2004 ODI SOURCE BOOK ON

DEVELOPMENT-RELATED TRENDS

Updated by

Dirk Willem te Velde and Ian Gillson

Overseas Development Institute

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Abstract

This study highlights current trends and brings together future projections of the main drivers of global change. Fifteen variables are identified and the projections by key organisations are presented in one report. This source book is an update of the ODI source book of 2001.

The main findings are as follows:

Key Drivers	Trends
Population	♦ World population to expand from 6.3 billion now to 8.9 billion in 2050. ♦ Downward revision by 0.4 billion from two years ago, owing to lower fertility expectations. ♦ High population growth in least developed regions, especially Africa, where population is set to more than double by 2050. ♦ Increasingly ageing populations. Life expectancy 65 in world, but 50 in Africa; these are set to converge somewhat. ♦ Higher dependency ratios in developed world. ♦ Lower dependency ratios in developing world. ♦ AIDS could severely affect demographic structure.
Urbanisation	♦ Percentage of population in urban areas projected to increase from 48% in 2003 to 61% in 2030. ♦ Urbanisation highest in developing world. Urbanisation rate forecast to be highest in Africa and Latin America. ♦ Much of the focus of urban population growth is on the smaller cities and urbanised rural settlements, not on the mega-cities.
Environment	♦ Waste generation rises slightly less than private consumption. ♦ Energy efficiency continues to increase. ♦ The number of people facing severe water quantity problems will increase from 1.5 billion in 1990 to 2.1 billion in 2015, mostly in Africa, the Middle East, South Asia and Northern China, but projections on annual water withdrawal prepared in the past 25 years have turned out to be too pessimistic. ♦ Between 1990 and 2000 the proportion of land area covered by forests for the world as a whole decreased from 30.4% to 29.7%. The deforested area equals 940.000 km^2, similar to the size of a country like Colombia or Egypt. ♦ Land degradation continues to worsen. ♦ The North Atlantic and parts of the Pacific are already being over-fished. All or most of the increase in demand for fish to 2020 will need to be and is expected to be supplied through aquaculture, since marine capture fisheries show no sign of increasing yields. ♦ Emissions of almost all greenhouse gases continue to rise under even the most environmentally friendly scenarios. ♦ The global average surface temperature is projected to increase by 1.4 to 5.8°c over the period 1990 to 2100.
Food	♦ Despite declining real food prices and expanding world production and trade, food security for the poor will only improve slowly in many

	regions. ♦ Sub-Saharan Africa, for example, will experience little improvement in per capita calorie availability and the region's number of malnourished children will increase. ♦ Slowly declining world food prices and buoyant international trade will coexist with continuing malnutrition throughout the world.
Economic Growth	♦ The global economy is strengthening with average annual growth forecasts for 2004 and 2005 projected at 4.5%. Risks remain: the large US current account deficit and surpluses in Asia; addressing medium-term fiscal situations in many developed and developing countries; and managing the eventual transition to higher interest rates. ♦ Developing country growth, on a per capita basis, is projected to more than double during the next ten years compared with the performance of the 1990s. ♦ Projections show a continued divergence in GDP per capita between sub-Saharan Africa and the rest of the world.
Poverty	♦ Poverty projections indicate a poverty rate of 13.3% in 2015 compared with 29.6% in 1990, with the number of poor declining to 809 millions from 1.1 billion in 1999 ♦ Much of this reduction is due to China and India, poverty will remain a problem in South Asia and Sub Saharan Africa.
Education	♦ By 2015 most regions will have achieved the target of UPE. ♦ However, South Asia is struggling and sub-Saharan Africa will miss the target by a wide margin. ♦ 60% of 128 countries will miss reaching gender parity at primary and secondary levels by 2005.
Health	♦ 34–46 million people live with HIV/AIDS, two-thirds in Africa. HIV/AIDS will reduce life expectancy in Africa from 49.2 recently to under 46 in 2010. ♦ Deaths from communicable diseases to decline, but increase expected in the prevalence of deaths due to non-communicable diseases. ♦ Global warming could increase annual number of malaria cases from 50 million a year to 80 million by 2100.
Trade and Finance	♦ Trade growth expected of 6.8% between 2005–2010. ♦ Reduction in trade barriers will depend on the Doha round but growth in the range of non-tariff barriers. ♦ Rebound in FDI expected in the coming few years after steep decline in the early 2000s. ♦ Unequal distribution of this FDI in absolute volumes but not when scaled by host country size.
Official Development Assistance	♦ After declines in the levels of ODA over the 1990s, aid is now at it highest level in real and nominal terms. ♦ ODA expected to increase to US$75 billion in 2006 from around US$55 billion in the past years. ♦ An increasing proportion of ODA is going to the social sectors. ♦ Increasing importance of global funds .
Technology	♦ The number of countries with a direct connection to the Internet increased from eight in 1988 to 209 in 2003.

	♦ Telephone subscribers per 100 inhabitants increased from 11.6 in 1993 to 36.4 in 2003. Cellular mobile subscriptions have for the first time surpassed fixed line subscribers. ♦ Large digital divide between low and high income groups. ♦ Digital divide between large and poor countries is shrinking. ♦ Advances in medical technology change the burden of diseases.
Governance	♦ Increasing levels of democracy to continue. ♦ Growth in the number of international NGOs.
Migration	♦ International migration set to rise from 175 million today to 230 million in 2050, representing a decline from 2.9% to 2.6% of the total population. ♦ Developed countries need and continue to absorb immigrants. ♦ Migrants are increasingly sending remittances to developing countries, surpassing ODA levels by more than half. ♦ Increasing tensions for migration policy after 9/11.
Disasters	♦ The number of disasters is increasing and affecting more people, particularly in less developed regions. ♦ Disasters are becoming less deadly. ♦ But the financial costs are becoming higher, particularly in more developed regions.
Conflict and Refugees	♦ Internal conflict to increase. ♦ Interstate conflict to decline. ♦ The number of refugees has declined slightly recently.

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1. Introduction

This source book highlights current trends and brings together future projections of the main drivers of global change. Fifteen variables are identified and the projections by key organisations are presented in one report. It is an update of the ODI source book of 2001.

There have been several attempts to examine future trends in general. Table 1 shows a selection.

Table 1 Examples of forward-looking studies

Study	URL
Canadian Defence Department, *Military Assessment 2000*	www.vcds.dnd.ca/dgsp/dda/milasses/intro_e.asp
RIIA, *Open Horizons: Three Scenarios for 2020 – The 1998 Report and CD-ROM from the Chatham House Forum*, 1998.	
Chatham House, *2020 Scenarios, The Drivers*:	http://www.chforum.org/scenario
CIA, *Global Trends 2015: A Dialogue About the Future With Non-government Experts*. December 2000.	http://www.cia.gov/cia/publications/globaltrends2015/
Bertand, Gilles *et al*., *Scenarios Europe 2010 – Five Possible Futures For Europe – Working Paper*, European Commission Forward Studies Unit, July 1999.	
Sleigh, Andrew (ed.), *PROJECT 'Insight' Phase 1 final report Volume 1 – Main Text – Discussion of drivers, 'worlds' and methodologies*, CDA/HLS/WP095/1.0, April 1997. [Unpublished report]	
NHS Confederation/Institute of Health Service Management/International Hospital Federation, *Exploring the environment for healthcare: The Madingley Scenarios – Two Scenarios for the Future Context of Healthcare - a summary*.	http://www.cambridgeforesight.com/pdf/madingley.doc
MOD, *Future Strategic Context for Defence*. 22/02/2001] future_strategic_context_defence.pdf from	http://www.mod.uk/index.php3?page=2449.
Open University Business School, *Millennium Project* URL:	http://pcbs042.open.ac.uk/future/Millennium/000.html
PIU Strategic Futures, *The Future and How To Think About It*. URL:	http://www.cabinet-office.gov.uk/innovation/2000/strategic/future.html
Shell, *Global Scenarios 1998–2020*.	http://www.shell.com/downloads/publications/51234.pdf
United Nations University, *Millennium Project*	http://www.geocities.com/~acunu/millennium/Millennium_Project.html
Engelbrecht, Col Joseph A. *et al*., *Alternative Futures for 2025: Security Planning to Avoid Surprise – A Research Paper Presented to Air Force 2025,* April 1996.	http://www.maxwell.af.mil/au/2025/
Which World? Scenarios for the 21st century.	http://mars3.gps.caltech.edu/whichworld/index.html

Source: Davies *et al*. (2001).

There are currently several major forward-looking exercises in existence. One is the Copenhagen Consensus, which examines ten major challenges: Subsidies and Trade Barriers; Malnutrition and Hunger; Climate Change; Conflicts; Financial Instability; Sanitation and Water; Population: Migration; Communicable Diseases; Education; Government and Corruption. The aim is to prioritise the numerous problems facing the

world, by gathering some eminent economists at a meeting where some of the biggest challenges in the world would be assessed (see http://www.imv.dk/Default.asp?ID=158).

Another forward-looking exercise is the UN Millennium Project, which aims to devise a plan of implementation that will allow all developing countries to meet the Millennium Development Goals (MDGs). It focuses on identifying the operational priorities, organisational means of implementation, and financing structures necessary to achieve the MDGs. Ten thematically orientated Task Forces have been formed and are centred around: Poverty and Economic Development; Hunger, Primary Education and Gender Equality; Child Health and Maternal Health; HIV/AIDS, Malaria, TB, Other Major Diseases, and Access to Essential Medicines; Environmental Sustainability; Water and Sanitation; Improving the Lives of Slum Dwellers; Open, Rule-Based Trading Systems; Science, Technology and Innovation. The interim reports are posted on their website http://www.unmillenniumproject.org/html/about.shtm.

The CIA is also doing an update of its 2015 project, see http://www.cia.gov/nic/NIC_2020_project.html

On top of these, there are several institutions and agencies that provide projections for individual variables, such as population growth (UNDP), food (FAO), climate change (IPCC), MDG (World Bank and UNDP), HIV/AIDS (UNAIDS) and others, sometimes as far as 2050 or 2100.

This report is more limited in scope. It aims to provide information and report on trends and *existing* future projections for a selected number of topics. It does not attempt to build new scenarios. Projections are available in certain areas, such as demography and social indicators. However, in other areas, such as conflict and disasters, commentators are reluctant to make long-term predictions, while in economic spheres forecasts are normally only for the short term and revert to 'trend' in the long run.

It is important to note the inter-linkage among many of the key drivers. Projections in one area are subject to the variability of progress in others. For example, the rate of population increases will clearly influence the level of environmental stress and the projections for food demand. Hence major inaccuracies in one area will clearly affect the validity of other projections. Projections have been wrong in the past; the failure of the international institutions to predict the Asian economic crisis constitutes one example, too pessimistic water withdrawal projections another.

Future projections are always open to error and bias and therefore care must be taken to include forecasts from reliable sources. Even so, the projections must be treated with caution. The main aim of the report is simply to present the projections. There is little attempt to analyse their likelihood.

This study is an update of the previous ODI source book of 2001. Since then, several forward-looking studies have been published, for some variables but not for all. Key new publications that were not available last time include:

- New monitoring reports on achieving MDGs like education, health and poverty;
- UNEP's Global Environmental Outlook, which now reports qualitative scenarios;
- Food projections, such as for fish, and the IMPACT 2020 model simulations.

In addition, more recent annual updates on trends and projections have been used, such as:

- OECD DAC and IMF reports;
- World Bank annual reports, such as Global Economic Prospects and Global Development Finance;
- Annual UNCTAD and UNDP reports;
- Population projections that the UN updates regularly;
- UNESCO's Education For All annual reports;
- International Red Cross and UNHCR annual reports;
- Annual publications by ITU and WTO;
- IOM World Migration Reports;

These reports are almost entirely available on the web. In several instance we have taken tables and charts from these publications and make appropriate reference to the source.

The use of these sources has meant that certain variables contain completely new descriptions: Climate Change, Food, Economic Growth, Poverty, Education, Health, Trade and Finance, Aid, and Technology. On the other hand, for other variables little information has become available: Demography and Urbanisation, some Environmental variables, Governance, Disasters, Conflict and Refugees. For the latter variables, we have maintained the same structure but updated them according to availability of new reports. We have kept the same categorisation of variables with some minor adjustments.

The projected trends have not changed much for several variables. However, there have been some noticeable changes in trends and projections since the previous source book in May 2001:

- Rebound in forecasts for development assistance;
- Recovery of world economy and rise in oil prices;
- Sharp fall in FDI in past few years, although a recovery is expected for the near future;
- Lower population forecasts;
- Renewed insights into the tragedy of HIV/AIDS;
- Strengthened focus on Millennium Development Goals;
- Increased focus on migration policies and security following 9/11;
- Continued strong growth and poverty reduction in China and India;
- Rapid increase in the amount of democratic governments;
- Strong growth in ICT: Mobile subscriptions have overtaken fixed line subscriptions.

2. Demography

Demographic projections are fundamental in describing future trends in areas such as growth, poverty, health issues and environmental stress.

Growth rates by region and dependency ratios in an increasingly ageing world are important factors to consider in demographic projections. An increased population places a greater burden on resources. In the developed world the ageing populations are likely to place a greater economic burden on the economically active. However, in the developing world there is a window of opportunity, as large numbers of children will become economically active (UN 2001).

In 2003 the world population reached 6.3 billion. It is currently growing at a rate of 1.2% p.a., implying a net addition of 77 million a year; by 2050 it is expected to reach 8.9 billion under a medium-variant prediction (UN, 2003). However, given different fertility scenarios, world population could range between 7.4 billion and 12.8 billion in 2050 (Table 2). According to the FAO, strategic framework population is forecast to reach 7.2 billion in 2015 (FAO 2001a).

Table 2 Estimated and projected world population by fertility projection variant, 1950-2050.

Major areas	Estimated population (millions)			Projected population (millions) 2050			
	1950	2000	2003	Low	Medium	High	Constant
World	2519	6071	6301	7409	8919	10633	12754
Africa	221	796	851	1516	1803	2122	3279
Asia	1398	3680	3823	4274	5222	6318	7333
Latin America and Caribbean	167	520	543	623	768	924	1032
Europe	547	728	726	565	632	705	597
Northern America	172	316	326	391	448	512	453
Least Developed Countries	200	668	718	1417	1675	1960	3019

Source: United Nations (2003), World Population Prospects – the 2002 revision.

Particularly rapid growth is expected among the least developed countries, with population rising from 668 million to 1.7 billion by 2050 (medium variant), even despite the fact that fertility rates are expected to decline markedly. A no-change projection would put the number at 3 billion. The population of the developed regions is expected to change very little in the next 50 years. Asia will remain the most populous region by 2050. The greatest rate of increase should be seen in Africa. Africa's population will more than double by 2050, even under low-variant predictions (Table 2) (UN 2003).

Numerous organisations publish population predictions. Table 3 gives 2015 predictions for developing countries from the World Bank. These figures are comparable with the UN projections for developing countries.

Table 3 Population estimates and projections for developing countries 1998-2015

Region	Population (millions)	
	1998	2015
East Asia & Pacific	1,817	2,099
East Asia &Pacific (excluding China)	569	708
Eastern Europe & central Asia	475	483
Latin America & the Caribbean	502	623
Middle East & North Africa	286	390
South Asia	1,305	1,676
Sub-Saharan Africa	627	914
Total Developing Countries	5,011	6,185
Excluding China	3,763	4,794

Source: see World Bank Estimates in previous version of this source book.

The latest UN population estimates show increases over recent predictions due to the failure to see anticipated declines in fertility rates, especially in the least developed countries (UN 2003). Fertility rates are predicted to decline especially in the least developed countries.

In the 49 less developed countries fertility levels in the period 1995-2000 were 5.46 children per women and are projected to decrease to 2.47 in 2045, still above the replacement level of 2.1 children per women. Averages mask considerable heterogeneity; there are low-fertility countries such as China, where fertility is below replacement level and high-fertility countries such as Afghanistan, Angola, Burkina Faso, Burundi, Guinea-Bissau, DRC, Mali, Somalia, Uganda and Yemen, where fertility may have only just begun to decline.

Table 4 Total fertility rates 1995-2000 and 2045-2050 in the medium variant for the world and major development groups

Region	Total fertility (average number of children per woman)	
	1995-2000	2045-2050
World	2.83	2.02
Africa	5.22	2.40
Asia	2.72	1.91
Latin Am. &Caribbean	2.72	1.86
Europe	1.42	1.84
Northern Am	2.01	1.85
Least Developed Countries	5.46	2.47

Source: UN (2003) World Population Prospects 2002, revised version

Life expectancy is currently 65 years in the world but only 50 in Africa. Anticipated rises would increase life expectancy to 74 in the world and 65 in the developing world by 2050 (UN 2003).

Table 5 Life expectancy at birth 1995-2000 and 2045-2050 for the world and major development groups

Region	Total fertility (average number of children per woman)	
	1995–2000	2045–2050
World	64.6	74.3
Africa	50	64.9
Asia	65.7	76.0
Latin Am. &Caribbean	69.4	78.5
Europe	73.2	80.5
Northern Am	76.4	81.8
Least Developed Countries	62.5	66.4

Source: UN (2003), World Population Prospects 2002, revised version.

This demonstrates a convergence of life expectancy and implies an increasingly ageing population, especially in the developed world.

Population ageing will lead to an increase in the number of people aged 60 years or over, increasing from 606 million in 2000 to 1.9 billion in 2050, and will quadruple in less developed regions (UN 2003).

The ageing population structure is marked in the developed world, where the over 60s contribute 20% of the population rising to 33% by 2050 when there will be two old people for every one child. In Africa, the proportion of children is expected to decline from 43% in 2000 to 28% in 2050, and the proportion of older people is set to double form 5% to 10%.

When a greater proportion of people enter the economically active groups as fertility rates decline, this will reduce the dependency ratio and provide opportunities for economic growth. However, these gains could be wiped out in the countries badly affected by AIDS (see Health section).

Table 6 Dependency ratios and population aged 15-64, 1997-2005

	2000			2050		
	Total dependency ratio	Child dependency ratio	Elderly dependency ratio	Total dependency ratio	Child dependency ratio	Elderly dependency ratio
World	59	48	11	56	31	25
Africa	85	79	6	53	43	10
Asia	57	48	9	55	29	26
Europe	48	26	22	75	26	49
Latin America and the Caribbean	60	51	9	57	28	29

Source: United Nations Population division database (2002) revision.

Notes: Child dependency ratio is the ratio of the population aged 0–14 to that aged 15–64. The elderly dependency ratio is the ratio of the population aged 65 years or over to the population aged 15–64. The total dependency ratio is the ratio of the sum of the population aged 0–14 and that aged 65+ to the population aged 15–64. All ratios are presented as number of dependents per 100 persons of working age (15–64).

Changing age structures affect the dependency ratios with consequent financial and development repercussions. Table 6 shows the percentage ratio of the population in each dependent age range to the population aged 15–64, the economically active group. The dependency ratio is decreasing significantly only in Africa. The declining dependency ratios for the younger age ranges can be witnessed across all regions except Europe and this can lead to further growth for developing countries.

The median age has changed only slightly in the period (1950–95) reaching 26.4 years in 2000. It is predicted to rise by 10 years to 37 years in 2050 (UN 2003). Table 7 shows that the world median age will reach 36.8 years by 2050 and will have risen in all regions. However the projected disparity between Europe (47.7 years) and the least developed countries (27.1 years) has increased slightly.

Table 7 Median age by major area (medium variant)

Region	Median age (years)		
	1950	2000	2050
World Total	23.6	26.4	36.8
Africa	19.0	18.3	27.5
Asia	22.0	26.1	38.7
Europe	29.2	37.7	47.7
Northern America	29.8	35.4	40.2
Latin America & Caribbean	20.1	24.2	39.8
Oceania	27.9	30.7	39.9
Least Developed Countries	19.5	18.1	27.1

Source: UN (2003), World Population Prospects 2002, revised version.

Population predictions are subject to numerous qualifications, such as the impact of HIV/Aids in Africa and increasingly Asia, rates of migration and the contribution of shocks (see section on Health).

MAJOR SOURCES:

UN (2001), *World Population Prospects: The 2000 Revision*, UNPD.

UN (2003), *World Population Prospects 2002: Revised version*, UNPD, see http://www.un.org/esa/population/publications/wpp2002/WPP2002-HIGHLIGHTSrev1.PDF

FAO (2001), 'FAO Strategic Framework', see http://www.fao.org/strategicframework/

3. Urbanisation

'In the next quarter century, the population explosion that characterised much of the 20th century will be replaced by another dramatic demographic transition: urban population growth of an unprecedented scale' (IFPRI – Brockerhoff 2000).

The world's urban population has been estimated at three billion in 2003 and is expected to rise to five billion by 2003. The urban population accounts for the majority of the world population increase in this period (UN 2004).

48% of the world's population lived in urban areas in 2003, but this is expected to increase to 61% by 2030.

This rise in urban population will be concentrated in the less developed regions with population on average rising by 2.3% annually. Major drivers include rural to urban migration and transformation of rural settlements into urban places. The urban population in more developed regions is expected to rise only slowly from 0.9 to 1.0 billion, or by 0.1% annually over the period 2000–30 (UN 2004).

There are strong regional differences in the levels of urbanisation. Latin America is already highly urbanised at 77%, whereas Africa and Asia have urbanisation rates of 39% respectively. Africa and Asia can expect to see high rates of urban growth with forecasts of 3.1% and 2.2% respectively by 2030 (see Table 8).

Care must be taken to view the statistics in absolute terms as well. Asia is currently the least urbanised major area of the world. However, it has 1.5 billion urban dwellers, which is more than the combined total of Europe, North America, Latin America and the Caribbean (1.2 billion), see UN (2004)

Table 8 Total urban and rural populations by major area, selected periods, 1950-2030

	Population (millions					annual change (%)	
	1950	**1975**	**2000**	**2003**	**2030**	**1950–2000**	**2000–30**
Total population							
Africa	221	408	796	851	1398	2.56	1.88
Asia	1398	2398	3680	3823	4887	1.93	0.95
Europe	547	676	728	726	685	0.57	-0.2
Latin America & Caribbean	167	322	520	543	711	2.27	1.04
Northern America	172	243	316	326	408	1.22	0.85
Oceania	13	22	31	32	41	1.77	0.97
Urban population							
Africa	33	103	295	329	748	4.39	3.1
Asia	232	575	1367	1483	2664	3.55	2.22
Europe	280	446	529	530	545	1.27	0.1
Latin America & Caribbean	70	197	393	417	602	3.45	1.42
Northern America	110	180	250	261	354	1.65	1.16
Oceania	8	15	23	24	31	2.13	1.07
Rural population							
Africa	188	305	500	521	650	1.95	0.87
Asia	1166	1823	2313	2341	2222	1.37	-0.13
Europe	267	230	199	196	140	-0.59	-1.17
Latin America & Caribbean	97	125	127	126	109	0.54	-0.51
Northern America	62	64	66	65	53	0.12	-0.7
Oceania	5	6	8	9	10	1.04	0.68
Percentage urban						(rate of urbanisation)	
Africa	14.9	25.3	37.1	38.7	53.5	1.82	1.22
Asia	16.6	24	37.1	38.8	54.5	1.61	1.28
Europe	51.2	66	72.7	73	79.6	0.7	0.3
Latin America & Caribbean	41.9	61.2	75.5	76.8	84.6	1.18	0.38
Northern America	63.9	73.8	79.1	80.2	86.9	0.43	0.31
Oceania	60.6	71.7	72.7	73.1	74.9	0.36	0.1

Source: UN (2004), World Urbanisation Prospects: the 2003 Revision, Table 4.

Rural population is forecast to have positive growth rates in Africa and Oceania in the period 2000–30. However, world rural population will remain stable in the same period, with anticipated declines in the other regions (see Table 8).

The proportion of people living in urban agglomerations of over 10 million persons (mega-cities) is small at 4.5% in 2003, and is set to rise to just 5% by 2015. The proportion of the world's population living in small cities (below 0.5 million) is larger at 25% and expected to rise to 27.2% by 2015. Hence, much of the focus of growth is not on the mega-cities but on the smaller cities and urbanised rural settlements.

Table 9 illustrates the nature of the projected growth in world urban population: a 0.5 percentage point increase in mega-cities but 2.2 percentage point increase in cities below 0.5 million. For less developed regions this is 0.5 and 2.9 respectively

Table 9 Distribution of population among global urban settlements of different sizes 1975 to 2015.

	Population (millions)				Percentage distribution			
Size class of urban and rural settlements	1975	2000	2003	2015	1975	2000	2003	2015
Total	4068	6071	6301	7197	100	100	100	100
Urban	1516	2857	3044	3856	37.3	47.1	48.3	53.6
Cities> 10 million	65	251	283	358	1.6	4.1	4.5	5.0
Cities 5-10 mil	131	167	175	269	3.2	2.7	2.8	3.7
Cities 1-5 mil	333	659	695	914	8.2	10.9	11.0	12.7
Cities 500.000 <1 million	179	291	316	358	4.4	4.8	5.0	5.0
Cities fewer than 500.000	808	1489	1575	1957	19.9	24.5	25.0	27.2
Rural	2552	3214	3258	3341	62.7	52.9	51.7	46.4

Source: UN (2004), World Urbanisation Prospects 2003, Table 6.

Tokyo is the most populous urban agglomeration (35 million) followed by Mexico City (18.7), New York (18.3), São Paulo (17.9), Mumbai (17.4). Mumbai is expected to be second in 2015, after Tokyo.

UN-HABITAT (2003) estimates the total number of people currently living in slums to be 928 million. This figure is set to double until 2030 without policy changes.

MAJOR SOURCES

UN (2004), *World Urbanisation Prospects: the 2003 Revision*, see http://www.un.org/esa/population/publications/wup2003/2003WUP.htm

IFPRI (2000), 'Achieving Urban Food and Nutrition Security in the Developed World 20/20 Vision', see http://www.ifpri.org/2020/focus/focus03/focus03.pdf, includes Brockenhorst reference.

UN HABITAT (2003), *The Challenge of Slums - Global Report on Human Settlements 2003*, see http://hq.unhabitat.org/mediacentre/documents/whd/GRHSPR1.pdf

4. Environment

Global population in 2020 is projected to be a third higher than in 1995 and economic growth rates will remain high especially in parts of Asia. These are important factor affecting the environment. Increased demand is likely to lead to greater intensification of agriculture, increasing consumption of natural resources and the production of waste (Pinstrup-Anderson *et al.* 1999).

Future environmental projections are subject to fierce debate. There are very different projections and scenarios presented. For example, UNEP's Global Environmental Outlook 3 (GEO-3) includes four different qualitative scenarios, and we will report on these for some individual variables in the section.

Figure 1 Scenarios in Global Environmental Outlook

The *Markets First* scenario envisages a world in which market-driven developments converge on the values and expectations that prevail in industrialized countries;

In a *Policy First* world, strong actions are undertaken by governments in an attempt to reach specific social and environmental goals;

The *Security First* scenario assumes a world of great disparities, where inequality and conflict prevail, brought about by socio-economic and environmental stresses; and

Sustainability First pictures a world in which a new development paradigm emerges in response to the challenge of sustainability, supported by new, more equitable values and institutions.

Source: GEO-3, UNEP (2002).

A. Consumption and production patterns.

Consumption of natural resources in modern industrial economies is very high. It currently requires 300 kilograms of natural resources to generate US$100 of income. Some argue that transferring this resource-intensive model to the developing world is not a viable model of development (WRI 2001).

Global energy use has increased by 70% since 1970 and is projected to increase at more than 2% for the next 15 years. This will raise greenhouse gas emissions by about 50% (SDIS 2001).

Table 10 indicates significant increases in primary energy consumption still to be seen in Asia and Africa whilst the high consumption levels of the developed world are projected to plateau (UNEP 2000). In the OECD, energy intensity per unit of GDP has generally decreased during the 1990s, but at a slower rate than during the 1980s. While in the first half of the 1990s, energy intensity did not improve in most countries, owing to decreasing prices for energy resources (oil, gas, etc.), it improved slightly in the second half of the 1990s as a consequence of structural changes in the economy, energy conservation measures, and in some countries decreases in economic activity (OECD 2004a).

Industrial production is shifting towards the developing economies, especially in East Asia. Acid rain is a growing problem in Asia, with sulphur dioxide emissions expected to triple by 2010 (WRI, 2001). This distribution pattern and economic progress is forecast to lead to significant increases in energy use, by a factor of five or more in Asia by 2030 (UNEP 2001).

Table 10 Primary energy consumption projections

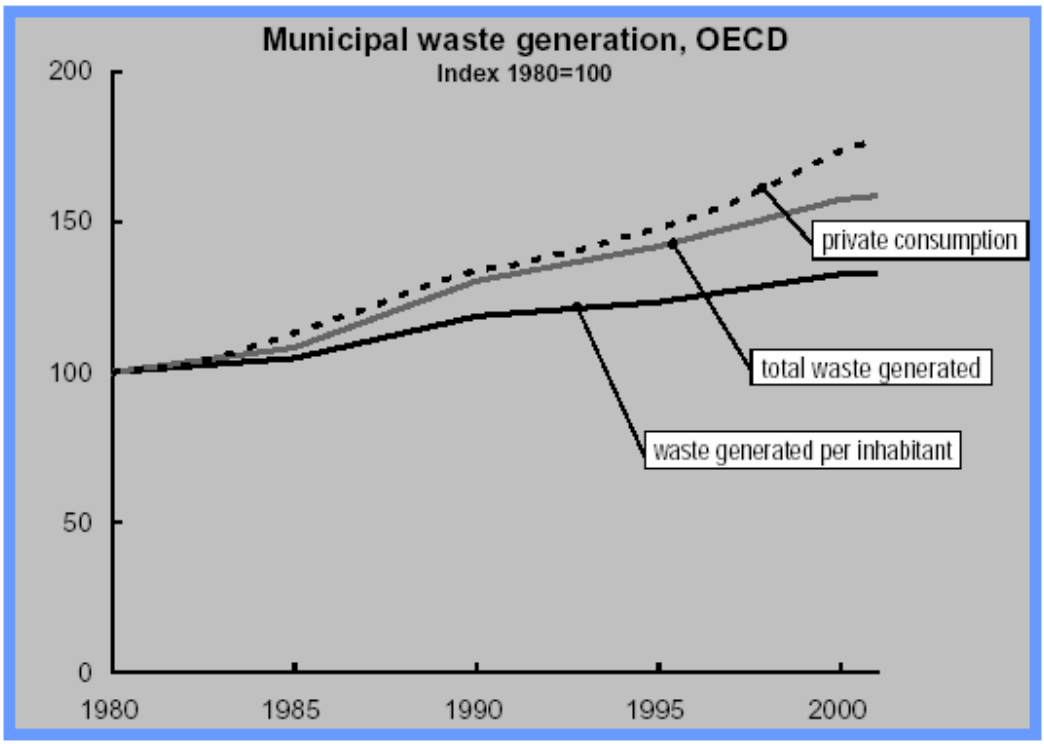
Region	Primary energy consumption total (petajoules)				Average annual change (%)		
	1950	1990	2015	2050	1950–90	1990–2015	2015–50
World	76,459	320,563	571,309	836,592	3.5	2.3	1.1
Africa	1,231	7,396	16,528	58,859	4.6	3.3	3.7
Asia & pacific	4,814	68,663	185,143	336,144	6.9	4.1	1.7
Europe	30,691	129,933	185,490	205,483	3.7	1.4	0.3
Latin Am	1,938	14,322	35,067	55,405	5.1	2.3	2.3
North Am	37,398	88,824	132,650	121,604	2.2	1.6	-0.2
West Asia	389	1,1424	26,431	59,097	8.8	3.4	2.8

Source: UNEP (2001), Global Environmental Outlook 2001

The generation of municipal waste in OECD countries increased by around 40% between 1980 and 1997. Whilst this growth rate is predicted to decline, municipal waste generation is expected to keep growing over the next two decades, reaching an estimated 770 million tonnes annually by 2020. The growth in the problem in developing countries is likely to be much worse (OECD 2001).

The quantity of municipal waste generated in the OECD area has continued to rise and reached 585 million tonnes in the early 2000s (570kg per inhabitant). Generation intensity per capita has risen in line with private final consumption expenditure and GDP, with a slight slowdown in recent years (OECD 2004a).

Figure 2 Municipal waste generation in the OECD



Source: OECD (2004a).

B. Water resources

If present rates of consumption continue, two out of every three people will live in a water-stressed environment by 2050. This is compounded by the large increases expected in the demand for water: domestic use (2.12), industrial use (2.37) and agricultural use (1.06) by the year 2050 (see Table 10) (Gleick, 2000).

By 2015, predictions suggest that areas with severe to moderately severe water shortage problems will increase from 12% to 14% of the total land area. The number of people facing severe water quantity problems will increase from 1.5 billion in 1990 to 2.1 billion in 2015 (Gleick, 2000).

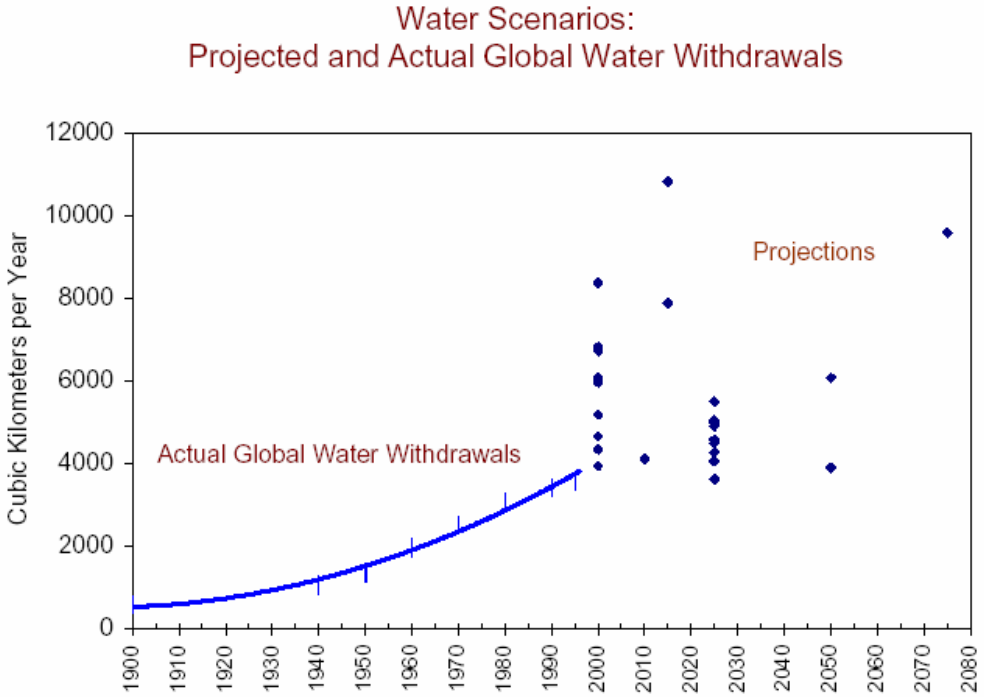
By 2015, nearly half the world's population, more than 3 billion people, will live in countries that are water-stressed. That is less than 17,000 cubic metres per capita per year, mostly in Africa, the Middle East, South Asia and Northern China.

The greatest increase in demand for water will come from Africa and Asia, with average annual increases of 13% and 10% respectively over the period 1990–2015 (see Table 11). The demand for water is expected to stabilise in Europe and North America by 2050.

Gleick (1999) surveys projections on annual water withdrawal prepared in the past 25 years. He finds that the earlier projections greatly overestimated the magnitude of future

demands because of the basic approach of extrapolating existing trends. Figure 3 shows actual water withdrawals until 1995 and projections thereafter.

Figure 3 Water scenarios: projected and actual global water withdrawals



Source: Gleick (1999).

Table 12 shows the make up of this increasing water use, with agriculture the major user. All users show projected increases, with agricultural users remaining the dominant influence.

In the developing world, 80% of water goes into agriculture. It is argued that this is not sustainable and that by 2015 a number of countries will be unable to maintain their levels of irrigation (CIA 2000).

Over-pumping of ground water is a major problem: for example, the water table under the grain producing areas of Northern China is falling at a rate of five feet per year. Measures taken to improve the efficiency of water use are not predicted to alter the problems of water shortage significantly by 2015. It is anticipated that water-pricing policies will not be widely applied by 2015 (CIA 2000).

The CIA predicts the possibility of conflicts arising from water shortage disputes by 2015. More than 30 nations receive over a third of their water from outside their boundaries. The potential for conflict in the Middle East is thought to be worrisome (CIA 2000).

Table 11 Total water withdrawal projections

Region	Total water withdrawal (cubic metres p.a.)				Average annual change (%)		
	1950	1990	2015	2050	1950–90	1990–2015	2015–50
World	n.a	2,978	3,715	4,327	n.a.	9	4
Africa	n.a.	145	199	280	n.a.	13	10
Asia & Pacific	n.a.	1,298	1,654	2,048	n.a.	10	6
Europe	n.a.	715	871	912	n.a.	8	1
Latin Am	n.a.	179	241	302	n.a.	12	7
North Am	n.a.	511	582	574	n.a.	5	0.00
West Asia	n.a.	130	168	211	n.a.	11	7

Source: UNEP (2001), Global Environmental Outlook 2000.

Table 12 Dynamics of water withdrawal and consumption by type of use (1990–2025)

Sector		Assessment			Forecast		
		1900	1980	1995	2000	2010	2025
Irrigated land area	(million hectares	47.3	198	253	264	288	329
Agricultural use Km^3/year	Withdrawal	525	2,179	2,488	2,560	2,737	3,097
	Consumptive use	406	1,688	1,939	1,970	2,093	2,331
Industrial Use Km^3/ year	Withdrawal	37.8	699	732	768	884	1,121
	Consumptive use	3.36	59.0	79.4	84.6	103	133
Municipal Use Km^3/year	Withdrawal	16	207	357	389	468	649
	Consumptive use	4.17	41.8	58.9	64.4	70.5	84.0
Reservoirs Km^3/year	Consumptive use	0.3	129	188	210	235	270
Total (rounded) Km^3/year	Withdrawal	579	3,214	3,765	3,927	4,324	5,137
	Consumptive use	415	1,918	2,265	2,329	2,501	2,818

Source: Shiklomanov (1998) in Gleick (2000).

C. Forest resources

The FAO estimate of total global forest was 3.86 billion hectares in 2000 compared with 3.45 billion hectares in 1995. The figures though are not directly comparable owing to changes in forest definition and the information base. However, the growing awareness of forest issues and management has helped to halt the rate of deforestation globally, although the problem still exists and is worsening in tropical zones (FAO 2001). No new FAO assessment has taken place since.

Table 13 shows that net annual deforestation at the global level is still high, at 9 million hectares p.a. However, this rate of loss is 10% less in the 1990s compared with the 1980s and is significantly lower than the previous FAO estimate of 11.3 million hectares p.a. in 1995 (FAO 2001b).

The GEO year book 2003 (UNEP 2003) finds that between 1990 and 2000, the proportion of land area covered by forest for the world as a whole decreased from 30.4% to 29.7%. The decrease was most significant in Latin America and the Caribbean (-2.3%) and Africa (-1.8%), with Europe and North America showing a slight increase (0.4% and 0.2% respectively). The deforested area equals 940.000 km^2, similar to the size of a country like Colombia or Egypt.

Table 13 Regional forest cover and forest cover change

Region	Total forest 2000		Change 1990–2000		Land area
	Million ha	%	Million ha	%/year	Million ha
World	3856	100	-9.0	-0.2	13 183
Africa	650	17	-5.3	-0.8	3008
Asia	542	14	-0.4	-0.1	3167
Oceania	201	5	-0.1	n.s.	849
North & Central America	539	14	-0.6	-0.1	2099
South America	874	23	-3.6	-0.4	1784
Europe	1040	27	0.9	0.1	2276

Source: The Global Forest Resources Assessment 2000(FAO 2001b).

Reasons for deforestation include conversion of forest to permanent agriculture, intensification of agriculture in shifting cultivation areas, and expansion of shifting cultivation into undisturbed forests.

The reduction in the rate of forest loss globally is mainly a result of natural forest regeneration in developed countries and increased plantations in Asia. The current rate of establishment of plantations is 4.5 million hectares per annum (FAO 2000b). Forest cover in Asia remains static with increases in plantations, while Europe and North America are showing increases in forest cover.

Tropical forests are still suffering losses, especially of natural forest. Table 14 illustrates that in tropical countries the net change in natural forest was a reduction of 13.5 million hectares p.a. in the period 1990–2000.

The SEI/UNEP backdrop scenario predicts the loss of a further 17% of forest area by 2050.

The increase in tropical forest management is an encouraging sign. In an FAO study of 76 countries, 42 million hectares of forest were under effective management schemes in 1980; by 2000 this had increased to 117 million hectares. The situation in temperate forests has been stable or improved in the last 20 years (FAO 2001b).

Table 14 Change of forest cover by major domains

Domain	Gross change	Net change	Gross change natural forest	Net change natural forest
Global	-13.5	-9.0	-15.0	-12.0
Tropical countries	-13.5	-11.7	-14.5	-13.5
Non-tropical countries	n.s	+ 2.7	-0.5	+ 1.5

Source: FAO (2001b), Global Forest Assessment 2001.

Forest fires have increasingly captured the news, with 1997 and 1998 being especially bad years. There are no good statistics to judge any trends in the incidence of forest fires. However, the link to the El Niño years of 1982/3 and 1997/8 were clear (FAO 1999).

D. Soil degradation

Policy failure and poor agricultural practices contribute to increased land pressure. For example, the excessive use of fertilisers (Table 20) and other chemicals through increased agriculture intensity contributes to soil degradation and water pollution. The cumulative productivity loss from crop-land over the past 50 years has been estimated at 13%. Productivity has declined on 16% of agricultural land in developing countries due to soil degradation. Almost 75% of Central America's agricultural land has been seriously degraded (Scher 1999).

A global agricultural model suggests that a slight increase in degradation relative to the baseline trends could result in a 17% to 30% higher world price for key food commodities in 2020 (Pinstrup-Anderson *et al.* 2001). Estimates of land loss due to degradation vary widely, from five to 12 million hectares every year to 2020. If land loss continues at current rates, an additional 150 to 360 million hectares would go out of production by 2020. A serious problem is also the reduction in soil quality in the land still under production (Scher 1999).

E. Fisheries

Fish stocks are increasingly under threat, as are livelihoods from fishing with declining catches and the imposition of quotas and bans.

Currently 8% of the world's reefs and 34% of all fish species may be at risk from human activity (WRI 2001). Of the major marine stocks fished worldwide, more than 28% are estimated to be overexploited (18%) and depleted or recovering (10%), while about 47% are fully exploited. Trend analysis shows large differences among OECD countries and among fishing areas, with high increases in some areas (e.g. the Pacific and Indian Oceans) and relatively stable trends in others (e.g. the North Atlantic). Only a few of the fish stocks in areas closest to OECD countries have significant potential for additional exploitation; the North Atlantic and parts of the Pacific areas are already being over-fished. All or most of the increase in demand for fish to 2020 will need to be and is expected to be supplied through aquaculture, since marine capture fisheries show no sign of increasing yields (OECD 2004; and Table 15).

Table 15 Total production of food fish, 1997 and 2020

	Actual 1997		Projected 2020		Projected annual growth rates 1997–2020 (percent)		
	Million metric tons	Share from aquaculture (percent)	Million metric tons	Share from aquaculture (percent)	Capture	Aqua-culture	Total
China	33.3	58	53.1	66	1.1	2.6	2.0
Southeast Asia	12.6	18	17.5	29	0.8	3.6	1.4
India	4.8	40	8.0	55	1.0	3.7	2.3
Other South Asia	2.1	23	3.0	39	0.6	4.0	1.7
Latin America	6.4	10	8.8	16	1.1	3.5	1.4
West Asia and North Africa	2.2	9	2.8	16	0.6	3.6	0.9
Sub-Saharan Africa	3.7	1	6.0	2	2.0	5.8	2.1
United States	4.4	10	4.9	16	0.1	2.7	0.5
Japan	5.2	15	5.2	20	–0.3	1.2	0.0
European Union 15	5.9	21	6.7	29	0.0	2.1	0.5
Eastern Europe and former Soviet Union	4.9	4	5.0	4	0.1	0.4	0.1
Other developed countries	4.8	12	5.8	20	0.5	2.9	0.8
Developing world	68.0	37	102.5	47	1.0	2.8	1.8
Developing world excluding China	34.6	17	49.4	27	1.0	3.6	1.6
Developed world	25.2	13	27.6	19	0.1	2.1	0.4
World	93.2	31	130.1	41	0.7	2.8	1.5

Sources: Actual data were calculated by authors from FAO 2002a; projections for 2020 are from the baseline scenario of IFPRI's IMPACT model (July 2002).

Notes: Actual data are three-year averages centered on 1997. Projected growth rates are exponential, compounded annually using three-year averages as endpoints.

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

While capture fisheries production has stagnated owing to overexploitation, there are hopes that aquaculture may ease pressure on threatened wild stocks. However, aquaculture itself is also associated with certain environmental problems. Aquaculture may have led to disturbance of the capture fisheries habitat through pollution and coastal habitat conversion and the increasing use of fishmeal and fish oil in the feeds of farm raised fish has also raised concerns that aquaculture may be harming wild fish populations rather than easing pressure on them. These concerns are expected to become increasingly prominent as demand for fish grows over the coming years (Delgado *et al*., 2003).

F. Land use changes

Changes in population and dietary intake will lead to the greater intensification of agriculture in the developing regions. Cropping intensity is set to increase by 15–20% by 2050 (UNEP 2001).

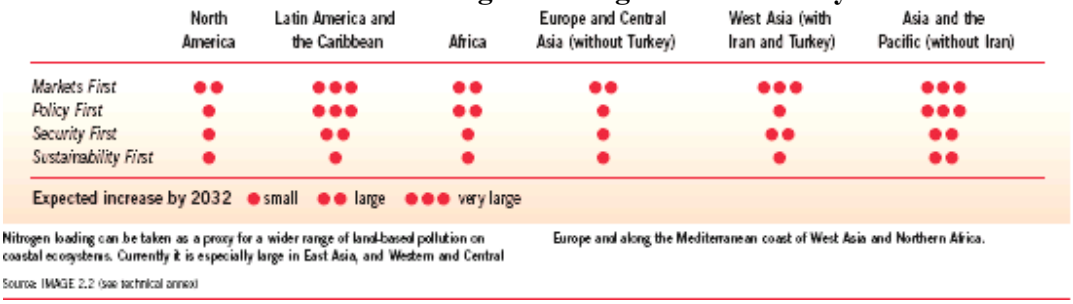
Globally, agricultural land currently occupies 37% of total land area and this is projected to increase to 46% by 2015 and 50% by 2050 (UNEP 2001).

The greatest increases will be in developing countries, with a 33% increase by 2015 and a 45% increase by 2050 (UNEP 2001). Africa is expected to reach increases of 57% and 90% by the respective dates. This all implies the increased use of fertilisers and the reduction in natural habitats.

The impact of agriculture is not limited to the developing world. Total water use by agriculture in OECD countries is expected to increase by 15% by 2020. Nitrogen and biochemical oxygen demand loading are forecast to increase by more than 25% and methane emissions could increase by almost 9% above current levels (OECD 2001).

Table 16 shows for different scenarios the changes expected by UNEP over 2002–32 in nitrogen loading, which can be taken as a proxy for a wider range of land-based pollution on coastal ecosystems. It is currently large in East Asia, Western and Central Europe, and along the Mediterranean coast of West Asia and Northern Africa (UNEP 2002).

Table 16 Potential increase in nitrogen loading on coastal ecosystems



Source: UNEP (2002).

Table 17 Non-domesticated land as percentage of total regional land areas.

Region	1990	2015	2050
World	70	65	60
Africa	70	55	45
Asia & Pacific	60	50	55
Europe & Former USSR	75	75	70
Latin Am. & Caribbean	70	65	60
North America	80	80	80
West Asia	90	75	70

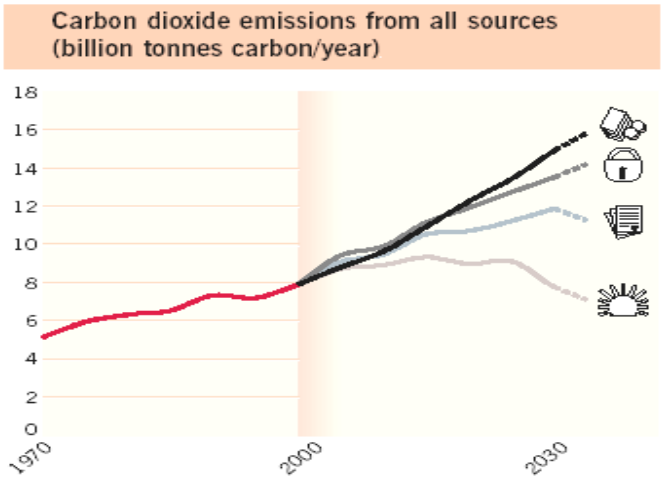
Source: UNEP (2001), Global Environmental Outlook.

Table 17 shows that in all areas of the world the amount of land not used for human activity is set to decline, with the largest land use changes being seen in Africa and West Asia. These land use changes will have significant environmental impacts for humans and will also cut habitat availability for numerous endangered species (WRI 2001).

G. Climate change

Carbon dioxide (CO_2) accounts for the largest share of emissions of greenhouse gases associated with global warming. CO_2 emissions have continued to rise since 1990 except in Europe, partly thanks to stricter regulations and downturns in Eastern Europe (UNEP Year Book 2003). The atmospheric concentration of carbon dioxide has increased by 31% since 1750 and the current rate of increase is unprecedented in the last 20,000 years. Global CO_2 emissions currently show an average annual increase of 1.4% (IPCC 2001) and are projected to stay above current levels for at least another 25 years, even in the most environment friendly scenarios (see Figure 4).

Figure 4 Carbon dioxide emissions from all sources (billion tonnes carbon/year)



Source: UNEP (2002).

In the last 20 years, this was primarily due to fossil fuel emissions (75%), with the remainder associated with land use changes. The emissions of CO_2 through fossil fuel burning are almost certainly going to be the dominant influence on the trends in atmospheric CO_2 in the 21st century. By 2100, levels could be between 90% and 250% above the 1750 levels (IPCC 2001).

Energy use and transportation are the main contributors to greenhouse gases. If current policy patterns continue the impact on climate change is expected to increase.

Motor vehicle kilometres travelled in OECD countries are expected to increase by 40% from 1997 to 2020, passenger air kilometres to triple by 2020, and energy use to increase by 35% to 2020 (OECD 2001).

Currently, the CO_2 emissions are predominantly from OECD countries; these are predicted to rise by a further 33% to 2020. This is well outside the Kyoto protocol target for Annex 1 countries of a 55% reduction from 1990 to 2008–12 (OECD 2001).

Emissions from non-OECD countries are set to rise at even greater rates. Table 14 shows projections of global greenhouse gases to 2050.

Table 18 Projected emissions of greenhouse gases
1990=100

Gases	1990 base year	2000	2025	2050
Carbon dioxide	100	110	163	204
Methane	100	105	125	150
Nitrous oxide	100	104	122	152

Source: Adapted from FAO (2001b).

IPCC predicts that anthropogenic climate changes will persist for many centuries, even with stabilisation of the emissions. The last IPCC conference agreed on the reality of human-induced climate change and that the impact of climatic change was likely to be more devastating in less developed countries, as these lacked the infrastructure to deal with and adapt to the new climates (IPCC 2001).

Global average surface temperature has increased over the 20th century by about 0.6°C. The projected rate of warming is much larger than the rate witnessed in the 20th century. Under the SRES forecasts, the globally averaged surface temperature is projected to increase by 1.4 to 5.8 °C over the period 1990 to 2100 (IPCC 2001).

Virtually all land areas will warm more rapidly than the global average; the northern regions of America and Asia are expected to experience warming 40% above the mean warming rates (IPCC 2000).

Global average temperature and sea levels are projected to rise under all IPCC SRES scenarios. Figure 5 shows annual increases in temperature according to the four different scenarios discussed before.

The consequences of this global warming have been a 10% decrease in the extent of snow cover since the 1960s and global average sea level rising by between 0.1 and 0.2 metres in the 20th century. Global mean sea level is projected to increase by 0.09 to 0.88 metres between 1990 and 2100 (IPCC 2001)

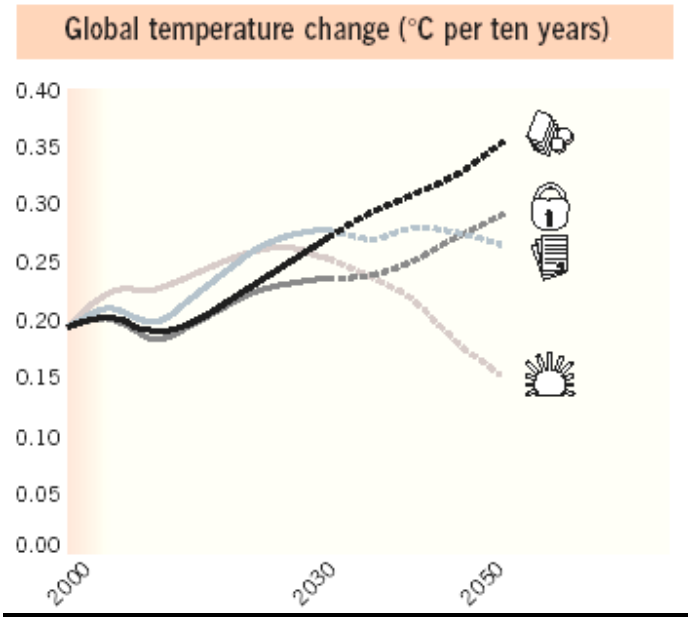
It is likely that warming associated with increasing greenhouse gas concentrations will cause an increase of Asian summer monsoon precipitation variability. Global average levels of precipitation are expected to increase in the 21st century and larger year-to-year variations are very likely (IPCC 2001).

Most climate models show a weakening of the ocean thermoline circulation which allows heat transport to the Northern Hemisphere; after 2100 this system could completely and irreversibly shut down.

It is only recently that current climate patterns have been compared with model projections. The incidence of extreme events is projected to increase. Even though El Niño projections show little change, global warming is likely to lead to greater extremes of drying and heavy rainfall and increase the risk of flooding and droughts (See Table 19).

Some researchers such as David Henderson suggest that the IPCC is far too pessimistic because it uses market-based GDP levels to forecast emissions, and not GDP corrected for purchasing power parity.

Figure 5 Global temperature change



Source: UNEP (2003), GEO-3.

Table 19 Confidence in changes in extreme weather and climate events

Changes in phenomenon	Confidence in observed changes (latter half of 20th century	Confidence in projected changes (during 21st century)
Higher maximum temperatures and more hot days over nearly all land areas.	Likely	Very likely
Higher minimum temperatures, fewer cold days and frost days over nearly all land areas.	Very likely	Very likely
Reduced diurnal temperature range over most land areas.	Very likely	Very likely
Increase of heat index over land areas	Likely over many areas	Very likely over most areas
More intense precipitation events	Likely Northern Hemisphere mid to high-latitudes land areas	Very likely, over many areas
Increased summer continental drying and associated risk of drought	Likely in a few areas	Likely mid-latitude continental interiors.
Increase in tropical cyclone peak wind intensities	Not observed	Likely, over some areas
Increase in tropical cyclone mean and peak precipitation intensities	Insufficient data	Likely, over some areas

Source: IPCC (2001).

H. Nitrogen cycle

The level of biologically available nitrogen may double in the next 25 years. Human activities now contribute more to the global supply of fixed nitrogen than do natural ones (UNEP 2000). The large increase in the use of fertilisers (predominantly nitrogen) is the main cause. Between 1972 and 1988, global fertiliser use grew at an annual average of 3.5% or by more than four million tonnes a year. Up to the 1980s, maintenance and improvement of fertility was thought of chiefly in terms of addition of mineral fertilisers, and agricultural subsidies increased the use of fertilisers further. Government policies supported farmers by subsidising agricultural inputs such as irrigation, fertiliser and pesticides. A study by FAO of 38 developing countries showed that 26 of them subsidised fertiliser use (cited in UNEP 2002). Levels and projections of fertiliser use can be seen in Table 16, with continued and significant annual growth rates of 3.3% and 2.8% for Africa and Asia up to 2020.

The increase in food demand brings new land under cultivation and increases the intensity of production. The Green Revolution in Asia witnessed large increases in the use of fertilisers. Generally, future growth will be slow owing to the high current usage rates. However, certain regions of the developing world, especially Africa and West Asia, have very low usage rates, so the capacity to expand levels is high (Bumb and Baanante 1996).

Table 20 Trends and projections in fertiliser use

Region	Fertiliser use (million nutrient tons)			Annual growth %	
	1960	1990	2020	1960–90	1990–2020
World total	27.4	143.6	208.0	5.5	1.2
Developed countries	24.7	81.3	86.4	4.0	0.2
Developing countries	2.7	62.3	121.6	10.5	2.2
East Asia	1.2	31.4	55.7	10.9	1.9
South Asia	0.4	14.8	33.8	12.0	2.8
West Asia/North Africa	0.3	6.7	11.7	10.4	1.9
Latin America	0.7	8.2	16.2	8.2	2.3
Sub-Saharan Africa	0.1	1.2	4.2	8.3	3.3

Source: Bumb and Baanante (1996).

I. Positive trends

In general, environmental degradation has increased at a slightly lower rate than economic growth. The use of energy and other resources appears to be increasing at a slower rate than GDP in many OECD countries, and the pollution intensity of output is growing even more slowly (OECD 2004a).

Progress has been made in lessening the consumption of ozone-depleting substances, reduced by about 70% since 1987. However, pockets of use of these and the growth in black-market trade are worrying (WRI 2001).

These trends give an indication of the possible decoupling of economic growth and environmental degradation. OECD economies are expected to reduce the energy intensity of their economies by 20% to 2020, while increasing total energy use by 35% (OECD 2001).

UNEP (2002) GEO 3 mentions several environmental achievements over the past three decades including:

- Reductions in many countries of emissions of common air pollutants.
- Ambient air quality and point-source water pollution addressed satisfactorily in many areas; recycling has become more common; wastewater treatment has improved; pulp and paper industry effluents have declined and hazardous waste threats have been reduced. Protected areas have been increasingly set aside for conservation and recreation.
- Technological change has helped to relieve some environmental pressures: lower material intensity in production; a shift from materials and energy supply to the provision of services; a modest boost in renewable technology; and a significant clean-up in some regions in previously 'dirty' industries.

J. Negative trends

Table 21 gives an overview of the environmental concerns that are likely to worsen into the 21st century. The areas of key concern appear to be related to water and coastal issues. The concentration of these factors in small island states is especially noted.

UNEP (2002) mentions several environmental challenges:

- Emissions of almost all greenhouse gases continue to rise.
- Ground-level ozone, smog and fine particulates have emerged as significant health risks.
- Overexploitation of many of the surface water resources and great aquifers upon which irrigated agriculture and domestic supplies depend has resulted in more and more countries facing water stress or scarcity. About 1,200 million people still lack access to clean drinking water and some 2,400 million to sanitation services.
- The extinction rate of species is believed to be accelerating. Habitat destruction and/or modification are the main cause of biodiversity loss.
- There has been a trend towards increasingly intense exploitation and depletion of wild fish stocks.
- Land degradation continues to worsen.
- Many remaining forest ecosystems have been degraded and fragmented.
- Crop and livestock production has contributed to the large increase in reactive nitrogen in the global biosphere, contributing to the acidification and eutrophication of ecosystems.
- Urban air pollution and deteriorating water quality are having major health, economic and social impacts.
- An increase in the frequency and intensity of natural disasters over the past 30 years has put more people at greater risk.

Table 21 Summary of global and regional environmental trends likely to worsen in the 21st century

Trends	Reasons	Consequences
Nitrogen overload	Large fertiliser usage increases	Still under consideration
Environmental related disasters	Natural and human exacerbated increases	Increase in number of deaths and people affected. Severe economic loss
Degradation of coastal areas and resources	Poor management of urbanisation, tourism and industrialisation.	Resource exploitation, habitat loss, ecosystem disruption.
Species invasion	Deliberate or accidental introduction of non-indigenous species.	Many indigenous organisms severely threatened by exotic species.
Climate extremes	1997/98 El Niño was the most powerful on record. Industrialisation/atmospheric pollution	Drought, flooding, storm events.
Land degradation	Increased use of marginal land, increasing vulnerability to water and wind induced erosion	Loss of productive capacity, food security concerns
Looming global water crisis	Increasing population, industrialisation, and food demand creates large demand increases	Food security, irrigation land losses, conflict.
Urbanisation	Industrialisation and intensification of agriculture	Problems of waste disposal and chronic health impacts.
Environmental importance of refugees	Increasing conflict and environmental disasters.	Refugees forced to make unrestricted use of the natural resources.
Vulnerability of small island developing states	Isolation, high import dependency, high coast to inland ratio, small physical and economic size.	Increasing land loss, poverty, shortage of fresh water.
Chemicals	Increasing use of compounds that persist in the environment	Impact on health and reproduction of organisms.

Source: UNEP (2000).

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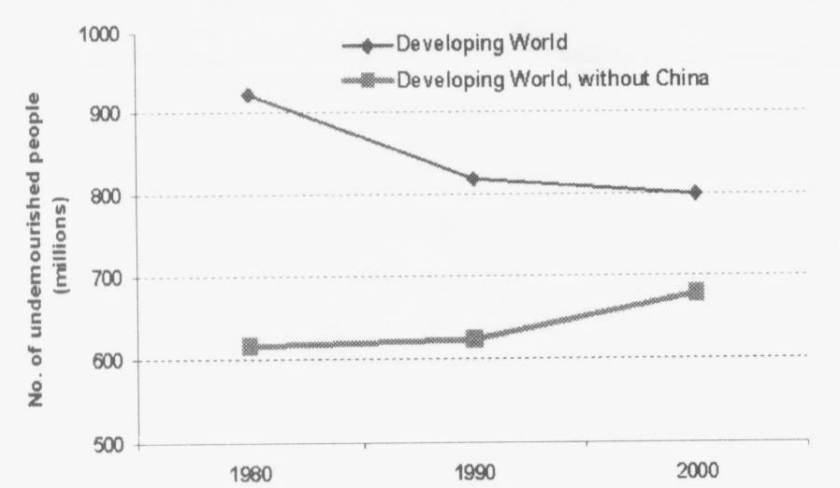
5. Food

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 799 million in 2000, while the proportion of people living in food insecurity dropped substantially, from 28% to 17% (Braun *et al*., 2003). However, progress has slowed considerably since the 1990s and, if China is excluded from consideration, the number of food-insecure people in the rest of the developing world increased by 50 million during the course of the decade (see Figure 6). 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 6 Undernourished people in developing countries, 1980-2000



Source: FAO (2004).

Global food demand growth caused by expanding populations and shifting consumption patterns will necessitate food production increases, but unexploited, available arable land is limited, placing the burden for these increases on technologically driven yield improvements.

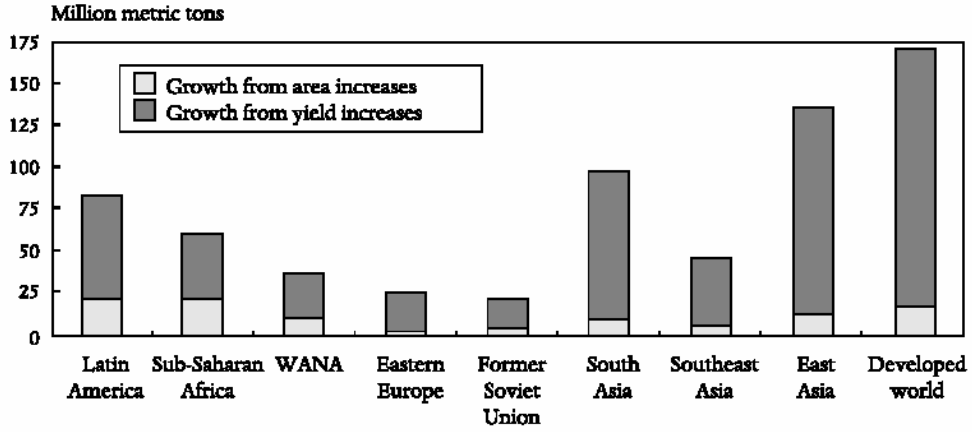
Cereals

Total cereal demand is expected to increase by 1.3% per year until 2020, particularly in developing countries, but it will decrease from historic rates because population growths are slowing and income elasticities of food demand for cereals are gradually declining in many countries. Developing Asia will account for over half 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). Global cereal production is projected to grow at a rate of 1.26% per year until 2020 (the difference in demand to be taken from stocks). 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).

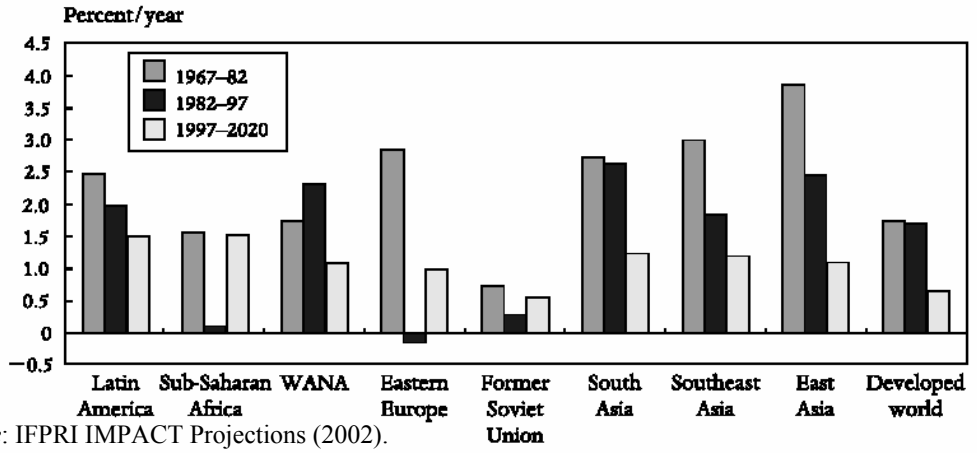
Sub-Saharan and Latin America will be able to increase their share of global cereal production because they will expand cultivated areas significantly, and will therefore not be as dependent as the rest of the world on cereal yield increases to drive production growth (see Figure 7). These two regions will be exceptions, as cereal area is projected to expand only 9% to 2020 in the developing world as a whole, providing for only 15% of cereal production growth during this period. Asia, in particular, posses little arable land not already under cultivation (Rosegrant *et al.*, 2002).

Figure 7 Share of area and yield increase in regional cereal production to 2020



Source: IFPRI IMPACT Projections (2002).

Figure 8 Yield growth rates by region, all cereals



Source: IFPRI IMPACT Projections (2002).

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 8). 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).

Meat

Global meat demand is projected to grow 57% (118 million tonnes) by 2020. Meat demand in developing countries is predicted to increase by 92% (102 million tonnes) by 2020 and will account for the lion's share of the increase in global demand. Asia, led by China, will in turn account for the major share of the increase in meat demand from developing countries (Delgado *et al*. 1999). Projected international meat trade will expand by 2020 because regional supply and demand will be out of balance. The three main exporters, the US, Latin America and the EU will all experience significant increases in the value of their meat exports.

Roots and Tubers

Aggregate demand for roots and tubers in the developing world will increase by 55% (248 million tonnes) by 2020. Sub-Saharan Africa will account for 44% of this increase, indicating that roots and tubers will continue to be an important part of the diet in the region. Asia will also account for a significant amount of the total increase, with East Asia accounting for 21% and South Asia 14%. In developing countries, the supply of roots and tubers is expected to increase only 51% by 2020, thus lagging behind demand growth. Rapidly improving yields will be necessary to drive roots and tubers production increases (Rosegrant *et al*. 2002).

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 seven million tonnes by 2020. Much of this excess will be exported to East Asia (Rosegrant *et al.* 2002).

Eggs and Milk

Eggs and milk have limited tradability, so trends in production and demand will stay close together by 2020. Egg demand will grow fastest in South Asia (113%). Milk demand in sub-Saharan Africa is projected to increase by 100% and production by 111% by 2020. South Asia will continue to dominate milk consumption and production in the developing world (Rosegrant *et al.* 2002).

Child malnutrition

Since the 1960s, developing countries have made impressive strides against 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 22).

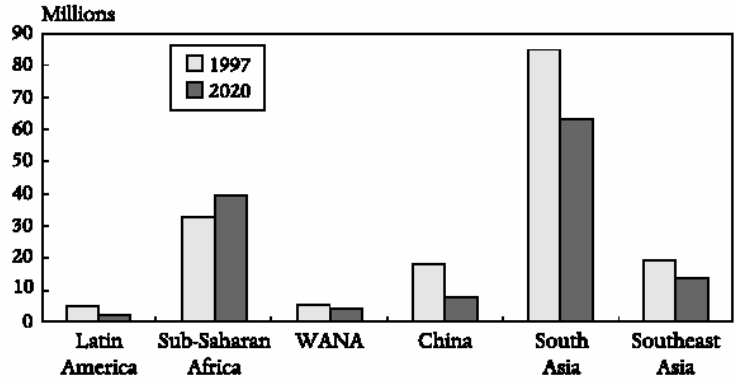
Although a downward trend is evident in the number of malnourished children in developing countries, this trend does not demonstrate a pattern of inevitable, steady progress. The timing and size of gains have been uneven and interspersed with periods of worsening or stagnant malnutrition. The largest 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). Nevertheless, caloric availability per capita rose in developing countries between the 1960s and early 1990s by 400 kilocalories, reaching nearly 2,700 kilocalories per day by 1997 (FAO, 2000). This is predicted to increase to 2,800 calories per day by 2020 (Smith and Haddad 2000).

Table 22 Number of malnourished children since 1970 (by million under 5s)

Region	1970	1975	1980	1985	1990	1995	1997	2004 (est.)
Latin America and Caribbean	9.5	8.2	6.2	5.7	6.2	5.2	5.1	6.0
Sub-Saharan Africa	18.5	18.5	19.9	24.1	25.7	31.4	32.7	39.0
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
East Asia	77.6	45.1	43.3	42.8	42.5	38.2	37.6	
All regions	203.8	167.6	164.3	177.7	176.7	167.1	166.3	150.0

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

Figure 9 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 132 million in 2020. Child malnutrition in sub-Saharan Africa, particularly in the northern region, is predicted to increase by 34%. All other regions are

predicted to see declines in the number of children who are malnourished (see Figure 9). China will witness the largest decline, followed by Latin America (IFPRI 2002).

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6. Economic Growth

Economic growth is a key driver of many future trends. However, economic growth predictions are difficult as they are subject to a variety of shocks, particularly in the short-term, while they revert to 'trend' in the long-run.

Since 2001, the global economy has grown well below potential, at a rate of just 2%. The global slowdown that began in 2001 with the bursting of the equity-market bubble evolved into a subdued recovery in 2002. Initially, the sharp downturn in business investment was a critical factor in sluggish growth. The pace of economic activity faltered again during 2002 and 2003 in response to events that undermined confidence: war in Iraq, transatlantic tensions, concerns about terrorism, and the outbreak of SARS (IMF 2003).

Barring additional shocks, global growth is predicted to increase to 3% in 2004 as firms in developed countries begin to upgrade capital stock and replenish inventories. Signs of renewed economic activity are appearing in the US – including an upturn in orders, production and exports, as well as firming equity markets. Yet, conditions in Europe and Japan remain slack. Improvement in confidence will prove the key to a revival in spending and growth. Following growth rates of 4% in 2003, developing countries are likely to grow at 4.9% in 2004, grounded in a revival of world trade and domestic demand. To date, the upturn is most rapid in emerging Asia, particularly China (IMF 2004a).

Risks to growth in the long-term remain. First, the pace of stabilisation in the Middle East remains uncertain. Secondly, SARS, though now under control, could re-emerge and present challenges, especially to China. Thirdly, and more broadly, a reversal of the incipient investment rebound in developed countries cannot be ruled out, as investment growth dropped sharply during 2003. Fourthly, global interest rates are low and will eventually have to rise substantially. Fifthly, while the Doha Round trade negotiations appears to be regaining momentum, significant obstacles remain. Finally, the US current account deficit (surpassing historic levels) – matched by a fiscal deficit of a similar size – and surpluses elsewhere, notably in Asia, remain a serious concern (World Bank 2004b).

The recovery in global economic growth, combined with currency developments, has fed through to commodity prices. Oil prices have climbed markedly; with spot prices rising from US$26.5 per barrel in September 2003 to US$40 a barrel in May 2004. A significant proportion of this increase appears to reflect the depreciation of the US dollar (with a correspondingly limited impact on predicted global growth). The remainder is due to higher-than-expected demand, particularly in the US and China; relatively low inventories; delays in restoring Iraq's oil production; and sizeable speculative activity. Non-fuel commodity prices have also increased, by 10% since mid-2003, with metals, food and agricultural raw materials experiencing the largest gains. While non-fuel prices are expected to stay firm, they remain moderate by historical standards and their average pace of increase is likely to slow in 2004 as production responds to higher prices (IMF 2004a).

Figure 10 Cycles and trends in real prices of non-fuel commodities, 1957–2004 (1990=100)

Source: IMF (2004b).

The projected rate and nature of economic growth in individual countries and regions is predicted to vary considerably. In industrial countries, growth is predicted to be strongest in the United States, with GDP growth estimated at 4.6% for 2004. With the impact of past fiscal and monetary stimulus waning during 2004, long-term growth prospects will depend on solid investment growth and a sustained pick-up in employment. In Europe, the growth is predicted to remain subdued; while there are signs of an increase in investment, household consumption remains weak. In Japan GDP growth is projected at 3.4% in 2004 (on the back of increased external demand from China), the highest since 1996, moderating thereafter, with deflation and corporate and banking system weaknesses remaining concerns (IMF 2004a).

Emerging and developing countries are also predicted an increase in economic growth. Predicted growth rates are particularly high for emerging Asia, where growth is projected to remain at 7.2% in 2004, the highest level since before the 1997/98 crisis, underpinned by sound macroeconomic policies, competitive exchange rates and the recovery of the IT sector. Buoyant growth in China, underpinned by rapid increases in investment and exports, has provided important support to growth in countries within and outside the region.

Table 23 Growth of real GDP, 1971-2015

		Growth (%)					Forecast (%)	
Region	**GDP 2002 ($ billions)**	**1971 –80**	**1981 –90**	**1991– 00**	**2002**	**2003**	**2004– 05**	**2006– 15**
World	32016	3.7	3.0	2.6	1.9	2.0	2.9	3.2
High income	25937	3.5	3.1	2.5	1.6	1.5	2.5	2.7
Low & middle-income	6079	5.0	2.6	3.3	3.3	4.0	4.9	4.6
East Asia & Pacific	1757	6.7	7.3	7.7	6.7	6.1	6.6	6.2
E. Europe & Central Asia	1114	3.9	1.5	-1.6	4.6	4.3	4.3	3.4
Latin America & Caribbean	1658	5.9	1.1	3.4	-0.8	1.8	3.8	3.8
Middle East & N. Africa	587	7.0	2.5	3.4	3.1	3.3	3.7	4.3
South Asia	646	3.1	5.9	5.2	4.2	5.4	5.4	5.4
Sub-Saharan Africa	316	3.5	1.7	2.3	2.8	2.8	3.7	3.5

Source: World Bank (2004b).

In Latin America, after the deep recession in 2001/02, economic activity has begun to recover. While GDP growth – notably in Brazil – remained weak in 2003, recovery is expected beyond 2004, underpinned by strengthening domestic demand, higher commodity prices and the global economic recovery (IMF 2004a).

In the Middle East, growth is predicted to fall back from the relatively high levels experienced in 2003, owing mainly to slower growth in oil production (although there have been benefits from higher oil prices) (IMF 2003).

In Central and Eastern Europe a moderate upturn is predicted, constrained by the relatively weak predicted performance of Europe and the need for fiscal consolidation in many countries (IMF 2004a).

Table 24 Growth of Real GDP per capita, 1971–2015

		Growth (%)					Forecast (%)	
Region	**GDP per capita 2002 ($)**	**1971 –80**	**1981 –90**	**1991 –00**	**2002**	**2003**	**2004– 05**	**2006- 15**
World	5297	1.8	1.3	1.2	0.7	0.8	1.8	2.2
High income	27185	2.6	2.5	1.8	1.2	1.1	2.1	2.5
Low & middle income	1194	2.9	0.7	1.7	1.9	2.7	3.6	3.4
East Asia & Pacific	956	4.6	5.6	6.4	5.8	5.2	5.7	5.4
E. Europe & Central Asia	3374	2.9	0.6	-1.8	4.5	4.3	4.2	3.3
Latin America & Caribbean	3149	3.3	-0.9	1.7	-2.3	0.4	2.4	2.5
Middle East & North Africa	1917	4.0	-0.6	1.2	1.1	1.3	1.7	2.5
South Asia	461	0.7	3.6	3.3	2.5	3.7	3.8	4.1
Sub-Saharan Africa	460	0.7	-1.1	-0.2	0.5	0.6	1.5	1.6

Source: World Bank (2004b).

Among the poorest countries, GDP growth in sub-Saharan Africa (excluding South Africa) increased to 4.4% in 2003, aided by increased oil production in Nigeria (IMF 2004a). GDP growth in the region is expected to strengthen in 2004, reflecting a combination of improving macroeconomic fundamentals; higher commodity prices; better weather conditions, debt relief under the Heavily Indebted Poor Countries (HIPC) initiative, and rising oil and gas production in several countries. While the projected

increase in GDP growth is encouraging, projections of growth in Africa are often over-optimistic, in part reflecting unanticipated shocks, such as political instability or natural disasters (IMF 2003).

Developing country growth, on a per capita basis, is projected to more than double during the 10-year period from 2005 to 2015 when compared with the performance of the 1990s. This projection reflects substantially improved growth prospects for Central Europe and Central Asia – leaving behind sharp contractions that characterised the transition to market economies during the 1990s – and for sub-Saharan Africa. For Africa, the long-term scenario is predicted as a continuation of the broad move towards better governance and economic policies, of progress towards resolving conflicts, and of diversification away from agriculture and primary commodities. At the same time, a lack of human capital, poor infrastructure and the AIDS epidemic remain pressing problems. Table 24 reveals a continued divergence in GDP per capita between sub-Saharan Africa and the rest of the world.

Average annual per capita growth in Latin America in 2006–15 is expected to accelerate by 0.8 percentage points over the levels experience in the 1990s but, as a result of slowing population growth, the acceleration of real GDP growth is small. Latin American countries are expected to have benefited from reform efforts in recent years and from sustained improvements in macroeconomic stability. The East Asia and Pacific region could witness a declining per capita growth rate from 6.4% in the 1990s to 5.4% in the longer term, as economies mature and as options for catch-up become less abundant. Per capita growth in the rest of the world, including South Asia, the Middle East and North Africa, and high-income countries is projected to accelerate moderately (World Bank 2003b).

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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 reasonably optimistic. If the projections come to pass, growth patterns could lead to a significant reduction of poverty. Thus, the millennium development goal 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 lack of comparable data, the different periods between each wave of data collection and the different poverty lines utilised mean that poverty data should be treated with caution. There are about 1.2 billion people in extreme poverty, living on, or below, the US$1 per day criteria. Of these, between 300 million and 420 million people live in chronic poverty – people who remain poor for much or all of their lives (CPRC 2004).

If the poverty line is raised to US$2 per day then 2.8 billion, almost half of the world's population, are below this line (World Bank 2003b).

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 30% in 1990 to 23% in 1999.

The income of the world's richest 5% is 114 times that of the poorest 5% (Milanovic, 2001). 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.

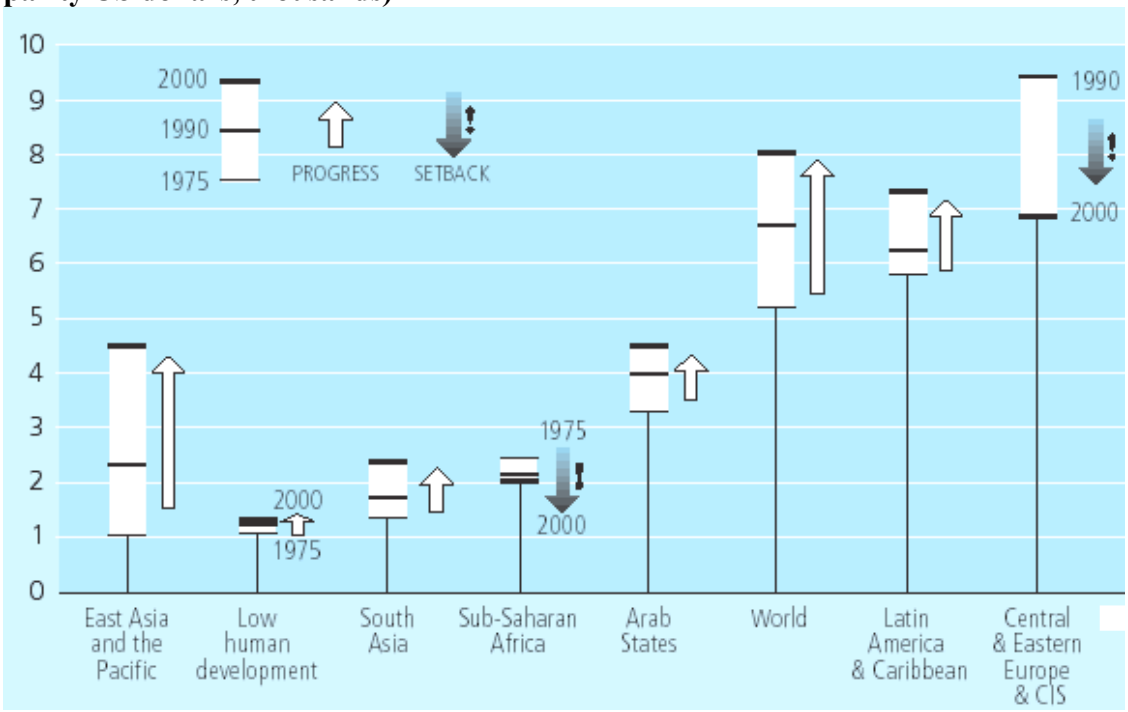
Factors decreasing inequality were:

- 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.

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 11). 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 ended the millennium 5% poorer 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 11 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 10 percentage points over the last decade.

Economic growth is important for achieving all the Millennium Development Goals, but it relates most directly to the poverty target. 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. 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).

Table 25 sets out projections of poverty to 2015.Achieving 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 poverty rate of 13.3% in 2015 compared with 29.6% in 1990. The actual number of poor would decline to around 809 million from 1.3 billion in 1990 and 1.1 billion in 1999. Asia should readily achieve the target, but Middle East and North Africa and Sub-Saharan African regions will make little progress in improving poverty incidence.

Table 25 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	**1999**	**2015**	**1990**	**1999**	**2015**
East Asia & Pacific	486	279	80	30.5	15.6	3.9
Excluding China	110	57	7	24.2	10.6	1.1
Europe and Central Asia	6	24	7	1.4	5.1	1.4
Latin America & the Caribbean	48	57	47	11.0	11.1	7.5
Middle East & North Africa	5	6	8	2.1	2.2	2.1
South Asia	506	488	264	45.0	36.6	15.7
Sub-Saharan Africa	241	315	404	47.4	49.0	46.0
Total	1292	1169	809	29.6	23.2	13.3
Excluding China	917	945	735	28.5	25.0	15.7
Region	**People living on less than US$2 per day (millions)**			**People living on less than US$2 per day (%)**		
	1990	**1999**	**2015**	**1990**	**1999**	**2015**
East Asia & Pacific	1114	897	339	69.7	50.1	16.6
Excluding China	295	269	120	64.9	50.2	18.4
Europe and Central Asia	31	97	45	6.8	20.3	9.3
Latin America & the Caribbean	121	132	117	27.6	26.0	18.9
Middle East & North Africa	50	68	62	21.0	23.3	16.0
South Asia	1010	1128	1139	89.8	84.8	68.0
Sub-Saharan Africa	386	480	618	76.0	74.7	70.4
Total	2712	2802	2320	62.1	55.6	38.1
Excluding China	1892	2173	2101	58.7	57.5	44.7

Source: World Bank (2003b).

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.

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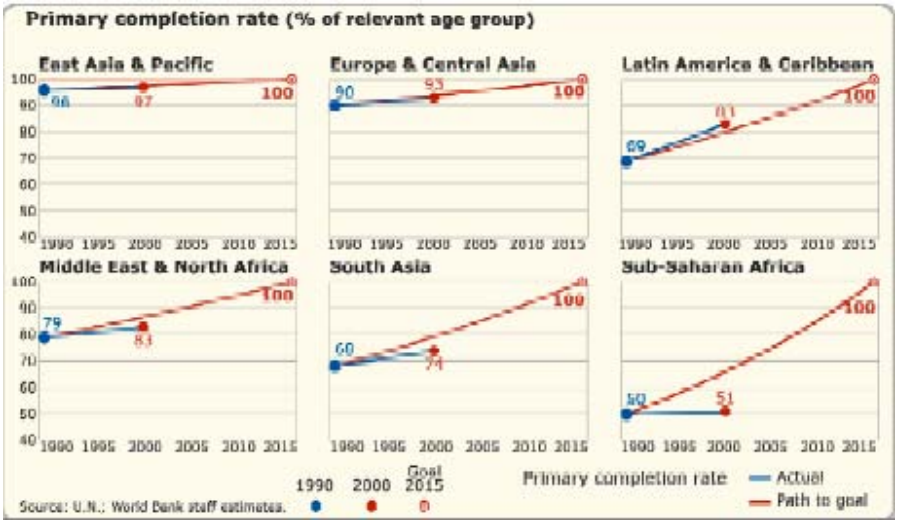
8. Education

A key Millennium Development Goal for Education is achieving primary school enrolment rates of 100% by 2015. Prospects for reaching the goal of universal primary education (UPE) are better than for some other MDGs, especially those that relate to access to clean water and sanitation and poverty.

Several regions are close to the target. East Asia and Pacific and Europe and Central Asia were fairly close to the target in 2000, with population-weighted completion rates of 97 and 93%, respectively. Although both regions would need to accelerate progress slightly over the trend observed in the 1990s, the required pace appears achievable, see Table 26.

Table 26 Progress on universal primary education



Source: World Bank (2004d).

Of the other four regions, Latin America has registered the fastest progress and is on track towards the goal. In South Asia, the Middle East and North Africa, progress on primary completion rate is slower and faster than recent trends will be needed to meet the goal. Sub-Saharan Africa could miss the target by a large margin. Because the annual improvement in completion rates was just 0.2% in the 1990s, an annual improvement of more than 4.5% will be needed in 2000–15 to achieve the target (Table 27) and this is unlikely to be achieved even if the economic growth rate doubles. UNESCO (2003) argues that on the basis of past rates of change, 60% of the 128 countries for which data are available are likely to miss reaching gender parity at primary and secondary levels by 2005.

Table 27 Primary completion rates – observed versus required improvement

	Annual improvement (percent)		
	Required	Observed	Required
	1990-2015	1990-2000	2000-15
East Asia and Pacific	0.16	0.10	0.20
Europe & Central Asia	0.42	0.33	0.48
Latin America & Caribbean	1.50	1.86	1.25
Middle East & North Africa	0.95	0.50	1.25
South Asia	1.55	0.85	2.03
Sub-Saharan Africa	2.81	0.20	4.59

Source: World Bank (2004d).

The Education for All Fast Track Initiative (EFA-FTI) is likely to accelerate progress toward universal primary school completion, but shortfalls are still likely in sub-Saharan Africa. Donor programming and budgeting cycles have translated into slow disbursement under the EFA-FTI programme, with only US$6 million of the first US$170 million committed actually disbursed as of January 2004.

A separate MDG relates to achieving gender parity in primary and secondary education preferably by 2005 and at all levels of education by 2015, but prospects for the latter seem remote. Progress at the primary level has been relatively good, with the ratio of girls to boys enrolled improving from 88 to 94% between 1990 and 2000. Girls' enrolments have increased faster than boys' in all regions, with lower disparities in the three regions where gender inequalities are greatest – **s**ub-Saharan Africa, the Middle East, and South and West Asia. Despite this gender parity in primary and secondary education is not expected to be met by 2005. Gender disparities against girls at the primary level in about 35% of developing countries and at the secondary level in about 43% of countries suggest that a number of countries may not reach this target even by 2015 (World Bank, 2004). UNESCO (2003) finds that twenty-two countries should achieve parity in primary and secondary education by 2015. 40% of countries are at risk of not achieving gender parity either at primary (nine) or secondary level (33) or at both (12), even by 2015.

The EFA Global Monitoring Report 2003/4 (UNESCO 2003) includes a new EFA Development Index, which incorporates data on four indicators: UPE (measured by net enrolment ratio), adult literacy (literacy rate of the 15-and-over age group), gender parity (average value of the gender parity index in primary and secondary education and in adult literacy), and quality of education (survival to primary Grade 5). EDI can be calculated for 94 countries based on 2000 data. Results show that no country from sub-Saharan Africa, the Arab States and West Asia (except the Maldives) is close to achieving these goals, see Table 28.

Table 28 Distribution of countries according to their mean distance from the EFA goals in 2000

	Achieved EDI: 0.98-1.00	Close to the goal EDI: 0.95-0.97	Intermediate Position EDI: 0.80-0.94	Far from the goal EDI: less than 0.80	Subtotal sample	Total number of countries
Arab States			11	6	17	20
Central and Eastern Europe	3	1			4	20
Central Asia		1	2		3	9
East Asia and Pacific	1		8	2	11	33
Latin America/Caribbean		6	12	2	20	41
North America/Western Europe	2	1			3	26
South and West Asia	1		1	4	6	9
Sub-Saharan Africa			8	22	30	45
Total	7	9	42	36	94	203

Source: UNESCO (2003), EFA Global Monitoring Report 2003/4.

Fertility rates have been declining in the more advanced parts of the developing world and this will lead to reductions in the school age populations (see Table 29). India and China can expect sharp falls in their primary populations between 2000 and 2015. However, in Africa there is still a rapid increase expected e.g. Congo 44%, and Ethiopia 39% (Foster and Naschold 2001). Falling fertility rates should further progress in educational goals in the future.

Table 29 Change in primary school age population (millions) 2000–15

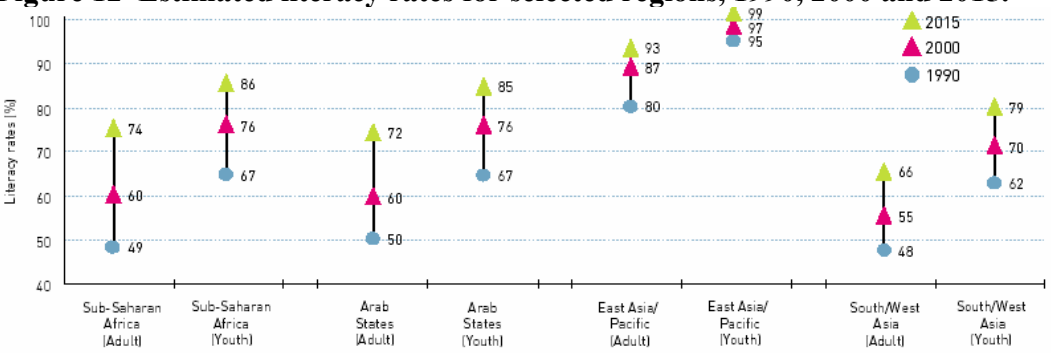
Region	Change in primary school age population
East Asia & Pacific	-22.5
Europe & Central Asia	-3.4
Latin America & Caribbean	+0.4
Middle East and North Africa	+6.1
South Asia	-0.3
Sub-Saharan Africa	+34.4
High-income countries	-5.6

Source: IMF/OECD/UN/WB (2000).http://www.paris21.org/betterworld/education.htm

The number of children in primary education school rose from 596 million in 1990 to 648 million in 2000 (UNESCO 2003). The number of out of school children decreased from 109 million in 1990 to 104 million in 1998. The number of illiterate adults (15+) decreased from 879 million in 1990 to 862 in 2000 and is expected to decrease further to 799 million in 2015. By 2000, 85% of all men and 74% of all women can read and write up from 82% and 69% in 1990 and this is expected to rise to 89% and 81% respectively.

Predictions for literacy rates in 2015 show increases for all counties. Regional literacy rates grew between 1990 and 2000, by at most one-third (in sub-Saharan Africa and the Arab States). Projected increases to 2015 (on the basis of past trends) are lower than these values (Figure 12). Women account for two-thirds of the world's illiterates.

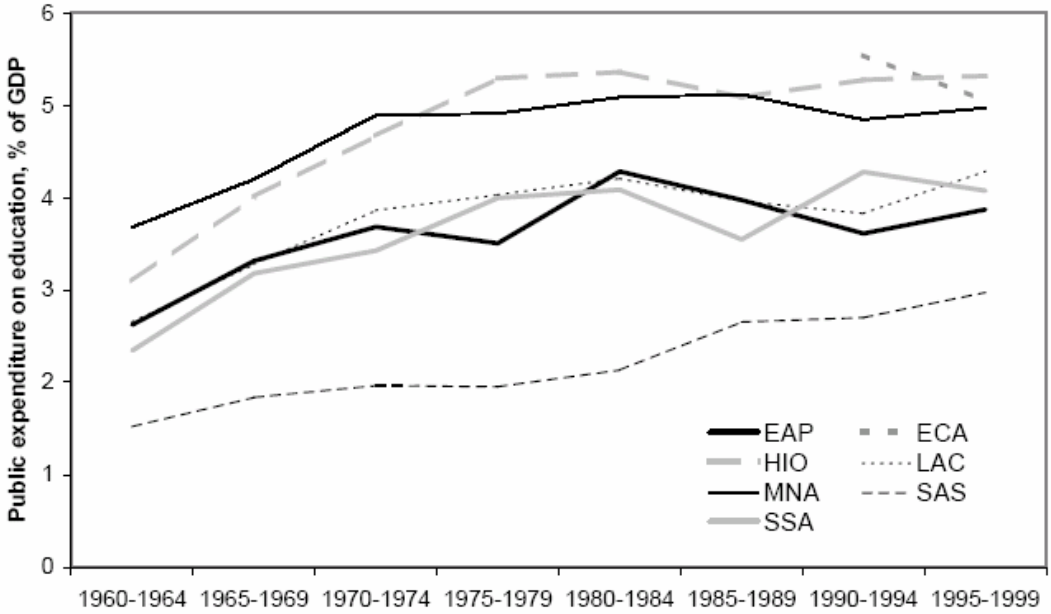
Figure 12 Estimated literacy rates for selected regions, 1990, 2000 and 2015.



Source: UNESCO (2004).

Public spending on education in low-income countries has risen at least since the 1960s. It rose from 4.3% of GDP in 1990 to 4.7% in 2000, Figure 13. Spending rose in all regions, but was lowest at 3.8% of GDP in 2000 in Europe and Central Asia and 4% in sub-Saharan Africa and South Asia. OECD countries spend an average of 5 to 5.5% of GDP on education.

Figure 13 Public spending on education in developing regions



Source: UN Millennium Project, Task Force 3 Interim Report on Primary Education.

There are several studies that examine how much financing is required to achieve universal primary education (see Task Force 3 Interim Report on Primary Education). One study examines four different scenarios, with costs ranging from US$11.4 billion each year to US$27.6 billion, see Table 30.

Table 30 Unit cost estimates of universal enrolment (US$ billions)

"Unit Cost" Estimates of Universal Enrollment (US$ billions)

Region	If $110.60 were spent per out of school child	If regional/group median of spending per student were spent on each out of school child	If country level of spending per student were spent on each out of school child	If 13% of GDP per capita were spent on all children of school age
SSA	4.94	2.63	2.15	1.27
MENA	0.90	0.87	2.18	5.73
SA	3.69	2.24	1.80	1.58
LAC	0.73	1.45	3.23	8.10
EAP	0.89	0.89	0.38	10.4
ECA	0.30	0.47	0.63	0.46
All Regions	11.4	14.9	10.4	27.6

Source: World Bank (2004).

A more recent and more detailed study by Bruns *et al*. (2003) examined costs in 40 countries. It included the impact of HIV/AIDS on teachers and estimates of repetition rates. The resulting requirements are US$16.6 billion of which US$15.1 billion are recurrent costs and US$1.5 billion are capital costs. Domestic resources could be mobilised of around US$14.3 billion and the rest would need external financing. Financing needs differ across countries and regions, the main financing would be needed in sub-Saharan Africa and South Asia (Table 31).

Table 31 Estimated annual (external) financing gap to achieve the education MDG, by region

Type of financing	Africa	S. Asia	LAC	EAP	MENA	ECA	Total	Share of total financing gap
Recurrent	1,127	97	14	30	21	34	1,323	55
Operation	841	97	14	30	21	34	1,037	43
AIDS	286	0	0	0	0	0	286	12
Capital	725	300	34	6	49	0	1,114	45
Total	1,852	397	48	36	70	34	2,437	100

Source: Bruns *et al.*, 2003.

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9. Health

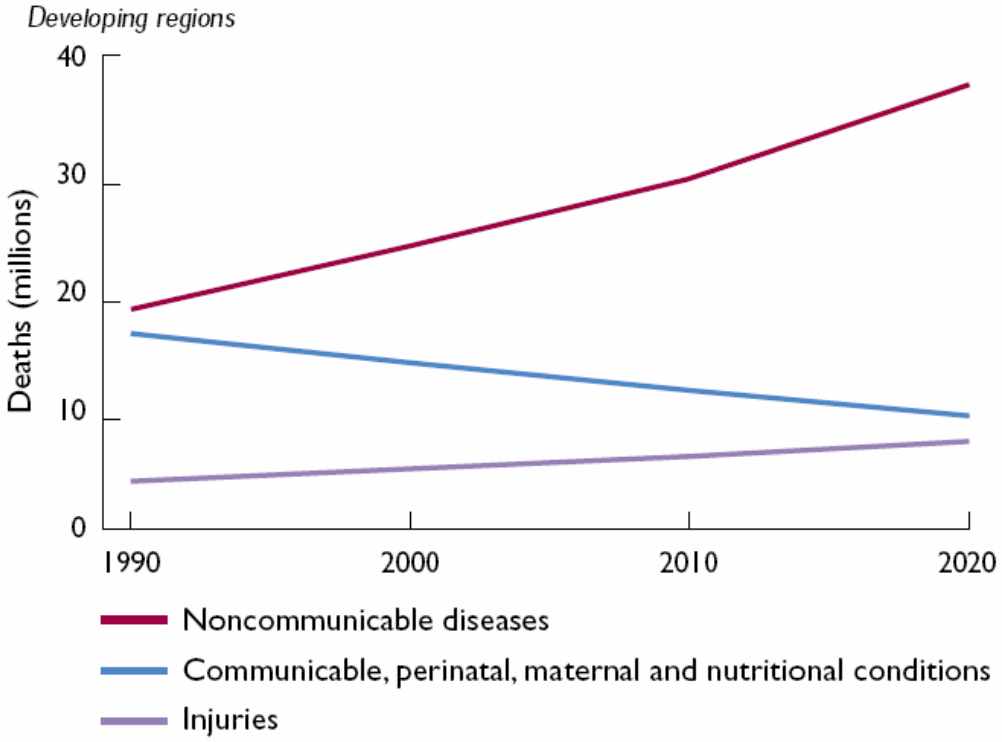
The next two decades will see dramatic changes in the health of the world's population, not least due to the AIDS epidemic. In developing countries (accounting for four-fifths of the world's population) non-communicable diseases such as depression and heart disease are fast replacing traditional problems such as infectious diseases and malnutrition. By the year 2020, non-communicable diseases are expected to account for seven out of every 10 deaths in developing countries, compared with less than one-half today (GBD 2000).

Life expectancy is expected to increase for women in most regions (to 88 years in developed countries). For men, life expectancy is predicted to grow more slowly due to increased exposure to tobacco (GBD 2000). However, the advent of HIV/AIDS will reverse the gains in life expectancy made in sub-Saharan Africa, which reached a peak of 49.2 years during the late 1980s and which is projected to drop to under 46 years by 2010 (UN 2003).

Communicable diseases

Deaths from communicable diseases, perinatal, maternal and nutritional conditions are expected to fall in developing countries to 2020 (see Figure 14). This decline is a result of ageing populations, increased income, educational progress and technological innovations (GBD 2000).

Figure 14 Projected health trends by broad cause in developing countries

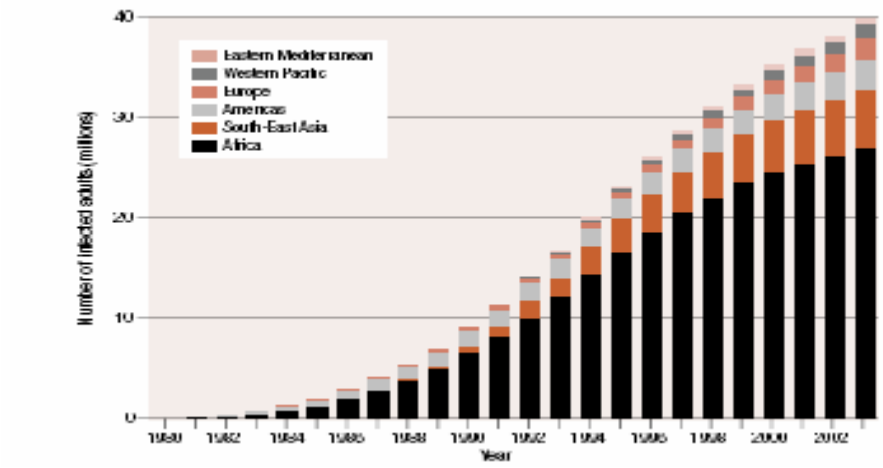


Source: GBD (2000).

HIV/AIDS

Today, an estimated 34–46 million people are living with HIV/AIDS. Already, more than 20 million people have died from AIDS, three million in 2003 alone (UNAIDS 2003). Of the five million people who became infected with the virus in 2003, 700,000 were children, almost entirely as the result of transmission during pregnancy and childbirth, or from breastfeeding. The most explosive growth of the epidemic occurred in the mid-1990s, especially in Africa (see Figure 15). In 2003, two-thirds of HIV/AIDS sufferers lived in Africa (which accounts for 11% of the world's population). Today, about one in 12 African adults has HIV/AIDS. One-fifth of the people infected with HIV live in Asia.

Figure 15 Estimated number of adults infected with HIV by region 1980–2003



Source: WHO (2004).

The prolonged time lag between infection with HIV and the onset of the full disease (on average nine to 11 years in the absence of treatment) means that the numbers of HIV-associated tuberculosis cases, AIDS cases and deaths have only recently reached epidemic levels in many of the severely affected countries. Globally, the greatest mortality impact is on people between the ages of 20 and 40 years (UN 2003).

Analysis of the regional spread of HIV/AIDS shows major differences between regions, within regions and within countries. While almost all countries in sub-Saharan Africa have been severely affected, widening variations are also emerging within the region, indicating that the consequences of the disease will vary substantially (WHO 2003a). Epidemics in the countries of Southern Africa are much larger than elsewhere in sub-Saharan Africa: in eastern Africa HIV prevalence is now less than half that reported in southern Africa and there is evidence of a modest decline. In western Africa prevalence is now roughly one-fifth of that of southern Africa and no rapid growth is occurring (Boerma *et al.* 2003).

The course of the epidemics in the two most populous countries – China and India – will have a decisive influence. In 2003, it was estimated that 840,000 people in China (0.12% of the total adult population) were living with HIV/AIDS. Official estimates

in India in 2003 put the number of people infected at 3.8 to 4.6 million, with considerable variation among states; there has been a modest increase in recent years. Countries in Eastern Europe and Central Asia are experiencing growing epidemics. In Western Europe and the US the estimated number of infections greatly exceeds the number of deaths, largely as a result of antiretroviral therapy in lowering death rates (Nicoll and Hamers 2002). In the Americas, the most affected area is the Caribbean, which has the second highest prevalence in the world after sub-Saharan Africa: overall adult prevalence rates are 2 to 3%. In Latin America, an estimated 1.6 million people are now infected.

The interaction of HIV/AIDS with other infectious diseases is an increasing public health concern. In sub-Saharan Africa malaria, bacterial infections and tuberculosis have been identified as the leading causes of HIV-related morbidity (Holmes *et al.* 2003).

In sub-Saharan Africa, death rates are expected to peak around 2005 with around 800,000 deaths per year. In India, death rates are expected to peak in 2010 at 500,000 per year. The global peak for HIV deaths is expected around 2006, with over three million deaths that year (GBD 2000). The problem of children having lost either or both parents to HIV/AIDS has been afflicting Africa for a decade, and will get worse. Today there are 14 million such children in the world of whom the vast majority are in Africa, but the projected total number will nearly double to 25 million by 2010 (UNICEF 2004).

In many countries, the cumulative effects of HIV/AIDS could have negative consequences for long-term economic growth and poverty reduction. Until recently, most studies predicted that a generalised HIV/AIDS epidemic at 10% adult prevalence would reduce economic growth by about 0.5% per year (World Bank 1999a). Several country studies have suggested that HIV/AIDS results in a reduction of GDP of around 1% but the latest estimates suggest that the adverse effects could be even worse (Bell *et al.*, 2003).

Tuberculosis

There were an estimated 8.4 million new cases of tuberculosis in 2000, up from 8.0 million in 1997. If present trends continue, 10.2 million new cases are expected by 2005 (WHO 2001), and it will cause between 1.4 and three million deaths in 2015 (GBD 2000). Many large, high-tuberculosis-burden countries (Brazil, Indonesia, Nigeria, Pakistan, Russian Federation) have inadequate controls for the disease – a problem due principally to a lack of resources and input into health care structures. The largest countries (China and India) have put tuberculosis control high on the political agenda but the magnitude of their populations and caseloads means that much remains to be done. However, a number of (smaller) developing countries (Peru and Vietnam) are effectively controlling tuberculosis through effective early detection and treatment systems.

Non-communicable diseases

Deaths from non-communicable diseases (such as strokes, heart attacks, cancer and diabetes) are predicted to increase from 28.1 million in 1990 to 49.7 million in 2020 (GBD 2000). In developing countries as a whole, deaths from non-communicable

diseases are expected to rise from 47% of the burden to almost 70%. The steep projected increase in the burden of non-communicable diseases worldwide will be driven by ageing populations, augmented by the large numbers of people in developing countries who are now exposed to tobacco use.

Malaria

One million people die each year from malaria, mostly children and pregnant women. Nine in ten of these deaths are in Africa (WHO 2003b). In some African countries, malaria accounts for 40% of public health spending and up to half of hospital admissions and outpatient visits. Malaria is on the increase owing to insecticide resistance, anti-malarial drug resistance and environmental change. Global warming could increase the annual number of malaria cases from the present 50 million a year to 80 million by 2100.

Tobacco

Over 1.3 billion people in the world smoke tobacco (World Bank 1999b), with 84% of these living in low- or middle-income countries (Guindon and Boisclair, 2003). At the country level, tobacco consumption varies by socioeconomic group. In many countries, at all levels of development and income, it is the poor who smoke the most and who bear most of the disease burden of tobacco use. Within 20 years tobacco use, if unchecked, will lead to one billion deaths, four-fifths of which will occur in developing countries. As such, tobacco dependence could become the world's single largest cause of premature death or years lived with disability (WHO 2003c). The largest populations of China and India are anticipated respectively to have 18% and 13% of adult disease burden attributable to tobacco by 2020 (GBD 2000).

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10. Trade and Finance

Trade

Over the past twenty years, developing countries have increased their share of global trade from about one-quarter to one-third (see Table 32). As a group, they have moved beyond their traditional comparative advantage in agricultural and resource exports into manufactures. These changes are not just a result of declines in the prices of agricultural and resource commodities relative to manufactures – the strong shift in the composition of exports shows up even when price changes are removed. Further, it is not just an artefact of a few large, high-growth exporters, such as India and China. The share of manufactures in the exports of developing countries other than China and India rose from one-tenth in 1980 to almost two-thirds in 2002. The increase has been sharp, but not equal in all regions. The share of manufactures in merchandise exports is now between 80 and 90% in Asia and Europe, but only 60% in Latin America. Africa and the Middle East have yet to reach the 30% mark and many countries, particularly poor countries, remain dependent on exports of agricultural and resource commodities.

The increase in exports has not benefited all countries. There have been major increases in the share of world exports from Western Europe and Asia, with declines in the share from Africa and Latin America. 43 countries had no increase on average in their merchandise exports for the 20 years after 1980. Of this group, 20 countries remained strongly dependent on oil or other natural resources, such as copper in Zambia. Severe conflicts undercut the performance of another 18 countries, including Rwanda and East Timor. Trade embargos limited the export performance of five other countries, including Libya and Sudan.

Table 32 World merchandise trade by region

Region	1948	1953	1963	1973	1983	1993	2002
Exports							
World (billion dollars)	58.0	84.0	157.0	579.0	1,835.0	3,671.0	6,272.0
Share %							
North America	27.3	24.2	19.3	16.9	15.4	16.6	15.1
Latin America	12.3	10.5	7.0	4.7	5.8	4.4	5.6
Western Europe	31.5	34.9	41.4	45.4	38.9	44.0	42.4
	6.0	8.1	11.0	9.1	9.5	2.9	5.0
Africa	7.3	6.5	5.7	4.8	4.4	2.5	2.2
Middle East	2.0	2.7	3.2	4.1	6.8	3.4	3.9
Asia	13.6	13.1	12.4	14.9	19.1	26.1	25.8
Imports							
World (billion dollars)	66.0	84.0	163.0	589.0	1,881.0	3,768.0	6510.0
Share %							
North America	19.8	19.7	15.5	16.7	17.8	19.7	22.0
Latin America	10.6	9.3	6.8	5.1	4.5	5.1	5.4
Western Europe	40.4	39.4	45.4	47.4	40.0	43.0	40.8
C/E Europe/Baltic/CIS	5.8	7.6	10.3	8.9	8.4	2.9	4.6
Africa	7.6	7.0	5.5	4.0	4.6	2.6	2.1
Middle East	1.7	2.0	2.3	2.8	6.3	3.3	2.7
Asia	14.2	15.1	14.2	15.1	18.5	23.3	22.4

Source: WTO International Trade Statistics (2003).

In 2002, world trade recovered from a steep decline in 2001. From the first through the third quarter, world trade expanded strongly but stalled in the fourth quarter. The average annual rate of merchandise trade expansion in 2002 was therefore limited to 3% in real terms, only half the rate observed in the 1990s. The recovery of global trade in 2002 was broadly shared, with all regions recording an improved performance in their merchandise and commercial services' trade. In the case of exports from North America and the Middle East, however, this meant a smaller rate of decline. The notable exception to this positive trend was the contraction of Latin America's commercial services trade (see Table 33) and a marked decline of its merchandise imports. Trade of transition economies expanded at double digit rates for both imports and exports (merchandise and commercial services) and remained, for the second year in a row, the region with the fastest annual trade expansion. In 2002, Asia recorded the strongest recovery in merchandise trade of all regions, almost offsetting the sharp contraction of its exports and imports in the preceding year. Asia's commercial services exports expanded faster than global exports. Western Europe's merchandise and services trade values were sustained mainly by the price effects of the euro and other European currencies against the US dollar. Nevertheless, Western Europe's share in world merchandise and commercial services trade again increased slightly (from 41% in 2001 to 47% in 2002). In the 1990s Western Europe's share of both merchandise and commercial services trade declined sharply. Although North American economic activity gained momentum in the course of 2002, its nominal trade growth was weak. Marginal increases in services trade and a decline in merchandise exports have led to an erosion of North America's share in global trade. Merchandise imports of the Middle East increased strongly, still benefiting from high oil revenues since 2000. The region's merchandise exports stagnated in 2002 after declining in the preceding year. Africa's exports and imports of merchandise and commercial services are estimated to have expanded at about 2% and therefore less than world trade.

Developments in 2002 further accentuated the two large regional trade imbalances in the global economy: the already large North American trade deficit widened and the substantial surplus of the Asian region increased further.

Table 33 Growth in world commercial services trade by region

	Exports				Imports			
	Value	Annual percentage change			Value	Annual percentage change		
	2002	1995–2000	2001	2002	2002	1995–00	2001	2002
World	1570	4	0	6	1545	4	1	5
North America	309	7	-3	1	248	9	-1	1
Latin America	56	6	-2	-4	65	5	1	-9
Western Europe	763	4	2	9	716	4	3	9
C/E Europe/Baltic/CIS	60	2	7	10	65	2	12	16
Africa	31	3	0	2	40	2	2	2
Middle East	29	10	-10	-1	45	5	-6	1
Asia	322	3	-1	7	367	2	-2	3

Source: WTO International Trade Statistics (2003).

In the first half of 2003 world merchandise exports rose by 15% in dollar terms over the corresponding period in 2002. The main factor behind this buoyant nominal trade growth was the depreciation of the US dollar against the currencies of the major traders in Europe and Asia. Higher oil and non-fuel commodity prices also

contributed to the dollar price increase in international trade. Adjusted for price and exchange rate movements a different picture emerges. Real trade in goods and services (exports plus imports) expanded by only 4.5% in 2003 (WTO 2003). World trade is predicted to expand by 6.8% in 2004 on the back of an expected 3.7% growth in global GDP (see Table 37).

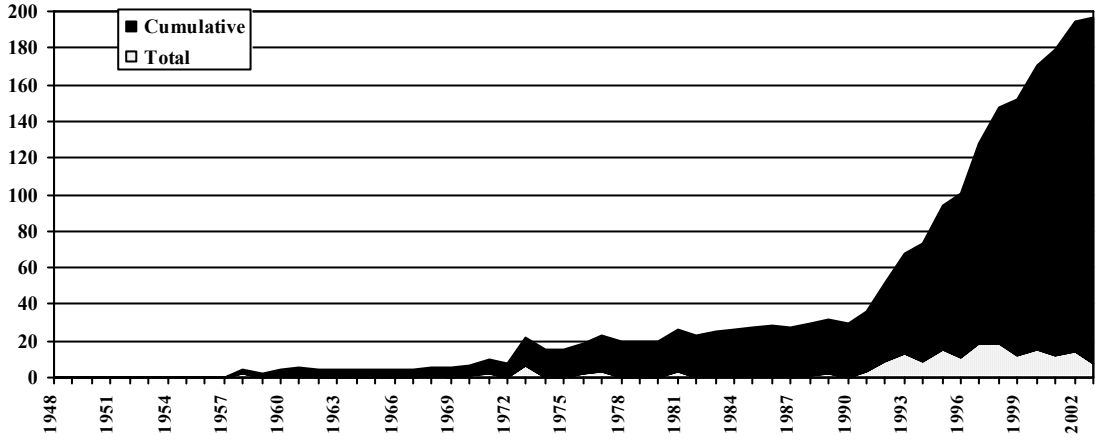
Table 34 World trade volumes in goods and services to 2005

Annual % change		2001	2002	2003	2004 proj.	2005 proj.
World trade volume		0.1	3.1	4.5	6.8	6.6
Imports (volume)	Advanced economies	-0.8	2.3	3.5	5.7	5.4
	Developing & transition economies	3.0	6.2	8.9	10.2	9.4
Exports (volume)	Advanced economies	-0.8	1.9	2.7	6.3	6.1
	Developing & transition economies	3.2	6.5	8.7	8.1	8.7
Terms of trade	Advanced economies	0.3	0.9	0.7	0.1	-0.4
	Developing & transition economies	-3.2	0.7	0.2	-0.1	-1.1

Source: IMF World Economic Outlook (2004a).

Regional trade agreements (RTAs) have proliferated in practically all regions of the world economy since the 1980s (see Figure 16). Activity on the regional track has accelerated since the failure of the WTO's Seattle Ministerial Conference in 1999. There are currently about 200 RTAs in force.

Figure 16 Number of WTO notifications of regional integration agreement (RIAs)



Source: World Trade Organization (2003).

Advocates of the regional approach to trade liberalisation argue that small groups of like-minded countries can club together to make trade liberalisation deeper, wider and faster than would be possible in the much larger and more diverse WTO. Such relatively cohesive clubs can also serve as a testing ground to pioneer approaches to solving trade problems that then serve as a model for multilateral agreements e.g. incorporation of services and trade-related investment in NAFTA were later instrumental in informing the development of multilateral rules in these areas. RTAs can also help developing countries 'lock and load', by helping them lock in domestic economic reforms to prepare them for the multilateral stage. So, regional agreements

can stimulate progress on multilateral agreements: they can be building blocks for multilateral liberalisation.

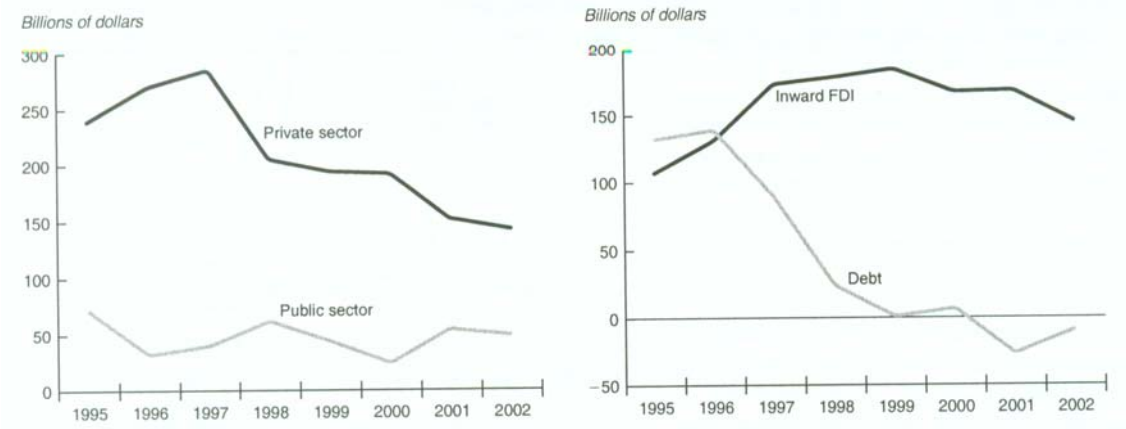
On the other hand, detractors argue that RTAs are stumbling blocks in the multilateral trade order. RTA members undertake trade liberalisation on a preferential basis, thereby discriminating against non-members and violating the WTO's most-favoured-nation principle. If developing countries are left outside they are clearly injured by RTAs. In addition, RTAs can lead to a 'spaghetti bowl' of opaque, overlapping and discriminatory procedures that are costly to administer and negotiate: taking resources away from multilateral liberalisation. Third, market access for agricultural products promises to be the linchpin of a successful Doha Round outcome. For the majority of developing countries there is no other single development in trade that carries such potential benefits. At the same time, the divisive agricultural trade issues between the major industrialised economies, the US, EU and Japan, can scarcely be resolved otherwise than in a multilateral context. Finally, the WTO remains the best framework yet achieved to mediate disputes that routinely arise in the global economy. Regional agreements do not have the institutional capacity to deal with such disputes as effectively.

Finance

Since 1997 there has been a decline in capital flows to developing countries. In 2002, the sum of net private debt and equity and net official flows was U$192 billion, or 3.2% of developing countries GDP, down from US$210 billion in 2001 (3.6% of GDP) and US$215 billion in 2000 (3.7% of GDP). The slide has been a steady one since 1997, when net flows to developing countries peaked at about US$325 billion (5.5% of GDP).

The decline since 1997 has occurred primarily in net capital flows from the private sector (Figure 17). From the peak years of 1995–96, when net debt inflows from the private sector were about US$135 billion per year, they have dropped steadily, becoming net outflows in 2001 and 2002.

Figure 17 Net financial flows to developing countries, 1995–2002



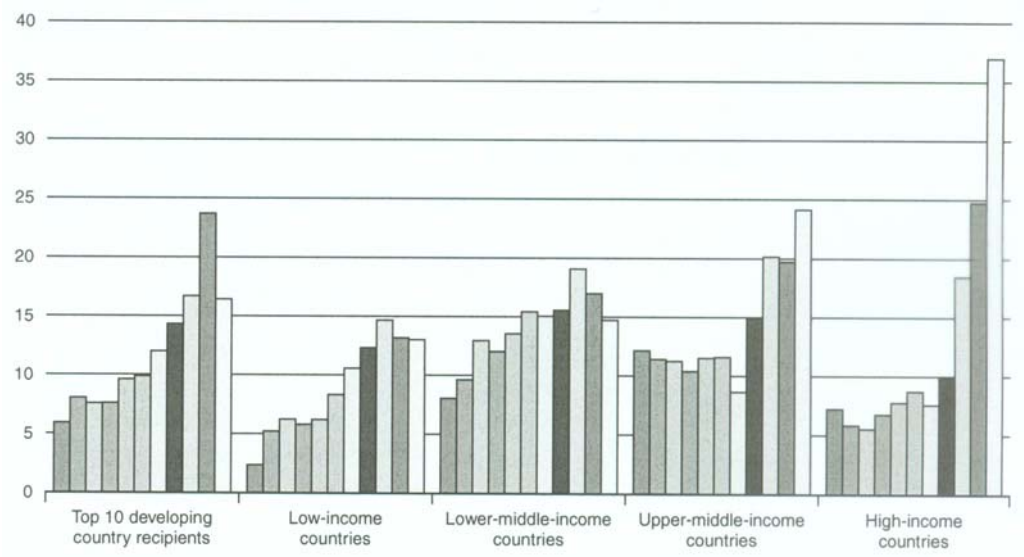
Source: World Bank (2003a).

The weakness in the growth of private sector debt flows in unprecedented in the post-1965 period. Strong debt growth to developing countries in the late 1960s exploded in the 1970s, as commercial banks recycled large oil surpluses from oil producers to developing countries. In the 1970s, developing country debt grew 16% annually in real terms. The debt crisis of the early 1980s slowed this growth but did not end it. Widespread efforts to reschedule debt meant that exposures to problem debtors were generally maintained, while new credits were extended in other parts of the developing world. Since the middle of 1998, however, the whole context for development financing has shifted. As borrowers have chosen or been required by their creditors to pay back their debts, the external debt of developing countries has fallen in dollar terms, even as the cost of debt has fallen. As debt is being repaid to private sector creditors, net equity inflows to developing countries remain significant, mainly though FDI.

Global FDI flows have expanded rapidly. The surge in FDI flows accelerated in the late 1990s, rising from US$331 billion in 1995 to US$1.3 trillion in 2000 before falling to US$725 billion in 2001 (UNCTAD 2002). Net inward FDI flows also slowed in 2002, with most of the slowdown occurring in Latin America. By contrast, flows to China picked up in response to strong growth and optimism following China's accession to the WTO. More recently, UNCTAD are expecting boom years for FDI.

All income groups have experienced a sharp rise in the average ratio of FDI to investment during the 1990s (Figure 18), with the largest increase in the industrial countries during the last years of the decade. Low-income countries have seen a fivefold increase in FDI relative to investment. FDI to developing countries equals about US$160 billion, while domestic investment in developing countries equals US$1.5 trillion (World Bank 2003a).

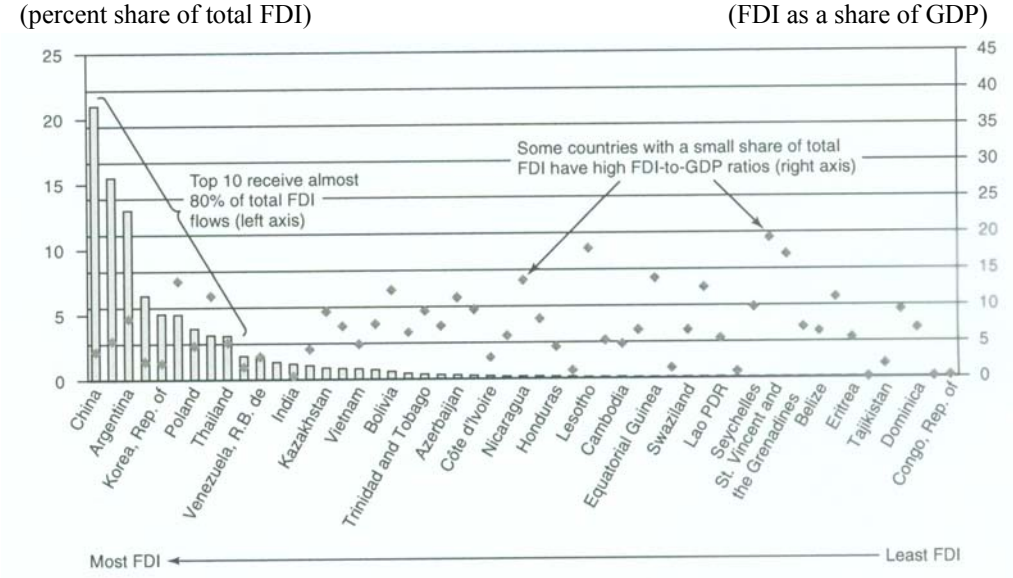
Figure 18 FDI inflows to regions 1999–2000
(FDI-to-investment ratios, %)



Note: Each set of bars represents the period 1990–2000; each bar represents one-year from that period.
Source: World Bank (2003b).

Not all countries have participated equally in the rise in FDI. Among industrial countries, the top five recipients of net FDI flows accounted for 74% of total FDI. However, a few of the smaller countries (e.g. Ireland and Denmark) have the highest ratio of FDI to GDP. The same pattern can be seen in developing countries, where the top 12 recipients captured 80% of total FDI flows, but some smaller countries had FDI-to-GDP ratios that were several times the average ratio. Figure 19 compares each developing country's share of total FDI with its ratio of FDI to GDP.

Figure 19 FDI inflows to developing countries relative to GDP



Source: World Bank (2003b).

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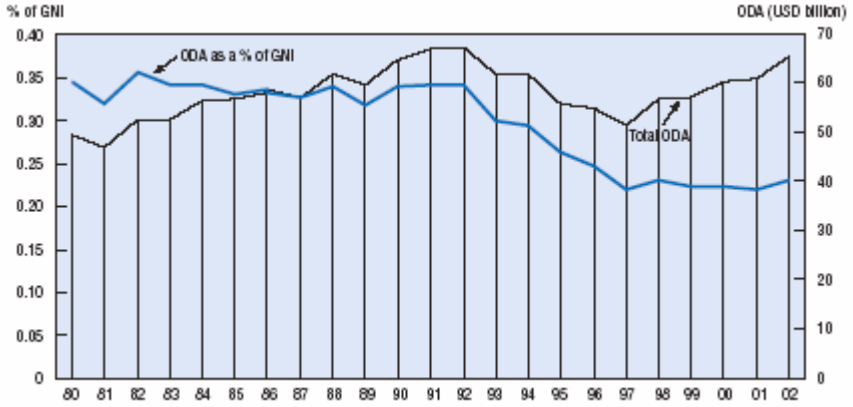
11. Official Development Assistance

Official development assistance (ODA) is a variable that is difficult to predict in the long-run because it depends almost entirely on policy decisions. On the other hand, precisely for this reason, it is easier to forecast aid in the short-run.

ODA fell consistently over the period 1990–97 but has recovered in recent years. ODA as % of gross national income fell to an all time low at 0.22% in 1997 from 0.35% at the beginning of the decade (Table 35). It is recovering only slightly and only very recently.

Donors committed themselves at Monterrey in March 2002 to a large increase in aid in real terms. Assuming that they deliver, official development assistance can rise from the level of around US$55 billion of the past few years to around US$75 billion (at 2002 prices and exchange rates) by 2006, Table 36. As a proportion of donor GNI, this would be an increase to about 0.29% from the low of 0.22% of 2001 (see Table 35), still well below the comparable levels of the early 1990s. (OECD DAC 2004a). However, implementation of ambitious rhetoric on the volume and quality of aid, and its anchoring in good governance and sovereign choice, has not yet occurred (Rogerson 2004).

Table 35 DAC members' total net ODA at 2001 prices as a share of GNI, 1980-2002



Source: OECD DAC (2004a).

ODA reached US$68.5 billion in 2003, the highest level ever, both in nominal and real terms (OECD 2004). This total represented 0.25% of DAC members' combined gross national income, up from 0.23% in 2002 and 0.22% in 2001. Three major factors are behind the US$2.3 billion rise, in real terms, in 2003:

- continuing growth in general bilateral grants (US$2 billion),
- the start of reconstruction aid to Iraq (US$2 billion),
- offset by a cyclical fall of contributions to multilateral concessional funds (-US$1.2 billion) and a small decrease in net lending (-US$0.5 billion).

The launch of the World Bank's Global Development Finance in 2004 further clarified that the evolvement in the exchange rate between the euro and the dollar explained an increase of US$7 billion in total of the US$10 billion increase (www.worldbank.org).

The United States remains the world's largest aid donor in volume terms, followed by Japan, France, Germany and the United Kingdom. Denmark, Luxembourg, the Netherlands, Norway and Sweden meet the United Nations ODA target of 0.7% of GNI. Three other countries have given a firm date to reach the 0.7% target: Belgium (2010); Ireland (2007), France (2012).

Table 36 DAC members' ODA prospects for 2006: latest projections

	Net ODA in 2002 (USD m)	ODA/GNI in 2002 Per cent	Commitment/Announcement/ *Assumption*	Year to be attained	Net ODA in 2006 (in millions of 2002 USD)	ODA/GNI in 2006 Per cent	Real change in ODA in 2006 compared with 2002 (at 2002 prices and exchange rates)[1]	
							(USD m)	Per cent
Austria	520	0.26	0.33	2006	728	0.33	208	40
Belgium	1 072	0.43	0.7% *(0.46% by 2006)*	2010	*1 234*	*0.46*	*162*	*15*
Denmark	1 643	0.96	*> 0.7%*	n.a.	*1 531*	*0.83*	*–112*	*–7*
Finland	462	0.35	*0.44%*	2007	598	0.42	136	29
France[2]	5 486	0.38	0.5% (0.7% by 2012)	2007	7 378	0.47	1 892	34
Germany	5 324	0.27	0.33%	2006	7 099	0.33	1 775	33
Greece	276	0.21	0.33%	2006	515	0.33	239	86
Ireland[2]	398	0.40	0.7%	2007	671	0.63	273	69
Italy	2 332	0.20	0.33%	2006	4 195	0.33	1 863	80
Luxembourg	147	0.77	1%	2005	206	1.00	60	41
Netherlands	3 338	0.81	0.8%	Already	3 566	0.80	228	7
Portugal	323	0.27	0.33%	2006	424	0.33	102	31
Spain	1 712	0.26	0.33%	2006	2 328	0.33	616	36
Sweden	1 991	0.83	Long term goal 1% (at least 0.87% in 2006)		*2 247*	*0.87*	*256*	*13*
United Kingdom	4 924	0.31	0.4%	2005-06	6 906	0.40	1 982	40
EU members, total	**29 949**	**0.35**	**0.39%**	**2006**	**39 627**	**0.42**	**9 679**	**32**
Australia[3]	989	0.26	0.26%	in 2003-04	*1 089*	*0.26*	*100*	*10*
Canada	2 006	0.28	8% annual increase	to 2010	2 730	0.34	723	36
Japan	9 283	0.23	*1998-2002 av. level (USD 10.5 bn)*	*in 2006*	*10 500*	*0.26*	*1 217*	*13*
New Zealand	122	0.22	*Future level is under review*		*154*	*0.26*	*32*	*27*
Norway	1 696	0.89	1%	2005	2 067	1.00	370	22
Switzerland[2]	939	0.32	0.4%	2010	1 143	0.36	204	22
United States[4]	13 290	0.13	See footnote 4		19 539	0.17	6 249	47
DAC members, total	**58 274**	**0.23**			**76 849**	**0.29**	**18 575**	**32**

1. Assumes average real growth in GNI of 2% p.a. (3% for Canada, 4% for Greece and zero for Japan) from 2002 to 2006.
2. ODA/GNI ratio for 2006 interpolated between 2002 and year target scheduled to be attained.
3. Estimated ODA/GNI 0.26% in 2003/04. As aid volume determined in annual budgets, assumes same ratio in forward years.
4. Assumes, for 2006, additional USD 5 bn from the Millennium Challenge Account, USD 2 bn from the Emergency Plan for AIDS Relief, phased spending from Iraq and Afghanistan reconstruction supplements and 2% p.a. inflation in the USA to deflate from 2006 to 2002 prices.

Source: OECD.

Source: OECD DAC (2004a).

The grant element of net ODA disbursements increased from 91% in 1991–92 to 97.1% in 2001–02. The share of ODA to multilateral organisations has remained fairly stable and stood at 30% in both 2002 and in 1991–92 (Table 37).

Table 37 Net ODA disbursements from DAC members

	Total DAC countries				
	1991-92	**1999**	**2000**	**2001**	**2002**
Official Development Assistance (ODA) (A + B)	58 453	53 233	53 749	52 335	58 274
ODA as % of GNI	**0.33**	**0.22**	**0.22**	**0.22**	**0.23**
A. Bilateral Official Development Assistance (1 + 2)	42 817	37 843	36 064	35 024	40 734
1. Grants and grant-like contributions	35 678	33 931	33 040	33 410	39 793
of which: Technical co-operation	12 945	13 036	12 767	13 602	15 452
Developmental food aid (a)	1 707	1 045	1 180	1 007	1 086
Emergency and distress relief (a)	2 502	4 414	3 574	3 276	3 869
Contributions to NGOs	928	1 151	1 200	1 137	1 246
Administrative costs	2 314	3 049	3 083	2 964	3 027
2. Development lending and capital	7 139	3 912	3 024	1 613	941
of which: New development lending	10 554	4 392	3 310	2 536	960
B. Contributions to Multilateral Institutions	17 513	15 390	17 685	17 311	17 540
Grants and capital subscriptions, Total	17 534	15 211	17 799	17 289	17 574
of which: EC	4 350	5 017	4 950	4 946	5 695
IDA	5 505	2 834	3 672	3 599	3 279
Regional Development Banks	1 503	1 860	2 187	1 491	1 813

Source: OECD/DAC statistical tables (2004b).

Table 38 Regional distribution of ODA by individual DAC donors and multilateral agencies (as % of gross disbursements)

	Sub-Saharan Africa			**South and Central Asia**			**Other Asia and Oceania**		
	1991–92	**1996–97**	**2001–02**	**1991–92**	**1996–97**	**2001–02**	**1991–92**	**1996–97**	**2001–02**
Total DAC	**27.2**	**28.8**	**29.5**	**10.6**	**12.5**	**16.6**	**20.0**	**25.6**	**21.5**
of which:									
EU members	41.7	41.2	42.8	9.1	8.9	11.5	13.8	15.8	11.4
EC	59.1	42.8	35.9	5.0	9.1	7.4	5.6	5.8	4.9
IFIs [b]	40.5	37.2	42.3	38.0	29.9	32.3	13.8	17.1	12.4
UN agencies [c]	44.4	38.9	39.0	14.3	16.2	16.1	11.6	12.0	7.6
Overall total	**31.9**	**32.1**	**33.1**	**14.1**	**15.5**	**18.7**	**17.8**	**21.6**	**17.3**
	Middle East and North Africa			**Europe**			**Latin America and Caribbean**		
	1991–92	**1996–97**	**2001–02**	**1991–92**	**1996–97**	**2001–02**	**1991–92**	**1996–97**	**2001–02**
Total DAC	**25.0**	**15.6**	**10.4**	**4.0**	**4.2**	**8.1**	**13.2**	**13.3**	**14.0**
of which:									
EU members	17.0	14.3	10.5	6.4	5.5	9.9	11.9	14.4	13.9
EC	13.7	18.8	17.7	8.4	11.2	25.0	8.0	12.4	9.1
IFIs	1.1	2.7	2.1	0.0	1.9	1.9	6.5	11.2	9.0
UN agencies	17.1	18.7	21.0	5.0	3.1	5.5	7.6	11.0	10.7
Overall total	**20.7**	**13.7**	**10.0**	**3.8**	**4.4**	**8.5**	**11.7**	**12.7**	**12.3**

Source: OECD/DAC statistical tables (OECD 2004b).

The share of aid going to sub-Saharan Africa has increased from 27.2% in 1991–92 to 29.5%, while aid going to the Middle East and North Africa has dropped significantly, though not in the case of the EC (Table 38). The IFIs and UN agencies have now become more concentrated in sub-Saharan Africa than the EC.

The percentage of aid going to the least developed countries from DAC members was 24% in 1991–92 and at 26% was slightly higher in 2002 (see Table 39) (OECD 2004).

Table 39 Aid from selected DAC countries to Least Developed Countries

	1991–92			2002		
	$ million	**% of donor's total**	**% of donor's GNI**	**$ million**	**% of donor's total**	**% of donor's GNI**
Canada	737	29	0.13	349	17	0.05
France	2 148	27	0.17	1 626	30	0.11
Germany	1 741	24	0.09	1 332	25	0.07
Italy	907	24	0.08	1 045	45	0.09
Japan	1 764	16	0.05	1 813	20	0.04
United Kingdom	950	29	0.09	1 153	23	0.07
United States	2 103	18	0.04	3 012	23	0.03
Total DAC	**14 495**	**24**	**0.08**	**15 137**	**26**	**0.06**
of which:						
EU Members	8 788	28	0.12	8 867	30	0.10

Source: OECD/DAC Statistical tables (2004b).

For aid to be at its most effective it must be well targeted. If all the current aid, even at present low levels, were targeted on the basis of high poverty rates then 19 million people could be lifted out of poverty each year, rather than the 10 million being helped now (World Bank 2000c). Currently, a third of aid money goes to middle-income countries (Oxfam 1999).

The sectoral direction of aid is changing as well. The direction is towards social and administrative infrastructure (including health and infrastructure), currently accounting for 33.1% of total aid. There have been significant declines in the aid to the productive sectors, such as agriculture, which now accounts for 5.6% of aid (Table 40) and industry and other production accounting for just 2.1%.

Table 40 Table major aid uses for total DAC donors (% of total bilateral commitments)

	Social and admin infrastructure		Economic infrastructure		Agriculture		Industry and other production		Commodity aid and programme assistance		Emergency aid		Other	
	1981–82	200–02	1981–82	2001–02	1981–82	2001–02	1981–82	2001–02	1981–82	2001–02	1981–82	2001–02	1981–82	2001–02
Total DAC countries	24.3	33.1	17.9	13.5	11.7	5.6	14.9	2.1	11.6	5.9	1.4	7.4	18.2	32.4

Source: OECD DAC statistical tables (2004b).

The share of spending attributed to the provision of international public goods has doubled from around 4% in 1980 to around 8% of total DAC donor contributions (commitments) at the end of the 1990s (Te Velde *et al.* 2003).

The changing nature of the response in donor countries is of interest as well. The humanitarian donors fell victim to aid fatigue in the 1990s. Recent studies indicate large reductions in the levels of giving to charity. Fears of waste and corruption were paramount in a US study (Earthscan 1999). A very skewed nature of response has been noted. Special appeals have generated figures of US$US 16 and US$US 8.40 per capita of targeted beneficiaries for countries such as Sierra Leone and Democratic

Republic of Congo respectively. However, the corresponding figure for the former Yugoslavia was US$207 (Oxfam 1999).

Rogerson (2004) identifies four factors underlying aid:

- *multiple foreign and security policy objectives*, loosely bundled with anti-poverty goals, with no common weighting system;
- the continued existence of *institutional barriers* insulating aid programmes to different extents from hard budget constraints;
- *reduced willingness, or ability, to use aid in its current form* at both ends of the client spectrum: more advanced countries reject foreign intrusion; weaker countries badly need aid but cannot demonstrate the ability to use it;
- new *cosy relationships with private and voluntary organisations*, funded by official aid, and competing with them for taxpayer and commercial support.

The aid system is adapting to recent attempts at structural change. The launch of new instruments (for example, the Global Fund to Fight AIDS, TB and Malaria (GFATM) and the US Millennium Challenge Account (MCA) or the broaching of others (the International Financing Facility) has serious implications for the system as a whole. Attitudes to multilateralism and aid in post-conflict environments have also shifted profoundly in the wake of 9/11 (Rogerson 2004).

There is also an increased consensus among donors that aid should go to countries with good policy environments. For instance, the US MCA will channel up to US$5 billion to a handful of developing countries with 'sound policies'. There is a heated debate about whether chosen countries have sufficient absorptive capacity to receive increased aid.

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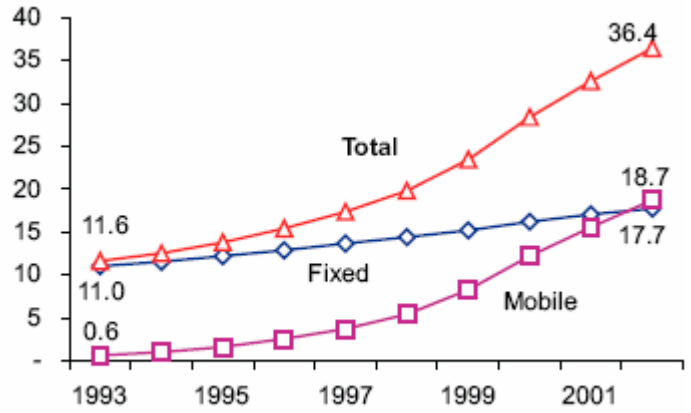
12. Technology

A. Information and communications technology

There has been considerable progress in the number of countries with a direct connection to the Internet. This has increased from eight countries in 1988 to 209 countries in 2003. Telephone subscribers per 100 inhabitants increased from 11.6 in 1993 to 36.4 in 2003. Cellular mobile subscriptions (18.7) have for the first time surpassed fixed line subscribers (17.7), see Figure 20.

Figure 20 Telephone subscribers per 100 inhabitants, world



Source: ITU (2003), World Telecommunication Development Report 2003.

Annual average growth of mobile subscribers over the period 1995–2002 amounted to 78% in Africa, 60% in Asia, 50% in Europe, 30% in the Americas and 47% for the World as a whole (ITU 2003).

Digital Planet 2002 produced by the World Information Technology and Services Alliance (WITSA) finds that:

- China has emerged as the world's fastest growing ICT nation with a compound annual growth rate of 27%. Countries in Eastern Europe also saw significant ICT spending increases.
- The software sector experienced 100% growth between 1995 and 2001, exceeding any other ICT sector. The Middle East/Africa spends a greater percentage of every dollar of the ICT budget on software than any other region.
- An additional 123 million people joined the online community in 2001, bringing the total to 522 million.
- While year-to-year total ICT spending demonstrated a small increase, the global market jumped from US$1.3 trillion in 1993 to US$2.4 trillion in 2001. The annual growth rate over 1993–2001 is 7.6%.
- ICT spending as % of global GDP has gained 2% since 1993, standing at 7.9% in 2000.

By 2005, an estimated 765 million people will be online, 200 million each in North America and Europe and almost 200 million in the Asia-Pacific, and up to 60 million

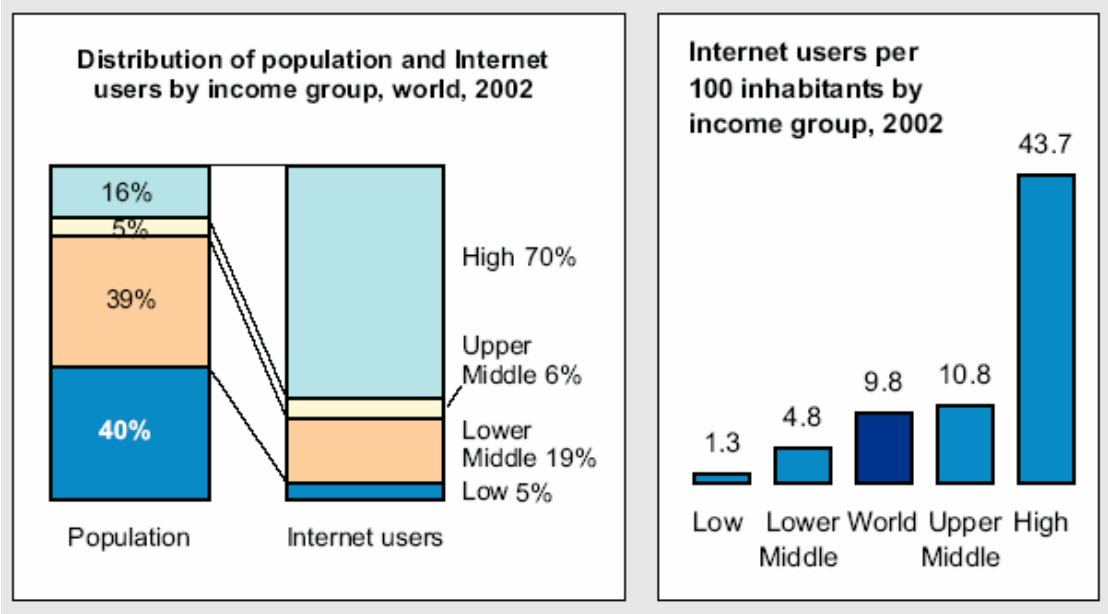
in each of the remaining regions of the world (Computer Industry Almanac 1999). Participation in global e-commerce could reach $US7 trillion by 2004 (Kalil 2000). A 'Pervasive Knowledge Network' is expected to develop; these networks will be all over the world and increasing numbers of people will be using computers for business and home-working (Mazarr 1997).

Information technology is also transforming the concepts of national security, national assets and warfare, and the means by which nation states protect their sovereignty and citizens. The possibility of 'information warfare' through the attack on or manipulation of information technologies has become very real (PRI 1997) and is happening in the form of e-mail viruses.

B. Digital divide

There are at least two digital divides. One is between income groups. The highest income groups in the world constitute 16% of the population but 70% of internet users (ITU 2003), see Figure 21.

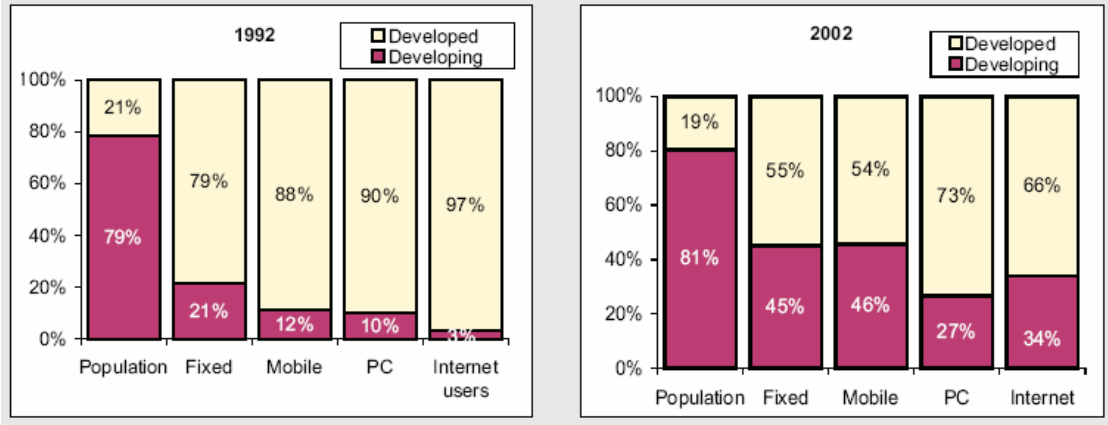
Figure 21 Digital divide across income groups



Source: ITU (2003).

Another digital divide is between rich and poor countries, and this is shrinking. While developed countries have 19% of the population, they have access to 55% of telephone lines, 73% of PC connections and 66% of internet connection. This gap (or digital divided across countries) is shrinking (see Figure 22), with the ratio per inhabitant for mobile subscriptions for developed relative to developing counties decreasing from 30 in 1992 to five in 2002.

Figure 22 Digital divide across countries



Source: ITU (2003), World Telecommunication Development Report 2003.

C Biotechnologies

Table 41 Human Genome Project goals and achievements

Area	Goal	Achieved
Genetic map	2- to 5-cM resolution map (600–1,500 markers)	1-cM resolution map (3,000 markers)
Physical map	30,000 STSs	52,000 STSs
DNA aequence	95% of gene-containing part of human sequence finished to 99.99% accuracy	99% of gene-containing part of human sequence finished to 99.99% accuracy
Capacity and cost of finished sequence	Sequence 500 Mb/year at < $0.25 per finished base	Sequence >1,400 Mb/year at <$0.09 per finished base
Human sequence variation	100,000 mapped human SNPs	3.7 million mapped human SNPs
Gene identification	Full-length human cDNAs	15,000 full-length human cDNAs
Model organisms	Complete genome sequences of *E. coli*, *S. cerevisiae*, *C. elegans*, *D. melanogaster*	Finished genome sequences of *E. coli*, *S. cerevisiae*, *C. elegans*, *D. melanogaster*, plus whole-genome drafts of several others, including *C. briggsae*, *D. pseudoobscura*, mouse and rat
Functional analysis	Develop genomic-scale technologies	High-throughput oligonucleotide synthesis
		DNA microarrays
		Eukaryotic, whole-genome knockouts (yeast)
		Scale-up of two-hybrid system for protein-protein interaction

Source: http://www.ornl.gov/sci/techresources/Human_Genome/hg5yp/.

Some analysts predict a 19% p.a. growth in sales over the period 2001–06 for speciality areas of biotechnology, including industrial enzymes (especially

biocatalysts, bioconsortium-based systems, pathway engineering and bioinformatics) (OECD 1999a).

The Human Genome Project was completed in 2003 and opens up new horizons for medical treatment (Table 41). It included the sequencing of the human DNA. Genetic engineering will proceed apace. It may well be possible to create complex organs, such as the heart or liver. These could be widely available for use by the 2030s (OECD 1999a).

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13. Governance

In the first few decades of the 21st century, it is predicted that, linked to the process of economic globalisation, there will be a dual processes of democratisation within individual states. There is also a growing realisation that there is an increasing need for a 'global democracy' which gives equal rights to all citizens on Earth.

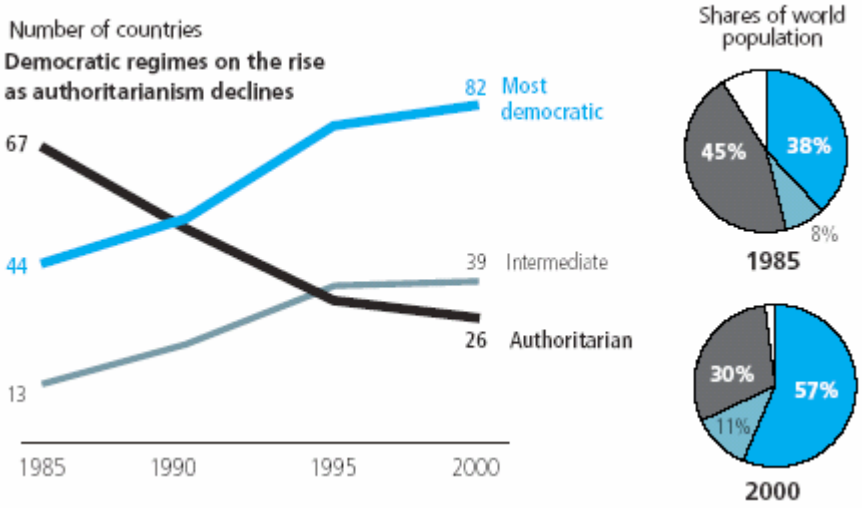
The processes of global ecological and economic integration is predicted to proceed far faster than the process of global political integration. This could make a global democracy 'a powerful global civil society which can ensure that the trade-offs between ecology and economy and between the interests of the empowered and disempowered are decided with the full consciousness of a global debate, dialogue and mass awareness'.

The state is forecast to remain the single most important organising unit of political, economic, and security affairs through 2015 but will confront fundamental tests of effective governance. Foremost could be the ability to benefit from, while coping with, several facets of globalisation and to deal with increasingly vocal and organised publics (CIA 2000).

All states will confront popular demands for greater participation in politics and attention to civil rights. These are pressures that will encourage greater democratisation and transparency (UNDP 2002b).

There are more democratic countries and more political participation than ever before, with 140 countries holding multiparty elections. Of 147 countries, 121 (with 68% of the world's people) had some or all of the elements of formal democracy in 2000, see Figure 23. This compares with only 54 countries, with 46% of the world's people, in 1980. Since then 81 countries have taken significant steps in democratisation, while six have regressed. Authoritarian regimes have been replaced by governments more accountable to the people (UNDP 2002b).

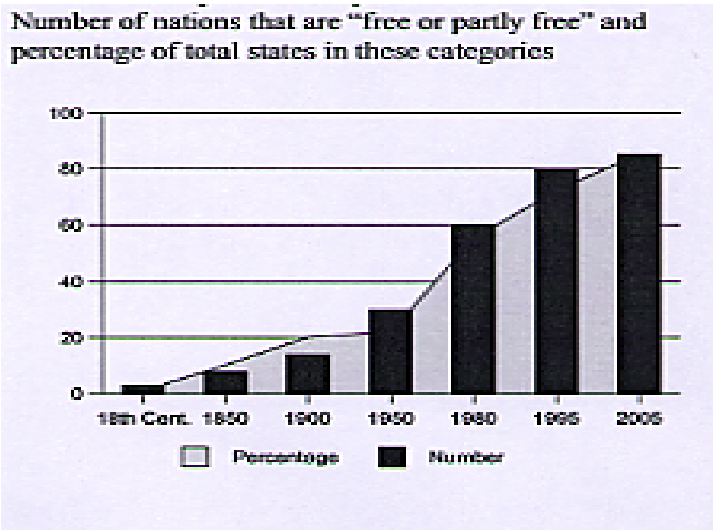
Figure 23 Rise in democracies



Source: UNDP (2002b) Human Development Report.

The percentage of countries in the world that could be roughly described as democratic may exceed 80% in 2005 (Mazarr 1997). The progress and projections in the growth of democracy seen in Figure 24 are likely in reality to be surpassed.

Figure 24 The advance of democracy



Source: Freedom House website.

Increased access to global sources of information is already creating a more informed public throughout the world; this public is consequently anticipated to be less tolerant of repressive regimes. 'Free markets generally produce free polities' (Mazaar 1997).

Non-state actors could increasingly gain resources and power over the next 15 years as a result of the ongoing liberalisation of global finance and trade, as well as the opportunities afforded by information technology (CIA 1996).

Non-profit networks with affiliates in more than one country can be expected to grow through 2015. Within individual countries, the non-profit sector may expand rapidly. The number of international NGOs has grown over the 1990s.

Figure 25 Number of international NGOs

Purpose	**1990**	**2000**	**Growth (%)**
Culture and recreation	2,169	2,733	26.0
Education	1,485	1,839	23.8
Research	7,675	8,467	10.3
Health	1,357	2,036	50.0
Social services	2,361	4,215	78.5
Environment	979	1,170	19.5
Economic development, infrastructure	9,582	9,614	0.3
Law, policy and advocacy	2,712	3,864	42.5
Religion	1,407	1,869	32.8
Defence	244	234	-4.1
Politics	1,275	1,240	-2.7
Total	**31,246**	**37,281**	**19.3**

Source: UNDP (2002b) Human Development Report.

The for-profit business sector is expected to grow rapidly over the next 15 years, spearheading legal and judicial reform and challenging governments to become more transparent and predictable. At the same time, governments will be challenged to monitor and regulate business firms through measures consistent with local standards of social welfare.

Multinational corporations are predicted to continue to multiply as governments continue to deregulate their economies, privatise state-owned enterprises, and liberalise financial markets and trade.

Western dominance is expected to persist but show a declining trend. Economic growth in Asia and Latin America should produce additional resources for the support of civil society. In addition, autocratic governments and Islamic states or groups may increasingly support non-profit groups sympathetic to their interests. International economic organisations are often dominated by a few countries. The US, Japan, France, UK, Saudi Arabia, Germany and the Russian Federation have 48% of the voting power of the IMF and 46% of the World Bank. Africa lacks full representation at the WTO headquarters: 15 countries have no representative, 16 countries between one and three, and six countries between four and six.

One of the potential advantages from the globalisation of governance is that wars may be less likely. 'Empirical studies reinforce the lesson that democracies seldom, if ever, fight wars with other democracies' (Mazaar 1997: 14), see Figure 26.

Figure 26 Number of people killed in wars in 20th century

Type of government	Number of unarmed people intentionally killed by government (millions	Number of people killed in wars (millions
Democratic	2	4
Authoritarian	29	15
Totalitarian	138	14

Source: UNDP (2002b), Human Development Report.

Predictions in the field of governance should be treated with great caution and the major social transformations could engender reactionary movements. The world could experience socio-economic inequities, and 'counter-globalisation' could therefore be a future trend (Mazarr 1997).

MAJOR SOURCES

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14. Migration

The current total number of international migrants is estimated to be 175 million, representing 2.9% of the world's population. Europe and Asia shelter the largest number of migrants, but the percentage of migrants vis-à-vis total population is much higher in Oceania and North America (Table 42). Roughly half of all migrants are women (IOM 2003).

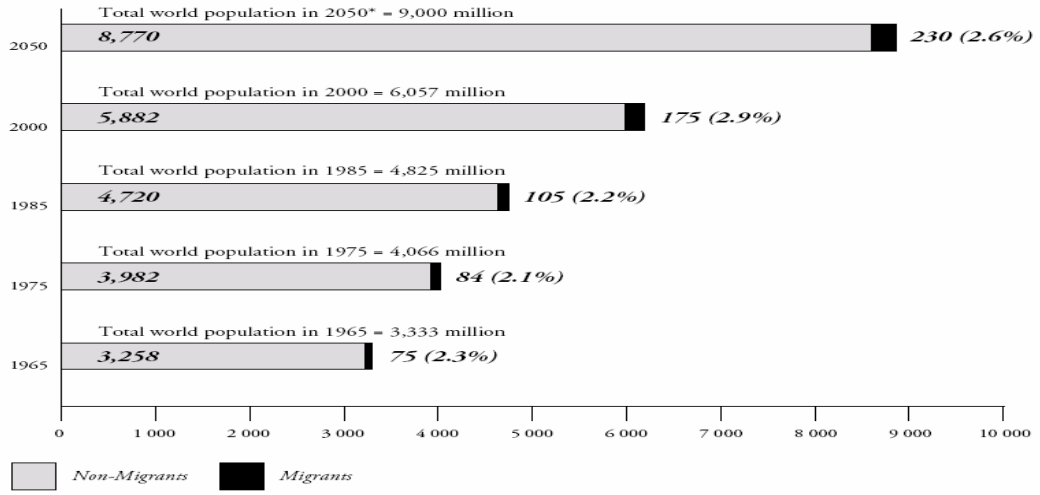
Table 42 World population and migrant stocks

	Total population (m)	Migrant stocks (m)	% of population
Asia	3672.3	497.	1.4
Africa	793.6	16.2	2.1
Europe	727.3	56.1	7.7
Latin America/Caribbean	518.8	5.9	1.1
Northern America	313.1	40.8	13.0
Oceania	30.5	5.8	19.1
Global	6056.7	174.7	2.9

Source: IOM (2003) World Migration Report.

The number of international migrants has grown steadily in the last 40 years and is expected to grow further to 230 million by 2050, although this represents a decline in percentage terms.

Figure 27 World population – non-migrants and migrants (stocks), 1965-2050



Source: IOM (2003), World Migration Report.

More than half of international migrants live in developing countries and the most rapid growth in migrations tends to occur as the result of a refugee crisis. Most migrant flows are south-south. Although the numbers of migrants appear to be significant, they represent a very small proportion of the host nation's population or workforce (IOM 2003).

Some of the major recent migratory moves include (IOM 2000):

- Out of China to other East Asian economies. International migration from China is expected to reach 400,000 persons annually. Estimates of the illegal

numbers leaving China are in the region of 200,000 people annually. It is estimated that 30 million Chinese people are living abroad.

- There are large-scale migrations from South Asia to the Middle East. This mainly involves temporary workers and the return of remittances to home nations. The migration is in the order of one million workers per year, mainly from Bangladesh, India, Pakistan, and Sri Lanka.
- Central America, the Caribbean and the United States provide the world's major immigration and emigration locations. Up to 1 million Mexicans each year enter the US for more than three months of the year and 300,000 settle. Canada also receives 200,000 people per year. These two locations are likely to remain the major destinations of future migrations.
- The most dynamic and diverse areas for migratory activity are in Central and Eastern Europe and the CIS. Between 1990 and 1997, 2.7 million people returned to the Russia from other parts of the CIS and the Baltic States.

These migrations are likely to increase in the future with the development of communications, the growing need for skilled labour as dependency ratios increase in the developed world, the increasing disparities between regions and the growing prevalence of internal conflicts.

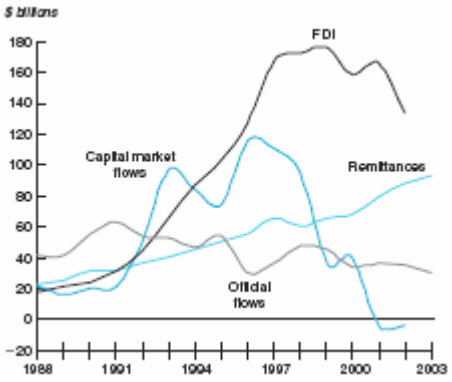
This 'brain drain' is a concern for future development prospects. Indian professionals and technical workers migrate in large numbers to jobs in Australia, Canada, UK and the US.; an estimated 15 million Indians live outside their country (IOM 2000).This problem of skilled migration is also prevalent in Africa, where an estimated 23,000 qualified academics emigrate each year to Europe, the Middle East and North America (IOM 2000). The World Bank estimates that 70,000 African professionals and university graduates leave their country of origin each year to work in Europe or North America (IOM 2003).

The World Migration Report 2000 notes that overseas international migration will become more important in sub-Saharan Africa as prospects for beneficial internal migration are limited, the labour market is weak, and migration techniques are becoming more sophisticated (IOM 2000).

On the other hand, evidence of return migration has been seen in sub-Saharan Africa, as political situations improve and economic changes have resulted in increased rural incomes. Together with deteriorating living conditions in urban areas, this has resulted in a return to rural areas (IOM 2000). This return to rural areas could impact upon urbanisation rates previously discussed.

Also on a positive note, migration is associated with remittances to the home country. Figure 28 shows that remittances to developing countries amounted to US$93 billion in 2003, about 1.5% of GDP, and about half more than aid flows to developing countries. For sub-Saharan Africa remittances are about a third of FDI flows.

Figure 28 Resource flows to developing countries 1988–2003



Source: World Bank (2004a), Global Development Finance.

The migratory pattern is likely to be driven by the prevailing conditions in the developed world. Fertility rates have fallen below replacement level in virtually all developed countries, accompanied by continuous declines in mortality, resulting in ageing populations (UN 2000).

International migration is projected to remain high during the first half of the century. The developed regions are expected to remain net receivers of international migrants, with an average gain of about two million migrants per year over the next 50 years. Averaged over the 2000–50 period, the main net gainers of international migrants are projected to be the US (1.1 million annual net migrants), Germany (211 thousand), Canada (173 thousand), the UK (136 thousand) and Australia (83 thousand), whereas the major net senders are projected to be China (-303 thousand annual net number of migrants), Mexico, (-267 thousand), India (-222 thousand), the Philippines (-184 thousand) and Indonesia (-180 thousand). Projections for regional migration can be seen in Table 43. Europe and North America are expected to gain at the expense of Africa, Asia and Latin America (UN 2003).

Table 43 Net migration, medium variant (thousands)

Period	Africa	Asia	Europe	Latin America	North America
1995–2000	-340	-1561	1022	-612	1402
2000–05	-168	-1293	627	-605	1355
2005–10	-159	-1242	579	-573	1310
2010–15	-222	-1157	576	-544	1265
2045–50	-217	-1254	571	-458	1280

Source: UN (2003) World Population Prospects, the 2002 revision.

Indeed, without migration, the population of the developed world is projected to begin to decline. If no migration is assumed, the European Union would lose 17% of its population by 2050, and the loss in the 15–64 age range would be 30% (UN 2000).

The UNPD has projected migration levels required to maintain elements of the developed world population structures (see Table 44). Scenario A is the migration level projected in the 1998 population revision. Scenario B is the level of migration required to maintain population at the maximum reached. Scenario C is the level required to maintain the 15–64 age-range at the maximum reached and Scenario D is the level required to maintain the PSR at the 1995 level. That is the potential support

ratio, defined as the ratio of population aged 15–64 years to the population aged 65 and over.

Table 44 Net number of migrants 1995–2050 by scenario and country

Country/region	Population with zero migration after 1995 (thousands)			Average annual number of migrants to fulfil scenario (thousands)			
	2000	2025	2050	A	B	C	D
Germany	80,985	72,643	58,812	207	324	458	3427
Japan	126,714	121,150	104,921	0	312	609	10,064
Russian Fed	144,960	131,824	114,248	135	508	650	4,675
UK	58,600	58,768	55,594	22	48	114	1,087
USA	274,335	296,616	290,643	760	116	327	10,777
Europe	723,482	684,055	600,464	428	1,821	2,934	25,203
EU	372,440	354,500	310,839	297	863	1,447	12,736

Source: United Nations Population Division (2001).

The projections point to large increases in migration to the developed world to prevent declining populations and worsening economic ratios. The EU population for example could decline by 100 million people by 2050 and would require nearly three million migrants a year to maintain the economically active age range at its highest level. The future could hold an increasing liberalisation of the labour market and relaxation of immigration laws to provide the work forces for developed countries (UN 2000).

MAJOR SOURCES

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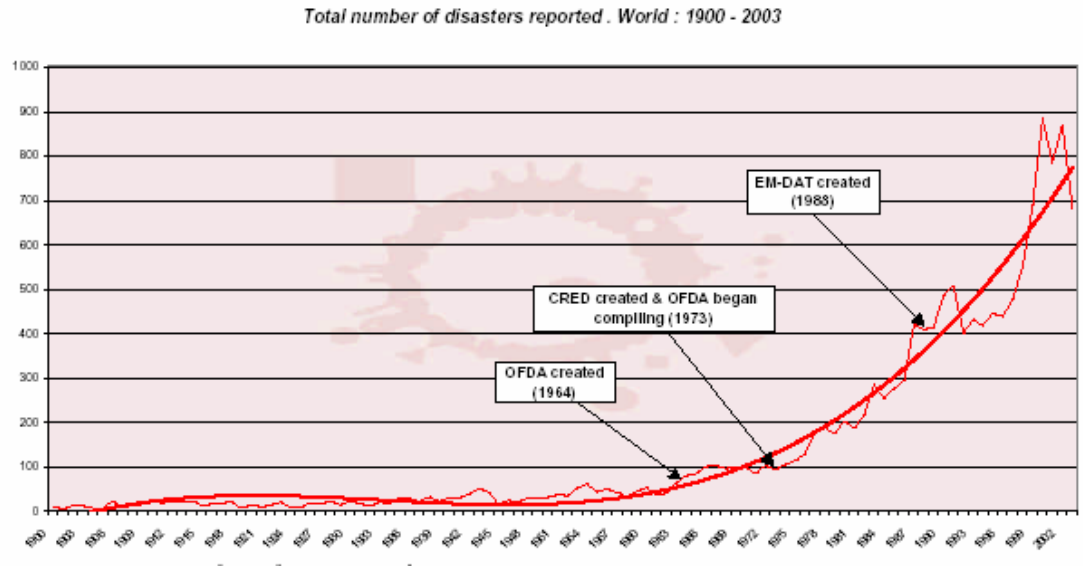
15. Disasters

Disasters can cause significant disruption to global trends. The number of disasters reported in 2002 was more than in any year of the preceding decade, see Figure 29.

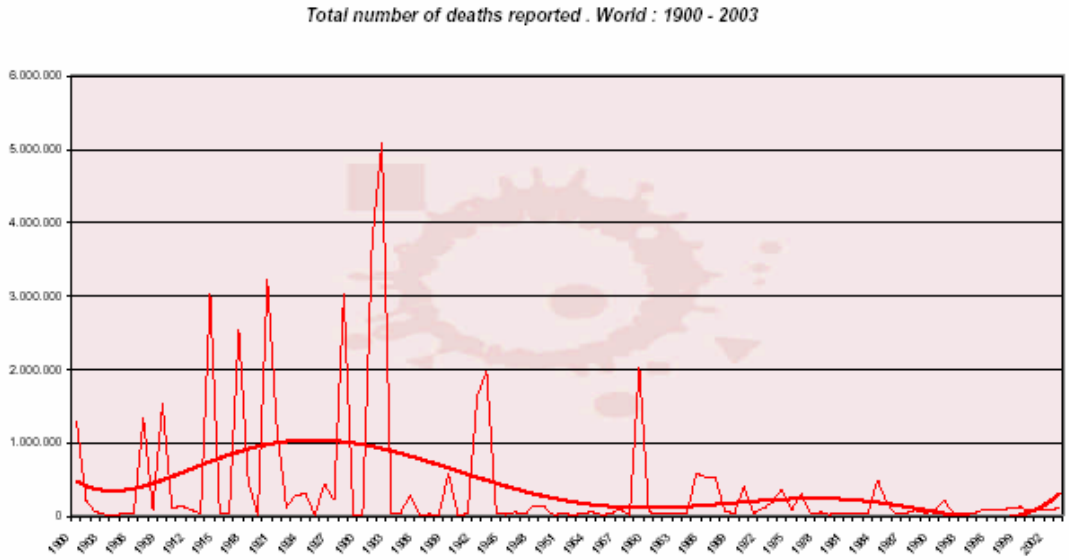
Figure 29 Reported disasters



Source: EM-DAT database.

However, they have become less deadly, with 24,500 people reported killed in 2002, compared with an average of 62,000 annually over the past decade; 608 million people were affected – three times the annual average from 1992–2001.

Figure 30 Deaths through disasters

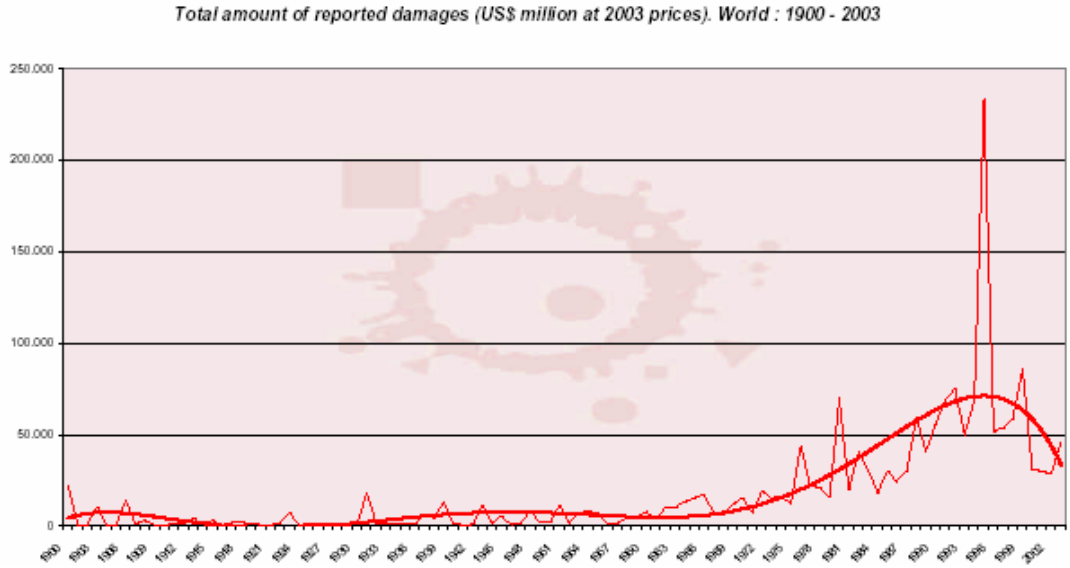


Source: EM-DAT.

Disasters particularly affect the world's poorest. Of those killed in 2002, only 6% lived in countries of high human development. While low human development countries report fewer natural disasters, their death toll is highest.

By contrast, while deaths remain low from disasters in highly developed countries, financial costs are high and rising, see Figure 31. Of globally reported disaster damage last year (US$27 billion), more than two-thirds occurred in developed countries. Less developed countries reported 0.15% of total damage. In the past the decade, the average cost of damage per natural disaster was US$477 million in highly developed countries, compared to US$149 million in medium developed countries and US$61 million in less developed countries. Differences are due to the financial value attached to infrastructure, which is higher for developed countries.

Figure 31 Amount of reported damages



Source: EM-DAT.

Weather-related disasters have risen from an annual average of 200 between 1993 and 1997 to 331 per year between 1998 and 2002. Famine is the deadliest disaster, killing at least 275,000 people over the past decade (nearly half of all reported fatalities). Floods affected more people across the globe (140 million per year on average) than all other natural or technological disasters put together. Comparing the decades 1983–92 and 1993–2002, reported global deaths from natural and technological disasters have fallen by 38%. However, numbers of people reported affected have risen by 54% over the same period (IFRC 2003).

Globally, the number of disasters has remained fairly constant, apart from lows in 1994 and peaks in 1999. However, the general trend in Africa has been upward (see Table 45).

Table 45 Total numbers of reported disasters (natural, technical and others) by continent

Regions	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Total
Africa	51	69	60	52	47	62	79	87	109	182	798
Americas	106	141	105	110	66	110	100	101	126	123	1088
Asia	215	245	194	247	135	180	187	208	229	231	2071
Europe	138	95	70	60	59	71	56	63	50	72	734
Oceania	36	18	17	14	15	8	17	15	18	15	173
Total	546	568	446	483	322	431	439	474	532	623	4864

Source: IFRC (2000).

The nature of natural disasters is also changing. During the last decade, climate-based disasters have predominated. Floods have affected 1.5 billion people, that is, 75% of the total numbers affected by disasters, whilst windstorms and droughts have also increased. In 1990, there were 66 reported flood disasters as compared to 110 in 1999 (IFRIC 2000). The Red Cross estimates that 335 million people or 5% of the world's population lost their homes in 1998 as a result of climate-related disasters (IFRIC 2000).

The long-term trends in technological disasters are also strongly upward, with the majority of this increase occurring in transport-related events (EM-Dat 2002). The increase in technical disasters has been especially marked since 1980. This has mainly been in the field of transport, especially road travel. These non-natural disasters account for a very small percentage of people affected by total disasters. However, future economic gains in developing countries could increase the prevalence and impact of these events.

MAJOR SOURCES

EM-Cred/OFDA data base www.cred.be

World Disasters Report 2000, International Red Cross.

World Disasters Report 2003, International Red Cross, see http://www.ifrc.org/publicat/wdr2003/

16. Conflict and Refugees

Conflicts
The major trends in conflict since World War II have been the reduction in interstate wars, the increase in internal conflicts, and the increasing targeting of civilian populations and their displacement.

During the period 1987–97, more than 85% of conflicts were internal and, currently, 90% of war deaths are not military (World Bank 2000c)

Table 46 shows armed conflicts defined as open, armed clashes between two or more centrally organised parties, with continuity between the clashes, in disputes about power over government and territory. Of the 118 armed conflicts that began between 1990 and 1999, only ten were classified as inter-state conflicts. The global number of conflicts rose sharply in the early 1990s (related to former Soviet Union) but has since stabilised.

Table 46 Armed conflicts in 1990s

Region	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Asia & Pacific	21	21	25	24	23	21	22	24	19	20
Central & South America	7	6	5	3	4	5	4	3	3	2
North Africa & Middle East	7	8	8	9	9	9	8	8	6	4
Sub-Saharan Africa	17	22	18	18	23	21	18	19	18	16
Europe	4	10	12	8	6	4	2	3	3	5
Total	**56**	**67**	**68**	**62**	**65**	**60**	**54**	**57**	**49**	**47**

Source: http://www.berghof-handbook.net/smith/.

On the positive side, trends in global spending on defence and armaments show large declines since the 1980s. Non-US spending has dropped by 50% and the global arms market has decreased by more than 50% in the same period (CIA 2000).

The CIA review of conflicts to 2015 highlights the continuation of these themes; internal conflicts will pose the greatest threat to stability, interstate wars will be less frequent though more lethal in nature and internal conflicts will create increasing internal displacements, refugees and humanitarian emergencies (CIA 2000).

The international community will have to deal with a changing power base, the rise of China and India, and the relative fall of Russia. China's People's Liberation Army will remain the world's largest military force and can expect to narrow the technological gap in a number of areas. This could improve their capability for regional operations by 2015 (CIA 2000).

Internal conflicts may increasingly develop into interstate conflicts as neighbours either seek to protect or exploit their own self-interest. Interstate conflicts are likely to grow over the rights to natural resources, especially water (CIA 2000).

Predicted areas of concern are sub-Saharan Africa, the Caucasus, Central Asia, parts of South and Southeast Asia, Central America and the Andean region.

The CIA survey predicts that states at risk include those with poor governance, ethnic, cultural or religious tensions, weak economies, and porous borders.

Conflict currently appears disproportionately in developing countries. Over 90% of civil wars and internal strife occur in developing countries. Sub-Saharan Africa accounts for nearly 40% of the total figure.

Refugees
While there are many economic migrants, about 9% of all migrants are refugees forced to flee dangerous conditions at home. At the end of 2000, the number of refugees in the world was 16 million, of which 12 million are under the mandate of United Nations High Commissioner for Refugees (UNHCR) and four million under the mandate of United Nations Relief and Welfare Agency (UNRWA). At the start of 2003 the number had increased to 20.6 million.

The largest number of refugees is found in Asia (nine million) and in Africa (five million) (UNHCR 2003).

Table 47 Persons of concern to UNHCR

	Total of concern	
Region	**1 January 2002**	**1 January 2003**
Asia	8,820,700	9,378,900
Africa	4,152,300	4,593,200
Europe	4,855,400	4,403,900
North America	1,086,800	1,061,200
Latin America and Caribbean	765,400	1,050,300
Oceania	81,300	69,200
Total	**19,761,900**	**20,556,700**

Source: UNHCR (2003), Refugees by Numbers.

Many more (25 million) are forced to flee war, natural disaster, violence or destitution but are considered internally displaced persons. An estimated 25 million more people are environmental migrants, fleeing natural disaster or displaced by dam or road building projects. Up to four million are involved in human trafficking (IFRC 2003).

Since 11 September 2001, immigration controls have become stricter. In the US, foreign nationals from 25 designated countries (mainly Islamic) are required to register with immigration authorities. Maintaining generous refugee policies in the light of terrorist threats is a challenge for all countries. Some countries simply refuse migrants or send them to other countries for processing. Other countries impose strict visa requirements and slow processing of claims to discourage 'bogus' asylum seekers.

In 1997 the number of people 'of concern' to the UNHCR was 19.7 million (see Table 48). This increased to a peak 21.8 million in 2002 and 20.6 million now. UNHCR includes in the number of person of concern: refugees (10.4 million in 2002), internally displaced people (5.8 million), asylum seekers (1 million), and returnees (2.4 million) and stateless and various (1 million).

Table 48 Annual totals of persons of concern to UNHCR

Year (end)	1997	1998	1999	2000	2001	2002
millions	19.7	19.8	20.5	21.8	19.8	20.6

Source: UNHCR (2003).

As the nature of conflict has changed over the years, with the rise in internal conflict so the number of internally displaced people has risen, providing the second largest group for UNHCR to deal with. As international migratory opportunities decline, the number of these internally displaced people is likely to rise, as is the number of returnees (UNHCR 2000).

Afghanistan was the origin of the major refugee population in 1999, with 2.5 million refugees going mainly to Iran, Pakistan and India. Other conflict areas generated large-scale refugee populations e.g. Sierra Leone, Iraq and Bosnia-Herzegovina (UNHCR 2000).

The main countries of permanent resettlement are USA, Canada and Australia, whilst in Europe the largest number of asylum seekers were in Germany, U.K. and Switzerland (UNHCR 2000).

Future predictions are difficult as they depend on the changing conflict situation. However, as travel and communication have become easier there has been a dramatic increase in the number of people seeking asylum in developed countries and despite toughening legislation, this is set to continue.

MAJOR SOURCES

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UNHCR (2003), *Refugees by Numbers 2000.*

Statistics refugees and others of concern to UNHCR: Statistical overview 2003.

The State of the Worlds Refugees 2000.

17. Summary Table

Key Drivers	Trends
Population	♦ World population to expand from 6.3 billion now to 8.9 billion in 2050. ♦ Downward revision by 0.4 billion from two years ago, owing to lower fertility expectations. ♦ High population growth in least developed regions, especially Africa, where population is set to more than double by 2050. ♦ Increasingly ageing populations. Life expectancy 65 in world, but 50 in Africa; these are set to converge somewhat. ♦ Higher dependency ratios in developed world. ♦ Lower dependency ratios in developing world. ♦ AIDS could severely affect demographic structure.
Urbanisation	♦ Percentage of population in urban areas projected to increase from 48% in 2003 to 61% in 2030. ♦ Urbanisation highest in developing world. Urbanisation rate forecast to be highest in Africa and Latin America. ♦ Much of the focus of urban population growth is on the smaller cities and urbanised rural settlements, not on the mega-cities.
Environment	♦ Waste generation rises slightly less than private consumption. ♦ Energy efficiency continues to increase. ♦ The number of people facing severe water quantity problems will increase from 1.5 billion in 1990 to 2.1 billion in 2015, mostly in Africa, the Middle East, South Asia and Northern China, but projections on annual water withdrawal prepared in the past 25 years have turned out to be too pessimistic. ♦ Between 1990 and 2000 the proportion of land area covered by forests for the world as a whole decreased from 30.4% to 29.7%. The deforested area equals 940.000 km^2, similar to the size of a country like Colombia or Egypt. ♦ Land degradation continues to worsen. ♦ The North Atlantic and parts of the Pacific are already being over-fished. All or most of the increase in demand for fish to 2020 will need to be and is expected to be supplied through aquaculture, since marine capture fisheries show no sign of increasing yields. ♦ Emissions of almost all greenhouse gases continue to rise under even the most environmentally friendly scenarios. ♦ The global average surface temperature is projected to increase by 1.4 to 5.8°c over the period 1990 to 2100.
Food	♦ Despite declining real food prices and expanding world production and trade, food security for the poor will only improve slowly in many regions. ♦ Sub-Saharan Africa, for example, will experience little improvement in per capita calorie availability and the region's number of malnourished children will increase. ♦ Slowly declining world food prices and buoyant international trade will coexist with continuing malnutrition throughout the world.
Economic	♦ The global economy is strengthening with average annual growth

Growth	forecasts for 2004 and 2005 projected at 4.5%. Risks remain: the large US current account deficit and surpluses in Asia; addressing medium-term fiscal situations in many developed and developing countries; and managing the eventual transition to higher interest rates. ♦ Developing country growth, on a per capita basis, is projected to more than double during the next ten years compared with the performance of the 1990s. ♦ Projections show a continued divergence in GDP per capita between sub-Saharan Africa and the rest of the world.
Poverty	♦ Poverty projections indicate a poverty rate of 13.3% in 2015 compared with 29.6% in 1990, with the number of poor declining to 809 millions from 1.1 billion in 1999 ♦ Much of this reduction is due to China and India, poverty will remain a problem in South Asia and Sub Saharan Africa.
Education	♦ By 2015 most regions will have achieved the target of UPE. ♦ However, South Asia is struggling and sub-Saharan Africa will miss the target by a wide margin. ♦ 60% of 128 countries will miss reaching gender parity at primary and secondary levels by 2005.
Health	♦ 34–46 million people live with HIV/AIDS, two-thirds in Africa. HIV/AIDS will reduce life expectancy in Africa from 49.2 recently to under 46 in 2010. ♦ Deaths from communicable diseases to decline, but increase expected in the prevalence of deaths due to non-communicable diseases. ♦ Global warming could increase annual number of malaria cases from 50 million a year to 80 million by 2100.
Trade and Finance	♦ Trade growth expected of 6.8% between 2005–2010. ♦ Reduction in trade barriers will depend on the Doha round but growth in the range of non-tariff barriers. ♦ Rebound in FDI expected in the coming few years after steep decline in the early 2000s. ♦ Unequal distribution of this FDI in absolute volumes but not when scaled by host country size.
Official Development Assistance	♦ After declines in the levels of ODA over the 1990s, aid is now at it highest level in real and nominal terms. ♦ ODA expected to increase to US$75 billion in 2006 from around US$55 billion in the past years. ♦ An increasing proportion of ODA is going to the social sectors. ♦ Increasing importance of global funds .
Technology	♦ The number of countries with a direct connection to the Internet increased from eight in 1988 to 209 in 2003. ♦ Telephone subscribers per 100 inhabitants increased from 11.6 in 1993 to 36.4 in 2003. Cellular mobile subscriptions have for the first time surpassed fixed line subscribers. ♦ Large digital divide between low and high income groups. ♦ Digital divide between large and poor countries is shrinking. ♦ Advances in medical technology change the burden of diseases.
Governance	♦ Increasing levels of democracy to continue.

	♦ Growth in the number of international NGOs.
Migration	♦ International migration set to rise from 175 million today to 230 million in 2050, representing a decline from 2.9% to 2.6% of the total population. ♦ Developed countries need and continue to absorb immigrants. ♦ Migrants are increasingly sending remittances to developing countries, surpassing ODA levels by more than half. ♦ Increasing tensions for migration policy after 9/11.
Disasters	♦ The number of disasters is increasing and affecting more people, particularly in less developed regions. ♦ Disasters are becoming less deadly. ♦ But the financial costs are becoming higher, particularly in more developed regions.
Conflict and Refugees	♦ Internal conflict to increase. ♦ Interstate conflict to decline. ♦ The number of refugees has declined slightly recently.

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