

GEO INDICATORS



Source: Joerg Boethling/ Still Pictures

- Environmental trends in 2006
- Energy
- Climate change
- Stratospheric ozone depletion
- Forests
- Fisheries
- Biodiversity
- Water and sanitation
- Environmental governance

GEO Indicators

Data published in the course of 2006 illustrate the continued overuse of the Earth's ecosystems and the negative impact on the environment, as well as some progress in global policies to address major environmental issues.

Various sets of core environmental indicators, as well as highly aggregated indices combining several indicators, have been developed and have gained importance throughout the years in various parts of the world and in international fora. They differ in their scope and purpose—from tracking impacts of individual economic activities and supporting direct policy action, to framing global sustainable development. The GEO Indicators aim to provide a comprehensive overview of the headline environmental trends at the global and regional levels. They simplify and focus information for decision-makers in national, regional, and global policy-making processes as well as for the public at large. However, the challenge remains to find good time-series data on the environment necessary for credible individual and aggregate indicators (UNESCO-SCOPE 2006).

The following selection from the core set of GEO indicators provides a graphic snapshot of key global environmental trends. The indicators support and complement findings of the Year Book's global and regional overviews and its special sections. They highlight trends of importance to policy makers, in the areas of energy, climate change, stratospheric ozone depletion, forests, fisheries, biodiversity protection, water and sanitation, and environmental governance.



The UNEP GEO Data Portal

The core indicators are continuously reviewed, refined, updated, and made available on the internet. They provide the most recent trends and the latest developments up to the current year—or the most recent year for which data are available. The overall core indicator set—as well as the underlying detailed data base—can be accessed directly at <http://geodata.grid.unep.ch/>.

ENVIRONMENTAL TRENDS IN 2006

The most recent data provide more evidence of growing pressures that damage the ecological systems supporting all life on the planet. The overall trend is towards continued overuse of the Earth's ecosystem resources. The Ecological Footprint index suggests that humanity's resource consumption and waste production exceeded the Earth biocapacity by about 25 per cent in 2003 (WWF 2006). The 2005 Millennium Ecosystem Assessment estimated that 15 of the 24 major ecosystem services that support humanity—through provision of fresh water, replenishment of fertile soil, or regulation of the climate for example—are being pushed beyond their sustainable limits or are already operating in a degraded state (Millennium Ecosystem Assessment 2005).

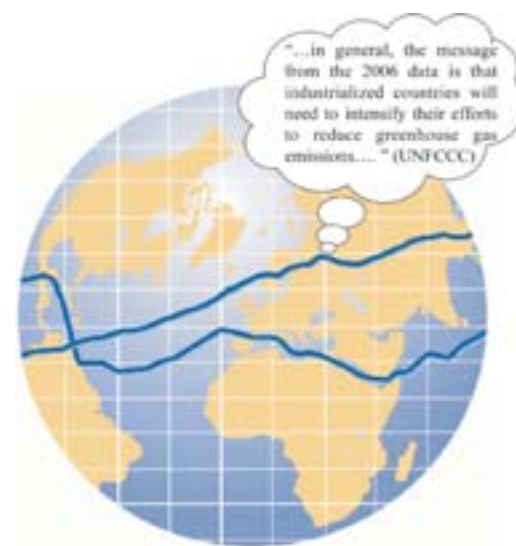
Some key trends can be identified. Total energy consumption continues to increase despite a continuing trend towards energy efficiency. The share of fossil fuels in energy use has not changed significantly since the mid-1990s. Carbon dioxide (CO₂) emissions from fossil fuel use are one of the main factors behind climate change. Data show that total CO₂ emissions continue to rise while global CO₂ emissions per capita have remained at the same level over the last few years. The downward trend for consumption of chlorofluorocarbons and hydrochlorofluorocarbons is expected to result in the full recovery of the stratospheric ozone layer over the long term.

In terms of pressures on natural resources, the total marine fish catch shows signs of stabilizing (though

its current level may not be sustainable), while marine aquaculture is increasing. The forest harvest rate indicates an increasing demand for wood, in particular in Africa and in Asia and the Pacific. There is also a trend towards establishing more land and sea areas to protect and maintain biological diversity.

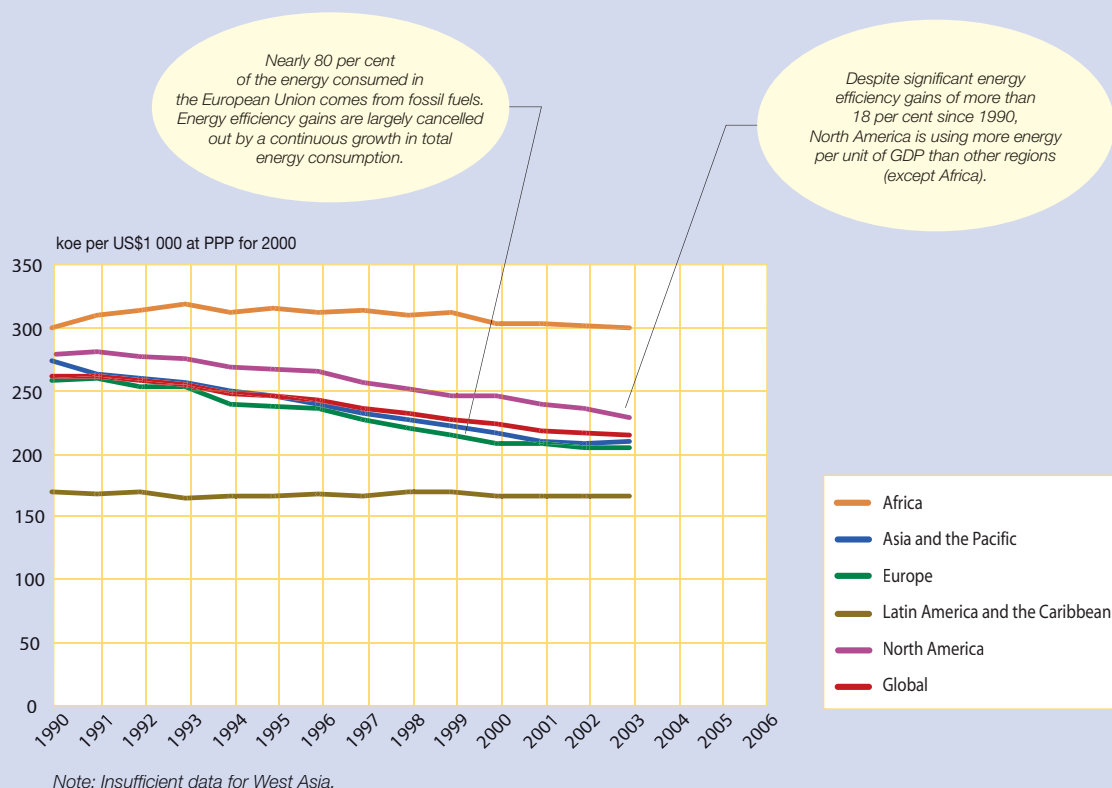
In the area of governance, the ratification process of various Multilateral Environment Agreements has advanced further in most regions in 2006. At the same time, certification programmes in forestry (Forest Stewardship Council) and environmental management systems (ISO-14001), among others, are attracting more companies and organizations.

Some progress is being made towards achieving the overall Millennium Development Goals (MDGs) set for 2015, but there is still a long way to go to ensure environmental sustainability (Goal 7). For example, while the world is on track to reach the drinking water target, it seems unlikely that the basic sanitation target will be reached (United Nations 2006). Indicators referring to the targets set under the MDGs have been clearly marked in the following pages.



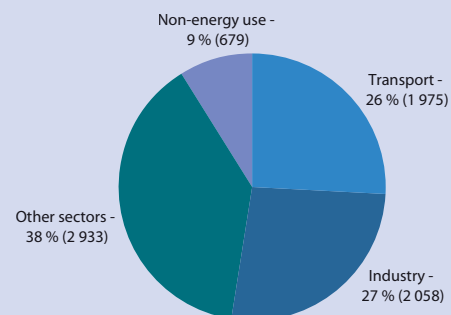
ENERGY: Energy efficiency

Indicator: Energy use per unit of GDP (MDG indicator 27, under Target 9, Goal 7)



The **intensity of energy use** continues to decrease gradually in most regions of the world—while recently stabilizing in others. This means that, on average, energy is used more and more efficiently in economic production, although there are significant differences in energy use between regions due to factors such as general economic structure and availability of natural resources. The overall trend towards more efficiency is cancelled out by a continued rise in total economic production, leading to an increase in energy consumption for the world as a whole from 5 559 million tonnes of oil equivalent (Mtoe) in 1990 to 7 645 Mtoe in 2004.

World energy consumption by sector, 2004



Units of measurement: Million tonnes of oil equivalent
Definition: 'Other sectors' comprises agriculture, commercial, public service, residential, and non-specified. 'Non-energy use' includes substances used as raw material in industrial processes such as propylene, benzene, and naphthalene.

Source: IEA 2006

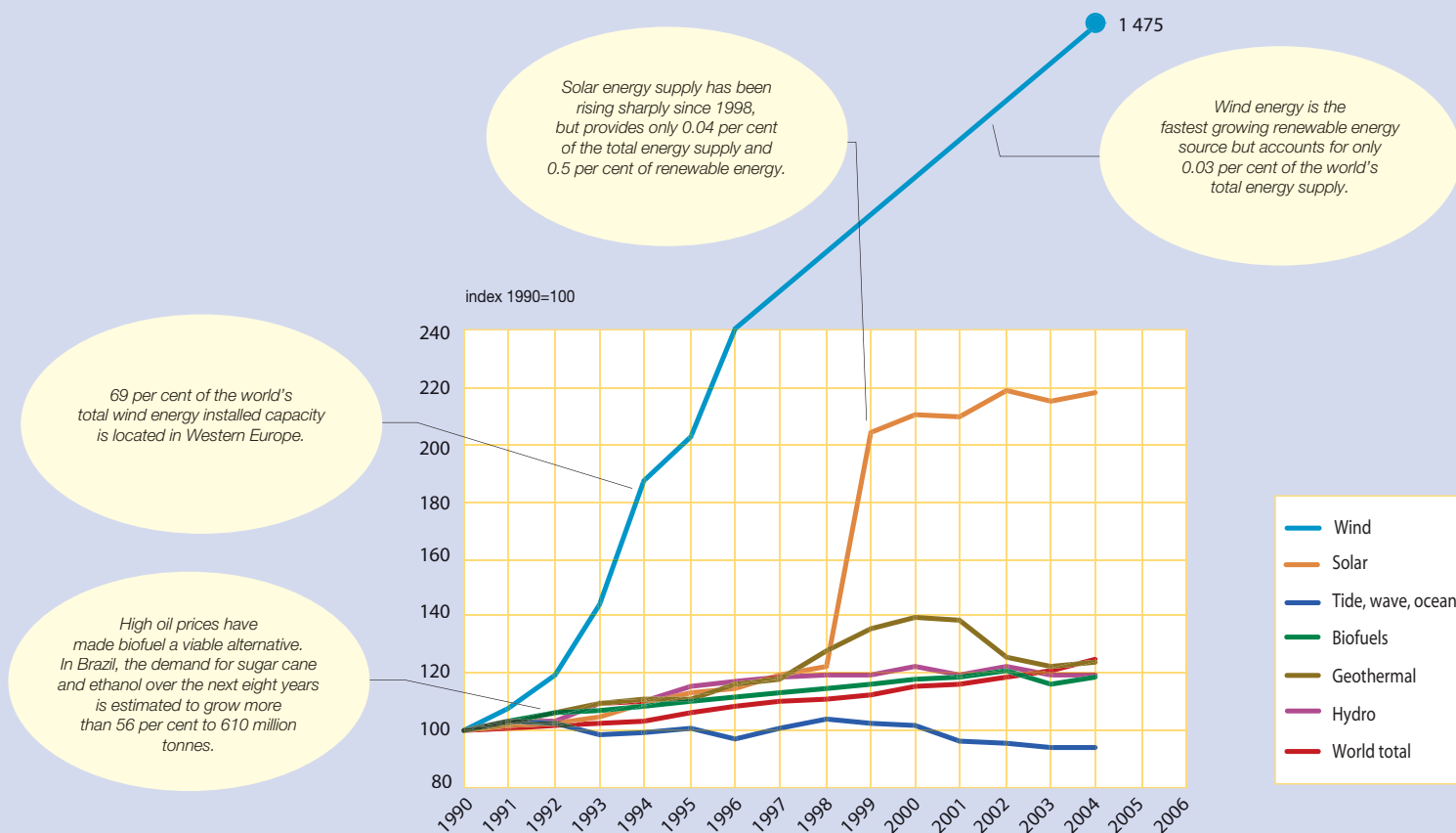
Between 1973 and 1990 the share of the transport sector in total energy consumption has increased from 23 per cent to 26 per cent, but in absolute terms more than doubled (from 967 to 1 975 Mtoe). During the same period total energy consumption increased more than 65 per cent (from 4 608 to 7 644 Mtoe). Even with technological efficiency gains, the transport sector is becoming an increasingly important source of greenhouse gas (GHG) emissions as demand for transport services continues to grow.

Units of measurement: Kilogram of oil equivalent (koe) per US\$1 000 of GDP, converted from national currencies using purchasing power parity (PPP) conversion factors for the year 2000.

Definition: Energy use is calculated by the International Energy Agency as the production of primary energy, plus energy imports minus energy exports, minus energy delivered to international marine bunkers, and plus or minus stock changes that happened during the year.

Source: GEO Data Portal, compiled from UNSD 2006

Indicator: Renewable energy supply index



69 per cent of the world's total wind energy installed capacity is located in Western Europe.

High oil prices have made biofuel a viable alternative. In Brazil, the demand for sugar cane and ethanol over the next eight years is estimated to grow more than 56 per cent to 610 million tonnes.

Solar energy supply has been rising sharply since 1998, but provides only 0.04 per cent of the total energy supply and 0.5 per cent of renewable energy.

Wind energy is the fastest growing renewable energy source but accounts for only 0.03 per cent of the world's total energy supply.

The share of fossil fuels in energy sources has been more or less stable since the mid 1990s at around 86-87 per cent of total energy use. The **share of renewable energy sources** for 2004 was slightly down, at 13.0 per cent from 13.2 per cent in 2003 (1990: 12.9 per cent). Among renewables, wind and solar energy have very small shares but are rising fast, illustrated by the growth index shown in the graph. Combustible renewables (such as biofuels and mostly traditional biomass of wood and waste) and hydro-electricity remain the biggest renewable energy sources with 10.3 per cent and 2.2 per cent respectively of total energy supply in 2004. More sustainable energy production and consumption patterns can be achieved through a reduction of total fossil fuel energy use, further improvement of energy

efficiency, and a continued increase in the share of renewable energy sources. Key challenges to the promotion of renewable energy are reducing costs and improving integration of renewable sources in the energy system, improved technology uptake, and increasing purchases leading to economies of scale. Costs are declining faster for renewable energy sources because renewable technologies are less mature than fossil fuel technologies. Between 1980 and 1995, the cost of electricity produced in Europe decreased by 88, 84, and 50 per cent for solar energy, wind, and biomass, respectively, while the cost of electricity produced from coal was more or less unchanged (IEA 2003).

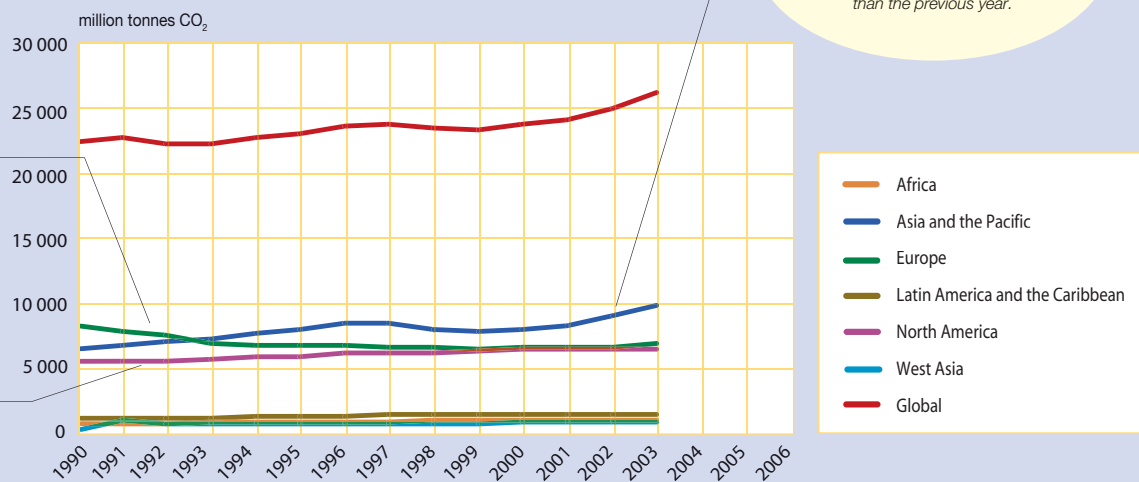
Units of measurement: none (index with 1990=100)
Definition: Renewable energy data refer to Total Primary Energy Supply, originally expressed in million tonnes of oil equivalent (Mtoe), for all the countries of the world from 1990 to 2004.

Source: GEO Data Portal, compiled from IEA 2006

Indicator: Carbon dioxide emissions, total and per capita (MDG Indicator28a under Target 9, goal 7 [Carbon dioxide emissions])

For 2003, the total amount of GHG emissions in the entire European region was 7 218 million tonnes of CO₂ equivalent, up from 7 094 in 2002 (1990: 9 838 million tonnes). For the new EU-25, total emissions fell by 7.3 per cent between 1990 and 2004, mainly due to economic decline in the 1990s—but they are on the rise again.

For 2003, the amount of GHG emissions in North America rose to 7 094 million tonnes from 6 768 million tonnes (1990: 5 488 million tonnes).

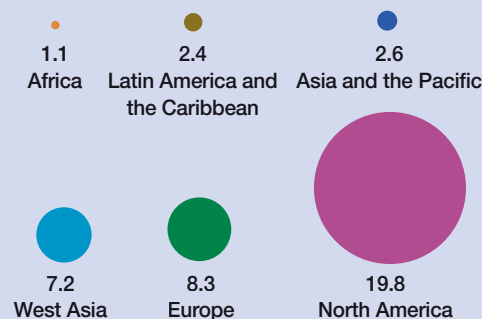


Globally, Asia and the Pacific have seen the biggest increase in GHG emissions—a 760 million tonne increase of CO₂ equivalent in 2003, 8.5 per cent more than the previous year.

The Earth's climate is changing rapidly. During the last century, the global average surface temperature rose by around 0.6°C. It is projected to rise by a further 1.4 to 5.8°C by the end of this century (IPCC 2001). Noticeable world-wide effects include sea level rise, the reduction of glaciers and ice masses, and changing vegetation and biodiversity patterns. For example, the average mass balance of mountain glaciers around the world continues to decrease, with the latest available data indicating a further thickness reduction of 0.5 metre in 2005. This confirms the trend in accelerated ice loss during the past two and a half decades and brings the total loss since 1980 to about 9.5 metres. Underlying rapid climate change are greenhouse gas (GHG) emissions from fossil fuel use, as well as land-use and forestry changes. Total anthropogenic CO₂ emissions continue to rise, although in most regions the increase is relatively small. The world total CO₂ emissions, including those from forestry and land use changes, are estimated to have just passed 26 billion tonnes in 2003, up from 24.8 in 2002 (1990: 22.2). In the period 1990–2004, the overall anthropogenic emissions of greenhouse gases (CO₂, N₂O, CH₄, HFCs, PFCs, and SF₆, among others) in industrialized countries decreased by 3.3 per cent. However, this was mostly due to a 36.8 per cent decrease in emissions from transition economies in eastern and central Europe.

In the more recent period 2000–2004, this group has seen an emission increase of 4.1 per cent (UNFCCC, GHG Data 2006).

CO₂ emissions per capita by region, 2003



Units of measurement: Tonnes per capita

Definition: Emission of CO₂ per capita is the total amount by a region divided by the region's population.

Source: GEO Data Portal, compiled from UNFCCC 2006, Marland and others 2006 and UN Population Division 2005. The global and regional data are compiled from national data submitted to the UN Framework Convention on Climate Change (UNFCCC) for countries listed in its Annex 1 and from estimated country data from the Carbon Dioxide Information and Analysis Center (CDIAC) for the rest of the world.

In comparison CO₂ emissions per capita have remained near the same level over the last years. The global average for 2003 was estimated at 4.1 tonnes per capita, up from 4.0 the year before. Differences among regions are considerable, with the highest figure for North America (19.8 tonnes per capita in 2003) and the lowest for Africa (1.1 tonnes per capita). The key challenge is to limit GHG emissions and stabilize concentrations of CO₂ and other gases in the atmosphere by strengthening local, national, and international strategies and initiatives for reducing GHG emissions and fossil energy use.

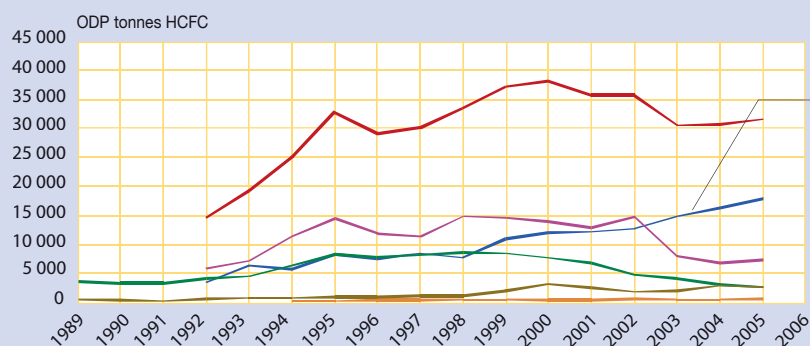
Units of measurement: Million tonnes of CO₂ equivalent

Definition: Emission of CO₂ is the total amount emitted as a consequence of human production and consumption

Source: GEO Data Portal, compiled from UNFCCC 2006 and Marland and others 2006.

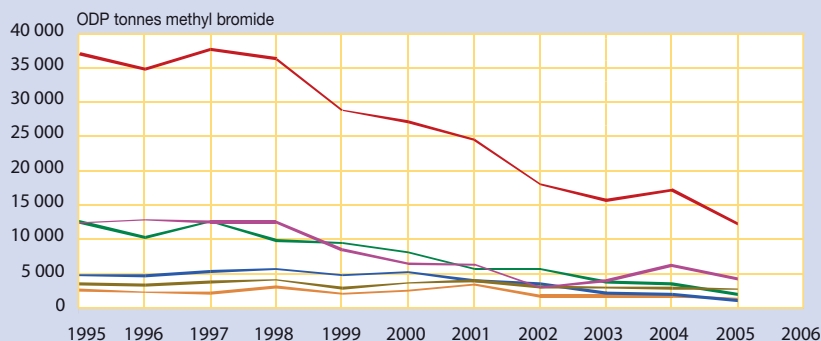
STRATOSPHERIC OZONE DEPLETION: Reducing ozone-depleting substances

Indicator: Consumption of CFC, HCFC, and MeBr (MDG 28b under Target 9, Goal 7 [CFC consumption])

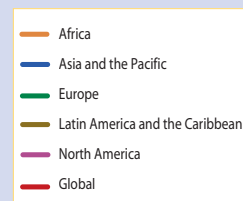


Note: Insufficient data for West Asia.

Consumption of HCFC in the Asia and the Pacific region increased 48 per cent between 2000 and 2005 and more than doubled since 1995.



Note: Insufficient data for West Asia.



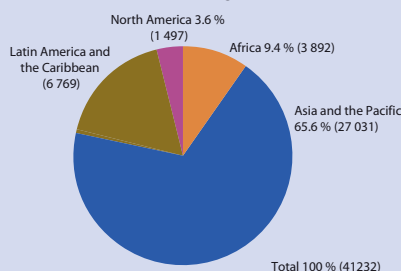
The use of hydrochlorofluorocarbons (HCFCs) as substitute for chlorofluorocarbons (CFCs) had been decreasing modestly since the year 2000, but recent years show a small increase to 31 700 tonnes ozone-depleting potential (ODP) in 2005, mainly due to increased consumption in the Asia and the Pacific region.

The use of methyl bromide, a substance with a high ODP mainly used as a fumigant, especially of soils before planting tomatoes, strawberries, and other crops, was banned under the Montreal Protocol by 2005 except for uses deemed critical. The use of methyl bromide continues to decline and in 2005 stood at 12 450 tonnes ODP for the world as a whole. Exemptions granted to certain industrialized countries for the phase out have decreased from 14 132 metric tonnes for 2005 to 5 122 for 2008. Developing countries are to complete their phase out by 2015.

The consumption of CFCs further decreased in 2005 and was reported at about 41 000 tonnes ODP for the world as a whole, down from 66 000 tonnes the year before. However, despite the considerable and swift phase out of CFCs over the last two decades, stratospheric ozone depletion remains a source of concern due to its long term impacts on human health, agriculture, and the environment. Full recovery of the ozone layer is currently expected to take longer than

earlier projected (WMO/UNEP 2006). At the same time ozone depleting substances and some of their substitutes such as HCFCs are also greenhouse gases—and so reductions in ozone-depleting substances can also help to mitigate climate change.

Consumption of CFCs by region, 2005



Note: Europe has a negative consumption of CFC (-187 tonnes) in 2005 due to destruction of export for feedstock use.

Over the last decade global consumption of CFCs has decreased from 28 3870 (1995) to 41 232 (2005) ODP tonnes.

Definition: Tonnes of ozone-depleting potential (ODP) by region in per cent.

The key challenges are to further reduce the production and use of CFCs, HCFCs, and methyl bromide; to reduce international movements and illegal trade of these substances; and to support developing countries in reducing their use of ozone-depleting substances.

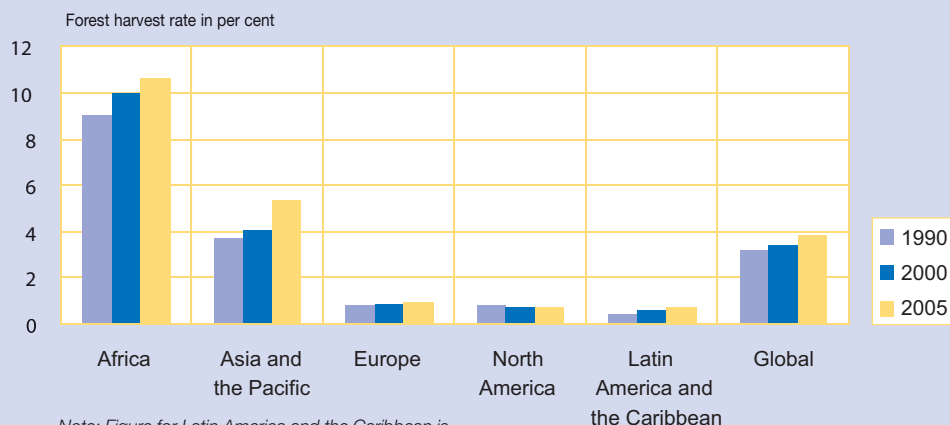
Units of measurement: Tonnes of ozone-depleting potential

Definition: Ozone-depleting potential (ODP) is the ratio of the impact on ozone of a chemical compared to the impact of a similar mass of CFC-11. Thus, the ODP of CFC-11 is defined as 1.0. The five CFCs compiled for MDG indicator no. 28 are CFC-11, CFC-12, CFC-113, CFC-114, and CFC-115. The HCFCs to be phased out are HCFC-22, HCFC-123, HCFC-124, HCFC-133a, HCFC-141b, HCFC-142b, HCFC-225ca, and HCFC-225cb. Methyl bromide, MeBr or CH₂Br, is to be phased out by 2005 in developed countries and by 2015 in developing countries (except for critical uses).

Source: GEO Data Portal, compiled from UNEP Ozone Secretariat 2006.

FORESTS: Sustainable management of forests

Indicator: Forest harvest rate and total FSC certified forest area

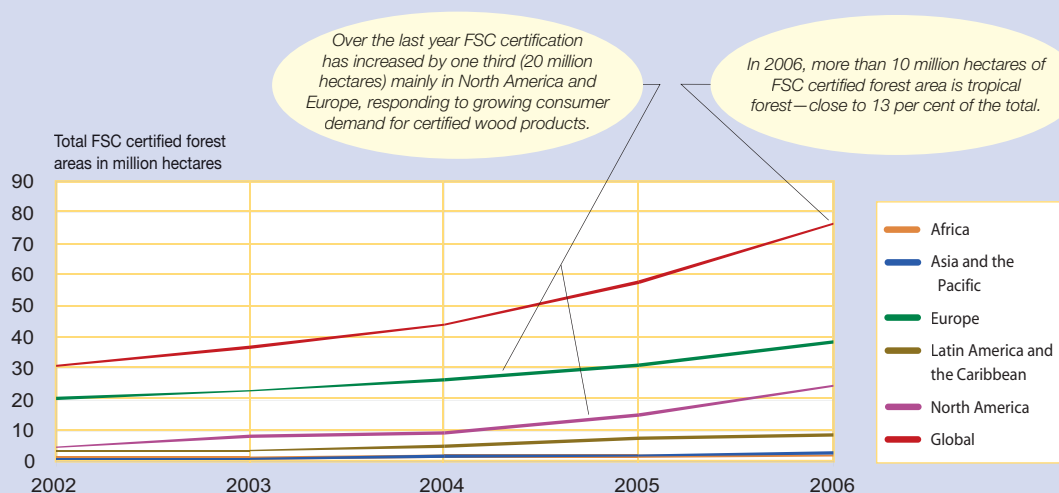


Note: Figure for Latin America and the Caribbean is tentative as data for several countries are missing. All data are approximations only, due to methodological differences in calculations and definitions.

Units of measurement: Per cent

Definition: Forest harvest rate is the amount of timber production divided by the total forest volume or 'growing stock'. Roundwood is wood in its natural state as felled, or otherwise harvested, with or without bark, round, split, roughly squared, or other forms (such as roots, stumps, or burls). The roundwood volume is measured in tonnes/m³ under bark, while the forest volume is measured in m³ over bark; an increase of 10 per cent bark has been applied to roundwood production volume for harmonization purposes. Roundwood volume also includes production of wood in areas outside forests ('other wooded land'). The wood density has been set at an average of 0.57 tonnes/m³ for all regions.

Source: GEO Data Portal, compiled from FAO 2005 and FAO 2006a.



Note: Insufficient data for West Asia

Units of measurement: Million hectares

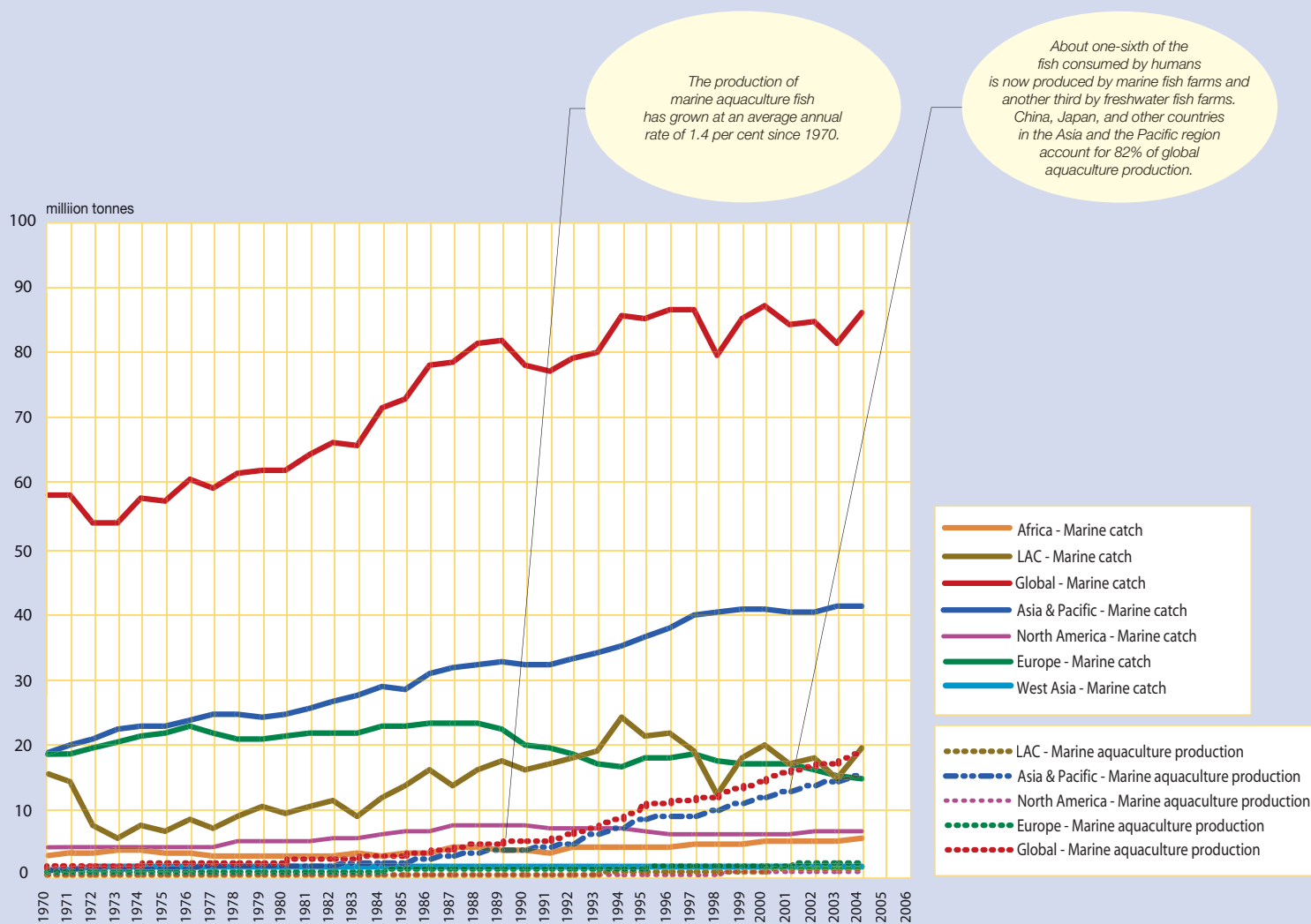
Definition: FSC certified forest area gives the area of forest that has received a FSC Forest Management Certificate. The certification is undertaken by an independent body to check that the forestry complies with the internationally agreed FSC Principles of Responsible Forest Management. Certified forest operations can claim the forest products they produce come from a responsibly managed forest. Before a certified forest operation can sell their products as FSC certified, they must also obtain 'chain of custody' certification (FM/COC). The data for 2006 ends at the beginning of July.

Source: GEO Data Portal, compiled from FSC 2006.

The increasing demand for wood products can pose a threat to the total forest cover around the world. Although there are not many reliable and comparable times-series data available on forest volume and wood production, the available information points to increasing **forest harvest rates** in most parts of the world, in particular in Africa and Asia and the Pacific. It has been estimated that the global forest harvest rate has increased to 3.8 per cent in 2005, based on data from the latest FAO Global Forest Resources Assessment.

In the last decade, about 80 million hectares in more than 80 countries have been certified according to sustainable management standards of the Forest Stewardship Council (FSC), while several thousand products are now produced using FSC certified wood and carrying the FSC trademark. **FSC certification** is carried out by independent bodies. The consumer demand for certified products is continuing to increase in all regions, particularly North America and Europe, with a doubling in the last two years.

Indicator: Annual marine fish catch and aquaculture production



The total **catch of fish, crustaceans, and molluscs** in marine areas has remained within the range of 80-87 million tonnes since 1994. For 2005, the latest reported year, the catch was 86 million tonnes. The reported figures are not always fully reliable and illegal catch is difficult to assess. However, it seems clear that the limits of natural fish stocks are being challenged more and more, resulting in tighter rules and regulations in the area of fish quotas, fish types, and seasonal catch.

While the overall marine fish catch is levelling off, the **production of marine aquaculture fish** is rising significantly, particularly in the Asia and the Pacific region—posing more threats to existing coastal ecosystems.

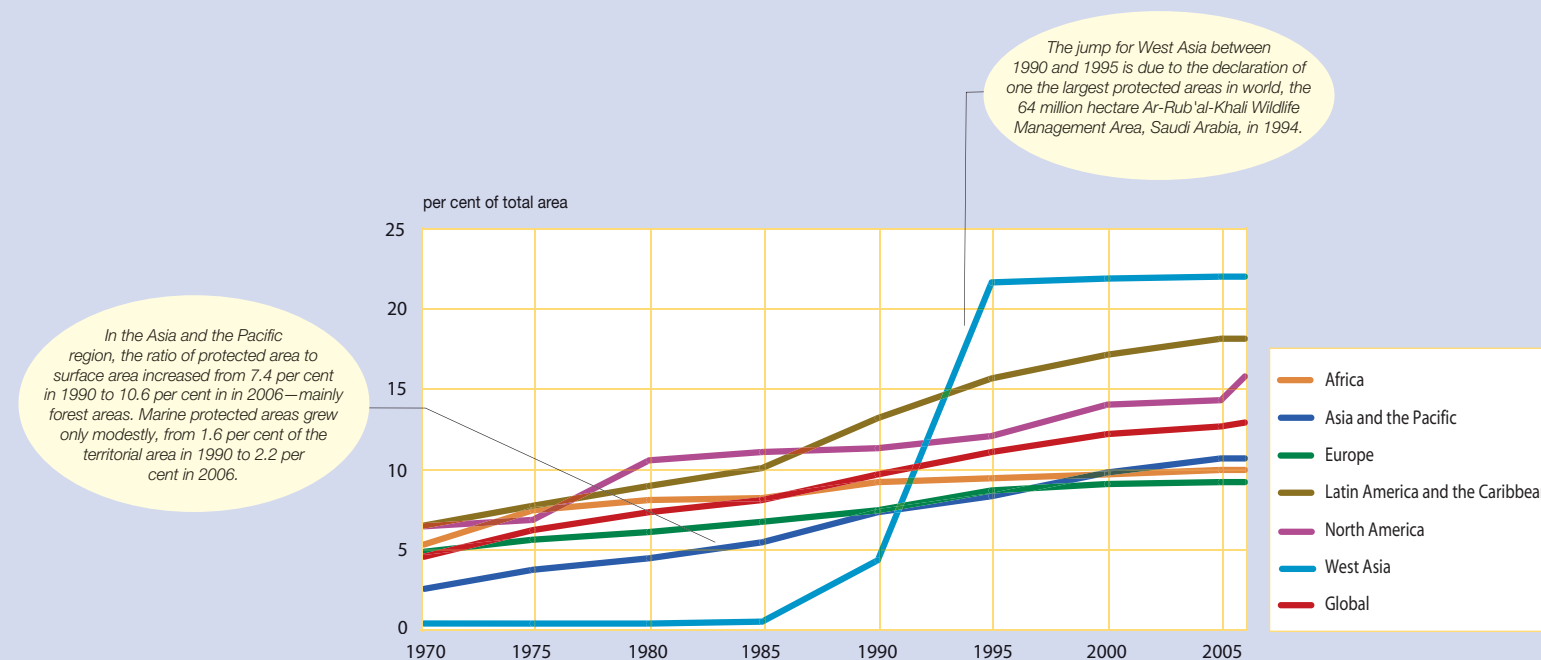
The key challenge is to achieve a more sustainable management of marine fish resources in all parts of the world through effective international cooperation—recognizing the importance of fish for nutrition and economic development while trying to avoid negative impacts on fish stocks and habitats.

Units of measurement: Million tonnes

Definition: Marine capture is the nominal catch of fish, crustaceans, and molluscs in marine areas and excludes production from fish farming. Aquaculture marine production includes all fish, molluscs, crustaceans, aquatic animals, and animal products cultivated in marine and brackish environments; it excludes production figures for marine mammals, corals, sponges, and aquatic plants. The data are based on official country reports.

Source: GEO Data Portal, compiled from FAO 2006b.

Indicator: Ratio of area protected to maintain biological diversity to surface area (MDG Indicator 26, under Target 9, Goal 7)



Continuing pressures on natural areas pose major challenges for conservation efforts to protect ecosystems and other areas of significance. Although in many parts of the world the protection of natural areas is expanding, their management improving, and protection is better integrated into urban, forestry, agricultural and fisheries policies, society's overall impact on the natural environment and biodiversity remains a major issue of concern.

In the last decades, the number and area of registered protected areas in the world—both those classified under the system established by the World Conservation Union (IUCN) and others—has been steadily growing. By the end of 2006, registered protected areas amounted to almost 13 per cent of the surface area of land and territorial waters. In reality this number is a little higher, because the figures presented here exclude protected areas for which no starting data are known and the number of marine protected areas is likely to be underestimated.

The upward trend has been levelling off somewhat in recent years in some regions. The most significant increase in the last decade was noted in the North America region: from 11.9 per cent in 1995 to 14.4 per cent in 2005 and now up to 15.6 per cent in 2006.

The indicator does not provide a measure for effectiveness of protection of biological diversity in the protected areas. Protected areas invariably require active management interventions if they are to fulfill their role in maintaining biological diversity. Such measures include protection from adverse human activities such as encroachment, poaching, or over-harvest of particular resources and intervention to maintain ecological processes or populations of species. A key challenge for many protected areas is that they do not have adequate resources invested in them to allow for such management (UNEP-WCMC 2007).

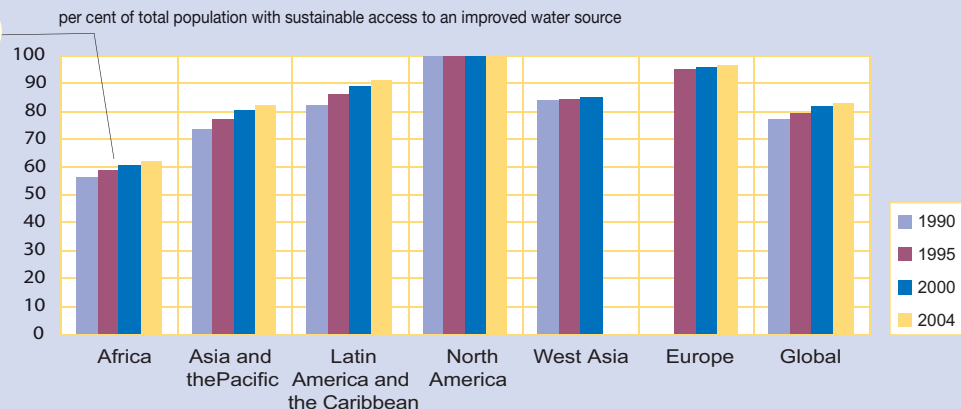
Units of measurement: Per cent

Definition: Protected area is the area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, of natural and associated cultural resources, and managed through legal or other effective means. The data include both the areas classified under the six IUCN management categories and other protected areas. They include terrestrial and marine protected areas, but exclude all areas for which no starting data are known. Data for 2006 end at the beginning of November.

Source: GEO Data Portal, compiled from UNEP-WCMC 2006.

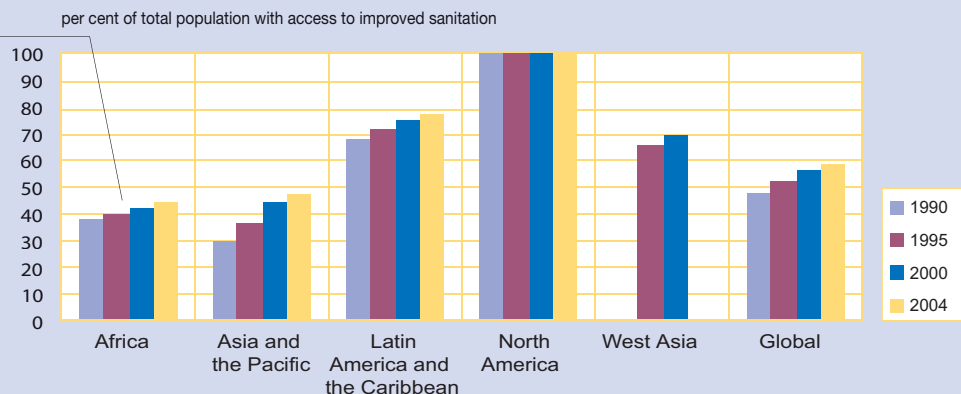
Indicator: Proportion of population with sustainable access to an improved water source and proportion of population with access to improved sanitation (MDG indicator 30 & 31, under Target 10, Goal 7)

Despite improvements in Africa as a whole from 1990 to 2004, the total number of people without access to drinking water in Sub-Saharan Africa increased by 23 per cent.



Note: Insufficient data for Europe in 1990 and West Asia in 2004

Despite improvements in Africa as a whole from 1990 to 2004, the number of people without sanitation in Sub-Saharan Africa increased by over 30 per cent.



Note: No data available for Europe and insufficient data for West Asia 1990 and 2004

Units of measurement: Per cent

Definition: The proportion of the population with access to safe drinking water is expressed as the percentage of people using improved drinking water sources or delivery points (piped water into dwelling, plot or yard; public tap/standpipe; tubewell/borehole; protected dug well; protected spring; rainwater collection). Improved drinking water technologies are more likely to provide safe drinking water than those characterized as unimproved.

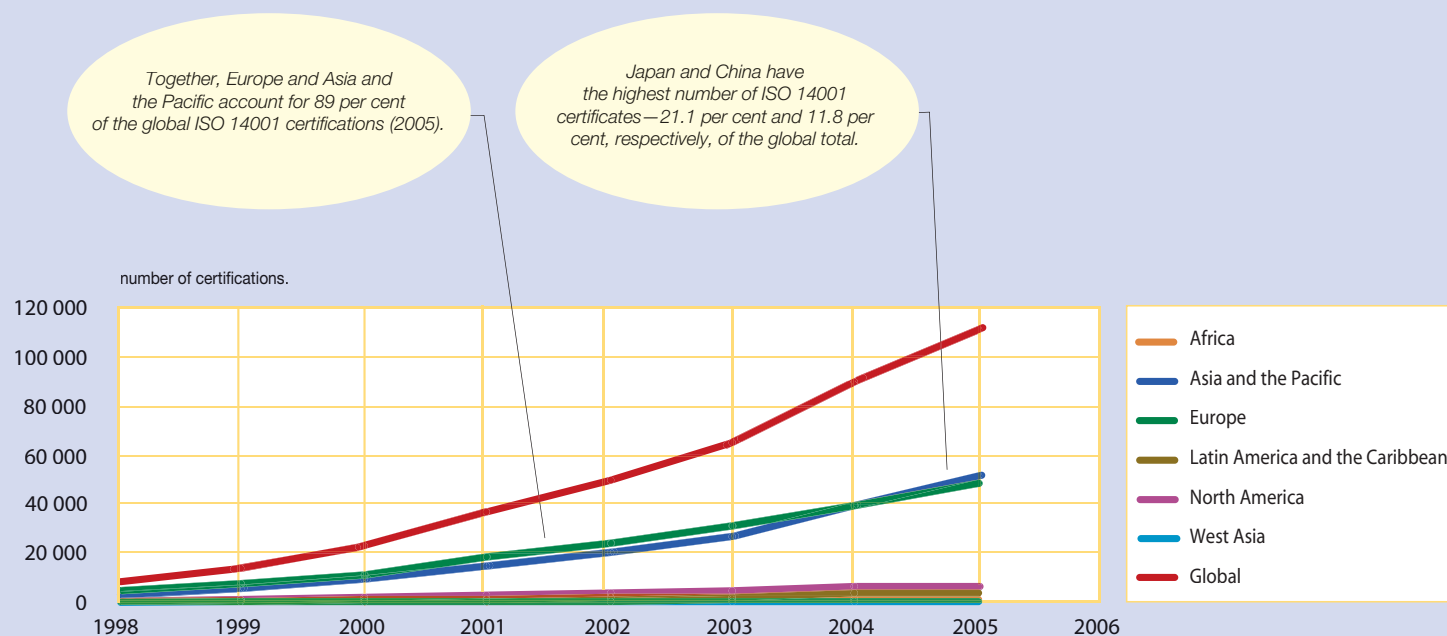
The proportion of the population with access to basic sanitation is expressed as the percentage of people using improved sanitation facilities (flush or pour-flush; ventilated improved pit; latrine; pit latrine with slab; composting toilet). Improved sanitation facilities are more likely to prevent human contact with human excreta than unimproved facilities.

Source: GEO Data Portal, compiled from WHO/UNESCO 2006.

Safe drinking water, sanitation, and good hygiene are fundamental to human health and development. Access to improved water supply and sanitation continues to increase—in 2004, 83 per cent and 59 per cent of the world's population had access to improved water supply and sanitation, respectively. Despite this progress, the world is not on track to achieve the sanitation target set by the Millennium Development Goals (MDGs).

These basic necessities are still a luxury for many of the world's poor people. Currently over 1.1 billion people do not use drinking water from improved sources, while 2.6 billion lack basic sanitation. These figures have not changed much during recent years. Migration from rural to urban areas poses major challenges for governments and urban planners, requiring extension of basic drinking water and sanitation services to peri-urban and slum areas to reach the poorest people (WHO/UNICEF 2006).

Indicator: ISO 14001 certifications



The International Organization for Standardization (ISO) is the world's largest developer of voluntary international standards for business, government, and society. The most widely known standards related to the environment field are ISO 9001 for quality management and **ISO 14001 for environmental management systems**. The standards are used worldwide by businesses and organizations, large and small, in public and private sectors, by manufacturers and service providers, in all sectors of activity. ISO does not undertake any certification or auditing itself—instead many companies and organizations decide to have their management systems independently audited and certified as

conforming to the standards. Certification is not a requirement of the standards themselves but many organizations have chosen certification because of the perception that an independent confirmation of high standards is important and worthwhile. By the end of December 2005, a total of at least 111 000 ISO-14001 certificates had been issued in 138 countries. The 2005 total represents an increase of 24 per cent over 2004, when the total stood at about 90 000 in 127 countries (ISO 2006).

Units of measurement: Number of certifications

Definition: Number of certifications of ISO14001 standards gives the number of organizations (enterprises, institutions) that have received the ISO 14001 certificate. ISO 14000 is a series of international standards on environmental management, of which ISO 14001 is the cornerstone standard. ISO 14001 specifies a framework of control for an Environmental Management System against which an organization can be certified by a third party. Data for 2006 end at the beginning of November.

Source: GEO Data Portal, compiled from ISO 2006.

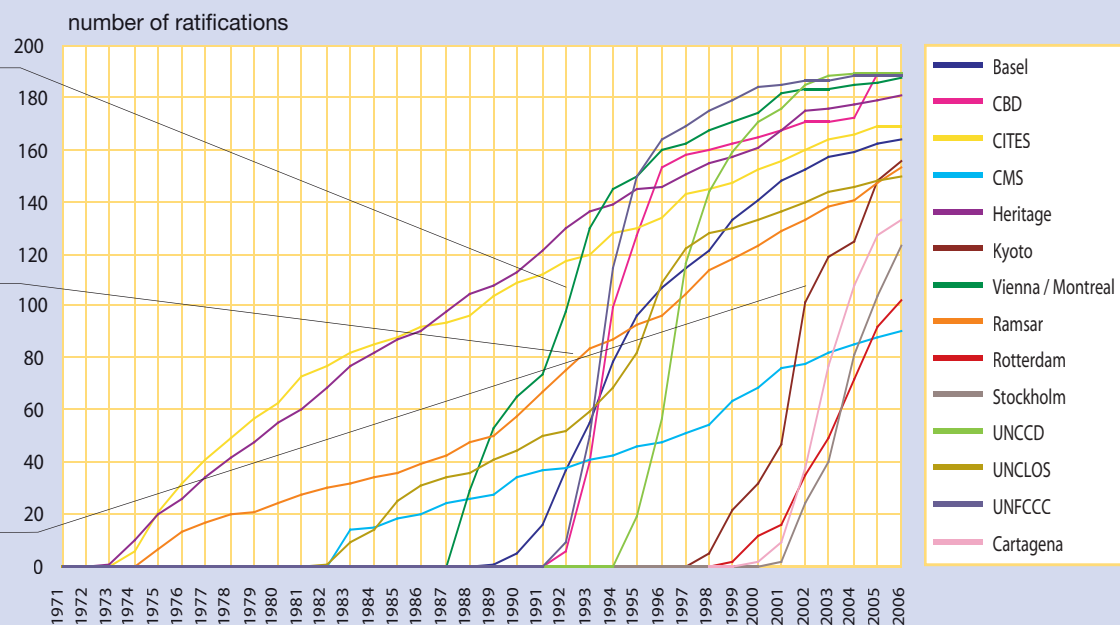
ENVIRONMENTAL GOVERNANCE: Multilateral environmental agreements

Indicator: **Ratification of multilateral environmental agreements (MEAs)**

Several MEAs play important roles in the Polar Regions such as Vienna / Montreal, CBD, Stockholm, UNCLOS, and UNFCCC.

In November 2006, the Parties to the Basel Convention agreed to increase efforts to address electronic waste issues. Some 20 to 50 million metric tonnes of e-waste are generated worldwide every year, comprising more than 5% of all municipal solid waste.

Among countries with commitments to cut emissions under the Kyoto Protocol, only Denmark, France, Iceland, the UK, Germany, and Norway reported lower emissions (excluding activities related to land use change and forestry) in 2004 than in 1990 along with ten countries with economies in transition.



	Vienna / Montreal	UNFCCC	Kyoto	CBD	Cartagena	CITES	CMS	UNCCD	Heritage	UNCLOS	Ramsar	Basel	Rotterdam	Stockholm
Africa (53)	53	52	39	53	39	52	32	53	48	39	47	44	32	38
Asia + Pacific (45)	44	44	38	47	29	31	10	45	40	34	27	33	20	28
Europe (49)	48	47	38	46	38	45	37	46	48	40	46	46	27	28
LAC (34)	33	33	31	32	23	32	8	33	32	27	27	30	15	21
North America (2)	2	2	1	1	0	2	0	2	2	1	2	1	1	1
West Asia (12)	11	10	9	10	4	7	3	10	11	9	4	10	7	7
Global (195)	191	188	156	189	133	169	90	189	181	150	153	164	102	123
Global (% ratified)	98%	96%	80%	97%	68%	87%	46%	97%	93%	77%	78%	84%	52%	63%
Change in number of parties from 2005 to 2006	+5	-	+8	+3	+6	-	+2	-	+2	+3	+7	+2	+10	+19

Units of measurement: Number of parties

Definition: Number of parties to Multilateral Environmental Agreements (MEAs) is the number of countries and political and/or economic integration organizations, which have deposited their instrument of ratification, accession, acceptance or approval of each of the 14 MEAs presented here. Data for 2006 are up to November.

Source: GEO Data Portal, compiled from various MEA secretariats.

The ratification process of various Multilateral Environment Agreements (MEAs) advanced in 2006 in almost all regions. It is estimated that there are 700 or more different international agreements that govern some aspect of the environment (UNEP 2006b). For the 14 key agreements selected here, 86 per cent of the potential signatories were formal parties at the end of 2006 (up from 83 per cent in 2005). Many of the conventions are now approaching their maximum in terms of number of parties. However, this does not necessarily mean that all

parties undertake immediate and adequate measures nor that the environmental problems are properly addressed. Strengthening and streamlining reporting mechanisms and further integration into national policies are important challenges for many of the international agreements.

Even the more recent conventions have seen their number of parties quickly increasing, such as the Stockholm Convention on Persistent Organic Pollutants (POPs), the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals

and Pesticides in International Trade (PIC), as well as the Kyoto Protocol to the UN Framework Convention on Climate Change. Negotiations are underway to develop commitments by industrialized nations and major developing countries for the 2012 post-Kyoto era.

Environmental conventions' websites

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel):
<http://www.basel.int/ratif/convention.htm>

Cartagena Protocol on Biosafety to the Convention of Biological Diversity (Cartagena):
<http://www.biodiv.org/biosafety/default.aspx>

Convention on Biological Diversity (CBD):
<http://www.biodiv.org/world/parties.asp>

Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage):
<http://whc.unesco.org/en/statesparties/>

Convention on the Conservation of Migratory Species of Wild Animals (CMS): <http://www.cms.int/about/intro.htm>

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES):
<http://www.cites.org/eng/disc/parties/index.shtml>

Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar):
http://www.ramsar.org/key_cp_e.htm

Kyoto Protocol to the UN Framework Convention on Climate Change (Kyoto): http://unfccc.int/essential_background/kyoto_protocol/status_of_ratification/items/2613.php

Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (PIC):
<http://www.pic.int/en/ViewPage.asp?id=345>

Stockholm Convention on Persistent Organic Pollutants (POPs):
<http://www.pops.int/documents/signature/signstatus.htm>

UN Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification Particularly in Africa (UNCCD):
<http://www.unccd.int/convention/ratif/doi.php>

UN Convention on the Law of the Sea (UNCLOS):
[http://www.un.org/Depts/los/reference_files/chronological_lists_of_ratifications.htm#The United Nations Convention on the Law of the Sea](http://www.un.org/Depts/los/reference_files/chronological_lists_of_ratifications.htm#The%20United%20Nations%20Convention%20on%20the%20Law%20of%20the%20Sea)

UN Framework Convention on Climate Change (UNFCCC):
http://unfccc.int/essential_background/convention/status_of_ratification/items/2631.php

Vienna Convention for the Protection of the Ozone Layer and its Montreal Protocol on Substances that Deplete the Ozone Layer (Vienna/Montreal):
http://ozone.unep.org/Ratification_status/index.asp

REFERENCES

FAO (2005). *Global Forest Resource Assessment 2005*, Progress towards sustainable management. FAO Forestry Paper 147. Food and Agriculture Organization, Rome. <http://www.fao.org/forestry/site/fra2005/en/> [Accessed 5 December 2006]

FAO (2006a). *FAOSTAT database*. Food and Agriculture Organization, Rome. <http://faostat.fao.org/> [Accessed 5 December 2006]

FAO (2006b). *FishStat Plus database*. Food and Agriculture Organization, Rome. <http://www.fao.org/fi/statist/FISOFI/FISHPLUS.asp> [Accessed 27 November 2006]

FSC (2006). *Forest Management Certificates by Continents*. Forest Stewardship Council, Bonn. http://www.fsc.org/en/whats_new/fsc_certificates [Accessed 24 November 2006]

IEA (2003). *Integrating Energy and Environmental Goals-Investment Needs and Technology Options*. International Energy Agency, Paris. <http://www.iea.org/textbase/papers/2003/minambiente.pdf> [Accessed 19 December 2006]

IEA (2006). *World Energy Statistics and Balances (2006 edition)*. International Energy Agency, Paris. <http://data.iea.org/ieastore/statlisting.asp> [Accessed 6 November 2006]

IPCC (2001). *Third Assessment Report – Climate Change 2001*. Intergovernmental Panel on Climate Change, Geneva. <http://www.ipcc.ch/> [Accessed 4 December 2006]

ISO (2006). *The ISO Survey of Certifications 2005*. International Organisation for Standardization, Geneva. <http://www.iso.org/iso/en/iso9000-14000/pdf/survey2005.pdf> [Accessed 6 November 2006]

Marland, G., Boden, T.A. and Andres, R. J. (2006). Global, Regional, and National Fossil Fuel CO₂ Emissions. In *Trends: A Compendium of Data on Global Change*. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, US Department of Energy. http://cdiac.esd.ornl.gov/trends/emis/em_cont.htm [Accessed x November 2006]

Millennium Ecosystem Assessment (2005). *Ecosystems and Human Well-being: Synthesis*. Island Press, Washington, DC. <http://www.maweb.org/en/products.aspx> [Accessed 28 November 2006]

UNEP (2006a). *GEO Year Book 2006*. United Nations Environment Programme, Nairobi

UNEP (2006b). *Manual on Compliance and Enforcement of MEAs*. United Nations Environment Programme, Nairobi

UNFCCC (2006). *Greenhouse Gases Database*. United Nations Framework Convention on Climate Change, Bonn. <http://ghg.unfccc.int/> [Accessed 31 October 2006]

UN Population Division (2005). *UN World Population Prospects, The 2004 Revision*. United Nations, New York <http://www.un.org/esa/population/publications/WUP2005/2005wup.htm> [Accessed 1 December 2006]

UNEP Ozone Secretariat (2006). *ODS Data Report Centre*. United Nations, Nairobi. http://ozone.unep.org/Data_Access/ [Accessed 27 November 2006]

UNEP-WCMC (2006). *World Database on Protected Areas*. UNEP World Conservation Monitoring Centre. Cambridge. <http://sea.unep-wcmc.org/wdbpa/> [Accessed 22 November 2006]

UNEP-WCMC (2007). *Millennium Development Goals: Indicator 26 Protected Areas Report* (forthcoming). UNEP World Conservation Monitoring Centre. Cambridge.

UNESCO-SCOPE (2006). *Indicators of sustainability: reliable tools for decision-making*. UNESCO-SCOPE Policy Briefs, 1/2006. <http://www.unesco.org/mab/publications/pdf/PolicyBriefNo1.pdf> [Accessed 8 December 2006]

UNITED NATIONS (2006). *The Millennium Development Goals Report 2006*. United Nations, New York. <http://mdgs.un.org/unsd/mdg/Resources/Static/Products/Progress2006/MDGReport2006.pdf> [Accessed 11 December 2006]

UNSD (2006). *Millennium Development Goals Indicators Database*. United Nations Statistics Division, New York. http://unstats.un.org/unsd/mi/mi_series_list.asp [Accessed 24 November 2006]

WHO/UNICEF (2006). *Meeting the MDG drinking water and sanitation target: the urban and rural challenge of the decade (2006)*. WHO/UNICEF Joint Monitoring Programme. http://www.wssinfo.org/pdf/JMP_06.pdf [Accessed 24 November 2006]

WMO/UNEP (2006). *Scientific assessment of ozone depletion: 2006. Executive summary*. Geneva. http://www.wmo.ch/web/arep/reports/ozone_2006/exec_sum_18aug.pdf [Accessed 7 December 2006]

WWF (2006). *Living Planet Report 2006*. World Wildlife Fund, Gland, Switzerland. http://assets.panda.org/downloads/living_planet_report.pdf [Accessed 12 December 2006]