer, Kathleen Strong, Veronic Triana, Tessa Wardlaw, and Keith West.

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The Report cover and overall layout was designed by Marie Arnaud Snakkers. Copy editing was conducted by Barbara Griffiths.

The Secretariat wishes to thank and most gratefully acknowledges funding assistance from Denmark (Ministry of Foreign Affairs), Germany (Deutsche Gesellschaft fűr Technische Zusammenarbeit [GTZ] GmbH), and Norway (Royal Ministry of Foreign Affairs). Without the ongoing financial support of these generous donors, the production of this Report would not have been possible.

1 Introduction

At the Millennium Summit of the United Nations in September 2000, all 189 member nations joined in a formal commitment to reduce global deprivation, including poverty, hunger, poor health and abuses of human rights. That commitment was translated into a series of Millennium Development Goals (MDGs)[1]. One of the MDGs—on poverty and hunger—uses nutritional status as an indicator of progress towards the target of halving these rates by 2015. The formal recognition of nutritional status as a key indicator of poverty and hunger is an important first step in recognizing that the policies, programmes and processes used to improve nutritional outcomes have a role to play in global development, broadly cast. But is this the sole relevance of nutrition[2] to those who seek to reduce global deprivation?

The 5th Report on the World Nutrition Situation (the Report) makes the case that the role of nutrition in development goes far beyond providing an indicator of progress towards the MDGs. So, in addition to its traditional role of providing an update of the world nutrition situation, this Report outlines how nutrition is central to the achievement of the MDGs, citing evidence that links nutrition to a range of other development outcomes. Further, it highlights how a nutrition perspective can strengthen key development mechanisms and instruments such as poverty reduction strategies, health sector reform, improving governance and human rights, and trade liberalization. The Report also makes specific suggestions about how nutrition can be engaged in a practical programme and policy context in each of these areas. This contribution is timely, as progress towards the 2015 MDG targets has been slower than anticipated (UNDP 2003).

In line with its ambitious scope, the Report seeks to reach beyond its traditional boundaries. For nutritionists and others working in health and nutrition, it is hoped the Report will be useful in efforts to engage with those beyond their usual boundaries. For development practitioners and planners working on other aspects of development, the Report should help them to find ways to make their work more effective by incorporating a nutrition perspective.

It is important to be clear about what 'nutrition' and 'a nutrition perspective' mean. First of all, food and nutrition are not the same. Nutrition is both the outcome and the process of providing the nutrients needed for health, growth, development and survival. Although food—as the source of these nutrients—is an important part of this process, it is not by itself sufficient. Other necessary inputs include good caring practices and good health services. A much-used UNICEF framework that situates the role of food in the nutrition process is provided in Annex 2. Although the process of generating nutritional status spans many levels, this Report is primarily concerned with the public

[1] The eight MDGs now provide, with relevant targets and indicators, the key guidance for the pursuit of these commitments by the international community. The MDGs may not occupy the same explicit guiding role in development agendas at the national and sub-national level, or among all development actors and agencies. The MDGs are, nevertheless, relevant to virtually every development aspiration. A complete list of MDG goals, targets and indicators is presented in Annex

[2] The Report uses a broad definition of 'nutrition' to encompass both nutritional status and the policies, programmes and other processes that affect nutritional status.

health policy level, where a 'nutrition perspective' can contribute to the process. The focus here is, therefore, on how policies, programmes and processes to improve nutrition can contribute to the design, implementation, monitoring and evaluation of other development objectives. This 'nutrition perspective' is intended to complement rather than replace the many other useful perspectives that contribute to the attainment of development objectives.

Although frequent mention is made of the increasing problem of overweight, obesity and diet-related chronic diseases, our primary focus is on the problem of undernutrition among vulnerable groups—the poor, women and young children—where malnutrition takes its greatest toll in illness, death and disability.

The Report begins with a chapter describing the key role of nutrition in the achievement of the MDGs. In doing so, it summarizes the state of the world nutrition situation by citing the most relevant nutrition indicator under each of the MDG headings. For example, the MDG on primary education provides an opportunity to review the situation of iodine deficiency—a condition that severely impairs learning. While there has been remarkable progress in reducing the prevalence of malnutrition worldwide, the Report also highlights some disturbing exceptions, particularly in Sub-Saharan Africa. As in past reports, key nutrition-relevant data are presented in the Annexes.

The Report then moves to four separate chapters on key development strategies or mechanisms: efforts towards achieving good governance at every level, poverty reduction strategies, social sector reform with an emphasis on health sector reform, and trade liberalization. These are described more fully in Box 1.

The list of strategies and mechanisms is by no means comprehensive, but it is based on a list proposed and discussed during the SCN 29th Session in 2002. A number of factors influenced the selection of these strategies and mechanisms. First, the strategies and mechanisms discussed must be prominent in the overall development debate—if they are not, then the value of strengthening them with a nutrition perspective is less relevant. Second, nutrition must have something to bring to the table to enhance the mechanism or strategy under review—if it does not, then expectations are raised unrealistically. Third, the set of strategies and mechanisms must be diverse enough to allow a wide set of experiences to be highlighted. Finally, the Report strives to forge new alliances to assist in the fight against malnutrition and, therefore, focuses on strategies and mechanisms that are not regularly included in nutrition forums and publications.

The list of strategies and mechanisms includes the dominant development paradigms at the national level (poverty reduction strategy processes or PRSPs and governance), at the international level (trade rules and governance) as well as the dominant sector for nutrition activities (health sector reform).

BOX 1 development strategies and mechanisms analyzed in this report

Good governance is defined here from a broad human development perspective. It goes beyond responsive, accountable and transparent democratic institutions to include a respect for human rights and freedoms, and an emphasis on equity and participation.

Health sector reform refers to a broad set of strategies designed to improve the efficiency, equity, and quality of health services. There is much debate among various stakeholders about how these objectives are interpreted and measured, but a number of specific strategies are being implemented and will be described.

Poverty reduction is a goal rather than a development strategy. Here we consider various strategies specifically designed to address poverty, including the poverty reduction strategy process. This is an evolving approach to poverty reduction first proposed by the World Bank and the International Monetary Fund. But now it is supported by a large number of major international agencies and bilateral donors in partnership with governments and civil society organizations in poor countries.

Trade liberalization is the reduction of tariff and non-tariff barriers to trade (including agricultural subsidies and other forms of protection), with a view to improving global economic efficiency, resulting in economic growth, greater employment, lower prices and other economic benefits. Concern over inconsistent trade policies, inequitable distribution of benefits and negative effects on some groups has led to intense debate on trade liberalization issues.

Table 1 Framework for mainstreaming nutrition

Key areas of development	*How does an understanding of nutrition strengthen strategic thinking in this area?*	*How can nutrition be engaged in a practical programme and policy context?*
Governance		
Health sector reform		
Poverty reduction		
Trade liberalization		

For each of these development strategies and mechanisms, two questions are addressed: (1) how does an understanding of nutrition strengthen strategic thinking in this area? and (2) how can nutrition be engaged in a practical programme and policy context? The Framework of Table 1 provides a matrix that this Report will therefore fill in.

Although the Report focuses on the contribution nutrition makes to development and to the specific objectives of the development efforts described, the right to adequate nutrition and food is firmly recognized in a number of international human rights instruments (Chapter 3). By implementing policies that attain this right, state leaders can, therefore, fulfil an obligation and realize an investment opportunity at the same time. But achieving this dual purpose is more than convenient efficiency. Food and nutrition are human rights precisely because they are necessary inputs for human development. Neither purpose can be fully and sustainably achieved without the other.

Food and nutrition are human rights precisely because they are necessary inputs for human development

While the strategies described in Box 1 are dealt with separately in this Report, they are closely interrelated and overlapping, with many features and key players in common. For example, both social sector reform and trade liberalization are components of most poverty reduction strategies. Trade liberalization can also directly affect health sector reform by influencing global markets for drugs, medical supplies, and private health insurance. As fundamental prerequisites for the long-term success of any of these strategies, good governance and a respect for, and fulfilment of, human rights are features of them all.

The Report concludes with a chapter that presents the completed matrix in Table 1 and summarizes the findings of the Report. It also distils key messages for both the broader development audience and for the nutrition community.

2 Nutrition trends and implications for attaining the MDGs

This chapter—and indeed this whole Report—will argue that nutrition has a crucial role to play in attaining many development outcomes embodied in the Millennium Development Goals (MDGs), building on previous SCN work (SCN 2002). In doing so, this chapter also takes on the more traditional function of an SCN Report on the World Nutrition Situation—that of summarizing progress in nutritional status.

Conventionally, nutrition is seen as integral to the first of the MDGs—on hunger and poverty. However, nutrition is also an instrument to achieve other MDGs, especially those relating to improvements in primary education enrolment and attainment, gender equity, child mortality, maternal health, and an ability to combat disease. The role of improved nutrition in supporting the pursuit of the MDGs is summarized in Table 2.

The following subsections summarize, on a goal-by-goal basis, the evidence for the assertions in Table 2. The subsections also provide the context for reports on various indicators of nutritional status. This chapter does not, however, aim to monitor the progress towards each goal on its own terms—this task is taken up in UNDP's Human Development Report 2003 (UNDP 2003).

Goal 1—Eradicate extreme poverty and hunger

Hunger and poverty are perpetuated by lack of access to, and control over, high-return assets, lack of access to institutions that give voice and provide opportunities, and by vulnerability to shocks and crises. Nutrition is a key component of one of the most fundamental assets: human capital (WHO/CMH 2002). Malnutrition disempowers individuals by causing or aggravating illness, lowering educational attainment, and diminishing livelihood skills and options. This makes it harder for individuals to seize new opportunities in a globalizing world, and reduces their resilience to resist the challenges and shocks it generates (see Goal 2).

These human capital deficits, if created in early childhood, tend to persist and affect labour force earnings throughout an individual's lifetime, diminishing them by sizable amounts. Productivity in non-market activities such as care for infants, children and other dependants, and in other household activities will also be reduced. The effects of enhanced asset ownership and use tend to interact positively. As a result, the effects of human capital on the productivity of other assets (such as financial, social, natural, and physical capital) will be foregone. Chapter 5 will present some detailed evidence on this key underpinning role of nutrition.

TRENDS IN CHILD ANTHROPOMETRY

One official MDG indicator of progress towards the poverty and hunger goal is the rate of low weight-for-age (underweight) of children 0-5 years old. The underweight measure conflates indicators of chronic malnutrition (low height-for-age or stunting) and acute malnutrition (low weight-for-height or wasting). As Figure 1 indicates, the Latin America and Caribbean region is on track to meet this MDG, Asia is close to meeting it, but in Africa, the gulf between projected rates and the MDG is widening. Despite the positive trends in Asia and Latin America that make the MDG seem achievable, continued and renewed efforts for improving the nutritional situation are necessary. It is important to note that success in Asia as a region is heav-

Table 2 The contribution of improved nutrition to the MDGs

Goal 1—Eradicate extreme poverty and hunger Malnutrition erodes human capital, reduces resilience to shocks and reduces productivity (through effects on physical and mental capacity). Early child malnutrition is partially irreversible and intergenerational, with consequences for adult health, including an increased risk of chronic disease. Biological and social vulnerability overlap and compound each other.
Goal 2—Achieve universal primary education Malnutrition reduces mental capacity. Malnourished children are less likely to enroll in school, or enroll later than other children. Current hunger and malnutrition reduces school performance. Iodine and iron are critical for cognitive development. Malnutrition may disable (vitamin A and blindness, iodine deficiency and impaired mental development).
Goal 3—Promote gender equality and empower women Gender inequality increases risk of female malnutrition, which erodes human capital and reduces women's access to assets. Dealing with malnutrition empowers women more than men. Better nourished girls are more likely to stay in school. Baby friendly communities with breastfeeding facilities will empower women.
Goal 4—Reduce child mortality Malnutrition is directly or indirectly associated with more than 50% of all child mortality. Malnutrition is the main contributor to the burden of disease in the developing world. Micronutrients are key to child survival (particularly vitamin A and zinc). Breastfeeding and appropriate complementary feeding are key to adequate nutrition and human development.
Goal 5—Improve maternal health Maternal health is compromised by malnutrition, anti-female bias in allocations of food, health and care. Malnutrition is associated with most of the major risk factors for maternal mortality. Stunting increases risk of cephalopelvic disproportion and obstructed labour. Deficiencies of several micronutrients (iron, vitamin A, folate, iodine, calcium) are associated with pregnancy complications .
Goal 6—Combat HIV/AIDS, malaria, and other diseases Malnutrition hastens onset of AIDS among HIV-positive individuals. Malnutrition may compromise efficacy and safety of ARV treatment, and weaken the resistance to opportunistic infections. Malnutrition reduces malaria survival rates. Different forms of malnutrition are important risk factors for diet related chronic disease.

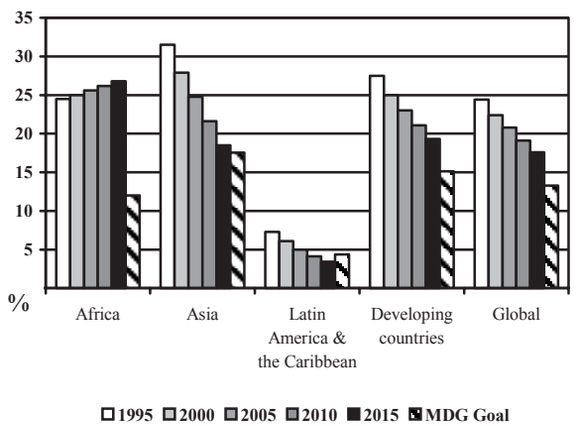
Note: Only the first six MDGs are discussed in this section[3].
Source: Adapted from Gillespie and Haddad 2003

ily influenced by rapid improvement in China's indicators which may mask setbacks in other countries in the region where the prevalence of malnutrition continues to rival those in Africa.

Table 3 disaggregates the 1990-2005 data in Figure 2 by subregion and presents absolute numbers of underweight children 0-5 years old. There is good news from South-Central Asia, where a decline of 17% is projected between 1995 and 2005 in the numbers of underweight

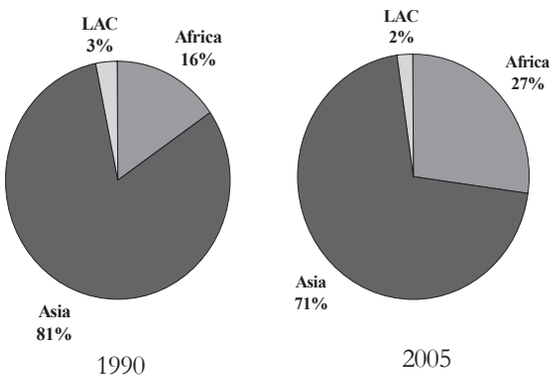
[3] While the remaining two goals—ensuring environmental sustainability and developing global partnerships for development—are crucial for supporting efforts to improve nutrition, what a nutrition perspective brings to these two goals is less clear. On the seventh goal of environmental sustainability, for example, there are arguments that a focus on diet diversity will promote biodiversity (see Johns and Eyzaguirre 2002), but to our knowledge these arguments have not been empirically tested.

figure 1 Trends and projections of underweight rates in children <5 years compared to the MDG Goal in 2015[4]



Sources: WHO Global Database on Child Growth and Malnutrition 2003 (http://www.who.int/nutgrowthdb); de Onis M and Blössner M 2003; de Onis M, Blössner M, Borghi E et al. 2004

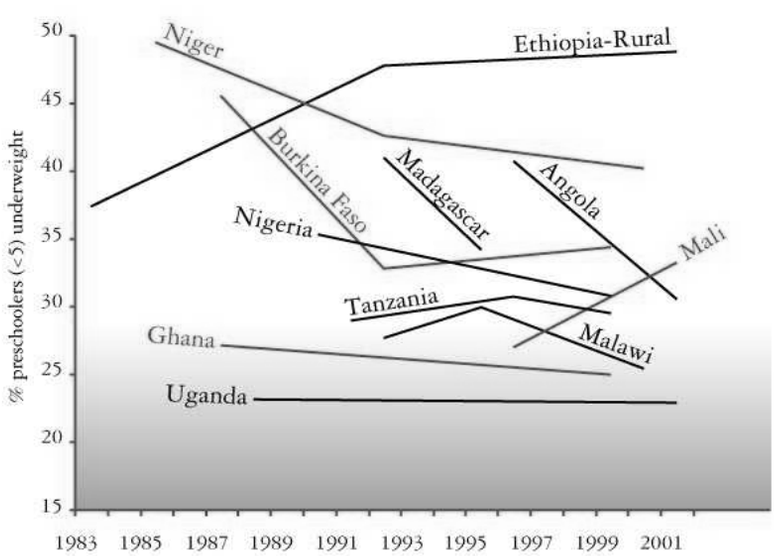
figure 2 The global distribution of underweight preschoolers: a shifting locus



Sources: WHO Global Database on Child Growth and Malnutrition 2003 (http://www.who.int/nutgrowthdb); de Onis M and Blössner M 2003; de Onis M, Blössner M, Borghi E et al. 2004

children. The worsening of the underweight situation is in Sub-Saharan Africa. Eastern Africa is the subregion experiencing the largest increases in prevalence and numbers of underweight children—the number is projected to increase by 36% from 1990 to 2005. Northern Africa is the only subregion where the number of underweight children is decreasing. These negative trends in Africa reflect the deteriorating situation in many Sub-Saharan African countries: the poverty rate has increased, HIV/AIDS has had devastating impacts, conflict persists, and gains in agricultural productivity remains elusive (UNDP 2003). Figure 2 highlights the shift in the locus of child malnutrition from Asia to Africa. Although the absolute

figure 3 Trends in underweight rates, countries in sub-saharan africa for which data are available



Source: WHO Global Database on Child Growth and Malnutrition 2003 (http://www.who.int/nutgrowthdb);

[4] The country classification in the regional categories as used by WHO in Figure 1 and Tables 3-5 corresponds to that of the UN, which is not necessarily the same in all UN Agencies. Annex 3 provides details.

Table 3 Estimated prevalence and number of underweight[a] children 0-5 years old 1990-2005 by UN region and subregion

UN region & subregion	*Prevalence (%)*				*Numbers (million)*			
	1990	*1995*	*2000*	*2005*	*1990*	*1995*	*2000*	*2005*
Africa	23.6	23.9	24.2	24.5	25.3	27.8	30.9	34.5
Eastern	26.7	27.9	29.2	30.6	9.5	10.9	12.8	14.8
Middle	27.8	26.9	26.1	25.3	3.7	4.2	4.7	5.3
Northern	12.3	10.9	9.7	8.6	2.6	2.3	2.1	1.9
Southern	14.0	13.9	13.7	13.6	0.8	0.8	0.8	0.8
Western	27.8	27.5	27.1	26.8	8.8	9.6	10.5	11.7
Asia	35.1	31.5	27.9	24.8	131.9	116.3	101.2	89.2
Eastern	18.5	13.2	9.3	6.5	23.1	14.5	9.5	6.1
South-Central	49.6	45.2	40.8	36.5	86.0	80.9	73.4	67.1
South-East	35.2	31.2	27.4	23.9	20.2	18.1	15.5	13.2
Western	12.9	12.1	11.3	10.6	2.7	2.8	2.8	2.7
Latin America & Caribbean	8.7	7.3	6.1	5.0	4.8	4.0	3.4	2.8
Caribbean	10.0	7.8	6.1	4.7	0.4	0.3	0.2	0.2
Central America	12.4	10.7	9.2	7.9	1.9	1.7	1.5	1.3
South America	7.0	5.7	4.6	3.7	2.5	2.0	1.6	1.3
Oceania	n/a[b]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
All developing countries	30.1	27.3	24.8	22.7	162.2	148.2	135.5	126.5

Notes: [a] Underweight is defined as <–2 standard deviations of the weight-for-age median value of the NCHS/WHO international reference data. More detailed data are found in Annex 4.
[b] not available.
Sources: WHO Global Database on Child Growth and Malnutrition 2003 (http://www.who.int/nutgrowthdb); de Onis M and Blössner M 2003; de Onis M, Blössner M, Borghi E et al. 2004

number of underweight preshoolers will remain higher in Asia, the rising prevalence in Africa is alarming.

The African situation is not uniformly bleak, however. There are several Sub-Saharan countries that are making progress in reducing underweight rates even under difficult conditions. From Figure 3 the data indicate that Nigeria, Niger, Angola, Ghana, Malawi, Madagascar and Tanzania all show declines in underweight rates based on the latest available data. Where nutrition success stories are occurring in Africa, they need to be documented and understood.

The trends in stunting data (Table 4) are broadly similar in pattern to the underweight data.[5] The trends in wasting (Table 5) present a particularly stark contrast between two regions. In almost every African subregion, not only the number, but also the prevalence of wasted children is projected to increase over the 1995-2005 period. The exception is Western Africa, where the prevalence of wasting remains relatively stable but at a high level. In Asia, every subregion shows declining or stable levels of wasting, but worldwide the greatest number and prevalence of wasted children are still found in South-Central Asia.

[5] Projections of stunting rates by Sahn and Stifel 2002 show similar patterns for Sub-Saharan Africa, using a different methodology.

Table 4 estimated prevalence and number of stunted[a] children 0-5 years old 1990-2005 by UN region and subregion

UN region & subregion	*Prevalence (%)*				*Numbers (million)*			
	1990	*1995*	*2000*	*2005*	*1990*	*1995*	*2000*	*2005*
Africa	36.9	36.1	35.2	34.5	39.6	41.9	45.1	48.5
Eastern	44.4	44.4	44.4	44.4	15.8	17.3	19.4	21.6
Middle	42.2	40.0	37.8	35.8	5.6	6.3	6.8	7.4
Northern	27.4	24.4	21.7	19.1	5.8	5.1	4.6	4.2
Southern	25.4	25.0	24.6	24.3	1.5	1.4	1.5	1.4
Western	34.7	33.8	32.9	32.0	10.9	11.8	12.7	13.9
Asia	41.1	35.4	30.1	25.7	154.6	130.8	109.4	92.4
Eastern	30.0	21.5	14.8	10.0	37.5	23.5	15.2	9.5
South-Central	50.8	45.2	39.7	34.5	88.0	81.0	71.5	63.5
South-East	41.8	36.8	32.1	27.7	23.9	21.3	18.1	15.3
Western	25.0	21.7	18.7	16.1	5.2	5.0	4.5	4.1
Latin America & Caribbean	18.3	15.9	13.7	11.8	10.0	8.8	7.6	6.5
Caribbean	12.4	9.6	7.4	5.7	0.5	0.4	0.3	0.2
Central America	25.9	23.0	20.4	18.0	4.0	3.7	3.3	2.9
South America	15.7	13.3	11.3	9.6	5.5	4.7	4.0	3.4
Oceania	n/a[b]	n/a	n/a	n/a	n/a	n/a	n/a	n/a
All developing countries	37.9	33.5	29.6	26.5	204.3	181.5	162.1	147.5

Notes: [a] Stunting is defined as <-2 standard deviations of the height-for-age median value of the NCHS/WHO international reference data. More detailed data can be found in Annex 4.
[b] not available.

Sources: WHO Global Database on Child Growth and Malnutrition 2003 (http://www.who.int/nutgrowthdb); de Onis M and Blössner M 2003; de Onis M, Blössner M, Borghi E et al. 2004

TRENDS IN FOOD SECURITY

The Food and Agriculture Organization of the United Nations (FAO) measure of food security, which is based on national food consumption data,[6] suggests that 17% of people in the developing world were 'undernourished' in 1999-2001, down from 18% in the mid-1990s. Over that period, the absolute number of food insecure in the developing world increased from 780 million to 798 million (FAO 2003). Table 6 describes the trends by subregions from the mid-1990s to 2000. In most subregions, the percentage of undernourished is declining, but far too slowly to reach the target of halving the 1990 proportion (20% for the developing regions as a whole) by 2015. The largest absolute increases in numbers of undernourished are seen in South Asia and Central Africa, with the largest absolute decreases in China (9.3 million) and East Africa. The largest proportionate increases in numbers are in Central Africa and Central America and the largest proportionate decreases are found in the Caribbean and China.

Given the static picture of the last five years, at least in terms of this measure, the 1996 World Food Summit goal of halving to 400 million the number of hungry people in developing countries by 2015 (FAO 1996) seems increasingly remote. It can now only be reached if annual reductions can be accelerated to 26 million per year, more than 12 times the pace of 2.1 million per year achieved to date (FAO 2003).

[6] The FAO measure of the prevalence of undernourishment takes into account the amount of food available per person nationally (derived from food balance sheets) and the extent of inequality in access to food.

Table 5 Estimated prevalence and number of wasted[a] children 0-5 years old by UN region and subregion

UN region & subregion	*Wasted*					
	1995		*2000*		*2005*	
	%	*million*	*%*	*million*	*%*	*million*
Africa	7.7	8.5	8.3	8.5	9.5	13.3
Eastern	6.6	2.6	7.6	3.3	8.7	4.2
Middle	7.0	1.1	9.1	1.6	11.9	2.5
Northern	4.7	1.0	6.2	1.3	8.0	1.7
Southern	3.7	0.2	4.9	0.3	6.6	0.4
Western	10.5	3.7	10.3	4.0	10.2	4.4
Asia	9.7	35.7	9.2	33.5	8.9	32.0
Eastern	2.7	3.0	2.2	2.3	1.8	1.7
South-Central	14.7	26.3	14.0	25.2	13.3	24.5
South-East	9.2	5.3	8.9	5.1	8.7	4.8
Western	4.4	1.0	4.2	1.0	3.9	1.0
Latin America & Caribbean	1.6	0.9	1.6	0.9	1.5	0.8
Caribbean	2.5	0.09	2.5	0.09	2.4	0.09
Central America	1.9	0.3	1.7	0.3	1.6	0.3
South America	1.4	0.5	1.4	0.5	1.4	0.5
Oceania	n/a[b]	n/a	n/a	n/a	n/a	n/a
All developing countries	8.3	45.2	8.2	45.1	8.3	46.2

Notes: [a] Wasting is defined as <–2 standard deviations of the weight-for-height median value of the NCHS/WHO international reference data. More detailed data can be found in Annex 4.
[b] not available.
Sources: WHO Global Database on Child Growth and Malnutrition 2003 (http://www.who.int/nutgrowthdb); de Onis M and Blössner M 2003; de Onis M, Blössner M, Borghi E et al. 2004

TRENDS IN FOOD SUPPLY COMPOSITION

China has the most dramatic declines in the number and percentage of those undernourished. It also has the largest increase in the dietary supply of fat, as measured from national food consumption data (see Table 7). The rest of Asia is also showing large percentage increases, albeit from a lower base. Latin America and the Caribbean is showing lower percentage increases, but from a higher base. This trend may be beneficial for those suffering from undernutrition. However, for many it will prove hazardous (Caballero and Popkin 2002). Hazardous because a diet rich in fat—together with high added sugar, low intake of fruits and vegetables, overweight and high blood cholesterol—is a major risk factor for chronic diseases, such as cardiovascular diseases and diabetes Type 2 (WHO/FAO 2003). These diseases now represent a major burden of disease in the low-mortality developing countries in the Americas and in Asia, and are forecast to increase in the high mortality developing countries (see Figure 4).[7]

[7] Obesity and noncommunicable diseases are considerable and on the increase in all but the poorest countries. In response, the General Assembly of WHO has made this issue a high priority. It is not discussed in depth in this Report because the main focus is on the MDGs, and how nutrition can contribute to the achievement of these goals. Although chronic diseases and related health and nutritional transitions are not explicitly part of the MDGs, these issues are considered important by the SCN. National data on the prevalence of overweight and obesity among adults and children are presented in Annex 6.

Table 6 Recent trends in "undernourishment", by country groupings

Region	*Number of undernourished (in millions)*			*Percentage of population undernourished*	
	1995-97	*1999-2001*	*% increase*	*1995-97*	*1999-2001*
East Asia	153.3	144.5	-6	12	11
East Asia—excluding China	8.7	9.2	6	11	12
Oceania (PNG)	1.2	1.3	8	27	27
South-East Asia	65.4	66.3	1	13	13
South Asia	276.5	293.1	6	22	22
North America (Mexico)	5.1	5.2	2	5	5
Central America	6.5	7.5	15	20	21
The Caribbean	9.8	7.8	-20	32	25
South America	34.0	32.9	-3	10	10
Near East	29.4	34.8	18	13	14
North Africa	5.8	6.1	5	4	4
Sub-Saharan Africa	192.7	198.4	3	35	33
Central Africa	39.5	47.6	21	53	58
East Africa	84.8	81.3	-4	45	39
Southern Africa	37.1	36.8	-1	46	41
West Africa	31.3	32.7	4	16	15
Developing World	779.7	797.9	2	18	17
Developing World —excluding China	635.1	662.6	4	20	19

Source: Extracted and calculated from FAO 2003
See Annex 5 for more details on global food insecurity.

Goal 2—Achieve universal primary education

The evidence showing the importance of food and nutrition for improved educational attainment is ample and convincing (see Drake et al. 2002 for a brief review). Several studies show that undernutrition in infancy and early childhood has adverse effects on school enrolment rates and on cognitive and behavioural development. Glewwe and Jacoby (1995) found that a 10% increase in stunting was causally associated with a 3.5% increase in age of first enrolment at school in Ghana. In a Guatemalan intervention study, Behrman et al. (2003) found that improved nutrition in infancy through receiving a nutritious drink increased the probability of attending school and of passing the first grade (see Chapter 5, Box 5). The same study also showed that adult cognitive achievement scores improved for individuals who had received the drink as infants. A recent study from Jamaica showed that previously stunted children had poorer educational attainment, regardless of their social background (Chang et al. 2002). In the Philippines, Mendez and Adair (1999) found strong associations between stunting of children under two and their subsequent cognitive ability test scores when eight and eleven years old.

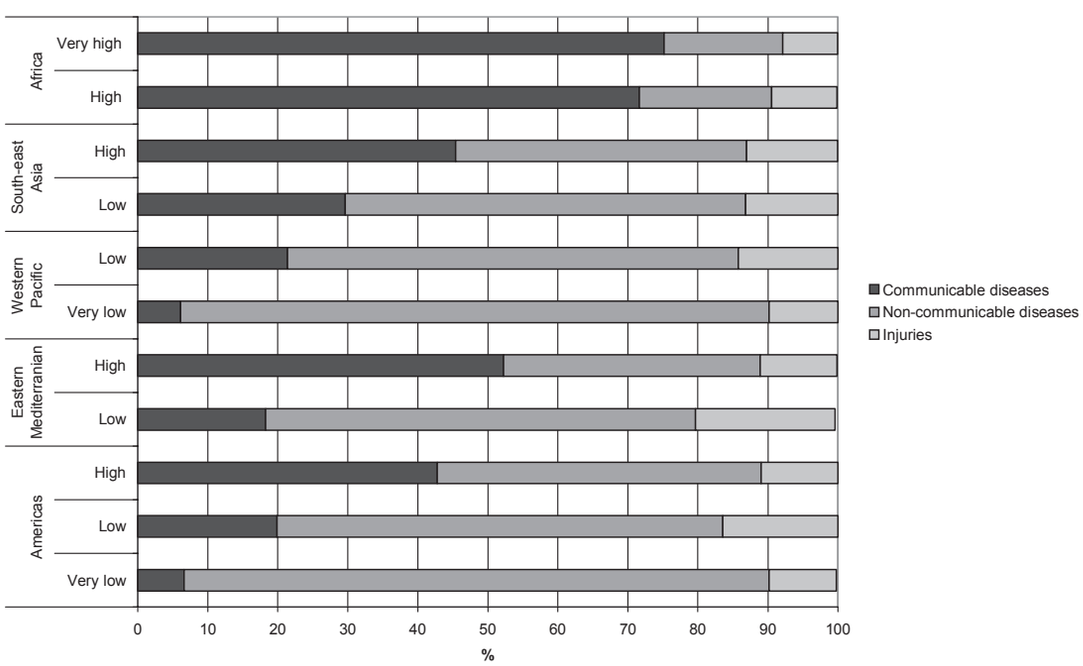
Noteworthy in the last five years has been the success of several initiatives—school feeding and enrolment-linked take home food rations (both included under the heading of food for education) and conditional cash transfers—in increasing enrolment rates throughout the developing world (WFP 2003, Morley and Coady 2003). Links between impaired cognitive development and a lack of specific nutrients have

Table 7 Trends in the dietary supply of fat

Region	*Supply of fat (g per capita per day)*				*% increase from 1977-79 to 1997-99*
	1967-69	*1977-79*	*1987-89*	*1997-99*	
North Africa	44	58	65	64	10
Sub-Saharan Africa[a]	41	43	41	45	5
North America	117	125	138	143	14
Latin America & Caribbean	54	65	73	79	22
China	24	27	48	79	193
East & South-East Asia	28	32	44	52	63
South Asia	29	32	39	45	41
European Community	117	128	143	148	16
Eastern Europe	90	111	116	104	-6
Near East	51	62	73	70	13
Oceania	102	102	113	113	11
World	53	57	67	73	28

Note: [a] Sub-Saharan Africa excludes South Africa
Source: FAOSTAT, 2003

Figure 4 Distribution of burden of disease from communicable diseases (includes maternal and perinatal conditions and nutritional deficiencies), noncommunicable conditions and injuries in countries with very low, low, high, and very high levels of mortality



Source: Based on Annex 3 in WHO 2003a

Table 8 Prevalence of iodine deficiency in school aged children and the general population based on urinary iodine by UN region

UN Regions [a]	*General population*		*School Age Children (6-12 years)*	
	Population with UI < 100 μg/L		*Population with UI < 100 μg/L*	
	(%)	*(in millions)* [b]	*(%)*	*(in millions)* [b]
Africa	43.0	324	42.7	60
Eastern Africa	45.2	98	45.1	19
Middle Africa	32.7	26	32.4	5
Northern Africa	50.6	88	50.7	14
Southern Africa	31.2	15	31.6	3
Western Africa	41.4	96	41.1	19
Asia	35.6	1239	38.3	187
Eastern Asia	16.3	212	16.3	24
South-Central Asia	41.9	632	43.2	104
South-Eastern Asia	60.5	313	61.2	46
Western Asia	55.8	83	53.2	12
Europe	52.7	331	53.1	27
Eastern Europe	59.9	181	60.0	15
Northern Europe	59.2	13	59.3	1
Southern Europe	49.2	59	47.8	4
Western Europe	42.6	78	43.6	6
Latin America & Caribbean	10.0	47	10.3	7
Caribbean	66.2	13	69.8	2
Central America	9.7	14	9.9	2
South America	6.6	21	7.3	3
Northern America	9.5	28	9.5	3
Oceania	64.5	19	59.4	2
Australia - New Zealand	72.8	17	73.0	2
Melanesia	33.9	2	32.7	0
Total	35.2	1989	36.5	285

Notes: Data was produced by WHO using the best available evidence and do not necessarily correspond to the official statistics of Member States. Data are not nationally representative for all countries (see Annex 7, Figure 1).
[a] 192 WHO Members States.
[b] Based on population estimates for the year 2000 (United Nations Population Division, World Population Prospects: The 2002 Revision).
Source: The WHO Global Databank of Iodine Deficiency Disorders, 1993-2003 (http://www3.who.int/whosis/micronutrient)

also been established, especially for iron and iodine deficiency, and are reviewed in the next subsections.

IODINE DEFICIENCY DISORDERS

Iodine deficiency disorders (IDD) in utero are recognized as causes of poor mental and cognitive development (Pharoah and Connolly 1994). All degrees of iodine deficiency affect thyroid function of the mother and neonate,

foetal brain growth (Delange 2001) and the mental development of the child. Research has also shown that concurrent iodine deficiency reduces cognitive performance in school children (Huda et al. 1999). Table 8 shows the current estimates for the severity of iodine deficiency globally and more data are provided in Annex 7. Much has been achieved in improving the coverage of households with iodized salt, with 67% of households in Sub-Saharan Africa consuming iodized salt during the period 1997-2002. Corresponding figures are 53% in South Asia, 53% in Middle East and North Africa, 80% in East Asia and 81% in Latin America and the Caribbean (UNICEF 2003). Despite these achievements, an estimated 54 countries defined by WHO are affected by iodine deficiency and nearly two billion individuals worldwide are iodine deficient.

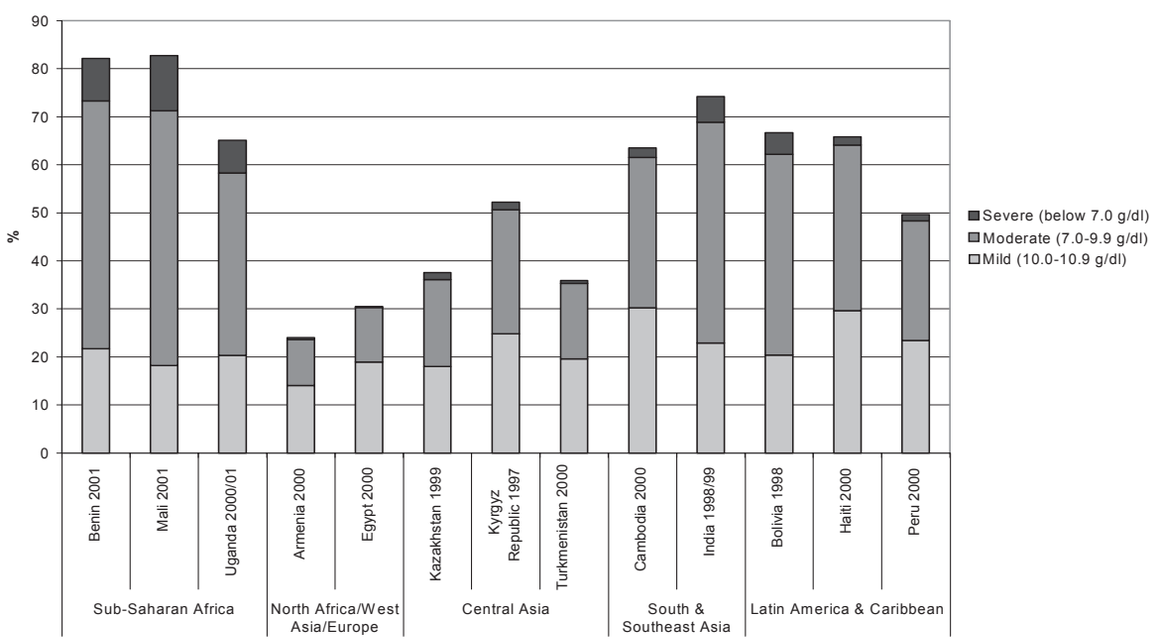
Iron Deficiency

It is well documented that iron deficiency leads to impaired cognitive development and lower school achievement (Grantham-McGregor and Ani 2001). Iron deficiency is one of the most prevalent nutritional disorders and is reported by WHO to affect four to five billion people.[8]

More and better data are needed to describe this serious nutritional deficiency (Stoltzfus 2001). Nationally representative data are becoming increasingly available through sources such as the Demographic and Health Surveys (DHS). Figure 5 shows the prevalence of anaemia[9] in children 0-5 years old in selected countries with recent DHS data. In most of the countries listed, there are more cases of moderate and severe deficiencies combined than cases of mild deficiency.

The extent of iron deficiency may be contested. What is not in dispute, however, is that billions of people suffer from low iron intake and that this has a high cost in terms of impaired cognitive development. In turn, this has a large impact on economic productivity foregone. Recent estimates (Horton and Ross 2003) of income foregone as a percentage of GDP are presented in Figure 6 for countries with available data. The economic costs range from 2% of GDP in Honduras to 7.9% in Bangladesh, depending on the extent of deficiency and the returns to educational attainment in the labour market.

figure 5 prevalence of anaemia in preschool children (6-59 months) in selected countries

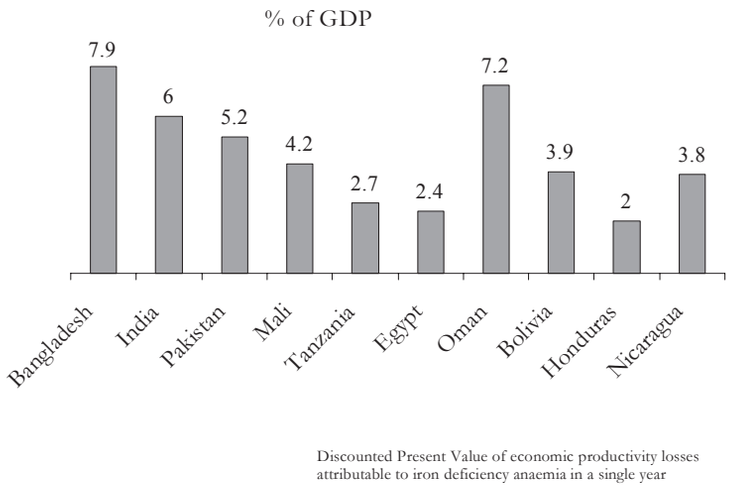


Source: ORC Macro, 2003. MEASURE DHS+ STATcompiler. http://www.measuredhs.com, December 2003

[8] Iron deficiency anaemia: The challenge. http://www.who.int/nut/ida.htm

[9] Anaemia measured by haemoglobin concentration is used as a proxy indicator of iron deficiency. However, this is neither a specific measure for iron status, since anaemia may also be caused by malaria, intestinal parasites or other factors (INACG 2002), nor a sensitive measure, since iron deficiency can exist without anaemia.

figure 6 The economic costs of iron deficiency anaemia



Source: Reprinted from Food Policy, 28(1), Horton and Ross, "The economics of iron deficiency", pp51-75, 2003, with permission from Elsevier

Goal 3—Promote gender equality and empower women

In many countries, gender bias and discrimination constrain and limit women's and girls' rights, choices, capabilities, and opportunities (Malhotra et al. 2002, Kishor and Neitzel 1996, Adams and Castle 1994, Agarwal 1994, Mahmud and Johnston 1994). Poor women have fewer employment opportunities than men; their wages are significantly lower than men's; they have less access to resources and information; and are less involved in household decision-making processes. Even decisions relating to how many children a woman should have are made by others. Girls, for example, are less likely to be enrolled in school and drop out earlier than boys. In some countries, sociocultural norms also dictate that girls marry during adolescence and have their first child soon thereafter. Taken together, these constraints limit women's abilities to improve their own and their children's nutritional status.

Gender equality is good for nutritional status (Oniang'o and Mukudi 2002). In unequal conditions, women and girls have poorer nutrition outcomes throughout the life cycle, higher rates of mortality, less access to health care, and greater household food insecurity (Osmani and Sen 2003, Kurz and Johnson-Welch 1997, Haddad, Hoddinott and Alderman 1997 and Shiffman 2000). Table 9 presents data for selected countries from DHS surveys and other sources. It shows that in several cases where maternal mortality, maternal malnutrition, and higher female child mortality are prevalent, the values for the gender development index and female-to-male literacy ratios are low.

One cross-country regression study, using data from 63 countries with multiple observations over time, found that improvements in women's education and life expectancy relative to men's have contributed to a reduction in child malnutrition of more than 50% from 1970 to 1995 (Smith and Haddad 2000). Further, Smith et al. (2003) found that women's decision-making power relative to men's was significantly associated with improved nutritional status in their children, particularly in South Asia. If the status of women relative to men in South Asia and Sub-Saharan Africa could be brought to the level it is in Western Europe, undernutrition rates would fall dramatically and halve the gap in child undernutrition rates between South Asia and Sub-Saharan Africa.

Improvements in the nutritional status of women and girls will contribute to reducing gender inequality. An emphasis on nutrition focuses on the biologically vulnerable—women and infants—who are also made vulnerable by sociopolitical processes (see Chapter 5). Good nutritional status early in life promotes the cognitive development of all children—girls and boys. If boys and girls are more equally prepared for school, the gap in enrolment and attainment is more likely to close, as is the gap in their returns to the workforce. A nutrition focus on women's access to information, education and services can also improve a woman's ability to claim rights in a wide variety of arenas.

Goal 4—Reduce child mortality

Worldwide, each year, more than 10 million children under five years of age die—most from preventable causes with the vast majority in poor countries (Black et al. 2003, Ahmand et al. 2000). More than 50% of these deaths are either directly or indirectly attributable to malnutrition (Pelletier et al. 1995). This important link between malnutrition and child mortality has recently been reconfirmed (Caulfield et al. 2004a).

TABLE 9 status of women: various indicators, selected data

Subregion & country	*Maternal Mortality Ratio (maternal deaths per 100,000 live births) 2000[a,e]*	*% Body Mass Index <18.5 kg/m² [b]*	*Ratio of female to male child mortality age 2-5 years[c]*	*Gender Development Index 2003[d,e,f] (low=worse for women)*	*Ratio of literate females to males, 2001[d]*
Sub-Saharan Africa					
Niger 1998	1600	20.7	1.11	0.28	0.44
Chad 1996/97	1100	21.1	0.95	0.37	0.83
Ethiopia 2000	850	26.0	1.07	0.35	0.81
Nigeria 1999	800	16.1	1.05	0.45	0.95
Madagascar 1997	550	20.6	0.93	0.47	0.92
North Africa/West Asia/Europe					
Yemen 1997	570	25.2	1.13	0.42	0.58
South & South-East Asia					
Nepal 2001	740	26.7	1.45	0.48	0.57
India 1998/99	540	41.2	1.47	0.57	0.82
Bangladesh 1999/2000	380	45.4	1.33	0.50	0.71
Cambodia 2000	450	21.2	0.93	0.55	0.89
Latin America & Caribbean					
Bolivia 1998	420	0.9	1.11	0.66	0.96
Peru 2000	410	0.7	0.90	0.73	0.97
Guatemala 1998/1999	240	2.0	1.21	0.64	0.85

Notes/Sources: [a] Maternal mortality in 2000: estimates developed by WHO, UNICEF and UNFPA. Available at: http://www.who.int/reproductive-health/publications/maternal_mortality_2000
[b] Data from DHS surveys
[c] Imputed from DHS data on child mortality disaggregated by sex: (U5MR-IMR)=mortality rate between 2-5 years, ratio calculated by dividing female mortality/male mortality
[d] Human Development Report 2003. Millennium Development Goals: a compact among nations to end human poverty, UNDP 2003
[e] For example for Switzerland the Maternal Mortality Ratio in 2000 was 4, and the Gender Development Index was 0.93
[f] The Gender Development Index is a composite score of life expectancy, education and income

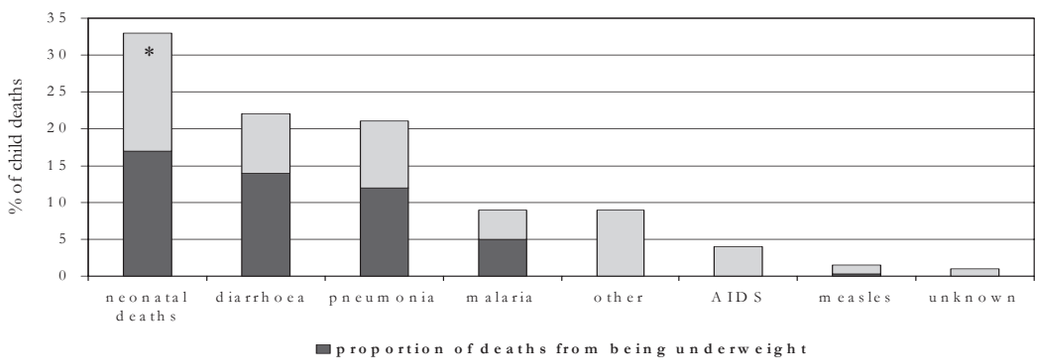
The main causes of child deaths are diarrhoea, pneumonia, malaria, measles, AIDS and perinatal conditions,[10] with undernutrition as an underlying cause for most of these (Figure 7) (Black et al. 2003 and Shankar 2000). Zinc deficiency, for example, contributes to child morbidity and mortality by increasing the prevalence and severity of diarrhoea and pneumonia (Jones et al. 2003).

Cross-country regression work also concludes that changes in underweight have a statistically significant effect on changes in child mortality, independent of socioeconomic and other conditions (Pelletier and Frongillo 2003).

The link between malnutrition and child mortality is brought about by compromised immunity. Malnutrition and infection are intertwined in a synergistic vicious cycle (Semba and Bloem

[10] The Global Burden of Disease Study categorizes low birthweight, birth asphyxia, birth trauma, and other conditions (such as neonatal sepsis, maternal and placental complications, respiratory distress, foetal blood loss, foetal haematological disorders, anaemia, perinatal infections, and maternal diabetes) as 'perinatal conditions,' while deaths due to congenital anomalies, neonatal tetanus, and syphilis are addressed separately (WHO Comparative Risk Assessment Working Group 2000).

figure 7 distribution of global child deaths by cause



*Work in progress to establish the cause-specific contribution of being underweight to neonatal deaths.

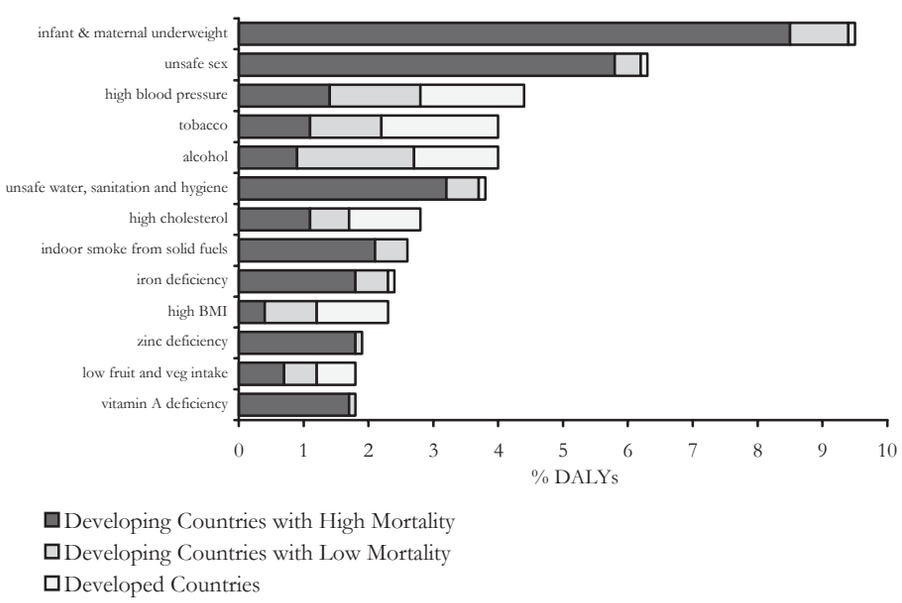
Source: Black RE, Morris SS, Bryce J 2003. Reprinted with permission from Elsevier (The Lancet, 2003, 361, pp 2230)

2001, Tomkins and Watson 1989, Scrimshaw et al. 1968). Undernutrition raises the risk of mortality by increasing the likelihood that the illness will be prolonged or become severe. A more prolonged or severe illness is more likely to negatively affect the nutritional status of children by placing them at ever increasing risk of future and more prolonged or severe illness episodes (Fishman et al. 2003). Infections cause appetite loss, malabsorption, metabolic changes and behavioural changes which affect feeding practices and thus deplete body nutrient stores (Tomkins and Watson 1989).

Overall, malnutrition is the main contributor to illness and disease in the world (Ezzati et al. 2002), comprising risk factors related to undernutrition, excess consumption of certain diet components (e.g. total calories and fat—see Table 7) and low consumption of others (e.g. fruit and vegetables). Childhood and maternal underweight alone are responsible for 138 million disability adjusted life years (DALYs) lost or 9.5% of the global burden of disease (see Figure 8), mostly in the high-mortality developing countries.

Maternal underweight is a key risk factor in low birthweight. This in turn is a risk factor for child stunting and underweight as well as for some types of chronic disease during adulthood (Barker 1993). Chapter 5 presents evidence suggesting that this is a key mechanism for poverty transmission throughout the life course and

figure 8 Leading global risk factors and contributions to global burden of disease



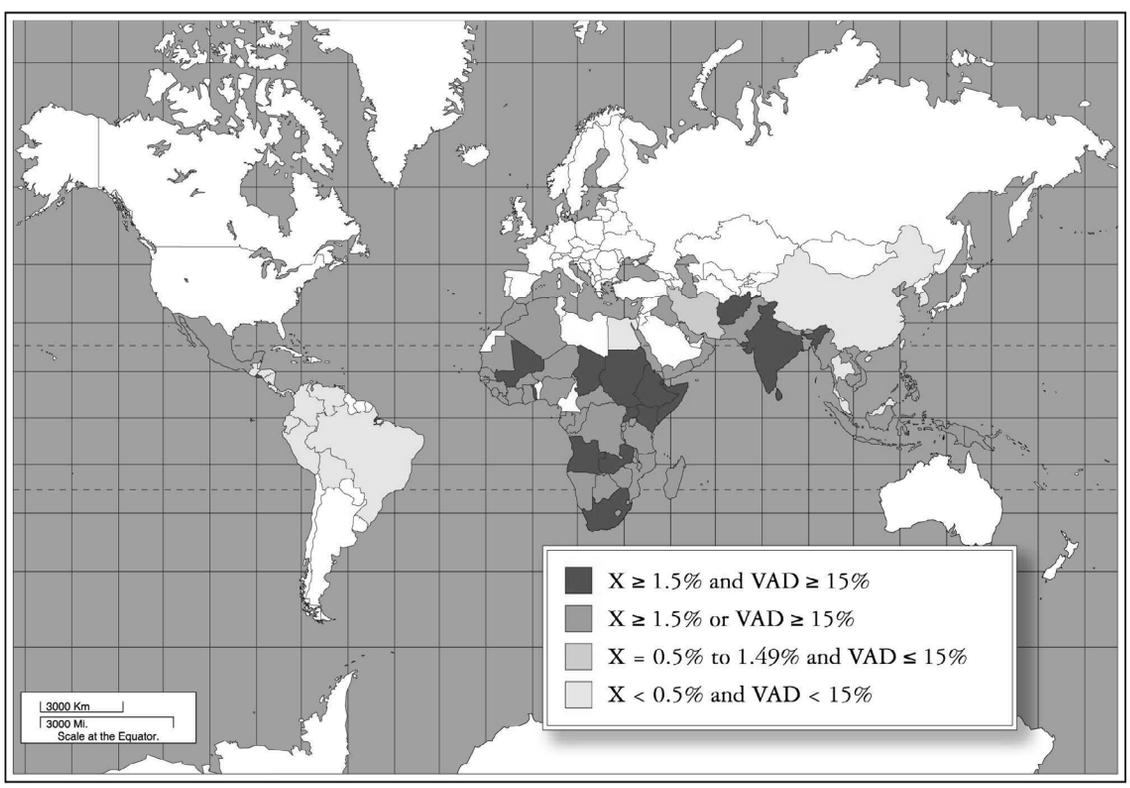
Source: Ezzati et al. 2002
Reprinted with permission from Elsevier (The Lancet, 2002, 360(9343), pp1-14)

across generations.

Low birthweight (LBW, defined as birthweight below 2500 grams)—specifically due to intrauterine growth retardation (IUGR)—is the perinatal condition most strongly linked to undernutrition (Fishman et al. 2003). The latest estimates from UNICEF (see Annex 9) indicate that 30% of all babies born at term in South Asia have low birthweights, with 14% in Sub-Saharan Africa, 15% in the Middle East and North Africa, 10% in Latin America and the Caribbean, and 8% in East Asia and the Pacific. LBW may be due to IUGR, preterm birth, or both (Kramer 1987).[11] Fishman et al. (2003) recently showed that the attributable fraction of neonatal death due to IUGR-LBW was considerable in some parts of the world, and highest (53.2%) in South-Asian countries.[12] The fraction of neonatal deaths attributed to low maternal body mass index (BMI) reached 16.6% among women in the same South-Asian countries.[13] (See Annex 9 for the most recent estimates of LBW, and Annex 11 for national data on maternal BMI.)

Exclusive breastfeeding is the best infant feeding strategy for the first six months (Kramer and Kakuma 2002), and has numerous concurrent and long-term advantages for mother and child. Infant morbidity (Léon-Cava et al. 2002) and mortality (WHO 2000a) is lower among breastfed than non-breastfed infants. Jones et al. (2003) estimate that exclusive breastfeeding in the first six months of life and continued breastfeeding from six to eleven months could reduce the annual number of deaths of children under five by 1.3 million, or 13% (see Annex 10 for information on global breastfeeding practices).

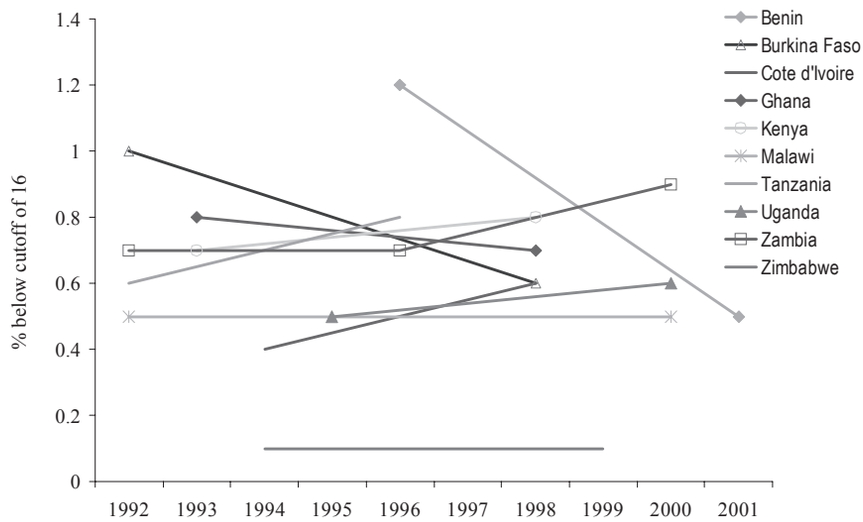
Figure 9 Prevalence of vitamin A deficiency among children 0-5 years old[a]



Note: [a] Countries stratified by joint prevalence of vitamin A deficiency (VAD), defined by serum retinol concentrations < 0.70 µmol/L or abnormal conjunctival impression cytology, and xerophthalmia (X), all active stages combined.
Source: West 2002. Adapted and reprinted with permission from The Journal of Nutrition

[11] In developing countries, the majority of LBWs are due to IUGR (usually defined as birthweight less than the tenth centile of weight-for-gestational age) whereas preterm birth (< 37 weeks gestation) is the predominant cause in most developed countries (Ashworth 1998). Poor maternal nutrition during pregnancy is thought to account for 14% of IUGR in developing countries, and maternal stunting may account for 18.5% (ACC/SCN 2000).
[12] Bangladesh, Buthan, Democratic People's Republic of Korea, India, Maldives, Myanmar, and Nepal.
[13] Annex 11 provides national data on BMI.

figure 10 Trends in prevalence of severe maternal malnutrition (BMI <16) for women who had a birth 5 years prior to survey: African countries with trend data



Source: DHS: Statcompiler

PRESCHOOLER VITAMIN A STATUS

It is well known that vitamin A supplementation has been shown to reduce child mortality by 23% in areas with high vitamin A deficiency (Beaton et al. 1994). Whereas food-based approaches for ensuring adequate vitamin A status is the most sustainable approach, vitamin A supplementation is the main current intervention to reach as many children as possible in the short-term. A map of estimated prevalence of vitamin A deficiency (VAD) among children 0-5 years old is shown in Figure 9.[14] Extrapolations from the best available data suggest that 140 million children under five and more than seven million pregnant women suffer from VAD every year; 1.2-3 million children and significant numbers of women die unnecessarily, and another 4.4 million children and 6.2 million women suffer from xerophthalmia (West 2002).[15] Nearly half of all VAD and xerophthalmia occurs in South and South-East Asia.

Goal 5—Improve maternal health

Every year, more than 500,000 women worldwide die from complications arising from pregnancy and childbirth (WHO/UNICEF/UNFPA 2000). Maternal malnutrition is associated with both maternal morbidity and mortality in several ways. Maternal stunting is associated with a small birth canal and obstructed labour, which is a main cause of maternal mortality (Konje and Ladipo 2000). The most fundamental way to reduce obstructive labour is to break the intergenerational cycle of chronic undernutrition and adopt measures to improve children's health and nutrition during rapid periods of growth, i.e. infancy, early childhood and adolescence (Konje and Lapido 2000, ACC/SCN 2000).

MATERNAL UNDERNUTRITION

Maternal undernutrition is directly associated with ill health through the malnutrition-infection complex, and places both the mother and her foetus at risk (King 2003). There is substantial evidence relating low birthweight and intrauterine growth retardation to maternal undernutrition (Fishman et al. 2003, see Goal 4). Of ten African countries with trend data, only three (Figure 10) show declines in the rate of severe maternal malnutrition (% BMI <16). Micronutrient deficiencies are also associated with pregnancy complications and maternal mortality.

Iron deficiency anaemia

Iron deficiency anaemia among pregnant women is associated with an estimated 111,000 maternal deaths each year (Stoltzfus et al. 2003). Table 10 shows the prevalence of anae-

[14] Further country-specific estimates, as well as vitamin A supplementation rates, are provided in Annex 8.
[15] See Annex 8 for more information on Vitamin A status

Table 10 Prevalence of anaemia[a] in women (15-49 years)

	Mild anaemia[b]	*Moderate anaemia*[c]	*Severe anaemia*[d]	*Any anaemia*	*Number of women*
Sub-Saharan Africa					
Benin 2001	40.7	21.8	1.8	64.3	3 125
Mali 2001	39.1	20.8	2.8	62.7	3 787
Uganda 2000/01	22.1	7.5	0.7	30.4	6 548
North Africa/West Asia/Europe					
Armenia 2000	10.2	2	0.3	12.4	6 137
Egypt 2000	22.7	4.6	0.3	27.7	7 575
Central Asia					
Kazakhstan 1999	26.6	7.7	1.2	35.5	2 269
Kyrgyz Republic 1997	27.7	9	1.5	38.1	3 767
Turkmenistan 2000	37.8	8.4	1.1	47.3	7 714
South & South-East Asia					
Cambodia 2000	44.8	12.7	1.3	58.8	3 634
India 1998/99	35	14.8	1.9	51.8	79 663
Latin America & Caribbean					
Bolivia 1998	20.7	5.6	0.9	27.1	3 531
Haiti 2000	36.3	15.8	3	55.1	4 836
Peru 2000	25.4	5.9	0.3	31.6	6 184

Notes: [a] Anaemia measured by haemoglobin concentration is used as a proxy indicator of iron deficiency. However, this is not a specific measure for iron status, since anaemia may also be caused by malaria, intestinal parasites or other factors (INACG 2002).
[b] Haemoglobin level 10-10.9 g/dl for pregnant women and 10.0-11.9 g/dl for non-pregnant women.
[c] Haemoglobin level 7-9.9 g/dl.
[d] Haemoglobin level less than 7g/dl.
Source: ORC Macro 2003. MEASURE DHS+ STATcompiler. http://www.measuredhs.com, December 2003

mia in women in selected countries where recent data exists at the national level.

Vitamin A deficiency

Maternal vitamin A deficiency has also been associated with maternal mortality risk. A recent trial in Nepal showed that low-dose vitamin A supplementation reduced maternal mortality by 44% (West et al. 1999) and that maternal night-blindness was associated with almost a four-fold increase in the risk of mortality (Christian et al. 2000). These results now need to be replicated elsewhere. Figure 11 shows estimates of maternal vitamin A status globally and more data are provided in Annex 8.

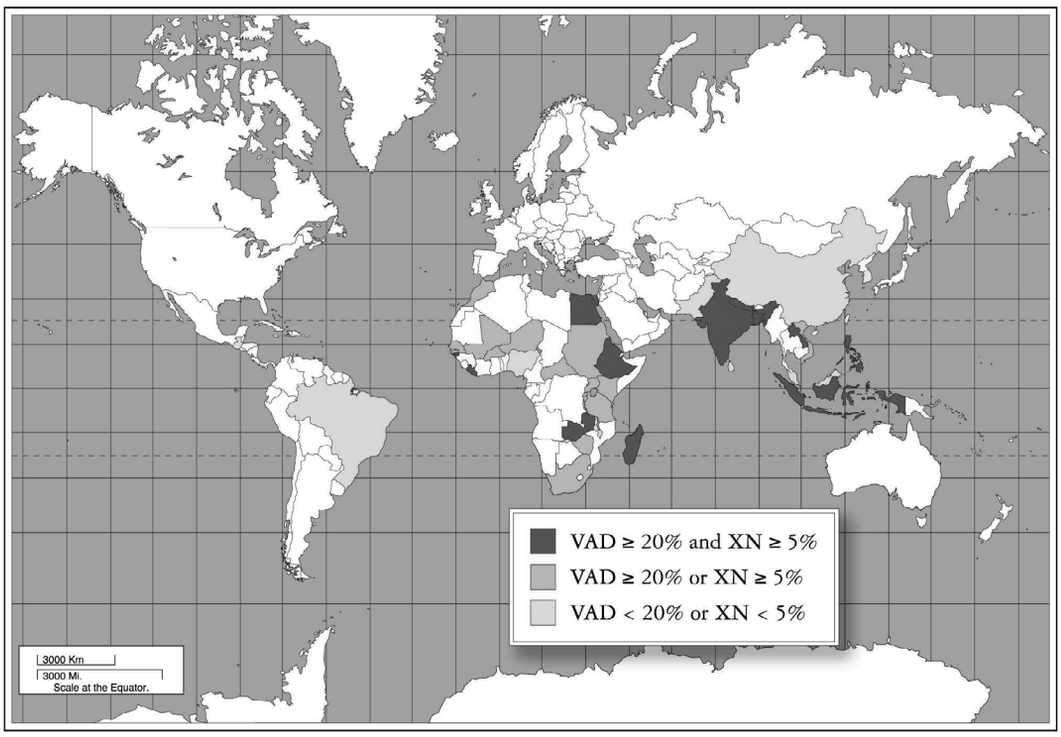
Zinc deficiency

Maternal zinc deficiency is increasingly recognized as widespread among women in developing countries (Caulfield et al. 1998). Animal and observational studies indicate that zinc supplementation may reduce complications of pregnancy, but more research is required to establish this link in humans (Christian 2003, Osendarp et al. 2003). Preliminary findings from randomized, controlled intervention trials do, however, indicate that maternal zinc supplementation has a beneficial effect on neonatal immune status and infant morbidity (Osendarp et al. 2003).

Folate deficiency

Folate deficiency is associated with an increased risk of pre-term delivery and low birthweight (Scholl and Johnson 2000). It also contributes to anaemia, especially in pregnant and lactating women (Dugdale 2001). It may, therefore, indirectly be associated with increased risk of maternal death and illness. Folate helps to prevent malformations that affect the brain and the spi-

figure 11 Prevalence of low to deficient maternal vitamin A status[a]



Note: [a] Countries stratified by joint prevalence of low to deficient maternal vitamin A status, defined by serum or breastmilk retinol concentrations < 1.05 µmol/L (VAD=vitamin A deficiency) and maternal night blindness (XN), based on extant data for either or both indicators.
Source: West 2002. Adapted and reprinted with permission from The Journal of Nutrition

nal cord. Numerous studies provide strong support for public health policies and programmes for increasing folic acid intake before pregnancy to prevent neural tube defects (Bailey et al. 2003).

Calcium deficiency

There is some evidence that calcium supplementation reduces the risk of hypertension and thus mortality risk in areas where women are especially calcium deficient (Villar et al. 2003).

Iodine deficiency

Maternal iodine deficiency in women increases the risk of stillbirths and miscarriages (Dillon and Milliez 2000). It also has a detrimental effect on foetal brain development (see Goal 2) (Hetzel et al. 1987).

Improved maternal nutrition is essential for attaining the MDG target of reducing maternal mortality by three quarters between 1990 and 2015. It is also important for the targets on reducing hunger and malnutrition (Goal 1), achieving universal education (Goal 2), and promoting gender equity and women's empowerment (Goal 3). See Annexes 6 and 11 for more data on women's nutritional status.

Goal 6—combat HIV/AIDS, malaria and other diseases[16]

The AIDS pandemic threatens to halt and reverse development achievements (UN General Assembly 2001). The destructive power of HIV/AIDS is now well known (Barnett 2003). Before it leads to premature death, it affects assets, institutions and outcomes such as nutritional status. HIV/AIDS effects last well beyond premature death in terms of debt, family break-up and further infection. But nutrition is more than an outcome for those affected by HIV/AIDS; it is also a means of addressing it. Nutrition and food security play a critical role in all four of the main strategies for combating HIV/AIDS: prevention, care, treatment and mitigation.

[16] The main emphasis here is on HIV/AIDS. For update from a health point of view see the World Health Report 2003: Online: http://www.who.int/whr/2003/en/Chapter3-en.pdf

PREVENTION

Nutritional status may influence a person's risk of infection. This has been much investigated for mother-to-child transmission (MTCT) where several randomized, placebo-controlled trials have studied the effects of vitamin supplementation. Results from the studies indicate that providing nutritionally compromised mothers with multivitamin supplements reduces child mortality and HIV transmission through breastfeeding (Fawzi et al. 2002). Supplementation with vitamin A alone, however, has no effect on MTCT (Coutsoudis et al. 1999, Kumwenda et al. 2002).

Mother-to-child transmission of HIV is the most significant source of HIV infection in children below the age of ten years (WHO 2000b). The absolute risk of transmission through breastfeeding is estimated to be 10-20% (De Cock et al. 2000). The UNFPA/UNICEF/WHO/UNAIDS Inter-Agency Task Team on Mother-to-Child Transmission of HIV recommends that when replacement feeding is acceptable, feasible, affordable, sustainable and safe, HIV-infected mothers should avoid all breastfeeding (WHO 2000b). When one or more of these conditions is not fulfilled, exclusive breastfeeding is recommended during the first months of life. To minimize HIV transmission risk, breastfeeding should be discontinued as soon as feasible, taking into account local circumstances, the individual woman's situation and the risks of replacement feeding (including other infections and malnutrition). There is also evidence from one study that exclusive breastfeeding in the first three months of life may carry a lower risk of HIV transmission than mixed feeding (Coutsoudis et al. 2001).

There is a concern that the link between HIV/AIDS and breastfeeding may undermine achievements gained to promote breastfeeding worldwide (IBFAN 2001). In the context of HIV, UNAIDS, WHO and UNICEF agree that it is critical to protect, promote and support breastfeeding, making the Code of Marketing of Breastmilk Substitutes and the Baby Friendly Hospital Initiative even more relevant. At the same time, access to voluntary testing and counselling must improve, and HIV-positive women must be informed about the risks and benefits of different infant feeding options.

Food insecurity is a 'fueling factor' in the spread of HIV/AIDS, by increasing transactional sex activity and labour migration (Ngwira et al. 2001, Devereux 2002). Food security is, therefore, a major factor in prevention by avoiding the creation of risky environments and situations (Loevinsohn and Gillespie 2003).

CARE

Nutritional interventions can help manage symptoms, promote response to medical treatment, and increase the quality of life by improving daily functioning and nutritional status. Nutritional care and support involves helping people living with HIV/AIDS to optimize their dietary habits to maintain good nutritional status and meet their special nutritional needs.

Adequate nutrition is important because it may retard the progression of HIV to AIDS-related diseases (Sharpstone et al. 1999, Piwoz and Preble 2000). Even at the early stages of HIV infection when no symptoms are apparent, HIV increases the body's nutritional needs (WHO/FAO 2002). The risk of malnutrition increases significantly during the course of infection (Macallan 1999a), and weight loss has been shown to be an independent predictor of mortality (Tang et al. 2002). A study from Thailand showed that a daily micronutrient tablet reduced mortality in HIV-positive adults (Jiamton et al. 2003). Adequate nutrition is important because it also improves quality of life. Meeting immediate food and nutrition needs is essential if HIV/AIDS affected households are to live with dignity and security (WHO/FAO 2002).

Nutritional care and support can entail nutrition counseling, awareness generation, provision of food aid, meal planning, or other interventions. Home-based care offers strong opportunities for nutrition counseling. Community involvement is critical to the successful provision of these services and in many situations requires building capacity of individuals and the community.

TREATMENT

For treatment, antiretroviral drugs can interact with food and nutrients, affecting drug efficacy, side effects and adherence to drug regimens. Antiretroviral drugs in turn can affect food consumption, nutrient utilization and nutritional status. Certain antiretroviral drugs have effects on energy, fat and bone metabolism that require dietary management (WHO 2003b). Nutrition interventions in this context focus on assisting people living with HIV/AIDS and caregivers to make dietary choices that manage drug side effects and promote drug efficacy and adherence (Castleman et al. 2003). More information is needed about the efficacy and effects

of antiretroviral drugs on malnourished populations. Strategies on how to manage the nutrition dimension of antiretroviral treatments in resource limited settings are urgently needed as access to treatment becomes more widespread.

MITIGATION

The HIV/AIDS pandemic is adversely affecting household and community food security. HIV/AIDS is not like most other food security shocks that are of limited duration and magnitude. Households suffer the loss of productive labour, income and food reserves. Savings are diverted and assets are depleted to meet health care and funeral costs. More and more households and individuals are forced to seek support from the broader community. Unlike short term food security shocks, households are forced to make permanent adjustments and changes in livelihood strategies. These mounting demands rapidly erode existing social capital as well as threaten long-standing local institutions. Mitigation efforts need to recognize and support ways that the community and local stakeholders can address the problem, at least partially. Governments that traditionally spend few public resources on health, education, social safety nets, etc, are challenged to meet the demands placed on them to ensure an appropriate sustainable response.

Interventions derived from food security and development programming can be adopted to mitigate negative socioeconomic impacts and livelihood threats stemming from the HIV/AIDS pandemic. Interventions to support labour resources, cash resources, knowledge and local institutions are key. Appropriate interventions to mitigate the impacts of HIV/AIDS will likely be multidisciplinary in nature and dynamic, adjusting along with the evolution of the disease within the household and community. They are likely to involve both the infected and affected individuals and households. Unlike the traditional development project that targets households, HIV/AIDS interventions will likely target the community and individuals as well (for example women, orphans and other survivors).

Specific solutions will likely be as diverse as the characteristics of the epidemic in different and unique localities as well as different and unique households. They are inclined to encompass both elements of self-reliance and safety-net programming even within a single community. Utilizing what is already known and sharing lessons learned from experience are critical actions for increasing the number of options available for mitigating the negative food-security impacts of HIV/AIDS (Bonnard, 2002).

Malaria and Tuberculosis

The two other diseases constituting the main focus of Goal 6, malaria and tuberculosis, are also influenced by nutrition. The link between nutrition and malaria is increasingly understood (Shankar 2000). The effects of malnutrition, widely prevalent in malaria endemic areas worldwide, substantially increase the public health burden of malaria. Ezzati et al. (2003) estimate that underweight is a major contributing risk factor to malaria, as are vitamin A and zinc deficiencies. Recent work by Caulfield and Black (2004b) highlights the important role of zinc in malaria prevention.

There is good epidemiological and clinical evidence that malnutrition contributes to both the incidence and severity of tuberculosis (Macallan 1999b). Together with poverty, crowded living conditions and HIV, poor nutrition has contributed to an alarming increase in the global prevalence of tuberculosis (Davies 2003). Worldwide, the number of individuals who are co-infected with HIV and tuberculosis is also increasing. Van Lettow et al. (2003) describe how the 'triple trouble' of HIV, tuberculosis infection and malnutrition may put those infected at greater risk than those with any of the three conditions alone. Further investigation is needed to evaluate the prophylactic and therapeutic potential of nutritional interventions for co-infection with HIV and tuberculosis.

conclusions

With the exception of Sub-Saharan Africa, steady progress is being made in reducing undernutrition, although the rates of progress could be accelerated. For Sub-Saharan Africa the MDG on hunger and poverty will not be attained for many decades if current trends persist. However, there are some countries in the region that are making progress in reducing the prevalence of undernutrition. In all but the poorest countries, diets are becoming richer in fats, contributing to a global chronic disease epidemic.

The evidence cited in this chapter demonstrates that nutrition plays a fundamental role for the achievement of MDGs 1 through 6. But many of the strategies and mechanisms employed in the name of meeting the MDGs

make little or no reference to nutrition. Could nutrition help accelerate progress towards the MDGs? The rest of this Report argues that the answer is 'yes', for two reasons. First, integrating nutrition can help strategies for governance, health sector reform, poverty reduction and trade liberalization achieve their own goals. Second, through the use of nutrition perspectives, actions and actors will gain some traction and leverage, however modest, over new networks, resources and capacities, and should accelerate reductions in malnutrition—reductions that promise improvements in survival, health, education, productivity and empowerment.

3 governance and human rights

We will spare no effort to promote democracy and strengthen the rule of law, as well as respect for all internationally recognized human rights and fundamental freedoms, including the right to development.

This was the commitment made by UN Member States through the United Nations Millennium Declaration in September 2000. This commitment embodies key elements of 'good governance'. The processes by which resources are governed can have a profound effect on the level and allocation of resources across competing activities and on the ability of those resources to affect outcomes that matter to all people—in particular to the poor. 'Good' governance strengthens the incentives for investment, reduces the incentives for misallocation and misappropriation of resources, typically seeks representative democracy, does not generate conflict and, in general, advances the interests of the poorest (Frankenberger et al. 2002, Narayan 2002).[17]

The importance of good governance is well recognized within the original UNICEF conceptual framework. Good governance of malnutrition lists 'control and management of resources', influenced by political and ideological structures in a given society, under the heading of basic determinants (Jonsson 1995). But in line with all of the chapters in this Report, rather than asking how good governance can affect nutrition status, this chapter asks the opposite: how can a nutrition perspective help strengthen efforts to improve governance? In addition, how can nutrition be engaged in a practical good governance policy and programme context?

Before attempting to address these questions more specifically, it should be noted that the field of governance is large, encompassing many closely related issues. In particular, 'good governance' has been subject to widely different interpretations. The World Bank focuses on the need for governance to create an environment in which private investment is encouraged and institutions make markets work (World Development Report 2000/2001). UNDP has a broader view on good governance as an end in its own right as well as a means to an economic end. There is as yet no final definition of good governance even within UNDP.[18] However, a number of core principles have been agreed upon. They include: ensuring transparency and access to information in all public affairs; securing participation of civil society in the planning, budgeting and monitoring of development processes affecting people's lives; respecting the rule of law; and the possibility of holding states accountable for their responsibilities and promises. This broader understanding of good governance (outlined in Box 2) is also the one adopted here.

How does an understanding of nutrition strengthen strategic thinking in good governance?

By identifying linkages between principles of governance and specific nutrition concerns, a nutrition perspective has considerably strength-

[17] The importance of governance for nutrition-related outcomes has been shown by a number of studies including Geering and Thacker 2002 and Smith and Haddad 1999.
[18] UNDP Oslo Governance Center, personal communication 2003.

BOX 2 democratic governance: good governance from a human development perspective

At its core, democratic governance has three components:

Voice

- People's human rights and fundamental freedoms are respected, allowing them to live with dignity.
- Inclusive and fair rules, institutions and practices govern social interactions.
- Women are equal partners with men in private and public spheres of life and decision-making.

Capacity

- Economic and social policies are responsive to people's needs and aspirations.
- People can participate in and shape development processes.
- People can have an effective say in decisions that affect their lives.
- Economic and social policies aim at eradicating poverty and expanding the choices that all people have in their lives.

Accountability

- People can hold decision-makers accountable.
- People are free from discrimination based on race, ethnicity, class, gender or any other attribute.
- Decisions are made and communicated in a transparent manner.
- The needs of future generations are reflected in current policies.

Source: Adapted from UNDP, Human Development Report 2002 (Box 2.1) and Kaufman et al. 1999

ened strategic thinking. Our understanding of good governance specifically involves two areas: community-based programming and human rights.

COMMUNITY-BASED PROGRAMMING AND PARTICIPATION

While it cannot be argued that the nutrition community initiated participatory approaches to development, it can be stated with some confidence that these approaches have been popularized and concretized through their widespread implementation in efforts to improve nutrition status. Comprehensive arguments for participatory development were advanced by Cohen and Uphoff and by Chambers in the late 1970s and in the early 1980s.[19] The broad support by UNICEF of community-based nutrition programming—heavily influenced by the Joint Nutrition Support Project in Iringa, Tanzania in the 1980s—provided added impetus.[20] The design, implementation and evaluation of the Iringa project and its positive impacts on nutrition led the UNICEF Board to adopt its key features: the food-care-health concept of malnutrition as a manifestation of biological, social, economic and political failures at different levels and within different sectors (Annex 2). It also institutionalized the Triple-A Cycle of assessment, analysis and action—all done at the community level and with the goal of full community participation (Jonsson 2003). At a later date, FAO contributed substantially to participatory approaches to nutrition in the community through the field-testing and publication of Guidelines for Participatory Nutrition Projects (FAO 1993).

Although the community-based model in nutrition can be improved in many areas (Heaver 2002), it has raised the capacity of nutrition practitioners to:

- understand the need for and facilitate social mobilization and animation—so crucial to community ownership and sustainability (Maxwell 1998)
- realize the institutional constraints to effective participation (Heaver 2002), particularly in the context of no or limited decentralization of government
- contribute to the debate on 'scaling up' community-driven development initiatives as well as 'scaling down' government policies and decisions in order to fit the needs of communities (Marchione 1999, Gillespie 2003), principally on the key role of 'learning by doing' (Mansuri and Rao 2003).

These lessons are relevant to efforts to reduce malnutrition. Given the multisectoral

[19] See for example: Chambers R 1983 *Putting the Last First.* Longman Scientific and Technical Press, Essex, and Cohen J and Uphoff N 1977 *Rural Development Participation: Concepts and Measures for Project Design, Implementation and Evaluation.* Cornell University, Ithaca.

[20] The history of this approach in nutrition is described by Pelletier 2002.

causes of malnutrition, the nutrition community is in a strong position to engage other sectors to share experiences and to learn.

HUMAN RIGHTS BASED APPROACHES TO NUTRITION POLICIES AND PROGRAMMING

The World Conference on Human Rights in Vienna in 1993 reiterated that all human rights are interrelated, interdependent and indivisible. States, international organizations and NGOs were requested to cooperate to create favourable conditions at the national, regional and international levels to ensure the full and effective enjoyment of human rights. UNICEF was the first international development agency to put this into practice. In 1995, UNICEF's Executive Board decided that human rights principles should serve as a guide to all UNICEF's work—a decision triggered by the agency's pioneering work to make human rights the basis for its work to improve the nutrition of women and children. The 1997 UN Reform called on all members of the UN family to let human rights principles infuse all their activities. As a result, human rights are progressively being embraced by other development organizations and by a number of member states. The nutrition community has an important task ahead to provide both pertinent data and tools to make a human rights approach to development operational and, in doing so, to strengthen the basis for good governance.

The human rights paradigm has empowered the nutrition community[23] to:

- UNCOVER DISCRIMINATION—The principle of non-discrimination is at the core of all human rights. Nutrition status measures may be one of the first windows into social, ethnic, indigenous, gender and age discrimination as indicators of lack of voice and power. Community-based programming and participation are, by themselves, no guarantee that the socially and otherwise vulnerable groups in a local society are heard or served. In contrast, a human rights approach implies non-discrimination and participation of all as imperative. Nutrition assessments can help verify this by revealing inequities in the distribution of malnutrition. The household inequality literature has focused largely on individual level indicators of welfare that have relevance for all

BOX 3 evolution of the thinking on the human right to food and nutrition

Members of the nutrition community pioneered the application of the human rights agenda to food and nutrition issues within economic, social and human development (Eide et al. 1984, Eide 1989, Oshaug, Eide and Eide 1994, Jonsson 1996, Kent 1997, Kracht 2002, Jonsson 2003, Oshaug and Eide 2003[21]), and they continue to be at the forefront of such efforts. Provisions in the Universal Declaration of Human Rights (UDHR) of 1948, the two International Covenants on Civil and Political Rights (CPR) and on Economic, Social and Cultural Rights (CESCR) of 1966, and the 1989 International Convention on the Rights of the Child (CRC), have formed the normative basis for the application of human rights to food and nutrition issues.

A milestone achievement was to get the recognition of the universal right to adequate food adopted by the 1996 World Food Summit. The Summit requested that both the concept and steps to implement the right should be better clarified. Under the coordination of the UN High Commissioner for Human Rights, this request was met through the joint efforts of human rights and development experts including food and nutrition policy analysts, international organizations, representatives of interested governments and civil society. The process culminated in the issuing of the General Comment No. 12 on the right to food in 1999 which for the first time offers a comprehensive and authoritative interpretation of the human right to adequate food.[22]

Essentially, human rights are the relationships between claim holders and duty bearers. It is first of all the States that have duties, or obligations to respect, protect, and fulfil the rights of the claim holders. The obligation to fulfil encompasses facilitating people's efforts to cater for themselves, and directly providing for those whose opportunities to do so have been exhausted and who have become destitute. But apart from national and local governments, others also have duties: communities, families, parents, as well as the international community.

[21] See this reference for an historical account of the development of the right to food and nutrition.
[22] As laid down in very general terms in UDHR (Article 25) and the CESCR (Article 11) and also in more nutritional terms in the CRC (Articles 24 and 27).
[23] See also Eide 2002.

household and family members, such as food intake, receipt of appropriate health care, and individual nutrition status as measured by anthropometry (Haddad et al. 1997). Indicators such as wage rates, share of income earned, and education level attained are useful, but do not cover all household members. Because of its multisectoral etiology, nutrition indicators serve to aggregate discrimination across sectors. Moreover, since some nutrition indicators such as height-for-age represent cumulative effects, they also serve to identify past discrimination. In fact, much of the development economics literature on discrimination is rooted in nutrition economics, concerned with the allocation of food, care and health resources by gender and age (Alderman et al. 1995).

- DOCUMENT RIGHTS VIOLATIONS—There is a clear commonality between malnutrition and a failure to uphold a number of human rights. In a speech at the SCN Annual Symposium in Geneva in 1999 the then UN High Commissioner for Human Rights, Mary Robinson, characterized a lack of human rights as 'multiple denials' (ACC/SCN 1999). Malnutrition can also be characterized as a result of multiple denials, as described in other sections of this Report. Within a human rights perspective and through application of the conceptual framework for the determinants of malnutrition (Annex 2) these denials can be identified and the link between them demonstrated.
- HOLD GOVERNMENTS ACCOUNTABLE—The ability of malnutrition and hunger to flag a failure to uphold human rights has been described in many contexts. Sen (1990) argues that democratic forms of government—ones that are more likely to uphold at least civil and political rights—can 'spread the penalty of famines from the destitute to those in authority' and that 'no substantial famine has ever occurred in any country with democracy and independence and a relatively free press' (Sen 1995; p.26). The co-existence of widespread malnutrition, local famines, and a free press in India has cast a fresh eye on the strength of these associations (Banik 2002). Clearly a free press and democracy alone are not enough to prevent widespread hunger and malnutrition. But they do provide levers that civil society and other groups that seek to hold the government accountable can use, as the petition from the People's Union for Civil Liberties (PUCL) to the Supreme Court in India illustrates (see below).
- UNDERSTAND CAPACITY AS A CONSTRAINT—The human rights perspective makes the roles and responsibilities of individuals as duty bearers more explicit and transparent. The links between those who have a claim and those who have a duty to meet that claim in a given context are made clear. In doing so, the capacity to make a claim and the capacity to meet the corresponding obligations can be highlighted (Jonsson 2003). Inadequate capacity to assess, analyze and to act is one of the main reasons for the failure of many development interventions and policies (Johnston and Stout 1999, Gillespie 2001, Heaver 2002). The crucial importance of capacity comes through strongly in the PRSP literature (Chapter 5), but there are also examples from health sector reform (Chapter 4) and international trade negotiations (Chapter 6).

How can nutrition be engaged in a practical programme and policy context?

USING FOOD AND NUTRITION ISSUES TO MOBILIZE THE LEGISLATURE, THE JUDICIARY, AND THE MEDIA, TO GIVE VOICE AND STRENGTHEN ACCOUNTABILITY

India

A human rights approach opens new opportunities for holding states accountable for their unfulfilled governance responsibilities. Food and nutrition issues provide many examples of non-accountability that can be addressed through legislature and the judiciary to give voice and strengthen accountability. For example, on April 16, 2001, the People's Union for Civil Liberties in India (PUCL) submitted a 'writ petition' to the Supreme Court of India asking three questions (PUCL Bulletin, July 2001): (a) does the right to life mean that people who are starving and too poor to buy food can get free access to government stockpiles? (b) does the right to life under Article 21 of the Constitution of India include the right to food? and (c) does not the right to food which has been upheld by the Supreme Court imply that the state has a duty to provide food, especially in situations of drought, to people who are affected and are not in a position to purchase

BOX 4 supreme court of india's ruling on right to food

On July 23, 2001, the Court said: 'In our opinion, what is of utmost importance is to see that food is provided to the aged, infirm, disabled, destitute women, destitute men who are in danger of starvation, pregnant and lactating women and destitute children, especially in cases where they or members of their family do not have sufficient funds to provide food for them. In case of famine, there may be shortage of food, but here the situation is that amongst plenty there is scarcity. Plenty of food is available, but distribution of the same amongst the very poor and the destitute is scarce and non-existent leading to malnourishment, starvation and other related problems.'

On November 28, 2001, the Court issued directions to eight of the major schemes, calling on them to identify the needy and to provide them with grain and other services by early 2002. For example, for the Targeted Public Distribution Scheme, 'The States are directed to complete the identification of BPL (below poverty level) families, issuing of cards, and commencement of distribution of 25 kgs grain per family per month latest by 1st January, 2002'.

PUCL Bulletin, July 2001. Supreme Court of India. Record of proceedings. Writ petition (civil) No. 196 of 2001

food? The Court ruled in favour of the PUCL (see Box 4). While the battle continues in the courts, as the states contest their obligations and their ability to meet them, the issue is guaranteed to put pressure on state governments to place a higher priority on food and nutrition issues.

South Africa

One way to decrease vulnerability to rights deprivation is to increase people's awareness of the threat they face. As the South African example shows, one important opportunity to highlight vulnerability is access by the poor and their advocates to an effective media. The media can be a powerful voice for many competing constituencies, including the poor if they are a significant enough proportion of the population. Democracy and human rights in South Africa are enshrined in its new constitution whose Bill of Rights protects social, economic, civil and political rights.[24] Policies formulated by the Government have been designed to realize such rights and redress the stark injustices and inequities of the apartheid legacy. Particularly relevant to nutrition are the extensive social welfare provisions, including old-age pensions, child support and disability cash grants. Government allocation of welfare funds has been greatly expanded since 1994, although access is uneven.

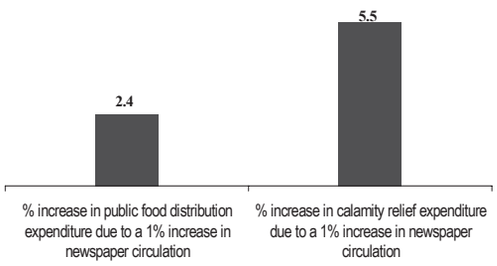
Research and development work to improve the management of severe childhood malnutrition in rural hospitals in the vast and impoverished former Transkei 'homeland' has been undertaken since 1998 by the School of Public Health of the University of the Western Cape and the Health Systems Trust in partnership with the Eastern Cape Province Department of Health. This work revealed that the great majority of children who were successfully rehabilitated in hospital returned to severe food insecure homes (Ashworth et al. 2004). Although all households qualified for receipt of the Child Support Grant (CSG), none of those interviewed were receiving it, despite strenuous efforts to obtain it on the part of most care-givers (Chopra et al. 2002c).

With a national alliance of child welfare organizations, a concerted advocacy campaign ensued. This consisted of a formal submission to a government commission on social welfare and related articles in newspapers, which prompted questions in parliament, and a thirty-minute film broadcast in prime time on national television. The result was immediate intervention by the Minister of Social Development who visited the area and brought in a mobile team to process CSG applications. This and continuing publicity and advocacy, including legal intervention using the provisions of the Constitution, has resulted in a sustained improvement in the distribution of the CSG in the Province.

In India, Besley and Burgess (2002), building on Sen's ideas, found that over the period 1958-1992 every 1% increase in the local language newspaper circulation resulted in a 5.5 % increase in Calamity Relief (food emergency) expenditure (see Figure 12). This again demonstrates how newspapers can give voice to those deprived of rights. However, Dreze notes in relation to the current co-existence of surplus food and widespread malnutrition in India, 'there is something deeply defective about a de-

[24] The Constitution of the Republic of South Africa, Act 108, 1996: Online: http://www.gov.za

Figure 12 Voice: Responsiveness of government to disasters by level of media awareness: India, 1958-1992



Source: Besley and Burgess 2002
Reprinted with permission from the Quarterly Journal of Economics, MIT Press Journals

mocracy where people's basic needs count for so little in electoral politics'.[25]

PROVIDING A MODEL FOR THE HUMAN RIGHTS FRAMEWORK TO INFLUENCE PUBLIC POLICY FORMULATION

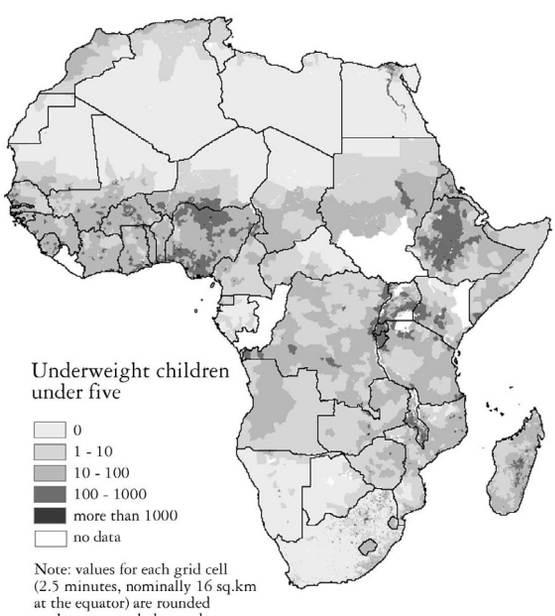
Uganda presents the first case of a country that has used the human rights framework to finalize its national Food and Nutrition Policy (FNP) (adopted by the Cabinet in July 2003). In its Guiding Principles the FNP emphasizes that adequate food is a human right. It stipulates that 'in the planning, budgeting and implementation of the policy, a rights-based approach will be adopted to ensure accountability and participation of the rights holders and duty bearers' (Kracht 2003).

This last guiding principle sets a precedent and outlines a modality for using human rights in the development of pro-poor public policy in Uganda. A parliamentary bill is being drafted that will eventually sign into law the policy and its action plans, including a clear appreciation of the resources required for implementation. There will be useful lessons to draw from the Uganda experience. If strategies to secure a top level decree calling for participation and accountability can be translated into policy, it would give the poor and marginalized an effective voice. Since the Guiding Principles of the FNP also underline that Uganda will meet its obligations as set out in international conventions, treaties and resolutions on the right to food in a fully transparent manner, there is an opportunity for the international community to learn from Uganda's experience.

CREATING NUTRITION MAPS FOR DIAGNOSIS AND ACTION AT THE SUB- AND SUPRA-NATIONAL LEVEL

The number of nutrition surveys has begun to outstrip the number of poverty surveys (UNICEF alone conducted 66 of them recently)[26] and have allowed mapping centres to map 'undernutrition hot spots' at a subnational level (CIESIN 2003). These nutrition maps, in common with poverty maps, are powerful tools for giving voice to regional and sometimes political and ethnic differences in well-being and increase the pressure on governments to act in the interests of the majority of their people. Unlike poverty maps, however, nutrition indicators go across space and cultures. This allows mapping to take place also across national boundaries to let transnational spatial factors such as climate, ecosystems and topology to be incorporated into poverty diagnoses and action plans. Figure 13 provides a glimpse of the po-

Figure 13 A transboundary nutrition map of Africa: number of underweight children



Source: CIESIN 2003
Reprinted with permission from the Center for International Earth Science Information Network.

[25] Online: http://www.indiatogether.org/2003/mar/chi-hunger.htm accessed on September 25, 2003.
[26] Online: http://www.unicef.org/reseval/micsr.html accessed on October 1, 2003.

tential to hold governments accountable in this way. However, to be used effectively in this manner, undernutrition must be widely appreciated as a priority problem for which governments can be held accountable.

In sum, the nutrition community has been at the forefront of both community-based (now community-driven) development and rights-based development. Both of these areas are generating insights about governance that promote voice, capacity, accountability and transparency. Examples of what the nutrition community can contribute in a practical programming and policy context include: the use of the legislature, the judiciary and the media to give voice and strengthen accountability of government; and the development of nutrition maps for diagnosis, action and accountability at the sub- and supra-national level.

4
Health sector reform[27]

With its roots in the structural adjustment programmes of the previous two decades, social sector reform is a revised response to the inefficient use of scarce public resources. Social sector reform contrasts with the 'conditionalities' imposed on understandably resistant governments in earlier adjustment efforts. It is the product of partnerships in which donors, national and local governments, and civil society have mutual interest in improving the efficiency, quality and equity of government services—though the compromises reached may not always be agreeable to all partners.

Although this Report argues that a nutrition perspective can provide benefits in many different sectors, nutrition interventions and outcomes are closely associated with health, and existing nutrition capacity is usually concentrated in health ministries. With the role for nutrition strongest and most clearly defined in the health sector, district health services offer a natural vehicle for many of the standard interventions for nutrition improvement. Therefore, the focus here is on how health sector reform (HSR), in particular, can benefit from a greater recognition of the role of nutrition. This is not intended to deny the importance of other social sectors both in direct nutrition relevant actions (such as incorporating nutrition into the education curriculum) or indirect nutrition activities with nutritional outcomes (such as improving local governance and accountability).

Health is both a fundamental human right and indispensable to the realization of other human rights. Any reform of a country's health sector should be in line with general principles and normative content of the human right to health as set out in General Comment 14 (GC14) on the right to the highest attainable standard of health.[28]

Although HSR is not a prescribed set of activities, here are six commonly adopted components (after Cassels, 1995).

- EFFICIENCY OF FACILITY BASED OPERATIONS—National Ministries of Health are being overhauled by improving management, organization, planning and programme integration. At the service level, segregated vertical structures have been replaced with integrated services. At intermediate and higher levels, integration has meant replacing technical specialists with fewer generalists running more comprehensive programmes. While the economic rationale is clear, the loss of specialist technical capacity may involve difficult trade offs.
- UNIVERSAL DELIVERY OF ESSENTIAL SERVICES—Rationalization of health service delivery has converged on a core package of cost-effective interventions considered essential and to be provided universally.[29] By guaranteeing, at least in principle, a minimum set of affordable essential services to all, core packages serve to further

[27] This section relies in part on a background paper prepared for this Report by Chopra et al. 2002a.
[28] In General Comment 14 (GC14) (on the right to the highest attainable standard of health specified in article 12 in the Covenant on Economic, Social and Cultural Rights), developed by the Committee on Economic, Social and Cultural Rights, the normative content of the right to health is interpreted. This includes elements that are important for governments to consider when embarking on HSR, including the need for health services and information to be physically and economically accessible to everyone.
[29] For example, for child health interventions see Jones et al. 2003.

the principles of efficiency, quality and equity simultaneously.

- DECENTRALIZATION—In the health sector, decentralization usually involves the handover of administration and management to local offices while political authority is retained at the center. Some countries have gone further, creating subnational levels of government with fuller authority over defined functions. The rationale is that by reflecting local needs and demands, decentralization leads to improved efficiency, quality and utilization (Kutzin 1995a). Decentralization is also considered a precondition for greater involvement of the private sector in service delivery.
- IMPROVING MINISTRY AND CIVIL SERVICE PERFORMANCE[30]—This component concentrates on institutional reforms, better management systems and reduced but more efficient personnel. Accountability and efficiency in management systems are increased by introducing more flexible work conditions, opening up management functions to all health professionals, shifting staff from central to peripheral facilities, and developing capacity.
- BROADENING HEALTH FINANCING OPTIONS—As a central feature of the reform process, health financing options include user fees, insurance schemes and community funds. The rationale is that the ability to raise and use funds will encourage local providers to improve quality of care, creating a 'virtuous cycle' of improved services leading to increased revenue (Kutzin 1995b). There is concern that user fees and insurance schemes reduce access to health care for the poor, increasing inequities in access to services (McPake 1993).[31]
- WORKING WITH PRIVATE SECTOR PROVIDERS—HSR gives more emphasis to the role of the private sector. This is in response to the perceived weakness of the public sector, in recognition of the economic efficiency of the market and acknowledging the existing range of private health providers and the health care they currently provide. Various contracting, regulating and franchising mechanisms are being used to broaden the pool of providers, increase the range of services offered, and improve standards of care. Although privatization is inherently inequitable, by creating a system where only the rich have access to premium services, government resources can then, under certain conditions, be used to improve the quality and coverage of basic services for the poor.

How does an understanding of nutrition strengthen strategic thinking in health sector reform?

These six components provide a framework for a discussion of how nutrition can be included to help improve HSR and how HSR can respond to this opportunity. As argued earlier, various forms of malnutrition contribute significantly to the burden of disease. A variety of feasible and affordable preventive nutrition interventions are recognized as among the most cost-effective strategies to improve health (World Bank 1993, Jones et al. 2003). More specifically in the context of HSR, nutrition interventions offer opportunities to improve the efficiency, equity and quality of health services.

As discussed in Chapter 2 of this Report, malnutrition interferes with normal growth and development, causing brain damage, stunting, underweight, anaemia, and immune deficiency. Malnutrition early in life (when it is most likely to affect individuals in poor countries) is associated with increased long-term susceptibility to chronic diseases such as coronary heart disease, hypertension and diabetes.[32] The dietary transition[33] associated with increased incomes, urbanization, globalization and other lifestyle changes further contributes to the global diet-related chronic disease epidemic (Popkin 1999; WHO/FAO 2003, WHO 2003). Good nutrition is not just a reflection of good health. By reducing susceptibility to infections, developmental disorders and chronic diseases, it has far-reaching preventive effects that improve health throughout the life cycle (ACC/SCN 2000). Recognition of these effects provides opportunities to increase the efficiency, quality and equity of preventive and curative services.

[30] In Part II of GC 14, the obligation of state's parties to the Covenant are addressed.
[31] It is important that there is a real 'economic accessibility (affordability)' of health services, as stated in the GC 14.
[32] Despite strong epidemiological evidence for these associations (Morley and Dwyer 2001, Byrne and Phillips 2000, Sallout and Walker 2003), not all experts agree that they are causal (Joseph and Kramer 1996, Gillman 2002).
[33] The dietary transition is the observed shift that occurs with economic development from a diet that is low in fat, and high in starch and fibre to one relatively high in fat and low in starch and fibre.

Efficiency

The efficient allocation of government resources on health activities can be assessed using three criteria (Gilson 1998):

- cost-effectiveness—health benefits are maximized for a given expenditure
- public interest—benefits extend beyond the individual to the larger community
- market failure—individuals are unable or unwilling to pay for these services.

Cost-effectiveness—The cost-effectiveness of a broad array of nutrition interventions has been amply documented (World Bank 1993, World Bank 1994, Allen and Gillespie 2001). Describing interventions to prevent micronutrient malnutrition, the World Bank (1994) estimates that 'the economic and social payoffs from micronutrient programmes reach as high as 84 times the programme costs,' a benefit:cost ratio that few other interventions in any sector offer. Nutrition interventions tend to be undervalued because they have multiple benefits, many of which are intangible, indirect or latent.

Public Interest—Improvements in individual health due to better nutrition reduce the spread of infectious diseases and the waste of precious health care resources on treatment. The reduced intellectual and physical capacity resulting from malnutrition wastes educational resources and limits the potential for economic growth and development. Malnutrition is a problem with broad social and economic impacts that affect everyone.

Market Failure—The principles of cost-conscious public spending demand that governments contribute to the cost of services only if individuals are unwilling to pay for these services themselves. In the health sector, fees have been introduced for curative health services and products because sick people are highly motivated to pay for treatment. For the same reasons, these services can be privatized. But preventive nutrition services such as micronutrient supplementation and breastfeeding promotion are much more difficult to market on a willingness-to-pay basis, even though they may offer much better value for money.

On the basis of all three criteria, government investment in nutrition is both justified and necessary to realize wider public health benefits.

Quality

Efficiency assumes quality. Quality in health service delivery is best measured by the desired health impact. The quality of health services is variable and this applies as much to nutrition interventions as to other health services. However, nutrition contributes to quality across a broad range of health services through both prevention and therapy. For example, with over 60% of child mortality due to the indirect effects of malnutrition (Caulfield et al. in press), no child survival programme can be considered complete without a nutrition component. HIV treatments in all contexts require vigorous efforts on nutrition whether with anti-retroviral therapy or without (Castleman et al. 2003). Although there is a tendency to emphasize the medical and curative aspects of health care, quality considerations demand attention to prevention, and good nutrition is one of the strongest preventive strategies available.

Equity

The concern with equity arises in the health sector because good health is one of the least equitably distributed human rights (Gwatkin 2000, WHO 2002). Whether across countries or within them, access to health services depends on income (Victora et al. 2003). This is especially true of curative services that do not pass the market failure test and are, therefore, less likely to be subsidized (World Bank 2003). Public support for nutrition interventions will benefit the poor more than the rich because the poor are more malnourished and are less able to afford the consequences.

If targeted preferentially to those in greatest need, nutrition interventions can be even more effective in reducing health inequities. Malnutrition affects not only the poorest households but, for biological and cultural reasons, more vulnerable members within households. Many nutrition services, such as breastfeeding promotion and micronutrient supplementation must be precisely targeted and timed. Few interventions are as 'leveling' as these in terms of addressing health inequities.

Finally, in addition to the direct contribution that nutrition makes to improving health and to the efficiency, quality and equity of health services, nutritional status is a sensitive measure of health outcome. Although nutritionists use child growth as an indicator of nutritional status, it also reflects the cumulative effects of illness and can, therefore, be used as an all-purpose well-standardized outcome indicator of child health—and, indirectly, of the efficiency, quality and equity of health services.

Table 11 Opportunities to improve health sector reform by engaging nutrition

Opportunities for HSR to include nutrition	*Examples*
Analyze health policy from a nutrition perspective	— Recognize and become more fully informed about the central preventive role of nutrition in health (e.g. underweight and child mortality) — Make this role visible to high level policy makers both in terms of the full range of functional consequences (performance, health and survival) and the cost-effectiveness of nutrition interventions, emphasizing the importance of nutrition as a public good[34] — Forge partnerships with local allies and international agencies to devise effective advocacy strategies and messages and to gain access to high-level decision makers — Refer policy makers to their governments' international commitments such as their human rights obligations and the MDGs, only attainable if serious investment in nutrition is made (see Chapter 2). — Document the impact of health sector reforms on nutrition services
Use nutrition tools and methods	— Use the many tools and methods developed in the context of community-based nutrition to strengthen decentralization efforts — Fully engage communities in the process of problem analysis and programme design. Malnutrition must be made visible to gain recognition at the community level — Highlight the utility of nutrition information for more effective monitoring and targeting of the reform process — Emphasize, in particular, anthropometric measures as simple, objective, inexpensive, standardized and relevant for measuring efficiency, quality and equity — Draw attention to the percentage of children underweight as an indicator of the MDG goal to halve hunger
Identify and promote nutrition models and actions that can strengthen health services	— Identify and promote models of good practice (e.g. baby-friendly hospital initiative, and baby-friendly communities) — Ensure that interventions to promote healthier nutrition behaviours are not sacrificed in favour of easier, insufficient, medical interventions — Ensure that key nutrition interventions such as the 'nutrition essentials' are included and given appropriate emphasis in core packages — Prioritize interventions based on sound economic analysis, ensuring that all the benefits of improved nutrition are considered — Resist efforts to impose user fees on preventive services
Integrate nutrition strategies into other health interventions	— Focus on the as yet largely unrecognized role of nutrition in preventing mother-to-child transmission of HIV and in maintaining the health and well-being of people living with HIV/AIDS — Promote nutrition within existing maternal child health strategies such as IMCI, EPI, antenatal care, etc. — Promote the important role of nutrition in infectious diseases (diarrhoea, ARI, TB), chronic diseases and in reducing morbidity and mortality in women and children — Facilitate the integration of nutrition into other sectors, using new opportunities for intersectoral coordination in decentralized planning

[34] For example, see SCN 2002 for a comprehensive set of arguments for the integration of nutrition into a range of development activities, and Burkhalter et al. 1999 for a computer based nutrition policy analysis process (PROFILES) that has been used to quantify the contribution that improved nutrition can make to human and economic development.

How can nutrition be engaged in a practical programme and policy context?

Considering the existing health sector reform components described above, four areas of opportunity to advance health sector objectives by including nutrition stand out: health policy analysis, nutrition tools and methods, models of good practice, and integration of nutrition into other health interventions. Examples of practical strategies that can be adopted within each of these areas are provided in Table 4. These include ways in which HSR can benefit from nutrition in how it is implemented across the entire range of HSR activities (for example, developing capacity or decentralizing), and how it meets HRS objectives (improving the efficiency, quality and equity of health services).

A major area of opportunity is the integration of key nutrition actions into other health services. Six 'nutrition essentials' have been proposed for this purpose:

- exclusive breastfeeding for about six months
- appropriate complementary feeding starting at about six months in addition to breastfeeding until 24 months
- adequate vitamin A intake for women, infants, and young children
- appropriate nutritional management during and after illness
- iron/folate tablets for all pregnant women, and
- regular use of iodized salt by all families (BASICS/WHO/UNICEF 2000).

A variety of other cost-effective nutrition interventions that involve the health sector have also been described (Allen and Gillespie 2001). Ministries and districts need to know of the benefits of these interventions and to develop programme managers' capacity to integrate them successfully.

A number of conditions are likely to facilitate or enhance the implementation of these strategies. First, there is a need for increased technical capacity in nutrition, and in other skills required to improve nutrition (such as behaviour change and communication). In efforts to address the current global health workforce crisis (World Bank 2003) specialist capacity in nutrition is not a luxury to be sacrificed. It is needed at the central level for design, training, supervision and evaluation and for development of core capacities of general health workers at decentralized levels.

Second, HSR has much to learn from the long tradition and success of community nutrition programmes in informing and involving beneficiaries at the community level. There, programmes use participatory methods of needs assessment, programme design, implementation and monitoring, all adaptable to various levels of decentralization (Shrimpton 1995). The life cycle approach and the conceptual framework described in the 4th Report on the World Nutrition Situation have provided useful organizing concepts for local analysis and action (ACC/SCN 2000). The experience in developing meaningful community capacity and involvement in programme design and management, especially through the use of community-based growth monitoring and promotion programmes, is well documented (Shrimpton 1995). Community and district nutrition information systems also provide models for monitoring and evaluation, quality assurance and management at the local level.

Third, deliberate efforts are needed to prioritize preventive behaviours. Beneficiary participation has been identified as a key factor in improving services for the poor (World Bank 2003). Without understanding the hidden nature of malnutrition and the greater cost-effectiveness of preventive approaches, there is a danger that preventive behaviours will be neglected in favour of an over-reliance on curative services. These are often in greater demand by beneficiaries, technically easier for providers and more immediately rewarding for both. This suggests that local capacity in nutrition policy analysis is, therefore, a prerequisite for effective participation and for the resulting reforms to have the intended benefits.

Fourth, financing problems must be addressed. While high demand for curative services may provide opportunities for private sector involvement or for cost-recovery within the public sector, low demand for preventive services suggests a need for public funding for nutrition interventions. Such funding should be sharply focused, targeting the most vulnerable groups (women and young children), promoting key nutrition behaviours, using strategies of proven cost-effectiveness. For example, breastfeeding promotion is not an intervention in demand among potential beneficiaries and continues to be thwarted, if anything, by the private sector (Aguayo et al. 2003). Yet breastfeeding has been identified as the single most effective intervention for the reduction of child mortality worldwide (Jones 2003).

5 poverty reduction strategies

We will spare no effort to free our fellow men, women and children from the abject and dehumanizing conditions of extreme poverty, to which more than a billion of them are currently subjected. We are committed to making the right to development a reality for everyone and to freeing the entire human race from want.
(United Nations Millennium Declaration, September 2000)

Poverty reduction relies on creating the capacity, opportunity and security for people to accumulate assets such as knowledge, health, land, finance, equipment, education, social networks and political influence. It relies on increasing the flow of benefits from those assets through institutions (such as the legal system) and processes (such as community power structures). It also relies on increasing the ability of people to reduce their vulnerability to shocks that might undermine asset accumulation. Improvements in poverty are assessed in many ways, from feelings that one has assumed greater control over ones' own future to quantitative assessments of household consumption and child physical growth.

This chapter will argue that the process of achieving good nutrition status has much to contribute towards poverty reduction. It is intrinsic to the accumulation of human capital. It also allows individuals to use institutions such as schools to improve the returns to that human capital in the labour market. Moreover, a focus on nutrition identifies a window of opportunity for poverty reduction efforts to resonate throughout the life cycle and to weaken the intergenerational cycle of poverty. A focus on nutrition will lead poverty-reducing strategies to focus on groups that are biologically vulnerable—infants, adolescents, mothers, and the elderly—and vulnerable due to social processes.

In a practical programme and policy context, this nutrition focus can be engaged in several ways: using the determinants of nutrition to understand the causes of poverty, designing specific activities to impact on poverty and nutrition, and using nutrition indicators such as the weight-for-age and height-for-age of children to measure progress in reducing poverty and in assessing programme impact.

A nutrition perspective towards accelerating poverty reduction is timely given current trends in the percentage and number of poor people as measured by the dollar a day MDG target (Target 1 under Goal 1). These data are presented in Table 12. They show similar patterns to the FAO 'undernourishment' measure (Target 2 under Goal 1: see Chapter 2 of the Report) and the percentage 'underweight' (an indicator for Goal 1: see Chapter 2 of the Report). Trends are worsening in Sub-Saharan Africa, both in numbers and percentage, but trends are rapidly improving in East Asia and the Pacific, and slowly in South Asia. It is worth noting that the poverty numbers correspond more closely to the underweight numbers in terms of the severity of the declines in Sub-Saharan Africa. Finally, the region with the largest number of poor people continues to be South Asia, however more of the world's poor now live in Sub-Saharan Africa than in East Asia and the Pacific.[35]

[35] The vast majority of the world's poor in South Asia and Sub-Saharan Africa live in rural areas (IFAD 2001).

Table 12 changes in the share and number of people living on $1 a day

Region	Percentage		Number	
	1990	1999	1990	1999
Sub-Saharan Africa	47.4	49.0	241	315
East Asia & Pacific	30.5	15.6	486	279
East Asia & Pacific—excluding China	24.2	10.6	110	57
South Asia	45.0	36.6	506	488
Latin America & Caribbean	11.0	11.1	48	57
Central & Eastern Europe & CIS[a]	6.8	20.3	31	97
Middle East & North Africa	2.1	2.2	5	6
Total[b]	29.6	23.2	1292	1169
Total—excluding China[b]	28.5	25.0	917	945

Notes: [a] Changes measured using the $2 a day poverty line, which is considered a more appropriate extreme poverty line for this region.
[b] Data are based on the $1 a day poverty line for all regions.
Source: UNDP 2003

How does an understanding of nutrition strengthen strategic thinking about poverty reduction?

Insights from the nutrition community's experiences for poverty analysis and strategy formulation are not new. For example, Maxwell (1998) notes the nutrition community's development and consensus adoption of a framework (Annex 2, UNICEF 1990) for understanding the causes of malnutrition and suggests that a similar process would be useful for the poverty reduction community. The poverty analysis debate has matured greatly in the last five years with the 2000/2001 World Development Report on Poverty (World Bank 2000/2001) and the adoption of poverty reduction as the key development goal of so many governments and agencies. Nevertheless, it is believed that a nutrition perspective can strengthen poverty analysis and the formulation of poverty reduction strategies.

Specifically, paying attention to the role that nutrition plays in an individual's life offers three basic insights:

- reversing the damage of early malnutrition is costly and difficult, and in some cases impossible
- poverty is biologically transmitted across generations through malnutrition
- nutrition focuses attention on those who are most vulnerable and at risk.

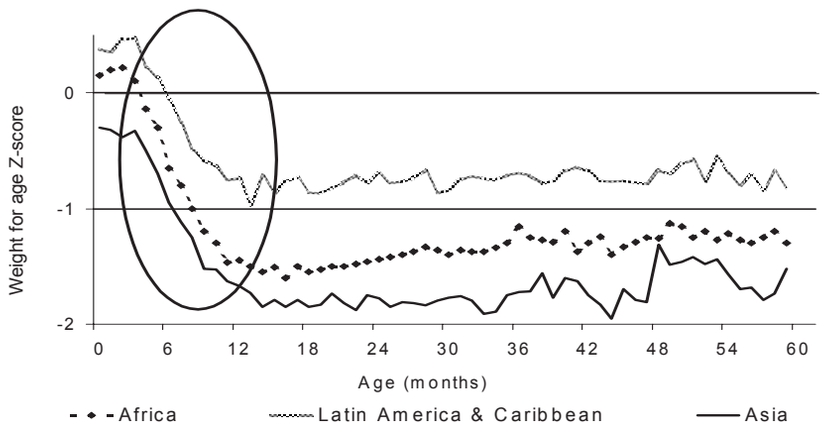
Irreversibility

Infants who are malnourished in the mother's womb and during the first two years of life cannot fully catch up with infants who avoid malnutrition. Infants born with low birthweight[36], for example, are on average shorter and lighter as adults, compared to normal birthweight infants (Allen and Gillespie 2001). Unlike the impact of a shock on economic indicators such as poverty rates, the impact of infant malnutrition is only partly reversible. This is shown in Figure 14 which presents standardized weight-for-age rates of thousands of children at different ages in the three regions. A standardized weight-for-age score of zero would be equivalent to the median value in a healthy population. The circled area is when growth failure occurs, with little or no recovery thereafter.

Thus nutritional deprivation in the first year or two of life should be considered a negative legacy due to its partial irreversibility. But this legacy is more than biological: it has economic manifestations. Estimates from the US suggest that an increase in birthweight of one pound

[36] Low birthweight (LBW) is defined as weighing less than 2500 g at birth. Although there are two main causes of LBW—being born small for gestational age or being born prematurely—in developing countries the majority of LBW infants are the former. That is, they are born small as a result of intrauterine growth retardation (IUGR) (Kramer 1987).

figure 14 Irreversibility of child growth failure ages 6-18 months



Source: Shrimpton et al. 2001
Reprinted with permission from Pediatrics

box 5 Long term consequences of early childhood malnutrition: zimbabwe and guatemala

Zimbabwe
This study isolates the impacts in 2000 of exposure to the 1982-84 drought on 665 children. The drought resulted in an average deficit in height of 2.3cm and 0.4 grades of schooling. Had the median preschool child in this sample had the height of a median child in a developed country, by adolescence, she would be 4.6cm taller, would have completed an additional 0.7 grades of schooling and would have started school seven months earlier. The authors estimate that this height deficit and related loss in schooling and potential work experience results in a loss of lifetime earnings of 7-12% and note that this likely underestimates the true losses.
Source: Alderman, Hoddinott, and Kinsey 2002

Guatemala
This study considers the impact of a 1970s community-level experimental nutritional intervention in rural Guatemala on several different education measures over the life cycle. These measures are used to estimate the functional benefits of a nutritional intervention (a high protein-energy drink, *Atole*) during the critical period when individuals were six months (roughly when complementary feeding was introduced) through 24 months of age.
The preliminary results indicate significantly positive and fairly substantial effects of the *Atole* nutritional intervention on many educational and cognitive outcomes:

- probability of attending school and of passing the first grade
- grade attained by age 13 (through a combination of increasing the probability of ever enrolling and reducing the age of enrolling)
- grade completion rate per year in schooling
- highest grade completed
- adult Raven's™ test scores, and
- adult cognitive achievement scores.

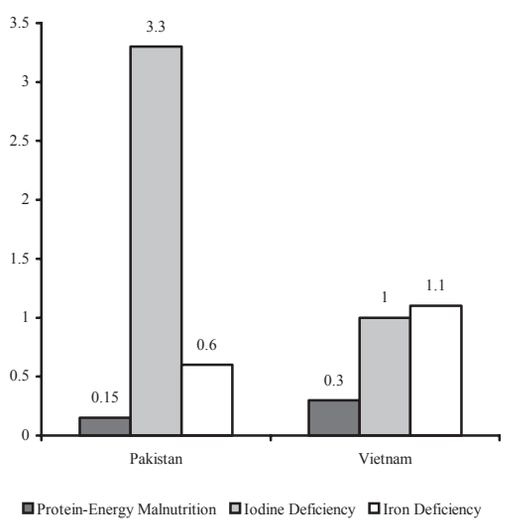
Thus there are important education-related effects that appear to persist well into adulthood. These education effects will result in lifetime income losses, the magnitude of which depends on how the Guatemalan and migrant labour markets reward these attributes.
Source: Behrman et al. 2003

leads to a seven percent increase in lifetime earnings (Behrman and Rosenzweig 2001). Box 5 presents some recent evidence from the developing world. Two separate data sets from Zimbabwe and Guatemala, used within a rigorous econometric framework, show the long-term consequences of both negative shocks—civil war and drought in Zimbabwe—and positive shocks—a nutrition supplementation intervention—on subsequent human development outcomes.

In their review of the economic benefits of reducing low birthweight in low-income countries, Alderman and Behrman (2003) conclude that such benefits—discounted back to their present value—amount to $580 per infant who moved from the low birthweight to the non-low birthweight category.

How do these costs to income growth and development add up at a macroeconomic level? Using household level estimates similar to the ones above, Figure 15 shows that the macroeconomic costs can be considerable in terms of year-in, year-out GDP foregone. For example, just three types of malnutrition are responsible for 3-4% of GDP loss in Pakistan in any given year and 2-3% of GDP loss in Vietnam.

Figure 15 Percentage loss in GDP from reduced adult productivity due to some forms of malnutrition



Source: Horton 1999

INTERGENERATIONAL TRANSMISSION OF POVERTY[37]

Women who were malnourished as infants are more likely to give birth to malnourished babies. Thus infant malnutrition, especially for girls, effectively perpetuates poverty, hunger and malnutrition across generations. The prevalence of low birthweight is strongly associated with the relative undernutrition of mothers, and there are substantial numbers of undernourished mothers. In Asia alone, 60% of women in South Asia and 40% in South-East Asia are underweight, that is, less than 45 kg in weight. One estimate is that about 50% of all growth retardation during gestation in rural developing countries is attributable to small maternal size at conception (low weight and short stature), and low gestational weight gain (or inadequate food and energy intake during pregnancy) (Kramer 1987).

Low birthweight is one of the main reasons why children are underweight (Allen and Gillespie 2001). Consequences of being born with low birthweight include heightened morbidity and mortality risks, poor neurodevelopmental outcomes, reduced strength and work capacity, and increased risk of chronic disease in adulthood.

Reducing infant malnutrition, especially for girls, weakens one of the strongest links in the intergenerational transmission of poverty.

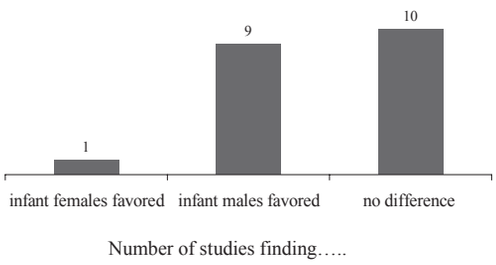
IDENTIFYING WHO IS VULNERABLE TO DEPRIVATION

A general finding in the development literature is that those who are biologically vulnerable with increased nutrient needs for growth, pregnancy and lactation, i.e. women and infants, also tend to be vulnerable due to deprivation through social processes. A nutrition perspective, therefore, forces anti-poverty and anti-hunger initiatives to focus on the most vulnerable in society.[38] A human rights perspective brings in the central principle of non-discrimination. In South Asia for example, male infants tend to be favoured in terms of food intake relative to requirements (see Shaikh et. al. 2003 and Figure 16).

A nutrition perspective also provides a window into the dynamics of intrahousehold deprivation and vulnerability. A recent series of papers analyzing the effects of the 1994/95 drought in resettlement areas of rural Zim-

[37] See also the discussion of the importance of nutrition for achieving MDG 1 in Chapter 2.
[38] For a discussion of who are poor see also Kracht 2002.

figure 16 intrahousehold inequalities in food intake for infants in south asia



Source: Haddad et al. 1996

babwe illustrates this point. At the household level, analyses show a dramatic increase in poverty following this drought, but also suggest that income and asset levels recovered relatively quickly following the good rains of 1995/96. However, this masks very different stories at the individual level. Data on nutritional status uncovers that amongst adults, male body mass was unaffected by the drought, whereas adult women lost, on average, around 3% of body mass. However, this loss of weight was largely recovered within the 12 months following the 1995/96 harvest. Amongst preschool children aged 24 months and older, the drought had no effect on growth. However, in the aftermath of the drought preschoolers aged 12-24 months grew 15-20% more slowly. When measured again at ages 60-72 months, drought-affected children residing in poor households had failed to recover this loss of growth. So, while the household data suggest a short transitory shock, the individual data on nutritional status show a more nuanced picture: adult males unaffected; adult females adversely but not permanently affected; older preschoolers largely unaffected; younger preschoolers from poor households badly—and likely permanently—affected (Owens et al. 2003, Hoddinott and Kinsey 2001, 2003). Unlike the household level focus, the nutrition perspective provides insight into those most vulnerable.

How can nutrition be engaged in a practical programme and policy context?

There are at least three areas in which a nutrition perspective can enhance anti-poverty programme design, implementation and monitoring:

- interventions intended to break the intergenerational cycle of poverty
- strengthening the PRS process
- generating indicators for poverty strategy design.

INCORPORATION OF NUTRITION COMPONENTS INTO INTERVENTIONS THAT ATTEMPT TO BREAK THE INTERGENERATIONAL CYCLE OF POVERTY

In the last five years interventions are increasingly found in South and Central America, and, to a lesser extent, in South Asia. The general idea behind these interventions is to prevent shocks from disrupting household asset accumulation (as happens when a child is pulled out of school or not taken to a health clinic, or when the quality and quantity of the household diet is reduced). Cash or food is transferred (PROGRESA in Mexico and Red de Proteccion Sociale in Nicaragua [RPS], Food for Education in Bangladesh) in return for school attendance and the attendance of preschoolers at health clinics with a focus on growth-promoting activities. The programmes are generally classified as development interventions, but they are motivated by a desire to keep chronic poverty and shocks from undermining the long-term accumulation of human capital. These programmes support long-term development processes.

Both the PROGRESA and the RPS experience in Nicaragua, summarized in Box 6 and Box 7, are positive. Short-term poverty reduction is promoted via poverty targeting of transfers which are conditional on a minimal level of investment by the family in health, nutrition and education of their children. In this way, the expenditures underlying these programmes are regarded as investments rather than transfers by the governments involved. However, these approaches still need to pay attention to key principles of effective interventions—coverage, targeting, intensity and sustainability.

Major challenges of such programmes include: avoiding dependency, creating a sustainable emergence from poverty and generating political sustainability. Initial indications are positive on all these fronts, but must be monitored closely.

STRENGTHENING POVERTY REDUCTION STRATEGY PROCESSES (PRSPs)

In 1999, the World Bank and International

BOX 6 The PROGRESA conditional cash transfer programme: breaking the transmission of intergenerational poverty in Mexico

PROGRESA is a large-scale anti-poverty programme ($800 million in 1998) that aims to transfer cash to women in households that fall below a marginalization index cutoff. To receive the transfer, the children and infants in the households must meet school and health enrolment requirements. This ensures investment in the human capital of the next generation, while protecting the household against shocks that may pull the children out of school and away from the health clinics.

Dimension of living standards	*Impacts of PROGRESA (based on randomized intervention at community level with baseline and follow-ups)*
Severity of poverty	Decreased by 45% with PROGRESA (compared to a 36% decrease if PROGRESA had been untargeted
Visits to health clinic	Increased by 8% for first prenatal visit in first trimester
Secondary school enrolment	Increased by 10%
Nutritional status	Increased by 16% in growth per year, in under threes

Source: Skoufias and McClafferty 2001

Monetary Fund (IMF) endorsed the framework of the Poverty Reduction Strategy (PRS) process. This was originally an instrument for Highly Indebted Poor Countries (HIPCs) to strengthen links between debt relief and poverty reduction by making debt relief integral to broader poverty reduction strategies. The model now includes policy dialogue in all countries receiving concessional funding from International Financial Institutions (IFIs) (de Haan 2002).

As of the end of 2003, over 30 PRSPs had been finalized (IMF/World Bank 2003). PRSPs have become a key—perhaps the key—mechanism by which the 42 HIPCs and additional developing countries engage with the donor community. The PRS process is intended to: (a) generate country ownership of its poverty reduction strategy and the process by which it is refined, (b) promote the participation of a wide range of country-level stakeholders, (c) be comprehensive, (d) improve public expenditure management and, of course, (e) reduce poverty.

The PRS process has had the desirable effect of moving the poverty debate forward and, in doing so, has inevitably generated tensions. Indeed, the IMF and the World Bank explicitly acknowledge the trade offs between country ownership and international expectations; between the different dimensions of poverty versus selectivity and focus of implementation; between the range of issues emerging from a participatory process and a need to prioritize; and the need to move as quickly as possible in implementation, while acknowledging capacity constraints (IMF/World Bank 2003).

Reflecting these tensions and its high profile, the PRS process has generated criticisms including:

- too great an emphasis on poverty measurement and not enough diagnosis or effort on the processes that move individuals and families out of poverty (Booth and Lucas 2001; Action Aid 2003)
- too short a time frame (UNDP 2002)
- the need to go beyond Ministries of Finance and become more comprehensive (AfDB 2002; BMZ 2002) and to strengthen the ability to take on intersectoral issues (EURODAD 2001)
- too narrow a view (income/expenditure-based) taken of poverty (Thin et al. 2001)
- failure to incorporate an understanding of political (Oxfam 2002a) and social processes (Malaluan and Guttal 2002) including a failure to address gender concerns (UNIFEM 2001; Whaites 2002; AfDB 2002; IMF/World Bank 2003; Zuckerman and Garrett 2003) and the concerns of excluded or marginal groups (Hartmanshenn et al. 2002)
- failure to adopt a rights-based approach (Whaites 2002)
- insufficient ownership of process by country and by government (Whaites 2002; IMF/World Bank 2003) and insufficient space for civic participation (McGee et al. 2002; Action Aid 2003)
- the need to generate intermediate indica-

BOX 7 The Nicaraguan *red de protección social* (RPS) or "social safety net"

Modelled largely after PROGRESA, RPS is designed to address both current and future poverty through cash transfers targeted to households living in extreme poverty in rural Nicaragua. The transfers are conditional, and households are monitored to ensure that they undertake prescribed actions intended to improve their children's human capital development. When they fail to fulfil those obligations, they lose their eligibility for the programme.

The RPS's objectives include:

- supplementing household income for up to three years to increase expenditures on food
- reducing school desertion during the first four years of primary school
- increasing the healthcare and nutritional status of children under age five.

The findings from the two year pilot phase of the RPS are summarized below. Effects are large and statistically significant.

Indicator	*Estimate of statistically significant change in indicator between treatment and control groups over 2000-2002 period*	*Change in indicator as % of baseline value for treatment group*
per capita household expenditure (Cordobas)	521	12.4
per capita food household food expenditure (Cordobas)	566	20
percentage of household expenditures spent on food	4.1	6
enrolment of children 7-13 in 1st-4th grades	17.7	26
percentage of children age 0–3 taken to health control in past six months	no statistically significant difference	—
percentage of children age 0–3 taken to health control and weighed in past six months	17.5	32
percentage of children under 5 who are stunted (HAZ < - 2)	no statistically significant difference	—
height for age z-score for children under 5	0.17	9.5
percentage of children under 5 who are underweight (WAZ < - 2)	-6	39.2
percentage of children under 5 who are wasted (WHZ < - 2)	no statistically significant difference	—
percentage of children age 0–3 given iron supplement (ferrous sulphate) in past 12 months	31.1	80

Source: Maluccio and Flores 2003

tors on actions as well as outcomes (Booth and Lucas 2001)

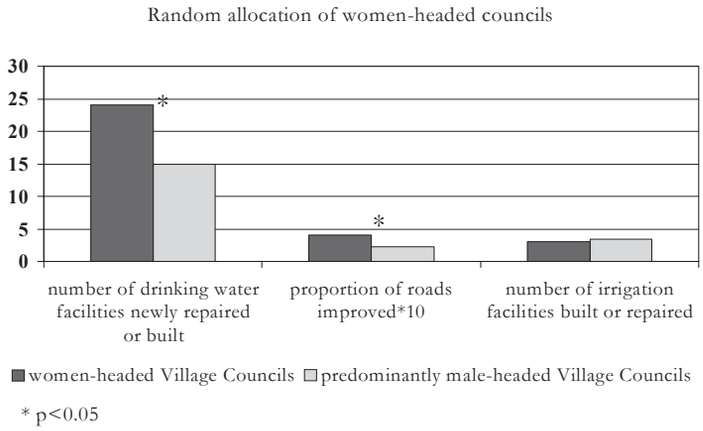
- the need to prevent people from becoming poor and not just how to get people out of poverty.[39]

It is not the purpose of this Report to undertake a comprehensive evaluation of the PRS process to date. The list of limitations above is generated from a wide range of country experiences at a wide range of stages in the process. Admittedly, the Report focuses only on the limitations of PRSPs and not on the many constructive and positive achievements of the PRS process (ODI 2003), but that is because the Report seeks to identify areas for strengthening. Moreover, the outlook for strengthening is

[39] Asbjørn Eide, personal communication.

positive, if only because within each country context, the PRS process seeks to adjust and improve the strategy as limitations emerge. Given that the PRS process is one of the key mechanisms for donor engagement with low-income countries, how can a nutrition perspective assist in addressing perceived weaknesses of the PRS process?

Figure 17 Women's leadership matters for nutrition: women-headed village councils in India: West Bengal



Source: Chattopadhyay and Duflo 2003

Taking the long view

The previous sections have emphasized the returns to improved infant nutrition throughout the life cycle and across generations. Programmes such as PROGRESA and RPS focus on reducing poverty today through cash transfers but are conditional on the kinds of long-term investments that move individuals and families out of poverty. A focus on nutrition as an investment should strengthen the long-term perspective of PRSPs. It will also emphasize the processes that allow people to pull themselves out of poverty. Human capital needs to interact with other types of capital (natural, physical, financial, social and political) to maximize its impact.

Taking the multisectoral view

Individuals who are malnourished have been failed by many different sectors: agriculture, health, education, social welfare, finance, and labour. To address malnutrition effectively requires alliances between sectors. Nutrition is not only a driver of development; it is also a broad, non-exclusive investment opportunity. Many different sectors can feasibly invest in it and have a strong incentive to do so. If they did, they could serve their own sectoral goals as indicated in the above discussion on MDGs. Such attention to nutrition would strengthen incentives for different sectors to collaborate on problem diagnosis and to coordinate actions in a coherent manner, with benefits for other aspects of PRSPs.

Focusing on those excluded by history and culture from productive economic and social interactions

As indicated above, a nutrition perspective highlights the issue of biological vulnerability which in turn overlaps with those most socially vulnerable: females, adolescents, infants, the unborn, street children and people living with HIV, for example.

Figure 17 provides an example of the tangible impacts of a commitment to include the previously excluded. Within the context of a strong evaluation design, the study examined the consequences of changing women's access to decision-making bodies. In two Indian States in the early 1990s, one in three Village Councils was randomly chosen for female leadership. A few years later the impacts of this change in power were measured (see Figure 17).

Of the three outcomes measured, the number of drinking water facilities newly repaired and efforts to improve roads were significantly higher in the women-headed councils—reflecting the material issues they cared most about. Just as a nutrition perspective can shed light on gender and intrahousehold inequalities in poverty analysis, it can strengthen strategies to reduce poverty, including PRSPs.

Taking a human rights approach to development

As indicated in Chapter 3, a nutrition perspective helps to bring the concepts, approaches and tools of human rights to the development table and make them a key element. A nutrition perspective can help to strengthen the human rights content of the PRS process. As Chapter 3 argued, it can do this by bringing the concepts of voice, capacity and accountability to the fore, highlighting roles and responsibilities as it does so.

The ability of a nutrition focus to mitigate

other concerns with PRSPs to date, such as too narrow a set of indicators and too little attention to rights and voice, will be assessed in the following sections.

USE AND DEVELOP NUTRITION INDICATORS TO MEASURE PROGRESS OF NON-NUTRITION ACTIVITIES

Should ministers of finance be as concerned with the growth of their nation's children as they are with the growth of their nation's GDP? As indicated in above, there is ample credible evidence that the former indicator is a strong predictor of the latter, albeit with a lag of approximately 25-30 years. But has child nutritional status been an underutilized measure of current deprivation? Measurement involves comparing a child's height or weight at a given age to an internationally recognized standard. Height-for-age in the first two years of life is an indicator of cumulative deprivation and weight-for-age is a composite indicator of current and past deprivation (Mason 2001). Both are easier to collect than income or consumption-based indicators[40] and both are valid over time and space.

Including child nutrition status as a key indicator for the first MDG is thus a welcome development. Nutrition indicators are currently regularly collected in a number of nationally representative surveys,[41] are reported in poverty assessments, and appear in around 50% of intermediate-PRSPs and PRSPs. However, the surveys are still too infrequent per country to undertake meaningful monitoring of actions intended to reduce poverty and malnutrition.[42] Moreover, the surveys are often not comparable due to different sampling methods or age range of collection. Based on experience from IFPRI and elsewhere, a complex nationally representative demographic and health survey is estimated to cost, on average, less than one million dollars. A simpler nutrition status survey would cost perhaps half that amount. Conservatively, it could cost less than $25 million per year to implement annual anthropometric data surveys in 50 key developing countries—ratcheting up the pressure on governments in the South and North to act to accelerate malnu-

table 13 value derived from adding stunting (as an indicator of infant malnutrition) to a set of indicators to diagnose poverty causes

	Poverty high calorie availability low	*Poverty high calorie availability adequate*	*Poverty low calorie availability low*	*Poverty low calorie availability adequate*
Stunting high	1 *Worst-case:* chronic long and short-term deprivation. No development taking place; emergency relief overwhelmed.	3 Food access not a problem, but poor dietary quality, inadequate care, and inability to gain access to other non-food inputs that are crucial for nutrition	5 Population recently emerged from poverty but no ability to access adequate food, information, time, water or health services for nutrition (unlikely)	7 Population that has emerged from poverty; but inadequate diet quality and no initial ability to access information, time, water or health services supporting nutrition
Stunting low	2 Emergency hits fragile population: emergency relief not effective	4 Emergency hits fragile population: emergency relief effective	6 Emergency hits non-fragile population: emergency relief not effective	8 *Best-case:* no long or short term deprivation

[40] To construct the height-for-age indicator, age, height and sex of the child is required as well as a readily available set of international standards. In some communities, determination of age can be a considerable challenge (Oshaug et al. 1994). To construct an income per capita indicator, on the other hand, the following data are required: household size, wage rates for each household member, days worked for each household member, net non-labour income (cash and in kind), imputed income from home ownership, agricultural income, income from own business, and a regional price deflator.

[41] These include Living Standards Measurement Surveys from the World Bank (LSMS), Multiple Indicator Surveys from UNICEF (MICS), and Demographic and Health Surveys (DHS) from Macro International, supported by USAID.

[42] See the WHO Global Database on Child Growth and Malnutrition to get a sense of the frequency of child nutrition surveys per country (Online: http://www.who.int/nutgrowthdb/).

trition reduction.

Anthropometric measures complement the more complex consumption-based poverty measures. They can be used to (a) track overall progress of a country's poverty reduction strategy, (b) target anti-poverty programmes, (c) assess the impact of anti-poverty programmes (as seen with PROGRESA in Mexico and RPS in Nicaragua) and (d) add a diagnostic level to the causes of deprivation when used with other indicators.[43] Table 13 highlights the value added by including information from a nutrition indicator (infant stunting) in a set of standard poverty and food availability indicators. In particular, the stunting variable adds a time dimension to the diagnosis, distinguishing between populations that have been hard hit by a shock (e.g. cell 3 vs. cell 4). And it helps to identify situations where private income is sufficient to purchase enough calories to avoid hunger, but is insufficient to purchase a diverse diet and other inputs that are crucial for good nutrition (cell 7 vs. cell 8).

Key anthropometric data can empower a wide range of decision-makers—from the mother discussing her child's growth that month, to the government official in the planning commission weighing the costs and benefits of different intervention options. It can humanize the measurement of poverty. But the more general issues relating to indicators still apply—a demand for their use has to precede a demand for their collection (Shoham et al. 2001). Crucially, the capacity to collect and use the data also has to be in place.

In summary, insights from nutrition include the concept that there is a window of opportunity before and during pregnancy and in the first two years of life to boost the lifetime well-being of an individual and to weaken the intergenerational cycle of poverty. In addition, a focus on malnutrition inevitably involves a focus on individuals who are socially disadvantaged and hence especially vulnerable to risk. In a practical context, this Report highlights the crucial role that nutrition components play in much larger anti-poverty conditional cash transfer programmes; the potential role that a nutrition perspective can play in the PRS process by bringing life cycle, intergenerational and multisectoral perspectives to the table; and finally the potential for nutrition indicators to serve as less controversial indicators of progress in reducing poverty.

[43] See Mason 2001 for a summary of different indicators of food and nutrition status, and their different strengths and weaknesses in relation to their intended use.

6

Trade Liberalization

We believe that the central challenge we face today is to ensure that globalization becomes a positive force for all the world's people. For while globalization offers great opportunities, at present its benefits are very unevenly shared.
(United Nations Millennium Declaration, September 2000)

Trade liberalization, or the reduction and elimination of tariff and non-tariff barriers to trade, has its ideological roots in the economic principle of 'comparative advantage.' This holds that if all countries or regions are able to trade freely, unhindered by artificial distortions that result in economic inefficiencies, then the global economy will function at maximum efficiency. It will provide benefits to all in terms of economic growth, high employment and low prices, with social benefits in terms of poverty reduction and overall welfare.

In pursuit of these benefits, multinational organizations and national governments (sometimes reluctantly) are putting in place policies to liberalize trade. The World Bank and the International Monetary Fund (IMF), the General Agreement on Tariffs and Trade (GATT), the World Trade Organization (WTO), and regional trade agreements such as the North American Free Trade Agreement (NAFTA) are important institutions and mechanisms facilitating international trade. The Codex Alimentarius Commission sets international standards of food safety and instruments such as the Sanitary and Phytosanitary (SPS) measures and the Technical Barriers to Trade (TBT) agreements. These instruments are intended to ensure that these standards are applied safely, fairly and equitably. The Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement protects the rights of patent holders from international trade in patent protected products.

Other significant actors in trade liberalization, and among its strongest proponents, are transnational corporations (TNCs). Liberalization allows these firms to move raw materials, production capacity and finished products quickly in response to changing economic conditions, thus maximizing their comparative advantage and their profits. TNCs now account for around two thirds of international trade, half of which is between branches of the same company (UNCTAD 1999). Owing to this dominance over trading channels TNCs have attracted much attention in the context of trade liberalization.

In addition to its proponents, the existing trading system has many opponents: governments of countries at the mercy of selective tariffs, groups vulnerable to sudden shifts in comparative advantage, and protected industries—including many in the industrialized West. A recent UN report rejects the claim that trade liberalization is good for the poor, arguing instead that current forms of globalization and trade liberalization tend to reinforce rather than relieve the 'poverty trap' that ensnares the least developed countries (UNCTAD 2002). Trade liberalization has variously been characterized as an opportunity to lift half the world out of poverty or a scourge that threatens to further divide the world into haves and have-nots.

Despite the theory and the rhetoric, numerous reports document many aspects of the current set of rules and regulation that do not favour the poor, especially the rural poor who are most dependent on agricultural incomes (UNCTAD 2002, Oxfam 2002b). First, many

poor countries are in the process of developing new industries in which they may be able to acquire a comparative advantage. By rapidly opening their markets they are unlikely to be able to compete with more developed economies that have already developed superior skills, institutions and infrastructure. In addition, they are unlikely to have social protection programmes that can cope with even moderate labour displacement. Second, tariffs and other restrictions on imports into industrialized countries remain high, limiting the ability of some developing countries to exploit a comparative advantage due to closed export markets. Third, persistent and increasing agricultural subsidies in the European Union and the United States work directly against the welfare of farmers in the poorest countries, calling into question rich countries' true commitment to trade liberalization. These subsidies encourage over supply. They put commodities (US cotton and European milk, for example) on the world market in quantities that depress prices and undercut the competitiveness of poor farmers in developing countries, eroding livelihoods and perpetuating poverty and malnutrition.

The current series of international trade negotiations, which began at the WTO ministerial meeting in Doha, Qatar in 2001, was greeted with optimism and was dubbed the 'development round' when member governments promised to focus on the plight of the poorest nations. Specifically, they agreed to enter into negotiations that would increase developing countries' access to western markets while reducing rich countries' own export subsidies and domestic supports. Follow-up to these promises was disappointing. The most recent ministerial WTO negotiations in Cancun, Mexico in 2003, were broken off without reaching agreement when a consortium of developing countries refused to grant the concessions that the rich countries demanded in return for meeting these obligations. This was treated as a victory in some circles, if only because this was the first time that, in the words of WTO Director-General Supachai Panitchpakdi (2003), 'the poorest countries in the world actively took part in the negotiations and succeeded in placing their interests on the trade agenda'. But at the same time, the lack of agreement makes the benefits of the 'development round' less certain.

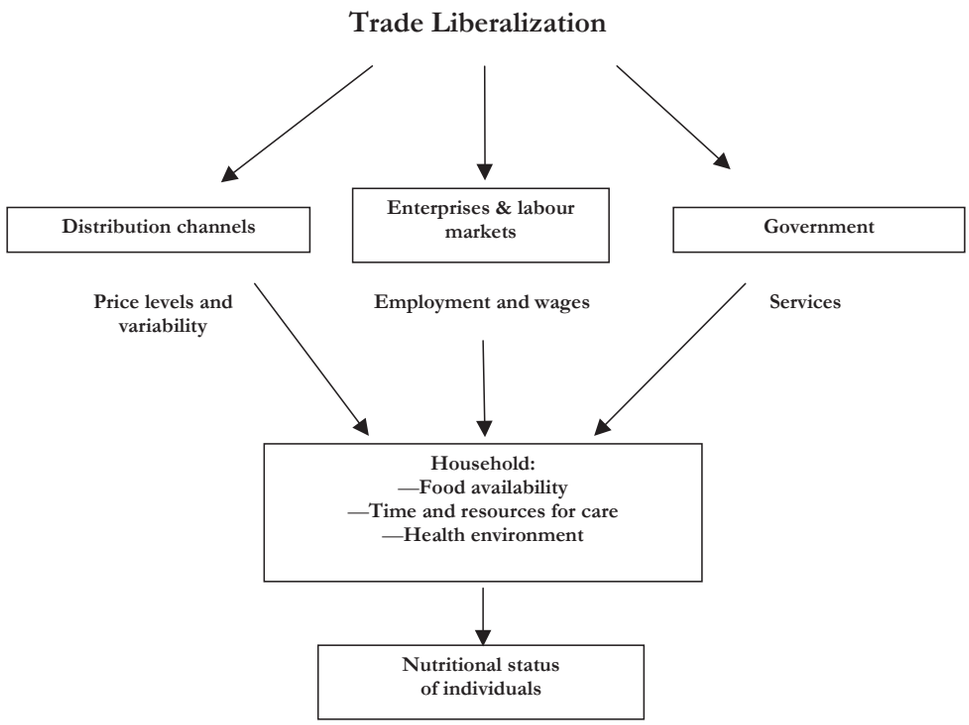
This chapter began with an account of the rationale for trade liberalization as a way to reduce poverty. The strength and universality of this argument—that trade is good for growth and growth helps the poorest—continues to be debated among economists (Rodriguez and Rodrik 1999, MacKay et al. 2000, Easterly 2001, Stiglitz 2002). However, there seems to be consensus that even when trade reforms lead to per capita income growth and even if this translates into long-term declines in poverty, in the short-term poverty may get worse for the most vulnerable segments of the population (Ben-David et al. 1999). Moreover, even if real per capita income growth is steady and robust, some forms of poverty such as child undernutrition, may be reduced only slowly (Haddad et al. 2003).

In looking at the linkages between trade liberalization and nutrition, this analysis is guided by the conceptual framework illustrated in Figure 18.[44] The effect of trade policy on nutrition is mediated principally by three kinds of institutions: distribution channels, enterprises and governments. These in turn influence nutrition through their effects on prices, employment, wages, and services. At the household level, these institutions determine the quality and quantity of food available, the time and resources for care of nutritionally vulnerable individuals, and the health environment. This simplified framework belies the complexity of the actual response to any trade policy. At the level of the household and individual, it involves interactions among all of these pathways, with both positive and negative effects that change over time as the institutions, households and individuals adjust in response. As a mechanism for influencing nutrition, trade policy is, therefore, a blunt instrument. It acts at the macro level through complex and poorly understood pathways each with a strong potential for unpredictable and unintended effects to influence nutrition at the household and individual level.

Case studies on the effects of trade liberalization on nutrition in Uganda, Bangladesh and the Philippines revealed a complex pattern of winners and losers, depending on the conditions (Hawkes et al. 2002a). A multi-country series of studies of the effects of agricultural commercialization on nutrition similarly found both positive and negative impacts that were

[44] This framework is adapted from one originally presented by Winters 2000 to describe the linkages between trade liberalization and poverty.

figure 18 conceptual framework for the effects of trade policy on nutritional status



Source: adapted from Winters 2000

unique to each situation (von Braun and Kennedy 1994). Although such complexity makes generalization difficult, conditions influencing nutrition outcomes included factors such as the intrahousehold allocation of the income earned from cash-cropping (Uganda), landlessness (Bangladesh and the Philippines), or the trend towards greater reliance on breastmilk substitutes among mothers in formal employment (all countries).

The issue here is how to maximize the benefits from freer international trade and comparative advantage without threatening the nutritional well-being or food security of vulnerable groups. The focus here on nutrition may be considered too narrow by some. But as a fundamental human right, an excellent indicator of general welfare and a crucial input to human capacity and poverty reduction, nutrition should be part of, if not central to, the trade liberalization debate.[45]

How does an understanding of nutrition strengthen strategic thinking in trade liberalization?

The aim here is not to trace the links between trade liberalization and nutrition in all of their complexity but to suggest a few areas where trade policy can gain insights and benefit from an explicit consideration of nutrition issues. There are two key areas in which a nutrition perspective might generate insights for trade liberalization:

- Is there something about trade liberalization that generates employment conditions that make child care more difficult? Moreover, is this effect large enough to undermine the potential long-term poverty reducing impacts of trade liberalization?
- Does trade liberalization undermine the safety of food supply (real or perceived) and if so, will this slow down the momentum of trade liberalization?

The link between trade liberalization and food security itself is not dealt with in this Re-

[45] See Oxfam 2002b for a more general discussion of the poverty impacts of trade liberalization.

port. Household level food insecurity is regarded as an aspect of livelihood insecurity and poverty. As such, it has received a great deal of attention elsewhere (see, for example, FAO 2003).

EMPLOYMENT CONDITIONS

In cross-country analyses, it is usual to examine the relationship between trade liberalization, or 'openness,' and overall employment rates and wages. It is less common to look at employment conditions that might affect the ability of mothers to care for infants and young children.

The need to return to work is the reason most often given for stopping or not initiating breastfeeding. Apart from the obvious interference with breastfeeding, when working mothers leave infants and young children in the care of other household members, crucial aspects of feeding and care may also be neglected. This is particularly alarming given that infancy is a period when the occurrence of growth faltering and the need for care is greatest (see Figure 14, Chapter 5). Despite international recognition of the right to maternity protection, codified in the Convention on Maternity Protection of 1952 and in national maternity protection legislation in 144 countries, provisions for maternal leave are often inadequate and poorly enforced (Clearinghouse on Infant Feeding and Maternal Nutrition 1996).

The availability of day care can greatly affect women's formal labour market participation (Quisumbing et. al 2003). Urban women in Brazil cited lack of childcare options as a primary cause of unemployment (Deutsch 1998). If trade liberalization creates jobs in the formal sector, then women with young infants to care for (a high proportion of working women) may be excluded for lack of child care or forced to accept lower paid work in the informal sector. This trade off suggests either that the benefits of trade liberalization will not be realized for a significant segment of the population or that this will come only at the expense of the human capital of the next generation. This is not to argue against trade liberalization, it is to argue for policies that provide adequate maternity protection.

FOOD SAFETY AND FOOD QUALITY

The tension between the legitimate public

BOX 8 International standards and agreements governing food safety

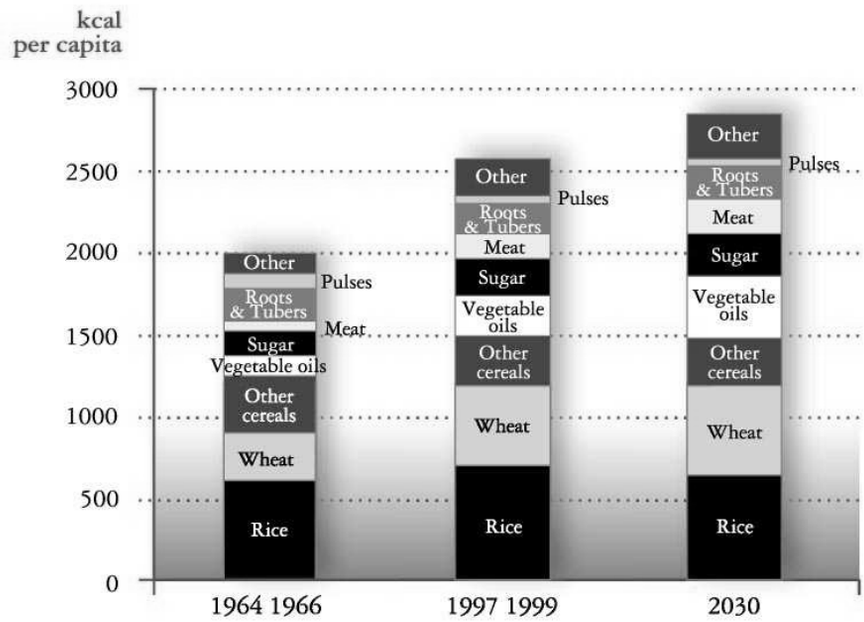
The Codex Alimentarius Commission was established in 1963 by the World Health Assembly to '... guide and promote the elaboration and establishment of definitions and requirements for foods to assist in their harmonization and in doing so to facilitate international trade' (Codex Alimentarius, General Principles). This followed a period during which food laws and standards set up by different countries inevitably gave rise to trade barriers as countries were obliged to protect themselves from potentially harmful additives, pesticides, toxins and other contaminants in foods that were not subject to the same standards. In many countries, the Codex Alimentarius has become the primary source of food standards for consumers, the food industry and national food control agencies. Its relevance for international trade in food and the international harmonization of food standards is recognized in the Sanitary and Phytosanitary Measures (SPS) and Technical Barriers to Trade (TBT) agreements.

The Sanitary and Phytosanitary Measures (SPS) agreement sets out the basic rules for the application of standards for food contaminants, including methods of analysis and sampling, and hygienic practice. It allows countries to set their own standards but requires these standards to be based on science and applied only to the extent necessary to protect human, animal or plant health. The SPS rules are designed to protect domestic consumers while ensuring that strict health and safety regulations are not used simply as a ploy to protect domestic producers from international competition.

The Technical Barriers to Trade (TBT) agreement is intended to ensure that technical regulations and standards do not create unnecessary obstacles to trade. It covers packaging, marking and labelling requirements, and analytical procedures for assessing conformity with technical regulations and standards. Like the SPS agreement, it recognizes countries' rights to adopt their own standards but ensures that such national standards are fair and equitable and do not give domestically produced goods an unfair advantage.

Source: World Trade Organization (http://www.wto.org/)

Figure 19 Trends in diet composition and total per capita calorie consumption in developing countries between 1964 and 1999, and projections for 2030



Source: WHO/FAO 2003
Reprinted with permission from WHO

health interests of a state and the principle of free and fair international trade is often at the heart of international trade disputes. Is food crossing the borders safe to consumers? More generally, does it promote health? If claims are made to the contrary, are they motivated by trade protection or public health protection concerns?

In defining food safety, rather than focus on unsafe foods, unsafe food consumption should be the target. Kinsey (2003) proposes the following definition: '(1) foods that contain microbes in sufficient quantities to lead to short-term illness or death, (2) foods that contain substances that are believed to pose potential long-term health problems such as pesticide residues or bovine spongiform encephalopathy, (3) foods that have unknown, but suspected, health consequences such as foods that have been genetically modified or irradiated, and (4) foods that contain nutrients or ingredients that when consumed in excess quantities lead to chronic diseases such as diabetes, cancer, and cardiovascular heart disease.'

In the context of trade liberalization, the nutritional quality of food is an important but largely unexplored aspect of food safety. First, developed country agricultural subsidies and trade restrictions distort prices for some commodities on the world and domestic markets and affect incomes in a variety of ways. As a rule, such distortions have net economic costs but not necessarily a negative impact on nutrition. Depending on the mechanism and the commodities in question and their nutritional qualities, these price and income changes have different effects on the attainment of healthy diets.

Second, some of the rules that govern multilateral trade as enforced by the WTO are concerned with food safety and food quality issues. The key regulatory instruments governing international trade in food are the Codex Alimentarius Commission and the SPS and TBT agreements (see Box 8). These recognize the need to protect consumers from imported foods that do not meet national standards for safety, while at the same time ensuring that these standards are not used unfairly as a barrier to trade. Given the rapid increase in (a) diet-related chronic disease (see Figure 4) and (b) the percentage of calories from fats and added sugars (see Table 7 and Figure 19), when will an expanded food safety definition be used by trade partners to regulate trade in food that is perceived to be unhealthy? The case of sheep flaps in the Pacific Islands provides an early example of such regulation (see Box 9).

Third, the financial liberalization that often goes hand-in-hand with trade liberalization

BOX 9 International trade in cheap high fat foods: a need for regulation?

Evans et al. (2001) researched the preferences and frequency of consumption of different foods in the small south Pacific island country of Tonga. They conclude that despite being aware of the nutritional value of available foods and despite preferring more nutritious traditional food, economic forces have induced a shift toward consumption of cheap imported meats such as high fat mutton flaps (sheep bellies). Cost and availability considerations lead to unhealthy food choices that contribute to the high incidence of obesity and diet related chronic diseases. This problem was considered serious enough in Fiji to lead the Government there to place a ban of the sale of mutton flaps (WHO/WPRO 2003). The Regional Office for the Western Pacific of WHO has produced a manual on how domestic laws can be used to regulate the availability of such 'obesogenic' foods.

makes it easier for multinationals to establish production facilities and franchises and to market foods that are often high in saturated fats, salt and added sugars, all of which contribute to diet-related chronic disease (WHO 2002, WHO/FAO 2003). The fast food industry in developing countries is increasingly dominated by the same transnational corporations that are under pressure in the US and UK to improve the health content of their menus. These companies have already demonstrated an ability to adapt their marketing strategies in the developing world (Hawkes 2002b) to include specific menu items affordable to low income groups and to use advertising, sponsorships, and promotions that target children and teenagers.

In addressing these food safety issues, a nutrition perspective will generate the following insights:

- The public health implications of existing and potential trade deals will become better understood. Sometimes this understanding will work against trade liberalization and sometimes for it. Real health concerns are less likely to be sacrificed to trade concerns and unfounded health concerns are less likely to hamper trade liberalization.
- The health and nutrition implications for consumers of the existing support to developed country farmers will be more clearly understood. They can then be weighed more accurately against the costs to taxpayers in the developed world and small farmers in the developing world. Again, this may work to help or hinder trade liberalization in the short-term. But in the longer-term, trade liberalization policies that promote health (or at least do not harm health) are likely to be more sustainable and defensible to civil society in the developed and developing worlds and to developing country governments.

How can nutrition be engaged in a practical programme and policy context?

How can these insights be used to improve the international trading system to achieve the intended objectives of liberalization? Three types of action are suggested:

- STRENGTHEN ENFORCEMENT OF EXISTING RULES—to uphold legitimate health concerns and to enable legitimate trade activity. Existing instruments to regulate international trade in food are intended primarily to protect public health from threats posed by unsafe food imports. In evaluating these, a balance must be struck between the extent of the threat and the cost and inconvenience of averting it. At one extreme are severe threats such as pathogens or toxins that can cause fatal illness. At the other are less consequential threats such as flaws in flavour, colour or texture with no health consequences. Evaluating a threat is not always this easy. For example, the perceived threat of genetically modified foods is sufficient grounds for some nations to ban imports of these foods completely, while others do not even bother to distinguish them in their own domestic food supply. The nutrition community can help clarify the health-related trade rules, by (a) strengthening the positive basis for such determinations and (b) facilitating dialogue on the more normative bases for deciding what is, and what is not, an 'acceptable risk'.
- DESIGN MITIGATING INTERVENTIONS WITHIN EXISTING RULES—The nutrition community can help in the design of sustainable interventions that facilitate longer-term poverty-reducing trade liberalization while protecting welfare in the short-term. The Hogares Communitarios from Guatemala represents a useful case study of an

BOX 10 greater domestic control over dietary choices: changing the rules

Foods of low quality—that research finds contribute disproportionately to diet-related disease and death—continue to be traded and marketed without regard to health impact. Although mechanisms that give governments greater control over dietary choices are needed, there is always the risk that such mechanisms will be hijacked to protect domestic food industries. Also, while excessive consumption of some foods (such as those high in fat) can contribute to chronic disease risk in some situations, the same foods may offer opportunities to reduce malnutrition and food insecurity in others. Balancing the various public health risks in diverse markets could therefore prove challenging.

While health promotion and education may go some way towards reducing demand for unhealthy foods and countering the observed trend towards unhealthy lifestyle choices, public health advocates have recommended the use of existing domestic and international legal instruments to restrict trade in the offending foods (Chopra et al. 2002b, WHO/WPRO 2003). Although these mechanisms are, by design, trade-distorting, they could be justified on the basis of health protection. A definition of 'food safety' broad enough to include not just contaminated foods but also foods responsible for unhealthy diets, may need to be introduced in some of the existing regulatory instruments (described in Box 8), as has already been proposed (Kinsey 2003, Chopra et al 2002b). A technical hurdle is that these instruments are designed to ensure only that individual foods themselves are safe. Yet it is the combination of certain foods in diets at the level of the individual consumer, together with other lifestyle factors that make such foods unhealthy.

As an extension of such restrictions the active promotion of unhealthy diets by TNCs could be restricted on public health grounds, leading to the suggestion that a code of practice in food advertising be considered (FAO/WHO 2003). The International Code of Marketing of Breastmilk Substitutes could serve as a model for such an instrument. Given the complexity of the issues involved, some commentators have argued for the use of non-binding approaches, citing successes in the areas of human rights and environmental quality (Beaglehole and Yach 2003).

effective scheme to provide high-quality child care to allow mothers to take advantage of new employment opportunities in the formal sector afforded by trade liberalization (Ruel 2002). In The Gambia, 'baby-friendly' communities provided similar supports that allowed mothers to both work and breastfeed their infants (Semega-Janneh 1998).

- LOBBY TO CHANGE EXISTING PRACTICES—The nutrition community can work with the food industry, the WTO, and others to advise on how domestic and multinational firms can meet the growing demand for safe and healthy foods, by introducing new lines and upgrading the health content of existing products. See Box 10 for more detailed discussion and examples.

Perhaps new mechanisms are needed to ensure that trade is not hindered due to specious health claims and public health is not undermined by trade, or perhaps existing instruments can be adapted. Nevertheless, there appears to be justification for a consideration of the rules governing the international trade in food within a wider food safety/food quality/diet quality context. In some cases, considerations would favour trade liberalization while in others some form of regulation would be advised. But if international trade continues to be informally regulated by its principal actors, then efforts to uphold the public's trust that trade rules promote, and do not undermine public health should be rewarded by an unfettered and sustainable drive for ever greater gains from trade.

The polarization of the trade liberalization debate has created an adversarial environment that has, on occasion, degenerated into violent confrontation, resulting more in paralysis than constructive action. The involvement of a wide variety of interest groups with widely varying agendas, and a lack of clear distinction between trade liberalization and other aspects of the larger phenomenon of globalization make it difficult to identify the real issues. One purpose of this analysis is to inform both sides of the debate. The main constraint in this analysis is the lack of empirical data on how trade liberalization influences nutrition. In particular, there is need to understand how specific trade policies and regulatory instruments affect the attainment of healthy diets.

A nutritionally adequate diet is both a human right and, because it is fundamental to human development and capacity, a prerequisite for economic development. Therefore, the impact of trade liberalization on nutrition matters. This is an area where the trade liberalization debate

can move from the tug-of-war of pitched ideological struggle to an examination of the nutrition impacts of specific policies in particular situations and the impact of such policies on diet and nutrition.

7 conclusions

Both nutritional well-being and the policies, programmes and processes by which it is attained have much to offer those who seek to advance a broad range of development goals. The Report shows how good nutrition underpins progress towards each of the first six MDGs. The evidence suggests that:

- good nutrition status reduces poverty by boosting productivity throughout the life cycle and across generations (Goal 1)
- good nutrition leads to improved educational outcomes (Goal 2)
- dealing with malnutrition typically empowers women (Goal 3)
- malnutrition is associated with over 50% of all child mortality (Goal 4)
- maternal malnutrition is a direct contributor to poor maternal health (Goal 5)
- good nutrition status slows the onset of AIDS in HIV-positive individuals, and increases malarial survival rates (Goal 6)
- good nutrition lowers the risk of diet-related chronic disease (related to Goals 1, 4 and 6).

In effect, it is suggested that strengthening a nutrition perspective can accelerate improvements in non-nutrition development objectives. Given the sobering mid-term report on progress towards the MDGs (UNDP 2003), this is a timely contribution. Such an integration of nutrition also situates direct efforts to improve nutrition closer to non-nutrition capacity, commitment and resources allowing increased leverage for accelerating malnutrition reduction.

As Chapter 2 indicates, accelerating malnutrition reduction is needed, especially in Sub-Saharan Africa where trends in preschool malnutrition, household food insecurity and poverty are all moving in the wrong direction. However, in some countries in the region (e.g. Nigeria, Niger, Angola, Malawi, Madagascar, Ghana and Tanzania) and in other regions of the developing world progress is being made in reducing preschooler undernutrition, although the rates of progress could be accelerated. In all but the poorest countries, a trend towards increasing fat consumption, amongst other things, is contributing to a global epidemic in diet-related chronic diseases. Highlights of the world nutrition situation are presented in Box 11.

Chapters 3 to 6 of the Report move beyond links between nutrition and the MDGs, focusing on how a nutrition perspective can strengthen key development mechanisms and instruments such as poverty reduction strategies, health sector reform, improving governance and human rights, and trade liberalization that seeks to work for poor people. The Report also makes specific suggestions about how nutrition can be engaged in a practical programme and policy context in each of these areas.

On governance, the nutrition community has been at the forefront of both community-based (now community-driven) development and rights-based development. Both of these areas are generating insights about governance that promotes voice, capacity, accountability and transparency. Examples of what the nutrition community can contribute in a practical programming and policy context include: the use of the legislature, the judiciary and the media to give voice and strengthen accountability of government, and the development of nutrition maps to assist diagnosis action and accountability at the sub- and supra-national level.

For health sector reform, the huge and largely unappreciated role that malnutrition plays in the global burden of disease, together with a range of cost-effective health sector interventions to

BOX 11 World Nutrition Situation: Key Points

- For Sub-Saharan Africa, the prevalence of *preschool underweight* is increasing and will continue to do so unless strategic moves to improve the situation are implemented; Steady progress is being made in South-Central Asia. *Preschool stunting* shows similar patterns.
- The locus of *preschool malnutrition* is steadily shifting from Asia to Africa, although the majority of the world's malnourished children still live in Asia.
- The prevalence and numbers of *wasted* (low weight-for-height) *preschoolers* are projected to increase in every African region.
- Asia is making good progress towards the MDG target of halving *child underweight* from 1990 to 2015 and will be close to meeting it. However, much of this progress—but not all—is driven by improvements in China.
- The *preschool malnutrition* trends in Africa reflect the deteriorating situation in many Sub-Saharan African countries where the poverty rate has increased, HIV/AIDS has had devastating impacts, conflict persists, and gains in agricultural productivity as a key driver of overall economic growth remain elusive.
- The Sub-Saharan Africa picture is not all bleak, with some countries showing i*mprovements under difficult* circumstances (for example Nigeria, Niger, Angola, Ghana, Malawi, Madagascar and Tanzania). More analysis is needed on these positive trends in Africa.
- *Food insecurity:* As measured by FAO, Central Africa, the Near East and Central America are posting the largest increases in the number of food insecure individuals. China and the Caribbean are showing the largest declines in the number of food insecure.
- *Diet composition*: China is experiencing the most rapid and largest increase in the share of fats in the food supply, followed by the rest of Asia.
- *Malnutrition, mortality and morbidity*: (a) malnutrition is the main contributor to disease in the world, (b) childhood and maternal underweight alone are responsible for 138 million disability adjusted life years (DALYs) lost or 9.5% of the global burden of disease, (c) in low mortality developing countries, diet-related risk factors for chronic disease are responsible for a large share of the burden of disease.
- Nearly 2 billion people (35.2%) worldwide have *inadequate iodine* nutrition.
- *Vitamin A*: Extrapolations from the best available data suggest that 140 million preschool-aged children and more than 7 million pregnant women suffer from vitamin A deficiency every year.
- *Maternal Underweight*: Of ten African countries with trend data, only three show declines in the rate of severe maternal malnutrition (BMI less than 16).
- *Low birthweight*: 30% of all babies born at term in South Asia have low birthweights, with rates of 14% in Sub-Saharan Africa, 15% in the Middle East and North Africa, 10% in LAC and 8% in East Asia and the Pacific.
- *Iron deficiency* anaemia among pregnant women is associated with an estimated 111,000 maternal deaths each year.

improve nutrition, makes nutrition activities among the best ways to improve the efficiency and quality of health services. Furthermore, since malnutrition affects the poor and most vulnerable (women and children), addressing malnutrition also addresses inequities in health. Practical ways to engage nutrition in health sector reform include: using a nutrition perspective in the analysis of health policy, using nutrition tools and methods, identifying and using nutrition models that can strengthen health services, investing in the development of nutrition capacity, and integrating nutrition strategies into other health interventions.

On poverty reduction, insights from nutrition include the concept that there is a window of opportunity to improve the nutrition status of women before and during pregnancy, and to improve the nutrition status of infants in the first two years of life. This boosts the lifetime well-being of the individual and weakens the intergenerational cycle of poverty. In addition, a focus on malnutrition inevitably involves a focus on individuals who are socially disadvantaged and especially vulnerable to risk. In a practical context, the Report highlights the crucial role that nutrition components play in much larger anti-poverty conditional cash transfer programmes. It also highlights the potential role that a nutrition perspective can play in the PRS process by bringing life cycle, intergenerational and multisectoral perspectives to the table. Finally, it highlights the potential for nutrition indicators to serve as less controversial indicators of progress in reducing poverty.

In the area of trade liberalization, a nutrition perspective leads to a better understanding of the impact of trade on human well-being, through employment conditions and their effects on child care and through the safety and quality of

the food supply. Adding a nutrition dimension to the analysis of trade policies requires a focus not just on the quantity of trade but on its quality, not on the aggregate level but at the level of the individual and household. Ensuring that the benefits of trade liberalization are equitably distributed and do not have inadvertent or unexpected health impacts is in everyone's interest and can be accomplished by enforcing the existing rules, designing mitigating interventions within the existing rules or changing the rules altogether.

In sum, it is argued that the incorporation of perspectives from the international nutrition experience will enhance the capacity of broad development strategies to meet their own objectives. Nutrition is both a driver of development and a broad, non-exclusive investment opportunity. Many different sectors can feasibly invest in it, and have a strong incentive to do so. If they did, they could serve their own sectoral goals.

These conclusions are summarized in Table 14, which represents a completed version of the framework outlined in the Introduction to this Report.

The Report has several messages for the nutrition community:

First, much remains to be done to eradicate the scandal of malnutrition in a world that has seen global GDP double in real terms in the past 20 years (DeLong 2003). Malnutrition in Sub-Saharan Africa must receive priority attention.

Second, nutrition has much to offer a wide range of development initiatives, as the examples from good governance, health sector reform, poverty reduction strategies, and trade liberalization show. The nutrition community must boldly share its experiences and insights.

nutrition status is not merely an indicator of the attainment of the MDGs, it also represents a foundation for their attainment

Third, the nutrition community must strategically incorporate nutrition into other development processes. This will not only enhance those development processes in their own right, having a multiplier effect on development, but may well increase funding and capacity for malnutrition reduction, thus accelerating nutritional progress.

Fourth, this incorporation of nutrition will be challenging. It will require a greater awareness of the substantive links between nutrition and other development issues, and renewed efforts to forge partnerships with other development professionals (Gillespie, McLachlan and Shrimpton 2003). Nutrition professionals will need to be ready and capable to engage with broader development policy processes.

In sum, how the nutrition community should serve broader development goals is clear—

Table 14 A summary of the value that a nutrition perspective can add to key areas of development policy

Key areas of development	*How does an understanding of nutrition strengthen strategic thinking in this area?*	*How can nutrition be engaged in a practical programme and policy context?*
Governance	— Human rights concept — Lessons learned from community models	— Legislative agenda — Role of media — Nutrition maps
Health sector reform	— Catalytic role of nutrition — Cost-effectiveness — Key role of capacity — Bring different sectors together	— Health policy with a nutrition lens — Nutrition tools — Nutrition models — Nutrition capacity — Integrate nutrition other health strategies
Poverty reduction	— Intergenerational — Irreversibility — Vulnerability	— Incorporation in PROGRESA-type investments — Enhanced role in PRSPs — Increased use as indicators
Trade liberalization	— Employment conditions — Food safety and quality — Diet quality	— Strengthen enforcement of existing rules — Design mitigating interventions within existing rules — Lobby to change existing rules

nutrition status is not merely an indicator of the attainment of the MDGs, it also represents a foundation for their attainment. Of equal importance, how the broader development community should mobilize resources for malnutrition reduction is readily apparent. For this 'win-win' situation to materialize, the nutrition community needs to assume its leadership role as the custodians of technical knowledge and practical experience in nutrition, ready to work in partnership with others to realize the shared goals of a world free of hunger, malnutrition, and poverty.

Annex 1 Millennium development goals

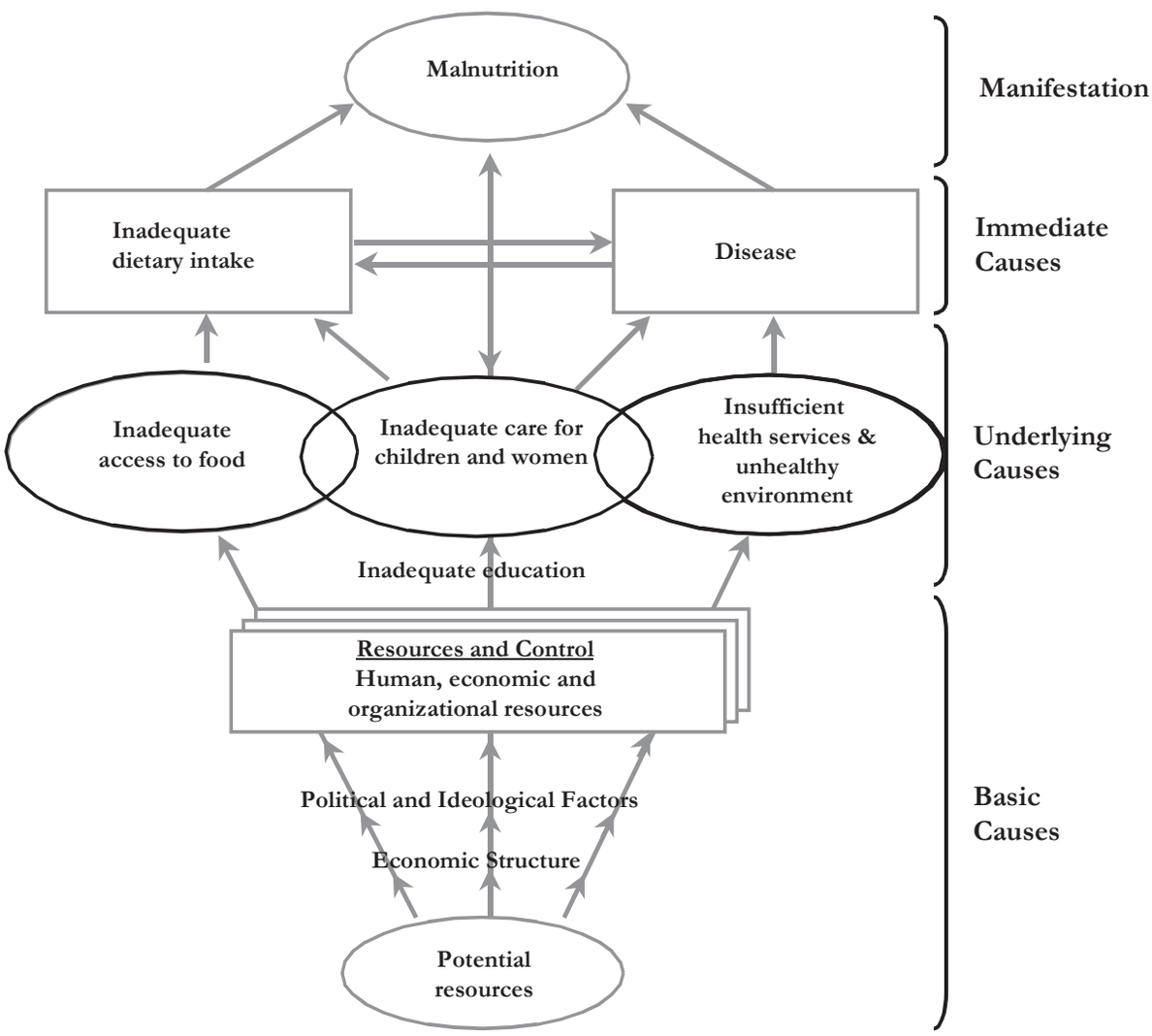
Millennium Development Goals	
Goals and targets	*Indicators*
Goal 1 Eradicate extreme poverty and hunger	
Target 1 Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day	1. Proportion of population below one dollar per day (World Bank) 2. Poverty gap ratio (incidence x depth of poverty) (World Bank) 3. Share of poorest quintile in national consumption (World Bank)
Target 2 Halve, between 1990 and 2015, the proportion of people who suffer from hunger	4. Prevalence of underweight children (under-five years of age) (UNICEF, WHO) 5. Proportion of population below minimum level of dietary energy consumption (FAO)
Goal 2 Achieve universal primary education	
Target 3 Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling	6. Net enrolment ratio in primary education (UNESCO) 7. Proportion of pupils starting grade 1 who reach grade 5 (UNESCO) 8. Literacy rate of 15-24 year olds (UNESCO)
Goal 3 Promote gender equality and empower women	
Target 4 Eliminate gender disparity in primary and secondary education, preferably by 2005, and to all levels of education no later than 2015	9. Ratio of girls to boys in primary, secondary and tertiary education (UNESCO) 10. Ratio of literate women to men of 15-24 year olds (UNESCO) 11. Share of women in wage employment in the non-agricultural sector (ILO) 12. Proportion of seats held by women in national parliament (IPU)
Goal 4 Reduce child mortality	
Target 5 Reduce by two thirds, between 1990 and 2015, the under-five mortality rate	13. Under-five mortality rate (UNICEF, WHO) 14. Infant mortality rate (UNICEF, WHO) 15. Proportion of 1 year old children immunized against measles (UNICEF, WHO)
Goal 5 Improve maternal health	
Target 6 Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio	16. Maternal mortality ratio (UNICEF, WHO) 17. Proportion of births attended by skilled health personnel (UNICEF, WHO)

Goals and targets	*Indicators*
Goal 6 Combat HIV/AIDS, malaria and other diseases	
Target 7 Have halted by 2015 and begun to reverse the spread of HIV/AIDS	18. HIV prevalence among 15-24 year old pregnant women (UNAIDS, WHO, UNICEF) 19. Condom use rate of the contraceptive prevalence rate (UNAIDS, UNICEF, UN Population Division, WHO) 20. Ratio of school attendance of orphans to school attendance on non-orphans aged 10-14 (UNICEF, UNAIDS)
Target 8 Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases	21. Prevalence and death rates associated with malaria (WHO) 22. Proportion of population in malaria risk areas using effective malaria prevention and treatment measures (UNICEF, WHO) 23. Prevalence and death rates associated with tuberculosis (WHO) 24. Proportion of tuberculosis cases detected and cured under the Directly Observed Treatment Short Course (DOTS) (internationally recommended TB control strategy) (WHO)
Goal 7 Ensure environmental sustainability	
Target 9 Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources	25. Proportion of land area covered by forest (FAO) 26. Ratio of area protected to maintain biological diversity to surface area (UNEP, IUCN) 27. Energy use (kg oil equivalent) per one dollar GDP (IEA, World Bank) 28. Carbon dioxide emissions (per capita) (UNFCCC, INSD) and consumption of ozone-depleting CFCs (ODP tons) (UNEP, Ozone Secretariat) 29. Proportion of population using solid fuels (WHO)
Target 10 Halve by 2015 the proportion of people without sustainable access to safe drinking water and sanitation	30. Proportion of population with sustainable access to an improved water source, urban and rural (UNICEF, WHO) 31. Proportion of people with access to improved sanitation, urban and rural (UNICEF, WHO)
Target 11 By 2020 to have achieved a significant improvement in the lives of at least 100 million slum dwellers	32. Proportion of people with access to secure tenure (UN Habitat)
Goal 8 Develop a Global Partnership for Development	
Target 12 Develop further an open, rule-based, predictable, non-discriminatory trading and financial system (includes a commitment to good governance, development, and poverty reduction—both nationally and internationally)	*Some of the indicators listed below are monitored separately for the least developed countries (LDCs), Africa, landlocked countries and small island developing states*

Goals and targets	*Indicators*
Target 13 Address the Special Needs of the Least Developed Countries (includes: tariff and quota free access for least developed countries' exports; enhanced programme of debt relief for Heavily Indebted Poor Countries (HIPC) and cancellation of official bilateral debt; and more generous ODA for countries committed to poverty reduction)	*Official development assistance (ODA)* 33. Net ODA, total and to LDCs, as percentage of OECD/Development Assistance Committee (DAC) donors' gross national income (GNI) (OECD) 34. Proportion of total bilateral, sector-allocable ODA of OECD/DAC donors to basic social services (basic education, primary health care, nutrition, safe water and sanitation) (OECD)
Target 14 Address the special needs of landlocked countries and small island developing States (through the Programme of Action for the Sustainable Development of Small Island Developing States and the outcome of the 22nd Special Session of the General Assembly)	35. Proportion of bilateral ODA of OECD/DAC donors that is untied (OECD) 36. ODA received in landlocked countries as proportion of their GNIs (OECD) 37. ODA received in small island developing States as proportion of their GNIs (OECD)
Target 15 Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term	*Market access* 38. Proportion of total developed country imports (by value and excluding arms) from developing countries and from LDCs admitted free of duties (UNCTAD, WTO, World Bank) 39. Average tariffs imposed by developed countries on agricultural products and textiles and clothing from developing countries (UNTAD, WTO, World Bank) 40. Agricultural support estimate for OECD countries as percentage of their GDP (OECD) 41. Proportion of ODA provided to help build trade capacity (WTO, OECD) *Debt sustainability* 42. Total number of countries that have reached their Heavily Indebted Poor Countries Initiative (HIPC) decision points and number that have reached their HIPC completion points (cumulative) (IMF, World Bank) 43. Debt relief committed under HIPC initiative, US$ (IMF, World Bank) 44. Debt service as a percentage of exports of goods and services (IMF, World Bank)
Target 16 In cooperation with developing countries, develop and implement strategies for decent and productive work for youth	45. Unemployment rate of 15-24 year olds, each sex and total (ILO)
Target 17 In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries	46. Proportion of population with access to affordable essential drugs on a sustainable basis (WHO)
Target 18 In cooperation with the private sector, make available the benefits of new technologies, especially information and communications	47. Telephone lines and cellular subscribers per 100 population (ITU) 48. Personal computers in use per 100 population (ITU) and Internet users per 100 population (ITU)

Source: Extracted from UN General Assembly (2001) *Road map towards the implementation of the United Nations Millennium Declaration.* Report of the Secretary General. A/56/326. United Nations Statistic Division, New York.
Online: http://millenniumindicators.un.org/unsd/mi/mi_goals.asp

ANNEX 2 UNICEF conceptual framework



Source: Adapted from UNICEF (1998) *The State of the World's Children 1998*. Oxford University Press, Oxford.

Annex 3
Countries in the UN regions and subregions

Africa				
Eastern Africa	*Middle Africa*	*Northern Africa*	*Southern Africa*	*Western Africa*
Burundi	Angola	Algeria	Botswana	Benin
Comoros	Cameroon	Egypt	Lesotho	Burkina Faso
Djibouti	Central African Republic	Lybian Arab Jamahiriya	Namibia	Cape Verde
Eritrea	Chad	Morocco	South Africa	Côte d'Ivoire
Ethiopia	Congo	Sudan	Swaziland	Gambia
Kenya	Democratic Republic of the Congo	Tunisia		Ghana
Madagascar	Equatorial Guinea	Western Sahara ‡		Guinea
Malawi	Gabon			Guinea-Bissau
Mauritius	Sao Tome & Principe			Liberia
Mozambique				Mali
Réunion				Mauritania
Rwanda				Niger
Seychelles				Nigeria
Somalia				St Helena (UK)
Uganda				Senegal
United Republic of Tanzania				Sierra Leone
Zambia				Togo
Zimbabwe				

Asia				
Eastern Asia	*South-Central Asia*	*South-Eastern Asia*	*Western Asia*	
China	Afghanistan	Brunei Darussalam	Armenia	Syrian Arab Republic
China, Hong Kong SAR	Bangladesh	Cambodia	Azerbaijan	Turkey
Democratic People's Republic of Korea	Bhutan	Indonesia	Bahrain	United Arab Emirates
Japan	India	Lao, People's Democratic Republic	Cyprus	Yemen
Macau	Iran (Islamic Republic of)	Malaysia	Georgia	
Mongolia	Kazakstan	Myanmar	Iraq	
Republic of Korea	Kyrgyzstan	Philippines	Israel	
	Maldives	Singapore	Jordan	
	Nepal	Thailand	Kuwait	
	Pakistan	Timor Leste, Democratic Republic	Lebanon	
	Sri Lanka	Viet Nam	Occupied Palestinian Territory	
	Tajikistan		Oman	
	Turkmenistan		Qatar	
	Uzbekistan		Saudi Arabia	

Europe			
Eastern Europe	*Northern Europe*	*Southern Europe*	*Western Europe*
Belarus	Channel Islands (UK)	Albania	Austria
Bulgaria	Denmark	Andorra	Belgium
Czech Republic	Estonia	Bosnia & Herzegovina	France
Hungary	Faeroe Islands (DK)	Croatia	Germany
Poland	Finland	Gibraltar (UK)	Liechtenstein
Republic of Moldova	Iceland	Greece	Luxembourg
Romania	Ireland	Holy See	Monaco
Russian Federation	Isle of Man (UK)	Italy	Netherlands
Slovakia	Latvia	Malta	Switzerland
Ukraine	Lithuania	Portugal	
	Norway	San Marino	
	Sweden	Serbia & Montenegro	
	United Kingdom	Slovenia	
		Spain	
		The former Yugoslav Republic (TFYR) of Macedonia	

Latin America and the Caribbean			
Caribbean		*Central America*	*South America*
Anguilla (UK)	Jamaica	Belize	Argentina
Antigua & Barbuda	Martinique (F)	Costa Rica	Bolivia
Aruba (NE)	Monserrat (UK)	El Salvador	Brazil
Bahamas	Netherlands Antilles (NE)	Guatemala	Chile
Barbados	Puerto Rico (US)	Honduras	Colombia
British Virgin Island (UK)	St Kitts and Nevis	Mexico	Ecuador
Cayman Islands (UK)	St Lucia	Nicaragua	Falkland Islands (Malvinas) (UK)
Cuba	St Vincent & the Grenadines	Panama	French Guiana (F)
Dominica	Trinidad & Tobago		Guyana
Dominican Republic	Turks & Caicos Islands (UK)		Paraguay
Grenada	US Virgin Islands (US)		Peru
Guadeloupe (F)			Suriname
Haiti			Uruguay
			Venezuela

Northern America
Bermuda (UK)
Canada
Greenland
St Pierre and Miquelon (F)
United States of America

Oceania			
Australia-New Zealand	*Melanesia*	*Micronesia*	*Polynesia*
Australia New Zealand	Fiji New Caledonia Papua New Guinea Solomon Islands Vanuatu	Guam (US) Kiribati Marshall Islands Micronesia (Federated States of) Nauru Northern Mariana Islands (US) Palau	American Samoa (US) Cook Islands French Polynesia (F) Niue Pitcairn (NZ) Samoa Tokelau (NZ) Tonga Tuvalu (UK) Wallis & Futuna Islands (F)

Notes: (F) Overseas Departments of France, French territorial collectivity
(UK) UK crown dependent territory, British colony, or British protectorate
(US) United States of America
‡ Recognized by the Organization of African Unity
(DK) Kingdom of Denmark
(NE) Netherlands
(NZ) Overseas territory of New Zealand

Source: UN (2003) *World Populations Prospects: the 2002 Revision.* United Nations Population Division, New York.

ANNEX 4
TRENDS AND PREVALENCE OF MALNUTRITION IN PRESCHOOL CHILDREN

TABLE 1 ESTIMATED PREVALENCE AND NUMBER OF STUNTED[a] PRESCHOOL (0-5 YEAR OLD) CHILDREN, 1980-2005, WITH 95% CONFIDENCE INTERVALS

UN region & subregion	*Stunted*											
	1980		*1985*		*1990*		*1995*		*2000*		*2005*	
	%	million	%	million	%	million	%	million	%	million	%	million
Africa	39.0	32.8	37.8	36.4	36.9	39.6	36.1	41.9	35.2	45.1	34.5	48.5
	33.8-44.2	28.4-37.2	33.5-42.2	32.3-40.6	33.3-40.5	35.7-43.5	33.0-39.1	38.4-45.5	32.5-38.0	41.6-48.7	31.7-37.4	44.5-52.6
Eastern	44.4	12.0	44.4	13.7	44.4	15.8	44.4	17.3	44.4	19.4	44.4	21.6
	34.8-54.4	9.4-14.7	35.8-53.3	11.1-16.5	36.6-52.4	13.0-18.7	37.3-51.8	14.5-20.2	37.6-51.4	16.5-22.5	37.6-51.4	18.3-25.0
Middle	46.6	4.5	44.4	5.0	42.2	5.6	40.0	6.3	37.8	6.8	35.8	7.4
	34.3-59.3	3.3-5.7	34.3-54.9	3.9-6.2	34.2-50.5	4.5-6.7	34.0-46.2	5.4-7.3	33.7-42.1	6.0-7.6	33.0-38.6	6.9-8.0
Northern	34.0	6.2	30.6	6.2	27.4	5.8	24.4	5.1	21.7	4.6	19.1	4.2
	25.3-44.0	4.6-8.0	23.3-39.0	4.8-8.0	21.1-34.7	4.5-7.4	18.7-31.2	3.9-6.5	16.1-28.6	3.4-6.1	13.5-26.5	2.9-5.8
Southern	26.2	1.3	25.8	1.4	25.4	1.5	25.0	1.4	24.6	1.5	24.3	1.4
	25.2-27.1	1.3-1.4	24.8-26.8	1.4-1.5	23.7-27.1	1.4-1.6	22.6-27.6	1.3-1.6	21.5-28.1	1.3-1.7	20.4-28.6	1.2-1.7
Western	36.5	8.8	35.6	10.0	34.7	10.9	33.8	11.8	32.9	12.7	32.0	13.9
	25.7-48.8	6.2-11.8	27.2-44.9	7.6-12.6	28.7-41.2	9.0-13.0	29.9-37.9	10.4-13.2	30.2-35.7	11.7-13.8	28.4-35.7	12.4-15.5
Asia	55.1	176.8	48.2	166.4	41.1	154.6	35.4	130.8	30.1	109.4	25.7	92.4
	52.7-57.6	168.9-184.6	45.7-50.7	157.8-175.1	38.6-43.6	145.1-164.1	32.6-38.2	120.5-141.0	27.1-33.1	98.6-120.2	22.5-28.9	80.9-103.8
Eastern	51.3	54.7	40.2	43.3	30.0	37.5	21.5	23.5	14.8	15.2	10.0	9.5
	50.1-52.6	53.4-56.0	38.9-41.5	41.9-44.7	28.7-31.3	35.9-39.1	20.4-22.6	22.3-24.7	13.9-15.8	14.3-16.1	9.3-10.7	8.8-10.2
South-Central	61.7	88.9	56.3	91.3	50.8	88.0	45.2	81.0	39.7	71.5	34.5	63.5
	57.8-65.5	83.2-94.4	52.1-60.5	84.4-98.1	46.1-55.4	79.9-96.0	40.2-50.3	72.0-90.2	34.4-45.3	62.0-81.6	29.0-40.5	53.3-74.4
South-East	52.1	27.6	46.9	26.3	41.8	23.9	36.8	21.3	32.1	18.1	27.7	15.3
	42.1-62.0	22.3-32.8	37.8-56.2	21.2-31.5	33.6-50.4	19.2-28.8	29.3-44.9	17.0-26.0	25.2-39.7	14.3-22.5	21.3-35.1	11.8-19.4
Western	32.5	5.6	28.6	5.5	25.0	5.2	21.7	5.0	18.7	4.5	16.1	4.1
	27.4-37.9	4.7-6.5	25.3-32.1	4.9-6.2	20.2-30.4	4.2-6.3	15.1-30.1	3.5-6.9	10.9-30.1	2.7-7.3	7.8-30.3	2.0-7.8
Latin America & Caribbean	24.3	12.7	21.1	11.3	18.3	10.0	15.9	8.8	13.7	7.6	11.8	6.5
	17.6-31.0	9.2-16.1	15.7-26.5	8.5-14.2	13.6-23.0	7.4-12.6	11.3-20.5	6.2-11.3	9.1-18.4	5.0-10.2	7.0-16.5	3.9-9.2
Caribbean	20.0	0.7	15.8	0.6	12.4	0.5	9.6	0.4	7.4	0.3	5.7	0.2
	11.1-33.4	0.4-1.2	8.8-26.8	0.3-1.0	6.8-21.5	0.3-0.9	5.1-17.3	0.2-0.7	3.8-14.1	0.1-0.5	2.7-11.5	0.1-0.4

UN region & subregion	*Stunted (cont.)*											
	1980		*1985*		*1990*		*1995*		*2000*		*2005*	
	%	million	%	million	%	million	%	million	%	million	%	million
Central America	32.2	4.8	29.0	4.3	25.9	4.0	23.0	3.7	20.4	3.3	18.0	2.9
	20.7-46.5	3.1-6.9	18.4-42.3	2.8-6.3	16.3-38.4	2.5-5.9	14.4-34.8	2.3-5.6	12.5-31.5	2.0-5.1	10.8-28.4	1.8-4.6
South America	21.3	7.2	18.3	6.4	15.7	5.5	13.3	4.7	11.3	4.0	9.6	3.4
	13.8-31.3	4.7-10.6	12.6-25.8	4.4-9.1	10.8-22.2	3.8-7.8	8.6-20.0	3.0-7.1	6.5-18.9	2.3-6.7	4.9-18.2	1.7-6.5
Oceania	n/a[b]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
All developing countries	48.6	222.6	43.2	214.4	37.9	204.3	33.5	181.5	29.6	162.1	26.5	147.5
	46.5-50.7	212.9-232.2	41.2-45.2	204.4-224.5	35.9-39.8	193.7-214.9	31.4-35.6	170.4-192.7	27.5-31.7	150.4-173.8	24.2-28.7	135.0-159.9

Notes: [a] Stunting is defined as <-2 standard deviations of the height-for-age median value of the National Center for Health Statistics/World Health Organization (NCHS/WHO) international reference data.
[b] not available
Sources: *1, 2, 3*

TABLE 2 ESTIMATED PREVALENCE AND NUMBER OF UNDERWEIGHT[a] PRESCHOOL (0-5 YEAR OLD) CHILDREN, 1980-2005, WITH 95% CONFIDENCE INTERVALS

UN region & subregion	*Underweight*											
	1980		*1985*		*1990*		*1995*		*2000*		*2005*	
	%	*million*	*%*	*million*	*%*	*million*	*%*	*million*	*%*	*million*	*%*	*million*
Africa	23.5	19.8	23.5	22.6	23.6	25.3	23.9	27.8	24.2	30.9	24.5	34.5
	20.2-26.8	17.0-22.6	20.6-26.4	19.8-25.4	21.0-26.2	22.6-28.1	21.5-26.3	25.0-30.6	21.9-26.4	28.0-33.8	22.1-26.8	31.1-37.8
Eastern	24.3	6.6	25.4	7.9	26.7	9.5	27.9	10.9	29.2	12.8	30.6	14.8
	19.1-30.3	5.1-8.2	20.5-31.1	6.3-9.6	22.0-32.0	7.8-11.4	23.3-33.0	9.1-12.9	24.6-34.3	10.8-15.0	25.7-35.8	12.5-17.4
Middle	29.6	2.9	28.7	3.3	27.8	3.7	26.9	4.2	26.1	4.7	25.3	5.3
	17.2-46.0	1.7-4.4	18.5-41.6	2.1-4.7	19.8-37.5	2.6-5.0	21.0-33.8	3.3-5.3	21.8-30.8	3.9-5.5	21.6-29.3	4.5-6.1
Northern	15.4	2.8	13.8	2.8	12.3	2.6	10.9	2.3	9.7	2.1	8.6	1.9
	11.2-20.7	2.0-3.8	9.3-19.9	1.9-4.1	7.4-19.6	1.6-4.1	5.9-19.4	1.2-4.1	4.6-19.4	1.0-4.2	3.6-19.5	0.8-4.3
Southern	14.3	0.7	14.2	0.8	14.0	0.8	13.9	0.8	13.7	0.8	13.6	0.8
	9.9-20.3	0.5-1.0	9.9-19.9	0.6-1.1	9.9-19.5	0.6-1.1	9.8-19.2	0.6-1.1	9.7-19.0	0.6-1.2	9.6-18.8	0.6-1.1
Western	28.4	6.9	28.1	7.9	27.8	8.8	27.5	9.6	27.1	10.5	26.8	11.7
	21.9-36.0	5.3-8.7	28.1-34.1	6.4-9.6	23.6-32.4	7.4-10.2	24.2-31.0	8.4-10.8	24.2-30.3	9.4-11.7	23.6-30.3	10.3-13.2
Asia	45.4	145.6	40.5	139.6	35.1	131.9	31.5	116.3	27.9	101.2	24.8	89.2
	42.3-48.6	135.4-155.7	37.1-43.8	128.0-151.3	31.7-38.5	119.2-144.7	27.8-35.1	102.7-129.8	24.0-31.7	87.3-115.0	20.8-28.8	74.9-103.5
Eastern	33.4	35.5	25.2	27.1	18.5	23.1	13.2	14.5	9.3	9.5	6.5	6.1
	32.2-34.5	34.3-36.8	24.2-26.3	26.0-28.3	17.6-19.4	22.0-24.2	12.5-13.9	13.7-15.3	8.8-9.9	9.0-10.1	6.1-6.9	5.7-6.5
South-Central	58.5	84.3	54.1	87.7	49.6	86.0	45.2	80.9	40.8	73.4	36.5	67.1
	51.7-64.9	74.5-93.6	47.1-60.9	76.4-98.8	42.4-56.8	73.5-98.5	37.9-52.6	67.9-94.3	33.5-48.5	60.3-87.3	29.3-44.4	53.9-81.5
South-East	44.0	23.3	39.5	22.1	35.2	20.2	31.2	18.1	27.4	15.5	23.9	13.2
	38.0-50.1	20.1-26.5	34.4-44.8	19.3-25.1	30.8-40.0	17.6-22.9	27.1-35.6	15.7-20.7	23.4-31.8	13.2-18.0	19.9-28.5	11.0-15.7
Western	14.7	2.5	13.8	2.7	12.9	2.7	12.1	2.8	11.3	2.8	10.6	2.7
	8.4-24.6	1.4-4.2	10.2-18.5	2.0-3.6	9.9-16.7	2.1-3.5	7.3-19.4	1.7-4.5	5.0-23.7	1.2-5.8	3.3-28.9	0.9-7.5
Latin America & Caribbean	12.5	6.5	10.5	5.6	8.7	4.8	7.3	4.0	6.1	3.4	5.0	2.8
	9.0-16.1	4.7-8.4	7.4-13.5	4.0-7.3	6.1-11.3	3.4-6.2	5.0-9.6	2.8-5.3	4.0-8.1	2.2-4.5	3.2-6.8	1.8-3.8
Caribbean	16.0	0.6	12.7	0.5	10.0	0.4	7.8	0.3	6.1	0.2	4.7	0.2
	10.0-24.7	0.4-0.9	7.7-20.2	0.3-0.8	5.9-16.4	0.2-0.7	4.5-13.3	0.2-0.5	3.3-10.8	0.1-0.4	2.5-8.7	0.1-0.3
Central America	16.5	2.4	14.4	2.1	12.4	1.9	10.7	1.7	9.2	1.5	7.9	1.3
	10.2-25.6	1.5-3.8	8.8-22.5	1.3-3.4	7.5-19.9	1.2-3.1	6.3-17.6	1.0-2.8	5.2-15.7	0.9-2.6	4.3-14.0	0.7-2.3
South America	10.4	3.5	8.6	3.0	7.0	2.5	5.7	2.0	4.6	1.6	3.7	1.3
	6.8-15.8	2.3-5.3	5.5-13.0	1.9-4.6	4.5-10.8	1.6-3.8	3.6-8.9	1.3-3.1	2.9-7.4	1.0-2.6	2.3-6.1	0.8-2.2
Oceania	n/a[b]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
All developing countries	37.6	172.1	33.9	168.1	30.1	162.2	27.3	148.2	24.8	135.5	22.7	126.5
	35.3-40.0	161.5-182.8	31.4-36.3	156.0-180.1	27.6-32.5	149.1-175.3	24.8-29.9	134.4-162.0	22.2-27.3	121.3-149.7	20.1-25.4	111.8-141.2

Notes: [a] Underweight is defined as <-2 standard deviations of the weight-for-age median value of the NCHS/WHO international reference data.
[b] not available

Sources: 1, 2, 3

Table 3 Estimated prevalence and number of wasted[a] preschool (0-5 year old) children, 1995-2005, with 95% confidence intervals

UN region & subregion	Wasted					
	1995		2000		2005	
	%	million	%	million	%	million
Africa	7.3	8.5	8.3	8.5	9.5	13.3
	6.5-8.2	7.5-9.5	7.3-9.2	7.5-9.5	8.2-10.7	11.5-15.0
Eastern	6.6	2.6	7.6	3.3	8.7	4.2
	5.4-8.0	2.1-3.1	6.3-9.2	2.7-4.0	6.8-11.1	3.3-5.4
Middle	7.0	1.1	9.1	1.6	11.9	2.5
	5.1-9.5	0.8-1.5	6.6-12.6	1.2-2.3	8.4-16.7	1.7-3.5
Northern	4.7	1.0	6.2	1.3	8.0	1.7
	2.7-8.0	0.6-1.7	3.5-10.6	0.8-2.3	4.5-14.0	1.0-3.0
Southern	3.7	0.2	4.9	0.3	6.6	0.4
	2.4-5.7	0.1-0.3	3.3-7.4	0.2-0.4	4.2-10.2	0.3-0.6
Western	10.5	3.7	10.3	4.0	10.2	4.4
	8.8-12.4	3.1-4.3	9.0-11.9	3.5-4.6	9.0-11.6	3.9-5.0
Asia	9.7	35.7	9.2	33.5	8.9	32.0
	8.2-11.2	30.2-41.2	7.7-10.7	28.1-39.0	7.3-10.5	26.4-37.6
Eastern	2.7	3.0	2.2	2.3	1.8	1.7
	2.6-2.9	2.8-3.2	2.1-2.4	2.1-2.4	1.6-1.9	1.5-1.8
South-Central	14.7	26.3	14.0	25.2	13.3	24.5
	12.0-17.9	21.5-32.1	11.3-17.2	20.4-30.9	10.7-16.5	19.7-30.3
South-East	9.2	5.3	8.9	5.1	8.7	4.8
	6.8-12.3	4.0-7.1	6.5-12.2	3.7-6.9	5.7-12.7	3.2-7.0
Western	4.4	1.0	4.2	1.0	3.9	1.0
	2.4-8.0	0.6-1.8	1.9-8.7	0.5-2.1	1.4-10.4	0.4-2.7
Latin America & Caribbean	1.6	0.9	1.6	0.9	1.5	0.8
	1.2-2.1	0.7-1.1	1.1-2.1	0.6-1.1	0.9-2.1	0.5-1.2
Caribbean	2.5	0.09	2.5	0.09	2.4	0.09
	1.4-4.4	0.05-0.16	1.5-3.9	0.06-0.14	1.5-3.9	0.05-0.14
Central America	1.9	0.3	1.7	0.3	1.6	0.3
	1.5-2.3	0.2-0.4	1.2-2.4	0.2-0.4	0.9-2.7	0.1-0.4
South America	1.4	0.5	1.4	0.5	1.4	0.5
	0.9-2.3	0.3-0.8	0.8-2.4	0.3-0.8	0.7-2.6	0.3-0.9
Oceania	n/a[b]	n/a	n/a	n/a	n/a	n/a
All developing countries	8.3	45.2	8.2	45.1	8.3	46.2
	7.3-9.4	39.6-50.8	7.2-9.3	39.5-50.7	7.2-9.4	40.3-52.1

Notes: [a] Wasting is defined as <-2 standard deviations of the weight-for-height median value of the NCHS/WHO international reference data.
[b] not available

Sources: *1, 2, 3*

TABLE 4 ESTIMATED PREVALENCE AND NUMBER OF OVERWEIGHT[a] PRESCHOOL (0-5 YEAR OLD) CHILDREN, 1995-2005, WITH 95% CONFIDENCE INTERVALS

UN region & subregion	*Overweight*					
	1995		*2000*		*2005*	
	%	*million*	*%*	*million*	*%*	*million*
Africa	3.3	3.9	4.2	5.3	5.2	7.3
	2.9-3.7	3.4-4.4	3.4-4.9	4.3-6.3	3.9-6.6	5.4-9.2
Eastern	2.7	1.1	2.9	1.3	3.1	1.5
	2.0-3.6	0.8-1.4	1.9-4.4	0.8-1.9	1.7-5.6	0.8-2.7
Middle	1.7	0.3	2.0	0.4	2.5	0.5
	0.8-3.5	0.1-0.6	0.9-4.8	0.2-0.9	0.9-7.1	0.2-1.5
Northern	7.7	1.6	11.7	2.5	17.4	3.8
	6.2-9.4	1.3-2.0	8.6-15.7	1.8-3.4	11.5-25.5	2.5-5.6
Southern	6.5	0.4	n/a[b]	n/a	n/a	n/a
	5.3-7.7	0.3-0.4	—	—	—	—
Western	1.6	0.6	2.0	0.8	2.5	1.1
	1.2-2.2	0.4-0.8	1.1-3.6	0.4-1.4	1.0-5.9	0.5-2.6
Asia	2.6	9.5	2.5	9.0	2.5	9.0
	1.9-3.2	7.2-11.8	1.8-3.2	6.5-11.5	1.6-3.4	5.8-12.2
Eastern	4.0	4.4	3.2	3.2	2.4	2.3
	3.7-4.4	4.1-4.8	2.9-3.4	3.0-3.5	2.3-2.6	2.2-2.5
South-Central	1.7	3.0	2.0	3.7	2.5	4.6
	0.8-3.6	1.4-6.4	1.0-4.0	1.8-7.3	1.2-5.1	2.3-9.3
South-East	2.2	1.3	2.4	1.4	2.6	1.5
	1.2-3.9	0.7-2.3	1.3-4.3	0.7-2.4	1.4-4.9	0.8-2.7
Western	3.6	1.0	4.2	1.0	3.9	1.0
	2.4-8.0	0.6-1.8	1.9-8.7	0.5-2.1	1.4-10.4	0.4-2.7
Latin America & Caribbean	4.4	2.4	4.3	2.4	4.3	2.4
	3.5-5.2	1.9-2.9	3.5-5.2	1.9-2.8	3.4-5.2	1.9-2.9
Caribbean	3.5	0.13	4.1	0.14	4.7	0.17
	3.0-4.2	0.11-0.16	2.7-6.1	0.10-0.22	2.3-9.4	0.08-0.34
Central America	3.3	0.5	3.9	0.6	4.6	0.7
	2.5-4.5	0.4-0.7	2.8-5.4	0.5-0.9	3.2-6.5	0.5-1.1
South America	4.9	1.7	4.5	1.6	4.2	1.5
	3.8-6.4	1.3-2.2	3.5-5.9	1.2-2.1	3.2-5.5	1.1-2.0
Oceania	n/a	n/a	n/a	n/a	n/a	n/a
All developing countries	2.9	15.8	3.0	16.7	3.4	18.8
	2.5-3.4	13.4-18.2	2.5-3.5	14.0-19.4	2.7-4.0	15.0-22.5

Notes: [a] Overweight is defined as >+2 standard deviations of the weight-for-height median value of the NCHS/WHO international reference data.
[b] not available

Sources: 1, 2, 3

Table 5 Latest national prevalence of wasting, stunting and underweight in preschool (0-5 year old) children

Country	*Year of survey*	*Wasting (%)*	*Stunting (%)*	*Underweight (%)*
Afghanistan	1997	16.1	47.6	49.3
Albania	2000	11.1	31.7	14.3
Algeria	2000	2.7	18.0	6.0
Angola	2001	6.3	45.2	30.5
Argentina	1995-96	3.2	12.4	5.4
Armenia	2000-01	1.9	12.9	2.6
Australia	1995-96	0.0	0.0	0.0
Azerbaijan	2000	8.0	19.6	16.8
Bahrain	1995	5.3	9.7	8.7
Bangladesh	1999-00	10.3	44.7	47.7
Barbados	1981	4.9	7.0	5.9
Belize	1992	n/a[a]	n/a	6.2
Benin	2001	7.5	30.7	22.9
Bhutan	1999	2.6	40.0	18.7
Bolivia	1998	1.3	26.8	7.6
Bosnia & Herzegovina	2000	6.3	9.7	4.1
Botswana	2000	5.0	23.1	12.5
Brazil	1996	2.3	10.5	5.7
Burkina Faso	1998-99	13.2	36.8	34.3
Burundi	2000	7.5	56.8	45.1
Cambodia	2000	15.0	44.6	45.2
Cameroon	1998	5.9	29.3	22.2
Cape Verde	1994	5.6	16.2	13.5
Central African Republic	1995	6.4	28.4	23.2
Chad	2000	11.2	29.1	28.0
Chile	2002	0.3	1.5	0.8
China	2000	2.2	14.2	10.0
Colombia	2000	0.8	13.5	6.7
Comoros	2000	11.5	42.3	25.4
Congo	1987	5.5	27.5	23.9
Costa Rica	1996	2.3	6.1	5.1
Cote d'Ivoire	1998-99	7.8	25.1	21.2
Croatia	1995-96	0.8	0.8	0.6
Cuba	2000	2.0	4.6	3.9
Czech Republic	1991	2.1	1.9	1.0
Democratic People's Republic of Korea	2000	10.4	45.2	27.9
Democratic Republic of the Congo	2001	13.4	38.1	31.0
Djibouti	1996	12.9	25.7	18.2
Dominican Republic	2000	1.5	6.1	4.6
Ecuador	1998	2.4	26.4	14.3

Country	*Year of survey*	*Wasting (%)*	*Stunting (%)*	*Underweight (%)*
Egypt	1998	5.1	20.6	10.7
El Salvador	2002-03	1.4	18.9	10.3
Eritrea	2002	12.6	37.6	39.6
Ethiopia	2000	10.5	51.5	47.2
Fiji	1993	8.2	2.7	7.9
Gabon	2000-01	2.7	20.7	11.9
Gambia	2000	8.2	19.1	17.1
Georgia	1999	2.3	11.7	3.1
Ghana	1998-99	9.5	25.9	24.9
Guatemala	1998-99	2.5	46.4	24.2
Guinea	1999	9.1	26.1	23.2
Guinea-Bissau	2000	10.3	30.4	25.0
Guyana	1997	11.4	10.0	11.8
Haiti	2000	4.5	22.7	17.3
Honduras	2001	1.1	29.2	16.6
Hungary	1980-88	1.6	2.9	2.2
India	1998-99	15.7	44.9	46.7
Indonesia	2000	n/a	n/a	24.6
Iran, Islamic Republic of	1998	4.9	15.4	10.9
Iraq	2000	5.9	22.1	15.9
Italy	1975-77	0.8	2.7	1.5
Jamaica	1999	3.8	4.4	3.8
Japan	1978-81	0.8	5.6	3.7
Jordan	1997	1.9	7.8	5.1
Kazakhstan	1999	1.8	9.7	4.2
Kenya	1998	6.1	33.0	22.1
Kiribati	1985	10.8	28.3	12.9
Kuwait	1996-97	1.2	3.2	1.7
Kyrgyzstan	1997	3.4	24.8	11.0
Lao People's Democratic Republic	2000	15.4	40.7	40.0
Lebanon	1996	2.9	12.2	3.0
Lesotho	2000	5.4	45.4	17.8
Liberia	1999-00	6.0	39.5	26.5
Libyan Arab Jamahiriya	1995	2.7	15.1	4.7
Madagascar	1997	7.4	48.3	40.0
Malawi	2000	5.5	49.0	25.4
Malaysia	1995	n/a	n/a	20.1
Maldives	1997-98	20.0	36.0	45.0
Mali	2001	10.6	38.2	33.2
Mauritania	2000-01	12.8	34.5	31.8
Mauritius	1995	13.7	9.7	14.9
Mexico	1998-99	2.0	17.7	7.5
Mongolia	1999	3.6	24.6	12.7

Country	*Year of survey*	*Wasting (%)*	*Stunting (%)*	*Underweight (%)*
Morocco	1992	2.2	24.2	9.5
Mozambique	1997	7.9	35.9	26.1
Myanmar	1997	8.2	41.6	28.2
Namibia	1992	8.6	28.5	26.2
Nepal	2001	9.6	50.5	48.3
Netherlands	1980	0.7	0.8	0.7
Nicaragua	2001	2.0	20.2	9.6
Niger	2000	13.6	39.7	40.1
Mozambique	1997	7.9	35.9	26.1
Myanmar	1997	8.2	41.6	28.2
Namibia	1992	8.6	28.5	26.2
Nepal	2001	9.6	50.5	48.3
Netherlands	1980	0.7	0.8	0.7
Nicaragua	2001	2.0	20.2	9.6
Niger	2000	13.6	39.7	40.1
Nigeria	1999	15.6	33.5	30.7
Oman	1998	7.2	10.4	17.8
Pakistan	1990-94	14.2	36.3	40.0
Panama	1997	1.0	18.2	8.1
Papua New Guinea	1982-83	5.5	43.2	29.9
Paraguay	1990	0.3	13.9	3.7
Peru	2000	0.9	25.4	7.1
Philippines	1998	6.5	32.1	31.8
Qatar	1995	1.5	8.1	5.5
Romania	2002	2.3	10.1	3.2
Rwanda	2000	6.8	42.6	24.3
Saint Lucia	1976	6.1	10.8	13.8
Sao Tome & Principe	2000	3.6	28.9	12.9
Senegal	2000	8.4	25.4	22.7
Seychelles	1987-88	2.0	5.1	5.7
Sierra Leone	2000	9.9	33.8	27.2
Singapore	1970-77	4.2	10.6	14.4
Solomon Islands	1989	6.6	27.3	21.3
Somalia	2000	17.2	23.3	25.8
South Africa	1994-95	2.5	22.8	9.2
Sri Lanka	1995	13.3	20.4	32.9
Sudan	1992-93	13.1	34.3	33.9
Suriname	1999-00	6.5	9.8	13.2
Swaziland	2000	1.3	30.2	10.3
Syrian Arab Republic	2000	3.8	18.8	6.9
Tajikistan	2002	4.9	30.9	n/a
TFYR Macedonia	1999	3.6	6.9	5.9
Thailand	1995	5.4	13.4	17.6

Country	*Year of survey*	*Wasting (%)*	*Stunting (%)*	*Underweight (%)*
Togo	1998	12.3	21.7	25.1
Tonga	1986	0.9	1.3	n/a
Trinidad & Tobago	2000	4.4	3.6	5.9
Tunisia	2000	2.2	12.3	4.0
Turkey	1998	1.9	16.0	8.3
Turkmenistan	2000	5.7	22.3	12.0
Uganda	2000-01	4.1	39.1	22.8
Ukraine	2000	6.2	15.9	3.2
United Republic of Tanzania	1999	5.4	43.8	29.4
United States of America	1988-94	0.7	2.0	1.4
Uruguay	1992-93	1.4	9.5	4.4
Uzbekistan	1996	11.6	31.3	18.8
Vanuatu	1996	5.5	20.1	12.1
Venezuela, Bolivarian Republic	2000	3.0	12.8	4.4
Viet Nam	2000	8.6	36.5	33.8
West Bank & Gaza	1996	2.7	7.3	4.1
Yemen	1997	12.9	51.7	46.1
Yugoslavia	2000	3.7	5.1	1.9
Zambia	2001-02	5.0	46.8	28.1
Zimbabwe	1999	6.4	26.5	13.0

Note: [a] not available
Sources: *2, 3*

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ANNEX 5
GLOBAL FOOD INSECURITY

TABLE 1 PREVALENCE OF UNDERNOURISHMENT IN DEVELOPING COUNTRIES

Region/subregion/country (undernourishment category)	*Total population*			*Number of people undernourished*			*Proportion of undernourished in total population*		
	1990-92	*1995-97*	*1999-2001*	*1990-92*	*1995-97*	*1999-2001*	*1990-92*	*1995-97*	*1999-2001*
	millions			*millions*			*%*		
Developing World	4050.0	4418.6	4712.2	816.6	779.7	797.9	20	18	17
Asia & Pacific	2812.1	3033.0	3204.8	566.8	496.4	505.2	20	16	16
—*East Asia*	1241.1	1306.7	1353.4	198.3	153.3	144.5	16	12	11
China* (3)	1169.5	1231.0	1275.0	193.0	144.6	135.3	17	12	11
Korea, Democratic People's Republic of (4)	20.3	21.6	22.3	3.7	6.9	7.5	18	32	34
Hong Kong, SAR of China (1)	5.8	6.3	6.9	0.0	0.1	0.1	—	—	—
Mongolia (5)	2.3	2.4	2.5	0.8	1.0	1.0	34	42	38
Republic of Korea (1)	43.3	45.3	46.7	0.8	0.7	0.7	—	—	—
—*Oceania*	3.9	4.4	4.8	0.9	1.2	1.3	25	27	27
Papua New Guinea (4)	3.9	4.4	4.8	0.9	1.2	1.3	25	27	27
—*South-East Asia*	444.8	486.0	517.0	76.4	65.4	66.3	17	13	13
Cambodia (5)	10.0	11.7	13.1	4.3	5.2	5.0	43	45	38
Indonesia (3)	185.6	200.6	212.1	16.6	11.4	12.6	9	6	6
Lao People's Dem. Republic (4)	4.2	4.8	5.3	1.2	1.3	1.2	29	28	22
Malaysia (1)	18.3	20.5	22.2	0.6	0.4	0.5	3	—	—
Myanmar (3)	41.3	45.1	47.7	4.0	3.3	3.2	10	7	7
Philippines (4)	62.5	69.8	75.7	16.1	16.1	16.8	26	23	22
Thailand (3)	55.5	59.5	62.8	15.6	12.3	11.9	28	21	19
Viet Nam (3)	67.5	74.0	78.1	18.1	15.3	15.1	27	21	19
—*South Asia*	1122.4	1236.0	1329.6	291.1	276.5	293.1	26	22	22
Bangladesh (4)	112.7	126.3	137.5	39.2	47.9	44.1	35	38	32
India (4)	861.3	943.5	1008.9	214.5	194.7	213.7	25	21	21
Nepal (3)	18.6	20.9	23.0	3.4	5.0	3.8	18	24	17
Pakistan (3)	112.5	126.9	141.3	29.0	24.1	26.8	26	19	19
Sri Lanka (4)	17.2	18.2	18.9	5.0	5.0	4.6	29	27	25

Region/subregion/country (undernourishment category)	Total population			Number of people undernourished			Proportion of undernourished in total population		
	1990-92	1995-97	1999-2001	1990-92	1995-97	1999-2001	1990-92	1995-97	1999-2001
	millions			millions			%		
Latin America & Caribbean	442.2	481.2	512.0	59.0	55.3	53.4	13	11	10
—*North America*	84.8	92.7	98.9	4.6	5.1	5.2	5	5	5
Mexico (3)	84.8	92.7	98.9	4.6	5.1	5.2	5	5	5
—*Central America*	28.7	32.7	36.0	5.0	6.5	7.5	17	20	21
Costa Rica (3)	3.1	3.7	4.0	0.2	0.2	0.2	7	6	6
El Salvador (3)	5.2	5.8	6.3	0.6	0.8	0.8	12	14	14
Guatemala (4)	9.0	10.2	11.4	1.4	2.2	2.9	16	21	25
Honduras (4)	5.0	5.8	6.4	1.1	1.2	1.3	23	20	20
Nicaragua (4)	3.9	4.6	5.1	1.2	1.5	1.5	30	33	29
Panama (4)	2.4	2.7	2.9	0.5	0.6	0.7	20	22	26
—*Caribbean*	28.5	30.3	31.6	7.9	9.8	7.8	28	32	25
Cuba (3)	10.7	11.0	11.2	0.9	2.7	1.3	8	24	11
Dominican Republic (4)	7.2	7.8	8.4	1.9	2.1	2.1	27	26	25
Haiti (5)	7.0	7.6	8.1	4.6	4.6	4.0	65	60	49
Jamaica (3)	2.4	2.5	2.6	0.3	0.3	0.2	14	11	9
Trinidad & Tobago (3)	1.2	1.3	1.3	0.2	0.2	0.2	13	14	12
—*South America*	300.1	325.5	345.6	41.5	34.0	32.9	14	10	10
Argentina (1)	33.0	35.2	37.0	0.7	0.4	0.4	—	—	—
Bolivia (4)	6.7	7.6	8.3	1.8	1.9	1.8	26	25	22
Brazil (3)	150.3	161.7	170.4	18.6	16.7	15.6	12	10	9
Chile (2)	13.3	14.4	15.2	1.1	0.7	0.6	8	5	4
Colombia (3)	35.7	39.3	42.1	6.1	5.0	5.7	17	13	13
Ecuador (2)	10.5	11.7	12.6	0.9	0.6	0.6	8	5	4
Guyana (3)	0.7	0.7	0.8	0.2	0.1	0.1	21	12	14
Paraguay (3)	4.3	5.0	5.5	0.8	0.7	0.7	18	13	13
Peru (3)	22.0	23.9	25.7	8.9	4.2	2.9	40	18	11
Suriname (3)	0.4	0.4	0.4	0.1	0.0	0.0	13	11	11
Uruguay (2)	3.1	3.2	3.3	0.2	0.1	0.1	6	4	3
Venezuela (3)	20.0	22.3	24.2	2.3	3.5	4.4	11	16	18
Near East & North Africa	321.3	361.3	392.4	25.3	35.2	40.9	8	10	10
—*Near East*	200.6	228.3	249.6	19.6	29.4	34.8	10	13	14
Afghanistan (5) +	14.6	19.7	21.8	8.4	12.7	15.3	58	65	70
Iran, Islamic Republic of (3)	59.9	65.8	70.3	2.8	3.0	3.8	5	5	5
Iraq (4) +	17.8	20.6	23.0	1.2	5.1	6.2	7	25	27
Jordan (3)	3.4	4.4	4.9	0.1	0.3	0.3	4	7	6
Kuwait (2)	2.1	1.7	1.9	0.5	0.1	0.1	22	4	4

Region/subregion/country (undernourishment category)	*Total population*			*Number of people undernourished*			*Proportion of undernourished in total population*		
	1990-92	*1995-97*	*1999-2001*	*1990-92*	*1995-97*	*1999-2001*	*1990-92*	*1995-97*	*1999-2001*
	millions			*millions*			*%*		
Lebanon (2)	2.8	3.2	3.5	0.1	0.1	0.1	3	3	3
Saudi Arabia (2)	15.8	17.6	20.3	0.6	0.6	0.6	4	3	3
Syrian Arab Republic (2)	12.8	14.6	16.2	0.6	0.6	0.6	5	4	4
Turkey (2)	57.2	62.6	66.7	1.0	1.5	1.8	—	—	3
United Arab Emirates (1)	2.1	2.4	2.6	0.1	0.0	0.0	4	—	—
Yemen (4)	12.2	15.6	18.4	4.2	5.4	6.1	35	35	33
—*North Africa*	120.7	133.0	142.8	5.7	5.8	6.1	5	4	4
Algeria (3)	25.4	28.2	30.3	1.3	1.6	1.7	5	6	6
Egypt (2)	57.4	63.2	67.9	2.7	2.3	2.3	5	4	3
Libyan Arab Jamahiriya (1)	4.4	4.9	5.3	0.0	0.0	0.0	—	—	—
Morocco (3)	25.1	27.7	29.9	1.5	1.9	2.1	6	7	7
Tunisia (1)	8.3	9.1	9.5	0.1	0.1	0.1	—	—	—
Sub-Saharan Africa	474.5	543.1	603.0	165.5	192.7	198.4	35	35	33
—*Central Africa*	62.8	73.8	81.7	22.0	39.5	47.6	35	53	58
Cameroon (4)	11.9	13.6	14.9	3.9	4.5	4.0	33	33	27
Central African Republic (5)	3.0	3.4	3.7	1.5	1.7	1.6	50	51	44
Chad (4)	6.0	7.0	7.9	3.5	3.4	2.7	58	49	34
Congo (4)	2.3	2.7	3.0	0.9	1.1	0.9	37	42	30
Congo, Democratic Republic of the (5)	38.5	46.1	51.0	12.1	28.7	38.3	31	62	75
Gabon (3)	1.0	1.1	1.2	0.1	0.1	0.1	11	9	7
—*East Africa*	166.1	188.2	209.5	73.2	84.8	81.3	44	45	39
Burundi (5)	5.7	6.1	6.4	2.8	3.9	4.5	49	64	70
Eritrea (5)	n/a	3.2	3.7	n/a	2.0	2.2	n/a	63	61
Ethiopia (5)	n/a	56.9	62.9	n/a	32.2	26.4	n/a	57	42
Kenya (5)	24.3	28.0	30.7	10.6	11.1	11.5	44	40	37
Rwanda (5)	6.4	5.3	7.5	2.8	2.7	3.1	43	50	41
Somalia (5) +	7.2	7.6	8.8	4.9	5.5	6.2	68	73	71
Sudan (4)	25.4	28.6	31.1	7.9	6.3	7.7	31	22	25
Uganda (3)	17.8	20.7	23.3	4.1	5.3	4.5	23	25	19
Tanzania, United Republic of (5)	27.0	31.8	35.1	9.5	15.7	15.2	35	49	43
—*Southern Africa*	71.0	81.0	89.2	34.2	37.1	36.8	48	46	41
Angola (5)	9.9	11.7	13.1	6.1	6.4	6.4	61	54	49
Botswana (4)	1.3	1.5	1.5	0.2	0.3	0.4	18	22	24
Lesotho (4)	1.7	1.9	2.0	0.5	0.5	0.5	27	26	25
Madagascar (5)	12.3	14.2	16.0	4.3	5.6	5.7	35	40	36
Malawi (4)	9.6	10.2	11.3	4.7	4.0	3.7	49	39	33

Region/subregion/country (undernourishment category)	*Total population*			*Number of people undernourished*			*Proportion of undernourished in total population*		
	1990-92	*1995-97*	*1999-2001*	*1990-92*	*1995-97*	*1999-2001*	*1990-92*	*1995-97*	*1999-2001*
	millions			*millions*			*%*		
Malawi (4)	9.6	10.2	11.3	4.7	4.0	3.7	49	39	33
Mauritius (3)	1.1	1.1	1.2	0.1	0.1	0.1	6	6	5
Mozambique (5)	14.1	16.8	18.3	9.7	10.3	9.7	69	62	53
Namibia (3)	1.4	1.6	1.8	0.3	0.2	0.1	20	12	7
Swaziland (3)	0.8	0.9	0.9	0.1	0.1	0.1	10	16	12
Zambia (5)	8.3	9.5	10.4	3.7	4.4	5.2	45	47	50
Zimbabwe (5)	10.5	11.7	12.6	4.5	5.1	4.9	43	44	39
—*West Africa*	174.7	200.1	222.6	36.2	31.3	32.7	21	16	15
Benin (3)	4.8	5.6	6.3	1.0	1.0	1.0	20	17	16
Burkina Faso (3)	9.3	10.5	11.5	2.0	1.9	1.9	22	18	17
Côte d'Ivoire (3)	13.0	14.7	16.0	2.4	2.3	2.4	18	16	15
Gambia (4)	1.0	1.2	1.3	0.2	0.4	0.4	22	32	27
Ghana (3)	15.6	17.7	19.3	5.5	2.9	2.4	35	17	12
Guinea (4)	6.4	7.5	8.1	2.5	2.4	2.3	40	31	28
Liberia (5)	2.1	2.2	2.9	0.7	0.8	1.2	33	38	42
Mali (4)	9.0	10.2	11.4	2.2	2.7	2.4	25	27	21
Mauritania (3)	2.0	2.3	2.7	0.3	0.3	0.3	14	11	10
Niger (4)	8.0	9.4	10.8	3.3	4.0	3.7	42	43	34
Nigeria (3)	88.5	102.1	113.9	11.2	7.8	9.1	13	8	8
Senegal (4)	7.5	8.5	9.4	1.7	2.1	2.3	23	25	24
Sierra Leone (5)	4.1	4.1	4.4	1.9	1.7	2.2	46	42	50
Togo (4)	3.5	4.0	4.5	1.2	1.0	1.1	33	25	25

Notes: Figures following country name refer to the prevalence categories (proportion of the population undernourished in 1999-2001):
(1) <2.5% undernourished
(2) 2.5-4% undernourished
(3) 5-19% undernourished
(4) 20-34% undernourished
(5)≥ 35% undernourished.
(*) includes Taiwan Province of China
(—) proportion less than 2.5% undernourished
(n/a) not available
(+) the estimate of the proportion of undernourished for 1999-2001 is not available, the estimate for 1998-2000 published in the last year report [FAO (2002) *State of Food Insecurity in the World 2002*. Food and Agriculture Organization: Rome] is given instead.
Table does not include countries for which there were insufficient data.
Total population from *UN Population Prospects,* 2000 revision.

Source: *1*

TABLE 2 PREVALENCE OF UNDERNOURISHMENT IN COUNTRIES IN TRANSITION

Region/subregion/country (undernourishment category)	*Total population*		*Number of people undernourished*		*Proportion of undernourished in total population*	
	1993-95	*1999-2001*	*1993-95*	*1999-2001*	*1993-95*	*1999-2001*
	millions		*millions*		*%*	
Countries in Transition	414.1	411.8	25.2	33.6	6	8
—*Commonwealth of Independent States*	284.8	283.4	20.6	28.8	7	10
Armenia (5)	3.7	3.8	2.0	1.9	55	51
Azerbaijan (4)	7.6	8.0	2.8	1.7	37	21
Belarus (2)	10.3	10.2	0.1	0.3	—	3
Georgia (4)	5.4	5.3	2.4	1.4	45	26
Kazakhstan (4)	16.7	16.2	0.2	3.5	—	22
Kyrgyzstan (3)	4.5	4.9	1.3	0.4	28	7
Republic of Moldova (3)	4.3	4.3	0.2	0.5	5	12
Russian Federation (2)	148.4	145.5	6.4	6.2	4	4
Tajikistan (5)	5.7	6.1	1.2	4.3	22	71
Turkmenistan (3)	4.1	4.7	0.6	0.3	15	7
Ukraine (2)	51.7	49.6	1.2	2.0	—	4
Uzbekistan (4)	22.3	24.9	2.1	6.4	10	26
—*Baltic States*	7.8	7.5	0.4	0.3	5	3
Estonia (2)	1.5	1.4	0.2	0.1	10	4
Latvia (3)	2.6	2.4	0.1	0.2	3	6
Lithuania (1)	3.7	3.7	0.2	0.0	4	—
—*Eastern Europe*	121.5	121.0	4.1	4.5	3	4
Albania (2)	3.2	3.1	0.2	0.1	5	4
Bosnia & Herzegovina (3)	3.6	4.0	0.5	0.3	13	8
Bulgaria (3)	8.5	8.0	0.7	1.3	8	16
Croatia (3)	4.6	4.7	0.8	0.5	18	12
Czech Republic (1)	10.3	10.3	0.2	0.2	—	—
Hungary (1)	10.2	10.0	0.1	0.0	—	—
TFYR Macedonia (3)	2.0	2.0	0.3	0.2	15	10
Poland (1)	38.5	38.6	0.3	0.3	—	—
Romania (1)	22.8	22.4	0.4	0.2	—	—
Serbia & Montenegro (3)	10.5	10.6	0.5	0.9	5	9
Slovakia (3)	5.3	5.4	0.2	0.2	4	5
Slovenia (1)	2.0	2.0	0.1	0.0	3	—

Notes: same as for Table 1
Source: 1

REFERENCE

1. FAO (2003) *State of Food Insecurity in the World 2003* Food and Agriculture Organization, Rome.

Annex 6 overweight and obesity

Table 1 Rates of adult overweight[a] and obesity[b]

UN region & country	Sex	Year survey began/ended	BMI ≥25 %	BMI ≥30 %
Africa				
Egypt	Both sexes	1998/99	62.20	24.80
	Male	1998/99	49.43	12.87
	Female	1998/99	71.00	32.93
Gambia	Both sexes	1995	10.40	2.30
	Male	1995	—	—
	Female	1995	—	—
Ghana	Both sexes	1987/89	11.20	3.10
	Male	1987/89	5.30	0.60
	Female	1987/89	18.10	6.10
Lesotho	Female	1993	50.10	23.00
Morocco	Both sexes	1998/99	34.70	9.97
	Male	1998/99	25.00	4.27
	Female	1998/99	44.03	15.40
Mauritius	Both sexes	1998	48.14	14.39
	Male	1998	41.00	8.00
	Female	1998	54.00	20.00
Seychelles	Both sexes	1994	49.67	18.93
	Male	1994	38.30	8.50
	Female	1994	59.80	28.20
South Africa	Both sexes	1998	45.10	21.60
	Male	1998	29.10	9.30
	Female	1998	56.20	30.10
Tunisia	Both sexes	1996/97	43.80	17.21
	Male	1996/97	28.07	5.97
	Female	1996/97	48.73	21.10
Asia				
Bahrain	Both sexes	1998/99	61.60	28.30
	Male	1998/99	59.70	22.70
	Female	1998/99	61.90	34.00
China	Both sexes	1997	15.40	—
	Male	1997	14.50	—
	Female	1997	16.20	—
India	Both sexes	1998	4.83	0.48
	Male	1998	4.71	0.34
	Female	1998	4.91	0.58
Iran	Both sexes	1999	32.76	9.79
	Male	1999	27.85	5.23
	Female	1999	36.71	13.45
Japan	Both sexes	2001	23.40	3.10
	Male	2001	26.80	2.90
	Female	2001	20.70	3.30
Korea	Both sexes	1998	26.30	2.40
	Male	1998	26.00	1.70
	Female	1998	26.50	3.00
Kuwait	Both sexes	1998/2000	64.20	28.80
	Male	1998/2000	65.80	27.50
	Female	1998/2000	62.60	29.80
Kyrgyzstan	Both sexes	1993	35.00	8.70
	Male	1993	31.48	4.76
	Female	1993	38.06	12.08
Laos	Both sexes	1994	9.30	1.10
	Male	1994	6.80	0.70
	Female	1994	11.40	1.40
Malaysia	Both sexes	1996	26.20	5.50
	Male	1996	23.90	3.80
	Female	1996	28.60	7.20
Pakistan	Both sexes	1990/94	13.80	3.40
	Male	1990/94	11.57	1.80
	Female	1990/94	18.97	5.93

UN region & country	*Sex*	*Year survey began/ended*	*BMI ≥25 %*	*BMI ≥30 %*
Philippines	Both sexes	1998	20.20	3.30
	Male	1998	17.00	2.10
	Female	1998	23.30	4.40
Saudi Arabia	Both sexes	1995	43.30	17.20
	Male	1995	40.28	13.05
	Female	1995	45.46	20.26
Singapore	Both sexes	1998	30.40	6.00
	Male	1998	33.90	5.30
	Female	1998	27.00	6.70
Thailand	Both sexes	1996	—	—
	Male	1996	13.20	—
	Female	1996	25.00	—
Europe				
Austria	Both sexes	1991	—	8.50
	Male	1991	—	8.30
	Female	1991	—	9.00
Belgium	Both sexes	1979/84	56.20	15.10
	Male	1979/84	58.60	12.10
	Female	1979/84	53.60	18.40
Croatia	Both sexes	1995/97	64.40	23.10
	Male	1995/97	79.20	31.10
	Female	1995/97	49.90	15.20
Cyprus	Male	1993/94	—	16.00
	Female	1993/94	—	19.00
Denmark	Both sexes	1994	35.80	7.60
	Male	1994	44.20	8.20
	Female	1994	28.00	7.00
Estonia	Both sexes	1997	35.40	7.80
	Male	1997	41.90	9.90
	Female	1997	29.90	6.00
Finland	Both sexes	1999	42.36	10.10
	Male	1999	50.10	9.70
	Female	1999	36.00	10.50
France	Both sexes	1991/92	35.02	6.86
	Male	1991/92	40.80	6.40
	Female	1991/92	28.90	7.80
Germany	Both sexes	1998	60.04	20.76
	Male	1998	66.67	19.16
	Female	1998	53.81	22.26
Hungary	Both sexes	1992/94	55.40	21.10
	Male	1992/94	62.90	21.00
	Female	1992/94	49.10	21.20
Ireland	Both sexes	1997/99	56.80	17.80
	Male	1997/99	66.40	20.10
	Female	1997/99	48.40	15.90
Italy	Both sexes	1994	38.40	6.40
	Male	1994	46.00	6.50
	Female	1994	31.40	6.30
Latvia	Both sexes	1997	50.40	13.70
	Male	1997	50.50	9.50
	Female	1997	50.40	17.40
Lithuania	Both sexes	1997	52.00	15.10
	Male	1997	53.30	11.40
	Female	1997	51.00	18.30
Norway	Both sexes	1994	34.00	5.40
	Male	1994	42.00	5.00
	Female	1994	26.40	5.90
Russia	Both sexes	1996	—	—
	Male	1996	44.20	10.80
	Female	1996	58.40	27.90
Serbia & Montenegro	Both sexes	2000	54.00	17.60
Spain	Both sexes	1995/97	—	12.20
	Male	1995/97	—	12.30
	Female	1995/97	—	12.10
Sweden	Both sexes	1996/97	39.60	7.00
	Male	1996/97	45.90	6.80
	Female	1996/97	33.60	7.20
Switzerland	Both sexes	1992/93	30.30	5.40
	Male	1992/93	39.20	6.10
	Female	1992/93	21.80	4.70
The Netherlands	Both sexes	1996/98	—	—
	Male	1996/98	43.50	6.50
	Female	1996/98	36.50	9.10
Turkey	Both sexes	1997	—	22.30
	Male	1997	—	12.90
	Female	1997	—	29.90
United Kingdom	Both sexes	2000	60.02	21.21
	Male	2000	65.50	21.00
	Female	2000	55.20	21.40

UN region & country	Sex	Year survey began/ended	BMI ≥25 %	BMI ≥30 %
Latin America & Caribbean				
Brazil	Both sexes	1989	32.80	8.30
	Male	1989	27.30	4.80
	Female	1989	38.10	11.70
Cuba	Both sexes	1982	36.40	—
	Male	1982	31.50	—
	Female	1982	39.40	—
Mexico	Female	1999	59.60	24.40
Peru	Both sexes	2000	53.37	15.27
	Male	2000	49.23	10.53
	Female	2000	56.53	18.93
Uruguay	Both sexes	1998	52.40	18.10
	Male	1998	57.00	17.00
	Female	1998	49.00	19.00
North America				
Canada	Both sexes	2000/01	48.00	15.00
	Male	2000/01	56.00	16.00
	Female	2000/01	39.00	14.00
USA	Both sexes	1999/2000	—	30.90
	Male	1999/2000	—	27.70
	Female	1999/2000	—	34.00
Oceania				
Australia	Both sexes	1995	55.30	18.60
	Male	1995	64.30	18.70
	Female	1995	47.30	18.40
Cook Islands	Both sexes	1998	77.60	43.00
	Male	1998	76.60	40.60
	Female	1998	81.00	50.00
Fiji	Both sexes	1993	41.70	14.10
	Male	1993	32.40	7.30
	Female	1993	50.40	20.50
French Polynesia	Both sexes	1995	73.70	40.90
	Male	1995	75.20	36.30
	Female	1995	72.50	44.30
Nauru	Both sexes	1994	—	79.40
	Male	1994	—	80.20
	Female	1994	—	78.60
New Caledonia	Both sexes	1992/94	—	—
	Male	1992/94	—	—
	Female	1992/94	70.40	—
New Zealand	Both sexes	1996/97	34.60	14.90
	Male	1996/97	41.00	12.60
	Female	1996/97	29.80	16.70
Tonga	Both sexes	1998/2000	—	56.00
	Male	1998/2000	—	—
	Female	1998/2000	—	—
Vanuatu	Both sexes	1998	48.90	15.90
	Male	1998	45.90	12.20
	Female	1998	51.90	19.60

Notes: [a] BMI ≥25
[b] BMI ≥30
Source: 1

Table 2 Rates of child (5-17 years) overweight (BMI ≥25 Cole et al. equivalent[a]) and obesity (BMI ≥30 Cole et al. equivalent)

Region[b]		*BMI ≥25*	*BMI ≥30*
Africa			
	Male	1.2	0.1
	Female	1.4	0.3
Asia			
	Male	13.9	4.5
	Female	10.9	3.1
Europe			
	Male	21.1	3.6
	Female	18.5	3.2
Latin America & the Caribbean			
	Male	33.7	7.8
	Female	37.1	7.5
Northern America			
	Male	26.7	8.8
	Female	28.1	9.0
Oceania			
	Male	21.1	5.2
	Female	21.3	5.6

Notes: [a] Refers to international cut off points for body mass index for overweight and obesity by sex between 2 and 18 years, defined to pass through body mass index of 25 and 30 kg/m^2 at age 18, obtained by averaging data from Brazil, Great Britain, Hong Kong, Netherlands, Singapore, and United States developed by Cole et al. (2000).
[b] Countries in each region and number of observations include for Africa: Algeria (n=840), Ethiopia (n=1774), Mali (n=1146), Senegal (n=1726), Seychelles (n=5514), Zimbabwe (n=2541); for Asia: China (n=1576), Cyprus (n=2476), Lebanon (n=1101), Nepal (n=999), Pakistan (n=1070), Saudi Arabia (n=12701); for Europe: Czech Republic (n=35835), Denmark (n=11211), France (n=1582), Poland (n=3044), Russian Federation (n=3044), Slovakia (n=3044), UK–England (n=3088); for Latin America and the Caribbean: Mexico (n=170568), Chile (n=199444); for Northern America: USA (n=6736); and for Oceania: Australia (n=2289). Total number of observations were 473,447.
Source: *2, 3*

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3. Cole TJ, Bellizzi MC, Flegal KM, Dietz WH (2000) Establishing a standard definition for child overweight and obesity worldwide: international survey. *British Medical Journal* 320:1240–1243.

annex 7 prevalence of iodine deficiency

background

Iodine deficiency, which is the primary cause of preventable mental retardation in children, remains a major global public health problem. There has been widespread mobilization in the international community over the last decades in support of eliminating iodine deficiency disorders (IDD). Most countries where IDD is a public health problem have taken measures to control iodine deficiency, mainly through universal salt iodization programmes.

In May 2002 the United Nations General Assembly and its Special Session on Children endorsed the goal of IDD elimination by 2005. The World Health Organization (WHO) continually updates its Global Database on IDD as part of its mandate to track progress made by countries in meeting this goal, to follow trends and to monitor the sustainability of implemented salt iodization programmes. Updated global estimates of iodine deficiency were recently released (de Benoist B, Andersson M, Egli I, Takkouche B 2004).

methodology

Until the 1990s total goitre prevalence (TGP) was the recommended indicator for assessing population iodine status. Today, however, urinary iodine (UI) and goitre are the most common indicators of iodine status. Given salt iodization's impact on iodine nutrition, UI is a more sensitive indicator of recent changes in iodine nutrition than TGP. UI is thus the preferred indicator for monitoring and evaluating salt iodization programmes. The current global and regional prevalence of iodine deficiency has been estimated based on the most representative UI data available to WHO in June 2003 from surveys carried out among school-age children between 1993 and 2003. Iodine deficiency is considered to be a public health problem in populations of school-age children (6-12 years) where median UI concentration is below 100 µg/l (WHO/UNICEF/International Council for the Control of Iodine Deficiency Disorders 2001). The severity of iodine deficiency is assessed for each country using criteria based on median UI, as shown in Table 1.

results

Data on UI are available from 126 countries. Figure 1 shows the global coverage of national and subnational UI surveys. Overall, UI data have been collected covering 92.1% of the world's 6-12 year old population. Of these 126 countries, 75 have nationally representative surveys covering 49.8% of the same population.

Table 2 presents global prevalence of iodine deficiency by UN region. Nearly 2 billion people (35.2%) worldwide have inadequate iodine nutrition. Table 3 shows the number of countries by UN region where iodine deficiency is still a public health problem. National estimates of iodine deficiency are presented in Table 4.

conclusion

Iodine deficiency is still a significance public health problem in 54 countries. A continued effort from all partners involved in iodine deficiency control is needed to maintain consistent monitoring and evaluation are steps to meeting the goal of sustained IDD elimination.

table 1 epidemiological criteria for assessing iodine nutrition based on median urinary iodine concentrations in school-age children

Median urinary iodine (µg/l)	Iodine intake	Iodine nutrition
< 20	Insufficient	Severe iodine deficiency
20-49	Insufficient	Moderate iodine deficiency
50-99	Insufficient	Mild iodine deficiency
100-299	Optimal	Optimal
≥300	Excessive	Risk of adverse health consequences (iodine-induced hyperthyroidism, autoimmune thyroid disease)

Source: Adapted from 2

figure 1 coverage of urinary iodine surveys. countries[a] with national and subnational urinary iodine surveys carried out between 1993 and 2003

Note: [a] Based on 192 WHO Member States.
Source: *Adapted from 3*

TABLE 2 PREVALENCE OF IODINE DEFICIENCY IN SCHOOL-AGE CHILDREN AND THE GENERAL POPULATION BASED ON URINARY IODINE BY UN REGION,[a] 2003

UN region & subregion	*Iodine deficiency (UI < 100 µg/l)*			
	General population		*School-age children (6-12 years)*	
	%	*Total number millions*[b]	*%*	*Total number millions*[b]
Africa	43.0	324.2	42.7	59.7
Eastern Africa	45.2	98.2	45.1	19.4
Middle Africa	32.7	26.3	32.4	5.1
Northern Africa	50.6	88.2	50.7	14.1
Southern Africa	31.2	15.4	31.6	2.5
Western Africa	41.4	96.2	41.1	18.6
Asia	35.6	1239.3	38.3	187.0
Eastern Asia	16.3	212.2	16.3	24.2
South-Central Asia	41.9	631.9	43.2	104.1
South-Eastern Asia	60.5	312.6	61.2	46.4
Western Asia	55.8	82.6	53.2	12.2
Europe	52.7	330.8	53.1	26.7
Eastern Europe	59.9	180.6	60.0	15.1
Northern Europe	59.2	13.0	59.3	1.2
Southern Europe	49.2	58.8	47.8	4.1
Western Europe	42.6	78.5	43.6	6.4
Latin America & Caribbean	10.0	47.4	10.3	7.1
Caribbean	66.2	13.2	69.8	1.7
Central America	9.7	13.5	9.9	2.2
South America	6.6	20.8	7.3	3.3
Northern America	9.5	27.6	9.5	2.8
Oceania	64.5	19.2	59.4	2.1
Australia - New Zealand	72.8	17.0	73.0	1.7
Melanesia	33.9	2.2	32.7	0.4
Micronesia	—	—	—	—
Polynesia	—	—	—	—
Total	35.2	1988.7	36.5	285.4

Notes: [a] Based on 192 WHO Members States.
[b] Based on population estimates for 2000 from the UN (2003) *World Population Prospects: the 2002 Revision*. United Nations Population Division, New York.
Source: 3

Table 3 Number of countries[a] classified by severity of iodine deficiency based on median UI in school-age children by UN region, 2003

UN region & subregion	Classification of iodine nutrition					
	Severe deficiency (Median UI < 20 µg/l)	Moderate deficiency (Median UI 20-49 µg/l)	Mild deficiency (Median UI 50-99 µg/l)	Optimal (Median UI 100-299 µg/l)	Excessive (Median UI ≥ 300 µg/l)	No data
Africa	0	6	10	20	2	15
Eastern Africa	0	0	3	6	1	7
Middle Africa	0	2	1	2	0	4
Northern Africa	0	1	2	2	0	1
Southern Africa	0	1	0	3	0	1
Western Africa	0	2	4	7	1	2
Asia	1	5	12	16	0	13
Eastern Asia	0	0	0	2	0	3
South-Central Asia	1	2	4	5	0	2
South-Eastern Asia	0	1	3	3	0	4
Western Asia	0	1	5	7	0	4
Europe	0	1	15	14	0	11
Eastern Europe	0	1	6	3	0	0
Northern Europe	0	0	5	2	0	3
Southern Europe	0	0	1	5	0	7
Western Europe	0	0	3	4	0	1
Latin America & Caribbean	0	1	1	14	3	14
Caribbean	0	1	1	0	0	11
Central America	0	0	0	8	0	0
South America	0	0	0	6	3	3
Northern America	0	0	0	1	0	1
Oceania	0	1	2	1	0	12
Australia- New Zealand	0	0	2	0	0	0
Melanesia	0	1	0	1	0	2
Micronesia	0	0	0	0	0	5
Polynesia	0	0	0	0	0	5
Total	1	13	40	67	5	66

Note: [a] Based on 192 WHO Member States
Source: 3

TABLE 4 NATIONAL ESTIMATES OF IODINE DEFICIENCY IN SCHOOL-AGE CHILDREN AND THE GENERAL POPULATION, 2003

Country	*Date of survey (yrs)*	*Level of survey*	*Sample size*[a]	*Median UI (μg/l)*	*Severity of iodine deficiency/ iodine nutrition*	*Proportion of population with UI < 100 μg/l %*	*6-12 yrs population affected (000)*	*General population affected (000)*
Afghanistan	No data	—	—	—	—	—	—	—
Albania	No data	—	—	—	—	—	—	—
Algeria	1994P	Local	169	27	Moderate	77.7	3879	24294
Andorra	No data	—	—	—	—	—	—	—
Angola	No data	—	—	—	—	—	—	—
Antigua & Barbuda	No data	—	—	—	—	—	—	—
Argentina	No data	—	—	—	—	—	—	—
Armenia	1998	National	2596[b]	146	Optimal	31.8	110	977
Australia	2000, 2001	State, local	802	77	Mild	71.5	1339	13974
Austria	1994	Local	589	111	Optimal	49.4	327	4080
Azerbaijan	2001P	Regional	347	54	Mild	74.4	943	6173
Bahamas	No data	—	—	—	—	—	—	—
Bahrain	1999	National	749	204	Optimal	16.2	16	115
Bangladesh	1993	National	2054	54	Mild	70.7	17844	101673
Barbados	No data	—	—	—	—	—	—	—
Belarus	1995-98	National	11562	45	Moderate	80.9	697	8041
Belgium	1998	National	2585	80	Mild	66.9	566	6888
Belize	1994-95	National	1656	184	Optimal	26.7	12	67
Benin	1999	Local	433	289	Optimal	8.3	108	544
Bhutan	1996	National	333	230	Optimal	24.0	98	526
Bolivia	1996	National	508[c]	250	Optimal	19.0	294	1643
Bosnia & Herzegovina	1999	National	1945	111	Optimal	52.4	187	2162
Botswana	1994	National	287	219	Optimal	15.3	49	271
Brazil	2000	State	1013	360	Excessive	0.0	0	0
Brunei Darussalam	No data	—	—	—	—	—	—	—
Bulgaria	1996	National	1028	111	Optimal	42.9	257	3417
Burkina Faso	1999	Local	391	114	Optimal	47.5	1239	5997
Burundi	No data	—	—	—	—	—	—	—
Cambodia	No data	—	—	—	—	—	—	—
Cameroon	1993	National	757	52	Mild	91.7	2757	14424
Canada	No data	—	—	—	—	—	—	—
Cape Verde	1996	National	302	52	Mild	77.4	66	351
Central African Republic	1993-94	Province	319[d]	21	Moderate	79.5	579	3036
Chad	1993-94	National	1141	29	Moderate	99.6	1632	8314
Chile	2001	Local urban	371	984	Excessive	0.2	4	31
China	2002	National	11766	241	Optimal	16.2	24044	210974

Country	*Date of survey (yrs)*	*Level of survey*	*Sample size*[a]	*Median UI (µg/l)*	*Severity of iodine deficiency/iodine nutrition*	*Proportion of population with UI < 100 µg/l %*	*6-12 yrs population affected (000)*	*General population affected (000)*
Colombia	1994-98	National urban	7363	249	Optimal	6.4	417	2786
Comoros	No data	—	—	—	—	—	—	—
Congo	No data	—	—	—	—	—	—	—
Cook Islands	No data	—	—	—	—	—	—	—
Costa Rica	1996	National	538	233	Optimal	8.9	53	364
Cote d'Ivoire	1999-2000	Local	400	162	Optimal	33.8	1036	5531
Croatia	2002	National	927	140	Optimal	28.8	101	1278
Cuba	1995	National rural	3027	95	Mild	51.0	571	5748
Cyprus	No data	—	—	—	—	—	—	—
Czech Republic	2000P	Regional	714	119	Optimal	47.7	386	4887
Democratic People's Republic of Korea	No data	—	—	—	—	—	—	—
Democratic Republic of Congo	1995	Local	305	267	Optimal	0.0	0	0
Denmark	1997-98	Regional	4616[e]	61	Mild	70.8	335	3789
Djibouti	No data	—	—	—	—	—	—	—
Dominica	No data	—	—	—	—	—	—	—
Dominican Republic	1993	National	837	39	Moderate	86.0	1111	7410
Ecuador	1999	Local	630	420	Excessive	0.0	0	0
Egypt	1998	State	706	148	Optimal	31.2	3548	21998
El Salvador	1996-97	National	2394	150	Optimal	4.6	48	295
Equatorial Guinea	No data	—	—	—	—	—	—	—
Eritrea	1998	National	2100	168	Optimal	25.3	201	1010
Estonia	1995	National	1840	65	Mild	67.0	75	896
Ethiopia	2000P	District	512	58	Mild	68.4	9360	47169
Fiji	1994	District	479	34	Moderate	75.4	93	626
Finland	1997	Local	342[e]	164	Optimal	35.5	159	1845
France	1996	National	12014[e]	85	Mild	60.4	3097	36149
Gabon	2001	National	NS	190	Optimal	38.3	94	500
Gambia	1999	National	594	42	Moderate	72.8	180	1011
Georgia	1998	National	NS	62	Mild	80.0	395	4142
Germany	1999	National	3065	148	Optimal	27.0	1626	22252
Ghana	1994	District	292	54	Mild	71.3	2647	14596
Greece	No data	—	—	—	—	—	—	—
Grenada	No data	—	—	—	—	—	—	—
Guatemala	1995	National	814[f]	222	Optimal	14.4	333	1733
Guinea	1999	Region	1234	91	Mild	63.6	997	5316
Guinea-Bissau	No data	—	—	—	—	—	—	—
Guyana	1997P	National	342	162	Optimal	26.9	28	205

Country	*Date of survey (yrs)*	*Level of survey*	*Sample size*[a]	*Median UI (µg/l)*	*Severity of iodine deficiency/iodine nutrition*	*Proportion of population with UI < 100 µg/l %*	*6-12 yrs population affected (000)*	*General population affected (000)*
Haiti	No data	—	—	—	—	—	—	—
Honduras	1999	Local	609	240	Optimal	31.3	395	2122
Hungary	1994-97	National	2814	80	Mild	65.2	533	6470
Iceland	1998P	Local	89[g]	150	Optimal	37.7	12	108
India	See notes[1]	State,	17321	133	Optimal	31.3	50698	328509
Indonesia	1996P	District	544	65	Mild	63.7	19315	138313
Iran, Islamic Republic of	1996	National	2917	205	Optimal	14.9	1670	10142
Iraq	No data	—	—	—	—	—	—	—
Ireland	1999	Local	132[e]	82	Mild	60.8	228	2378
Israel	No data	—	—	—	—	—	—	—
Italy	See notes[2]	Region, local	11226	94	Mild	55.7	2154	32018
Jamaica	No data	—	—	—	—	—	—	—
Japan	No data	—	—	—	—	—	—	—
Jordan	2000	National	2601	154	Optimal	24.4	224	1300
Kazakhstan	1999	National	951[h]	97	Mild	53.1	1057	8214
Kenya	1994	National	3042	115	Optimal	36.7	2220	11575
Kiribati	No data	—	—	—	—	—	—	—
Kuwait	1997	National	341	147	Optimal	31.4	87	767
Kyrgyzstan	1994	Region	221	30	Moderate	88.1	693	4464
Lao People's Democratic Republic	2000	National	900	162	Optimal	26.9	279	1487
Latvia	2000	National	599	59	Mild	76.8	154	1789
Lebanon	1997	National	586	95	Mild	55.5	283	1996
Lesotho	1999	National	500	26	Moderate	100.0	331	1800
Liberia	1999	National	2060	321	Excessive	3.5	22	113
Libyan Arab	No data	—	—	—	—	—	—	—
Lithuania	1995	National	2087	75	Mild	62.0	207	2148
Luxembourg	1994	Local	124	90	Mild	57.4	23	257
Madagascar	No data	—	—	—	—	—	—	—
Malawi	No data	—	—	—	—	—	—	—
Malaysia	1995	National	11362	91	Mild	57.0	2118	13660
Maldives	1995	National	316	67	Mild	65.5	38	202
Mali	1999	Local	352	203	Optimal	34.1	899	4304
Malta	No data	—	—	—	—	—	—	—
Marshall Islands	No data	—	—	—	—	—	—	—
Mauritania	1995	National	240	55	Mild	69.8	359	1959
Mauritius	1995	National	225[e]	154	Optimal	4.4	6	53
Mexico	1999	National	585	235	Optimal	8.5	1332	8667
Micronesia, Federated States of	No data	—	—	—	—	—	—	—

Country	*Date of survey (yrs)*	*Level of survey*	*Sample size[a]*	*Median UI (µg/l)*	*Severity of iodine deficiency/iodine nutrition*	*Proportion of population with UI < 100 µg/l %*	*6-12 yrs population affected (000)*	*General population affected (000)*
Monaco	No data	—	—	—	—	—	—	—
Mongolia	2001	National	2748	102	Optimal	48.9	199	1252
Morocco	1993	National	281	75	Mild	63.0	2762	18945
Mozambique	1998	Province	567	69	Mild	65.4	2346	12123
Myanmar	2001	National	3345	136	Optimal	38.2	2809	18662
Namibia	No data	—	—	—	—	—	—	—
Nauru	No data	—	—	—	—	—	—	—
Nepal	1997-98	National	1450	144	Optimal	35.1	1555	8638
Netherlands	1995-96	Local	937	154	Optimal	37.5	523	6025
New Zealand	1996-99	Local	282	66	Mild	79.7	334	3065
Nicaragua	2000	National	886	271	Optimal	0.0	0	0
Niger	1998	Region	944	270	Optimal	0.0	0	0
Nigeria	1998	State	537	147	Optimal	38.8	9187	46914
Niue	No data	—	—	—	—	—	—	—
Norway	No data	—	—	—	—	—	—	—
Oman	1993-94	National	951	91	Mild	49.8	224	1379
Pakistan	1993-94	Region	1500	16	Severe	90.4	25037	135519
Palau	No data	—	—	—	—	—	—	—
Panama	1999	National	604	235	Optimal	8.6	37	263
Papua New Guinea	1996	Local	627	181	Optimal	27.7	290	1547
Paraguay	1999	National	5864	294	Optimal	13.4	136	769
Peru	1999	National	4936	230	Optimal	11.8	496	3158
Philippines	1998	National	10616	71	Mild	65.3	8742	51313
Poland	1999	Local	873	84	Mild	64.0	2200	24718
Portugal	No data	—	—	—	—	—	—	—
Qatar	1996	Local	59	203	Optimal	30.0	22	180
Republic of Korea	No data	—	—	—	—	—	—	—
Republic of Moldova	1996	National	516	78	Mild	62.0	282	2648
Romania	2000-2001	National	7358	68	Mild	64.2	1178	14373
Russian Federation	1999, 2000, 2001, 2002	Local	3401	93	Mild	56.2	6620	80974
Rwanda	1996	National	1246	298	Optimal	0.0	0	0
Saint Kitts & Nevis	No data	—	—	—	—	—	—	—
Saint Lucia	No data	—	—	—	—	—	—	—
Saint Vincent & the Grenadines	No data	—	—	—	—	—	—	—
Samoa	No data	—	—	—	—	—	—	—
San Marino	No data	—	—	—	—	—	—	—
Sao Tome & Principe	No data	—	—	—	—	—	—	—
Saudi Arabia	1994-95	National	4590	180	Optimal	23.0	934	5410

Country	*Date of survey (yrs)*	*Level of survey*	*Sample size[a]*	*Median UI (µg/l)*	*Severity of iodine deficiency/ iodine nutrition*	*Proportion of population with UI < 100 µg/l %*	*6-12 yrs population affected (000)*	*General population affected (000)*
Senegal	1996-97	Region	1054	45	Moderate	75.7	1437	7460
Serbia & Montenegro	1998-99	Region	1515	158	Optimal	20.8	203	2191
Seychelles	No data	—	—	—	—	—	—	—
Sierra Leone	No data	—	—	—	—	—	—	—
Singapore	No data	—	—	—	—	—	—	—
Slovakia	2002	National	1744	183	Optimal	15.0	74	810
Slovenia	No data	—	—	—	—	—	—	—
Solomon Islands	No data	—	—	—	—	—	—	—
Somalia	No data	—	—	—	—	—	—	—
South Africa	1998	National	8254	177	Optimal	29.0	2050	12980
Spain	1995, 2000, 2000P, 2001P, 2002P	Regional, province	3154	109	Optimal	50.1	1383	20898
Sri Lanka	2000-01	National	2630	145	Optimal	30.6	684	5786
Sudan	1997	National	3544	75	Mild	62.0	3594	20385
Suriname	No data							
Swaziland	1998	Local	170	170	Optimal	34.5	73	369
Sweden	No data							
Switzerland	1999	National	600	115	Optimal	39.5	228	2833
Syrian Arab Republic	No data	—	—	—	—	—	—	—
Tajikistan	No data	—	—	—	—	—	—	—
Thailand	2000	National	3557i	150	Optimal	34.9	2588	21705
TFYR Macedonia	2002	National	1216	199	Optimal	11.8	25	241
Timor Leste	No data	—	—	—	—	—	—	—
Togo	1999	Local	381	116	Optimal	42.8	397	2055
Tonga	No data	—	—	—	—	—	—	—
Trinidad & Tobago	No data	—	—	—	—	—	—	—
Tunisia	1996-97	National	94	164	Optimal	26.4	360	2568
Turkey	1997-99	National	5948	36	Moderate	74.6	7549	52457
Turkmenistan	1999	Local	65	64	Mild	65.6	539	3145
Tuvalu	No data							
Uganda	1999	National	293	310	Excessive	11.9	622	2975
Ukraine	1991-96, 1996-99	Local	3506	50	Mild	70.1	2884	34280
United Arab	1994	Region	258	91	Mild	56.6	205	1662
United Kingdom	No data							
United Republic of Tanzania	1996	State	586	127	Optimal	37.7	2745	13676
United States of America	1988-94	National	3058	237	Optimal	9.5	2811	27649
Uruguay	No data	—	—	—	—	—	—	—

Country	*Date of survey (yrs)*	*Level of survey*	*Sample size*[a]	*Median UI (µg/l)*	*Severity of iodine deficiency/ iodine nutrition*	*Proportion of population with UI < 100 µg/l %*	*6-12 yrs population affected (000)*	*General population affected (000)*
Uzbekistan	1998	National	800	36	Moderate	97.4	4204	25037
Vanuatu	No data	—	—	—	—	—	—	—
Venezuela	2000, 2001	State	1040	286	Optimal	0.0	0	0
Vietnam	1993	National	3062	40	Moderate	84.0	10517	67434
Yemen	1998	National	974	173	Optimal	30.2	1228	5833
Zambia	1993	National	2505	60	Mild	72.0	1567	7703
Zimbabwe	1999	National	847	245	Optimal	14.8	378	1900

Notes: (P) published
(NS) not specified
[a] samples consist of school-age children unless otherwise indicated
[b] children 0-5 yrs
[c] children <5 yrs and women
[d] general population
[e] adults
[f] school-age children and women
[g] elderly
[h] women
[i] pregnant women
[1] 1993-93, 1995, 1996, 1996P, 1997, 1997P, 1998, 1998P, 1999, 2000P, 2001P, 2001, 2002
[2]1992-1994, 1993-1995, 1994P, 1997P, 1998P, 1999P

Source: *1*

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ANNEX 8 VITAMIN A DEFICIENCY UPDATE[46]

Vitamin A is an essential micronutrient for the normal functioning of the visual system, growth and development, maintenance of epithelial cellular integrity, immune function, and reproduction.

ASSESSING VITAMIN A DEFICIENCY

Comprehensive recommendations for the assessment and control of vitamin A deficiency (VAD) have recently been reviewed and revised by the International Vitamin A Consultative Group (Sommer, Davidson 2002). These recommendations include standardized definitions of VAD and VAD disorders:

- *VAD: state of inadequate vitamin A nutriture.* VAD is defined as liver stores below 20 µg/g (0.07 µmol/g) of retinol. Serum retinal levels may still be within the homostatically regulated normal range. By convention, serum retinol levels <20 µg/dL (0.70 µmol/L) are considered deficient.
- *VAD disorders: physiologic disturbances secondary to VAD.* VAD disorders are defined as any health and physiologic consequences attributable to VAD, whether clinically evident (e.g. xerophthalmia, anaemia, growth retardation, increased infectious morbidity and mortality) or not (e.g. impaired iron mobilization, disturbed cellular differentiation and depressed immune response).
- *Xerophthalmia: clinically evident ocular manifestations of VAD.* These include night blindness (XN) through corneal ulceration and keratomalacia (X3).

POPULATION ASSESSMENT

Table 1 shows the updated prevalence criteria indicating significant vitamin A deficiency within a defined population. A maternal history of night blindness during a recent pregnancy was added to the clinical criteria for assessing vitamin A status of a population, and the serum retinol criterion for a "public health problem" was revised to 15% or more of children sampled having levels of <20 µg/dL (0.7 µmol/L).

MAGNITUDE OF THE PROBLEM

Extrapolations from the best available data suggest that 140 million preschool-aged children and more than 7 million pregnant women suffer from VAD every year; 1.2 to 3 million children and significant numbers of women die unnecessarily, and another 4.4 million children and 6.2 million women suffer from xerophtalmia (West 2002). Nearly half of all VAD and xerophtalmia occurs in South and Southeast Asia. Tables 2 and 3 show country level estimates for vitamin A deficiency among preschool children and pregnant women, respectively.

PREVENTION AND CONTROL

A majority of countries where vitamin A deficiency is known to be a public health problem have introduced policies supporting regular supplementation of children. Supplementation coverage has increased significantly in the last few years, spurred on by the linkage of supplementation to the introduction of National Immunization Days (NIDs) in the mid-1990s. However, maximizing vitamin A's impact on child survival requires at least twice-yearly supplementation, with NIDs providing only one round. Significant effort has been invested in instituting delivery mechanisms for a second round. As countries eradicate polio and phase out NIDs altogether, the successful implementation of these alternative distribution mechanisms becomes even more important. Africa in particular faces substantial challenges to sustaining high levels of coverage after NIDs are phased out (IVACG 2003). Table 4 shows coverage in children ages 6-59 months who have received at least one high dose of vitamin A.

TABLE 1 PREVALENCE CRITERIA INDICATING SIGNIFICANT VAD WITHIN A DEFINED POPULATION

Criteria	*Prevalence (%)*
Clinical	
Children 2–5 years old	
Night blindness (XN)	>1.0
Bitot's spots (X1B)	>0.5
Corneal xerosis (X2) and corneal ulcers (X3)	>0.01
Corneal scars (XS)	>0.05
Women of childbearing age	
XN during recent pregnancy	>5.0
Biochemical	
Serum retinol <0.70 µmol/L 20 µg/dL)	>15

Source: 1

[46] This annex is excerpted from two papers published in *The Journal of Nutrition* as Proceedings of the XX International Vitamin A Consultative Group Meeting. Kind permission from the authors and *The Journal of Nutrition* has been given. New guidelines for assessing vitamin A deficiency is presented in the paper by Sommer and Davison (2002). The most recent updates on the extent of vitamin A deficiency among preschool children and women are presented in the paper by West (2002). WHO is currently preparing an online global database on vitamin A expected to be ready in 2004.

Table 2 Global prevalence of preschool child vitamin A deficiency and xerophthalmia, with numbers of cases, by region and selected country[a]

Region & country	Population <5 yrs (x10³)	Vitamin A deficient [b]		Xerophthalmia	
		%	No. of cases (x10³)	%	No. of cases (x10³)
Africa	103,934	32.1	33,406	1.53	1,592
Ethiopia	11,032	61.2	6,752	4.80	530
Kenya	4,462	40.6	1,812	2.00	89
Nigeria	17,880	28.1	5,024	1.00	179
Senegal	1,596	34.5	551	0.36	6
South Africa	4,909	33.3	1,635	1.60	79
Other countries[c]	64,055	27.5	17,632	1.11	710
Eastern Mediterranean	59,818	21.2	12,664	0.85	510
Egypt	8,081	11.9	962	0.32	26
Morocco	3,215	25.5	820	0.16	15
Pakistan	23,793	24.0	5,710	0.24	57
Sudan	4,162	23.8	991	1.74	72
Other countries[c]	20,567	20.3	4,181	1.65	340
South & Southeast Asia	169,009	33.0	55,812	1.20	2,026
Bangladesh	15,120	30.8	4,649	0.62	94
India	114,976	30.8	35,355	1.56	1,790
Indonesia	22,006	57.5	12,653	0.34	75
Nepal	3,485	34.9	1,216	0.60	21
Sri Lanka	1,597	35.3	564	1.60	26
Other countries[c]	11,825	11.6	1,375	0.17	20
Western Pacific	122,006	14.0	17,128	0.18	220
China	97,793	11.7	11,442	0.17	170
Philippines	9,800	38.0	3,724	0.07	7
Viet Nam	8,454	11.8	998	0.20	17
Other countries[c]	5,959	16.2	964	0.44	26
Region of the Americas	47,575	17.3	8,218	0.16	75
Brazil	15,993	13.7	2,187	0.13	20
Guatemala	1,816	13.4	244	0.00	0
Peru	2,898	13.0	377	0.00	0
Other countries[c]	26,868	20.1	5,410	0.20	55
European Region					
Macedonia	152	29.5	45	0	0
Total	502,494	25.3	127,273	0.88	4,424

Notes: [a] Table excludes countries classified in the WHO's *World Health Report 2000* as being low in risk of child and adult mortality in each region and for which no prevalence data on preschool child vitamin A deficiency or xerophthalmia exist.
[b] Defined by serum retinol <0.70 µmol/L or, occasionally, abnormal conjunctival impression cytology.
[c] Additional country references are located at http://www.jhsph.edu/CHN/GlobalVAD.html.

Source: *2*

TABLE 3 GLOBAL PREVALENCE OF MATERNAL VITAMIN A DEFICIENCY AND NIGHT BLINDNESS, WITH NUMBERS OF CASES, BY REGION AND SELECTED COUNTRY[a]

Region & country	Live births per year (x10³)	Serum/breastmilk concentration <0.70 umol/L %	Serum/breastmilk concentration <0.70 umol/L No. of cases (x10³)	Serum/breastmilk concentration <1.05umol/L %	Serum/breastmilk concentration <1.05umol/L No. of cases (x10³)	Night blindness %	Night blindness No. of cases (x10³)
Africa	24,425	10.0	2,452.58	22.0	5,382.72	4.4	1,075.33
Ethiopia	2,699	9.4	253.71	20.4	550.60	16.0	430.76
Kenya	992	9.1	89.88	23.3	230.94	2.2	21.43
Nigeria	4,176	4.7	196.27	10.2	425.95	2.4	100.22
Senegal	364	5.8	21.18	30.6	111.38	2.2	7.86
South Africa	1,055	9.6	100.86	24.4	257.84	2.2	22.79
Other countries[b]	15,139	11.8	1,790.68	25.1	3,806.01	3.3	492.27
Eastern Mediterranean	12,003	7.8	938.35	17.5	2,094.15	3.2	383.79
Egypt	1,720	10.2	175.44	20.4	350.88	9.4	161.68
Morocco	703	12.5	87.88	46.3	325.40	2.2	15.18
Pakistan	5,349	6.4	343.41	12.8	686.81	2.2	115.54
Sudan	944	2.4	22.66	6.4	60.42	2.2	20.39
Other countries[b]	3,287	9.4	308.98	20.4	670.55	2.2	71.00
South & Southeast Asia	36,212	6.2	2,251.39	24.3	8,797.18	10.9	3,939.58
Bangladesh	3,504	6.0	210.24	22.5	788.40	12.8	448.51
India	24,480	4.8	1,175.47	22.8	5,583.49	12.1	2,968.17
Indonesia	4,608	10.2	470.02	34.2	1,575.94	6.5	297.22
Nepal	786	31.5	247.59	54.0	424.44	16.7	131.26
Sri Lanka	328	11.6	37.88	27.0	88.56	3.7	12.14
Other countries[b]	2,497	4.4	110.19	13.5	336.35	3.1	78.29
Western Pacific	24,806	5.0	1,239.52	10.9	2,702.33	1.9	466.84
China	19,821	2.0	396.42	4.0	792.94	1.0	198.21
Philippines	2,064	22.2	458.21	44.4	916.42	8.6	177.50
Viet Nam	1,654	15.0	248.10	43.5	719.49	0.7	11.16
Other countries[b]	1,267	10.8	136.79	21.6	273.59	6.3	79.96
Region of the Americas	9,967	3.8	374.78	8.0	799.26	3.8	376.00
Brazil	3,344	2.5	83.60	5.0	167.20	3.7	124.90
Guatemala	399	5.3	20.95	11.3	44.89	1.9	7.45
Peru	610	4.2	25.62	9.0	54.90	7.6	46.38
Other countries[b]	5,614	4.4	244.61	9.5	532.27	3.5	197.27
Total	107,413	6.8	7,256.63	18.4	19,775.63	5.8	6,232.54

Notes: [a] Table excludes countries classified in the WHO's *World Health Report 2000* as being low in risk of child and adult mortality in each region and for which no prevalence data on maternal vitamin A deficiency or night blindness exist.
[b] Additional country references can be located at http://www.jhsph.edu/CHN/GlobalVAD.html.

Source: *2*

TABLE 4 Percentage of children aged 6 to 59 months who have received at least one high dose of vitamin A capsules in 2001

Countries & territories	*Vitamin A supplementation coverage rate (6-59 months) in 2001*
Afghanistan[a]	84
Albania	-
Algeria	-
Andorra	-
Angola	75
Antigua & Barbuda	-
Argentina	-
Armenia	-
Australia	-
Austria	-
Azerbaijan	-
Bahamas	-
Bahrain	-
Bangladesh[a]	90
Barbados	-
Belarus	-
Belgium	-
Belize	-
Benin	95
Bhutan	-
Bolivia	31
Bosnia & Herzegovina	-
Botswana	85
Brazil	-
Brunei Darussalam	-
Bulgaria	-
Burkina Faso	97
Burundi	95
Cambodia	57
Cameroon	100
Canada	-
Cape Verde	-
Central African Republic	90
Chad[a]	91
Chile	-
China	-
Colombia	-
Comoros	-
Congo	100
Congo, Democratic Republic of the	98
Cook Islands	-
Costa Rica	-
Côte d'Ivoire	97
Croatia	-
Cuba	-
Cyprus	-
Czech Republic	-
Denmark	-
Djibouti	91
Dominica	-
Dominican Republic	35
Ecuador	50
Egypt	-
El Salvador	-
Equatorial Guinea	-
Eritrea	61
Estonia	-
Ethiopia	16
Fiji	-
Finland	-
France	-
Gabon	89
Gambia	91
Georgia	-
Germany	-
Ghana[a]	100
Greece	-
Grenada	-
Guatemala	-
Guinea	93
Guinea-Bissau	100
Guyana	-
Haiti	-
Holy See	-
Honduras	62
Hungary	-
Iceland	-

Countries and territories	*Vitamin A supplementation coverage rate (6-59 months) in 2001*
India	25
Indonesia	61
Iran, Islamic Republic of	-
Iraq	-
Ireland	-
Israel	-
Italy	-
Jamaica	-
Japan	-
Jordan	-
Kazakhstan	-
Kenya	90
Kiribati	-
Korea, Democratic People's Republic of[a]	99
Korea, Republic of	-
Kuwait	-
Kyrgyzstan	-
Lao People's Democratic Republic[a]	70
Latvia	-
Lebanon	-
Lesotho	-
Liberia[a]	100
Libyan Arab Jamahiriya	-
Liechtenstein	-
Lithuania	-
Luxembourg	-
Madagascar	73
Malawi	63
Malaysia	-
Maldives	-
Mali	74
Malta	-
Marshall Islands	51
Mauritania	98
Mauritius	-
Mexico	-
Micronesia, Federated States of	71
Moldova, Republic of	-
Monaco	-
Mongolia	93
Morocco	-
Mozambique	71
Myanmar[a]	97
Namibia	84
Nauru	-
Nepal[a]	98
Netherlands	-
New Zealand	-
Nicaragua	-
Niger[a]	89
Nigeria	77
Niue	-
Norway	-
Occupied Palestinian Territory	-
Oman	-
Pakistan[a]	100
Palau	-
Panama	-
Papua New Guinea	-
Paraguay	-
Peru	6
Philippines[a]	84
Poland	-
Portugal	-
Qatar	-
Romania	-
Russian Federation	-
Rwanda	94
Saint Kitts & Nevis	-
Saint Lucia	-
Saint Vincent & Grenadines	-
Samoa	-
San Marino	-
Sao Tome & Principe	-
Saudi Arabia	-
Senegal[a]	85

Countries and territories	*Vitamin A supplementation coverage rate (6-59 months) in 2001*
Serbia & Montenegro	-
Seychelles	-
Sierra Leone[a]	91
Singapore	-
Slovakia	-
Slovenia	-
Solomon Islands	-
Somalia	62
South Africa	-
Spain	-
Sri Lanka	-
Sudan[a]	92
Suriname	-
Swaziland	-
Sweden	-
Switzerland	-
Syrian Arab Republic	-
Tajikistan	-
Tanzania, United Republic of[a]	93
Thailand	-
The former Yugoslav Republic of Macedonia	-
Timor-Leste	-
Togo	77
Tonga	-
Trinidad & Tobago	-
Tunisia	-
Turkey	-
Turkmenistan	-
Tuvalu	-
Uganda	37
Ukraine	-
United Arab Emirates	-
United Kingdom	-
United States	-
Uruguay	-
Uzbekistan	-
Vanuatu	-
Venezuela	-
Viet Nam	59
Yemen	100
Zambia[a]	83
Zimbabwe	-
Regional summaries	
Sub-Saharan Africa	75
Middle East and North Africa	-
South Asia	46
East Asia and Pacific	-
Latin America and Caribbean	-
CEE/CIS and Baltic States	-
Industrialized countries	-
Developing countries	59
Least developed countries	78
World	59

Notes: (-) Data not available.
[a] Identifies countries that have achieved a second round of vitamin A coverage greater than or equal to 70%.
Source: *4*

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Annex 9
Low birthweight

Table 1 Percent of infants with low birthweight,[a] 1998-2002

Countries & territories	*% of infants with low birthweight[b]*
Afghanistan	-
Albania	3
Algeria	7
Andorra	-
Angola	12
Antigua & Barbuda	8
Argentina	7
Armenia	7
Australia	7
Austria	7
Azerbaijan	11
Bahamas	7
Bahrain	8
Bangladesh	30
Barbados	10
Belarus	5
Belgium	8
Belize	6
Benin	16
Bhutan	15
Bolivia	9
Bosnia & Herzegovina	4
Botswana	10
Brazil	10
Brunei Darussalam	10
Bulgaria	10
Burkina Faso	19
Burundi	16
Cambodia	11
Cameroon	11

Countries & territories	*% of infants with low birthweight*
Canada	6
Cape Verde	13
Central African Republic	14
Chad	17
Chile	5
China	6
Colombia	9
Comoros	25
Congo	-
Congo, Democratic Republic of the	12
Cook Islands	3
Costa Rica	7
Côte d'Ivoire	17
Croatia	6
Cuba	6
Cyprus	-
Czech Republic	7
Denmark	5
Djibouti	-
Dominica	10
Dominican Republic	14
Ecuador	16
Egypt	12
El Salvador	13
Equatorial Guinea	13
Eritrea	21
Estonia	4
Ethiopia	15
Fiji	10
Finland	4

Countries & territories	*% of infants with low birthweight*
France	7
Gabon	14
Gambia	17
Georgia	6
Germany	7
Ghana	11
Greece	8
Grenada	9
Guatemala	13
Guinea	12
Guinea-Bissau	22
Guyana	12
Haiti	21
Holy See	-
Honduras	14
Hungary	9
Iceland	4
India	30
Indonesia	10
Iran (Islamic Republic of)	7
Iraq	15
Ireland	6
Israel	8
Italy	6
Jamaica	9
Japan	8
Jordan	10
Kazakhstan	8
Kenya	11
Kiribati	5
Korea, Democratic People's Republic of	7
Korea, Republic of	4
Kuwait	7
Kyrgyzstan	7
Lao People's Democratic Republic	14
Latvia	5
Lebanon	6
Lesotho	14
Liberia	-
Libyan Arab Jamahiriya	7
Liechtenstein	-
Lithuania	4
Luxembourg	8
Madagascar	14
Malawi	16
Malaysia	10
Maldives	22
Mali	23
Malta	6
Marshall Islands	12
Mauritania	42
Mauritius	13
Mexico	9
Micronesia (Federated States of)	18
Moldova, Republic of	5
Monaco	-
Mongolia	8
Morocco	11
Mozambique	14
Myanmar	15
Namibia	16
Nauru	-
Nepal	21
Netherlands	-
New Zealand	6
Nicaragua	13
Niger	17
Nigeria	12
Niue	0
Norway	5
Occupied Palestinian Territory	9
Oman	8
Pakistan	19
Palau	9
Panama	10
Papua New Guinea	11
Paraguay	9
Peru	11
Philippines	20
Poland	6
Portugal	8
Qatar	10
Romania	9
Russian Federation	6

Countries & territories	% of infants with low birthweight
Rwanda	9
Saint Kitts & Nevis	9
Saint Lucia	8
Saint Vincent and Grenadines	10
Samoa	4
San Marino	-
Sao Tome & Principe	-
Saudi Arabia	11
Senegal	18
Serbia & Montenegro	4
Seychelles	-
Sierra Leone	-
Singapore	8
Slovakia	7
Slovenia	6
Solomon Islands	13
Somalia	-
South Africa	15
Spain	6
Sri Lanka	22
Sudan	31
Suriname	13
Swaziland	9
Sweden	4
Switzerland	6
Syrian Arab Republic	6
Tajikistan	15
Tanzania, United Republic of	13
Thailand	9
The former Yugoslav Republic of Macedonia	5
Timor Leste	10
Togo	15
Tonga	0
Trinidad & Tobago	23
Tunisia	7
Turkey	16
Turkmenistan	6
Tuvalu	5
Uganda	12
Ukraine	5
United Arab Emirates	15
United Kingdom	8
United States	8
Uruguay	8
Uzbekistan	7
Vanuatu	6
Venezuela	7
Viet Nam	9
Yemen	32
Zambia	10
Zimbabwe	11
Regional summaries	
Sub-Saharan Africa	14
Middle East & North Africa	15
South Asia	30
East Asia & Pacific	8
Latin America & Caribbean	10
CEE/CIS & Baltic States	9
Industrialized countries	7
Developing countries	17
Least developed countries	18
World	16

Notes: [a] Defined as less than 2500 grams (up to and including 2499 grams). National estimates of low birthweight incidence were arrived at using six methods to analyze national household surveys and routine government reporting. Methodology is explained in UNICEF/WHO (forthcoming) *Low Birthweight in 2000. Country, Regional and Global Estimates Developed by UNICEF and WHO*. These estimates should be regarded as the best possible on the basis of available information and should be seen as indicating orders of magnitude rather than as precise figures. Given the different methods used, caution should be exercised in comparing across countries. These estimates may differ from countries' own official estimates.

[b] Data refer to the most recent year available during the period specified.

Source: UNICEF (2004) *The State of the World's Children: Girls, Education and Development*. UNICEF, New York.

Annex 10 Breastfeeding practices

Table 1 Breastfeeding and complementary feeding practices

Countries & territories	*% of children (1995-2002[a])*		
	exclusively breastfed	*breastfed with complementary food*	*still breastfeeding*
	(<6 months)	*(6-9 months)*	*(20-23 months)*
Afghanistan	-	-	-
Albania	6	24	6
Algeria	13	38	22
Andorra	-	-	-
Angola	11	77	37
Antigua & Barbuda	-	-	-
Argentina	-	-	-
Armenia	30	51	13
Australia	-	-	-
Austria	-	-	-
Azerbaijan	7	39	16
Bahamas	-	-	-
Bahrain	34	65	41
Bangladesh	46	78	87
Barbados	-	-	-
Belarus	-	-	-
Belgium	-	-	-
Belize	24	54	23
Benin	38	66	62
Bhutan	-	-	-
Bolivia	39	76	36
Bosnia & Herzegovina	6	-	-
Botswana	34	57	11
Brazil	42	30	17
Brunei Darussalam	-	-	-
Bulgaria	-	-	-
Burkina Faso	6	49	87
Burundi	62	46	85
Cambodia	12	72	59
Cameroon	12	72	29
Canada	-	-	-

Countries & territories	*% of children (1995-2002[a])*		
	exclusively breastfed	*breastfed with complementary food*	*still breastfeeding*
	(<6 months)	*(6-9 months)*	*(20-23 months)*
Cape Verde	57	64	13
Central African Republic	17	77	53
Chad	10	68	51
Chile	73	-	-
China	67	-	-
Colombia	32	58	25
Comoros	21	34	45
Congo	4	94	13
Congo, Democratic Republic of the	24	79	52
Cook Islands	19	-	-
Costa Rica	35	47	12
Côte d'Ivoire	10	54	42
Croatia	23	-	-
Cuba	41	42	9
Cyprus	-	-	-
Czech Republic	-	-	-
Denmark	-	-	-
Djibouti	-	-	-
Dominica	-	-	-
Dominican Republic	11	26	6
Ecuador	29	52	34
Egypt	57	71	30
El Salvador	16	77	40
Equatorial Guinea	24	-	-
Eritrea	52	43	62
Estonia	-	-	-
Ethiopia	55	43	77
Fiji	47	-	-
Finland	-	-	-
France	-	-	-
Gabon	6	62	9
Gambia	26	37	54
Georgia	18	12	12
Germany	-	-	-
Ghana	31	70	57
Greece	-	-	-
Grenada	39	-	-
Guatemala	39	76	45
Guinea	11	28	73
Guinea-Bissau	37	36	67
Guyana	11	42	31

Countries & territories	*% of children (1995-2002[a])*		
	exclusively breastfed (<6 months)	*breastfed with complementary food (6-9 months)*	*still breastfeeding (20-23 months)*
Haiti	24	73	30
Holy See	-	-	-
Honduras	35	61	34
Hungary	-	-	-
Iceland	-	-	-
India	37	44	66
Indonesia	42	81	65
Iran (Islamic Republic of)	44	-	0
Iraq	12	51	27
Ireland	-	-	-
Israel	-	-	-
Italy	-	-	-
Jamaica	-	-	-
Japan	-	-	-
Jordan	34	70	12
Kazakhstan	36	73	17
Kenya	5	67	24
Kiribati	80	-	-
Korea, Democratic People's Republic of	97	-	-
Korea, Republic of	-	-	-
Kuwait	12	26	9
Kyrgyzstan	24	77	21
Lao People's Democratic Republic	23	10	47
Latvia	-	-	-
Lebanon	27	35	11
Lesotho	15	51	58
Liberia	35	70	45
Libyan Arab Jamahiriya	-	-	23
Liechtenstein	-	-	-
Lithuania	-	-	-
Luxembourg	-	-	-
Madagascar	41	82	43
Malawi	44	93	77
Malaysia	29	-	12
Maldives	10	85	-
Mali	38	66	62
Malta	-	-	-
Marshall Islands	63	-	-
Mauritania	20	78	57
Mauritius	16	29	-

Countries & territories	*% of children (1995-2002[a])*		
	exclusively breastfed (<6 months)	*breastfed with complementary food (6-9 months)*	*still breastfeeding (20-23 months)*
Mexico	38	36	21
Micronesia, Federated States of	60	-	-
Moldova, Republic of	-	-	-
Monaco	-	-	-
Mongolia	51	55	57
Morocco	66	53	21
Mozambique	30	87	58
Myanmar	11	67	67
Namibia	26	-	-
Nauru	-	-	-
Nepal	69	66	92
Netherlands	-	-	-
New Zealand	-	-	-
Nicaragua	31	68	39
Niger	1	56	61
Nigeria	17	63	35
Niue	-	-	-
Norway	-	-	-
Occupied Palestinian Territory	29	78	11
Oman	-	92	73
Pakistan	16	31	56
Palau	59	-	-
Panama	25	38	21
Papua New Guinea	59	74	66
Paraguay	7	59	15
Peru	71	76	49
Philippines	37	57	23
Poland	-	-	-
Portugal	-	-	-
Qatar	12	48	21
Romania	-	-	-
Russian Federation	-	-	-
Rwanda	84	79	71
Saint Kitts & Nevis	56	-	-
Saint Lucia	-	-	-
Saint Vincent & Grenadines	-	-	-
Samoa	-	-	-
San Marino	-	-	-
Sao Tome & Principe	56	53	42
Saudi Arabia	31	60	30
Senegal	24	64	49

Countries & territories	*% of children (1995-2002[a])*		
	exclusively breastfed	*breastfed with complementary food*	*still breastfeeding*
	(<6 months)	*(6-9 months)*	*(20-23 months)*
Serbia & Montenegro	11	33	11
Seychelles	-	-	-
Sierra Leone	4	51	53
Singapore	-	-	-
Slovakia	-	-	-
Slovenia	-	-	-
Solomon Islands	65	-	-
Somalia	9	13	8
South Africa	7	67	30
Spain	-	-	-
Sri Lanka	54	-	62
Sudan	16	47	40
Suriname	9	25	11
Swaziland	24	60	25
Sweden	-	-	-
Switzerland	-	-	-
Syrian Arab Republic	81	50	6
Tajikistan	14	35	35
Tanzania, United Republic of	32	64	48
Thailand	4	71	27
TFYR of Macedonia	37	8	10
Timor Leste	44	63	10
Togo	18	65	65
Tonga	62	-	-
Trinidad & Tobago	2	19	10
Tunisia	46	-	22
Turkey	7	34	21
Turkmenistan	13	71	27
Tuvalu	-	-	-
Uganda	65	75	50
Ukraine	22	-	-
United Arab Emirates	34	52	29
United Kingdom	-	-	-
United States	-	-	-
Uruguay	-	-	-
Uzbekistan	16	45	36
Vanuatu	50	-	-
Venezuela	7	50	31
Viet Nam	31	29	20
Yemen	18	79	41
Zambia	40	87	58
Zimbabwe	33	90	35

Countries & territories	*% of children (1995-2002[a])*		
	exclusively breastfed (<6 months)	*breastfed with complementary food* (6-9 months)	*still breastfeeding* (20-23 months)
Regional summaries			
Sub-Saharan Africa	28	65	50
Middle East & North Africa	37	59	25
South Asia	36	46	67
East Asia & Pacific	54	-	-
Latin America & Caribbean	38	48	25
CEE/CIS & Baltic States	14	41	23
Industrialized countries	-	-	-
Developing countries	39	55	51
Least developed countries	35	66	63
World	39	55	51

Notes: (-) Data not available.
[a] Data refer to the most recent year available during the period specified in the column heading. Main data sources are DHS, MICS and UNICEF.
Source: *1*

TABLE 2 TRENDS IN THE MEDIAN DURATION OF BREASTFEEDING[a]

Region, country & year	Median duration (months)
Sub-Saharan Africa	
Benin 1996	23
Benin 2001	22
Burkina Faso 1992/93	25
Burkina Faso 1998/99	26
Cameroon 1991	17
Cameroon 1998	18
Cote d'Ivoire 1994	20
Cote d'Ivoire 1998/99	21
Ghana 1988	21
Ghana 1993	21
Ghana 1998	22
Kenya 1989	20
Kenya 1993	21
Kenya 1998	21
Madagascar 1992	20
Madagascar 1997	21
Malawi 1992	21
Malawi 2000	24
Mali 1987	18
Mali 1995/96	22
Mali 2001	23
Niger 1992	21
Niger 1998	21
Nigeria 1990	20
Nigeria 1999	18
Rwanda 1992	28
Rwanda 2000	31
Senegal 1986	19
Senegal 1992/93	20
Senegal 1997	21
Tanzania 1992	22
Tanzania 1996	22
Tanzania 1999	21
Togo 1988	22
Togo 1998	24
Uganda 1988	19
Uganda 1995	20
Uganda 2000/01	21
Zambia 1992	19
Zambia 1996	20
Zambia 2001/02	22
Zimbabwe 1988	19
Zimbabwe 1994	19
Zimbabwe 1999	20
North Africa/West Asia/Europe	
Egypt 1988	19
Egypt 1992	19
Egypt 1995	19
Egypt 2000	19
Jordan 1990	13
Jordan 1997	12
Morocco 1987	15
Morocco 1992	16
Turkey 1993	12
Turkey 1998	12
Yemen 1991/92	16
Yemen 1997	18
Central Asia	
Kazakhstan 1995	14

Region, country & year	*Median duration (months)*
Kazakhstan 1999	15
South & Southeast Asia	
India 1992/93	24
India 1998/99	25
Indonesia 1987	22
Indonesia 1991	23
Indonesia 1994	24
Indonesia 1997	24
Philippines 1993	14
Philippines 1998	13
Latin America & Caribbean	
Bolivia 1989	16
Bolivia 1994	18
Bolivia 1998	18
Brazil 1986	5
Brazil 1996	7
Colombia 1986	8
Colombia 1990	9
Colombia 1995	11
Colombia 2000	13
Dominican Republic 1986	7
Dominican Republic 1991	6
Dominican Republic 1996	8
Dominican Republic 1999	6
Guatemala 1987	21
Guatemala 1995	20
Guatemala 1998/99	20
Haiti 1994/95	18
Haiti 2000	18
Peru 1986	15
Peru 1992	17
Peru 1996	20
Peru 2000	21

Note: [a] Table 2 presents data from countries where datasets from more than one national survey has been conducted with help from DHS. It shows median duration (in months) of any breastfeeding among children less than three years of age. Median duration is based on current status.

Source: *2*

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ANNEX 11 MATERNAL NUTRITIONAL STATUS BY ANTHROPOMETRIC INDICATOR

Region, country & year	*Women's Body Mass Index (BMI) in kg/ square height in meters*						
	BMI mean	*SD[a]*	*BMI<18.5 (Underweight)*	*18.5<BMI<25.0 (Normal weight)*	*BMI≥25.0 (Overweight)*	*BMI≥30.0 (Obese)*	*No. of women*
Sub-Saharan Africa							
Benin (2001)	22.2	3.9	10.5	73.4	16	4.8	2874
Burkina Faso (1998/99)	20.9	2.6	13.2	81	5.7	0.9	3277
Cameroon (1998)	22.6	3.5	7.9	71.5	20.7	3.2	1658
Central African Republic (1994/95)	21	2.7	15.3	78	6.7	1.1	1921
Chad (1996/97)	20.5	2.7	21	73.8	5.2	0.9	3549
Comoros (1996)	22.4	3.7	10.3	70.5	19.1	4.2	730
Cote d'Ivoire (1998/99)	22.5	3.7	7.4	74.6	18	4.5	1299
Eritrea (1995)	19.5	2.9	40.6	55.2	4.2	0.9	1779
Ethiopia (2000)	19.9	2.2	26	71.6	2.3	0.2	6493
Gabon (2000)	23.5	4.2	6.6	64	29.5	8.2	2190
Ghana (1998)	22.1	4	11.2	72.6	16.1	4.9	1943
Guinea (1999)	21.7	3.4	11.9	76	12.1	2.5	3152
Kenya (1998)	21.9	3.6	11.9	73.2	14.8	2.7	3103
Madagascar (1997)	20.4	2.4	20.6	75.6	3.7	0.4	2604
Malawi (2000)	21.9	2.9	6.5	82.5	11	1.5	6489
Mauritania (2000/01)	25.1	5.7	8.6	48.6	42.7	19.2	2806
Mozambique (1997)	21.6	2.9	10.9	79.6	9.5	1.7	3091
Namibia (1992)	22.6	4.5	13.8	65	21.3	7.3	2121
Niger (1998)	20.7	3	20.7	71.9	7.6	1.6	3324
Nigeria (1999)	22.8	5.5	16.2	61	22.9	7.1	2046
Rwanda (2000)	22.2	2.9	5.9	80.8	13.2	1.4	4096
Togo (1998)	21.6	3.5	10.9	77.8	11.4	2.4	3029
Uganda (2000/01)	21.7	3.1	9.4	79.4	11.2	1.7	3322
Zambia (2001/02)	21.5	3.2	13	76.6	10.3	2.4	3629
Zimbabwe (1999)	23.4	3.9	4.5	69.6	25.9	6.9	2286

Region, country & year	Women's Body Mass Index (BMI) in kg/square height in meters						
	BMI mean	SD[a]	BMI<18.5 (Underweight)	18.5<BMI<25.0 (Normal weight)	BMI≥25.0 (Overweight)	BMI≥30.0 (Obese)	No. of women
North Africa/West Asia/ Europe							
Armenia (2000)	23.8	4.1	5	64.4	30.6	7.3	1088
Egypt (2000)	28.2	5.1	0.6	28.2	71.2	32.4	6751
Jordan (1997)	27.3	5.5	2.3	35.8	61.9	28.2	2923
Morocco (1992)	24.1	4.4	3.9	63.2	32.8	10.6	2747
Turkey (1998)	26	5	2.6	45.2	52.2	18.8	2183
Yemen (1997)	21.2	4.2	25.2	59.7	15.1	4	5479
Central Asia							
Kazakhstan (1999)	22.9	4.7	9.8	67.5	22.8	8.4	510
Kyrgyz Republic (1997)	22.7	3.6	6.2	72.9	20.8	4.4	1238
Turkmenistan (2000)	23	4.5	10.1	66.2	23.8	7.8	2117
Uzbekistan (1996)	22.5	3.7	9.8	71.6	18.5	4.1	1525
South & Southeast Asia							
Bangladesh (1999/2000)	19.3	2.9	45.4	50.1	4.4	0.7	4496
Cambodia (2000)	20.5	2.6	21.2	73	5.8	0.5	2358
India (1998/99)	19.6	3.1	41.2	53.2	5.7	1	30523
Nepal (2001)	20.1	2.5	26.6	69.7	3.7	0.5	4078
Latin America & Caribbean							
Bolivia (1998)	25.3	4	0.9	52.8	46.4	11.2	3857
Brazil (1996)	24	4.4	6.2	58.9	34.8	9.7	2949
Colombia (2000)	24.7	4	3.1	56	40.8	10.5	3070
Guatemala (1998/99)	25	4.4	2	54.1	43.8	12.1	2199
Nicaragua (1997/98)	24.7	4.5	3.8	56	40.2	11.6	4793
Peru (2000)	25.4	3.9	0.7	52	47.4	11.6	8372

Note: [a] standard deviation
Source: *1*

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glossary

Anthropometric index Use of weight and height in conjunction with each other or with reference to age.

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

Burden of disease An indicator that quantifies the loss of healthy life from disease and injury.

Disability Adjusted Life Year (DALY) An indicator developed for the calculation of disease burden which quantifies, in a single indicator, time lost due to premature death with time lived with a disability.

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, which 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, healthy life.

Exclusive breastfeeding An infant is given no food or drink, including water, other than breastmilk (except any medicinal drops or syrups which may be indicated).

Low birthweight (LBW) Defined as a body weight at birth of less than 2500 grams.

Height-for-age Index used to compare a child's height with the expected value of a child of the same age from a reference population. A measure of stunting.

Malnutrition A nutritional disorder or condition resulting from faulty or inadequate nutrition.

Nutrition indicator A measure used at the individual and population level to determine nutritional status.

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.

Overnutrition A situation caused by an excessive, unbalanced intake of nutritional substances (and often reduced physical activity).

Prevalence The proportion of the population that has a condition of interest (e.g. wasting) at a specific point in time.

Stunting Refers to shortness that is a deficit of linear growth which has failed to reach genetic potential as a result of poor diet and disease. Stunting is defined as <-2 standard deviations (SD) of the height-for-age median value of the National Center for Health Statistics/World Health Organization (NCHS/WHO) international reference data.

Undernourishment Food intake that is continuously inadequate to meet dietary energy requirement.

Undernutrition The result of undernourishment, poor absorption or poor biological use of nutrients consumed.

Underweight Low weight-for-age and a composite of stunting and wasting. Underweight is defined as <-2 SD of the weight-for-age median value of the NCHS/WHO international reference data.

Wasting Describes a recent and severe process that has produced a substantial weight loss, usually as a consequence of acute shortage of food and/or disease. Wasting is defined as <-2 SD of the weight-for-height median value of the NCHS/WHO international reference data.

Weight-for-age Index used to compare a child's weight with the expected value of a child of the same age. A measure of underweight.

Weight-for-height Index used to compare a child's weight with the expected value of a child of the same height. A measure of wasting.

Abbreviations

ACC/SCN	Administrative Committee on Coordination, Sub-Committee on Nutrition (of the United Nations) now SCN (Standing Committee on Nutrition
AED	Academy for Educational Development
AfDB	African Development Bank
AIDS	acquired immunodeficiency syndrome
BMI	body mass index
CESCR	Covenant on Economic, Social and Cultural Rights
CIESIN	Center for International Earth Science Information Network
CPR	Covenant on Civil and Political Rights
CRC	Convention on the Rights of the Child
DALYs	disability-adjusted life years
DHS	Demographic and Health Surveys
FANTA	Food and Nutrition Technical Assistance Project
FAO	Food and Agriculture Organization of the United Nations
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
HIPCs	highly indebted poor countries
HIV	human immunodeficiency virus
HSR	health sector reform
IBFAN	International Baby Food Action Network
ICRW	International Center for Research on Women
IDD	iodine deficiency disorders
IFIs	international financial institutions
IFPRI	International Food Policy Research Institute
IMCI	Integrated Management of Childhood Illness
IMF	International Monetary Fund
INACG	International Nutritional Anemia Consultative Group
IUGR	intrauterine growth retardation
LBW	low birthweight
MDGs	Millennium Development Goals
MICS	Multiple Indicator Surveys from UNICEF
MTCT	mother-to-child transmission (of HIV)
NAFTA	North American Free Trade Agreement
PRS	poverty reduction strategy
PRSP	poverty reduction strategy paper
SCN	Standing Committee on Nutrition (of the United Nations System)
TB	tuberculosis
TNCs	transnational corporations
TRIPs	trade-related aspects of intellectual property rights
UDHR	Universal Declaration of Human Rights
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Program
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VAD	vitamin A deficiency
WFP	World Food Program
WTO	World Trade Organization