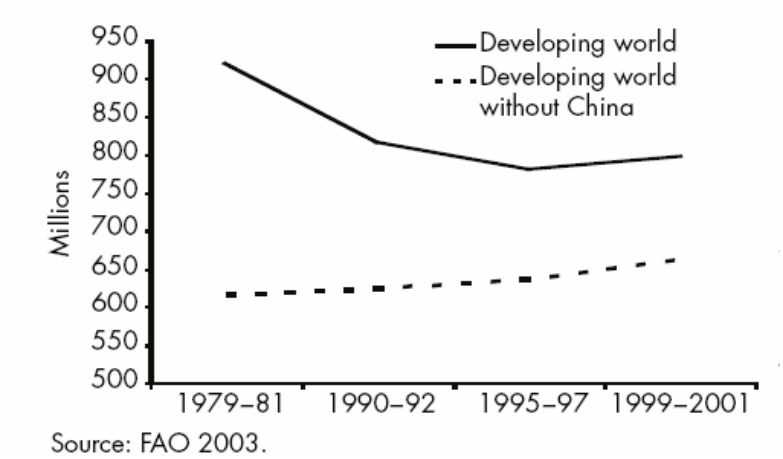
5 FOOD

Over the past two decades, the world has made remarkable progress in increasing food production and reducing food insecurity. The number of food-insecure people in developing countries fell from 920 million in 1980 to 798 million in 2001, while the proportion of people living in food insecurity dropped substantially, from 28% to 17% (Braun, *et al*., 2005). However, progress has slowed considerably since the 1990s and, if China is excluded from consideration, the number of undernourished people in the rest of the developing world increased by 28 million during the course of the decade (see Figure 5-1). In sub-Saharan Africa, the population living in hunger jumped nearly 20%, with 30 million more food-insecure people by the end of the decade.

Figure 5-1 Undernourished people in developing countries, 1980–2001



Source: von Braun, *et al*. 2005

Food consumption, in terms of kcal/person/day, is the key variable used for measuring and evaluating the evolution of the world food situation. The world has made significant progress in raising food consumption per person. It increased from an average of 2360 kcal/person/day in the mid-1960s to 2800 kcal/person/day at present. This growth was accompanied by significant structural change. Diets shifted towards more livestock products and vegetable oils, and away from staples such as roots and tubers. Projections estimate that on average, food consumption will increase to 2940 kcal/person/day in 2015, 3050 kcal/person/day in 2030 and 3070 kcal/person/day in 2050 (Bruinsma, 2003, FAO, 2006).

Significant changes in the number of people living in countries with a given per capita food availability took place before the turn of the century, and are expected to continue to happen (Table 5-1). The number of people living on less than 2200 kcal/day is expected to further decline dramatically. While in the mid-1960s, 57% of the world population was living of less than 2200 kcal/day, this proportion declined to 9.7% at the end of the 20th century and is expected do further decline to 2.4% in 2030 (Bruinsma, 2003).

Table 5-1 Population living in countries with a given per capita food consumption

	1964/66	1974/76	1984/86	1997/99	2015	2030
Kcal/person/day	Population (million)					
Under 2200	1893[a]	2281[a]	558	571	462	196
2200–2500	288	307	1290[b]	1487[b]	541	837
2500–2700	154	141	1337[c]	222	351	352
2700–3000	302	256	306	1134	2397[b]	2451[b]
Over 3000	688	1069	1318	2464[c]	3425[c]	4392[c]
World total	3325	4053	4810	5878	7176	8229

Note: [a] Includes India and China. [b] Includes India. [c] Includes China.
Source: Bruinsma, 2003.

However, not all countries may achieve food consumption levels in accordance with requirements for good nutrition. This may be the case for some of the countries which start with very low consumption (under 2200 kcal/person/day in 1999/01), high rates of undernourishment, high population growth rates, poor prospects for rapid economic growth and often meagre agricultural resources. There are 32 countries in this category, with rates of undernourishment between 29% and 72%, an average of 42% (FAO, 2006).

World agriculture (aggregate value of production, all food and non-food crop and livestock commodities) has been growing at rates of 2.1–2.3% p.a. in the last four decades, with much of the growth originating in developing countries (3.4–3.8% p.a.). The future may see a drastic decline in the growth of aggregate world production, to 1.5% p.a. in the next three decades and on to 0.9% p.a. in the subsequent 20 years to 2050. The slowdown reflects the lower population growth and the gradual attainment of medium-high levels of per capita consumption in a growing number of countries (FAO, 2006).

Increasingly, world agriculture will have to depend on non-food uses of commodities. The biofuel sector may provide some scope, perhaps a significant one, for relaxing the demand constraints represented by declining growth rates in human consumption (FAO, 2006).

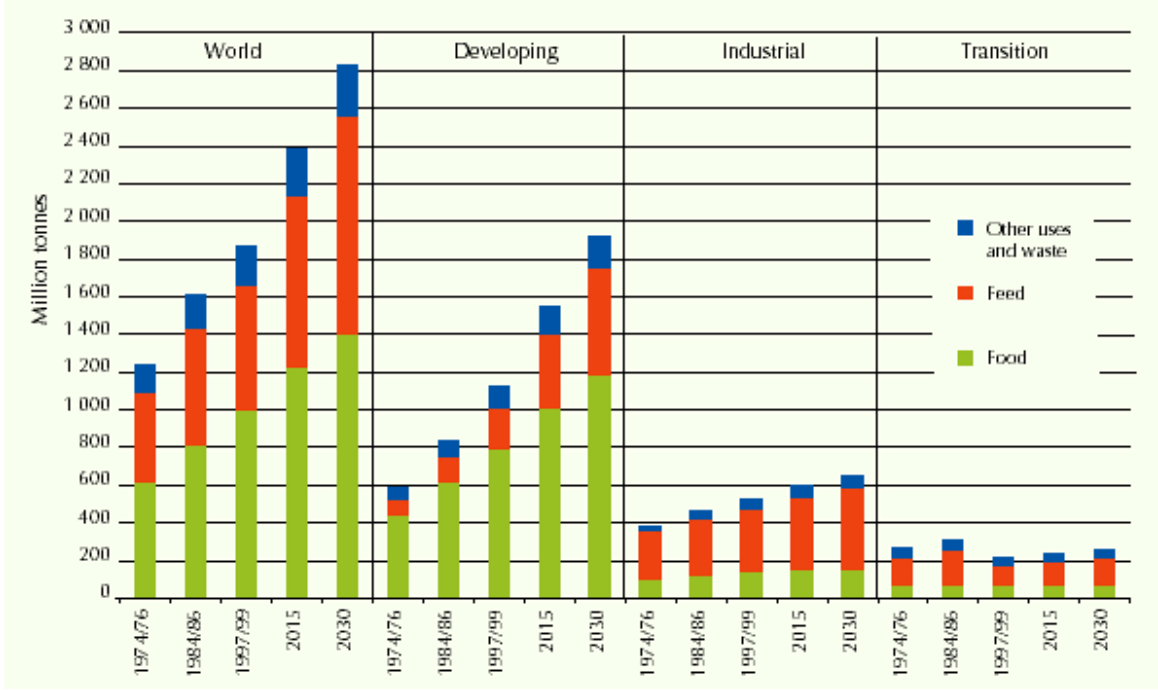
Cereals

The growth rate of world demand for cereals could be higher than in the recent past. This shows up in the projections where the growth rate of world demand for 1997/99–2015 is 1.4% p.a., compared with 1.0% p.a. in the preceding ten years. In the longer term, however, the more fundamental sources of slowdown – slower population growth everywhere, gradually declining income elasticities of food demand for cereals in many countries and the achievement of mid-high levels of per capita consumption in some countries – will predominate and the growth rate of world demand will be lower for the second part of the projection period 2015–30, to 1.2% p.a. (Bruinsma, 2003). Global cereal production is estimated to be 2 billion mt in 2005, and is projected to increase to 3 billion mt by 2050. Achieving this increase by 1 billion mt should not be taken for granted, as land and water resources are more stretched then in the past and the continued growth of yields is more limited (FAO, 2006), see Figure 5-2.

Developing Asia will account for the biggest part of the global increase in cereal demand (344 million tonnes), with China alone accounting for 26% (173 million tonnes). India will account for an additional 12% (78 million tonnes) of worldwide cereal growth and other developing Asian countries will account for 14% (92 million tonnes). Regional production increases will not satisfy rising Asian cereal demand and East Asian demand in particular will exceed production. The only developing region projected to have surplus cereal growth to 2020 is Latin America. Asia's share of world cereal production is predicted to increase 2% to reach 41% by 2020. Meanwhile, sub-Saharan Africa's share will increase from 4 to 5% and Latin America's from 7 to 8%. The share of the developed countries in total cereal production will decline through 2020 (Rosegrant, *et al*., 2002).

At the world level, aggregate consumption of all cereals should increase by 2030 by nearly 1 billion tonnes from the 1.86 billion tonnes of 1997/99. Of this increment, about a half will be for feed, and 42% for food, with the balance going to other uses (seed, industrial non-food and waste). Feed use will be the most dynamic element driving the world cereal economy, in the sense that it will account for an ever-growing share in aggregate demand for cereals. While developing countries will increase the share of cereals used for feed from less than 20% in 1997/99 to 29% in 2030, the majority of cereals consumed is still for food, whereas in industrial countries cereals were already in the 1970s used primarily as feed.

Figure 5-2 Aggregate consumption of cereals, by category of use



Source: Bruinsma, 2003

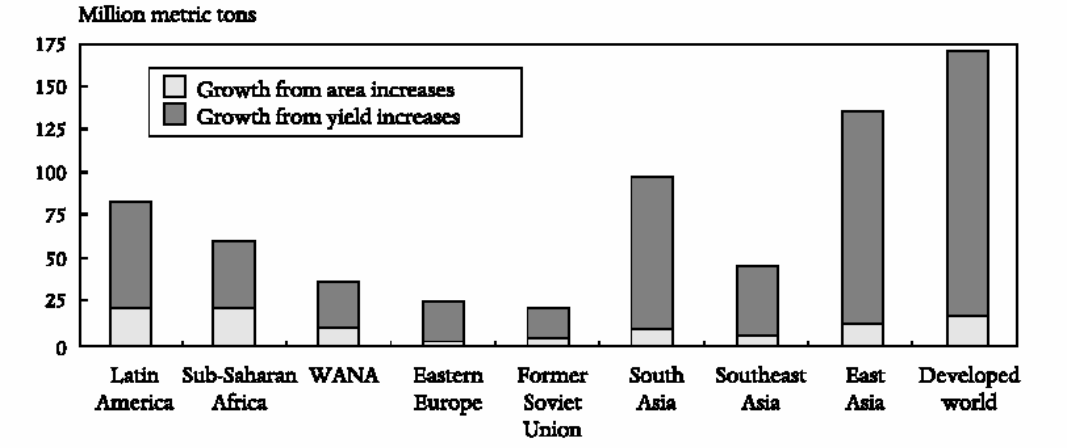
There are three sources of growth in crop production: arable land expansion which, together with increases in cropping intensities (i.e. increasing multiple cropping and shorter fallow periods), leads to an expansion in harvested area; and yield growth. About 80% of the projected growth in crop production in developing countries will come from intensification in the form of yield increases and higher cropping intensities. Arable land expansion will remain an important factor in crop production growth in many countries of sub-Saharan Africa, Latin America and some countries in East Asia, although much less so than in the past (Bruinsma, 2003) and Figure 5-3.

Looking beyond 2030, the growth rate of world consumption and production is expected to fall further in the subsequent 20 years to 0.6% p.a. and the aggregate consumption would rise to just over 3 billion tonnes by 2050. Thus, annual world production must rise by some 800 million tons in the 30 years to 2030 and by another 330 million tonnes in the subsequent two decades. The slowdown in the growth of world consumption is, however, a very mixed blessing. On the positive side we must count the influence of the lower population growth and the gradual approaching of saturation levels in per capita food consumption in a growing number of countries. On the negative side is the prospect that there will still be countries with persistent low overall food consumption levels whose population would consume more if they had access to more food (FAO, 2006).

Despite the importance of yields to overall growth in cereal production, yield growth rates will slow across all cereals and all regions, with the notable exception of sub-Saharan Africa (see Figure 5-4). Increasing intensity of land use – and the high levels of input use already achieved in much of Asia – has led to higher

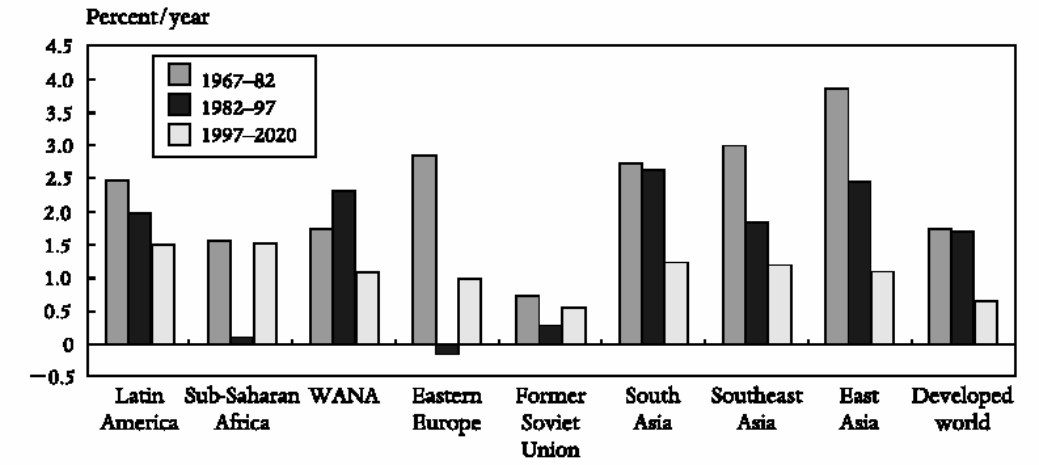
and higher input requirements in order to sustain yields. Public investment in crop research and irrigation infrastructure has also slowed considerably, with consequent effects on yield growth (Rosegrant, *et al*., 2002).

Figure 5-3 Share of area and yield increase in regional cereal production to 2020



Source: IFPRI IMPACT Projections (2002)

Figure 5-4 Yield growth rates by region, all cereals



Source: IFPRI IMPACT Projections (2002)

Meat, eggs and milk

Livestock production is the world's largest user of land, either directly through grazing or indirectly through consumption of fodder and feedgrains. Globally, livestock production currently accounts for 40% of the gross value of agricultural production. In industrial countries this share is more than 50%. In developing countries, where it accounts for one-third, its share is rising quickly; livestock production is increasing rapidly as a result of growth in population and incomes and changes in lifestyles and dietary habits (Bruinsma, 2003).

The world food economy is being increasingly driven by the shift of diets and food consumption patterns towards livestock products. This shift of aggregate agricultural output towards the higher-value livestock products makes the growth rate of agriculture to be higher than would result from a mere aggregation of

tonnes or calorie equivalents. On the negative side, there are environmental implications associated with the expansion of livestock production. For example, through the expansion of land for livestock development, livestock sector growth has been a prime force in deforestation in some countries such as Brazil, and in overgrazing in other countries. Intensive livestock operations on industrial scale, mostly in the industrial countries but increasingly in developing countries too, are a major source of environmental problems through the production of point-source pollution (FAO, 2006).

The rising share of animal products in the diet is evident in developing countries. Even though calories derived from cereals have increased in absolute terms, as a share of total calories they continue to fall, from 60% in 1961/63 to an expected 50% in 2030. Similarly, the contribution of other traditional staples (plantains, potatoes, sweet potatoes, cassava and other roots) fell from second largest contributor to dietary calories (10%) in 1961/63 to lowest (6.2%) by 1997/99. By then, animal products had become the second major source of calories (10.6%) in developing countries (Bruinsma, 2003).

In industrial countries, the consumption of animal proteins increased in the 1960s and 1970s from 44 to 55 g/capita/day. After this, animal protein consumption remained fairly stable. In developing countries, however, although the level of consumption of animal proteins increased steadily from 9g/capita/day in 1961/63 to 20g/capita/day in 1997/99, there is still significant potential for increases. Between 1997/99 and 2030, annual meat consumption in developing countries is projected to increase from 25.5 to 37 kg per person, compared with an increase from 88 to 100 kg in industrial countries. Projections to 2050 indicate that the aggregate meat consumption in developing countries may grow between 2020 and 2050 half as rapidly as in the preceding three decades. The overall projected slowdown in the world meat economy is based on the following assumptions: a) relatively modest further increases in per capita consumption in the industrial countries, b) growth rates in per capita consumption in China and Brazil well below those of the past, c) persistence of relatively low levels of per capita consumption in India, and d) persistence of low incomes and poverty in many developing countries (FAO, 2006).

Consumption of milk and dairy products will rise from 45 to 66kg/person/p.a. in developing countries, and from 212–221kg in industrial countries. For eggs, consumption will grow from 6.5 to 8.9kg in developing countries and from 13.5 to 13.8kg in industrial countries between 1999 and 2030 (Bruinsma, 2003).

Wide regional and country differences are also evident in the quantity and type of animal products consumed, reflecting traditional preferences based on availability, relative prices and religious and taste preferences. Some of the more important aspects include the following: In sub-Saharan Africa, low consumption levels of animal products have changed little over the last 30 years; milk contribution to total calories and protein per capita has remained constant in recent years, indicating an increase in total milk availability equivalent to population increases. Only minor increases in consumption are projected. In South Asia (excluding India), there has been a slow but steady growth in animal product consumption. This increase is mostly the result of an increase in the contribution of milk and poultry meat. The contribution of eggs is well below the developing country average. In India, the relative contribution of animal products to diets is predicted to increase up to 2030 largely as a result of increases in the consumption of milk and milk products. In East Asia (excluding China) there is also a steady increase in the contribution of animal products to the diet. However, unlike South Asia, this increase is a result of the contribution of meat, predominantly pork. In China, the projected rapid rise in the contribution of animal products to dietary energy from 15 to 20% between 1997/99 and 2030 will be mainly on account of a substantial increase in the contribution of pork and poultry. (Bruinsma, 2003).

Roots and Tubers

In 1995–97, the major roots and tubers – cassava, potato, sweetpotato, and yam – occupied about 50 million ha worldwide. Farmers produced 639mt of these crops annually, 70% of which were harvested in developing countries. Global total use of roots and tubers is projected to increase to 864mt or by 35% between 1993 and 2020. The largest increase in terms of volume is projected for cassava: 103 million mt, or by 44%. Potato ranks second, with 68 million mt, or 29% of the increase. Sweetpotato and yam will account for an additional 62 million mt, about 27%. In developing countries, the increase is projected to be

56%, and in sub-Saharan Africa root and tuber use is projected to almost double from 126mt to 248mt over the period 1993 to 2020 (Scott, *et al*. 2000).

Soybeans

Latin America will retain its dominant position as the top regional consumer of soybeans in the developing world, with demand increasing 78% by 2020. Production will more than meet demand increasing 81% by 2020 (Rosegrant, *et al*. 2002).

Edible Oils

Southeast Asia, the largest producer of edible oils, will increase its sizeable production surplus with production growth exceeding demand by 7 million tonnes by 2020. Much of this excess will be exported to East Asia (Rosegrant, *et al*. 2002). The growth of the non-food uses (including in recent years for the production of biofuels in some countries) was also a major factor in the growth of the sector, as was the availability of ample expansion potential of land suitable for the major oilcrops (e.g. oil palm in Southeast Asia). However, the growing interest in using vegetable oils in the production of biofuels leading to the rapid expansion of land areas under oilcrops can have significant adverse impacts on the environment, mainly by favouring deforestation (FAO, 2006).

Fish

The seemingly inexhaustible oceans have proved to be finite after all. Landings of wild fish have levelled off since the mid-1980s, and many stocks of fish are fished so heavily that their future is threatened. And yet the world's appetite for fish has continued to increase, particularly as urban populations and incomes grow in developing countries. Aquaculture – fish farming – has arrived to meet this increased demand. Production of fish from aquaculture has exploded in the past 20 years and continues to expand around the world. Developing countries will consume and produce a much greater share of the world's fish in the future, and trade in fish commodities will also increase. Per capita consumption is projected to grow in most of the developing world in the baseline, although it will remain unchanged in sub-Saharan Africa and the developed world. As aquaculture expands, especially in developing countries, environmental concerns such as effluent pollution, escaped farmed fish, land conversion, and pressure on stocks from fishmeal demand will increase with time unless technologies and policies promote sustainable intensification. And small, poor producers are at risk of being excluded from rapidly growing export markets unless ways can be found to facilitate affordable certification of food safety and environmentally sound production See Table 5-2 (Delgado, *et al*. 2003)

Table 5-2 Projected growth rates for fish as food 1997–2020

	ANNUAL GROWTH RATE (%)			
REGION/COUNTRY	Total food fish consumption	Total food fish production	Wild production	Aquaculture production
China	2.0	2.0	1.1	2.6
Developing world excluding China	1.9	1.6	1.0	3.6
Developing world	2.0	1.8	1.0	2.8
Developed world	0.2	0.4	0.1	2.1
World	1.5	1.5	0.7	2.8

Source: Delgado, *et al*. (2003)

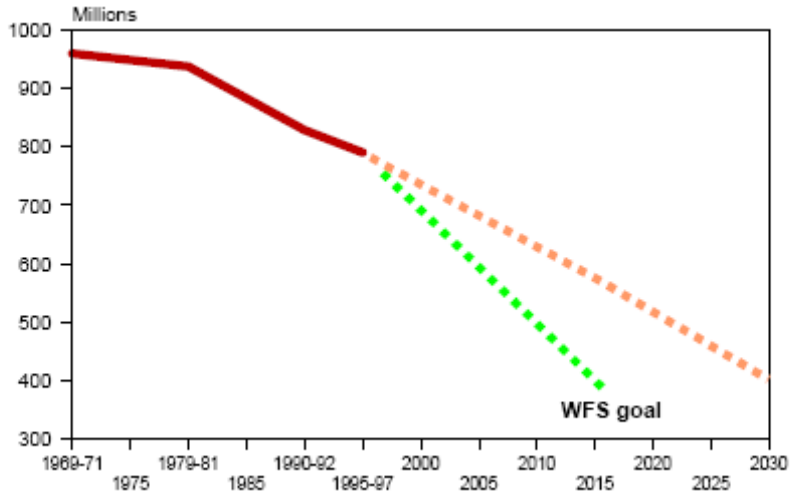
Global fish trade has already shifted from the North to the South, and South–South trade is projected to become increasingly important with the further emergence of urban middle classes. Developed countries will remain large net importers (Delgado, *et al*. 2003).

As world population continues to expand, with current projections being for an increase from 6 billion people in the year 2000 to 9-10 billion by 2050, fisheries products are one of the many food groups that will come under increasing pressure. Just about all of the world's natural fisheries resources are fully exploited (many being already over exploited), and the challenge for aquaculture is to expand to meet the future shortfall in fish supplies. A key way forward has been demonstrated over the last decade in China, where a substantial expansion of production has been grounded on small-scale pond culture (UN-Oceans 2006).

Malnutrition

The extent and depth of malnutrition in the developing world at the turn of the new century and millennium remains unacceptably high. About 800 million people – one-sixth of the developing world's population – do not have access to sufficient food to lead healthy, productive lives. Around 280 million of these food-insecure people live in South Asia, 240 million in East Asia, 180 million in sub-Saharan Africa, and the rest in Latin America, the Middle East, and North Africa. Although progress is being made in tackling food insecurity, it is slow. And in sub-Saharan Africa the number of food-insecure people has actually doubled since 1969–71. According to recent FAO projections, the World Food Summit (WFS) goal of halving the number of food-insecure people from 800 million in 1995 to 400 million by 2015 will not be achieved until 2030, see Figure 5-5.

Figure 5-5 Food insecure people in developing countries, 1969–2030



Source: Pinstrup-Anderson, 2000

Table 5-3 Projected trends in undernourishment in developing countries

Percent of population

	1990/92	2000/02	1999/01	2015	2030	2050
	SOFI 04					
Developing countries	20.3	17.0	17.2	10.1	6.9	3.9
sub-Saharan Africa	35.7	32.7	33.3	21.1	12.4	5.8
excl. Nigeria	*40.8*	*38.3*	*39.0*	*25.2*	*14.7*	*6.8*
Near East / North Africa	7.6	10.1	10.2	7.0	5.7	3.7
Latin America and Caribbean	13.4	10.2	10.7	6.6	3.9	2.6
South Asia	25.9	22.1	22.3	12.1	8.4	4.1
East Asia	16.5	11.5	11.6	5.8	3.9	2.9
	Million					
Developing countries	823	813	811	582	458	290
sub-Saharan Africa	170	203	201	179	140	88
excl. Nigeria	*159*	*192*	*191*	*173*	*135*	*84*
Near East / North Africa	24	40	39	36	36	29
Latin America and Caribbean	60	53	55	41	27	20
South Asia	291	301	299	203	166	90
East Asia	277	217	216	123	88	64

*The absolute numbers differ slightly from those published in FAO (2004a) because the latter include estimates for some small countries.
SOFI 04 = *State of World Food Insecurity in the World 2004 (FAO, 2004a)*

Source: FAO, 2006

Per capita food consumption will have grown significantly by 2015, and even more by 2030. The world average will be approaching 3000 kcal/person/day in 2015, and will be just over 3000 by 2030. These changes in world averages will reflect above all the rising consumption of the developing countries, whose average will have risen from the present 2650kcal to over 3000kcal in 2050. More and more people will be living in countries with medium to high levels of per capita food consumption (FAO, 2006).

These rises are often a mixed blessing as the diet transitions experienced by many countries imply changes in diets towards energy-dense ones, high in fat. In combination with lifestyle changes, largely associated with rapid urbanisation, such transitions, while beneficent in many countries with still inadequate diets, are often accompanied by a corresponding increase in obesity-related diseases. The two problems co-exist and these countries are confronted with a 'double burden of malnutrition' resulting in new challenges and strains in their health systems (FAO, 2006).

Since the 1960s, developing countries have made impressive reduction in malnutrition rates among children under the age of five, declining from an aggregate rate of more than 46% in 1967 to 31% in 1997. Nevertheless, as a result of high population growth rates in developing countries (averaging 2.1% annually), the percentage decline in child malnutrition has translated into an absolute decline of 37 million malnourished children since 1970 to approximately 166 million children in 1997. These aggregate declines mask striking regional trends (see Table 5-4).

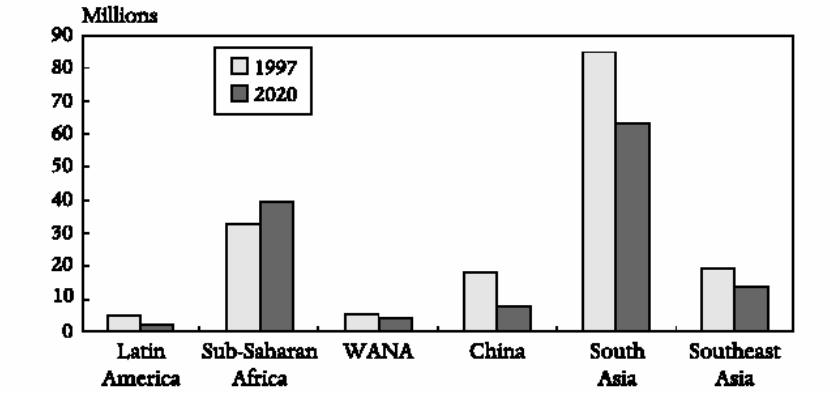
Although a downward trend is evident in the number of malnourished children in developing countries, this trend does not demonstrate a pattern of inevitable, steady progress. The timing and size of gains have been uneven and interspersed with periods of worsening or stagnant malnutrition. The largest declines have occurred in Asia during the 1970s. Sub-Saharan Africa was stable between 1970 and 1975, steadily increasing thereafter; improvements in West and North Africa have emerged only recently, and progress in Latin America slowed during the 1980s (Garrett 1997).

Table 5-4 Number of malnourished children since 1970 (by million under 5s)

Region	1970	1975	1980	1985	1990	1995	1997	2004 (est.)	2020
Latin America and Caribbean	9.5	8.2	6.2	5.7	6.2	5.2	5.1	6.0	1.1
sub-Saharan Africa	18.5	18.5	19.9	24.1	25.7	31.4	32.7	39.0	51.9
West Africa/North Africa	5.9	5.2	5.0	5.0	n.a.	6.3	5.9		
South Asia	92.2	90.6	89.9	100.1	95.4	86.0	85.0	105.0	66.0
East Asia	77.6	45.1	43.3	42.8	42.5	38.2	37.6		21.4
All regions	203.8	167.6	164.3	177.7	176.7	167.1	166.3	150.0	140.3

Source: Smith and Haddad (2000); Heinig (2004)

Figure 5-6 Number of malnourished children by region

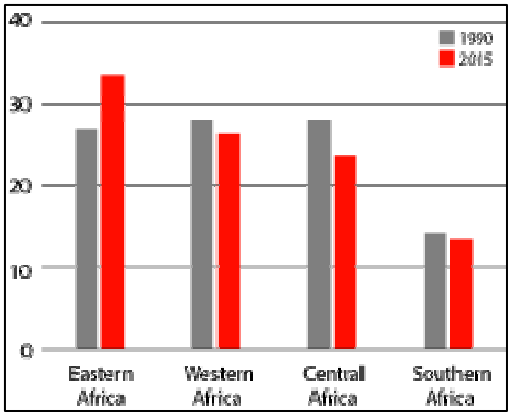


Source: IFPRI IMPACT Projections (2002)

The number of malnourished children under the age of five in developing countries is projected to decline to 140.3 million in 2020. The projections to 2020 for the developing countries as a whole mask wide variation across the regions. Under all scenarios, South Asia will continue to be the region with the highest prevalence and numbers of malnourished children, although both will fall rapidly. Little progress in reducing the prevalence of child malnutrition will be made in sub-Saharan Africa. Given slow rates of decrease in prevalence and large expected increases in the total number of African children under five, the number of malnourished children will increase under all scenarios, rising as high as 52 million (Smith and Haddad, 2000). All other regions are predicted to see declines in the number of children who are malnourished (see Figure 5-6). China will witness the largest decline, followed by Latin America (IFPRI 2002).

Sub-Saharan Africa is the only region where absolute number and prevalence of malnourishment among the under fives is projected to increase. Within sub-Saharan Africa, all regions except east Africa will see a declining share of undernourished children by 2015 (Figure 5-7).

Figure 5-7 Share of malnourished children under the age of 5 in sub-Saharan Africa (in %)



Source: World Bank (2006)

MAJOR SOURCES

Delgado, C., *et al*. (1999), *Livestock to 2020: The Next Food Revolution*, International Food Policy Research Institute.

Delgado, C., N. Wada, M.W. Rosegrant, S Meijer, M. Ahmed (2003) *Outlook for Fish to 2020. Meeting Global Demand.* International Food Policy Research Institute.

Bruinsma, J. (ed.) (2003) World *Agriculture: Towards 2015/30*. A FAO Perspective. Earthscan.

FAO (2006) World agriculture: towards 2030/2050. Interim Report.

FAO (2004), FAOSTAT database.

Garrett, J. (1997), Challenges to the 2020 Vision for Latin America: Food and Agriculture since 1970, 2020 Vision for Food, Agriculture and the Environment, Discussion Paper 21, International Food Policy Research Institute.

Heinig, J. (2004), Prevalence and Etiology of Malnutrition, University of California.

IFPRI (2003), Overview of the World Food Situation, International Food Policy Research Institute.

Rosegrant, M., M. Paisner, S. Meijer and J. Witcover (2002), Global Food Projections to 2020: Emerging Trands and Alternative Futures, International Food Policy Research Institute.

Scott, G. J., M.W. Rosegrant, C. Ringler (2000) Roots and Tubers for the 21st Century. Trends, Projections, and Policy Options. IFPRI.

Smith, L. and L. Haddad (2000), Explaining child malnutrition in developing countries: A cross-country analysis, Research Report 111, International Food Policy Research Institute.

UN-Oceans (2006), UN Atlas of the Oceans. (http://www.oceansatlas.org/)

von Braun, J., M.W. Rosegrant, R. Pandya-Lorch, M.J. Cohen, S.A. Cline, M.A. Brown, M. S. Bos (2005), New Risks and Opportunities for Food Security. Scenario Analyses for 2015 and 2050. International Food Policy Research Institute.

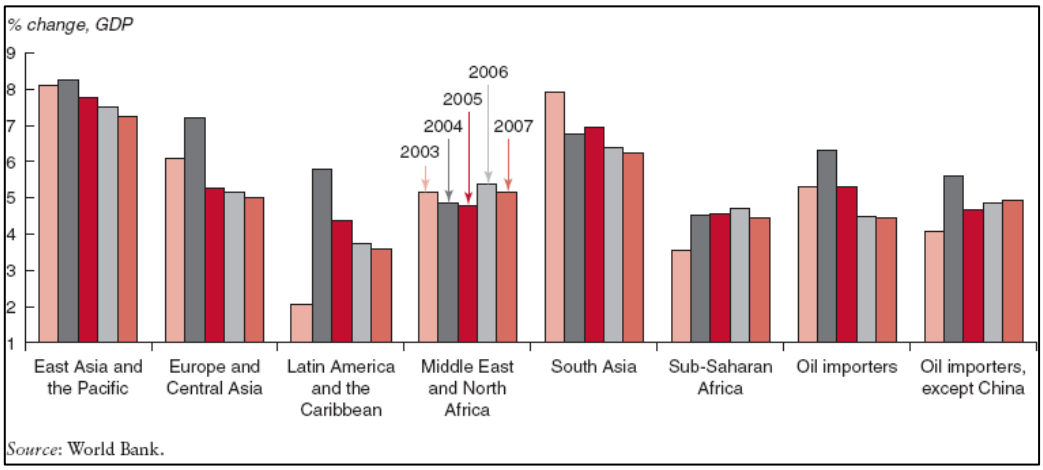
World Bank (2006) World Development Indicators 2006.

6 ECONOMIC GROWTH

The world economy grew by 3.3% in 2005, less significant than in 2004. Developing countries have experienced faster GDP growth (6.4%) than high-income countries (2.8%). The relatively stronger growth of GDP in developing countries is expected to remain strong, above 5%, during the period 2006–2008. Sub-Saharan Africa has also been doing well.

However, it is difficult to project overall trends in economic growth not only due to the significant variations in regional economic strength and politics, but also due to the fact that long-term prospects are particularly vulnerable to unpredicted external shocks.

Figure 6-1 Regional growth, 2003–2007



Industrial production in high income countries declined from 5% in 2004, to less than 1.5% in the 2005 (Global Economic Prospects, 2006). Among industrialised regions, Europe has been underperforming in economic growth expectations. Industrialised countries in the Euro areas, such as Germany, Sweden, Denmark, and the United Kingdom, have a slower economic growth rate than had previously been expected. The Euro area's real GDP growth in 2003 was 0.7%. It improved in 2004 to 1.7%, but it slowed down to 1.1% in 2005. It is expected to improve to 1.4% and 2.0% in 2006 and 2007, respectively.

In North America, the problem seems to be resulting from high oil prices mainly caused by natural disaster and high short-term interest rates. Real GDP growth improved somewhat in 2004 to 4.2%, from 2.7% in previous year. However, growth slowed down from 2005 slightly, that is, to 3.5~3.6% in 2006 and 2007. In the case of Japan, although GDP increased up to 2.3%, largely because of tight labour market conditions and reduced industrial restructuring, short-term forecast estimations of prospects for real GDP growth show a decline to 1.7% in 2007 (Global Economic Prospects, 2006).

Developing and emerging regions and countries have shown significant variation in growth. The most notable countries are India and China. It is worth noting that these two countries together account for about 40% of world population.

India and China performed remarkably well between 1995 and 2004, with China contributing 12.8% of the global output growth and India 3.2%. India's performance may appear low, but in comparison to other economies, the average real growth rate of India, which is 6.1%, is much higher than other industrialised countries.

In the longer term, high-income countries are expected to perform better than at the turn of the millennium. Real GDP per capita growth for the period of 2006–2015 is expected to recover among high-income countries after the recession of the 1990s and early 2000s, with the exception of Japan (Table 6-1).

Table 6-1 Long-term prospects

			Forecast	
	1980s	1990s	Medium-term 2001–06	Long-term 2006–15
World Total	1.3	1.2	1.5	2.1
High-income countries	2.5	1.8	1.6	2.4
OECD	2.5	1.8	1.6	2.4
United States	2.3	2.0	1.8	2.5
Japan	3.4	1.1	1.1	1.9
European Union	2.1	1.8	1.4	2.3
Non-OECD	3.5	4.0	2.0	3.5
Developing economies	0.7	1.5	3.7	3.5
East Asia & Pacific	5.8	6.3	6.4	5.3
Europe & Central Asia	0.9	−1.8	5.0	3.5
Latin America & Caribbean	−0.9	1.6	1.2	2.3
Middle East & North Africa	−1.1	1.0	2.5	2.6
South Asia	3.3	3.2	4.5	4.2
Sub-Saharan Africa	−1.1	−0.5	1.8	1.6

Source: World Bank.

Real GDP per capita, annual revenue percentage change

Among developing countries, East Asia and the Pacific are expected to grow more than 5% in the long term. Per capita GDP growth in Latin America and sub-Saharan Africa, which suffered from negative or marginal growth, is estimated to recover.

Table 6-2 GDP in six large economies, %

	Share of world GDP (2004 dollars and exchange rates)		Average real growth rates		Average contribution to world growth	
Economy	2004	2020	1995–2004	2005–20	1995–2004	2005–20
China	4.7	7.9	9.1	6.6	12.8	15.8
India	1.7	2.4	6.1	5.5	3.2	4.1
United States	28.4	28.5	3.3	3.2	33.1	28.6
Japan	11.2	8.8	1.2	1.6	5.3	4.6
Germany	6.6	5.4	1.5	1.9[a]	3.0	3.3
Brazil	1.5	1.5	2.4	3.6	1.5	1.7
World	100.0	100.0	3.0	3.2	100.0	100.0

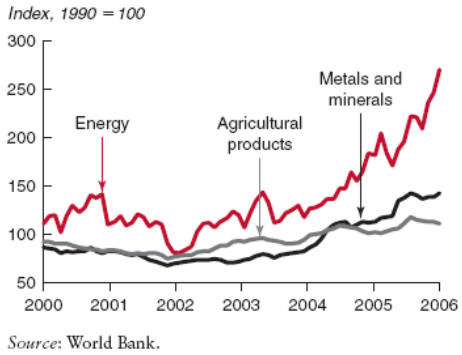
Source: World Development Indicators.
Note: Average growth rates are calculated as the average of annual real growth rates (US$ constant 2000) for the period. Similarly, average contributions are calculated as the average of annual contributions. The calculation for the period 2005ENNN20 is based on GDP in 2004 and the projected growth rates.
a. The World Bank projects an annual growth rate of 2.3 percent for the 25 countries of the European Union plus the European Free Trade Association, from which we derive the figure for Germany.

Source: http://siteresources.worldbank.org/INTCHIINDGLOECO/Resources/CE_Ch01pp.001-026_FINAL.pdf

Table 6-2 shows that China and India are expected to dominate over 10% of world GDP in 2020 with expected annual growth of 6.6% and 5.5%, respectively, over 2005–2020. In the near future, China and India will not yet be the dominant countries in the world economy. Instead they will be among the 'second-largest' tier nations after the current industrialised economies.

GDP growth in the Middle East and North Africa, South Asia, and sub-Saharan Africa is expected to pick up slightly (Global Economic Prospects, 2006) . However, it will depend largely on the risks currently being faced by these regions. These risks are unpredictable and largely due to political instability or terrorist activities. This may have undermined future growth prospects

Figure 6-2 Commodity process and terms-of-trade impacts of commodity price changes



Source: World Bank.

	1999–00	2001–03	2004–05
Cumulative price change			
Oil	120.3	18.9	88.0
Agricultural products	0.3	15.7	8.9
Metals and minerals	25.0	10.2	47.9
Manufactures	−5.0	3.0	10.4
Total terms-of-trade effect (% of GDP)			
Oil Importers			
Low and Middle income	−1.8	−0.1	−0.9
Low income	−3.8	−0.9	−2.9
Sub-Saharan Africa	−2.5	1.4	−1.2
South Asia	−3.9	−1.5	−2.7
Highly indebted poor countries	−4.3	1.5	−3.3

Source: World Bank.
Note: Periods Jan. 1999–Dec. 2000, Dec. 2000–Dec. 2003, Dec. 2003–July 2005.

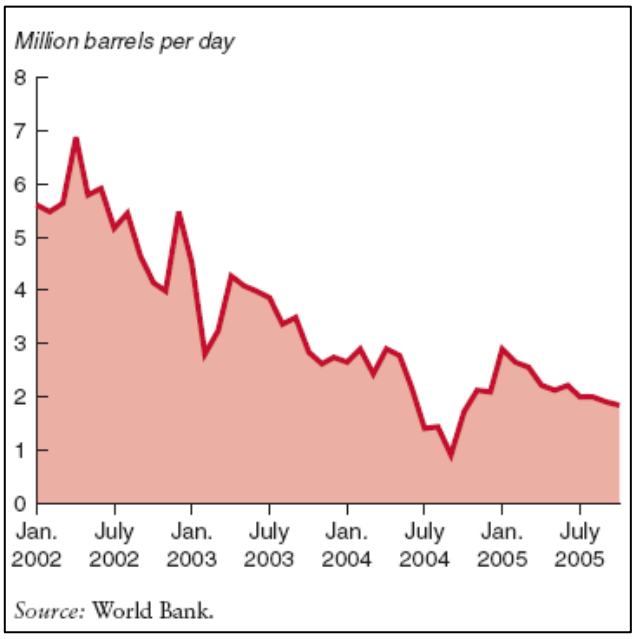
After declines in commodity prices over the past decades, prices for agricultural raw materials, and metals and minerals are rising or maintaining relatively high prices over the past few years. In recent years, commodity prices for metals and minerals and agricultural products have risen. According to the UNCTAD price index for non-fuel commodities, there was a 44.8% rise between 2002 and 2005 in current dollar terms (UNCTAD Commodity Bulletin). Since 2002, metal prices have risen by 180% in real terms, food by only 20%, and agricultural raw materials even lower by 4%. The rise in commodity prices has significant implications for trade balances, growth of the world economy, and major policy decisions (World Economic Outlook, 2006). As evidenced in Figure 6-2, terms-of-trade impacts of commodity price changes after 2001 show a 50% approximate change for metals and minerals.

It could also be that due to an increase in the productivity of agricultural and metallic industries, the prices of non-fuel commodities are not as high as historically recorded, but in recent years real prices have been increasing. Records also show that non-fuel prices have a high correlation with growth. Though it may not be historically significant, the increase in non-fuel prices could translate into much stronger performance in the world economy.

The UNCTAD Trade and Development Report 2006 points out that high commodity prices are caused by a rapid increase in world demand, slow supply response, low level of inventories in commodities, and pressure from financial markets as a result of heavy investments as financial assets. The IMF World Economic Outlook suggests that the rise in commodity prices is partly caused by the growth in emerging market and investment in commodity markets. In particular, the role China has played in recent years in the metals market is noteworthy. The level of China's contribution to the metal market exceeds its contribution to world PPP-adjusted GDP growth and world output – these rates are 29% and 15%, respectively. However, based on historical trends, it is likely that China would soon reduce its presence in the metal commodity market because once the economy exceeds US$15,000–US$20,000 per capita, China would become a more service-oriented economy.

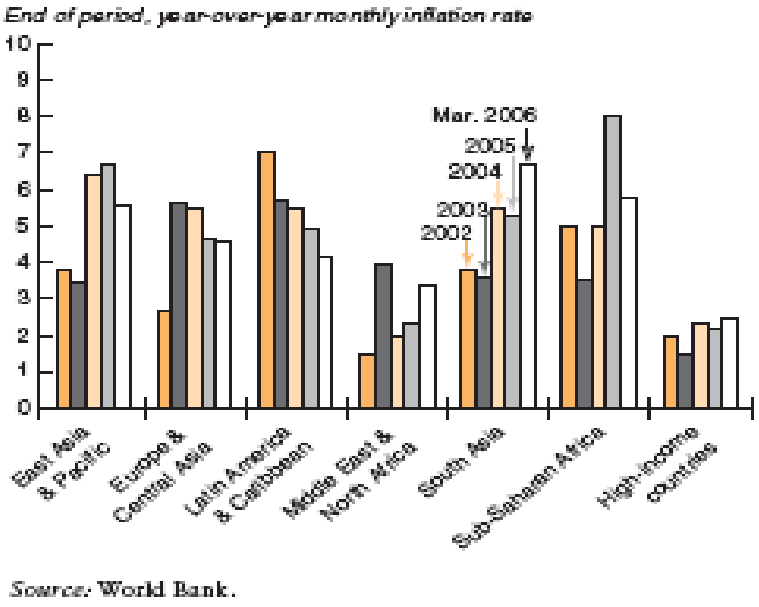
An increase in energy prices since 2003 has had a considerable impact on the world economy. Spot prices have risen from US$26.5 per barrel in September 2003 to US$40 in May 2004, and in the immediate aftermath of Katrina in August 2005, it was more than US$70 per barrel.

Figure 6-3 Levels of spare oil capacity



A major driving force behind the rise in oil prices seems to be the imbalance between a significant increase in world oil demand, and the limited oil capacity. Oil prices have been rising continuously since 2002. With the rapid growth of China, recent war in the Middle East, subsequent disruptions caused by natural disasters in oil producing regions, and declining oil production capacity, it seems the rise in oil prices will persist, at least in the short term. And in the longer term, high oil prices could potentially hinder growth potential for developing and emerging regions.

Figure 6-4 Moderate increases in inflation



Interestingly, inflation has responded only weakly to the rise in oil prices (Figure 6-4). Unlike the oil shocks of the 1970s, most regions are not influenced by changes in energy prices in a major way (Global Development Report 2006).

However, as shown in Figure 6-4, South Asia and sub-Saharan Africa seem to be affected more. According to the Global Development Report 2006, this is because of the rise in food prices. Unlike other regions where lower oil-intensive industries dominate, and credible monetary and fiscal policies regulate the economy, a significant increase in 2005 food prices affected these regions considerably. As crop production in sub-Saharan Africa is expected to pick up in 2006, the region's inflation rate is slated to decline.

A potential threat to global economic growth is environmental change. Climate change affects agricultural production, the frequency of natural disasters, and human health/mortality, which are closely related to economic performance in the world. The poorest countries and regions suffer most from economic damage caused by global climate change. The 1992–2002 CO_2 emissions responsible for climate change for various countries show that richer countries and CO_2 emissions are correlated.

Table 6-3 Annual growth rates in energy-related CO_2 emissions and their components, 1992–2002 (%)

Country/grouping	CO_2 emissions ($GtCO_2$)	GDP per head	Carbon intensity	Energy intensity	Population
USA	1.4	1.8	0.0	-1.5	1.2
EU	0.2	1.8	-0.7	-1.2	0.3
UK	-0.4	2.4	-1.0	-2.3	0.2
Japan	0.7	0.7	-0.5	0.2	0.3
China	3.7	8.5	0.5	-6.4	0.9
India	4.3	3.9	1.1	-2.5	1.7
OECD	1.2	1.8	-0.3	-1.1	0.7
Economies in transition	-3.0	0.4	-0.6	-2.7	-0.1
Non-Annex 1 parties	3.3	3.5	0.2	-2.0	1.6
World	**1.4**	**1.9**	**-0.1**	**-1.7**	**1.4**
Source: WRI (2006).					

The Stern Report estimates that the losses of climate change caused by 'business as usual' are between 5 and 20% of consumption. This is large compared to the costs of ex-ante mitigation, with a central estimate for costs of 1%of gross domestic product per year by the middle of the century, with a range of plus or minus 3%, reflecting the uncertainties.

The WB global economic prospects 2007 provides growth forecast until 2030. One of the implications is that the global middle class is rising rapidly which will bring structural changes to economies.

Figure 6-5 The global middle class (percentage shares)

	1993		2000		2030	
	Pop.	Income	Pop.	Income	Pop.	Income
Poor (per capita income below the average of Brazil)	76	29	82.0	28.7	63.0	17.0
Middle class (per capita income between Brazil and Italy)	8	12	7.6	13.8	16.1	14.0
High-income country nationals			3.4	6.8	1.2	1.0
Low- and middle-income country nationals, of which:			4.2	7.0	14.9	12.9
East Asia and the Pacific			1.3	2.0	7.3	6.4
Eastern Europe and Central Asia			0.8	1.3	2.2	1.9
Latin America and the Caribbean			1.5	2.7	2.6	2.2
Middle East and North Africa			0.4	0.6	0.8	0.7
South Asia			0.1	0.1	1.6	1.3
Sub-Saharan Africa			0.2	0.3	0.5	0.4
Rich (per capita income at or above the average of Italy)	16	58	10.5	57.5	20.9	69.0
Total	100	100	100.0	100.0	100.0	100.0

Source: Authors' calculations.
Note: Totals may not sum to 100 because of rounding. Estimates for 1993 are from Milanovic (2002). Thresholds of Brazil and Italy are annual per capita incomes (2000 PPP) of US$3,914 and US$16,746.

Source: The WB global economic prospects 2007.

Major sources

World Bank (2006), *Global Economic Prospects 2007*, World Bank
World Bank (2005), *Global Economic Prospects 2006*, World Bank
The Stern Review (2006): The Economics of Climate Change
UNCTAD, Commodity price Bulletin
IMF World Economic Outlook (2006)
Winters, L.A. and S. Yusuf, (2006), *Dancing with Giants: China, India and the Global Economy*, forthcoming World Bank and IPS book.
UNCTAD (2006), *Trade and Development report 2006*, UNCTAD.

7 POVERTY

After a wave of market reforms and increased openness in developing countries during the 1990s – both of which prompted acceleration of technological progress and brought about a more stable macroeconomic environment – long-term economic growth prospects for developing countries are optimistic. Growth patterns could lead to a significant reduction of poverty. Thus, the MDG of halving poverty by 2015 could be reached on a global level, although growth will be insufficient to achieve poverty targets in all regions (World Bank 2003b).

The reason why the goal is very likely to be reached lies almost entirely in the poverty reduction achievement of fast-growing India and China. At the same time, the majority of individual poor countries, especially in sub-Saharan Africa, appear very unlikely to halve poverty by 2015, as it would take implausibly high growth rates during the next ten years to achieve the poverty target (Clemens, *et al*., 2004, World Bank, 2005a). World Bank (2004) suggests that the typical African country will need to grow on average at least 7% for the next 15 years in order to halve poverty rates.

There are a number of methodological concerns in the estimation of poverty data, which suggest that such data should be treated with caution. Such limitations include the lack of comparable data, the different periods between each wave of data collection, the different poverty lines utilised, the potential inaccuracy of purchasing power parity exchange rates through which data are transformed, and intrinsic limitations of the welfare measures based on the surveys used.

In 2001, there were about 1.1 billion people in extreme poverty, living on, or below, the US$1 per day (PPP adjusted) criteria (World Bank 2005a). Of these, between 300 million and 420 million people lived in chronic poverty – people who remain poor for much or all of their lives (CPRC 2005).

If the poverty line is raised to US$2 per day then 2.8 billion, over half of the world's population was below this line in 2001 (World Bank 2005a).

During the 1990s, the absolute number of people in extreme poverty dropped only slightly but, because of population growth, the share of the world's population living in extreme poverty fell from 28% in 1990 to 21% in 2001.

The income of the world's richest 5% is 114 times that of the poorest 5%. The range of economic performance across countries and regions means that inequality has increased between some regions and decreased between others (Bourguignon and Morrisson, 2001; Schultz 1998). The most important factors increasing global inequality have been:

- rapid economic growth in already rich countries in Western Europe, North America and Oceania relative to the rest of the world
- slow growth on the Indian subcontinent until the late 20th century, and consistently slow growth in Africa.

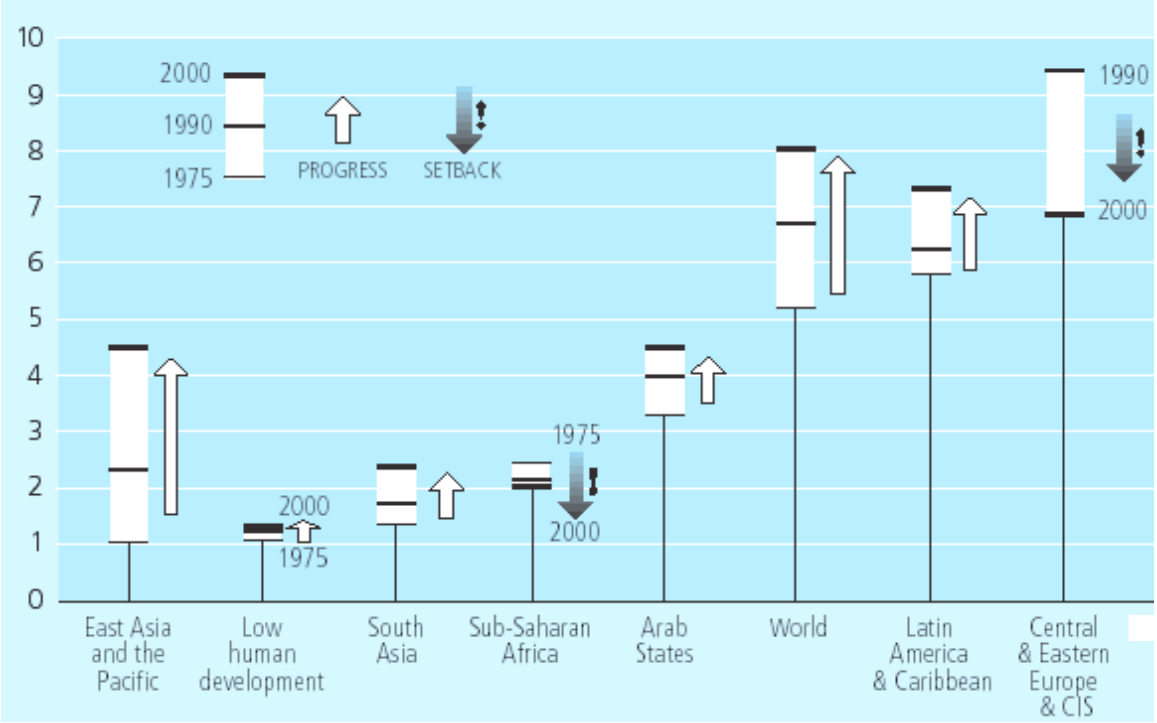
Factors decreasing inequality were:

- rapid growth in China since the 1970s and India since the late 1980s
- catch-up between European countries and the United States until the 1990s.

The estimation of poverty is usually done by using income rather than consumption as a welfare measure, as the latter is difficult to obtain for most countries. A country's income poverty rate is determined by its per capita income and the distribution of that income. Since the mid-1970s growth in per capita income has varied considerably across regions (see Figure 7-1). East Asia and the Pacific's impressive poverty reduction is primarily due to a quadrupling in its per capita GDP between 1975 and 2000. Sub-Saharan Africa was 5% poorer in 200 than in 1990. Central and Eastern Europe was the only other region to suffer

a decline in per capita income during the 1990s (UNDP 2002a). In terms of income inequality within countries, the limited available evidence indicates that worldwide, within-country income inequality has been increasing for the past 30 years (Dikhanov and Ward 2001). Among 73 countries for which data was available (accounting for 80% of the world's population), 48 have witnessed increased inequality since the 1950s, 16 have experienced no change and only nine – with just 4% of the world's population – have seen equality fall (Cornia and Kiiski 2001). The increase in inequality has impeded poverty reduction.

Figure 7-1 Global disparities in income – GDP per capita (2000 purchasing power parity US dollars, thousands)



Source: UNDP (2002a) and World Bank (2004c).

The problem of poverty is already highly regionalised and this concentration is intensifying. South Asia and sub-Saharan Africa are becoming the core areas for absolute poverty: sub-Saharan Africa has the highest levels of extreme poverty while South Asia contains the majority of the world's poor. These two areas contain nearly 70% of all people living in extreme poverty; an increase of ten percentage points over the last decade. However, while South Asia is likely to significantly reduce the number of people living in extreme poverty, sub-Saharan Africa is likely to increase that number (although reduce the share of people in extreme poverty).

Economic growth is important for achieving all the MDGs, but it relates most directly to the poverty target. As argued by Clemens, *et al*. (2004), 'economic growth is central to the poverty reduction goal because it is the only source of increased income for the poor that can be (comparatively) rapidly achieved.' Many studies have calculated an 'elasticity of poverty to average income' – the percentage decline in headcount poverty ratio for each 1% increase in per capita income. The exact level of this elasticity depends on the local conditions and may differ significantly across countries and regions. A typical estimate, holding constant the distribution of income, is that the poverty rate declines by 2% for each 1% increase in average per capita income (Bruno, *et al*. 1996; Adams 2002). This elasticity suggests that cutting headcount poverty in half requires a 41% increase in per capita income, implying an annual growth rate of 1.4% (UNDP 2003). Such figure is in line with a recent study carried out in 14 countries, which found that on average the elasticity of poverty to GDP per capita was 1.7 in the 1990s (World Bank 2005b). However, others suggest lower estimates for the level of the elasticity (i.e. between 0.73 and 1).

Table 7-1 sets out projections of poverty to 2015. We decide to use World Bank (2005a) data instead of the more recent estimates by World Bank (2006), as recent data in the latter are preliminary and not strictly comparable to previous years.

The MDG of halving extreme poverty by 2015 from the 1990 poverty level should be achieved on a global level, though with wide regional disparities. The latest poverty projections indicate a world (extreme) poverty rate of 10.2% in 2015 compared with 27.9% in 1990 (12.9% from 26.1% excluding China). The actual number of poor would decline to around 622 million from 1.2 billion in 1990 and 1.1 billion in 2001. Asia should readily achieve the target, but the Middle East, North Africa and sub-Saharan African regions will make little progress in improving poverty incidence. In fact the share (and the number) of people living on less than US$1 per day and on less than US$2 per day in sub-Saharan Africa has even increased between 1990 and 2001.

Table 7-1 Estimates of the world's poor

Region	**People living on less than US$1 per day (millions)**			**People living on less than US$1 per day (%)**		
	1990	**2001**	**2015**	**1990**	**2001**	**2015**
East Asia & Pacific	472	271	19	29.6	14.9	0.9
Excluding China	97	60	2	21.1	10.8	0.4
Europe and Central Asia	2	17	2	0.5	3.6	0.4
Latin America & the Caribbean	49	50	43	11.3	9.5	6.9
Middle East & North Africa	6	7	4	2.3	2.4	0.9
South Asia	462	431	216	41.3	31.3	12.8
sub-Saharan Africa	227	313	340	44.6	46.4	38.4
Total	1218	1089	622	27.9	21.2	10.2
Excluding China	844	877	606	26.1	22.5	12.9
Region	**People living on less than US$2 per day (millions)**			**People living on less than US$2 per day (%)**		
	1990	**2001**	**2015**	**1990**	**2001**	**2015**
East Asia & Pacific	1116	864	230	69.9	47.4	11.3
Excluding China	292	271	95	63.2	49.2	14.7
Europe and Central Asia	23	93	25	4.9	19.7	5.2
Latin America & the Caribbean	125	128	122	28.4	24.5	19.6
Middle East & North Africa	51	70	46	21.4	23.2	11.9
South Asia	958	1064	912	85.5	77.2	54.2
sub-Saharan Africa	382	516	612	75	76.6	69.2
Total	2654	2735	1946	60.8	52.9	32
Excluding China	1829	2142	1812	56.6	54.9	38.6

Source: World Bank (2005a)

These regional disparities in poverty reduction are confirmed by Chen and Ravallion (2004), who find that globally, 390 million people have been lifted out of poverty between 1981 and 2001. However, the progress has been uneven, with serious setbacks in some regions and time periods. Moreover more people living on around US$2 per day became worse-off over the 1981–2001 period than the number who gained.

In order to assess the relative advancement in the achievement of the MDG targets, Table 7-2 compares how estimates of poverty rates in 2015 have changed from the last version of this *Source Book* (which used data from World Bank, 2003). From the table it is clear that expectations on the number of poor people and on the incidence of poverty achievable by 2015 have significantly improved over the past two years. This is true for all regions, including sub-Saharan Africa.

Table 7-2 Difference in 2015 prediction of poverty

Region	World Bank 2005		World Bank 2003	
	People living on less than US$1 per day			
	Millions	**%**	**Millions**	**%**
East Asia & Pacific	19	0.9	80	3.9
Excluding China	2	0.4	7	1.1
Europe and Central Asia	2	0.4	7	1.4
Latin America & the Caribbean	43	6.9	47	7.5
Middle East & North Africa	4	0.9	8	2.1
South Asia	216	12.8	264	15.7
sub-Saharan Africa	340	38.4	404	46.0
Total	622	10.2	809	13.3
Excluding China	606	12.9	735	15.7
Region	**World Bank 2005**		**World Bank 2003**	
	People living on less than US$2 per day			
	Millions	**%**	**Millions**	**%**
East Asia & Pacific	230	11.3	339	16.6
Excluding China	95	14.7	120	18.4
Europe and Central Asia	25	5.2	45	9.3
Latin America & the Caribbean	122	19.6	117	18.9
Middle East & North Africa	46	11.9	62	16.0
South Asia	912	54.2	1139	68.0
sub-Saharan Africa	612	69.2	618	70.4
Total	1946	32.0	2320	38.1
Excluding China	1812	38.6	2101	44.7

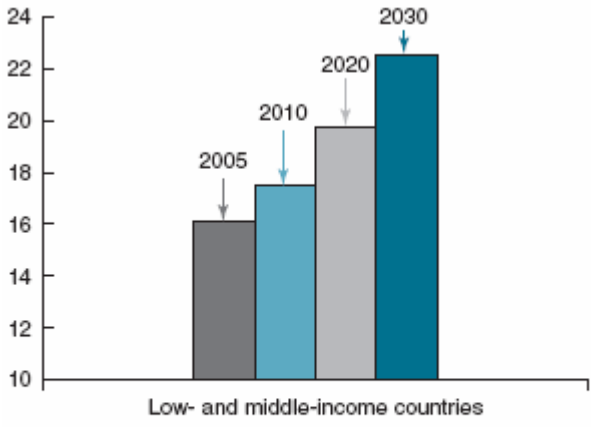
Source: World Bank (2003) and World Bank (2005a)

UNCTAD's Least Developed Countries 2004 report suggests that on current trends, the number of people living in extreme poverty in the LDCs will increase from 334 million people in 2000 to 471 million in 2015.

World Bank (2005) highlights possible downside risks which may have negative impacts in the near future and in the long-term on poverty, despite the relatively positive picture for both medium- and long-term prospects. One such risk is the potential increase in oil prices, which would have negative effects on all oil-importing economies, particularly those of low- and middle-income countries that face current account constraints. For the most vulnerable of these countries, an additional US$10 per barrel increase in oil prices could reduce domestic incomes by as much as 4 %, and on average, incomes of oil-importing low-income countries are expected to fall by about 1% of GDP.

The World Bank Global Economic Prospects 2007 produced forecasts until 2030. They expect that average incomes are likely to converge between developed and developing countries (Figure 7-2).

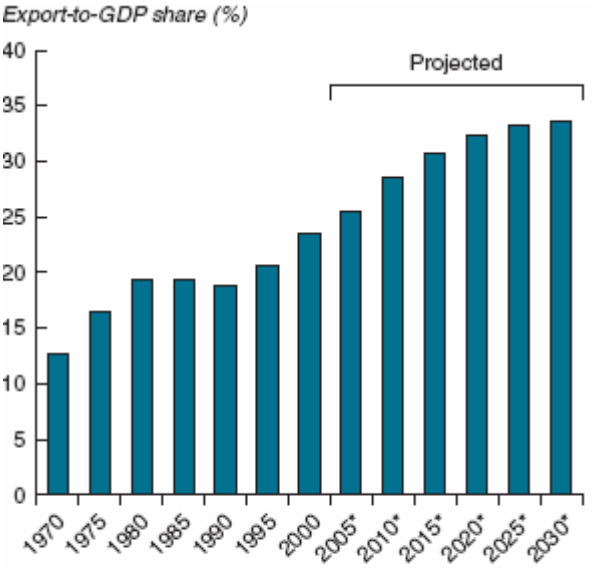
Figure 7-2 Per capita incomes as percent of high-income countries



Source: World Bank simulations using the Linkage model.
Note: Ratio of Purchasing Power Parity (PPP)–adjusted per capita incomes relative to high-income average. PPP is fixed at base year (2001) level.

They further argue that globalisation is likely to enter a new phase, with trade growing in importance in virtually every country. The average increase is shown in Figure 7-3.

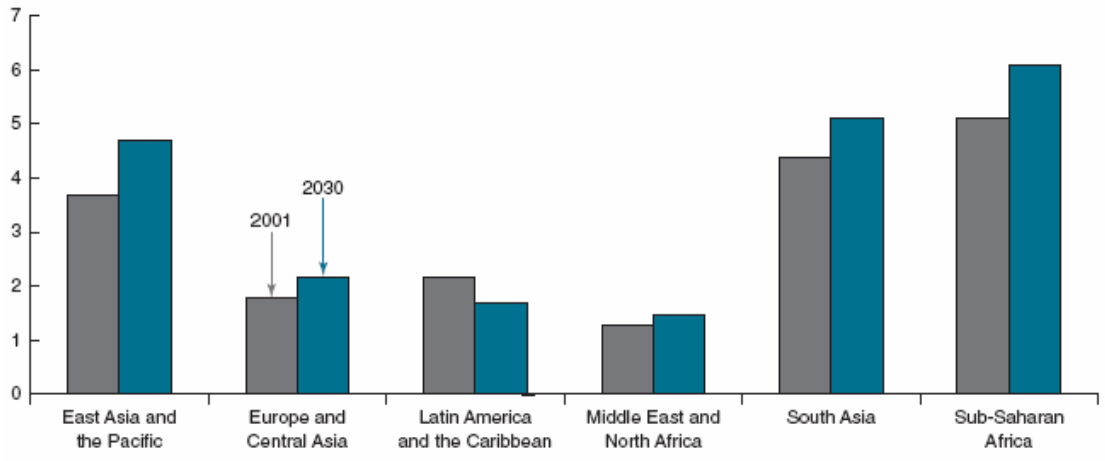
Figure 7-3 Exports – to –GDP ratio.



Sources: Development Data Platform (DDP) and staff calculations. *Indicates World Bank using the Linkage model.
Note: Export-to-GDP ratio for the world. The export share is calculated in nominal dollar terms. Observations are smoothed using five-year moving averages.

This globalisation would result in widening income inequality among and within countries, with Africa falling further behind. The wages of skilled wages are expected to rise further than wages of less skilled workers (Figure 7-4).

Figure 7-4 Ratio skilled to unskilled wages



Source: WB GEP 2007

MAJOR SOURCES

Adams, R. (2002), 'Economic Growth, Inequality and Poverty: Findings from a New Data Set', Policy Research Working Paper 2972, World Bank, Washington, DC.

Bruno, M., M. Ravallion and L. Squire (1996), 'Equity and Growth in Developing Countries: Old and New Perspectives on the Policy Issues', Policy Research Working Paper 1563, World Bank, Washington, DC.

Bourguignon, F. and C. Morrisson (2001), 'Inequality among World Citizens: 1820–1992', http://www.delta.ens.fr/XIX/paper_WD19.pdf.

Chen, S. and M. Ravallion (2004), How have the world's poorest fared since the early 1980s?, World Bank Research Observer 19(2): 141-169.

Clemens, M. A., Kenny, C.J. and T. J., Moss (2004) CGD Working Paper 40 (with co-author Charles Kenny), "The Trouble with the MDGs: Confronting Expectations of Aid and Development Success," September 2004.

Cornia, A. and S. Kiiski (2001), 'Trends in Income Distribution in the Post-World War II Period: Evidence and Interpretation', Discussion Paper 2001/89, United Nations University and World Institute for Development Economics Research, Helsinki, Finland.

CPRC (2005), *The Chronic Poverty Report 2004-05*, Chronic Poverty Research Centre.

Dikhanov, Y. and M. Ward (2001), 'Evolution of the Global Distribution of Income 1970-99', Paper prepared for the 53rd session of the International Statistical Institute, Seoul, 22-29 August.

UNDP (2002), *Deepening Democracy in a Fragmented World*, Human Development Report, United Nations Development Programme.

UNDP (2003), *Millennium Development Goals: A Compact among Nations to end Human Poverty,* Human Development Report, United Nations Development Programme.

Schultz, P. (1998), 'Inequality in the Distribution of Personal Income in the World: How is it Changing and Why', *Journal of Population Economics* 11(3): 307-44.

World Bank (2003), *Global Economic Prospects and the Developing Countries 2003*, Washington, DC.

World Bank (2004), *World Development Report*. Washington, DC.

World Bank (2005a), *Global Economic Prospects and the Developing Countries 2005*, Washington, DC.

World Bank (2005b), Pro-poor growth in the 1990s, Washington, DC.

World Bank (2006), *World Development Report*. Washington, DC.

World Bank (2006), *Global Economic Prospects 2007*, Washington, DC.