KEEPING TRACK

of our changing environment

12% biodiversity decline globally

+60% women parliamentarians

numbers

+130% plastics production

Ozone depleting substances -93%

+13 % drinking water coverage

21 megacities

13% = renewable energy sources

300 million ha forest area loss

+ 0.4˚C in global mean temperature

slum dwellers + 171 million

Globalization

change

energy efficiency

global warming

sustainability

+75% GDP

Ocean Acidity 8.11 - 8.06 pH

36% increase in CO_2 emissions

technology

Population +26%

UNEP

From Rio to Rio+20 (1992-2012)

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Keeping Track of Our Changing Environment

From Rio to Rio+20 (1992-2012)

Foreword

In 1992, the first United Nations Conference on Sustainable Development, popularly known as the Rio Earth Summit, was convened in Rio de Janeiro, Brazil to address the state of the environment and sustainable development. The Earth Summit yielded several important agreements including "Agenda 21", a plan of action adopted by over 178 governments to address human impacts on the environment at local, national and global levels, and key treaties on climate change, desertification and biodiversity. At the second Conference in 2002—the World Summit on Sustainable Development—governments agreed on the Johannesburg Plan of Implementation, reaffirming their commitment to Agenda 21. In 2012, the United Nations Conference on Sustainable Development, or Rio+20 Earth Summit, will focus on the Green Economy in the context of sustainable development, poverty eradication, and the institutional framework for sustainable development. The object is to renew political commitment to sustainable development, review progress and identify implementation gaps, and address new and emerging challenges.

This publication serves as a timely update on what has occurred since the Earth Summit of 1992 and is part of the wider Global Environment Outlook-5 (GEO-5) preparations that will lead to the release of the landmark GEO-5 report in May 2012. It underlines how in just twenty years, the world has changed more than most of us could ever have imagined—geopolitically, economically, socially and environmentally. Very few individuals outside academic and research communities envisaged the rapid pace of change or foresaw developments such as the phenomenal growth in information and communication technologies, ever-accelerating globalisation, private sector investments across the world and the rapid economic rise of a number of "developing" countries. Many rapid changes have also taken place in our environment, from the accumulating evidence of climate change and its very visible impacts on our planet, to biodiversity loss and species extinctions, further degradation of land surfaces and the deteriorating quality of oceans. Certainly, there have been some improvements in the environmental realm, such as the significant reduction in ozone-depleting chemicals and the emergence of renewable energy sources, new investments into which totalled more than $200 thousand million in 2010. But in too many areas, the environmental dials continue to head into the red.

This innovative report is based entirely on statistical data and indicators and shows where the world stands on many social, economic and environmental issues as we enter the second decade of the 21st century. Drivers of environmental change including population increase and economic growth, and especially the status of natural resources and landscapes, are clearly illustrated. Numbers plotted on straightforward graphs show upward and downward trends, which, along with satellite images, tell the story of dramatic changes.

Maintaining a healthy environment remains one of the greatest global challenges. Without concerted and rapid collective action to curb and decouple resource depletion and the generation of pollution from economic growth, human activities may destroy the very environment that supports economies and sustains life.

The upcoming Rio+20 Conference presents a timely, global-level opportunity to address one of its own stated objectives: to assess progress and gaps in implementing goals as part of an acceleration and scaling-up of transformative actions, programmes and policies. As we move towards the Rio+20 Conference in an ever-more globalised and integrated world, the need to chart progress towards a global Green Economy and more efficient and effective international environmental governance becomes vital. Without quantified targets, our environmental goals cannot turn theory into reality. Numeric and time-bound targets have certainly aided in progress made towards the Millennium Development Goals (MDGs), for example, and should be applied towards our environmental objectives as well.

This publication helps to tell the story of where the world was 20 years ago and where we collectively stand today, and to show the direction in which we need to move in a post-Rio+20 world. It also highlights the missing pieces in our knowledge about the state of environment— such as those related to freshwater quality and quantity, ground water depletion, ecosystem services, loss of natural habitat, land degradation, chemicals and waste—due to lack of regular monitoring, collection and compilation of data. Scientifically-credible data for environmental monitoring remains inadequate and the challenge of building in-country capacity to produce better policy-relevant data needs urgent attention.

We hope this report will inform all those participating in the Rio+20 events and the entire process and help set the world on a path towards a more sustainable environment.

Achim Steiner
United Nations Under-Secretary-General and Executive Director, UNEP

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Introduction & Scope

This publication was conceived with the idea of showing how the planet has changed in two decades—just twenty years—since decision-makers met at the United Nations Conference on Environment and Development in Rio de Janeiro. To relay this information in a compelling and succinct manner, environmental and related trends are charted and presented using globally-aggregated (and mainly statistical) data sets collected by international agencies, research bodies and other official entities.

Major economic, environmental, social and technological trends are shown through numerically-based graphs, with their upward, downward or stable trend lines as dictated by the data. While most of these trends speak for themselves, short explanations of the phenomena observed are also provided for further elucidation. Also included are a number of illustrative "before and after" satellite images, primarily covering the same time period of 1992-2010 and showing environmental changes at the local level. In some cases, these impacts are ongoing.

Scope and Methodology

Most of the time-series data were collected directly from countries and aggregated to regional and global levels by authoritative international agencies. The time series indicators presented here are based on the best and most comprehensive data available to date.

Three main criteria were used to select the indicators employed in this publication. First, an approximately 20-year temporal data record on which the trend charts could be based was required, so as to accurately portray the time period in question. In a few cases (and particularly for recent phenomena such as carbon trading), a correspondingly shorter time period was used to provide at least a partial picture to date. Second, the data on which the charts are based had to be global in coverage—that is, covering all or at least most countries so as to represent the entire world and not only certain regions. Third, the data had to be clearly sourced and taken from authoritative and reliable institutions with extensive experience in the thematic areas treated in each case.

To ensure reliability, indicator charts are only presented for areas where all three data requirements were met. For areas where one or another of the criteria was not met, such as freshwater water availability, groundwater depletion, land degradation and chemicals and waste, any analysis might not be reliable, and so trends are not provided. Also, the availability of data related to the environment and natural resources that are disaggregated by gender (i.e., qualitatively) or sex (i.e., quantitatively) is generally poor, especially for developing countries.

The implications of any shortcomings in the data are clear. To promote evidence-based environmental policies and actions, the underlying data needed to support sound decision-making must be part of the equation and be of proven scientific quality. Today, there are several reasons why the quality of international statistics varies greatly. First, statistics may not be available at the national level; second, the statistics that are collected may be of poor quality or outdated; and third, the comparability of statistics over time inherently presents challenges. These deficiencies and issues demonstrate the need for a comprehensive data and information system to optimally manage the vast array of related policy, scientific, technical, methodological and practical issues. For this to be achieved, the following steps are necessary:

(1) strengthen national-level capacity for collecting and compiling environmental observations, especially where data gaps exist;

(2) publish and provide access to data using various media; and

(3) develop services to efficiently and rapidly provide information to decision-makers in (an) understandable format(s).

Thus, a comprehensive capability at the global scale is needed to pull together and analyze the wealth of data collections that are available, and to enhance data collection for areas where information may be lacking. Within these limitations, it is hoped that this publication provides a clear and reasonably comprehensive twenty-year story on the state and trends in environment and development since 1992.

"What's New?" since Rio 1992

In terms of environment, what did not exist or was not well-known in 1992?

In the twenty years since the first Earth Summit in 1992, the world has changed in ways most of us could not imagine. The Internet, mobile phones and other information and communications technologies have made the world a much smaller place—and more of a 'globalized village'. An estimated five billion people have subscribed to mobile phone services and there are some two billion Internet users worldwide. Social media have further increased connectivity in recent years, with Facebook, for example, having more than 800 million users since it was launched in 2004. At the same time, space-based satellites can now even zoom in to street level, and provide detailed images in real-time on sophisticated smart-phones. We also see that economic power and production patterns are shifting among regions to the East and South, and that overall trade volumes are rising steeply.

Perhaps the ways in which our environment has changed are not so immediately obvious to everyone, but they are at least as significant. Natural resources are being depleted or degraded—sometimes before we realize it—and certain metals seem to become "rare" all of a sudden. The ever-increasing demand for resources such as water, energy, food, minerals and land is driven by growing populations with rising incomes, while in parallel these resources are increasingly constrained by ecosystem changes, inherent variability of weather conditions and resource productivity, and the impacts of climate change. Within the context of the "mega-trends" taking place in our rapidly changing world and society, a number of new environmental issues and phenomena have arisen since 1992:

Evolution of the Internet: 1992-2012

New Multilateral Environmental Agreements and Conventions

Several new Multilateral Environmental Agreements (MEAs) and Conventions have been established or entered into force in the last two decades to address emerging global environmental issues, including the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on Biological Diversity (CBD), agreements related to chemicals (Basel, Rotterdam and Stockholm Conventions), and the United Nations Convention to Combat Desertification (UNCCD).

Awareness of Climate Change

Among much debate and controversy, Climate Change has become a "hot topic" and entered the policy arena, topping the global environmental agenda.

The Green Economy

Viable pathways for fundamentally shifting economic development to become more low-carbon, climate resilient, resource efficient, and socially inclusive, as well as for valuing ecosystem services, are now being proposed widely and increasingly pursued.

Carbon Trading and other Environmental Market Tools

Placing a monetary value on greenhouse gas emissions and creating a market for trade in carbon is a new and increasingly utilized concept to address climate change. Other new market frameworks include biodiversity offset and compensation programs, habitat credit trading and conservation banking, with a goal toward reducing biodiversity loss and mainstreaming impacts into economic decisions. Worldwide, at least 45 compensatory mitigation programs and more than 1 100 mitigation banks now exist (UNDP and GEF 2011).

Markets for Organic Products and Eco-labeling

Consumer demand for goods that are produced in a sustainable way has boosted certification and eco-labeling, such as the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC) for forest products, the Marine Stewardship Council (MSC) for fish products, and "bio" or organic labels for many agricultural products including coffee, tea and dairy products.

Genetically Modified Organisms

Genetically Modified Organisms (GMOs) have been researched for decades, but have gained widespread attention in recent years, mainly due to prospects for increased food production. However, they remain controversial for a variety of reasons.

Recycling

Although recycling efforts are only beginning in many parts of the world, processing waste into new resources, products and materials is becoming mainstream policy and practice in several countries and regions.

Commercialization of Biofuels, Solar and Wind Energy

While the overall use of renewable energy is still modest, biofuels are gaining a significant market share, and wind and solar power production is increasing steeply. Windmills and solar panels are increasingly abundant, and in the transport sector, hybrid cars have entered the streets and air transport using biofuels are becoming a reality.

Chemicals Management

Management of toxic and other hazardous chemicals that threaten human and ecosystem health has improved. A number of deadly chemicals have been banned, and as of January 2010 the world is free of chlorofluorocarbons (CFC) production.

Nano Materials

Nanotechnology offers significant opportunities and benefits for industry and society at large, especially in the fields of energy, health care, clean water and climate change. But debate about this new technology continues and related potential environmental hazards and risks could be emerging.

Goals & Targets
in the global environment

One of the obstacles to achieving environmental goals set by the international community is the lack of sufficient, solid data and monitoring systems to measure progress. While for two of the interdependent areas of sustainable development—economic development and social development—the goals are normally measured and tracked quantitatively, environmental targets are largely defined in qualitative terms. On the other hand, those environmental agreements for which specific numerical targets were set, have been relatively successful. Already in the 1960s, for example, the World Commission on Protected Areas (WCPA) set a target of 10% of global land area to be designated as formally protected; today, nearly 13% of the world's surface is now set aside as protected. Similarly, the Montreal Protocol on Substances that Deplete the Ozone Layer defines mandatory targets and specific timeframes within which the required reductions must be met, and it conducts regular reviews of phase-outs in accordance with scientific updates. It has been hailed as perhaps the most effective environmental agreement to date. More such initiatives are needed to promote evidence-based environmental policies and measure progress. The following is a summary of environment-related goals that incorporate targets and indicators since 1992.

Specific Sets of Environmental Targets

The Millennium Development Goals (MDGs)

In September 2000, leaders from 189 nations agreed on a vision for the future: a world with less poverty, hunger and disease; greater survival prospects for mothers and their infants; better-educated children; equal opportunities for women; a healthier environment; and a world in which developed and developing countries work in partnership for the betterment of all. This vision took the shape of eight Millennium Development Goals (MDGs), which provide a framework of time-bound targets by which progress can be measured. A concise framework of eight goals and 21 targets towards the MDGs was adopted, along with 60 indicators to measure and show progress. While environment as a crosscutting theme is part of several MDGs, its significance in the overall framework is most prominently highlighted in MDG-7: Ensuring Environmental Sustainability. MDG-7 is divided into four targets as set forth below. They emphasize sustainability principles and reversing natural resource degradation; reducing biodiversity loss; increasing access to safe drinking water and sanitation; and improving slums (Table 1).

Table 1: UN Millennium Development Goal-7

Goal 7: Ensure environmental sustainability targets	Indicators
Target 7.A: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources Target 7.B: Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss	7.1 Proportion of land area covered by forest 7.2 CO_2 emissions, total, per capita and per $1 GDP (PPP) 7.3 Consumption of ozone-depleting substances 7.4 Proportion of fish stocks within safe biological limits 7.5 Proportion of total water resources used 7.6 Proportion of terrestrial and marine areas protected 7.7 Proportion of species threatened with extinction
Target 7.C: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation	7.8 Proportion of population using an improved drinking water source 7.9 Proportion of population using an improved sanitation facility
Target 7.D: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers	7.10 Proportion of urban population living in slums

The World Summit on Sustainable Development

Additional environmental targets were subsequently adopted in 2002 at the World Summit on Sustainable Development (WSSD). These relate to: fisheries; marine protection; biodiversity loss; access to renewable energy; and phasing out of organic pollutants (Table 2).

Table 2: Environmental targets adopted at the WSSD, 2002

Targets	Indicators
Maintain or restore depleted fish stocks to levels that can produce the maximum sustainable yield by 2015	To be determined
Reverse the loss of biodiversity by 2010	Identified by Convention on Biological Diversity (CBD)
Establish a representative network of marine protected areas by 2012	To be determined
Increase the share of renewable energy in the total energy supply, and provide 35% of African households with modern energy within 20 years	To be determined
Phase out by 2020, production and use of chemicals that harm health and environment	To be determined

The Copenhagen Accord

In 2009, the Copenhagen Accord recognised the need for emission targets that will hold the increase in global temperature below 2°C —equated by scientists to a concentration level of 450 ppm (parts per million) of carbon dioxide in the atmosphere. The Accord today is supported by 114 countries.

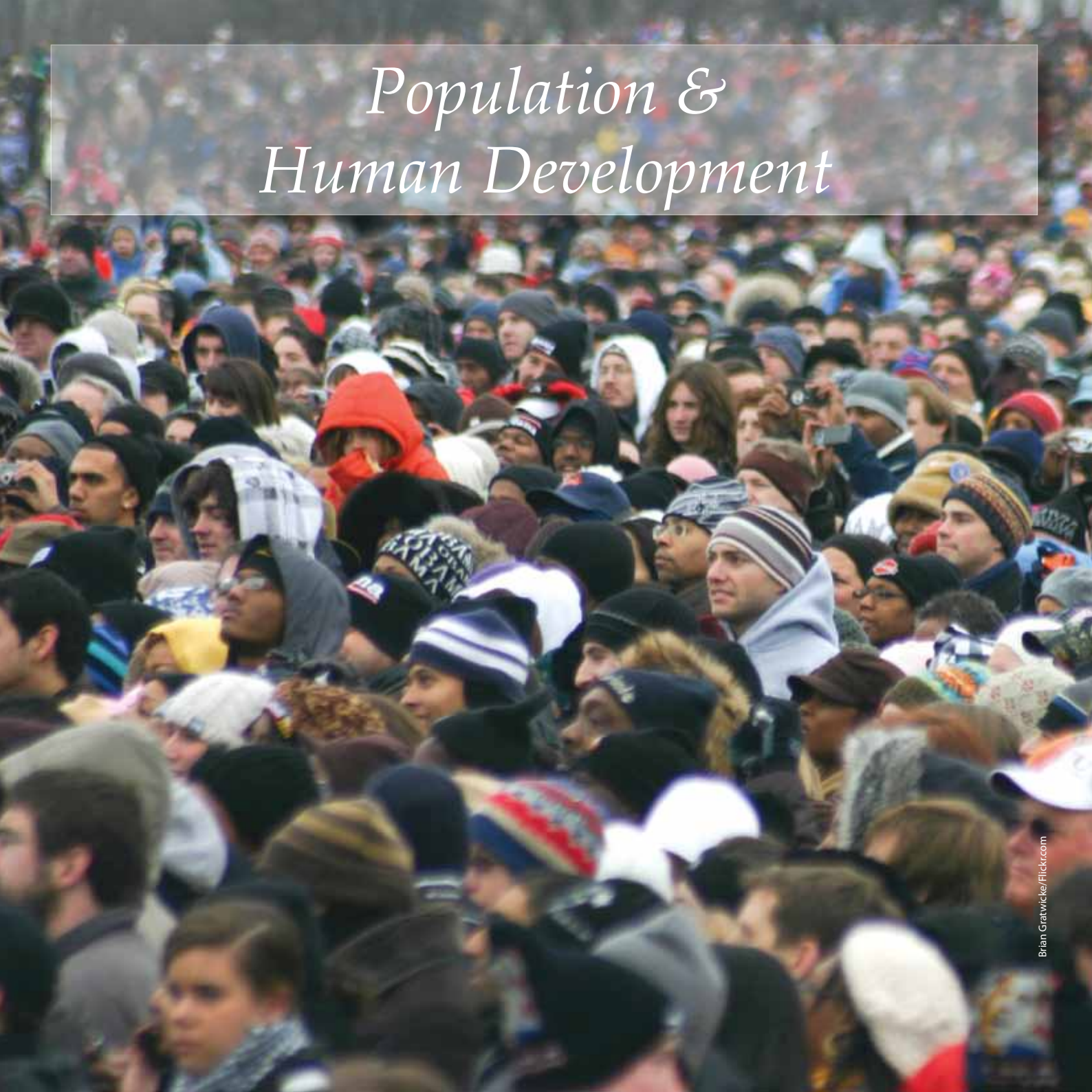
Aichi Biodiversity Targets

At its tenth meeting in Nagoya, Japan in October 2010, the Convention on Biological Diversity (CBD) Conference of the Parties adopted a revised and updated Strategic Plan for Biodiversity for the 2011-2020 period, including the set of Aichi Biodiversity Targets comprising five strategic goals and 20 targets. However, these targets have no clear numerical goals, except the following ones:

> *Target 5:* By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.
>
> *Target 11:* By 2020, at least 17% of terrestrial and inland waters, and 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

To conclude, with specific quantitative goals being absent, the above targets may read more like recommendations. However, when goals incorporate numerical levels or values, the required achievement is more clearly defined and potentially obtainable. In fact, empirical evidence shows that goal-setting can work when clear quantitative targets are set. Another lesson learned from the history of environmental target-setting is that it works best for well-defined issues, such as the phasing out of Ozone Depleting Substances (ODS) or leaded gasoline, and for issues related to industrial chemicals for which technologies exist or can be developed to solve environmental problems associated with their production and use. Finally, it has become clear that it is critical to have baseline information to allow progress towards the targets to be tracked. For example, relatively little measurable progress has been made—or can be demonstrated—towards the WSSD target to "reverse the loss of biodiversity by 2010", since there are insufficient, reliable and comprehensive biodiversity baseline data upon which to base trends and assess progress.

Population & Human Development

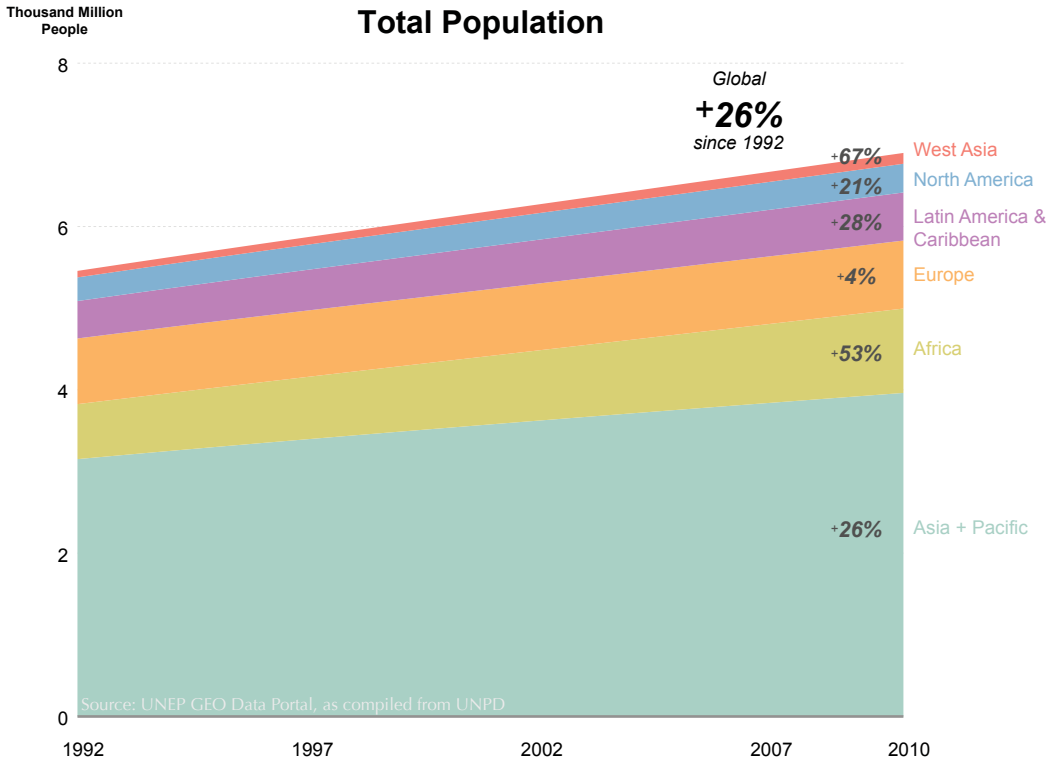


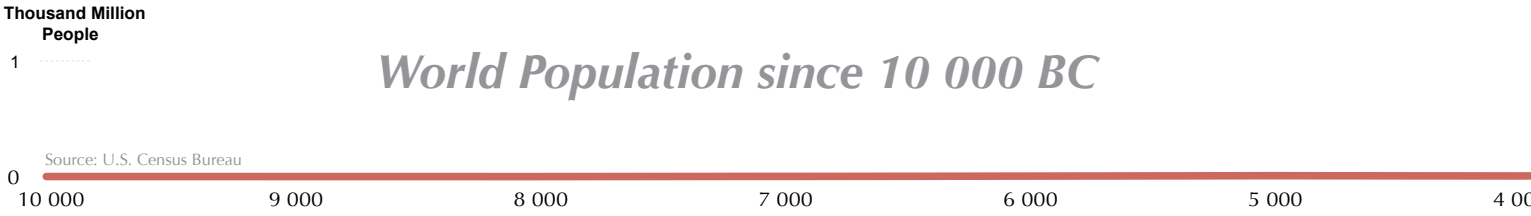
Brian Gratwicke/Flickr.com

Since 1992, the human population has grown by 1 450 000 000 people...

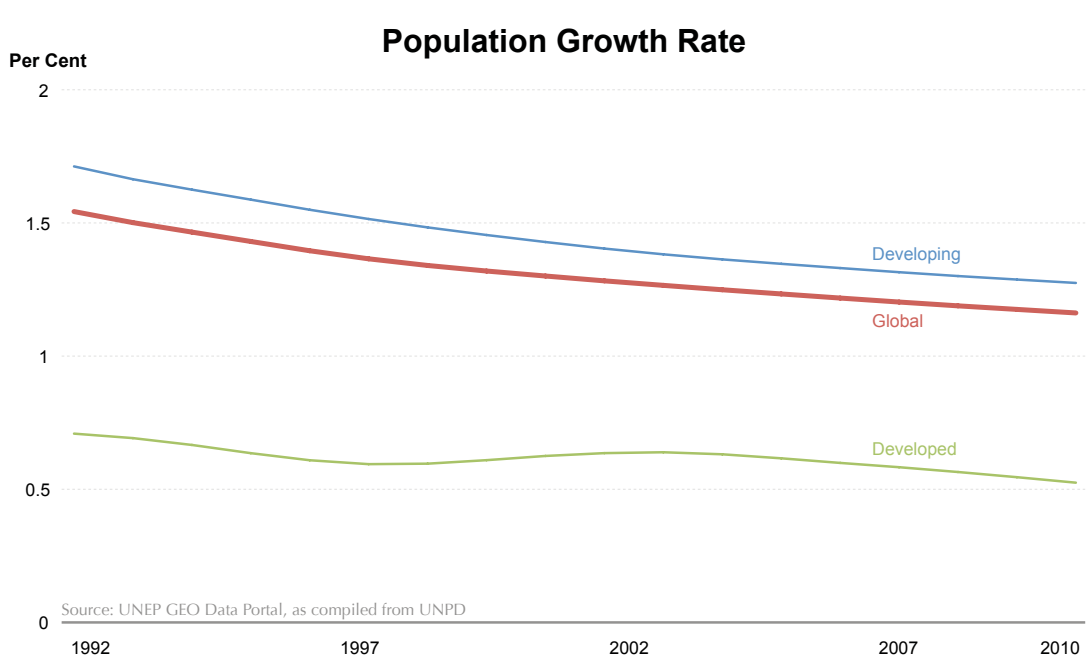
Since 1992, the world's population increased by an annual rate of 1.3%, adding nearly 1 500 million people to the planet. Between 1992 and 2010, world population grew from around 5 500 million to close to 7 000 million, representing a 26% increase.

There are large differences in population numbers and changes between regions. For example, nearly 60% of the global population lives in Asia, 15% in Africa, and another 15% in North America and Europe combined. However, total population increases are much greater in West Asia (67% since 1992) and Africa (53%), while the population number in Europe has grown only slightly (4%).





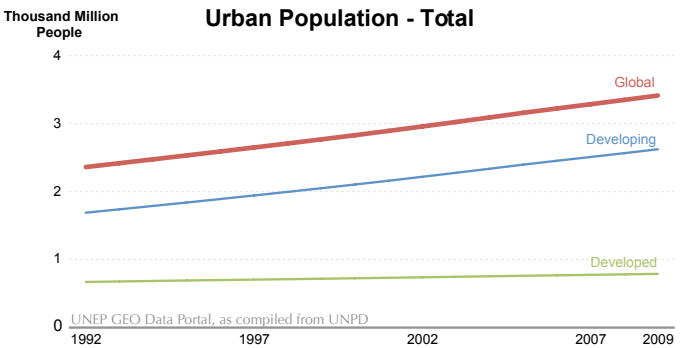
...however, the population growth rate is declining

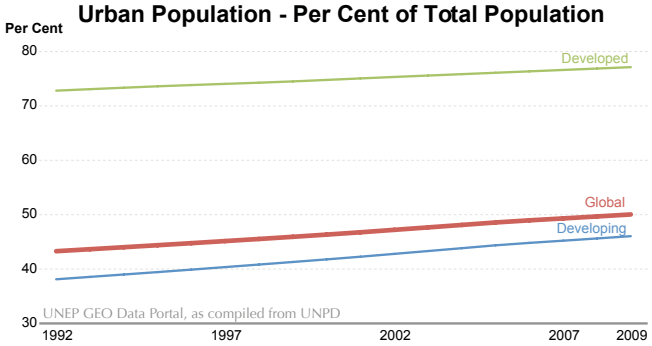


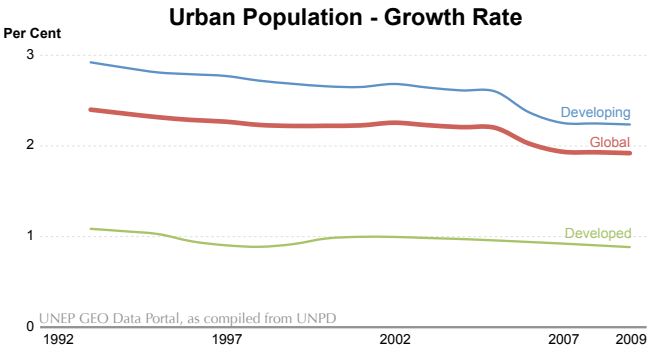
At the same time the population growth rate has been declining during the past several decades, dropping from around 1.65% per year in the early 1990s to 1.2% per year in the late 2000s. This represents a 27% decline in the growth rate between 1992 and 2010. There is a strong correlation between a country's economic state and its growth rate: developing countries tend to have a 2-3 times higher growth rate than developed countries.

This overall, global "decrease in the increase" means that the world's population and its population growth rate are increasing more slowly, and could eventually stabilise around 10 thousand million people in 2100 (UN 2011).

In 2011, over 3 500 million people—more than half the world's population—are living in urban areas







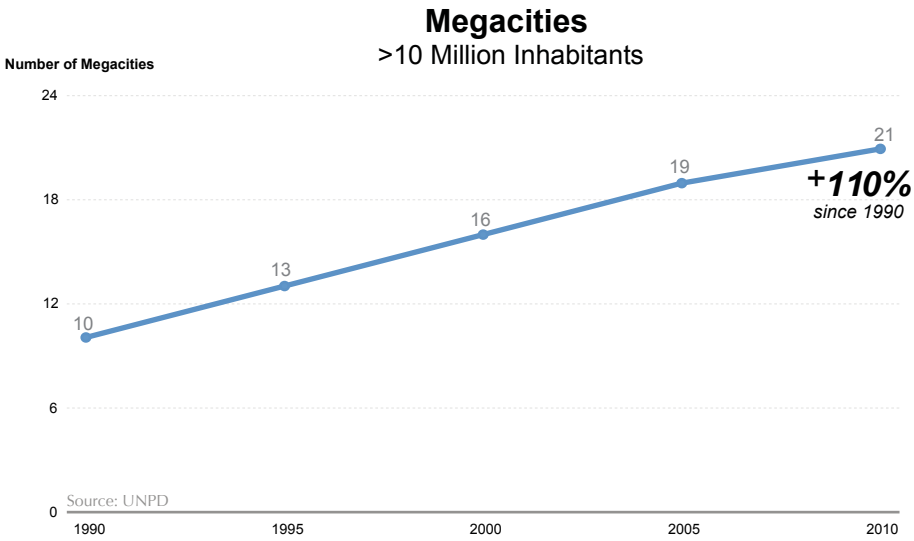
In 1992, 2 400 million of us lived in urban agglomerations. By 2009, the number had climbed to 3 500 million, a 45% increase. The additional 1 000 million "urban people"—nearly 200 000 new city dwellers per day—are the equivalent of 32 times the population of Tokyo, or 110 times that of Paris (Brinkhoff 2011).

This unprecedented urban growth, projected to continue (although at a decreasing rate) in the coming decades, will require special attention in order to make life in cities more socially, economically and environmentally sustainable.

While over half of the world population now lives in urban areas, they also account for 75% of global energy consumption (UN-Habitat 2009) and 80% of global carbon emissions (The World Bank Group 2010), at least when viewed from a consumption perspective (Satterthwaite 2011). On the other hand, the top 25 cities in the world create more than half of the world's wealth (UN-Habitat 2008).

This ongoing rapid urbanisation indicates that long-term investments addressing the associated vulnerabilities are critically needed. "[The] urgency is acute considering that 30-50% of the entire population of cities in developing countries live in settlements that have been developed in environmentally fragile areas, vulnerable to flooding or other adverse climate conditions, and where the quality of housing is poor and basic services are lacking" (UN 2009b).

The number of "megacities" has more than doubled since 1990



Top 10 Megacities 2010	Million People	Rank 1990
1 Tokyo, Japan	36.7	1
2 Delhi, India	22.2	11
3 Sao Paulo, Brazil	20.3	4
4 Mumbai, India	20.0	5
5 Mexico City, Mexico	19.5	3
6 New York-Newark, USA	19.4	2
7 Shanghai, China	16.6	18
8 Kolkata, India	15.6	7
9 Dhaka, Bangladesh	14.6	23
10 Karachi, Pakistan	13.1	21

Source: UNPD

According to UN-Habitat, megacities are high density metropolises with at least 10 million inhabitants. The number of these megacities climbed from 10 in 1992 to 21 in 2010, a 110% increase, adding on average one megacity every two years. Fifteen of the world's 21 megacities are found in developing countries. The largest megacity today is Tokyo which counts nearly 37 million persons, more than Canada's total population.

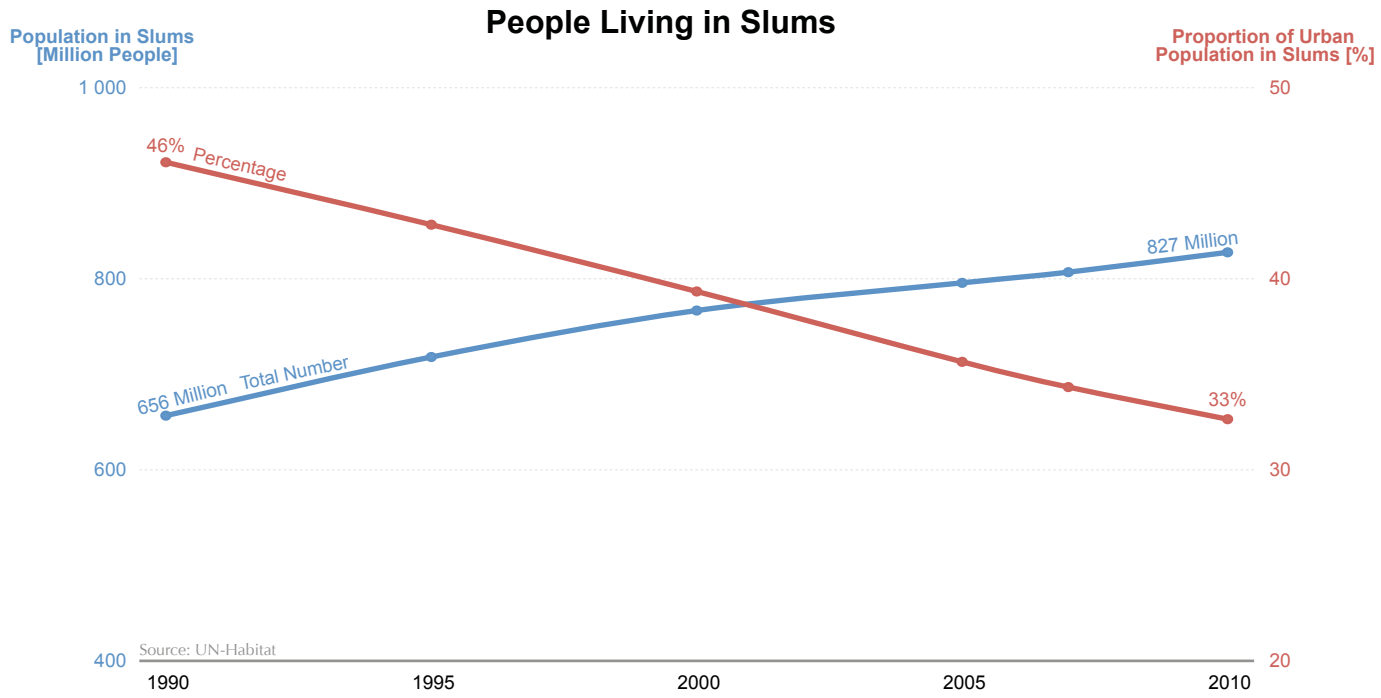
With large and dense metropolises come the associated environmental impacts of urban life. Very dense population structures and people living in close quarters bring sanitation, waste management, air quality, pollution and other concerns for residents and the environment alike. Not only do anthropogenic factors play a major role in megacities but the natural environment also presents risks to highly concentrated populations including floods, mudslides, tsunamis and earthquakes (UN 2009b, UN-Habitat 2009).

The population of China's Pearl River Delta has tripled since 1992 and includes two of the world's megacities

Source: USGS; Visualization UNEP-GRID Sioux Falls

The Greater Pearl River Delta area in southeastern China is the world's largest "mega-region" with a population of approximately 120 million people (UN 2010). Over the past two decades, the populations of the delta cities of Guangzhou and Shenzhen have each reached nearly 10 million people while Hong Kong, Foshan and Dongguan have grown to around 5 million each (UN 2009). The individual cities are beginning to merge into one contiguous urban area. The core delta area shown in the above image had a little over 20 million people in the early 1990s but has since tripled to roughly 60 million people (SEDAC 2010). This intense urbanization has led to the loss of productive farmland and natural areas among other environmental problems (Yan and others 2009).

A smaller proportion of urban dwellers live in slums, but their total number has risen to 827 000 000

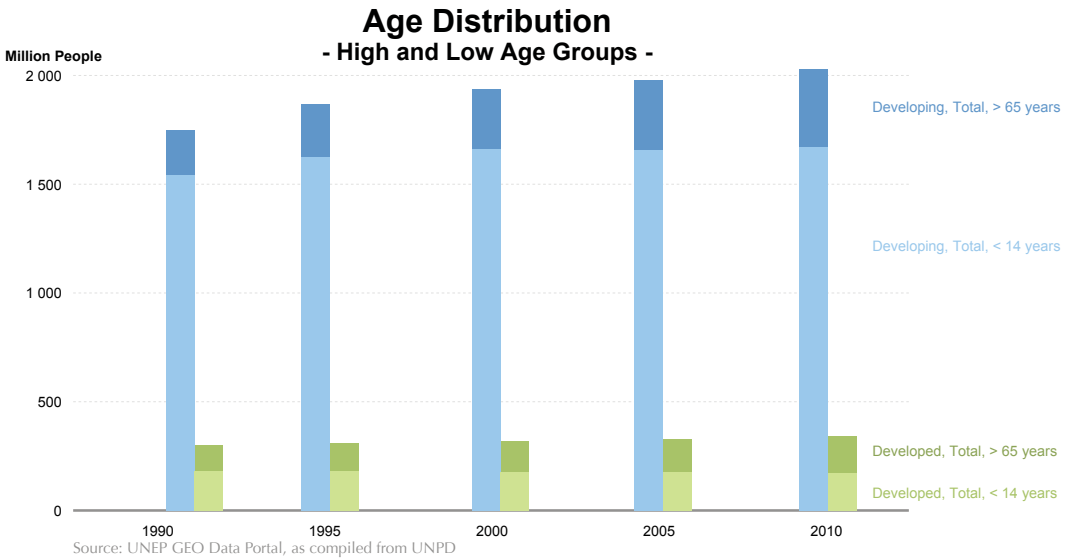


Since 1990, the share of the urban population living in slums in the developing world has declined significantly, dropping from 46% in 1990 to 33% in 2010. This decrease shows that many efforts to give inhabitants of slums access to improved water or sanitation, and/or more durable housing have been successful. On the other hand, the absolute number of people living in slums has increased by 26% over the same period, equaling 171 million additional people and raising their number from 656 million in 1990 to 827 million in 2010. "Redoubled efforts will be needed to improve the lives of the growing numbers of urban poor in cities and metropolises across the developing world" (UN 2011b).

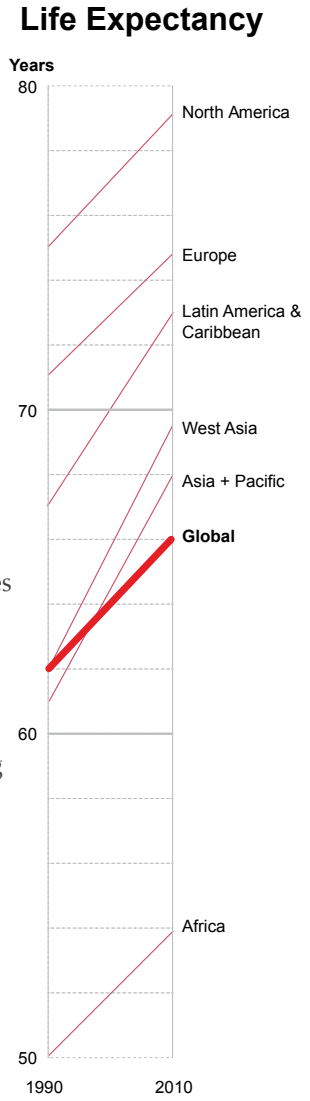
Note:

A slum household is defined as a group of individuals living under the same roof lacking one or more of these conditions: access to improved water; access to improved sanitation; sufficient-living area; durability of housing; security of tenure. However, since information on secure tenure is not available for most of the countries, only the first four indicators are used to define slum household, and then to estimate the proportion of urban population living in slums (UNSD n.d.).

The population aged over 65 is growing at a faster rate than other age groups in most regions of the world



Source: UNEP GEO Data Portal, as compiled from UNPD



Source: UNEP GEO Data Portal, as compiled from UNPD

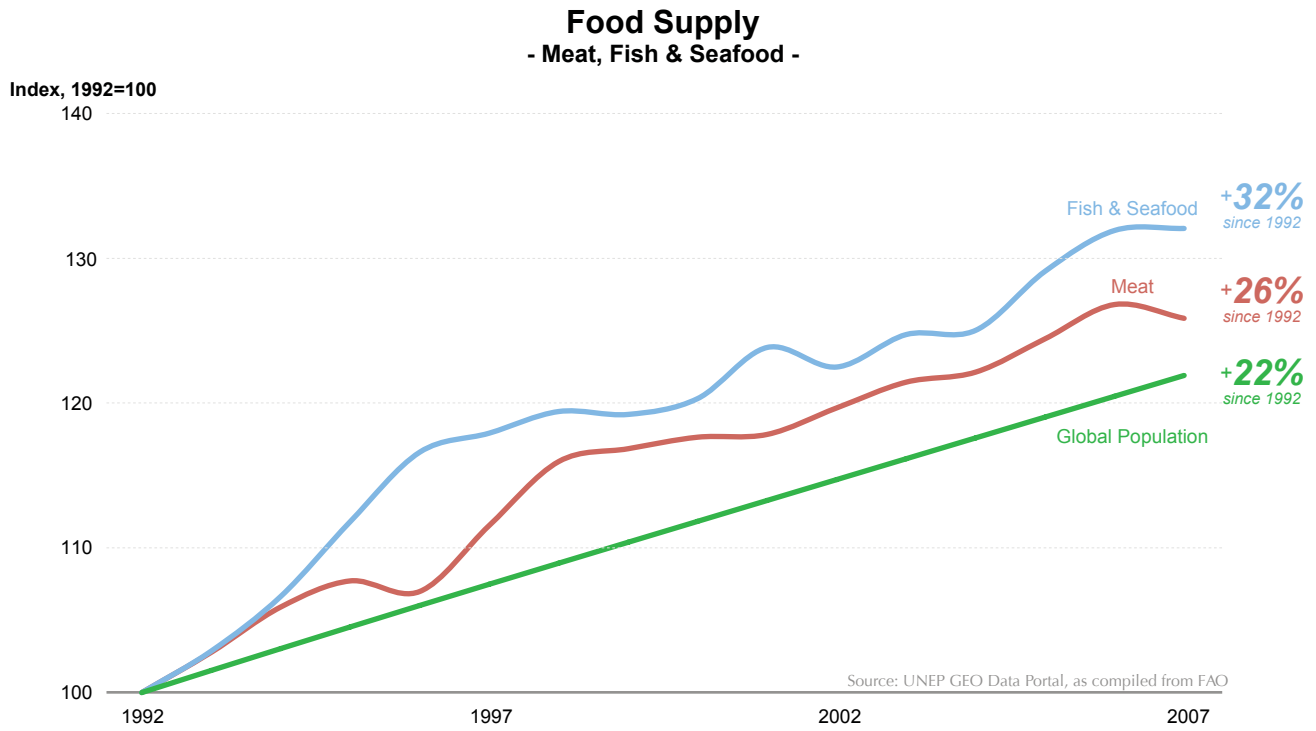
While the population of the groups below 14 and above 65 years of age in all developed countries together has remained largely the same since 1990, this population in developing countries has continued to grow (from 1 760 million to 2 040 million in 2010, an increase of 16%).

At the same time, there are significant differences in age structure between developed and developing regions. In the developed countries, the number of persons over 65 has been increasing rapidly, and now nearly equals the under 14 population. By contrast, in the developing countries, the under 14 population continues to grow and far outstrips the over 65 age group, although the latter is also rising, both in numbers and percentage of total population.

This developed-developing countries' dichotomy, as well as the fact that older populations are growing faster than the total population and that the difference in growth rates is increasing, has major implications for economies, the education and health care sectors, and the environment itself (UN 2009).

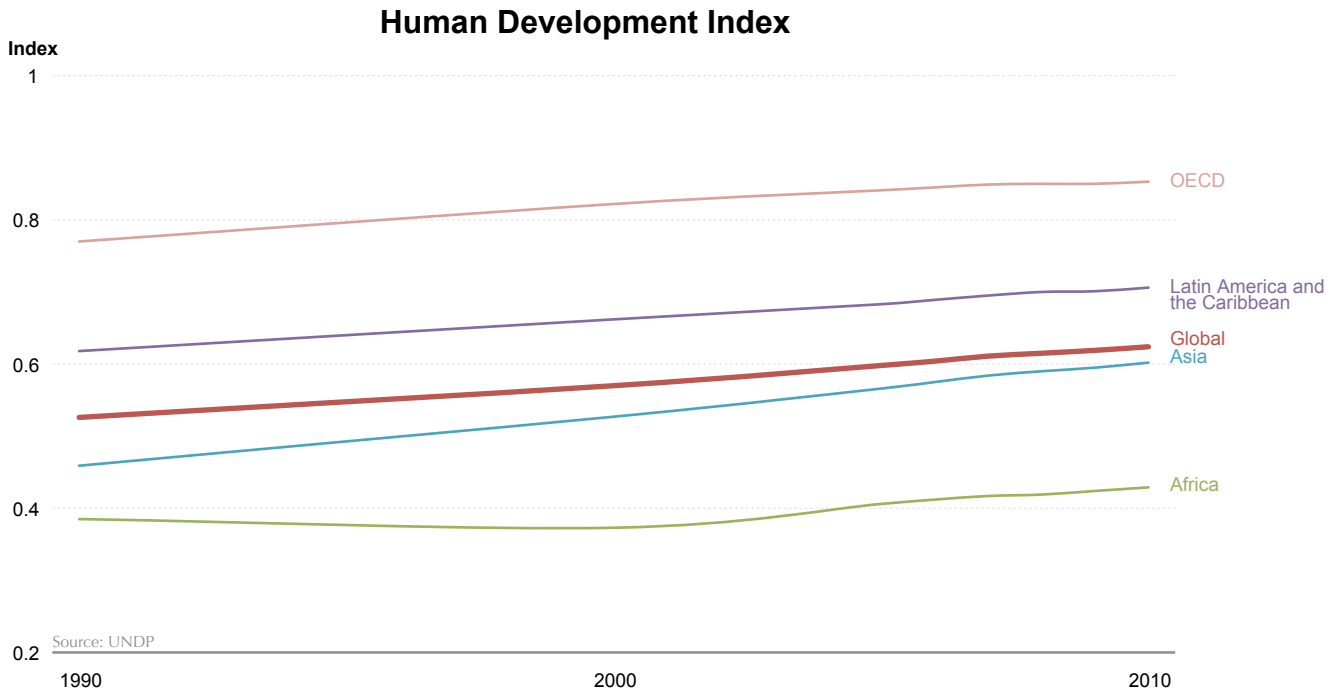
Life expectancy depends heavily on good public health, medical care and a balanced diet, as well as peaceful and stable surroundings. Although living conditions improved in all regions and globally the average life span increased by four to eight years, Africa lags far behind, noting that there are large differences within the continent.

The average global citizen consumes **43 kg** *of meat per year, up from 34 kg in 1992*



Global dietary patterns have changed enormously over the last decades. "Income growth, relative price changes, urbanization and shifts in consumer preferences have altered dietary patterns particularly in developing countries" (FAO 2008). Diets shifted away from basic foods towards livestock products, as well as oils, fruits and vegetables, increasing the demand for meat by 26% and for fish and seafood by 32% between 1992 and 2007. During that time, for example, global average meat consumption grew from 34 kg per person per year to 43 kg. Nearly all of these increases can be attributed to growing demand in Asia and to a lesser extent, Latin America. Based on different studies and considering the entire commodity chain (including deforestation for grazing, forage production, etc), meat production accounts for 18-25% of the world's greenhouse gas emissions (UNEP 2009, Fiala 2008, FAO 2006).

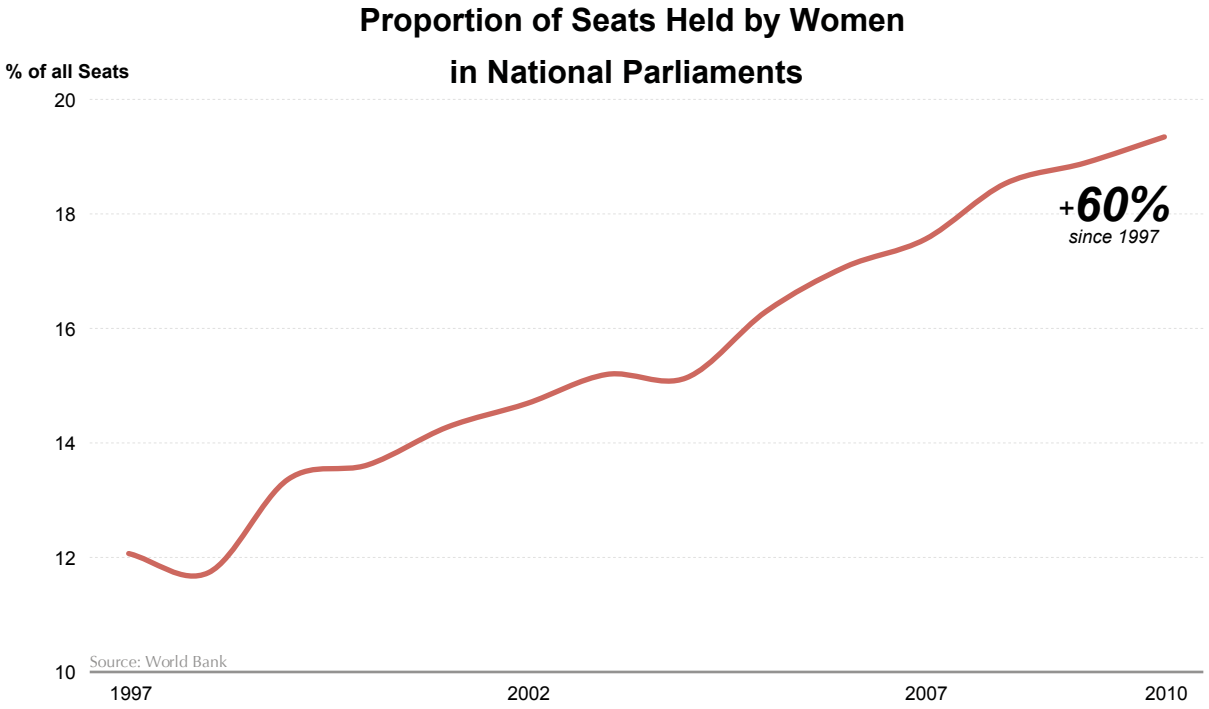
Human development levels are improving throughout the world, but there are large regional differences



The Human Development Index (HDI), which serves as a frame of reference for both social and economic development, combines three dimensions to measure progress: a "long and healthy life" (life expectancy), "access to knowledge" (school enrollment) and "standard of living" (gross national income). Over the past 20 years, the HDI has grown globally by 2.5% per year, climbing from 0.52 in 1990 to 0.62 in 2010, or 19% overall, showing substantial improvement in many aspects of human development. Although progress has been made, large differences in values and growth are visible between regions, with Africa lagging far behind.

"Most people today are healthier, live longer, are more educated and have more access to goods and services. Even in countries facing adverse economic conditions, people's health and education have greatly improved" (UNDP 2011).

Women's influence, as measured by seats in national parliaments, is steadily rising

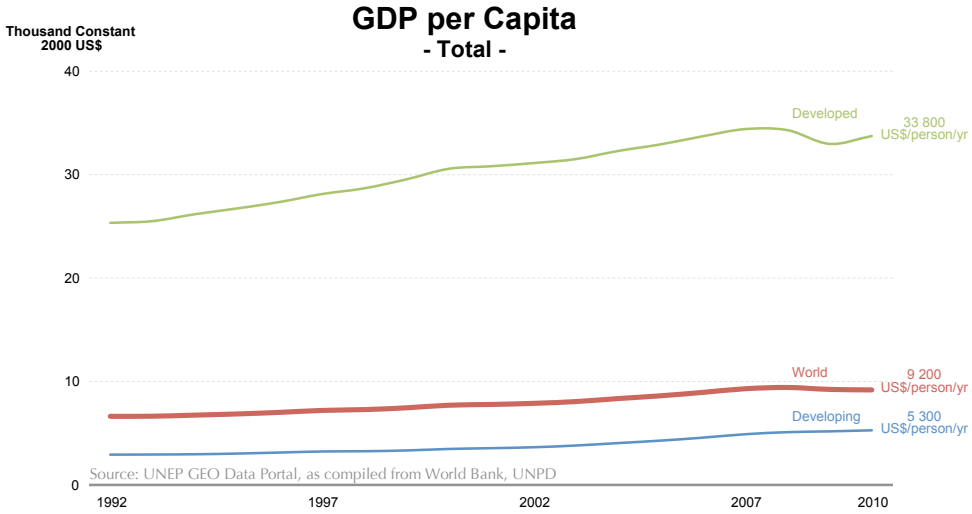


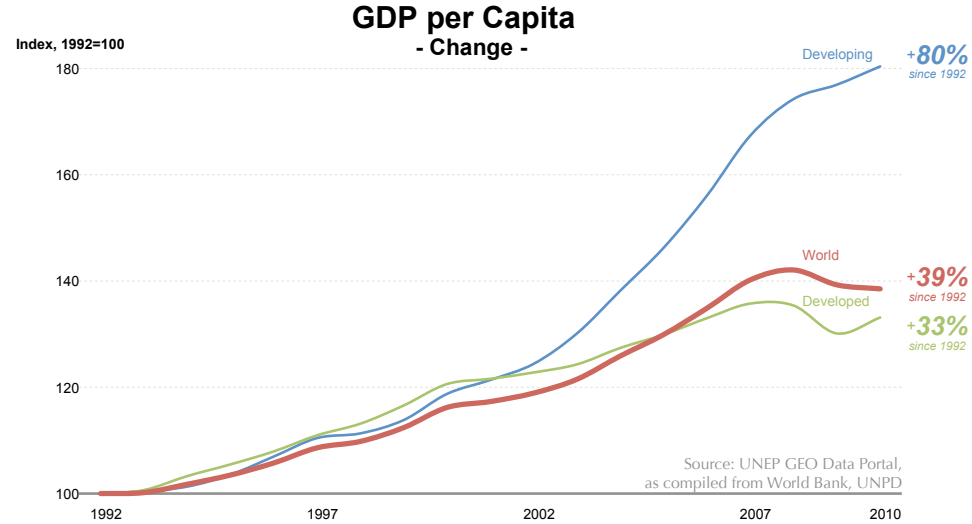
In the realm of gender parity, one indicator is the number of women in national parliaments. This figure has risen steadily over the last 20 years, from roughly 12% in 1997 to 19% in 2010, representing a 60% increase. This equals over 8 600 seats in more than 170 countries, up from just over 4 000 in 1997 (IPU 2011). "But this is far short of the target of 30% of women in leadership positions that was to be met by 1995, and further still from the MDG target of gender parity" (UN 2010). Women play a key role in improving environmental-related legislation and seeing that these measures are adequately funded and implemented.

Economy

Nic McPhee/Flickr.com

GDP has continued to climb at a steady rate...

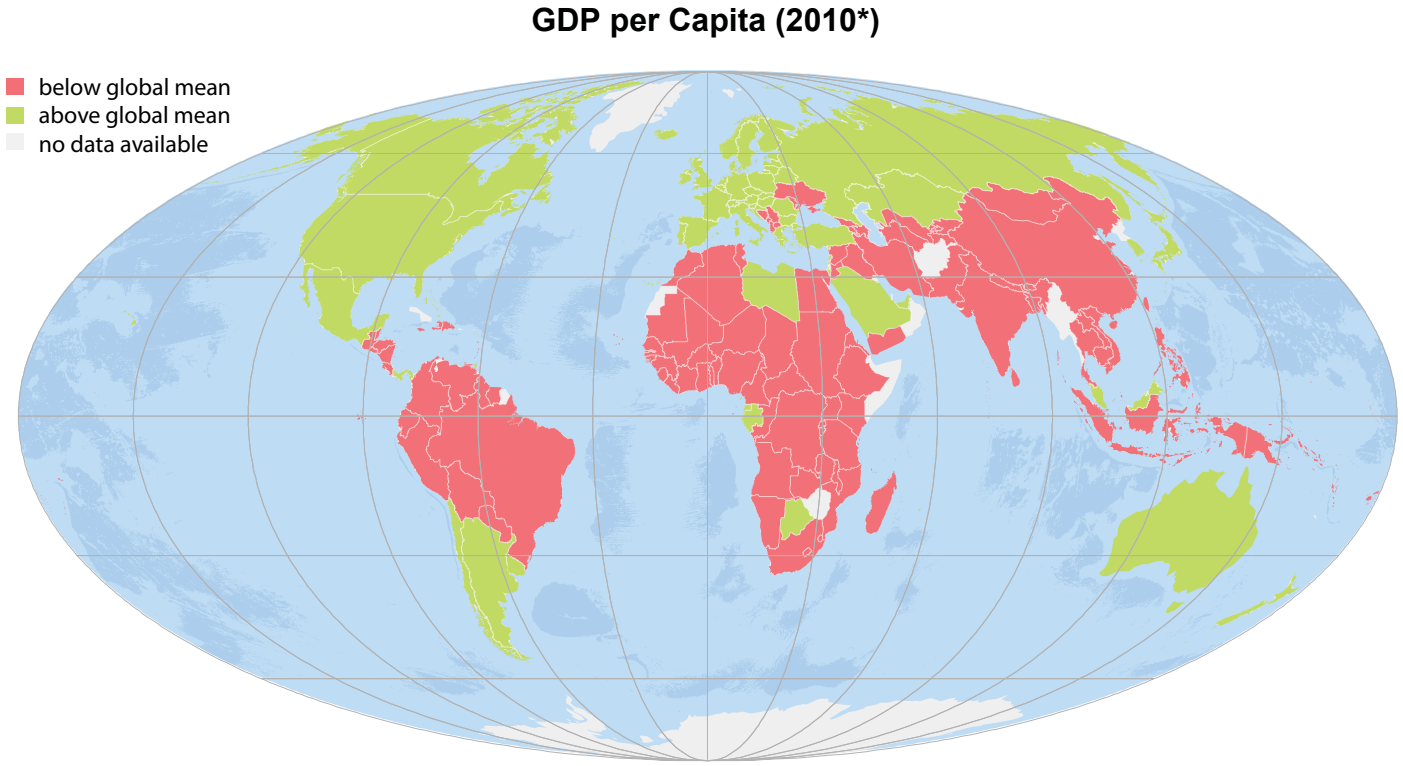




Since 1992, the world's overall Gross Domestic Product (GDP) has increased significantly i.e., from US$ 36 to 63 million millions in 2010, an increase of 75% or 3.2% per year on average. GDP per capita rose by 40% in that same period. Due to strong economic growth in many developing countries, their level of GDP per capita increased substantially, particularly in the last decade (80% since 1992, 45% since 2002). However, differences between developing and developed countries on per capita basis are almost seven-fold, reflecting the wide economic discrepancy between these two worlds.

GDP indicates the level of economic activity, but is often misinterpreted as a measure of a country's living standard. However, GDP as such does not adequately reflect standards of living, human well-being or quality of life. One successful attempt to move measurements and indicators of development beyond GDP is the Human Development Index, launched just before Rio 1992 and updated every year since.

...but huge differences in economic development persist

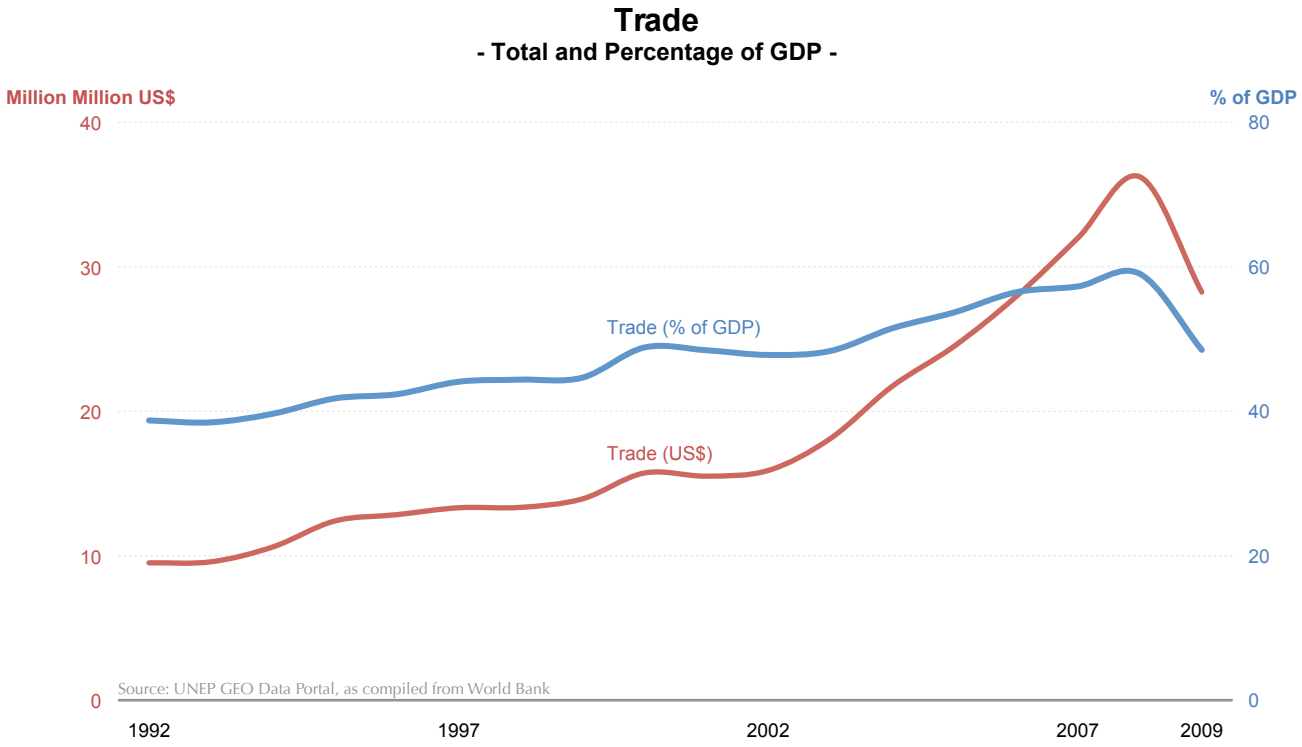


Source: UNEP GEO Data Portal, as compiled from World Bank, UNPD

Certainly not every country or citizen has benefited from overall higher levels of economic welfare. The gap between the lowest and highest income countries remains large, with many countries in Africa, Latin America and Asia still below the global average. In addition, many countries experience significant domestic income inequalities between rich and poor. In new and rising economic powers such as China and India, millions have been lifted out of poverty, but often at a high environmental cost. "The economic growth of recent decades has been accomplished mainly through drawing down natural resources, without allowing stocks to regenerate, and through allowing widespread ecosystem degradation and loss" (UNEP 2011).

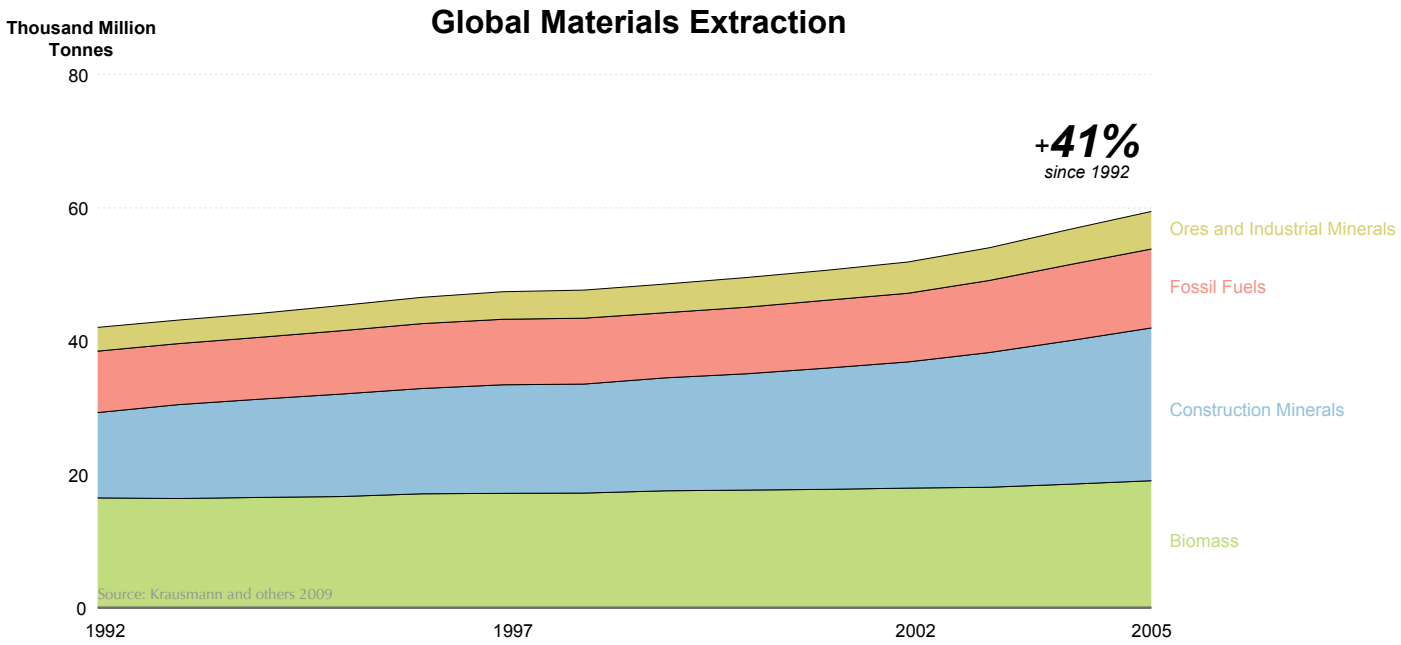
**All data for year 2010; except year 2009 data used for the following countries: Australia, Brunei Darussalam, Iran (Islamic Republic of), Libyan Arab Jamahiriya, Qatar, Saudi Arabia, United Arab Emirates, Yemen*

The absolute value of trade among countries, a major aspect of globalisation, has tripled



Trade has been present throughout much of human history, but its importance in economic, social and political terms has increased steeply over the last decades, and is a main facet of what is generally understood by "globalisation". The value of internationally traded products has tripled between 1992 and 2009, from over US$ 9 to 28 million millions. The share of trade as of the global total Gross Domestic Product (GDP) increased in that period from 39% to 49%, reaching nearly 60% before the economic crisis in 2008. By far the largest sectors of international trade in 2010 concern mineral fuels and oils (15%), electrical and electronic equipment (13%), machinery (12%) and vehicles (7%) (ITC 2011).

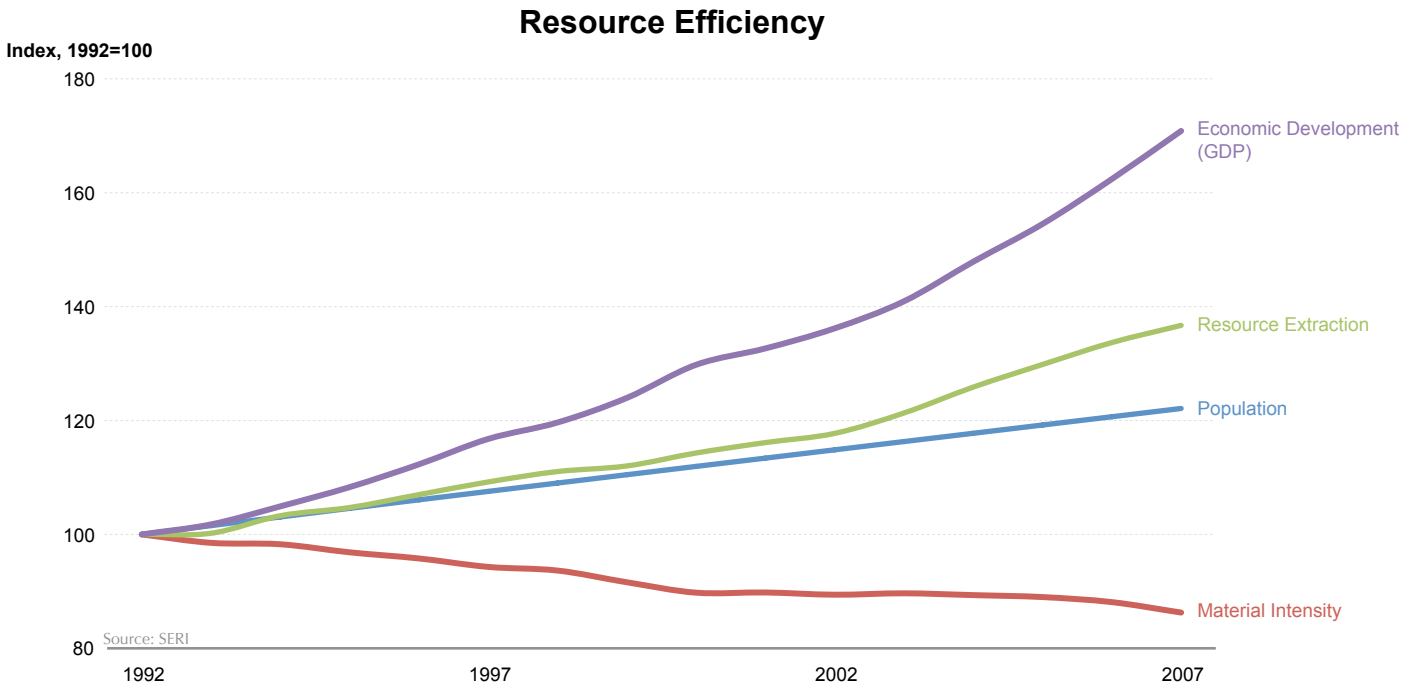
As societies grow and become wealthier, demand for basic materials is further increasing



The global use of natural resource materials increased by over 40% between 1992 and 2005, from about 42 to nearly 60 thousand million tonnes. On a per capita basis, the increase was 27%. Among the four major material groups (biomass, fossil fuels, ores and industrial minerals, and construction minerals) there has been a major increase in extraction of construction minerals of almost 80%, followed by ores and industrial minerals (close to 60%). This growth is strongly linked to increasing population numbers and the need for shelter, food and an improved standard of living (UNEP 2011).

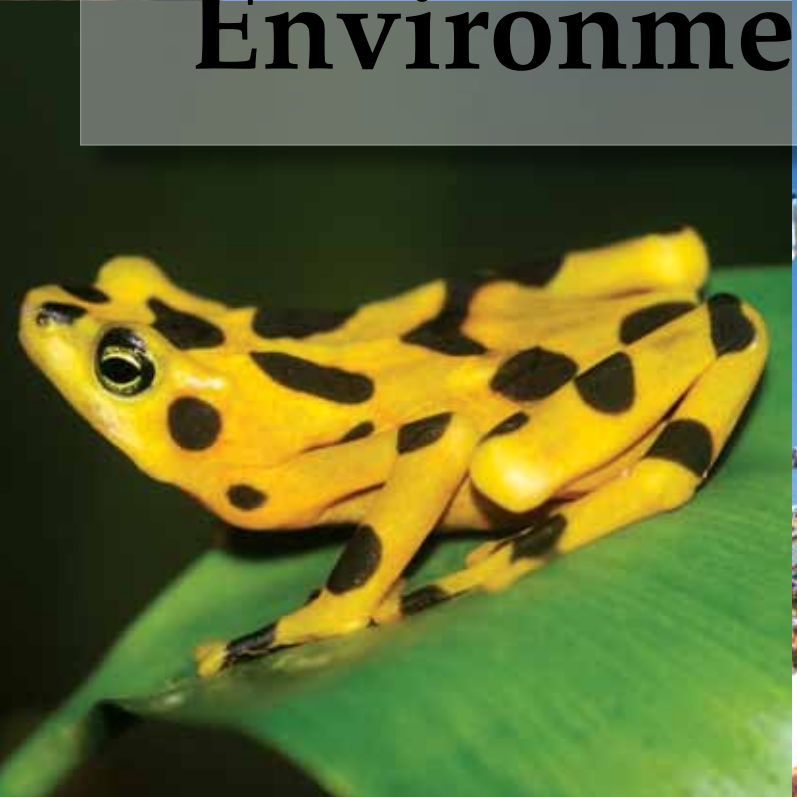
International trade in resource materials has also increased. "The total value of world trade in natural resources was US$ 3 700 thousand millions in 2008, or nearly 24 Per Cent of world merchandise trade. This value has increased more than six-fold between 1998 and 2008" (WTO 2011).

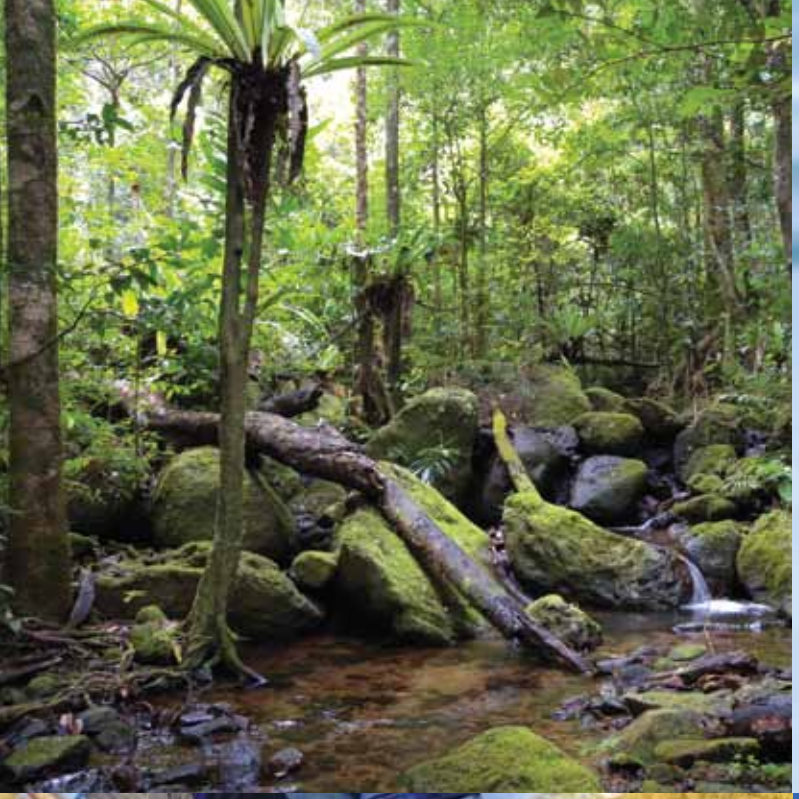
More energy and natural resources are being consumed, but the amounts needed per product are declining



Although overall energy and material use continue to grow, there is a simultaneous general decline in emissions, energy and material use per unit of output (UNEP 2011, Krausmann and others 2009), indicating that we are becoming more efficient at how we produce, use and dispose of materials. "Resource extraction per capita has been stable or increasing only slightly. What economies worldwide need is absolute decoupling of the environmental pressure associated with resource consumption from economic growth. This will be easier to achieve to the extent that resource use itself becomes more efficient" (UNEP 2011). One policy option concerns eco-taxes, which put a price on the full costs of resource extraction and pollution, including emitting CO_2, polluting the environment through the use of chemicals, deforestation, overpumping of aquifers and overfishing; such incentives can stimulate employment and help in the transition to absolute decoupling and Green Economy (ILO 2009, UNEP 2011b).


Environmental Trends

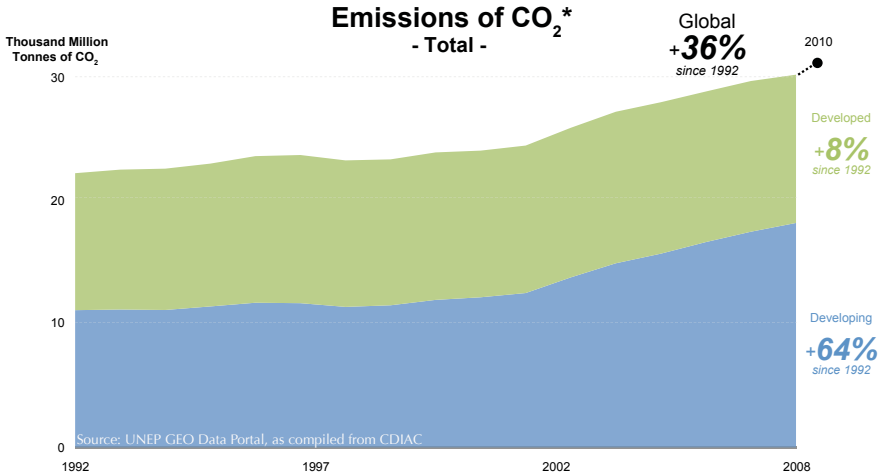


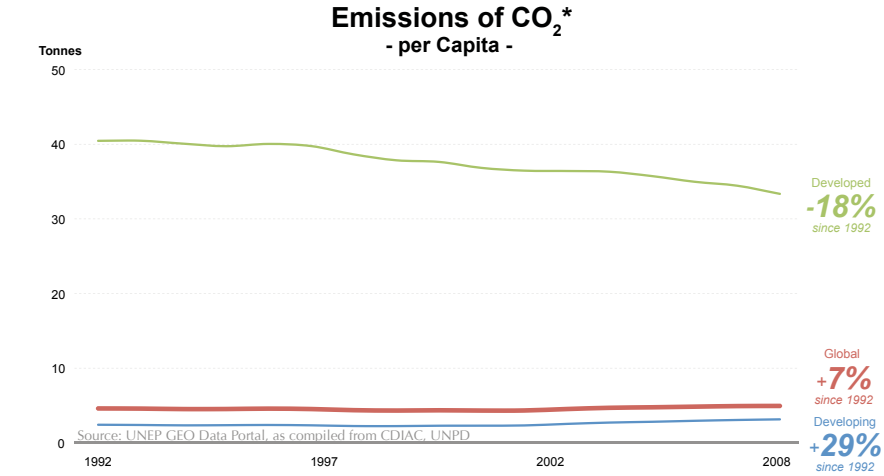




Atmosphere

MorgueFile

Global CO_2 emissions continue to rise, with 80% emitted by only 19 countries





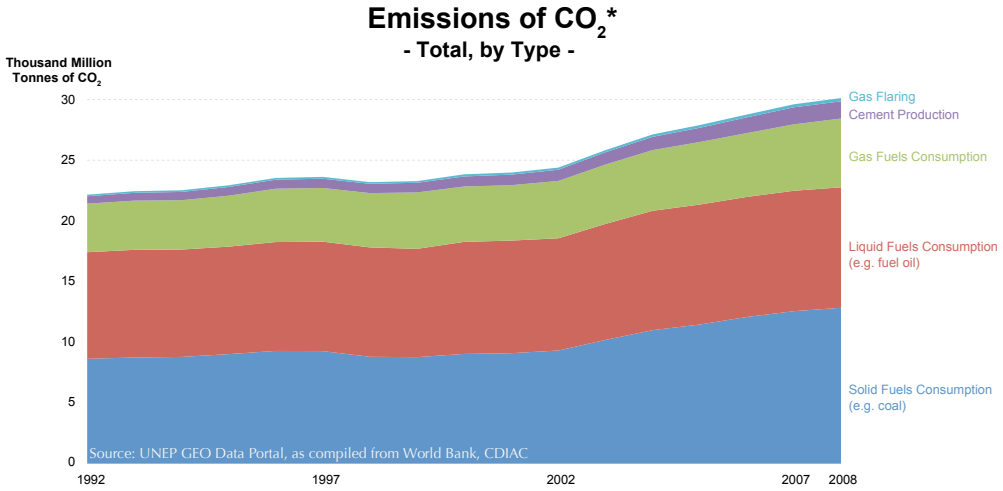
Globally, CO_2 emissions increased by 36% between 1992 and 2008, from around 22 000 million to just over 30 000 million tonnes. With general economic growth, plus developing countries such as Brazil, China and India investing significantly in large development, infrastructural and manufacturing projects, the growth of CO_2 emissions in developing countries over the last few years climbed even more (between 1992 and 2008, a 64% increase of total CO_2 emissions and 29% on a per capita basis).

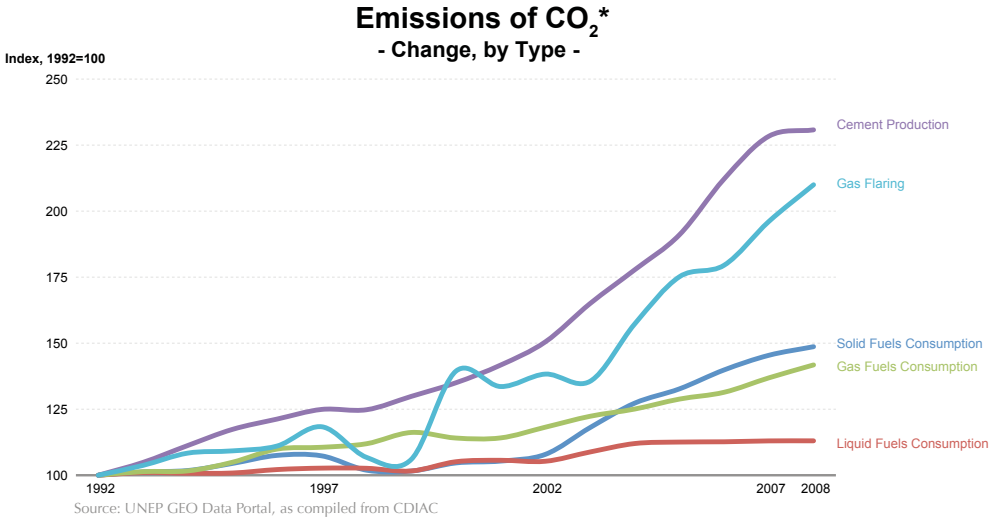
Latest estimates show that global CO_2 emissions accumulated to 30 600 million tonnes in 2010 (IEA 2011). Large differences exist between regions and countries, with 80% of the global CO_2 emissions being generated by 19 countries—mainly those with high levels of economic development and/or large populations.

Total emissions of CO_2 in developed countries increased by nearly 8%, and although per capita emissions declined steadily by 18%, they are still 10 times higher than those of developing countries. In addition, many developed countries profited from a significant shift of production to developing countries, thus leading to declining domestic emissions, but nevertheless increasing consumption-based emissions (Peters and others 2011).

** from fossil fuels, gas flaring, cement production, as provided through the original source*

Despite global efforts to reduce CO_2 emissions, they continue to rise due to the increasing use of fossil fuels...



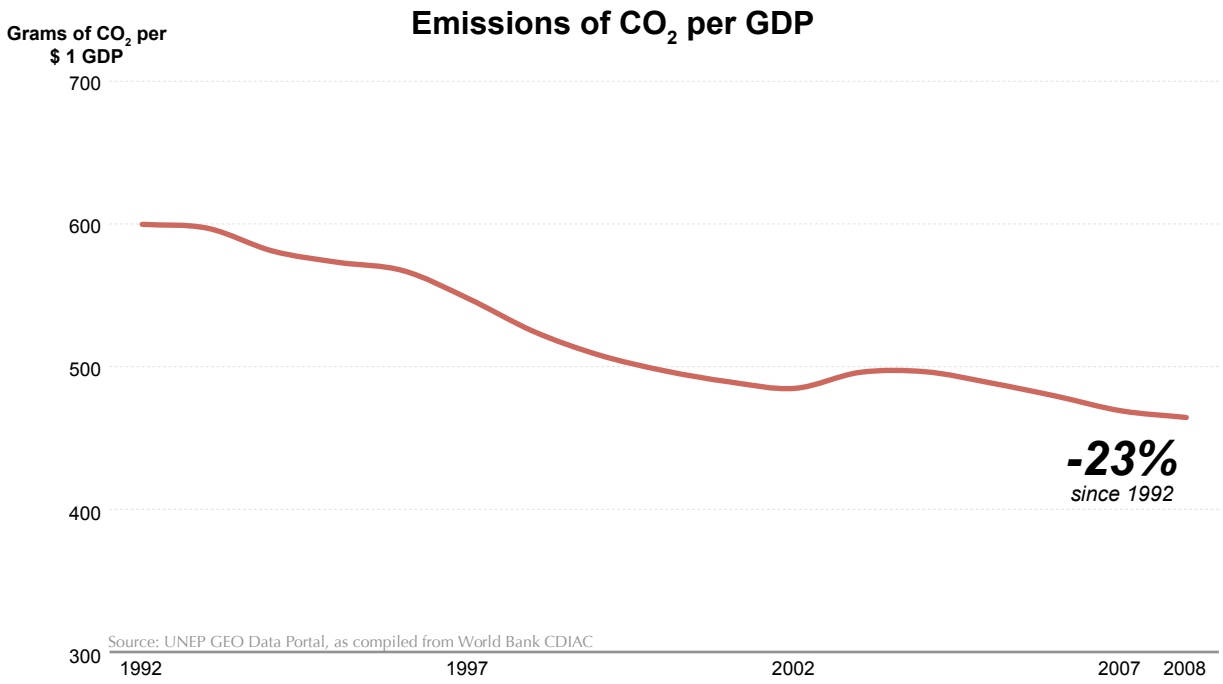


The main uses of fossil fuels are for generating electricity, enabling transport and producing heat. Their combustion leads to a release of CO_2 into the atmosphere which in turn influences the earth's climate. The production of cement not only demands very high levels of energy inputs, but also releases CO_2 directly through the heating of calcium carbonate, which produces lime and carbon dioxide. It has also become the fastest growing source of CO_2 emissions (+230% since 1992).

Global efforts since 1992 to slow the growth of, and ultimately reduce the total level of CO_2 emissions, have not yet fully succeeded. Those efforts must be strengthened; otherwise, it is very unlikely that the target of limiting temperature increase to 2°C by 2100 to reduce global warming, as agreed by global leaders in Cancun in 2010, will be met (IEA 2011).

** from fossil fuels, gas flaring, cement production, as provided through the original source*

...however, production processes are becoming more energy-efficient



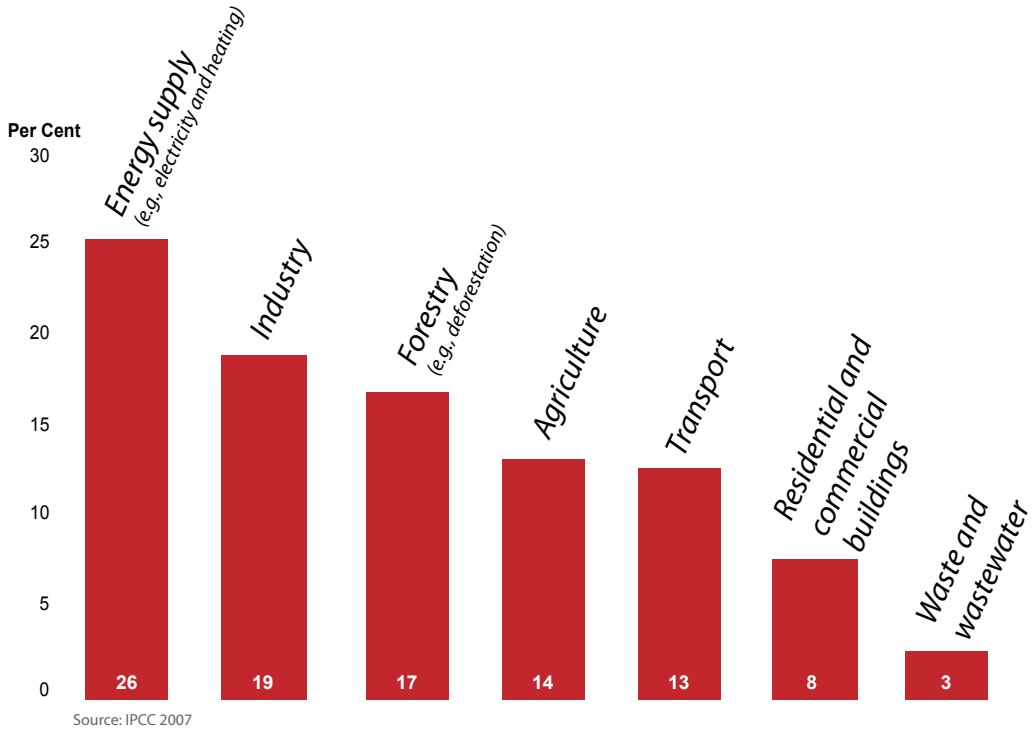
Increasing efforts to "decouple" emissions and economic development are being witnessed, meaning reduction of emissions while still experiencing economic growth. Applying new technologies to use energy and resources more efficiently is an example of a means to accomplish decoupling.

The graph above shows an annual efficiency gain of around 1.6%, and a total gain of 23% since 1992 (until 2007), indicating the start of a successful decoupling of emissions for each dollar of GDP generated. However, this may be partially influenced by the increasing value of the service industry, which has less energy- (and thus emission-) intensive impacts. In any case, the efficiency gains are still outweighed by the ongoing absolute increase in global emissions.

Over 60% of Greenhouse Gases are emitted by three economic sectors

Which sectors emit the most Greenhouse Gases?

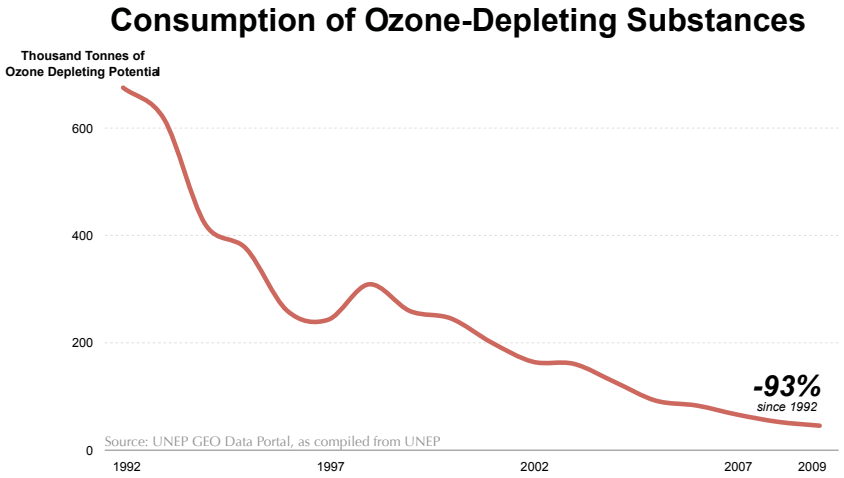
Per Cent contribution to global anthropogenic GHG emissions, 2004

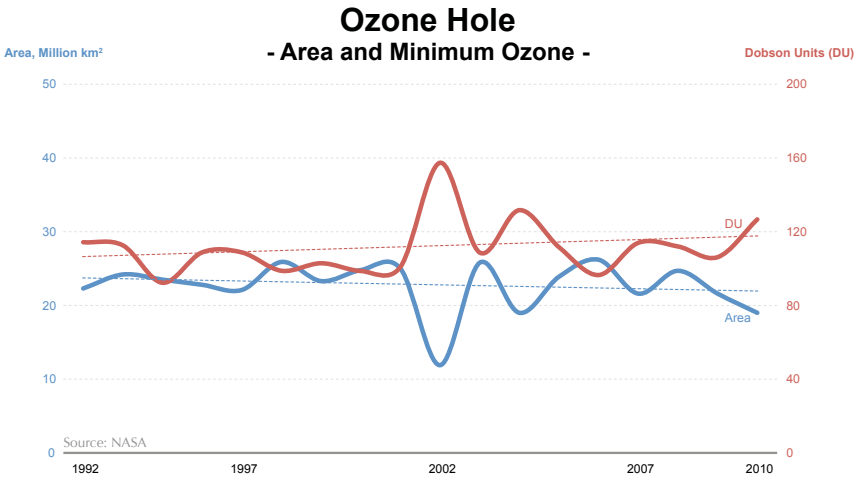


Source: IPCC 2007

The energy supply sector, industry/manufacturing and forestry sectors together account for over 60% of all greenhouse gas (GHG) emissions. The forestry sector's contribution is mainly through worldwide deforestation, as trees cut down to clear space for agriculture and other land uses can no longer absorb carbon dioxide, and if left to rot or burned, emit CO_2 stored in trunks and leaves.

The Montreal Protocol: "Perhaps the single most successful international agreement"



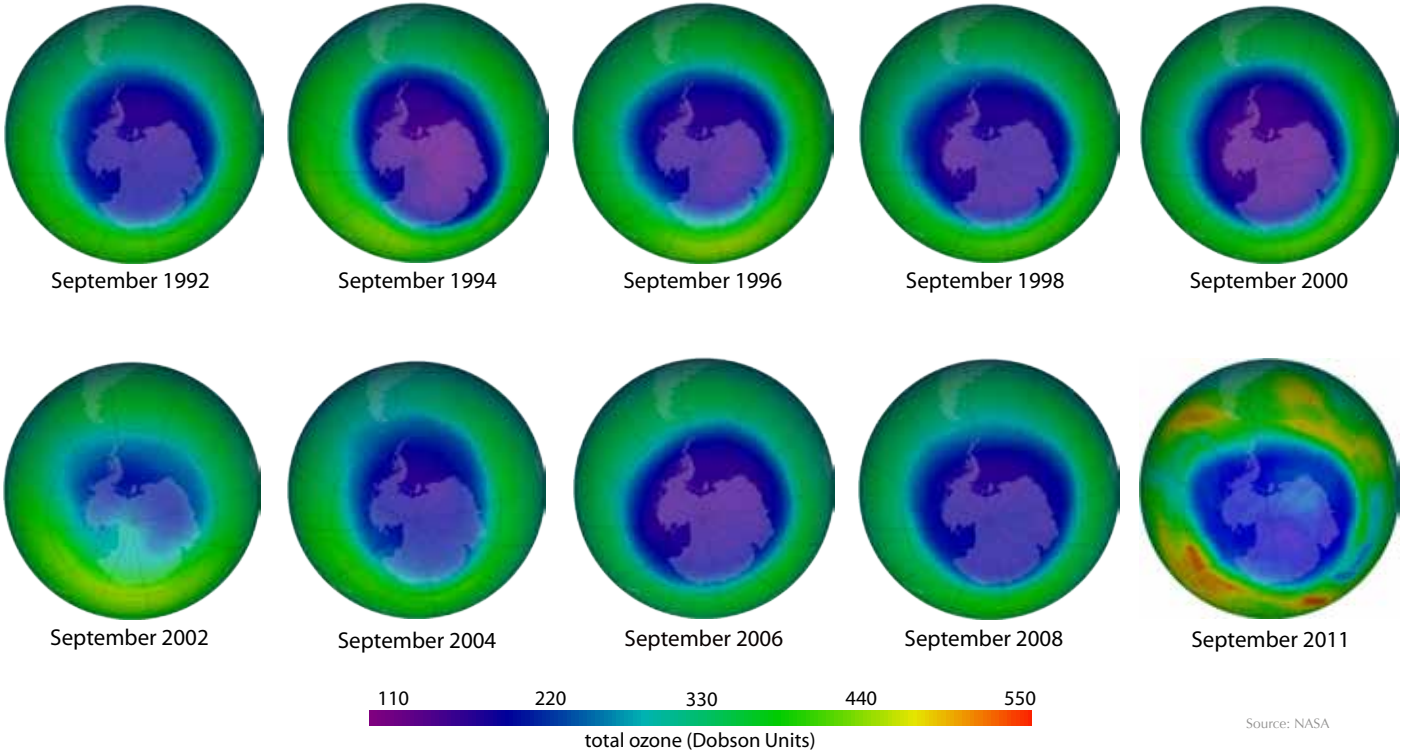


The ozone concentration in higher altitudes protects life on earth from the damaging ultraviolet (UV) rays of the sun. The ozone layer, especially above Antarctica, was rapidly diminishing until recently due to the use of Ozone-Depleting Substances (ODS).

Thanks to the participation and commitment of nearly all countries (195 in 2011) in perhaps the "single most successful international agreement to date" (Kofi Annan, former UN Secretary-General, on the Montreal Protocol), the consumption of ozone-depleting substances decreased by 93% from 1992 to 2009, and 98% since the Protocol's establishment in 1987. Production and consumption of ozone-depleting substances still continues through the use of compounds such as hydrochlorofluorocarbons (HCFCs), which have a global warming potential 77 to 2 300 times higher than CO_2, and are still to be phased out, as well as through limited and strictly-controlled essential use exemptions (e.g. for specific agricultural purposes) or illegal use.

The ozone hole over the Antarctic is showing only slow progress of recovery. The amount of ozone, measured in Dobson Units, varies yearly due to different temperatures in the Antarctic, but shows a small, positive, increase (WMO/UNEP 2010).

Further expansion of the "ozone hole" has halted, but full recovery is still far away



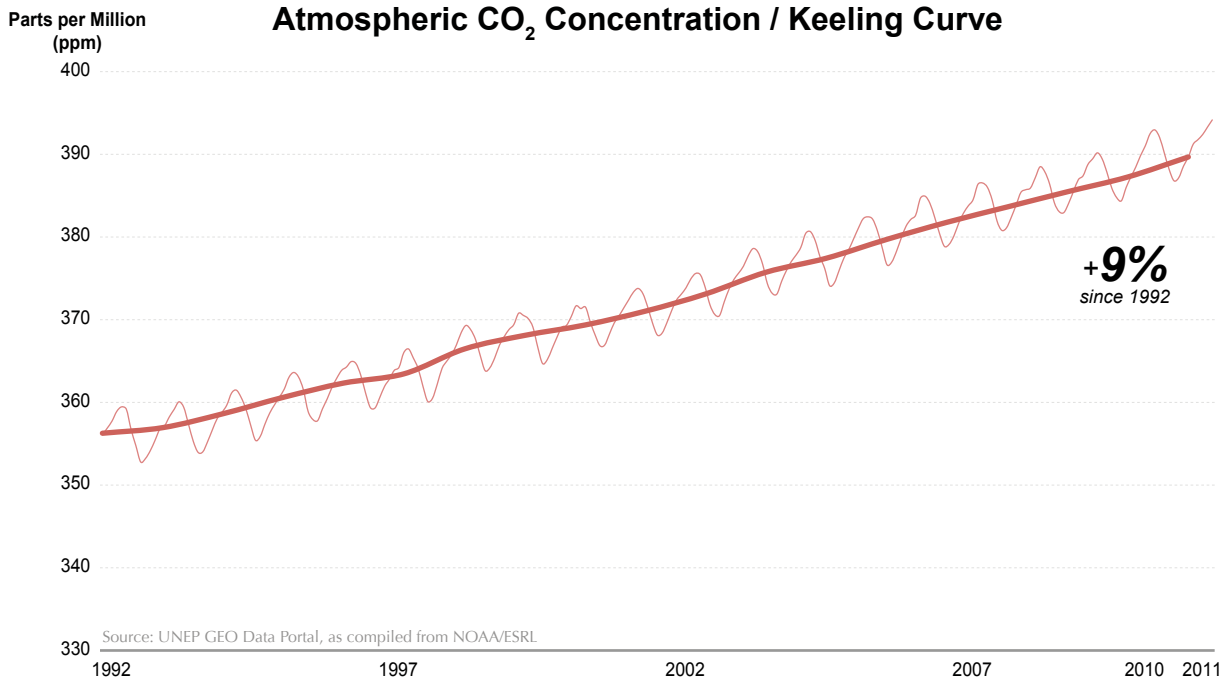
The use of ODS has been controlled from 1987 onwards (and subsequently banned) under the Montreal Protocol. As of 1 January 2010, no new production of chlorofluorocarbons (CFCs) is permitted. Given that many of these substances are also potent greenhouse gases, the Protocol provided at the same time "substantial co-benefits by reducing climate change" (WMO/UNEP 2010): "From 1990 to 2010, the Montreal Protocol's controls on production and consumption of ODSs [will] have reduced GHG emissions by the equivalent of a net 135 thousand million tonnes CO_2, which is equivalent to 11 thousand million tonnes CO_2 per year" (Molina and others 2009).

Over the past decade concentration and extent of ozone neither notably decreased nor increased (WMO/UNEP 2010). The ozone layer outside the Polar regions is expected to recover to its pre-1980 levels before 2050. However, the springtime ozone hole over Antarctica is expected to recover much later.

Climate Change

Gerard Van der Leun/Flickr.com

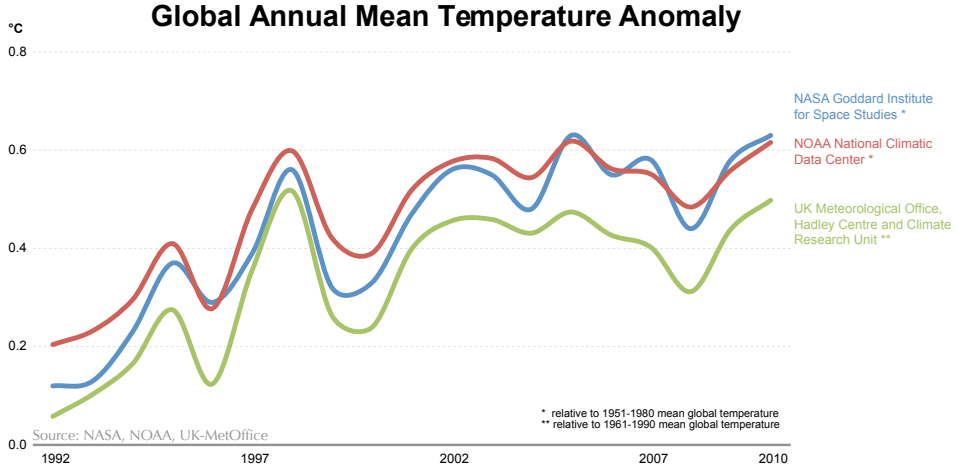
The average amount of CO_2 in the Earth's atmosphere shows a steady rise over the last two decades

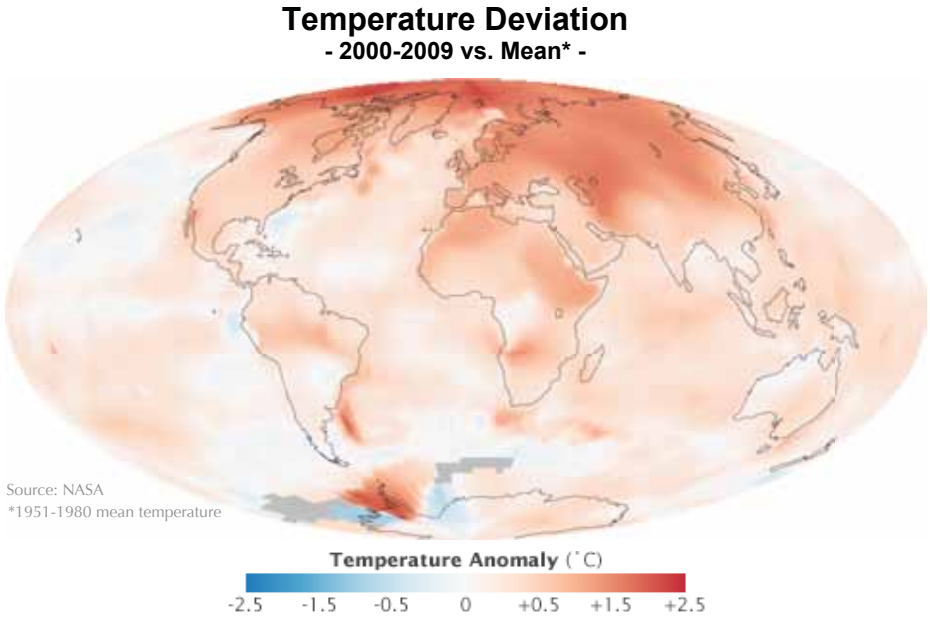


The concentration of carbon dioxide (CO_2) in the Earth's atmosphere has been measured at Mauna Loa, Hawaii since 1958, and at five other stations subsequently. It shows a steady mean increase from 357 ppmv (parts per million by volume) in 1992 to 389 ppmv in 2011. Seasonal variations of about 5 ppmv each year correspond to seasonal changes in uptake of CO_2 by the world's land vegetation, influenced by the greater vegetation extent and mass in the Northern hemisphere.

The increase in atmospheric CO_2 is primarily attributed to the combustion of fossil fuel, gas flaring and cement production and has been accelerating in recent years (IPCC 2007).

Global mean temperature increased by 0.4°C between 1992 and 2010

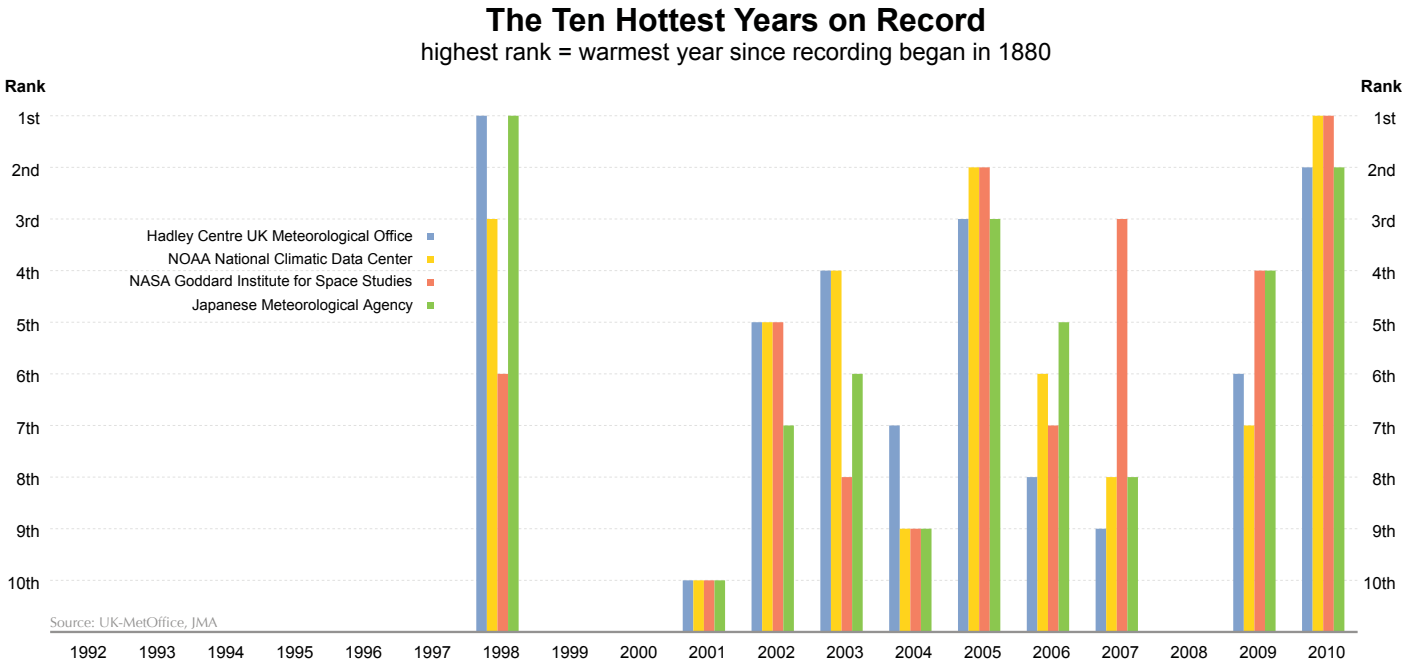




The average annual mean atmospheric temperature shows yearly variations, caused for example by tropical El Niño-La Niña cycles. Viewed over a longer time period, one can nevertheless observe a slow, but steady increase with occasional peaks. The annual mean temperature, as displayed, is calculated by three leading climate research centres, producing slightly different values — the general upward trend however is the same for all of them, with an increase of about 0.2°C per decade (Hansen and others 2006). "Most of the observed increase in global average temperature since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations" (IPCC 2007b).

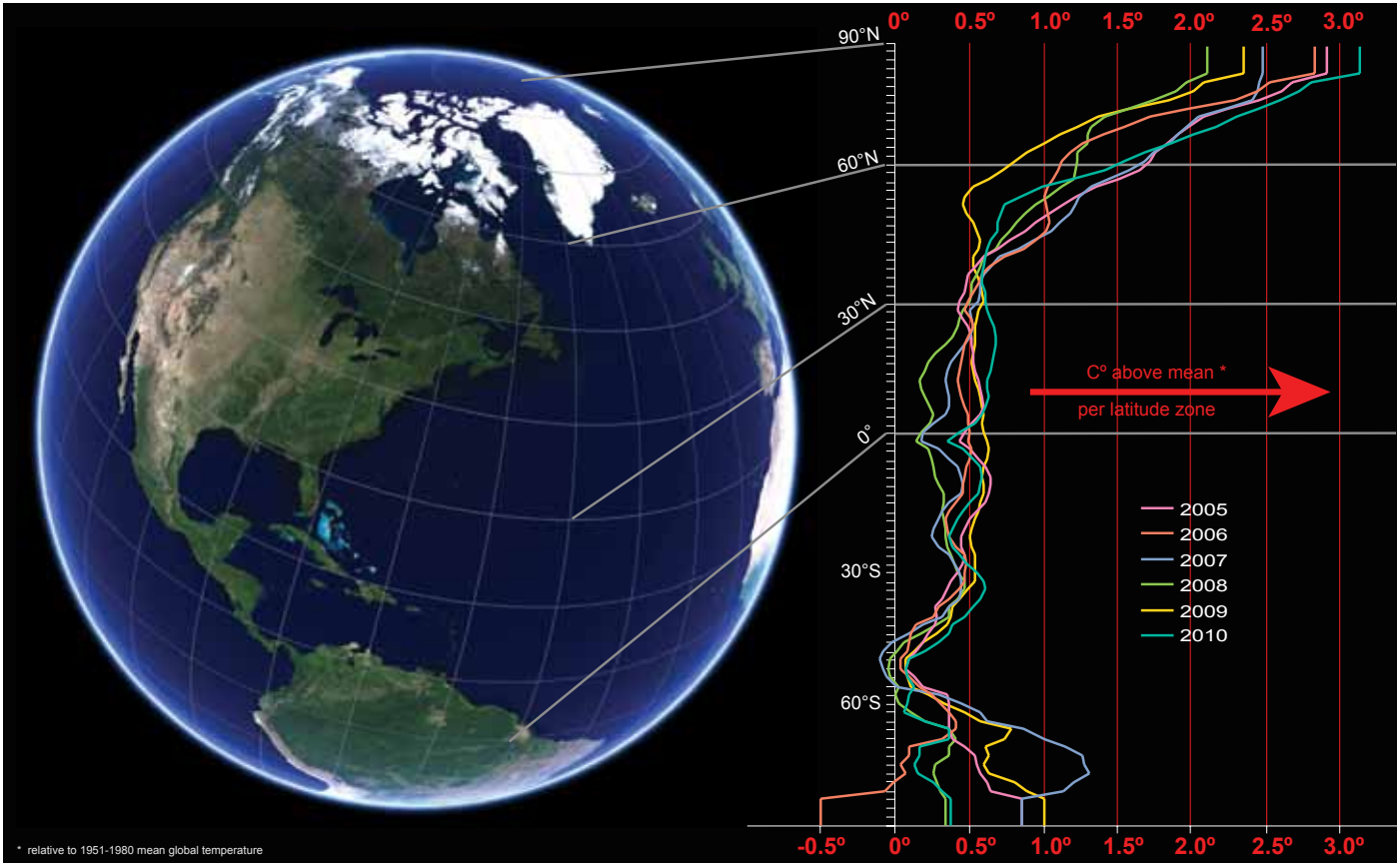
This map shows how much warmer temperatures during the decade 2000-2009 were compared to average temperatures recorded between 1951 and 1980 (a common reference period for climate studies). "The most extreme warming, shown in red, was in the Arctic. Very few areas saw cooler than average temperatures, shown in blue" (Voiland 2010). The last decade was the warmest on record since 1880; it was warmer than the previous record decade 1990-1999.

The 10 hottest years ever measured have all occurred since 1998



According to rankings from four top US, British and Japanese climate research centers, the ten hottest years on record have all occurred since 1998. Eighteen out of the last 21 years feature among the 20 warmest years on record since (reliable) recording of temperature started in 1880. These data and findings add weight to the common conclusion of all four agencies and most of the scientific community, that in spite of short-term spatial and temporal variability the clear long-term trend is one of global warming (NOAA 2011, NASA 2011, UK-MetOffice 2011, JMA 2011).

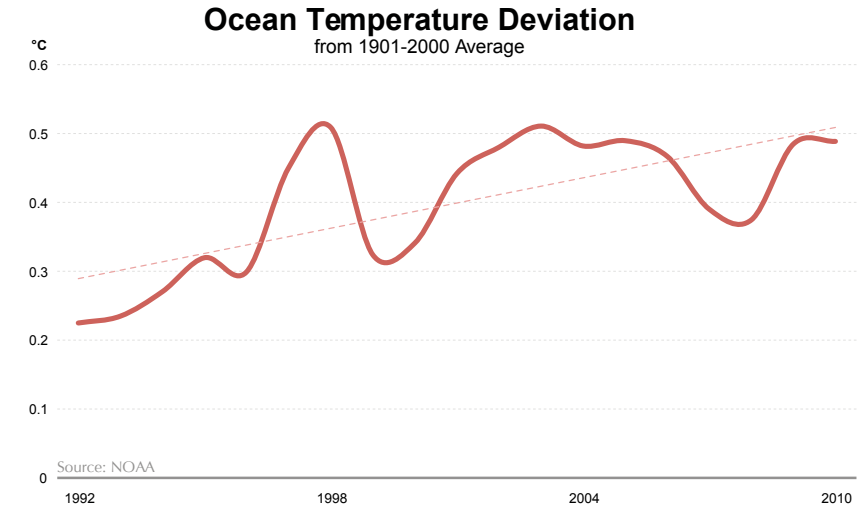
Far northern latitudes are seeing the most extreme changes in temperature



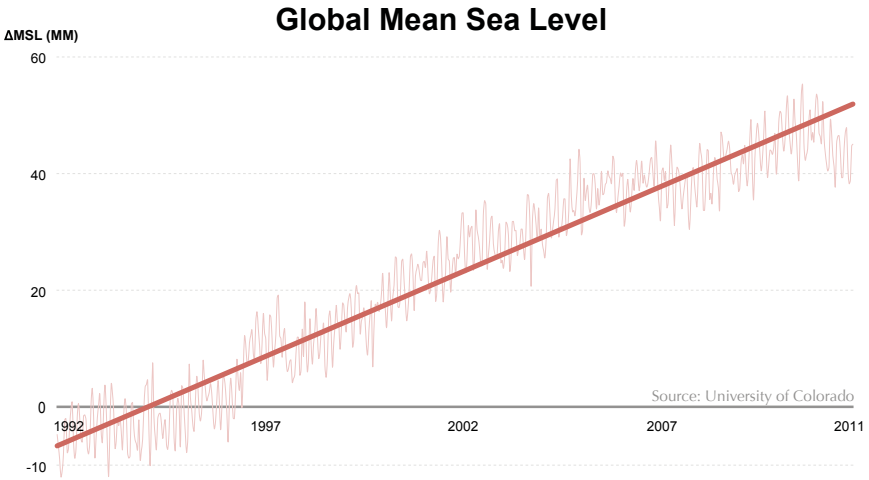
Source: NASA

The increase in global mean temperature is not occurring uniformly across the globe's latitudinal zones. This graph of departure from the historical mean temperature (1951-1980) for the past six years shows this variation by latitude. Far northern latitudes are seeing the most extreme changes in temperature (see in particular the upper part of the graph representing the higher latitudes, and corresponding larger temperature anomalies). Among the consequences of this warming are melting of ice sheets and thawing permafrost. Furthermore, a study of 1 700 species found poleward migration of 40 km between 1975-2005 and vertical migration in alpine regions of 6 m per decade in the second half of the 20th century (Hansen and others 2006).

Oceans are also warming, while sea-level rise continues unabated



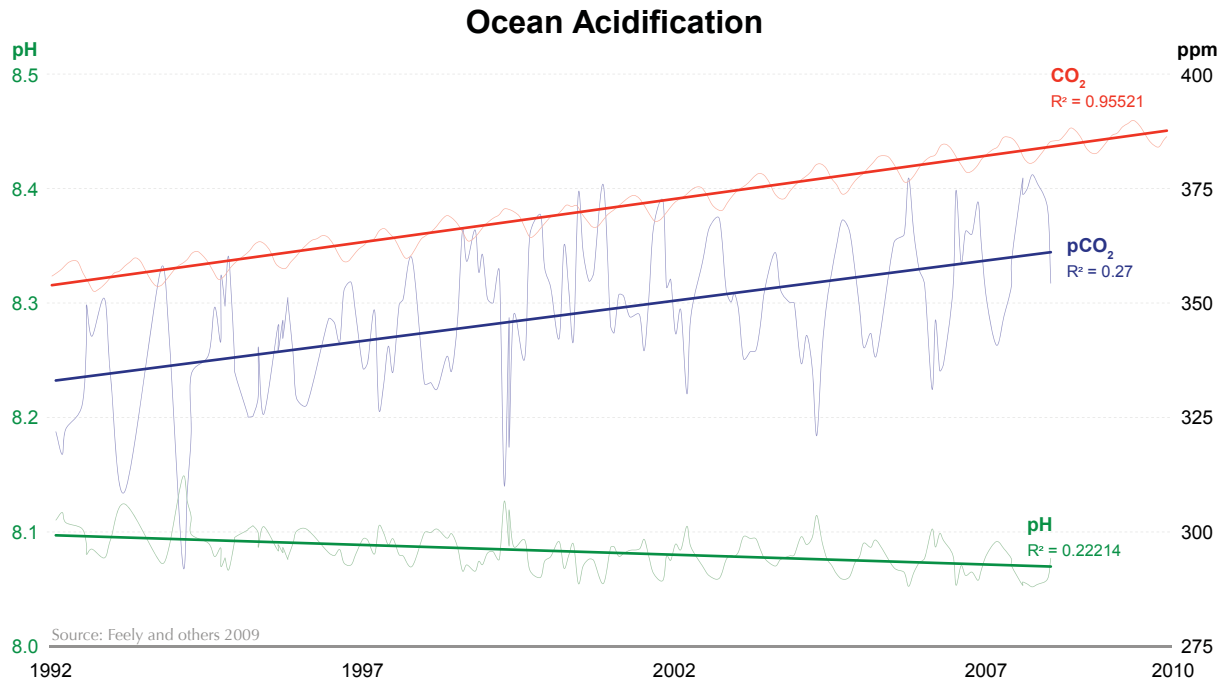
As the global atmospheric temperature increased over the last decades, so also did the average ocean temperature. By comparing the last 20 years to the average of the last century, one can observe a steady warming of ocean waters, increasing from 0.22°C above the long-term average in 1992 to nearly 0.5°C in 2010.



Globally, sea level has been rising at an average rate of about 2.5 mm per year between 1992 and 2011. This is due to rising sea-water temperature and resulting thermal expansion, as well as the melting ice of the Arctic, Antarctic and Greenland ice sheets (Bindoff and others 2007).

Scientific evidence supports the claim that current sea level rise is caused by global warming (Bindoff and others 2007), although different opinions exist about the exact link as well as future projections (Rahmstorf and Vermeer 2011).

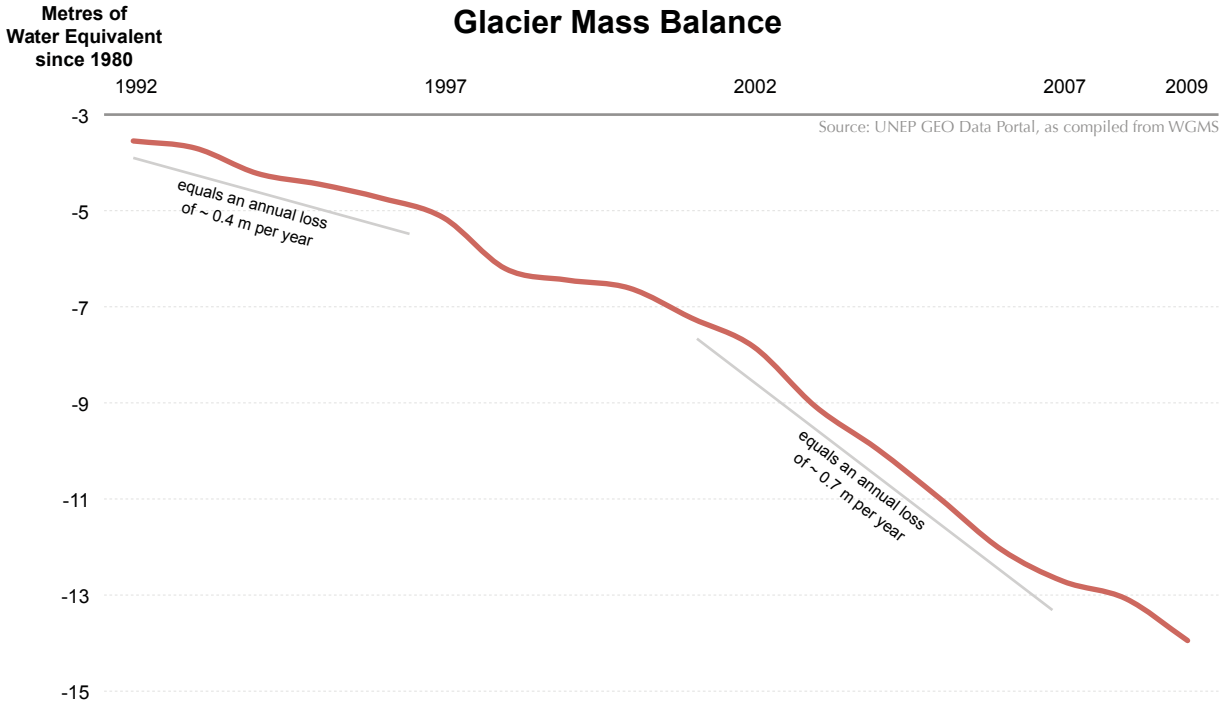
Oceans are becoming more acidic, with negative implications for corals and other marine life



Increasing carbon dioxide (CO_2) concentrations in the air alter the chemistry of the ocean's surface, causing it to become more acidic (measured by the logarithmic pH) (Caldeira and Wickelt 2003). The ocean's pH declined from 8.11 in 1992 to 8.06 in 2007 (Feely and others 2009). There is a "growing concern that the process called ocean acidification could have significant consequences on marine organisms which may alter species composition, disrupt marine food webs and ecosystems and potentially damage fishing, tourism and other human activities connected to the seas" (UNEP 2010b). Coral reefs are currently experiencing higher ocean temperatures and acidity than at any other time in at least the last 400 000 years. If this trend continues, all coral reefs will likely be threatened by mid-century, with 75 Per Cent facing high to critical threat levels (WRI 2011).

The increase in oceanic CO_2 concentrations (pCO_2 in the graph), measured off the coast of Hawaii, is consistent with the atmospheric increase measured at Mauna Loa, Hawaii, within the statistical limits of the measurements (Feely and others 2009).

Most mountain glaciers around the world are diminishing rapidly

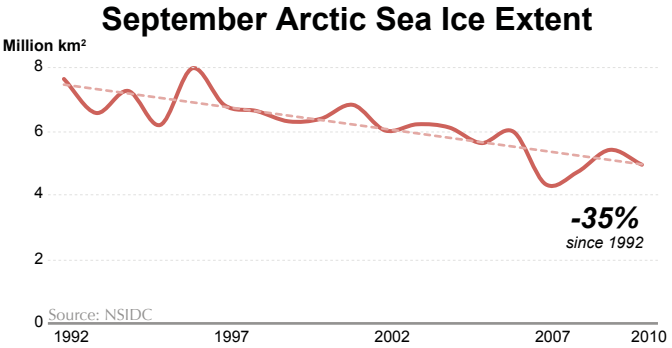


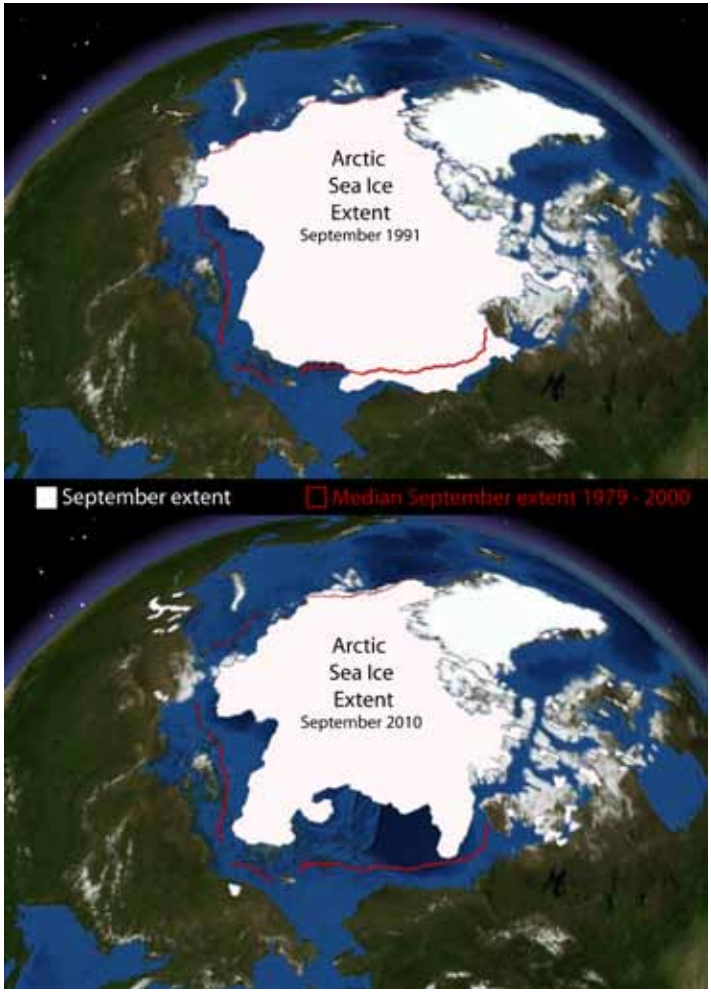
Changes in glaciers are key indicators of climate change. Nearly all mountain glaciers around the world are retreating and getting thinner, as measured by their annual mass balance, with "severe impacts on the environment and human well-being, including vegetation patterns, economic livelihoods, natural hazards, and the water and energy supply" (WGMS 2010). Diminishing glacier and ice cap volumes not only influence current sea-level rise but also threaten the well-being of approximately one-sixth of the world's population who depend on glacier ice and seasonal snow for their water resources during dry seasons (WGMS 2008).

Moreover, as most glaciers are rapidly diminishing, the speed with which this happens has been increasing in recent decades as well. For 30 glaciers observed (Zemp and others 2009), the average annual melting rate has increased from around 0.4 metres per year in the early 1990s to 0.7 metres of water equivalent per year over the last decade, thus almost doubling from one decade to the next, with record losses in 2004 and 2006 (WGMS 2010). The ongoing trend of worldwide and rapid glacier shrinkage may lead to the deglaciation of large parts of many mountain ranges by the end of the 21st century (WGMS/UNEP 2008).

The annual minimum extent of Arctic sea ice continues its steady decline

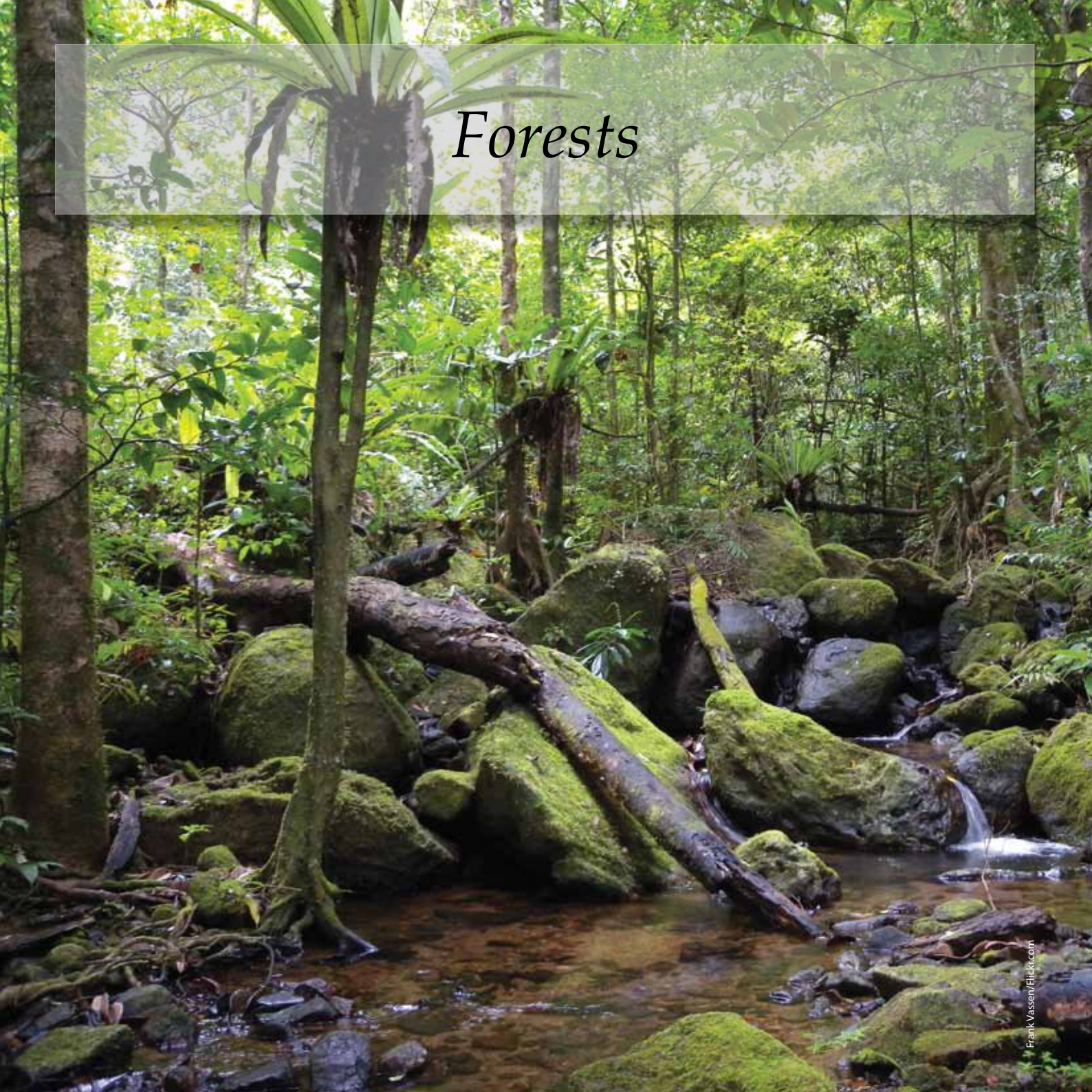
Arctic sea ice extent has been declining since well before satellite measurements began in 1979 (NSIDC 2011). This decline has been most pronounced in September at the end of the summer melt season (Stroeve and others 2008). Several of the most extreme years have been since 2002, with the smallest sea ice extent ever recorded (4.17 million km^2) occurring in 12 September 2007 (NSIDC 2011). Preliminary data for 2011 indicates that ice extent had reached its second smallest extent ever (4.33 million km^2 on 9 September) (NSIDC 2011). The trend is believed to be the result of natural variability in air temperature and ocean and atmospheric circulation patterns, combined with climate change (Wang and Overland 2009). While the short data record precludes confident predictions, there is concern that multiple feedback processes such as reduced albedo could lead to rapid transition to virtually ice-free Septembers in the future—as soon as 2040 by one analysis (Wang and Overland 2009).





Source: NSIDC

Forests



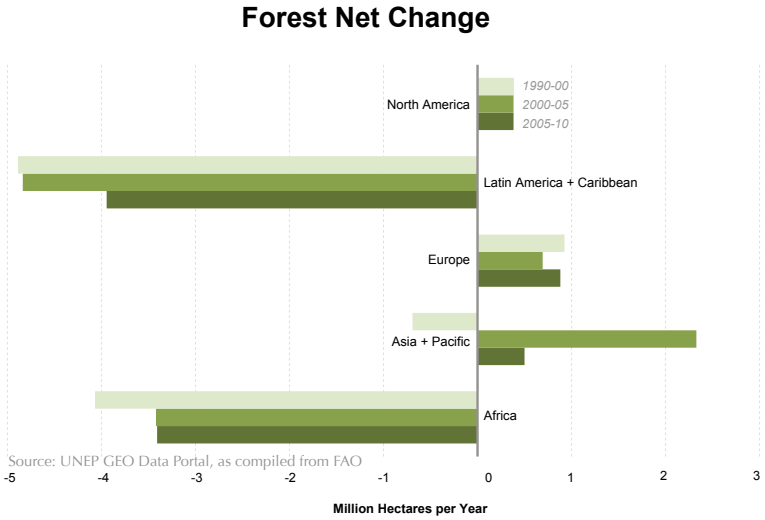
Frank Vassen/Flickr.com

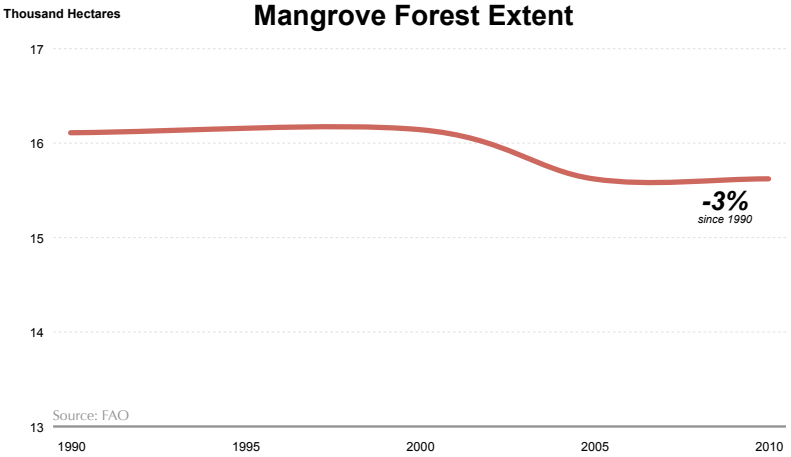
Primary forest area decreased by 300 million ha since 1990, or an area larger than Argentina

Forests currently cover around 30% of the Earth's land mass. Although the rate of deforestation is slowing down, large areas of primary forest and other naturally regenerated forests are declining, especially in South America and Africa, while forested areas in Europe and Asia are stable or increasing due to large-scale afforestation programmes. Around 13 million hectares of forest were converted to other uses or lost through natural causes each year between 2000 and 2010, compared to 16 million hectares per year during the preceding decade (FAO 2010). This results not only in biodiversity loss, but also contributes 12-15% to global warming by releasing CO_2 into the atmosphere and hampering further CO_2 storage (van der Werf and others 2009, UCSUSA 2011). "Millions of hectares of tropical forest are cleared every year to make way for agriculture, pastures and other non-forest uses, or are degraded by unsustainable or illegal logging and other poor land-use practices" (ITTO 2011).

Also in decline since several decades ago are mangrove forests—important from social, economic and biological points of view. For example, "mangrove forests act as extremely effective carbon sinks, able to absorb [nearly 100] tonnes of carbon per hectare, or more than three times the absorptive capacity of non-mangrove forests" (UNDP 2011b).

Between 1990 and 2010, 3% of mangrove extent was lost, mostly as a result of coastal development and conversions to agriculture and aquaculture (rice fields, shrimp farms). Using high-resolution satellite imagery, the extent of mangroves in 2000 was even found to be 13% less (blue point on the graph) than country statistics show (Giri and others 2010).





Large portions of the Amazon rainforest were cleared for cattle pastures and farm fields

Source: USGS; Visualization UNEP-GRID Sioux Falls

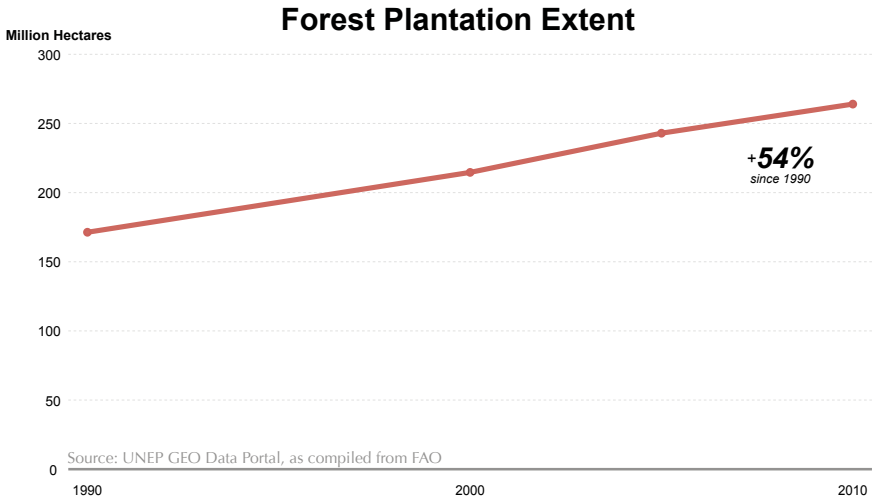
Satellite images show that enormous areas of Amazon rainforest were cleared, mostly along an "arc of deforestation" on the southern boundary of the Amazon Basin. The Brazilian states of Rondônia, Para and Mato Grosso saw the largest losses (INPE 2010). Major roads such as the BR-163 running from north to south across the 1985 image of Mato Grosso (above), provided access to the forest (Fearnside 2007). Twenty years later much of the forest is gone, replaced by soy fields and cattle pastures. Severe droughts in 2005 and 2010 increased the frequency of fire, and have reinforced concerns that the Amazon is reaching a tipping point where large areas of forest could be replaced by a more savanna-like ecosystem (Lewis and others 2011, Nepstad and others 2008, Malhi and others 2009).

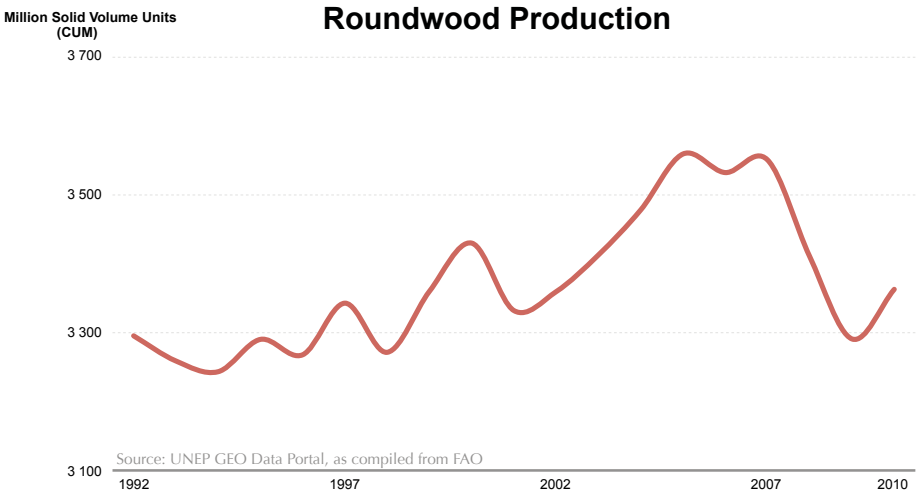
Simon Chirgwin / BBC World Service / Flickr.com

A gradually increasing percentage of the world's forests has been replanted and is typically less diverse

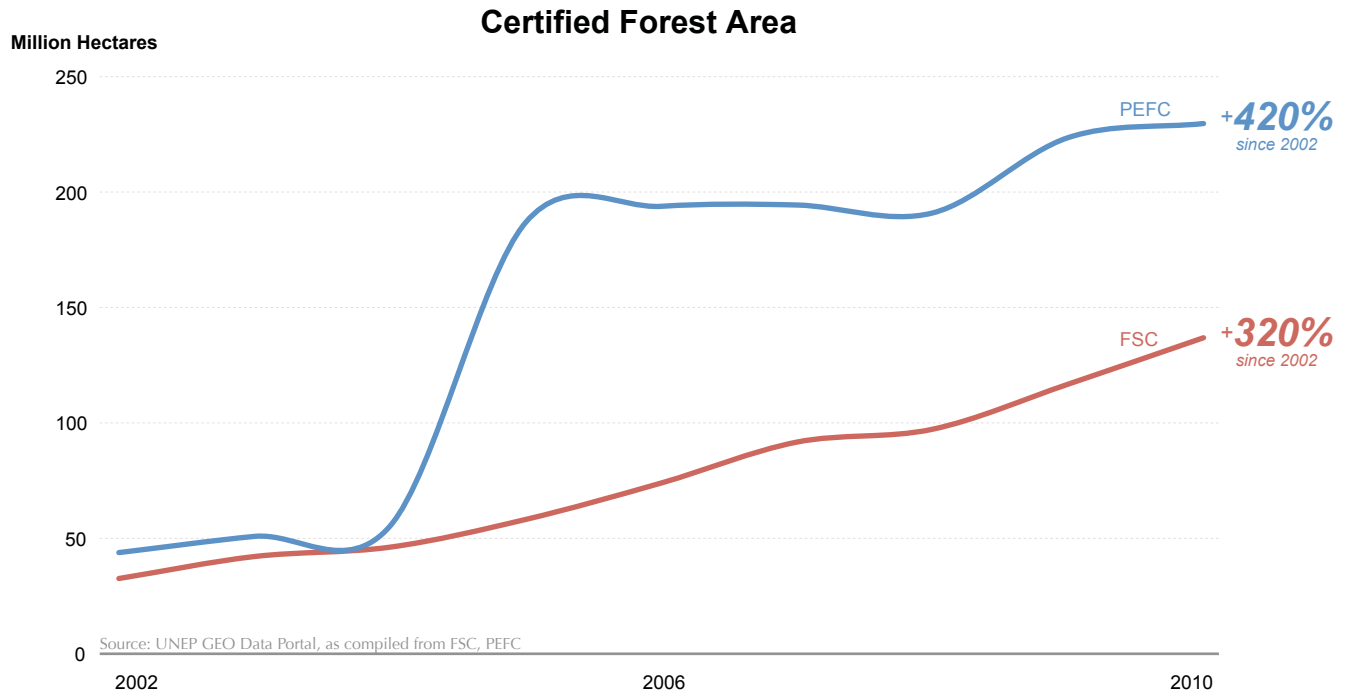
Forest plantations are generally intended for the production of timber, pulp and firewood, but along with other social and environmental benefits also stabilise soil and improve watershed protection. Since 1990, they have been growing at an annual rate of 2.2%, or around 4 600 thousand hectares annually, increasing from 170 to 265 million hectares globally. Over the 20-year period, this gain equals the size of a country such as Tanzania. The total plantation extent in 2010 represents 7% of the total forest area globally (FAO 2010b). Although these forests do not necessarily enrich local biodiversity since they are mostly composed of the same and/or introduced species, they can provide important ecosystem services such as timber, carbon and water storage and soil stabilisation.

Roundwood production depends heavily on demand from the construction sector. Economic growth around the world stimulated production, until the economic crisis in 2008, when new construction activities — and thus demand for timber — severely declined. Some of the peaks (as for example in 2000, 2005 and 2007) in roundwood production are due to increased extraction of the numbers of trees as a result of severe storms (Eurostat 2011).



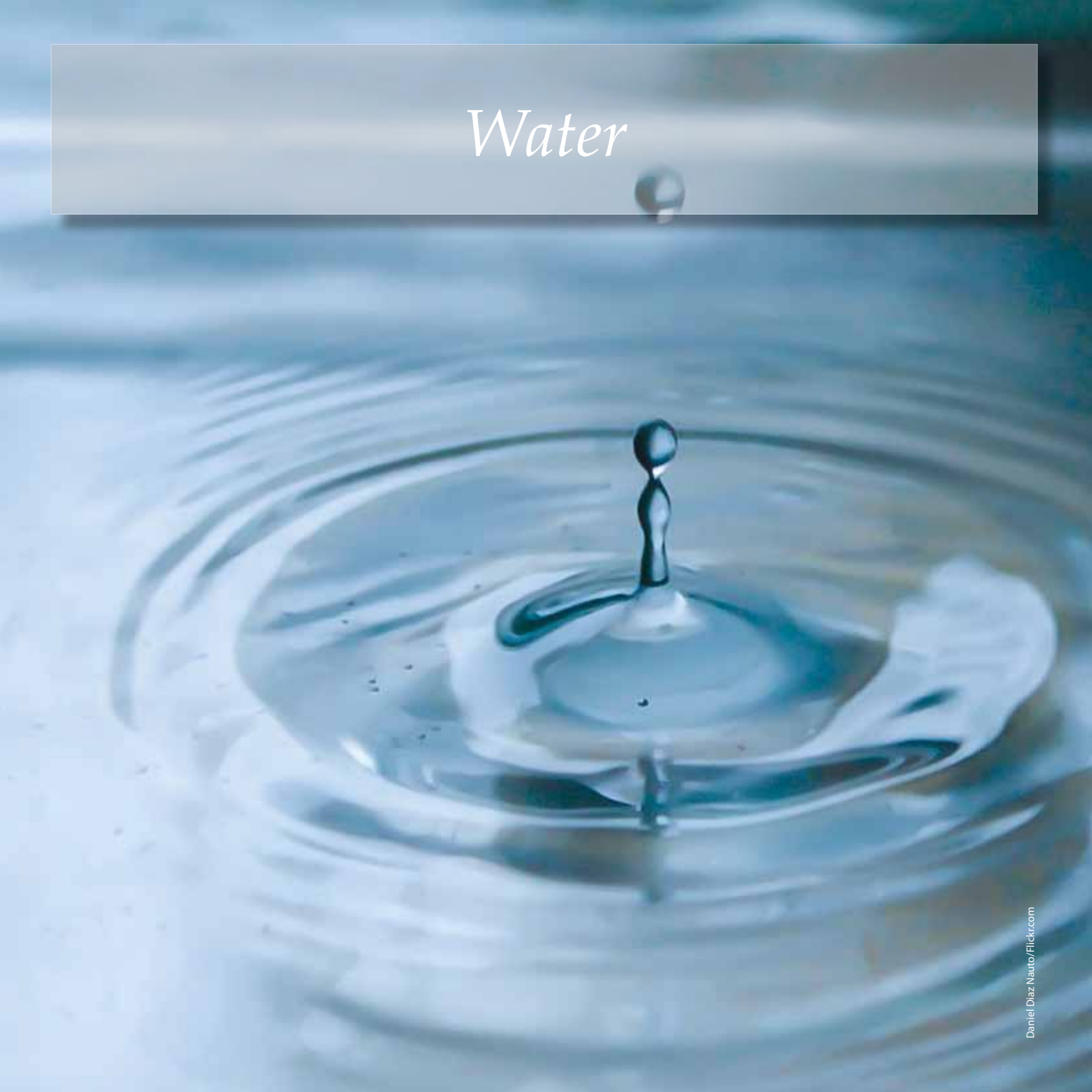


Only about 10% of global forests are under certified sustainable management



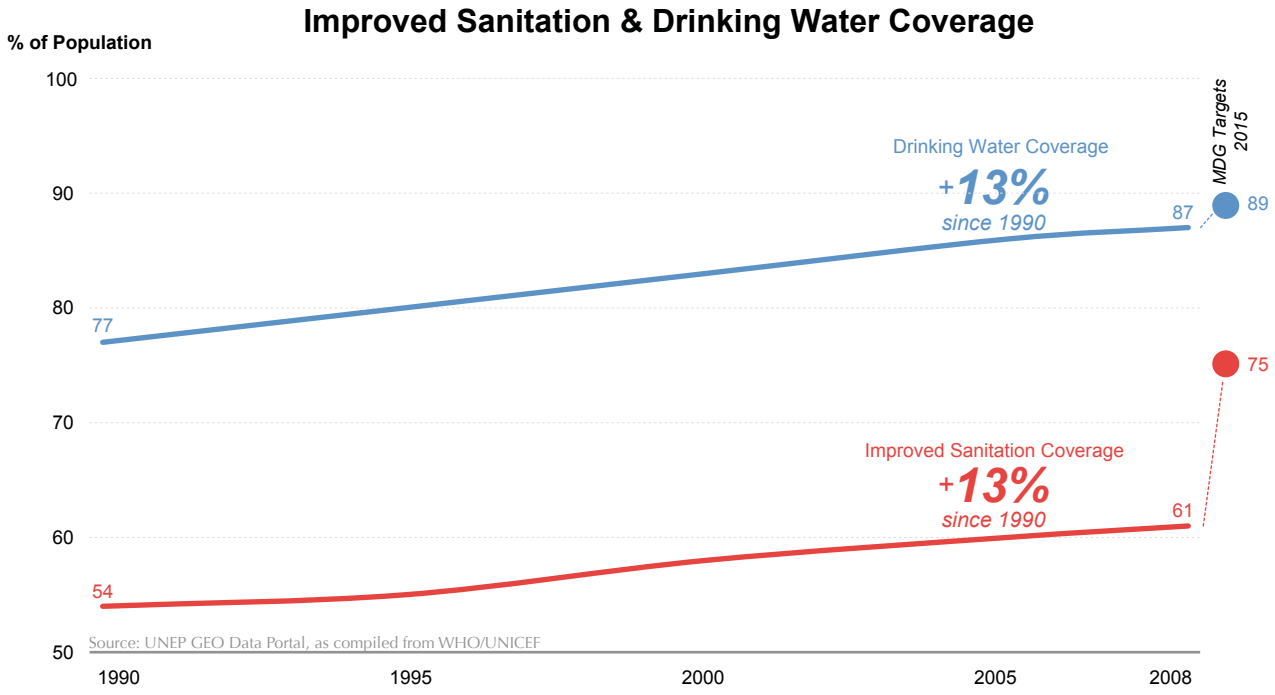
The Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC), the two largest forest certification bodies worldwide with slightly different approaches to management and certification, certify socially and environmentally responsible forestry. An impressive annual 20% growth rate of labeled forests indicates that both producers and consumers are actively influencing timber production. Nevertheless, in 2010 still only about 10% of the total forest extent was managed under FSC and PEFC practices.

Water



Daniel Diaz Nauto/Flickr.com

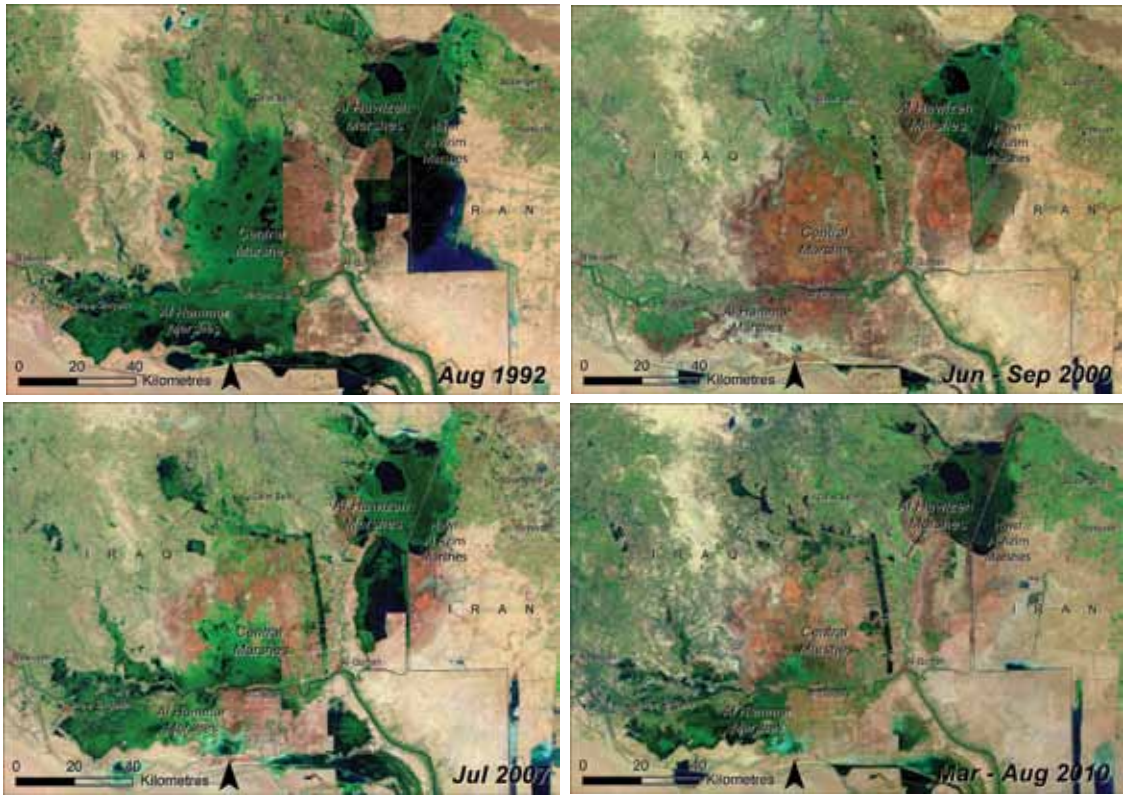
Drinking water coverage increased to 87%, but the world is far from meeting the sanitation target of 75%



Globally, improved sanitation coverage was just above the 60% mark in 2008, up from 54% in 1990, with over 2 500 million people still without access. Half of the people living in developing regions have no access to improved sanitation. In all regions, coverage in rural areas lags behind that of cities and towns. At the current rate of progress, the world will miss the MDG target of halving the proportion of people without access to improved sanitation by 2015. In fact, at the current rate of progress, it will take until 2049 to provide 75% of the global population with flush toilets and other forms of improved sanitation (UN 2011b).

However, the good news is that the world will meet or even exceed the MDG drinking water target by 2015 if the current trend continues. By that time, nearly 90% of the population in developing regions, up from 77% in 1990, will have gained access to improved sources of drinking water.

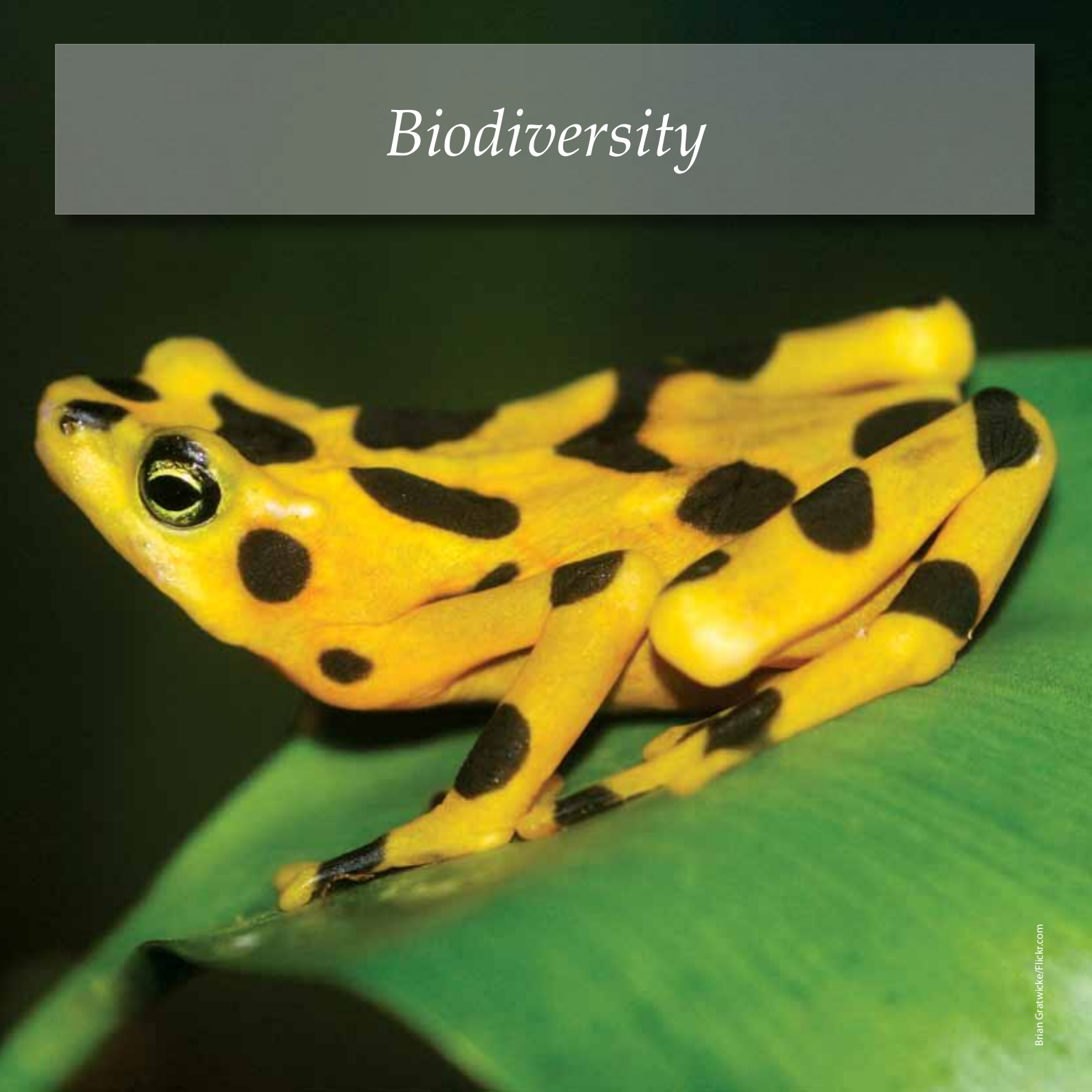
The Mesopotamian Marshlands, nearly destroyed in the 1990s, have been partially restored but remain at risk



Source: USGS; Visualization UNEP-GRID Sioux Falls

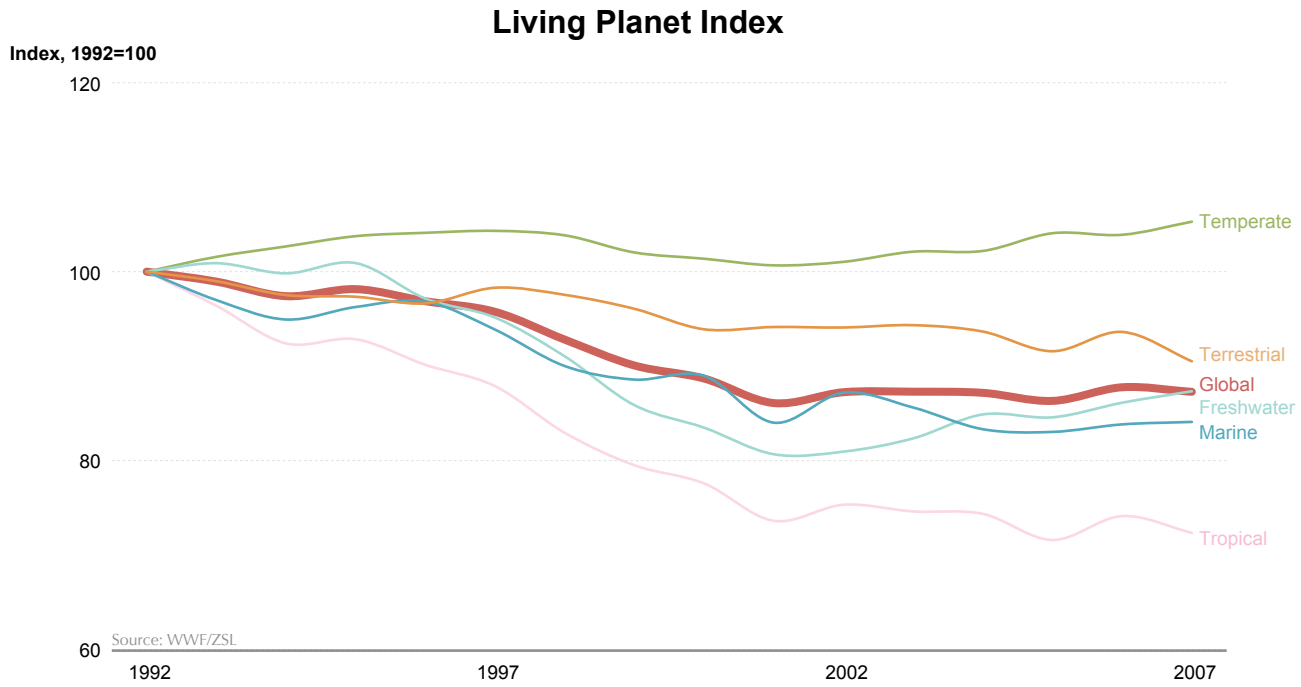
The Mesopotamian Marshlands are the largest wetland ecosystem in the Middle East (Partow 2001). Construction of numerous dams, water diversions and hydropower facilities on the Tigris and Euphrates Rivers over the past century and the deliberate draining of the marshes by the Iraqi regime in the early 1990s had almost destroyed the wetlands by 2000 (Aoki and Kugaprasatham 2009). Reflooding beginning in 2003 helped restore many ecosystem functions for a large portion of the marshes (Richardson and Hussain 2006). In 2008, the eastern Hawizeh marshes were designated as Iraq's first Ramsar Wetland Convention site and preparations are underway to inscribe the entire marshes as a joint cultural and natural site under the World Heritage Convention (Garsteck and Amr 2011). Ecosystem recovery, however, has been seriously undermined by a severe drought (2008-2010) and uncoordinated water-related developments in the Tigris-Euphrates basin (Garsteck and Amr 2011). The lack of a water sharing agreement between riparian countries and potential declines in Euphrates flows are a major threat to the wetlands' survival.

Biodiversity



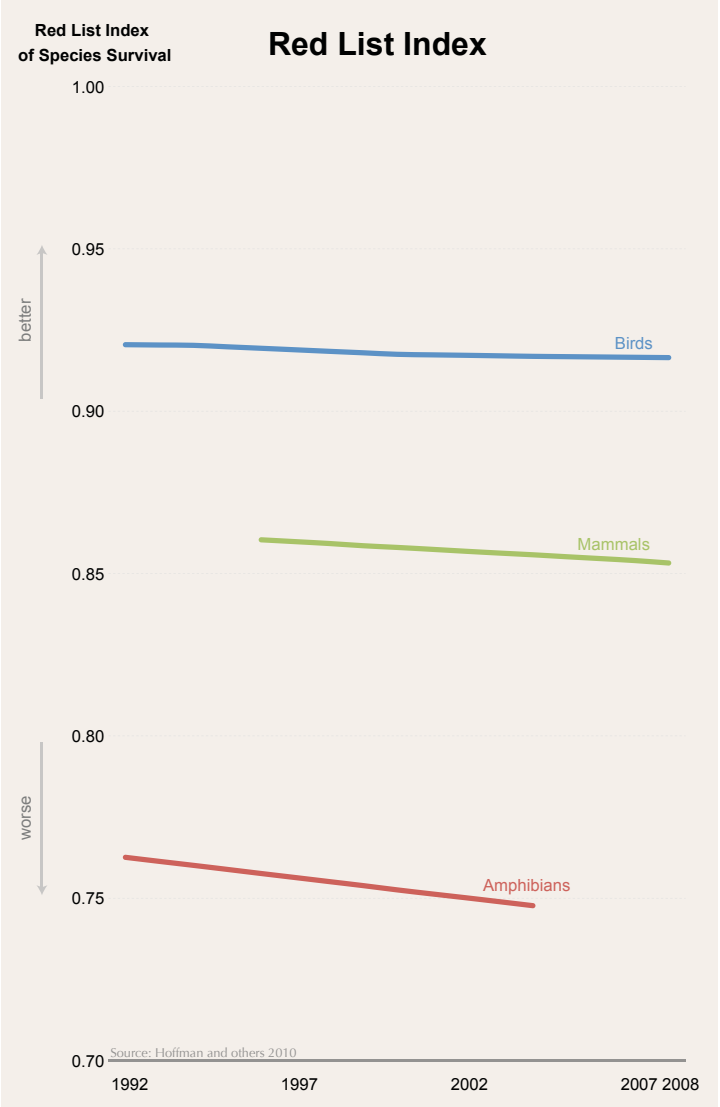
Brian Gratwicke/Flickr.com

The Living Planet Index has declined by 12% at the global level and by 30% in the tropics



The Living Planet Index reflects changes in the health of the earth's ecosystems. It is based on monitoring almost 8 000 populations of over 2 500 vertebrate species. In contrast to the temperate biome, which is somewhat stable (after hundreds of years of biodiversity losses), all other indices show various degrees of decline. Biodiversity in the tropics is dramatically declining, by 30% since 1992, indicating the ecosystem's severe degradation due to high deforestation rates of primary forest and transformation into agricultural land and pasture (WWF 2010).

Each year 52 vertebrate species move one Red List category closer to extinction

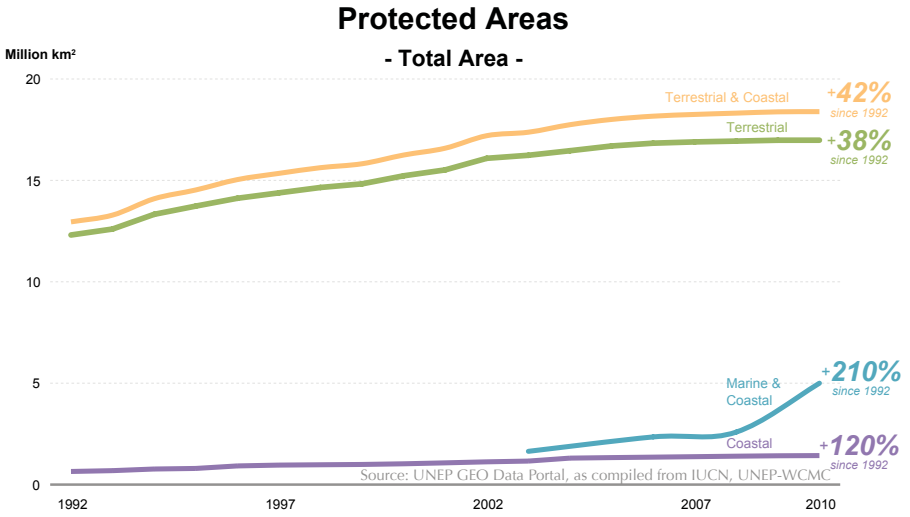


The Red List Index (RLI) measures the risk of extinction, divided into seven categories of extinction risk, as calculated from the IUCN Red List of Threatened Species. An RLI value of 1.0 equates to species not being expected to become extinct in the near future; a RLI value of zero indicates that all species have become 'Extinct' (Hoffman and others 2010). The graph shows that for those vertebrate groups where sufficient data are available, the trend is generally negative; i.e., that birds, mammals and amphibians are becoming increasingly threatened. The five principal pressures driving biodiversity loss are habitat change, overexploitation, pollution, invasive alien species and climate change (CBD 2010).

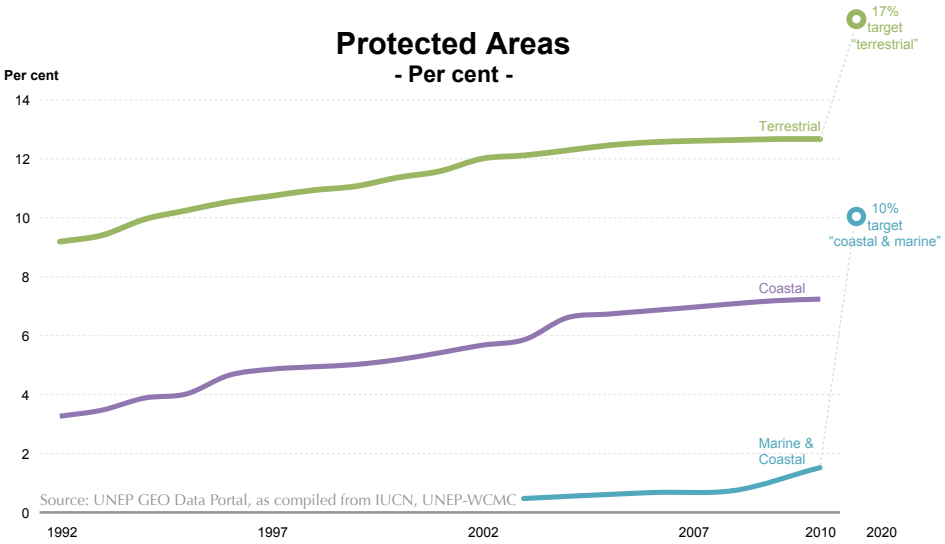
"Almost one-fifth of extant vertebrate species are classified as 'threatened', ranging from 13% of birds to 41% of amphibians" (Hoffman and others 2010). On average, 52 species per year moved one category closer to extinction from 1980 to 2008. Amphibians are more threatened than birds and mammals, and are declining at a faster rate. The status of other groups is likely to be similar if not worse; nearly a quarter of plant species are estimated to be threatened with extinction (CBD 2010), and in some plant groups over 60% of species are considered threatened (Hoffman and others 2010). As renowned ecologist Edward O. Wilson puts it: "One small step up the Red List is one giant leap towards extinction".

The highest numbers of threatened vertebrates can be observed in the tropical regions, with figures disproportionally higher than in other regions (Hoffman and others 2010).

13% of the world's land surface, 7% of its coastal waters and 1.4% of its oceans are protected

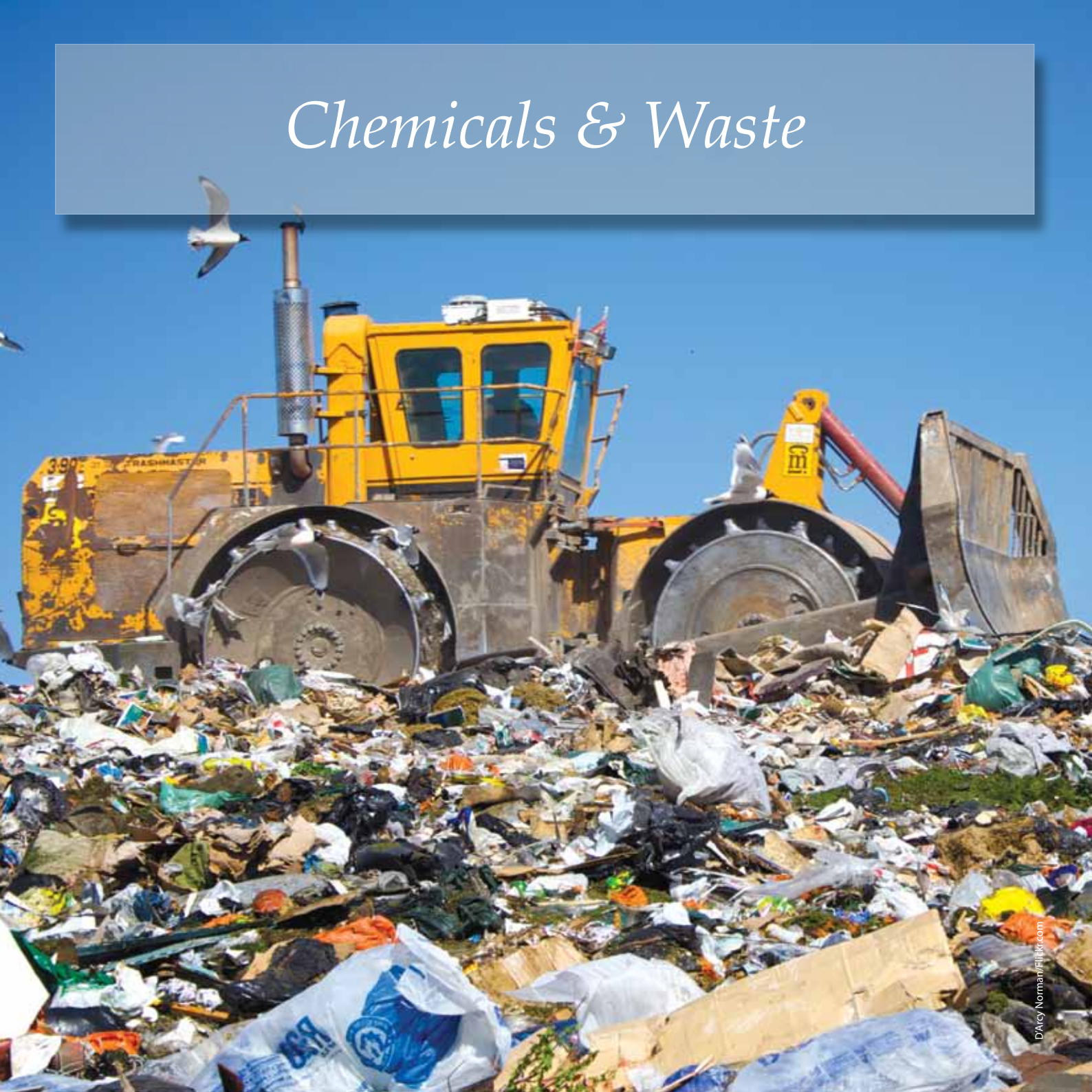


By 2010, there were over 148 000 protected areas in the world (IUCN 2011), covering almost 13% of the land area or 17 million square kilometres — an area as large as the Russian Federation. Marine protected areas, however, cover only around 7% of coastal waters (extending out to 12 nautical miles) and just above 1.4% of the oceans (IUCN/UNEP 2011, Toropova and others 2010). Likely due to time lags in reporting, the overall rate of increase in setting aside protected areas is levelling off in recent years, yet saw a total increase of 42% between 1992 and 2010.



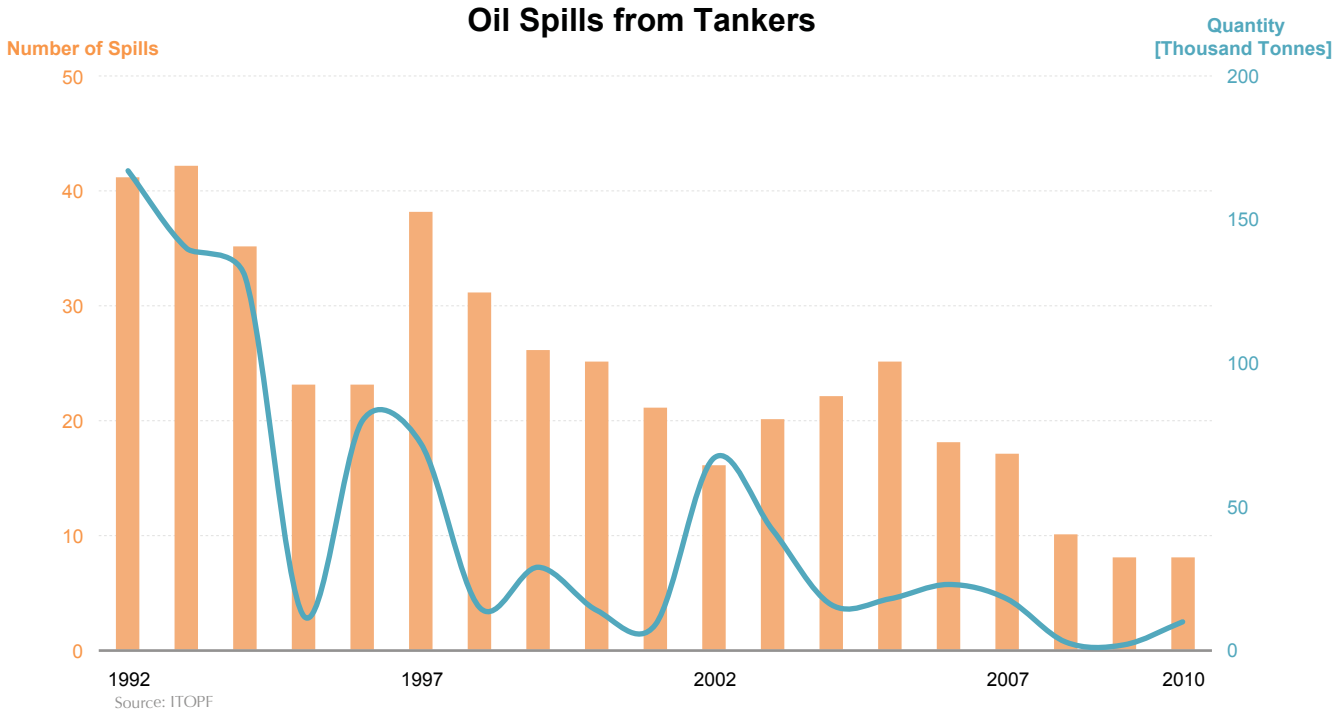
New targets for the extent of protected areas globally were set by governments in the Nagoya Protocol, negotiated in October 2010. Under a 20-point plan, they made commitments to protect 17% of terrestrial and inland waters, and 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, until 2020 (CBD 2010b).

Chemicals & Waste



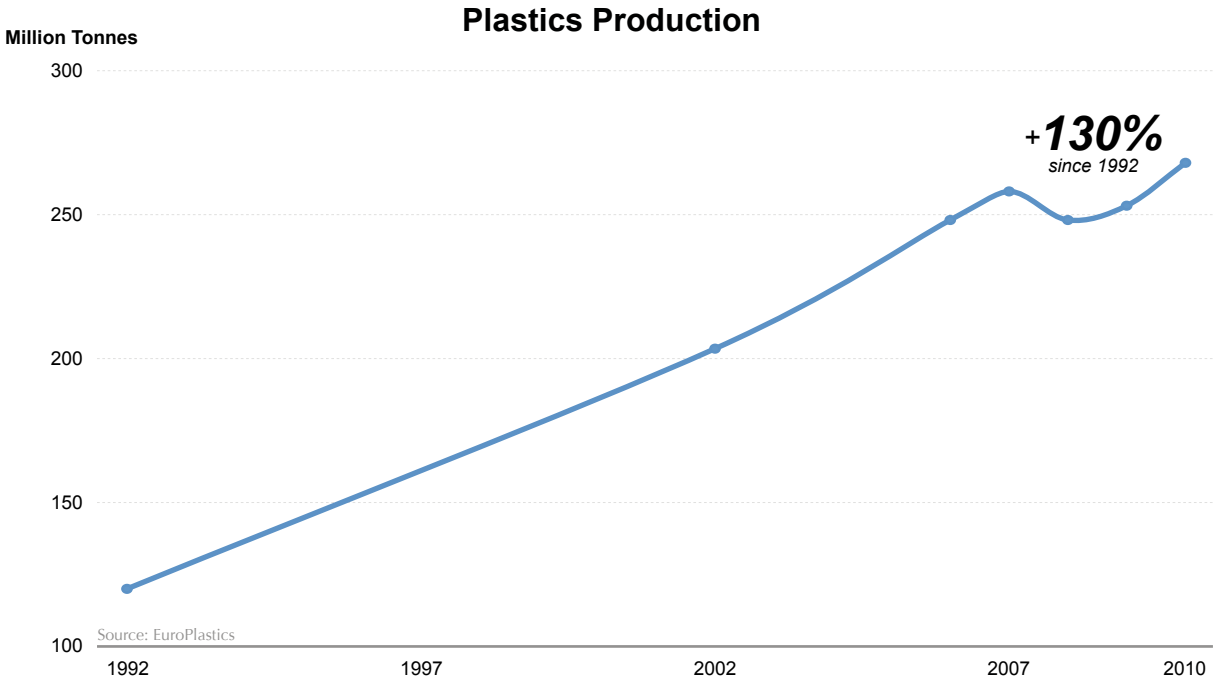
D'Arcy Norman/Flickr.com

Both the number of tanker oil spills recorded and the quantity of oil involved have declined in 20 years



The number as well as the total quantity of oil from accidental oil spills from tankers (including combined carriers and barges) have decreased significantly since 1992. Although the vast majority of spills are relatively small (i.e., less than seven tonnes) (ITOPF 2011), the accumulated amount is nearly one million tonnes since 1992. “Most spills from tankers result from routine operations such as loading, discharging and bunkering which normally occur in ports or at oil terminals” (ITOPF 2011).

Plastics decompose very slowly, creating a major long-term environmental impact



The amount of plastics* produced globally grew steadily from 116 million tonnes in 1992 to around 255 million tonnes in 2007, when the economic crisis led to a drop. But in 2010, a new record value of 265 million tonnes had already been reached. This total increase of 149 million tonnes in eighteen years equals a growth of around 130%, or 15% annually. The average use of plastic in developed regions reached around 100 kg per year per capita in 2005, whereas consumption in developing regions is only around 20 kg, with rapid increases foreseen in the next decade (UNEP 2011c).

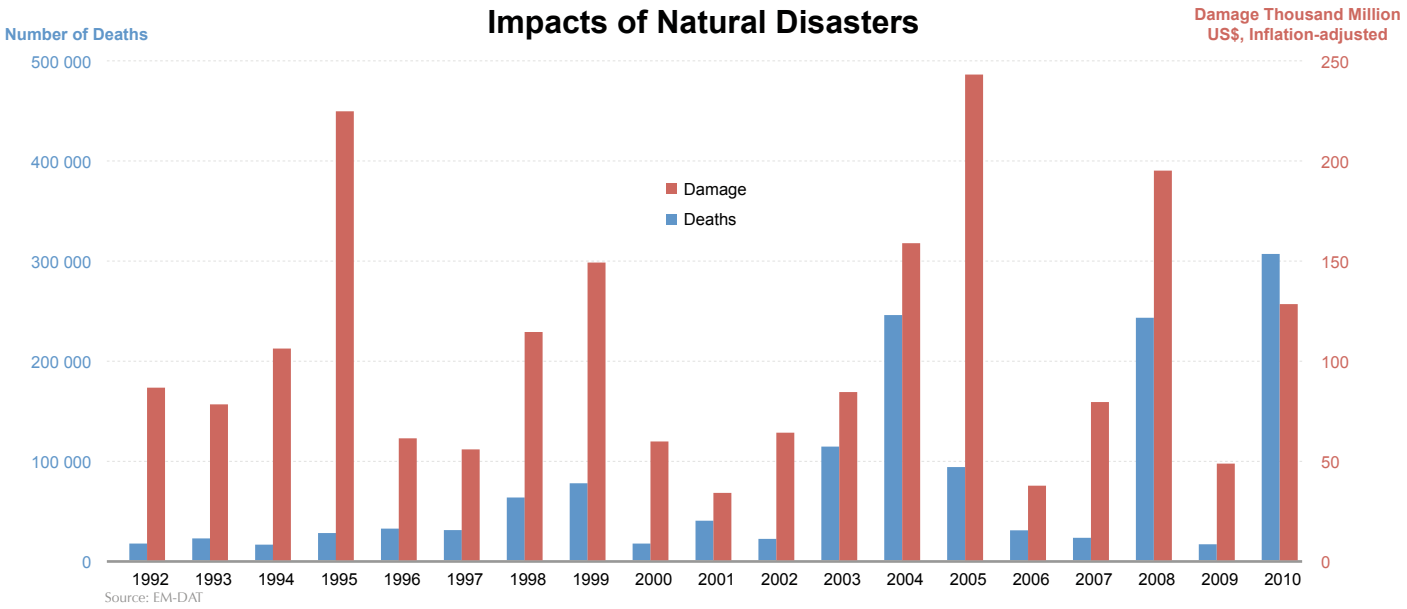
About 50% of plastic is used for single-use disposable applications, such as packaging, agricultural films and disposable consumer items (Hopewell and others 2009). Plastics debris in the ocean has become particularly notorious in recent years. Concentrated along shorelines or in huge, swirling open-sea gyres, such material threatens the lives of many marine organisms, especially seabirds and small mammals (UNEP 2011c).

**not including Polyethylene terephthalate (PET), Polyamide (PA) and polyacryl fibres*

Natural Hazards

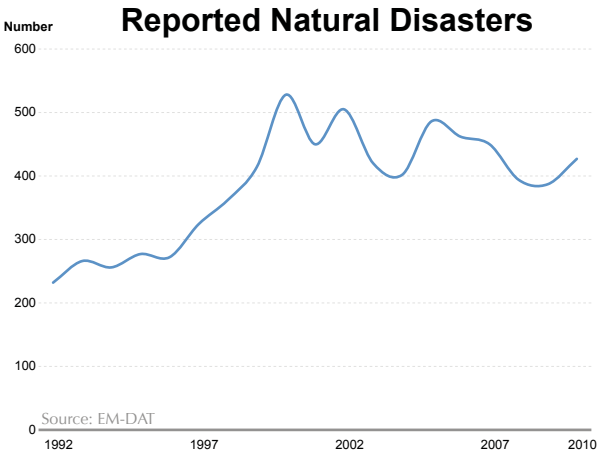
Warren Antiola/Flickr.com

Both human losses and economic damage from natural disasters show an upward trend



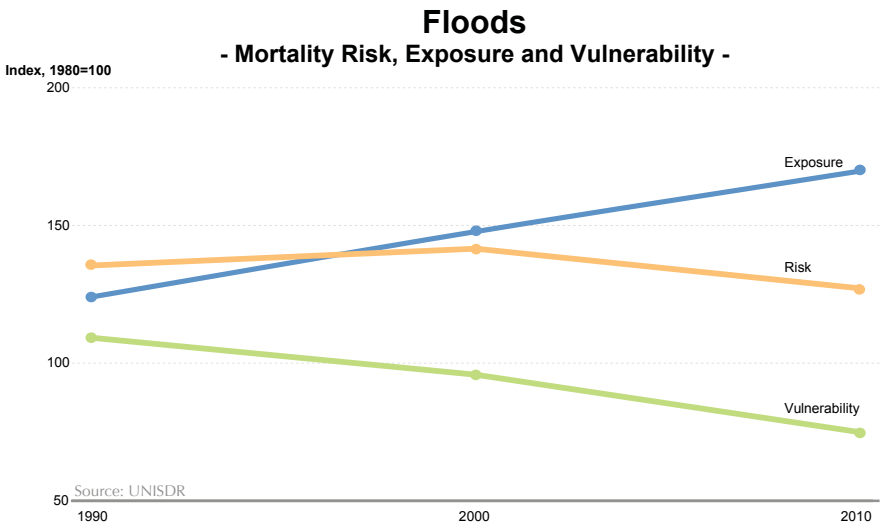
Although there is no clear indication that hazard occurrences (such as floods, droughts and hurricanes) have changed much in recent times (UN 2011c), the number of reported disasters has been increasing significantly. Indeed, "over the past two decades the number of reported natural disasters has doubled from around 200 to over 400 per year. In 2010, over 90 Per Cent of disaster displacement within countries was attributed to climate-related hazards" (NRC 2011).

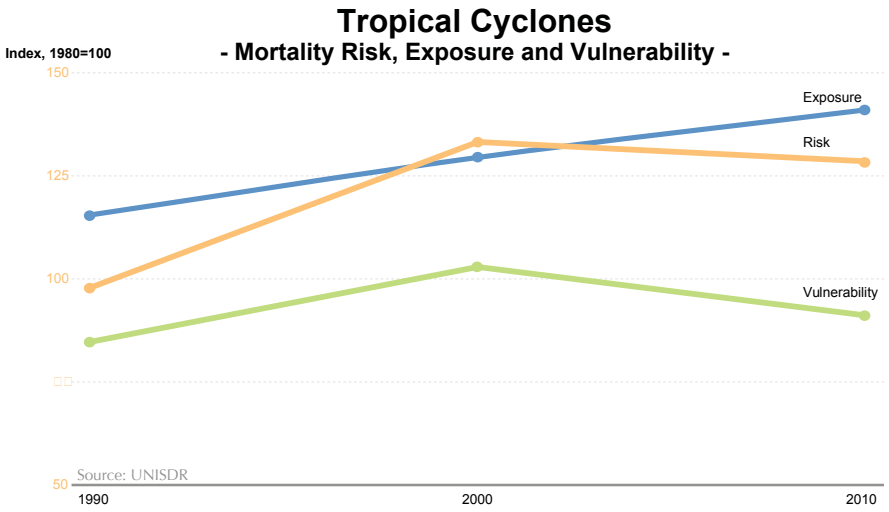
The risks are changing, mainly due to population increase, climate change and ecosystem degradation. The risks to humans and economic losses are increasing in absolute terms for all principal hazards, except for landslides, where the tendency appears to be stable. Relative risk, however, when measured as a proportion of population or GDP, is stable, and in the case of mortality, may even be declining (UN 2011c).



Increased exposure to natural disasters has resulted from more people living in hazard-prone areas

To quantify trends in disaster risk, one has to consider all three components of risk: hazard, exposure and vulnerability.* In all regions, human exposure is increasing mainly due to demographical factors: an increasing population with more people moving to hazard-prone areas. In most regions, vulnerability is decreasing, thanks to factors such as improved governance and better urban and land planning. At a global level, this decline in vulnerability compensates for the increase in exposure, thus stabilising or even decreasing the risk. However, this global trend is mostly related to a significant decline in vulnerability in China. If China were removed from the analysis, the risk would still be increasing due to a significant rise in exposure. The global trend hides large regional differences (UN 2011c).





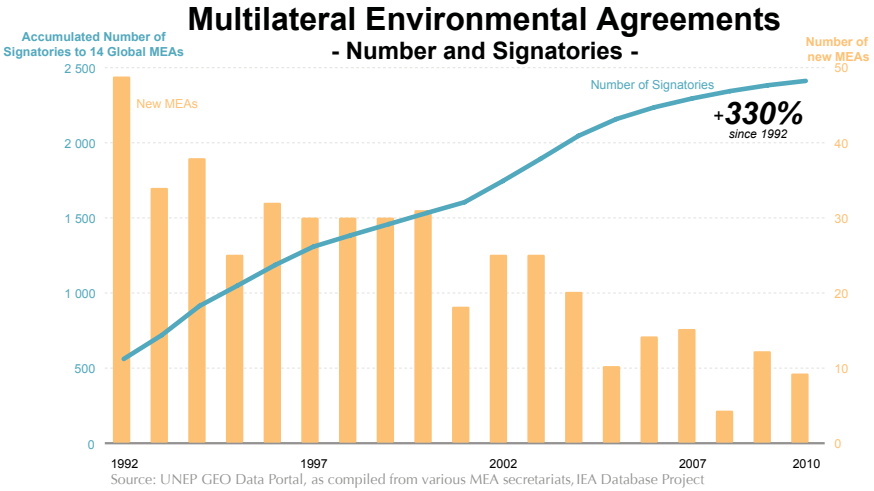
Note:

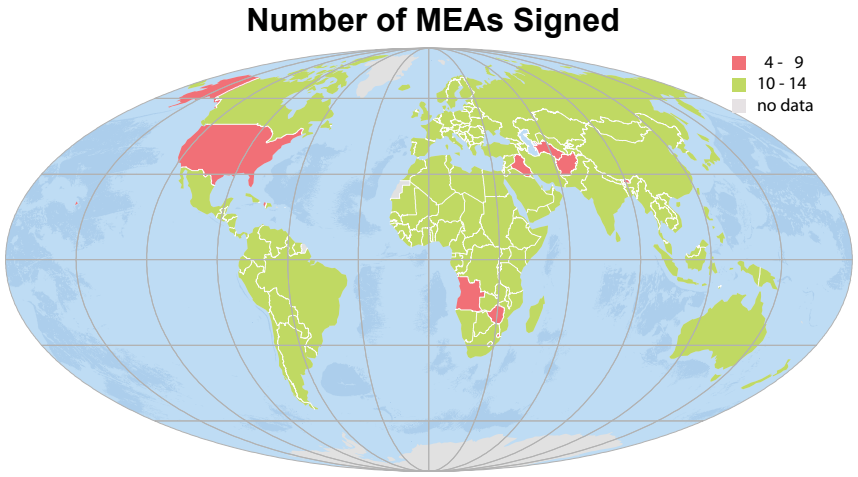
**Risk is the probability of losses (mortality and economic losses) from a specific hazard, according to its intensity, location and time period. Risk has three components: the hazard (probability of a hazardous event occurring at a specific intensity); exposure (number of people or assets) located in hazard-prone areas; and vulnerability (percentage of losses, should a hazardous event occur). A disaster can occur when a vulnerable population is hit by a hazardous event.*

Governance

ohn & Mel Kots/Flickr.com

Numerous international agreements were negotiated in the two decades following the Rio Conference in 1992





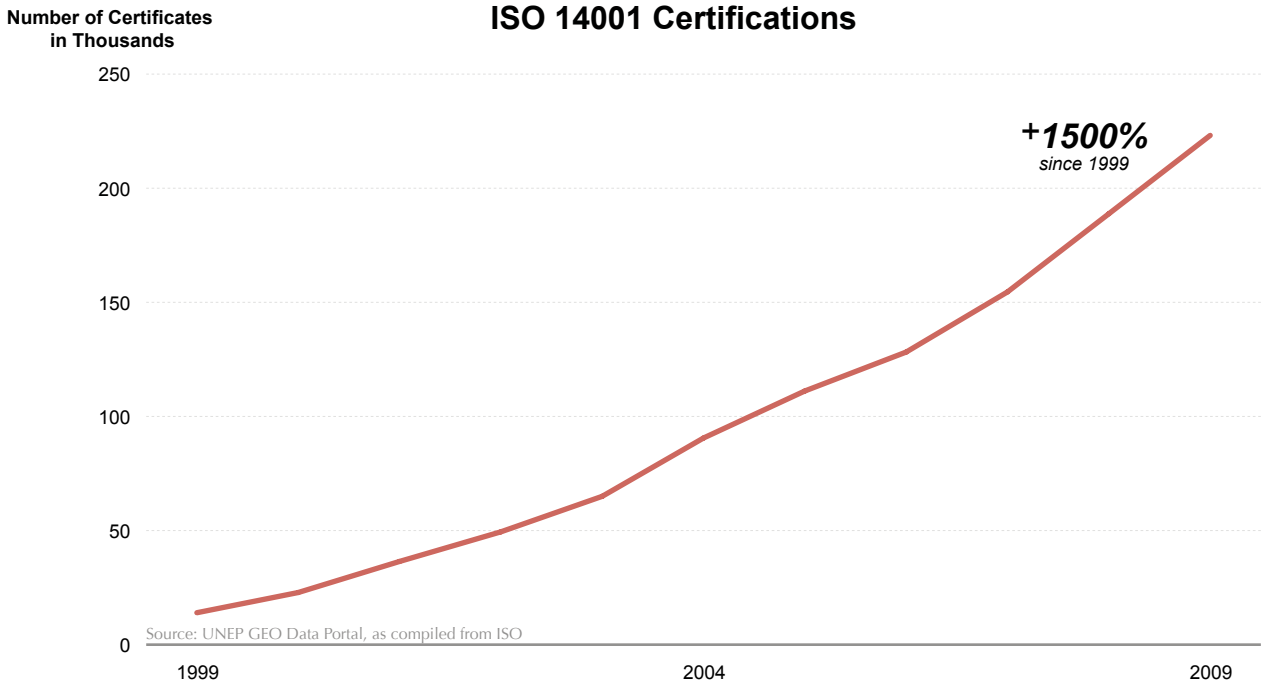
Source: UNEP GEO Data Portal, as compiled from various MEA secretariats

The steady increase of countries signing Multilateral Environmental Agreements (MEAs) such as the Convention on Biological Diversity, the Ramsar Convention or the Kyoto Protocol signifies rising political recognition of environmental issues. The graph includes 14 MEAs* and shows the total number of signatories for those 14 taken together (thus, if all 14 MEAs were signed by all 196 countries, the number would be 14 x 196 = 2744). Altogether, the number of newly established global and regional MEAs is steadily decreasing, demonstrating that legal frameworks are in place to address many important issues. Neither establishing or signing an agreement or convention, however, means that the related environmental problems have been solved.

Most countries have signed at least nine out of the 14 major MEAs; 60 countries have signed all of them. Only a few countries or territories or countries in conflict have not signed the majority of these MEAs.

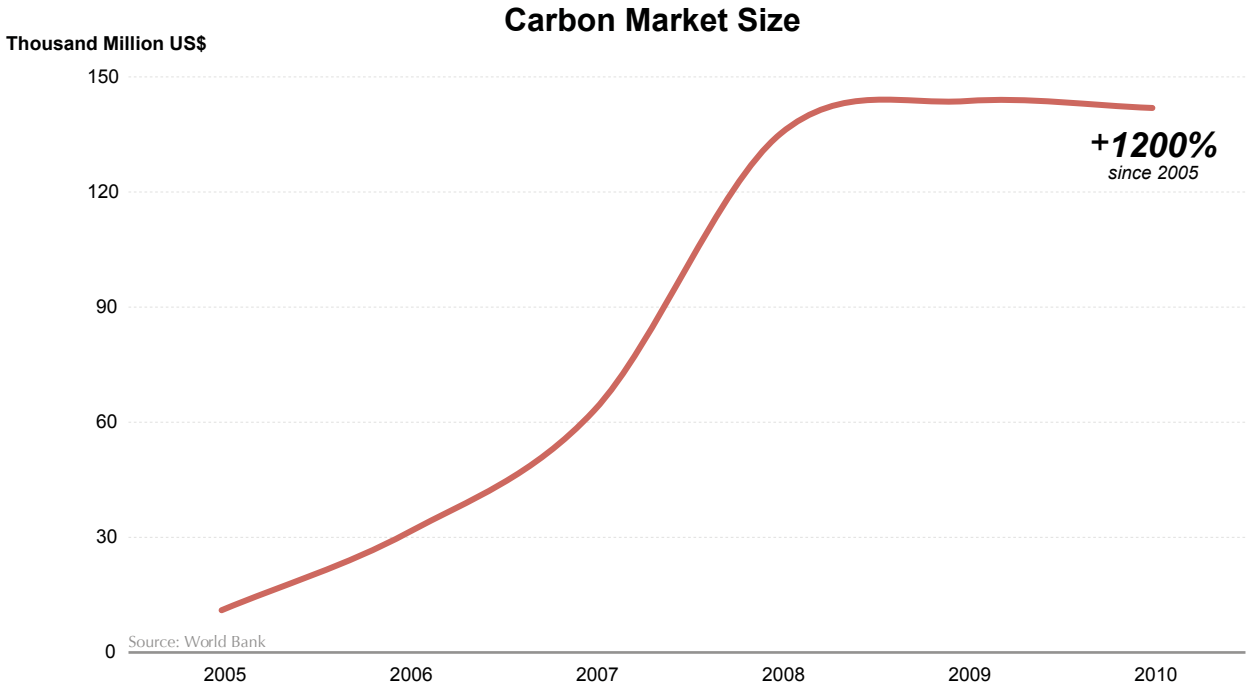
**Basel Convention, Cartagena Convention, Convention on Biological Diversity, Convention on International Trade in Endangered Species of Wild Fauna and Flora, Convention on Migratory Species, World Heritage Convention, Kyoto Protocol, Secretariat for the Vienna Convention and for the Montreal Protocol, Ramsar Convention, Rotterdam Convention, Stockholm Convention, Convention to Combat Desertification, Convention on the Law of the Sea, Framework Convention on Climate Change*

The private sector is increasingly adopting environmental management standards



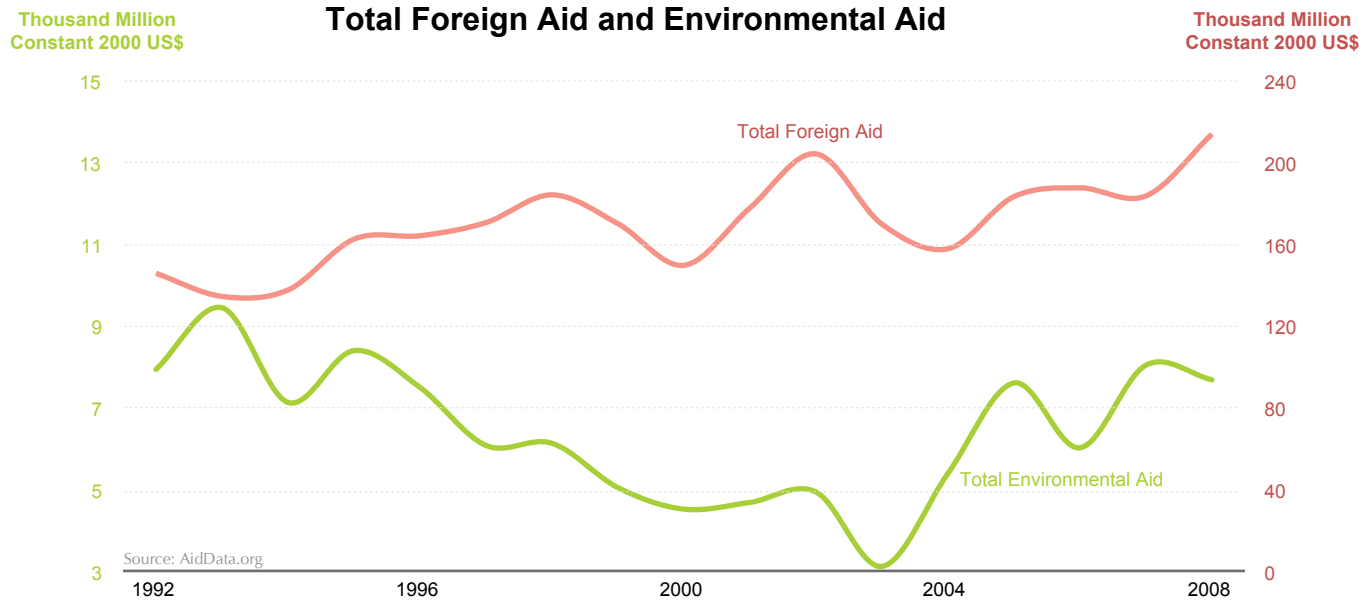
The International Organization for Standardization (ISO) has developed over 18 500 international standards on a variety of issues. The ISO 14000 standard is primarily concerned with "environmental management". In effect, it codifies what practices and standards companies should follow to minimize harmful impacts on the environment caused by their activities and to achieve continual improvement of environmental performance. With annual growth rates of over 30% and 230 000 certificates granted in 2009, this development demonstrates a growing number of companies' commitment to adopting environmental management systems.

Trading in CO_2 emissions has grown rapidly, but in 2010 still only equalled 1/500 of the global GDP



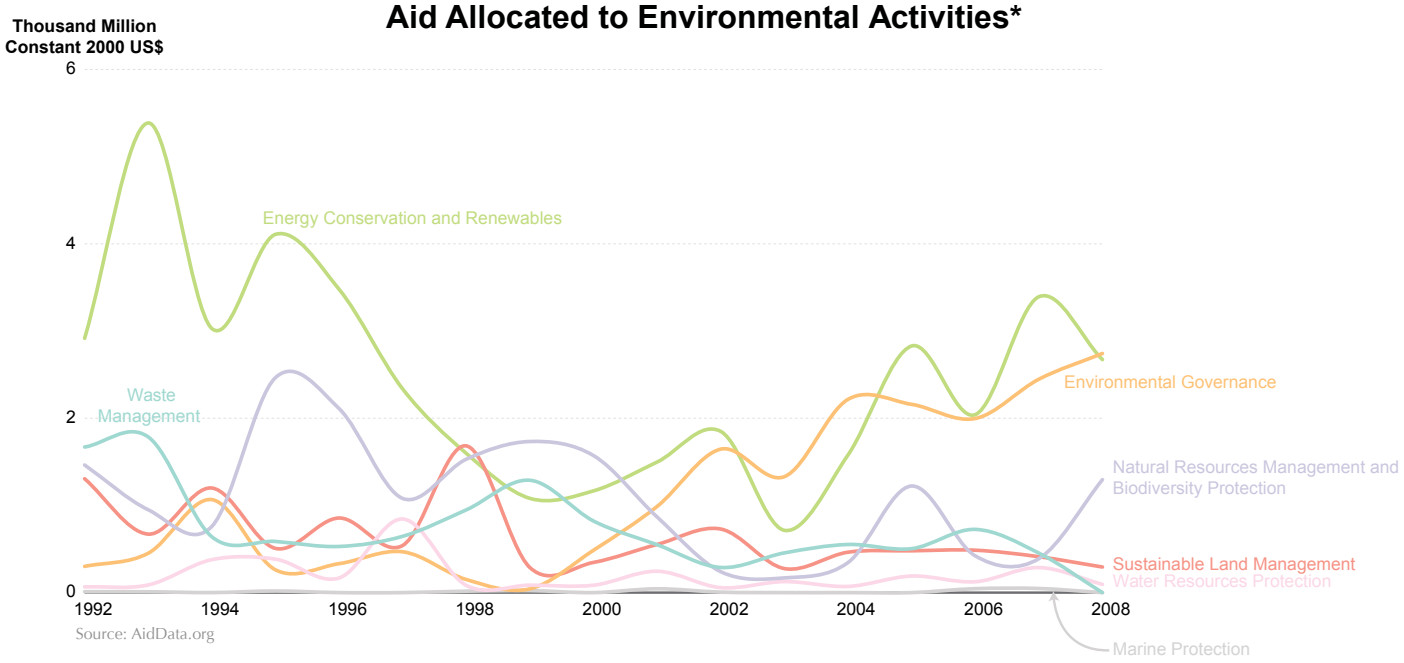
Following five consecutive years of robust growth, the carbon market reached a three-year plateau between 2008-2010 with a value of around US$ 140 thousand million (World Bank 2011), which equals about 1/500 of global GDP. The rise on global market trends since 2005 — the first year of the Kyoto protocol — is mostly due to increase in transactions volume. Carbon prices have not been spared by the economic downturn. In less than a year, prices fell from € 30 to € 8 on the European market (World Bank 2010). In addition, due to a lack of clarity about regulations in a post-Kyoto regime after 2012, some of the implemented mechanisms are today suffering rather large losses in value. Out of the total amount of allowances, the EU Emissions Trading System launched in 2005 accounts for 84% to 97% of the global carbon market value in 2010 (World Bank 2011).

Funding to support the environment has not kept up with the increase in total foreign aid since 1992



Total foreign aid from bilateral and multilateral donors increased overall during the last two decades, starting at US$ 145 thousand million in 1992 and reaching close to US$ 215 thousand million in 2008. Funding dedicated to environmental aid purposes, however, fluctuated more widely and declined overall until 2003, before rising dramatically within the next few years. By 2008, the share of environmental aid from total foreign aid dropped again to less than 4%, down from 5.5-7.0% in 1992-1993.

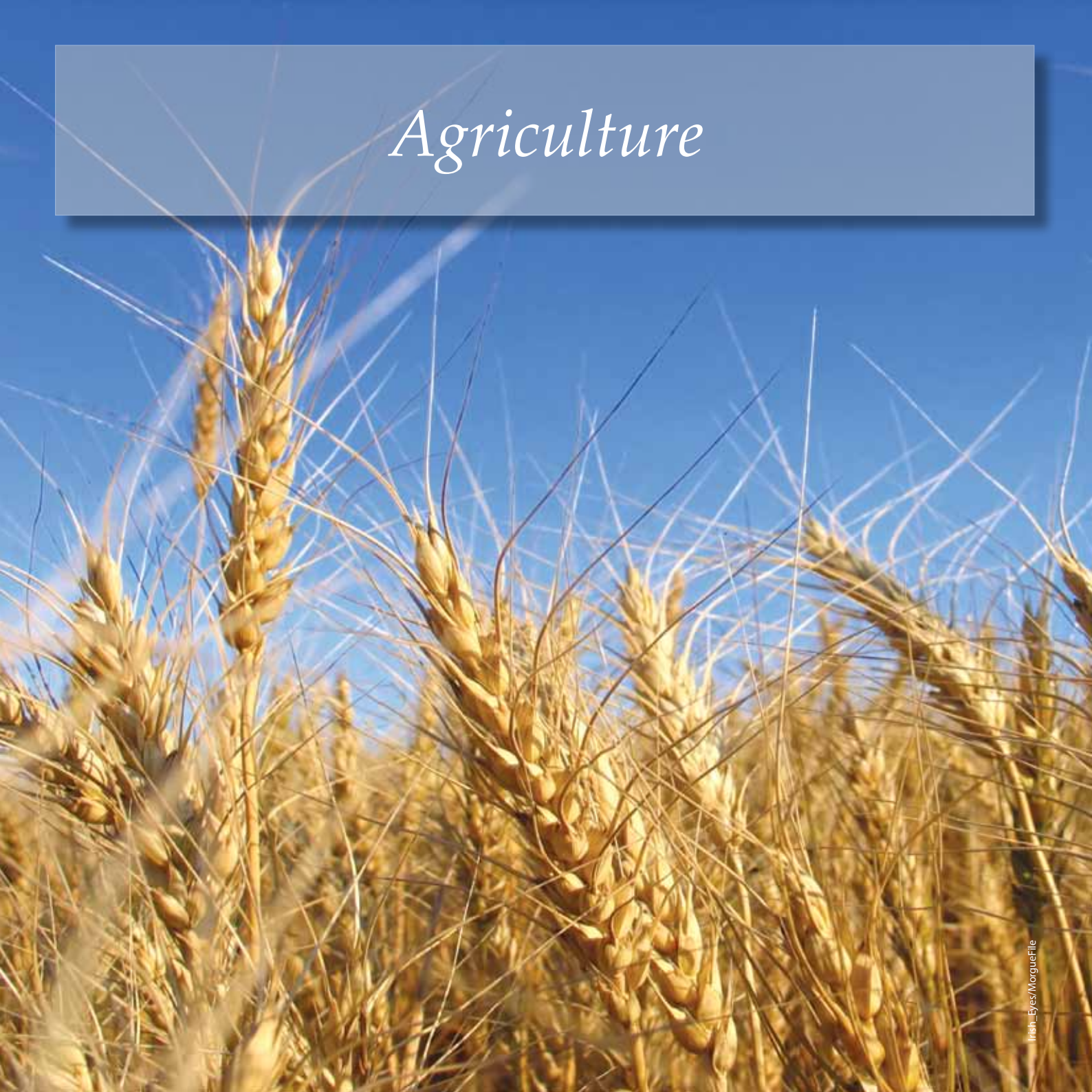
Environmental governance and energy initiatives receive the largest share of environmental aid



When one examines the amounts of aid received from bilateral and multilateral donors by different environmental sectors, it becomes clear that large differences exist. A major share of environmental aid funds is dedicated to energy conservation and to the development and implementation of environmental policies (Governance). This graph shows that from 1992-1997, aid to energy conservation was distinctly larger than any other sector; however, by 2008 it was being surpassed by the Governance sector. Other areas such as biodiversity protection, land management, water resources and marine protection receive far smaller amounts.

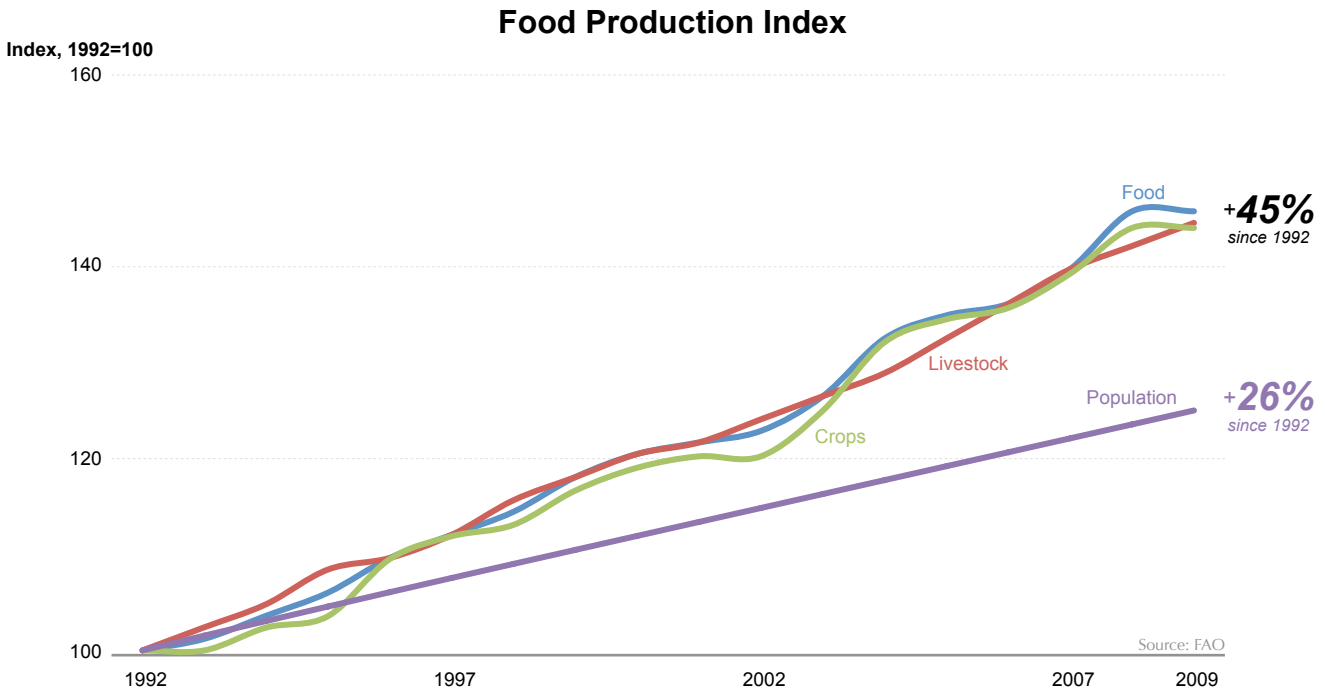
**Note: see Annex*

Agriculture



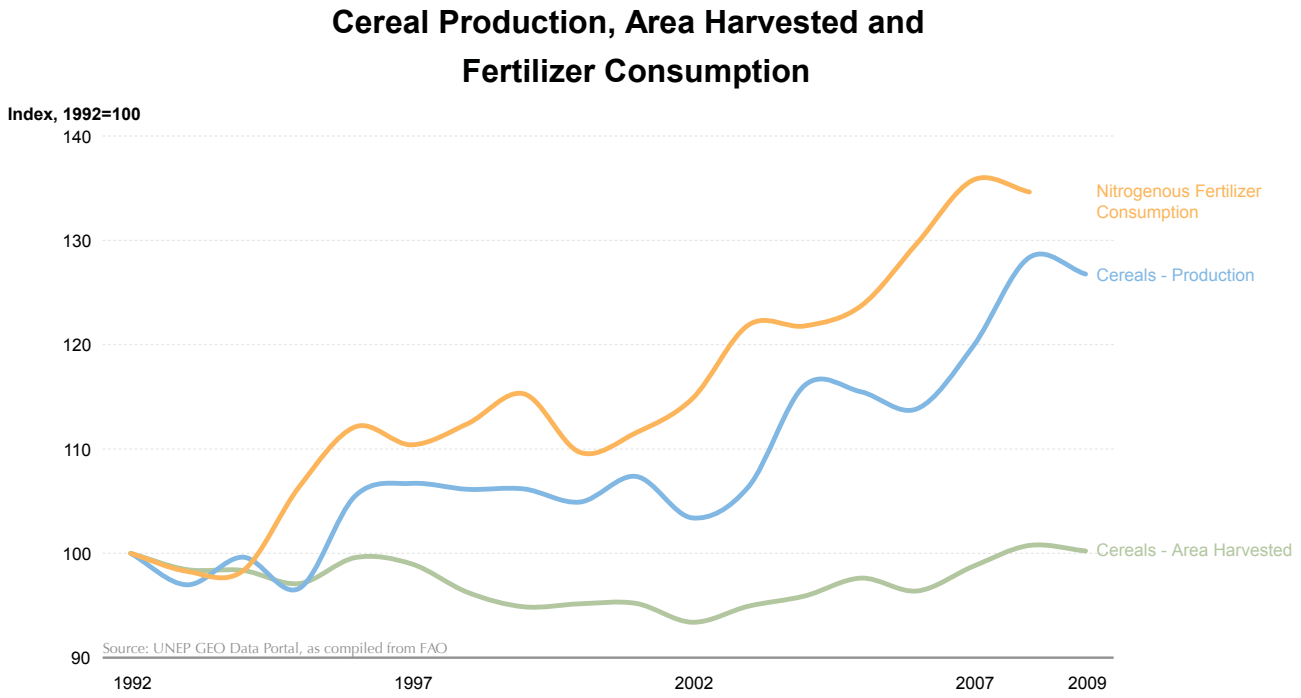
Irish_Eyes/MorgueFile

Food production has continued to rise steadily at a pace exceeding population growth



Global food production has continued to keep pace with and even exceed population growth over the past two decades. Gains in production have come primarily from improved yields and to a lesser extent from new agricultural land. However, despite solid gains made in food security, millions in developing countries still face chronic hunger and malnutrition. More significant gains in agricultural production will be necessary to meet continued global population growth. These will require expanding farm land and using more intensive production techniques. Such practices have known negative impacts on the environment, including loss of biodiversity and pollution from nitrogenous fertilizers and other agricultural chemicals. A more sustainable solution, as highlighted by the 'Special Rapporteur of the UN on the Right to Food', is to upscale agroecology, a method of creating beneficial interactions and synergies among the components of the agroecosystem (UN 2010b).

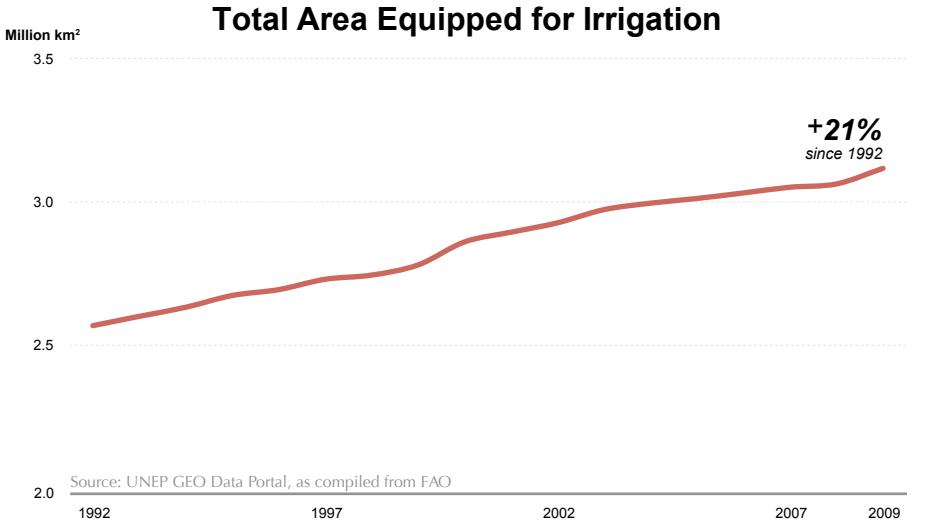
Higher agricultural yields depend heavily on the use of fertilizers

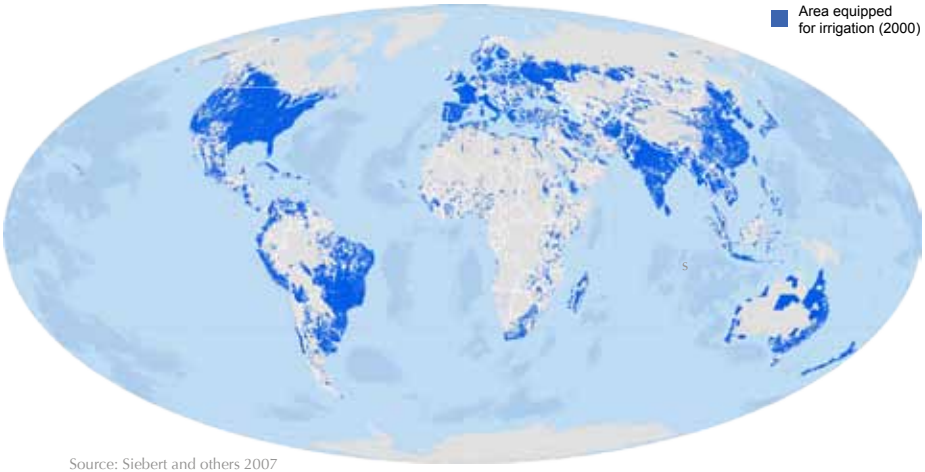


The increasing amounts of cereal crops being produced are only marginally linked to the total area under cultivation. Their increase is almost exclusively dependent on intensification, where the use of fertilizers plays a major role (UNEP 2011). The heavy dependence on machines and materials increases energy usage and leads to the fact that it takes an average of seven to ten calories of input energy (i.e., mostly fossil fuels) to produce one calorie of food (Heller and Keoleian 2000, Pimentel and Pimentel 1996).

Nitrogenous fertilizers, the use of which grew by around 1 500 thousand tonnes per year, supply plant nutrients and enrich soil fertility, but can lead to eutrophication of inland and marine waters, and increase the release of very potent greenhouse gases, such as N_2O.

While increasing irrigation infrastructure can raise crop yields, it puts further pressure on freshwater availability

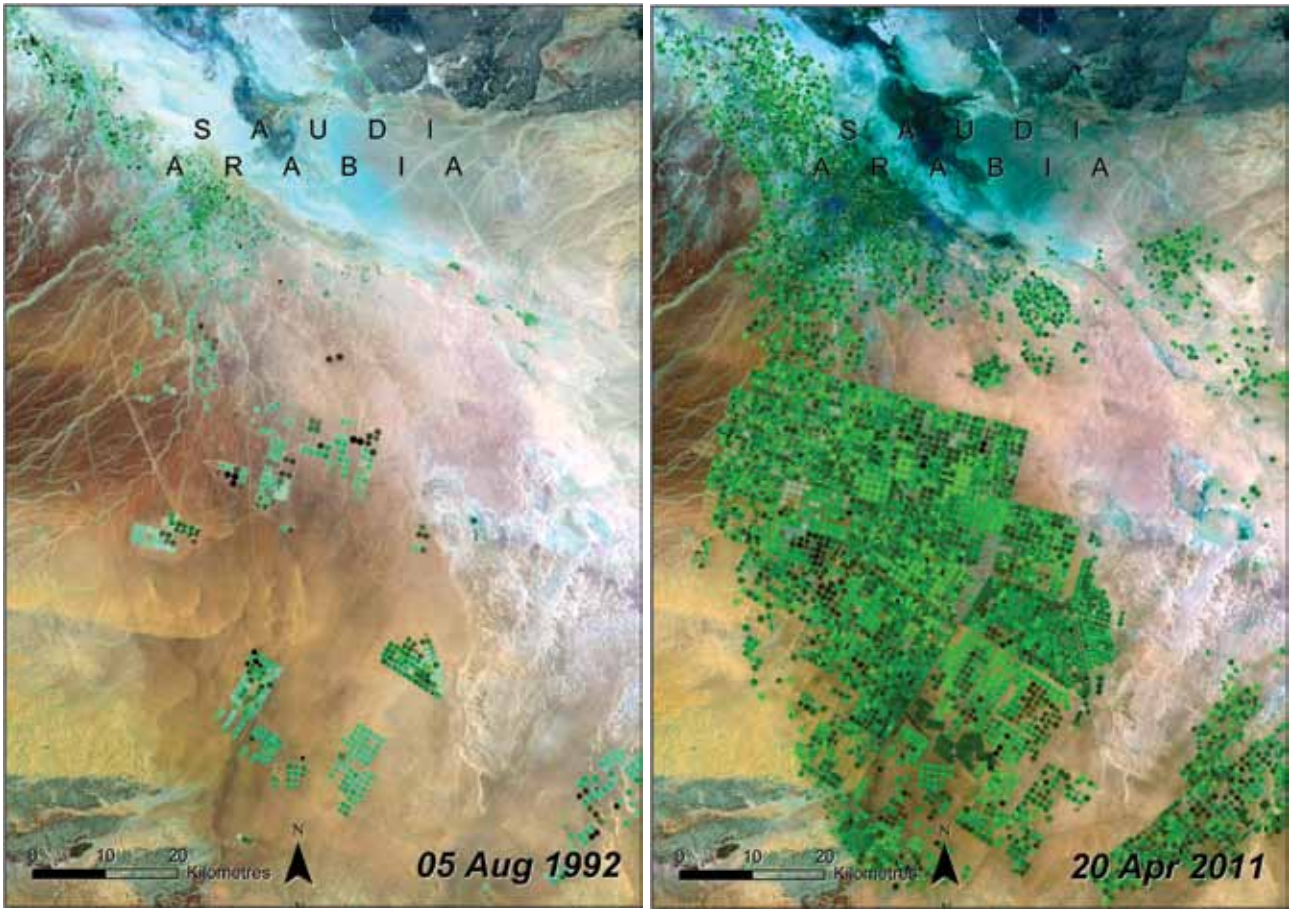




Source: Siebert and others 2007

Areas equipped for irrigation have expanded steadily (21% since 1992), providing improved food security and productivity in many water-constrained environments. However, irrigation accounts for approximately 70% of total freshwater withdrawals worldwide (UNESCO 2001) and is seen as one of the principal factors in an increasing state of water scarcity. Globally, there is adequate potential for expanding irrigation to help meet production needs for a growing population. However, many of the regions where irrigation is likely to expand are subject to freshwater and/or land scarcity. Irrigation expansion into sensitive ecosystems may lead to significant losses of natural habitat. Conversely, intensification of agriculture through irrigation can reduce the footprint of agriculture, sparing valuable natural areas. There is a strong need in general to increase water use efficiency under irrigated agriculture regimes.

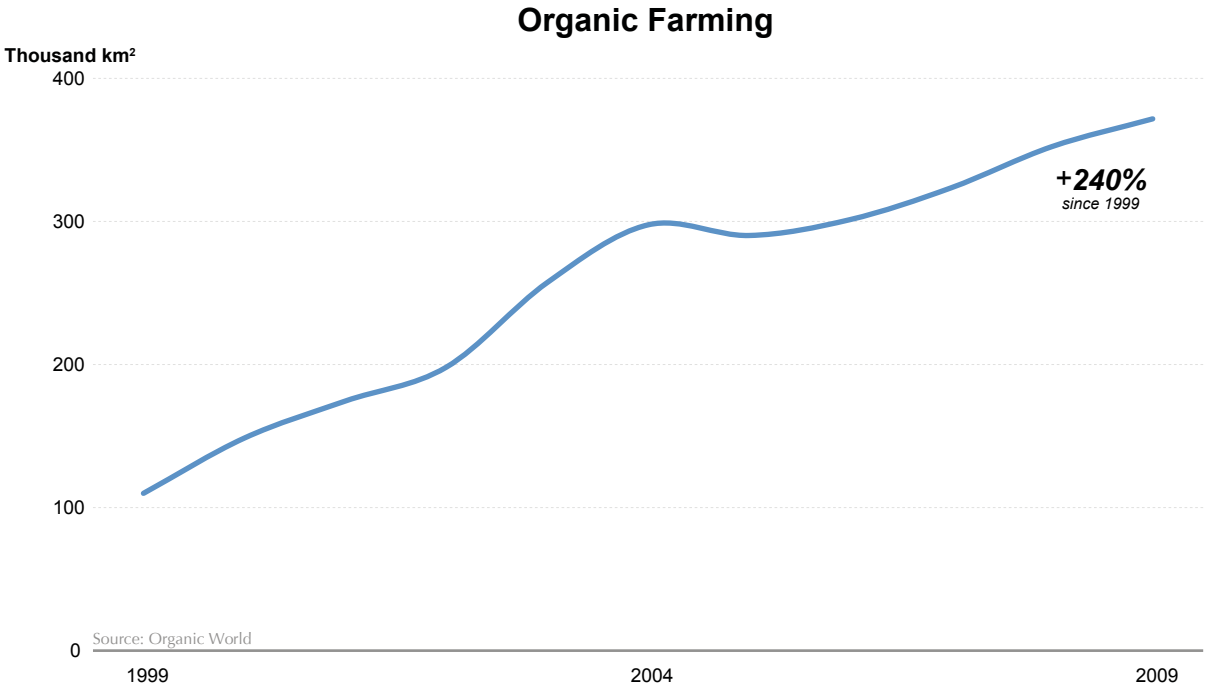
Enormous irrigation projects using fossil water turned Saudi Arabia into an exporter of food



Source: USGS; Visualization UNEP-GRID Sioux Falls

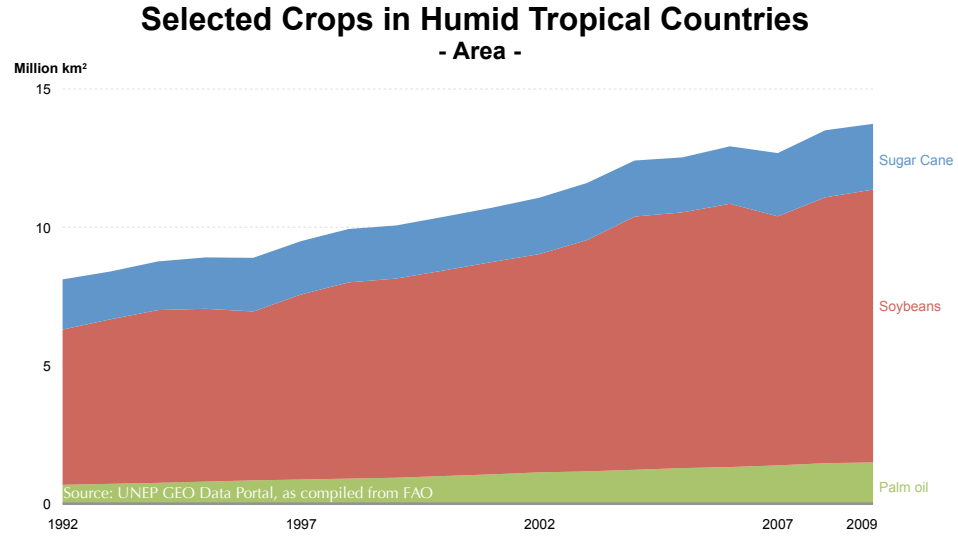
Rich in oil but lacking abundant renewable water resources, Saudi Arabia used oil revenues to develop domestic agriculture based on groundwater from non-renewable aquifers (Elhadj 2006). Subsidies, direct and indirect, led to astonishing growth in agricultural output (Royal Embassy of Saudi Arabia n.d.). Large center-pivot irrigation projects such as the one above at Wadi As-Sirhan appeared in the vast Saudi desert. However, by one calculation the cost of wheat produced reached around US$ 500 per tonne, several times the cost of imported wheat (Elhadj 2006). In 2008, the Saudi government announced plans to phase out wheat production by 2016 (Gulfnews 23 Apr. 2009).

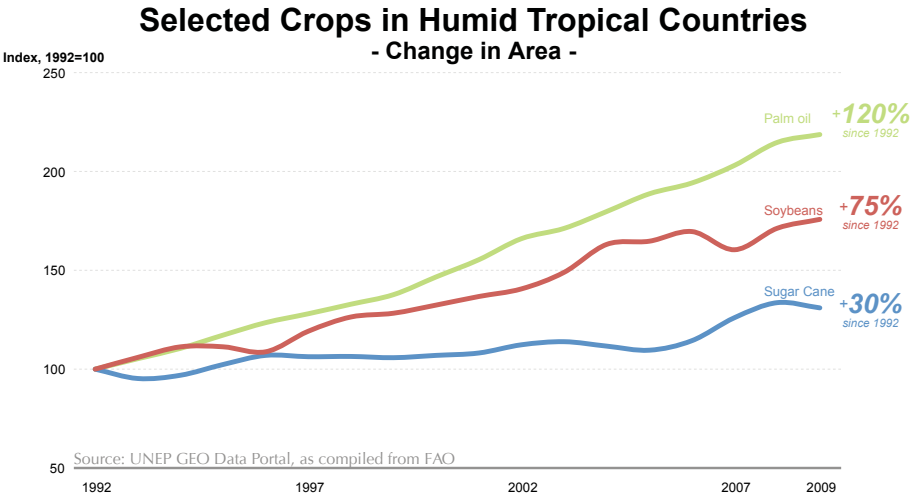
Land area used for organic farming is growing at an annual rate of nearly 13%



Organic farming is a form of agriculture that excludes or strictly limits the use of chemical fertilizers and pesticides, and builds on integrating crops and livestock, diversifying species and recycling nutrients on the farm, among other practices that favour natural processes (UN 2010b). It has expanded significantly from a very low baseline of around 110 000 km² in 1999, to covering an area of over 370 000 km² in 2009 (an increase of nearly 240%), an area that equals the size of a country such as Japan or Germany. Nevertheless, the percentage of agricultural land managed under certified ecological practices is still less than 1% globally.

Three crops have expanded dramatically in the tropics, often replacing primary forests

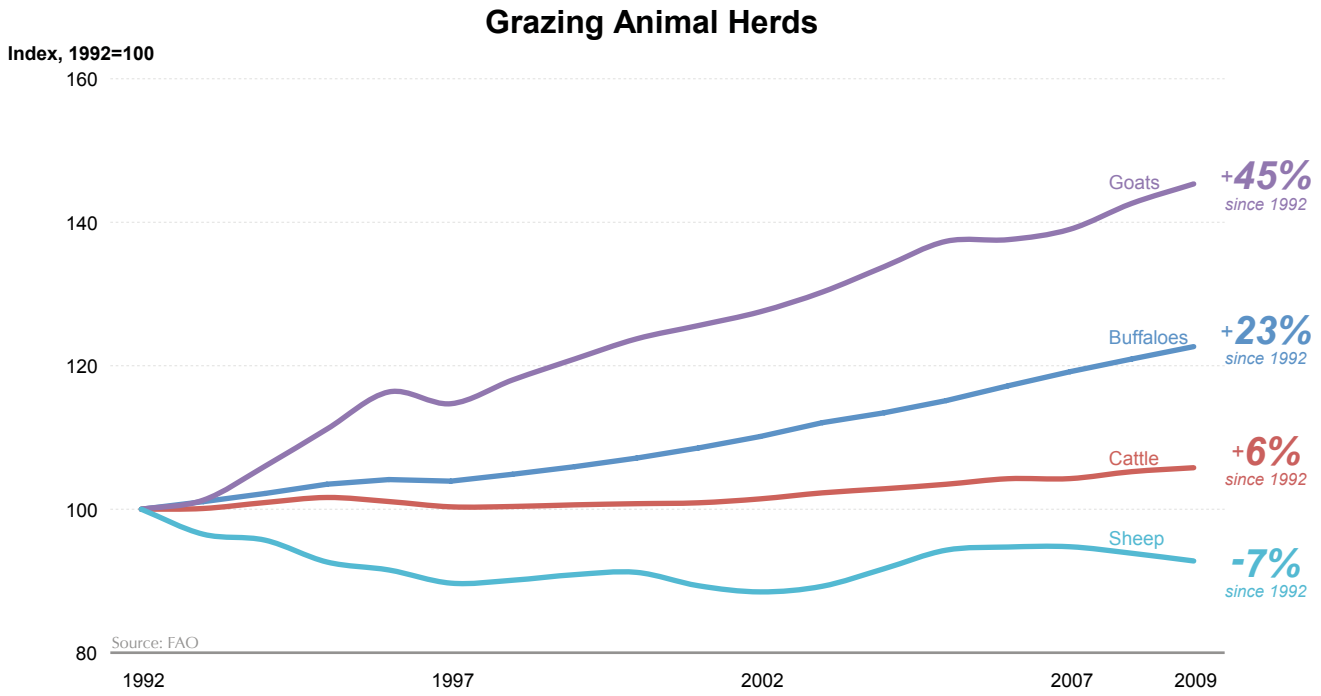




Sugar cane, soybeans, and palm oil are cultivated on a massive scale in the tropics; their area grew from just above 8 million km² in 1992 to nearly 14 million km² in 2009, a nearly 75% increase. Oil palm plantations showed the largest increase of 120% between 1992 and 2009, followed by soybeans (75%) and sugar cane (30%). However, soybean plantations occupy the largest area and also show the highest absolute growth, expanding from 6 250 thousand km² in 1992 to nearly 10 000 thousand km² in 2009.

These crops are largely being raised for the production of ethanol (sugar cane), export for livestock fodder (soybeans) and ingredients for food and drug products or other biofuel production (palm oil). In many or most cases they are grown on industrial-scale farms established by the clear-cutting or burning of vast areas of tropical forest (ITTO 2011, UCSUSA 2011, FAO 2006). Soybeans and sugarcane have been powerful drivers of forest loss in South America, while palm oil is widely grown in Indonesia. The rapid losses of these forests are among the most dramatic land-use changes in human history.

Ever-increasing numbers of grazing animals degrade already impoverished grasslands

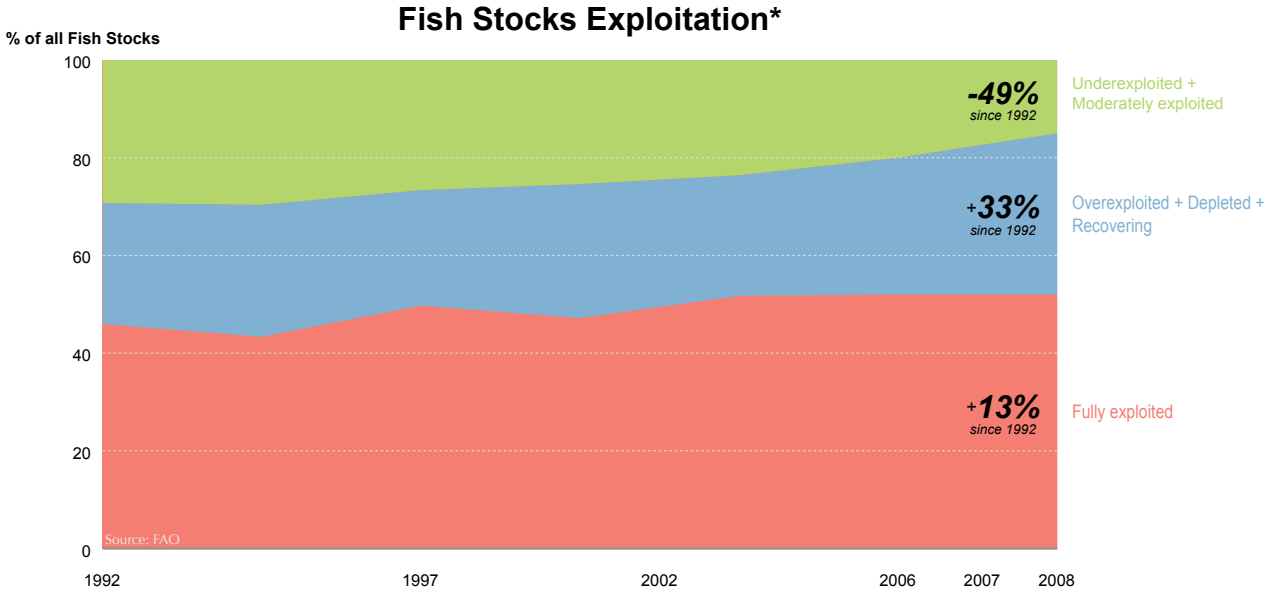


The numbers of grazing animals (other than sheep) have surged over the last 20 years. The number of cattle and buffaloes has increased by 6% and 23% respectively, and goats by an even greater rate of 45%. These increases in grazing animal herds are significant, due to the impacts they have on the landscape, particularly fragile grasslands. Their hooves pulverize the soil, breaking up the thin crust formed by rainfall and allowing valuable topsoil to be more easily eroded by wind (Brown 2011). Degraded grassland turns into shrubland, which is unable to sustain cattle and sheep, but on which goat populations continue to thrive. The goat population is very unevenly distributed globally: in 2009, 60% were in Asia and 34% in Africa.

Fisheries

Ezioman/Flickr.com

The depletion of fish stocks is one of the most pressing environmental issues

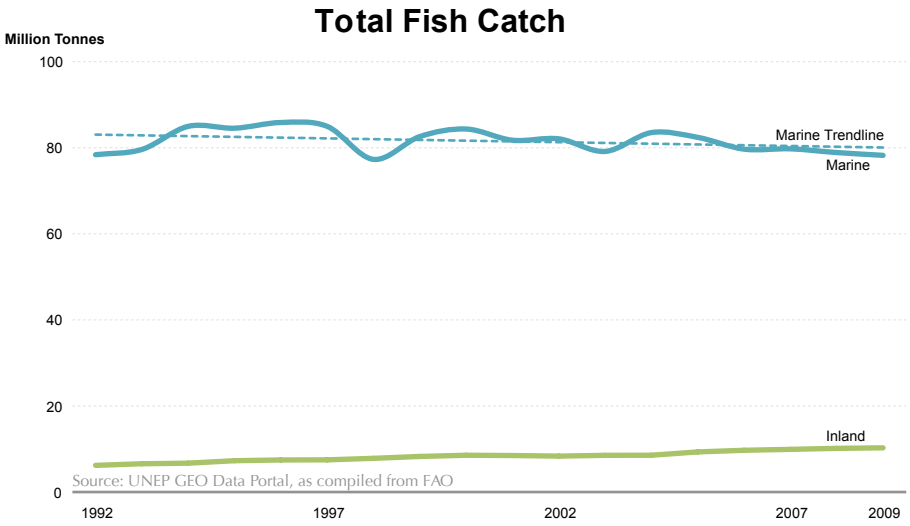


Since 1992, the proportion of fully exploited fish stocks increased by 13% and overexploited, depleted or recovering stocks increased by 33%, reaching 52% and 33%, respectively, of all fish stocks. Only a small percentage of stocks, around 15%, are under-exploited or moderately exploited; these stocks saw a strong decrease (especially in the last couple of years) of nearly 50% since 1992. "While the degree of uncertainty about these estimates may be great, the apparently increasing trend in the percentage of overexploited, depleted and recovering stocks and the decreasing trend in under-exploited and moderately exploited stocks do give cause for concern" (FAO 2010c). Subsidies of around US$ 27 000 million per year "have created excess capacity by a factor of two relative to the ability of fish to reproduce" (UNEP 2011b, Sumaila and others 2010).

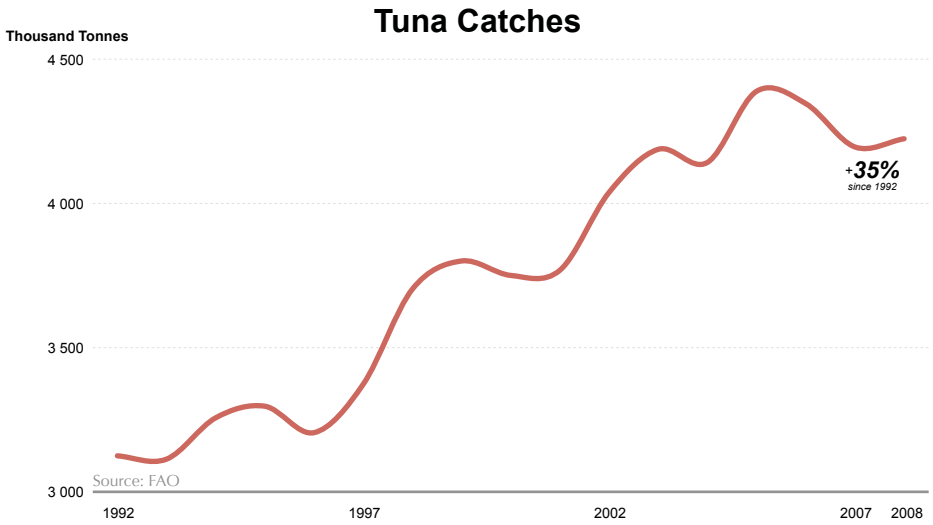
"The clock is ticking on the sustainability of global fish stocks", highlighting the need for an international agreement on better management of the marine environment (UNEP 2010c). Given that over 500 million people globally rely on fisheries and aquaculture for their livelihoods, and that fish help feed three thousand million people (FAO 2011), this issue is becoming more urgent than ever.

** Underexploited or moderately exploited = able to produce more than their current catches; overexploited, depleted or recovering from depletion = yielding less than their maximum potential production owing to excess fishing pressure in the past, with a need for rebuilding plans; fully exploited = current catches are at or close to their maximum sustainable productions, with no room for further expansion.*

Marine fish catch has declined slightly, although tuna catches have risen steeply

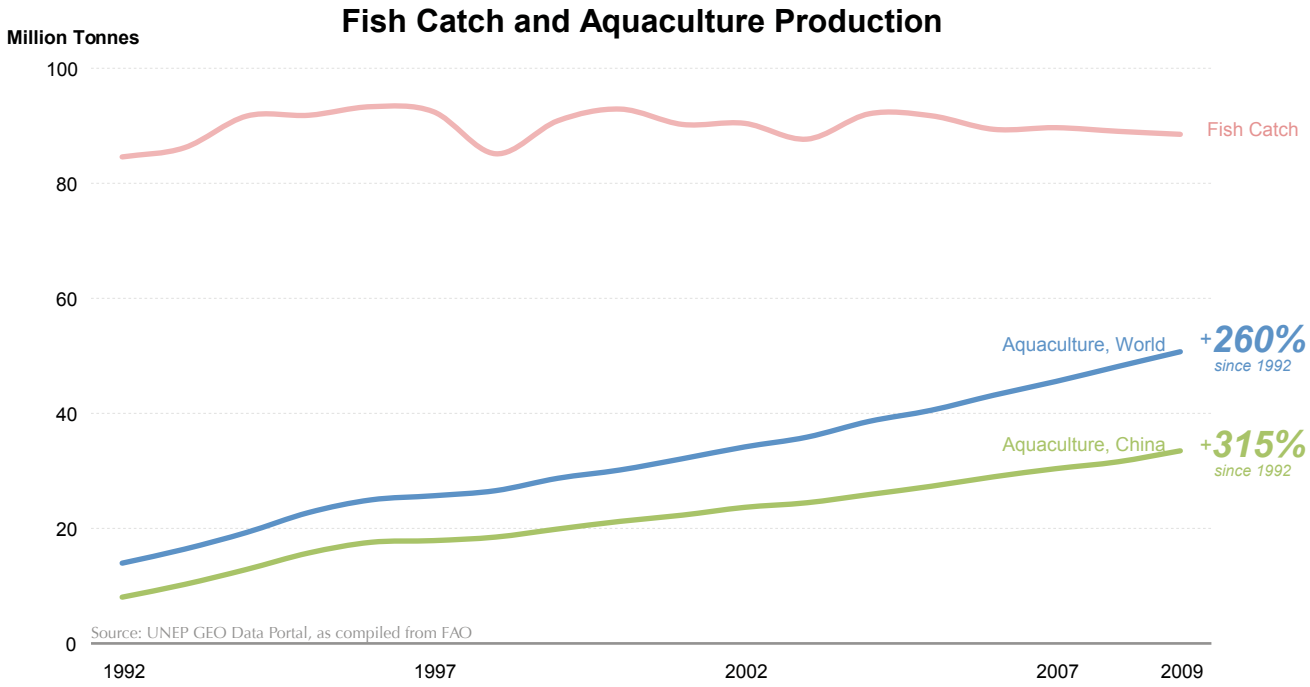


Marine fish catch data show annual variations, with an overall trend suggesting a slight decrease over the last 10 years. But with catches of around 80 million tonnes for marine fish and 10 million tonnes (with a steady growth) for inland water fish, the pressure on water ecosystems remains high (UNEP 2011c).



Tuna is an economically important, globally-traded fish that is increasingly in demand by consumers. Catches increased dramatically, from 600 thousand tonnes in the 1950s, to over 3 100 thousand tonnes in 1992, to 4 200 thousand tonnes in 2008, leaving some tuna species on the edge of extinction (IUCN 2011b, Collette and others 2011).

90% of global aquaculture is practised in Asia, the vast proportion of which occurs in China



Aquaculture increased by 260% between 1992 and 2009 with most growth occurring in Asia, and in particular China. The global production has grown from 14 million tonnes in 1992 to nearly 51 million tonnes in 2009, which now equals more than half of the total wild fish catch. This has created jobs and important economic benefits, but the environment has suffered from a loss of mangroves, poor fish-waste management, an influx of antibiotics, impacts of producing or catching large quantities of small fish for feed, and competition between escaped farm fish and neighbouring wild fish (FAO 2011b).

Shrimp and prawn aquaculture are thriving along tropical coastlines of Asia and Latin America

Source: USGS; Visualization UNEP-GRID Sioux Falls

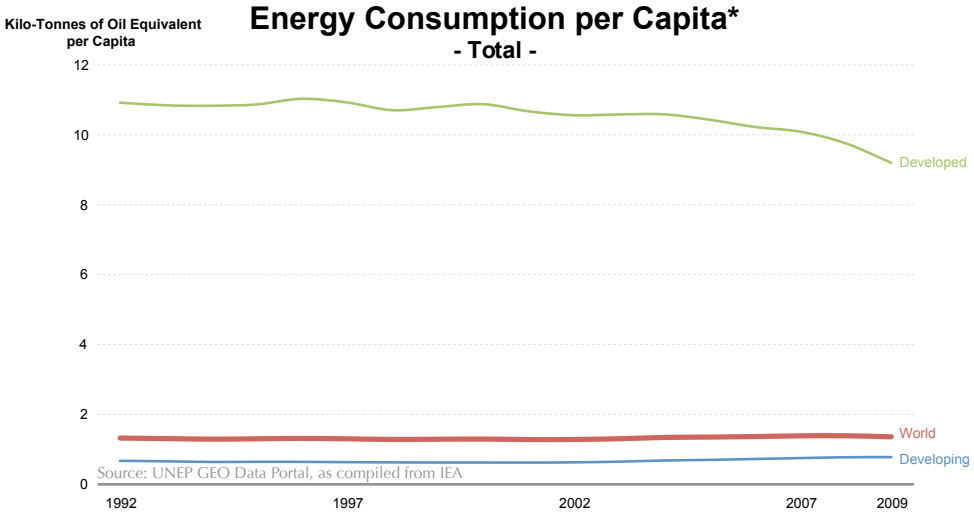
Shrimp and prawn aquaculture expanded roughly 400% globally between 1992 and 2009, primarily in coastal Asia and Latin America (FAO 2011c). The Gulf of Fonseca, shared by Nicaragua, Honduras and El Salvador, experienced dramatic expansion of large-scale shrimp production mostly during the 1990s (Benessaiah 2008). While the area directly affected by the shrimp ponds was generally salt and mud flats, some areas of adjoining mangrove were converted as well (Benessaiah 2008). Highly productive, biodiverse habitats within tidal zones, mangroves are often cleared for shrimp aquaculture (Giri and others 2008).

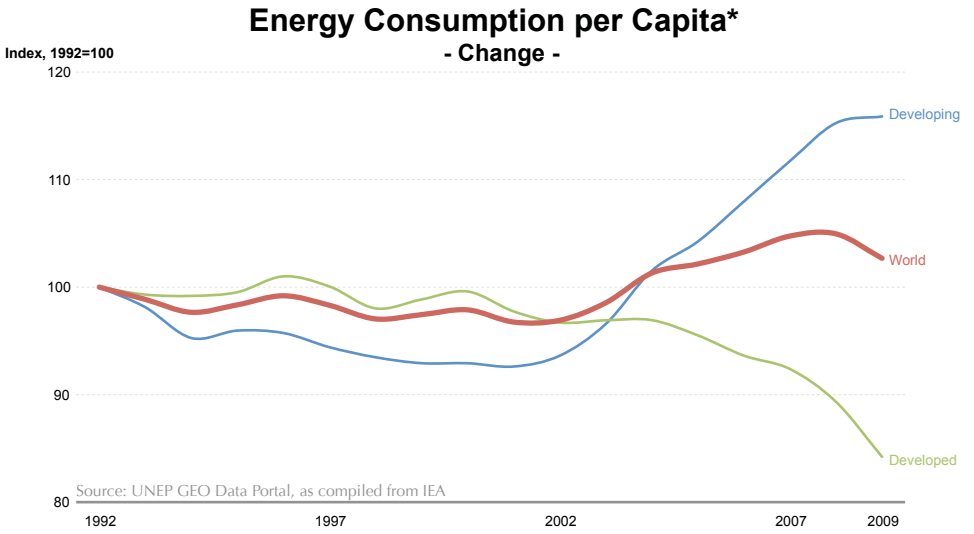
© Greenpeace/ Mario Urrutia

Energy

Zebra Pares/Flickr.com

Energy consumption in developed countries is nearly 12 times higher than that of developing countries





As a growing world population aspires to higher material living standards, there is an ever-greater need for goods and services, and the energy required to provide these (e.g. housing, consumer products, transport and travel). The amount of energy consumption per capita was slightly increasing until 2008 (+5 % since 1992). In 2009 it decreased for the first time in 30 years (globally -2.2%) as a result of the financial and economic crisis (Enerdata 2011), with the decrease being most noticeable for developed countries. Developing regions show a particularly strong increase in per capita energy consumption in the last five years, although recently this seems to be levelling off.

The three major economic sectors in terms of energy consumption are:

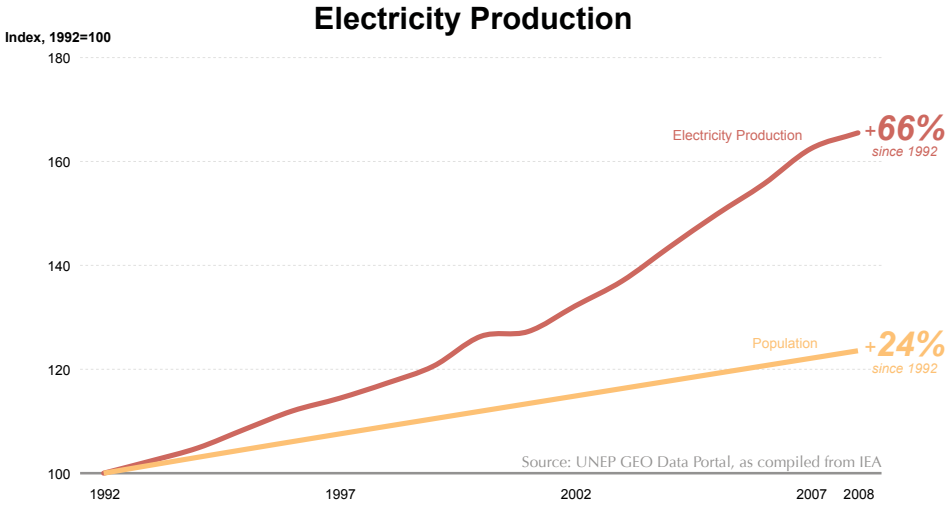
Manufacturing: 33%

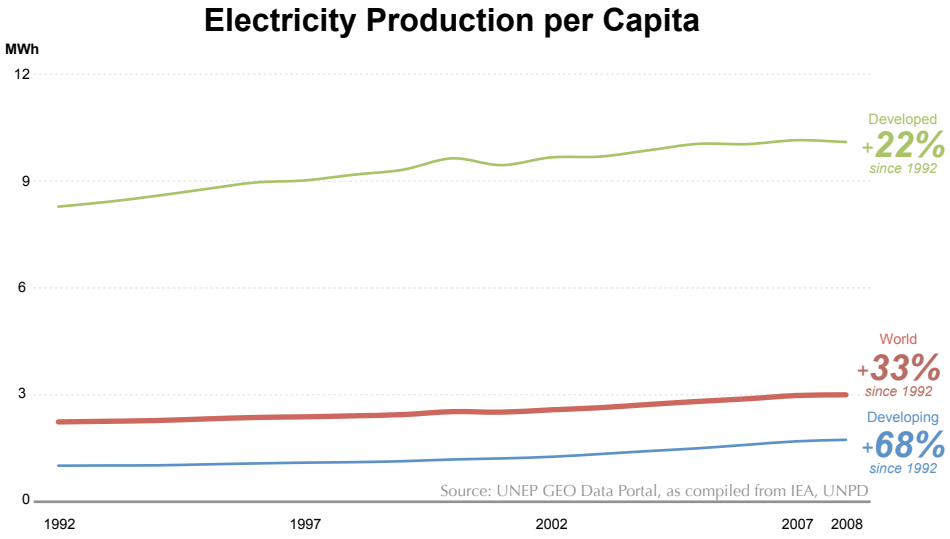
Households: 29%

Transport: 26%

**Total final consumption (TFC) is the sum of consumption by the different end-use sectors (industry, transport, other sectors, non-energy use). Electricity is allocated to the sector where it is consumed and therefore the energy used to generate the electricity is not counted explicitly. Generation losses are not included.*

A steady rise in electricity production still leaves 1 440 000 000 people in the dark



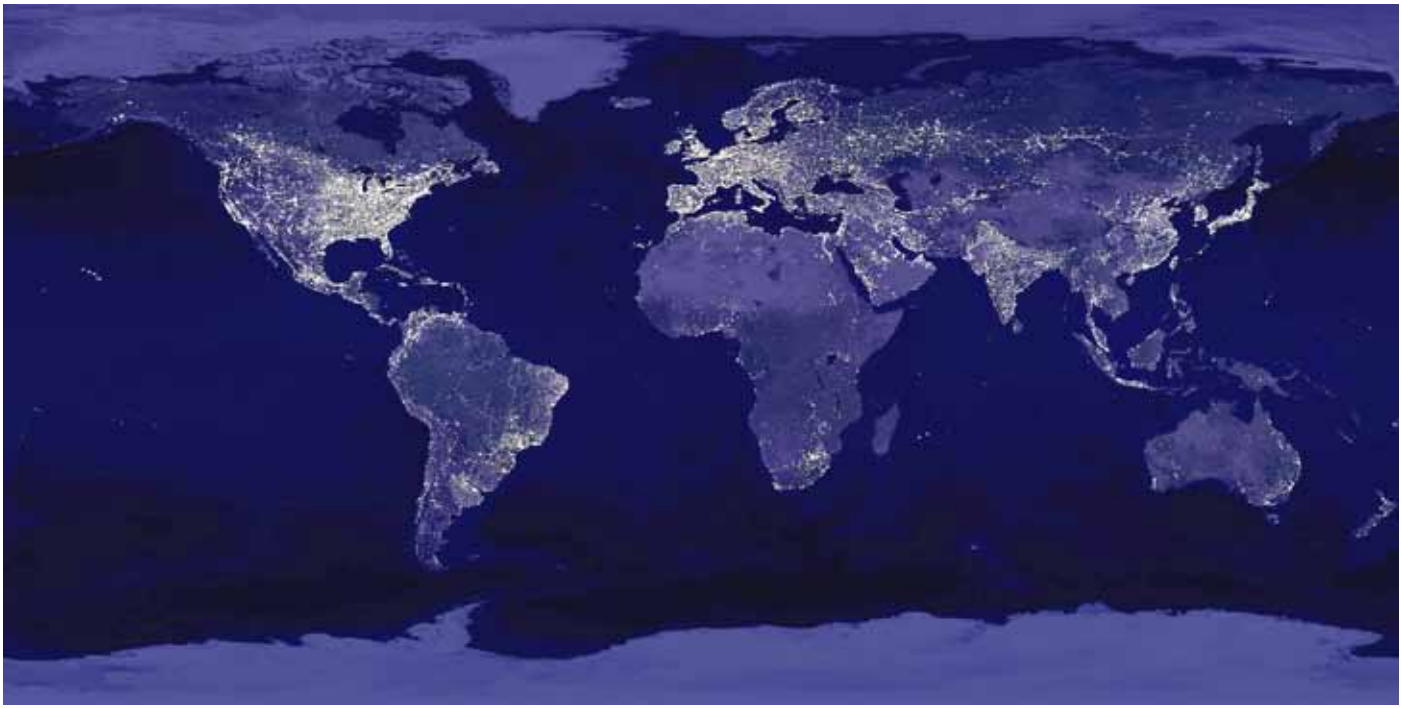


Electricity and heat generation account for more than 40% of all CO_2 emissions (IEA 2010). The strong annual rise of over 3% and a total rise of 66% between 1992 and 2008—a much larger increase than that of global population (1.3% annually and 24% in total)—is primarily the result of a growth in industrial production, as well as improving living standards in many developing countries.

Nevertheless, on a per capita basis, the largest part of the growth in absolute numbers occurred in the developed countries, increasing from 8.3 MWh in 1992 to nearly 10 MWh in 2008—a difference of 1.7 MWh per person. The global average of per capita electricity production grew by 33%, from 2.2 MWh in 1992 to 3.0 MWh in 2008; developing countries by 68%, from 1 MWh to 1.7 MWh.

In 2010, 1 440 million people globally—that is 20% of the world population—were still suffering from "energy poverty", not having access to reliable electricity or the power grid, and depended entirely on biomass for cooking and lighting (UNEP 2011b).

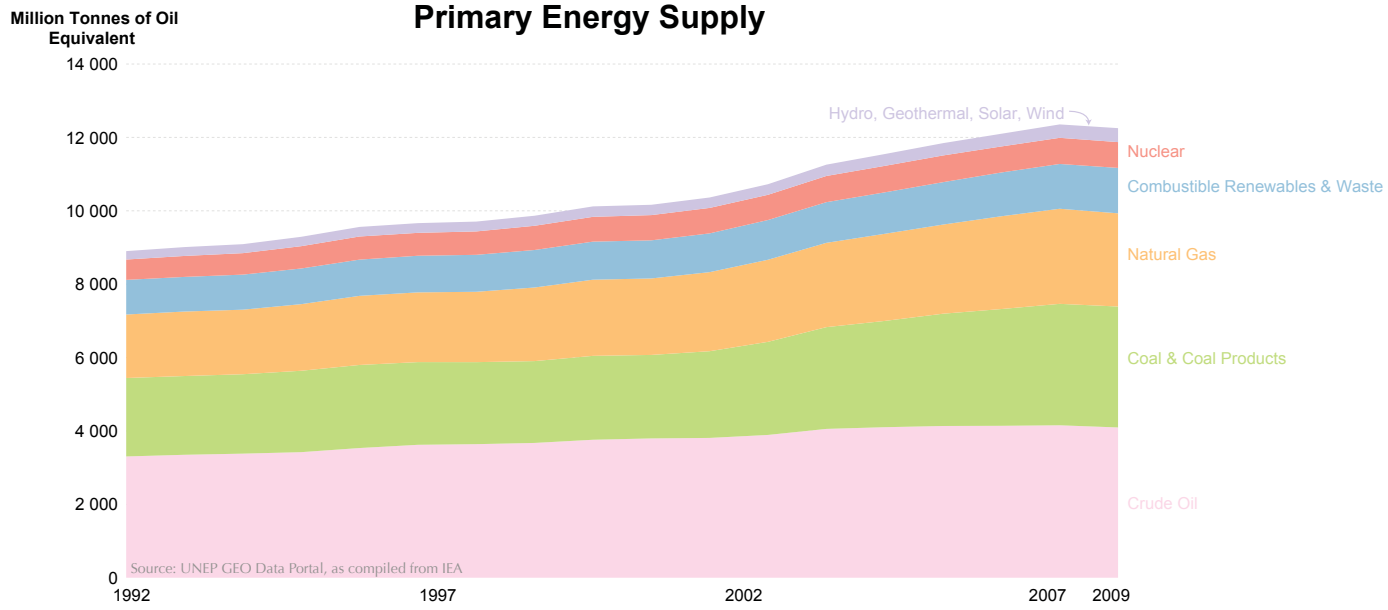
The pattern of lights visible from space demonstrates the electric (and digital) divide between North and South



Source: NASA

In the context of information and communications technology, one speaks about the "digital divide" between the North and the South. Even more than 100 years after the invention of electric light, many regions around the world remain in the dark. Nearly the entire African continent, with some exceptions like the Nile River in Egypt or some large cities in South Africa and Nigeria, and much of the interior of South America, look mostly dark when viewed from a distance. The brightest areas on the map are those where most electric power is consumed and are the most urbanized, but not necessarily the most populated; this is reflected by more densely inhabited countries such as India and China which are not as visible on the map as Western Europe and eastern North America (NASA 2008).

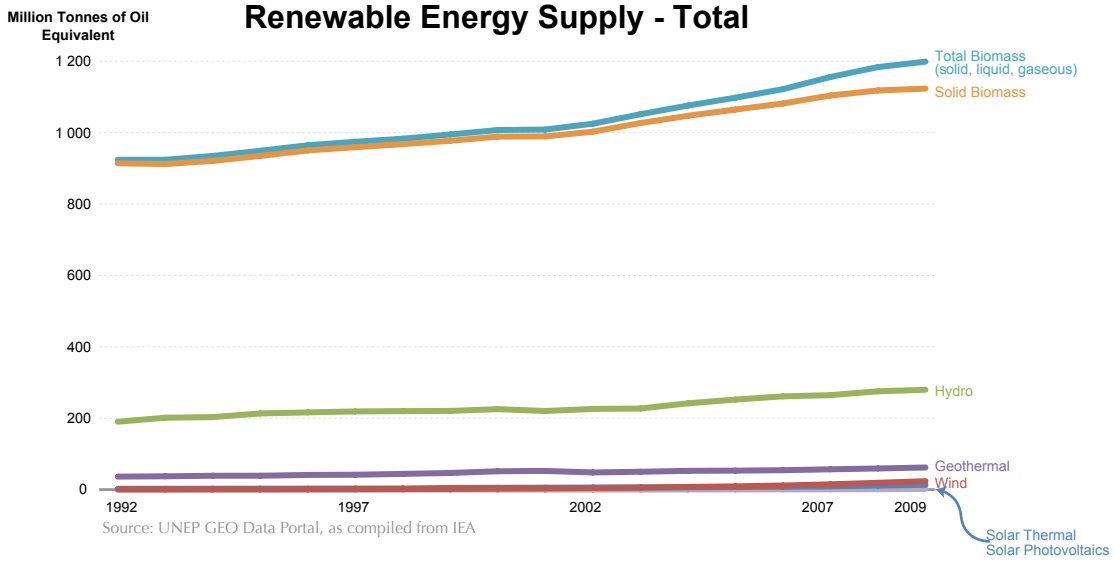
Renewable energy sources (including biomass) currently account for only 13% of global energy supply ...



Oil, coal and gas dominate energy production for electricity and heating, transportation, industrial uses and other fuel combustion. Their share has slightly increased in recent years, adding up to 80%. The overall share of renewable energy is still modest compared to that of fossil fuels.

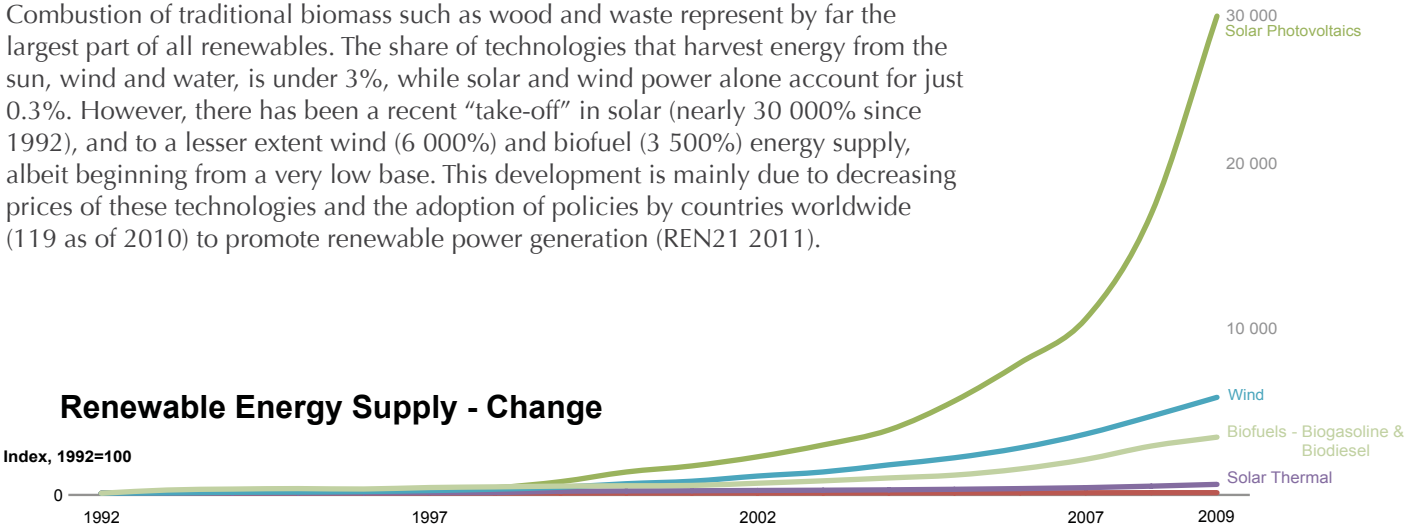
Although renewable energy production is gaining much attention, the amount of energy produced with renewable sources, including the use of sun, wind, water and wood, amounted to 13% in 2008; estimations show this figure rose to 16% in 2010 (REN21 2011). The largest renewable energy contributor, however, was biomass (10%), the majority (60%) being traditional biomass used in cooking and heating applications in developing countries (IPCC 2011). Thus, when biomass is excluded from the aggregations, other renewable energies provides less than 3% of the total energy.

...while solar and wind energy account for only 0.3% of global energy supply



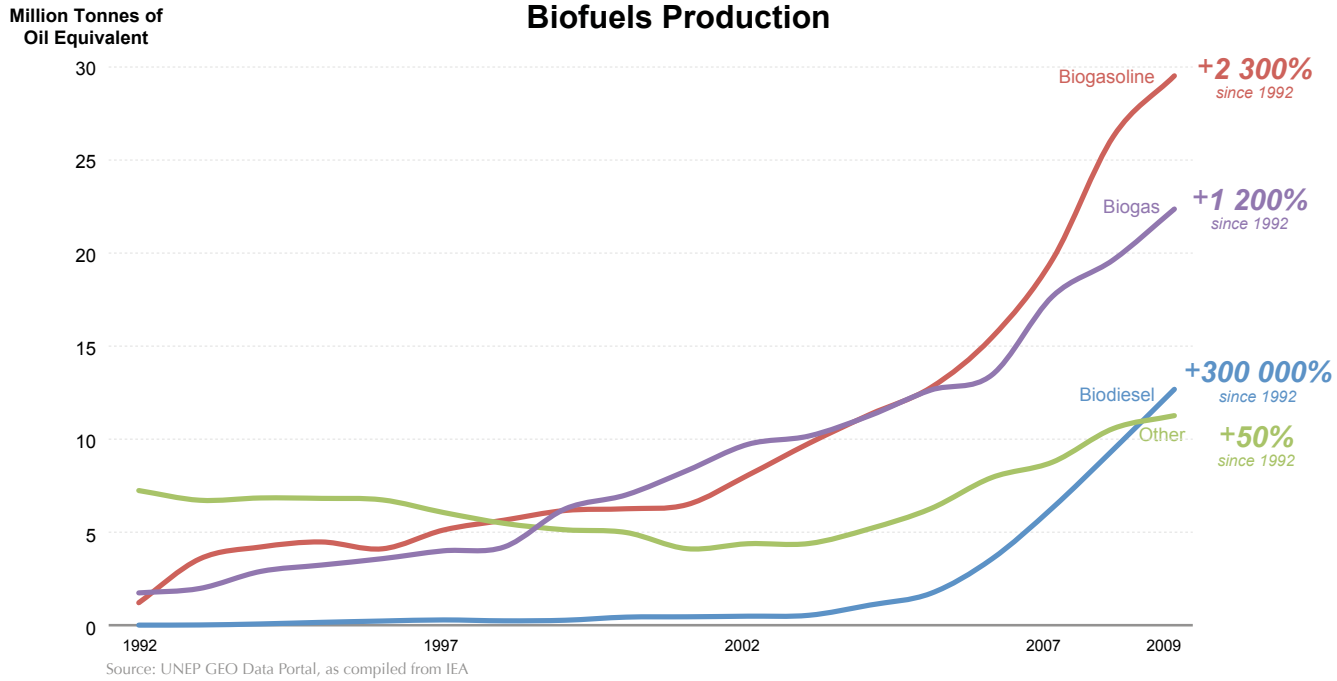
Source: UNEP GEO Data Portal, as compiled from IEA

Combustion of traditional biomass such as wood and waste represent by far the largest part of all renewables. The share of technologies that harvest energy from the sun, wind and water, is under 3%, while solar and wind power alone account for just 0.3%. However, there has been a recent "take-off" in solar (nearly 30 000% since 1992), and to a lesser extent wind (6 000%) and biofuel (3 500%) energy supply, albeit beginning from a very low base. This development is mainly due to decreasing prices of these technologies and the adoption of policies by countries worldwide (119 as of 2010) to promote renewable power generation (REN21 2011).



Source: UNEP GEO Data Portal, as compiled from IEA

Steep growth rates in biofuel production offer benefits, but also pose environmental and social risks

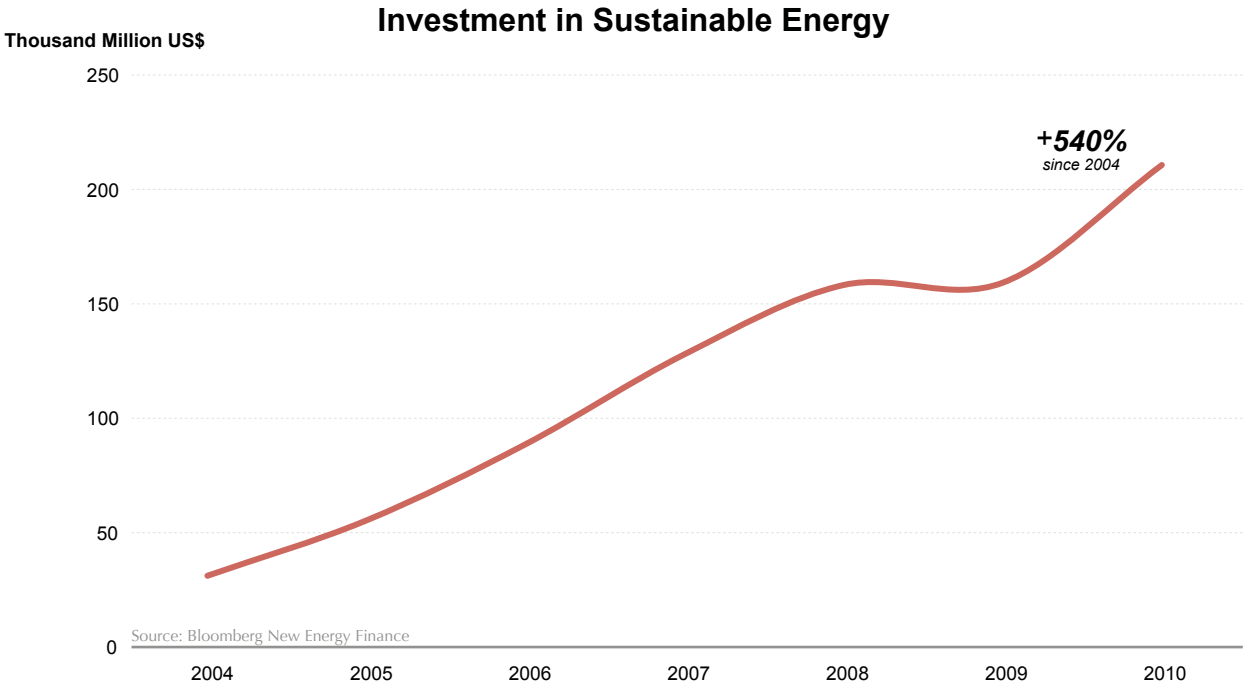


Source: UNEP GEO Data Portal, as compiled from IEA

Touted widely as an alternative to fossil fuels, the past decade has seen a rapid rise in the production and use of biomass (such as corn, sugar cane, palm or rapeseed oil) as a renewable energy source for the production of fuel. While biogasoline in the form of ethanol has been widely used in Brazil for a couple of decades, its use accelerated globally at the end of the 1990s, increasing by 20% every year to reach 30 million tonnes of oil equivalent in 2009. In the first years of the new century, biodiesel began to slowly enter the market, with annual growth rates of around 60%, attaining a production level of nearly 13 million tonnes of oil equivalent in 2009—a staggering increase of 300 000% between 1992 and 2009.

However, more recent information on biofuels is raising new concerns about their production and use. Among these are direct environmental and social impacts from land-clearing and conversion, the introduction of potentially invasive species, the overuse of water, along with related consequences for the global food market. A major reason for concern is the trend of numerous wealthy countries to buy or contract for land in other, typically developing and sometimes semi-arid countries, in order to produce food and often biofuels. This trend may have potentially serious impacts on fossil and renewable water resources, as well as the local food security (UNEP 2009b).

Investment in sustainable energy has skyrocketed in recent years

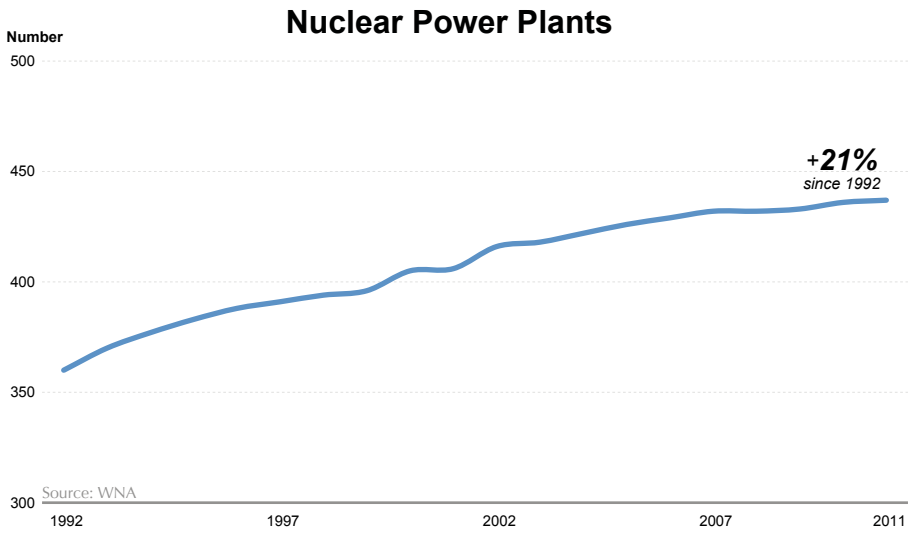


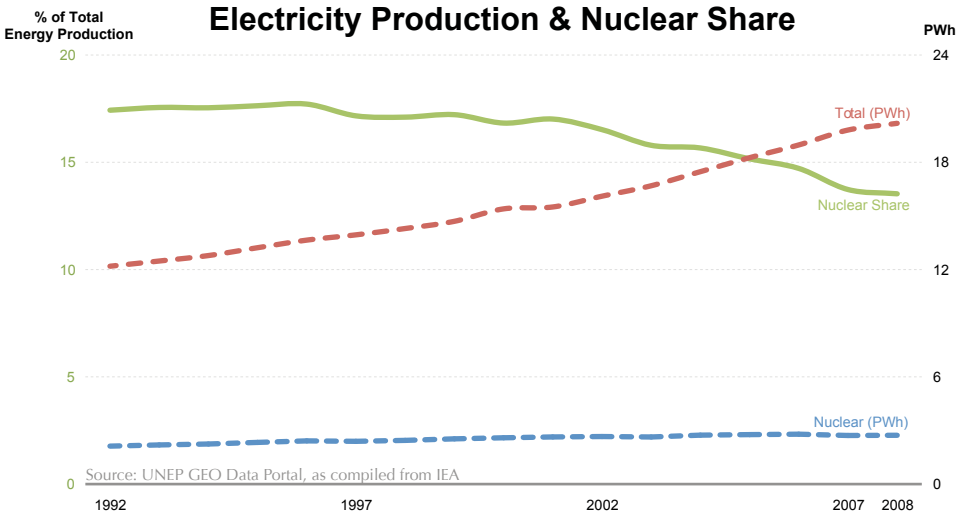
The greening of the energy sector—moving away from carbon-intensive energy sources and improving efficiency—is a rapidly growing business. Global investment in renewable power and fuels set a new record in 2010, and the margin over totals for previous years was wide. Investment totaled US$ 211 thousand million in 2010, up 32% from US$ 160 thousand million in 2009, and nearly five and a half times the 2004 figure. For the first time, new investment in utility-scale renewable energy projects and companies in developing countries surpassed that of developed economies (UNEP 2011d).

As of mid-2011, there are 437 nuclear power plants around the world, and 60 more under construction

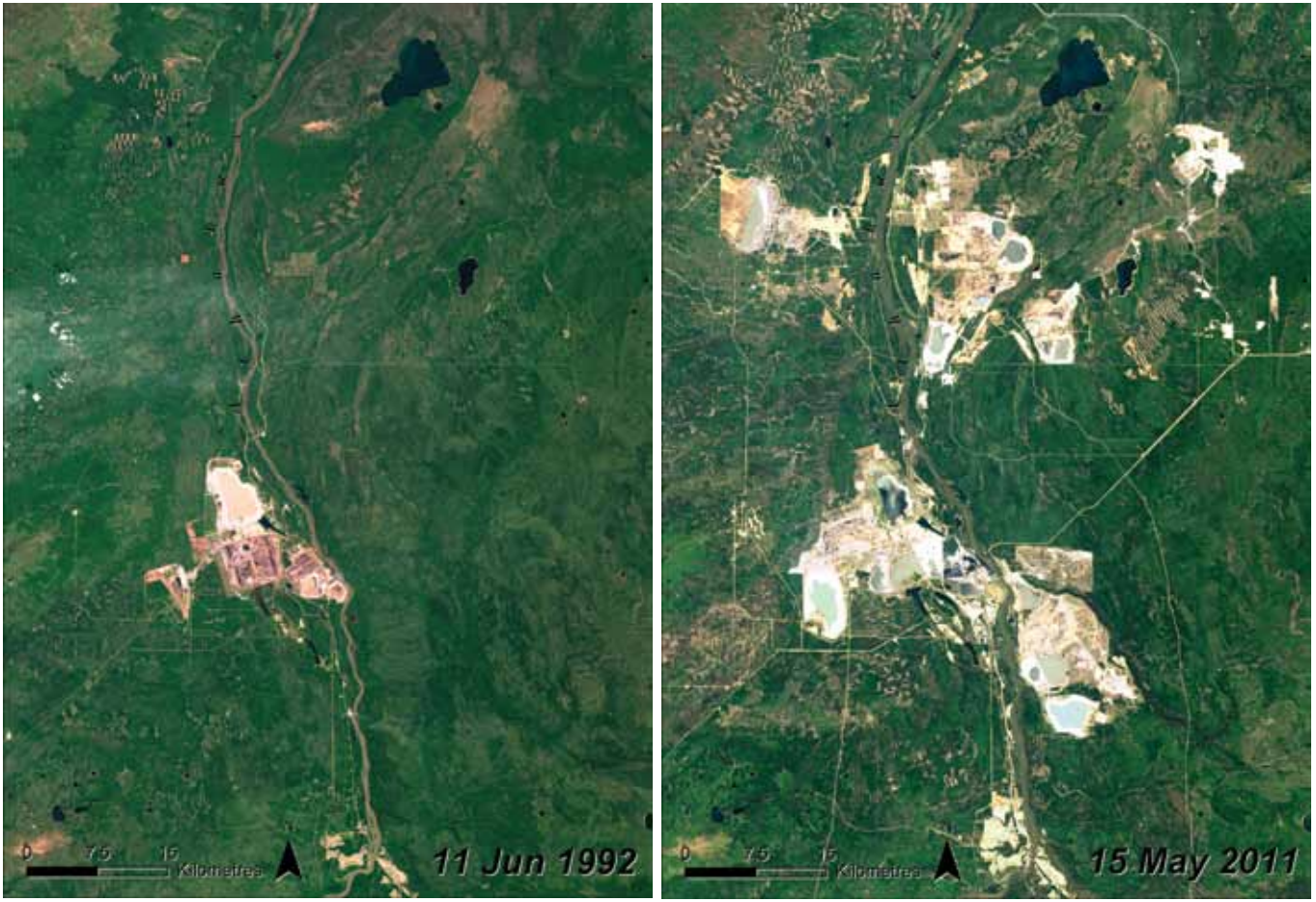
The number of nuclear power plants has increased by over 20% since 1992, rising from 360 to almost 440 in mid-2011. This is the equivalent of nearly four new plants a year, although growth levelled off somewhat in recent years. In some countries, nuclear power is seen as a unique opportunity to meet the growing demand for energy. In addition to its 14 operational plants, China is constructing 25 new ones with more to start soon (WNA 2011). Globally, there are 60 plants under construction, 155 planned and 339 proposed (WNA 2011b).

"In the 30 countries that have nuclear power generation capacity, the percentage of electricity coming from nuclear reactors ranges from 78% in France to just 2% in China" (IAEA 2008). The global average share lies at 13.5% in 2008, down from 17.5% in 1992, although total production grew by almost 30% (2.7 PWh in 2008).





The rising price of oil has created an investment boom in the oil sands of Alberta, Canada



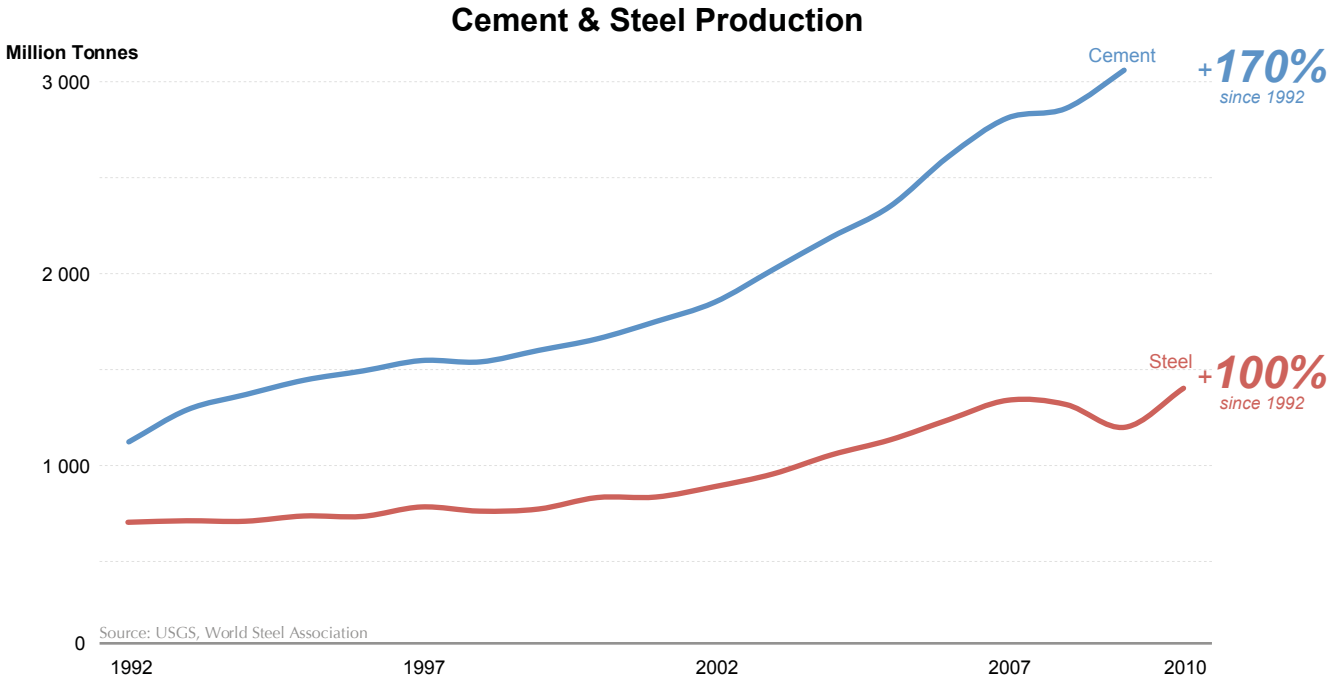
Source: USGS; Visualization UNEP-GRID Sioux Falls

The Athabasca Oil Sands region of Alberta, Canada forms the second-largest deposit of recoverable oil in the world after Saudi Arabia (CAPP n.d.). The energy and environmental costs of recovering the low quality oil, however, limited its development for decades. As the price of oil has risen there has been a rush to exploit the deposits lying under parts of Canada's boreal forest (Williams 2010). As seen in this image pair, the bright footprint of the strip-mined areas has expanded dramatically into the forest since 1992. An estimated US$ 40 thousand million was invested in 2010 alone (CAPP n.d.).

Industry, Transport & Tourism

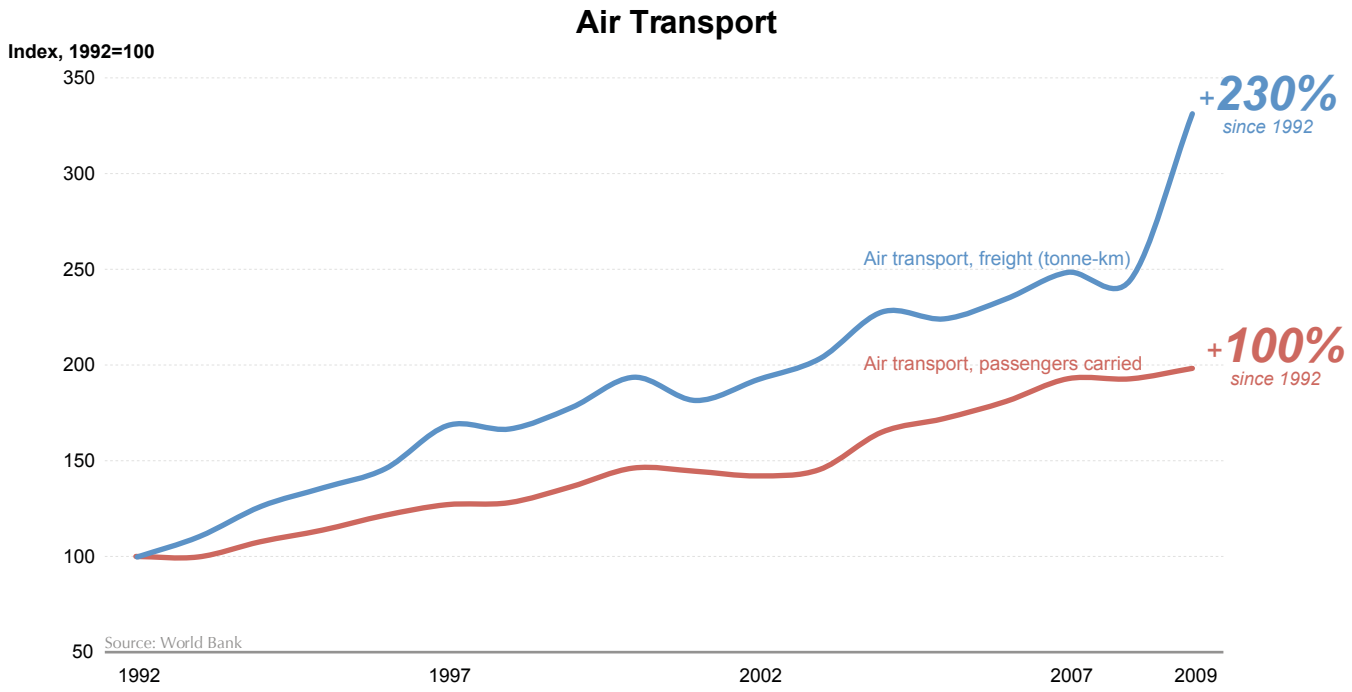
Neville Mars/Flickr.com

Basic construction materials serve an ever-increasing demand for the building sector



The growing global population and rapidly advancing economies in particular need construction materials to build housing, major roads and other infrastructure. The demand for cement and steel has risen steeply since 1992, from around 1 100 million tonnes of cement and 720 million tonnes of steel to more than 3 000 million tonnes of cement (in 2009) and 1 400 million tonnes of steel (in 2010). This represents annual growth rates of 6% for cement and 3.8% for steel, the majority of which is used in Asia (nearly 60% for steel in 2008). Production of cement and steel is responsible for about 6% of global anthropogenic greenhouse gas emissions (IEA 2010).

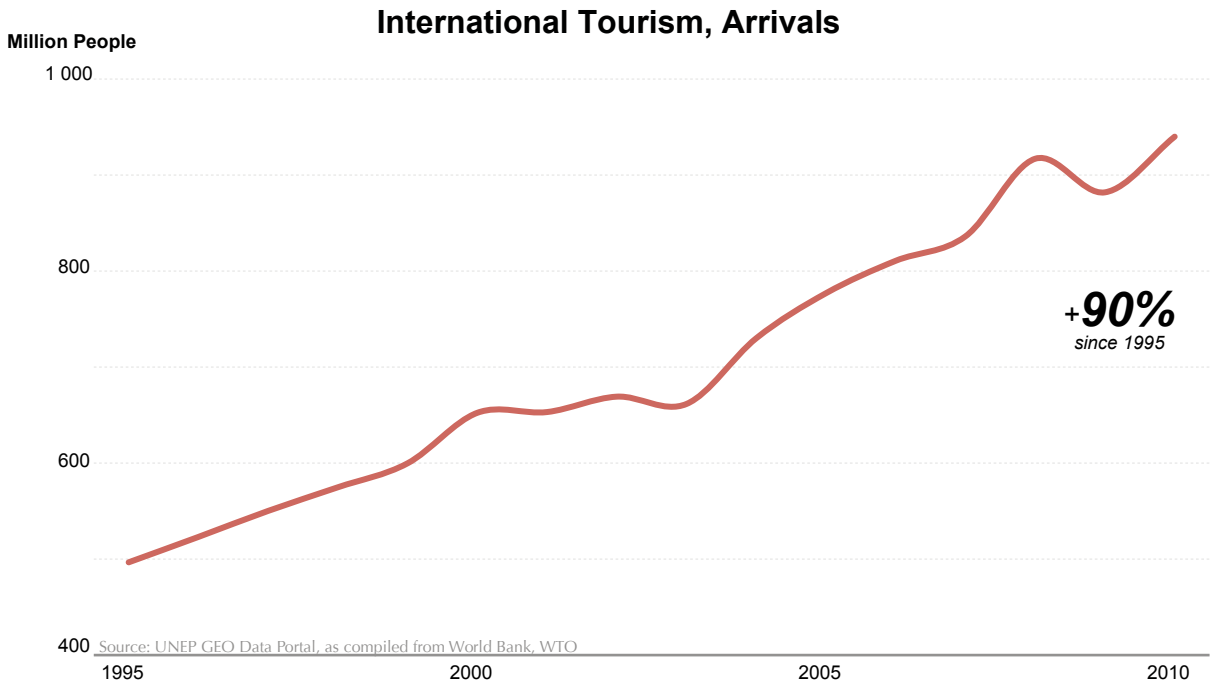
The number of passenger trips by airplane has doubled since 1992



Since 1992, there has been a steady increase in the number of passengers transported by air, an average 4% per year and reaching a total of 2 270 million passengers in 2009. Freight transport has followed a similar trend (7.3% growth rate per year) with a stunning rise since 2008, when enterprises restocked their inventories following the economic crisis (IATA 2010) and surpassing 200 thousand million tonne-kilometres. This huge increase in air travel and shipping of goods is one of the most notable characteristics of an ever-more "globalised" (interconnected) world.

At the same time, the downside of increased air travel and goods transport is the additional emissions of CO_2 as well as particulates, nitrogen oxides (NO_x) and water vapour, which can have more than twice the warming effect of the carbon dioxide alone (ETA 2011, IPCC 1999). Aviation is responsible for around 5% of anthropogenic climate change (Holmes and others 2011). Many airlines now allow customers to "offset" the environmental impact of their travel by paying a so-called "carbon tax", but the practical effects of such efforts are not yet measurable.

Increasing globalisation and higher incomes are driving a steep increase in international tourism

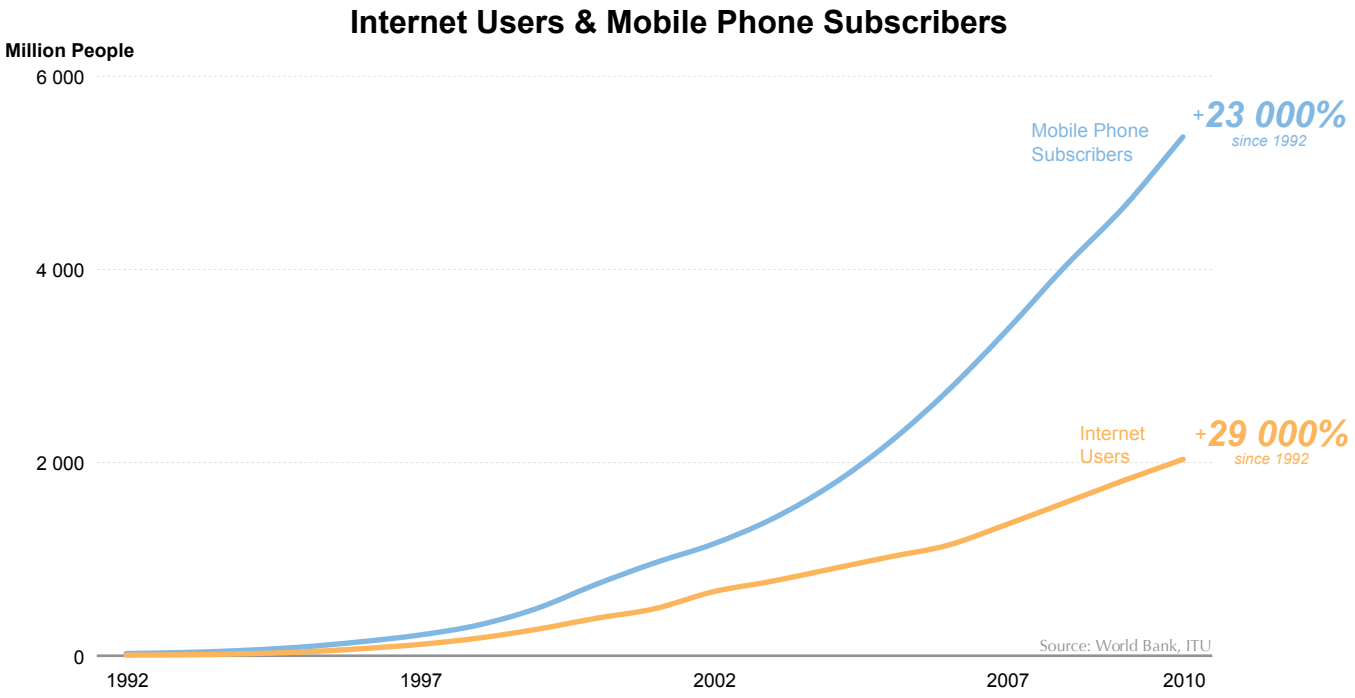


With a surge of 90% between 1995 and 2010, the number of tourist arrivals shows a strong upward trend. Travel and tourism is the single largest business sector in the world. In 2011 it is responsible for over 250 million jobs (8.8% of total employment), and nearly US$ 6 thousand million (over 9% of global GDP) (WTTC 2011). If the travel and tourism sector were a country, it would have the 2nd-largest economy, surpassed only by the United States. It has been growing by over 4% per year, providing an income to many people but also increasing pressure on the environment and natural resources (UNEP 2005), with significant challenges in terms of water consumption, discharge of untreated water, waste generation, damage to local terrestrial and marine biodiversity, and threats to the survival of local cultures and traditions (UNEP 2009c). Ecotourism, growing at rates of 20-34% per year and three times faster than the mass-tourist industry (TIES 2006), is less damaging to the environment and, when well designed, helps in developing local economies and reducing poverty (UNEP 2011b).

Technology

NASA Goddard Photo and Video/Flickr.com

The "global village" has developed rapidly on the basis of new technology



Use of the Internet and mobile phones has skyrocketed in the last 15 years, revolutionising global interconnectedness and opening up a true notion of "global commons" for nearly all of the world. The popularisation (and relatively low cost) of Internet use and mobile phones means that nearly everyone can "stay in touch" and, more importantly, benefit from and contribute to the global discourse. This also has positive implications for the development of so-called "citizens' science" networks for local and instantaneous monitoring of various phenomena. At the same time, a growing obsolescence of communication and computer devices and other hardware increases the amounts of electronic waste ("e-waste") containing hazardous chemical compounds used in the fabrication process. E-waste causes significant environmental and human-health impacts and poses enormous challenges for recycling (UNEP 2005b).

The word cloud represents the number of search results in Google for each of the “buzz words” . It helps to visualize the popularity of certain words or expressions.

Wordle.net was used to generate this word cloud.

Epilogue: On the Road to Rio+20

Having chronicled the story of how our environment has changed since the first Earth Summit 20 years ago, we have before us now the task of preserving its viability for future generations.

With limited progress on environmental issues achieved, and few real "success stories" to be told, all components of the environment—land, water, biodiversity, oceans and atmosphere—continue to degrade. And notwithstanding great advances in information and communication technologies, we have not made such breakthroughs when it comes to assessing the state of our environment. Until we apply the same dedication to this issue as we have to other areas, data gaps and inadequate monitoring will continue to hinder sound 'evidence-based policy-making.'

What can be done?

The need to focus attention and resources on improved monitoring and environmental data collection at all levels is essential in order to provide reliable and relevant information for decision-making. A new commitment to deal with persistent environmental problems and emerging issues calls for cooperation, flexibility and innovative solutions.

Careful stewardship of the planet's natural resources is required to ensure the health of our environment. As we continue the drive for more efficient resource use, it is now widely recognised that natural resource consumption must be decoupled from economic growth, that consumption should conform to, or be led by, the principles of sustainability, and that new paradigms and solutions should be applied for progress towards a Green Economy.

The United Nations Conference on Sustainable Development is an opportunity to redress the deteriorating state of the environment and the negative impacts experienced by the poorest and most vulnerable parts of society. It offers a chance to act on the pledges of the Earth Summit in 1992 and move further towards their fulfillment. The world will be watching and future generations depending on concrete actions stemming from the Summit. Finally, with the commitment and involvement of all stakeholders, the promising words of Agenda 21 can still become a reality in the decades to come.

Data Sources

Population and Human Development

Age Distribution: UNEP GEO Data Portal, as compiled from UNPD (United Nations Population Division)

Food Supply: UNEP GEO Data Portal, as compiled from FAO (Food and Agriculture Organization of the United Nations) – FAOStat

Historical World Population: US Census Bureau, International Data Base. Accessed on Apr 19, 2011 at http://www.census.gov/ipc/www/idb/worldpopinfo.php

Human Development Index: UNDP (United Nations Development Programme)

Life Expectancy: UNEP GEO Data Portal, as compiled from UNPD (United Nations Population Division)

Megacities: UNPD (United Nations Population Division), World Urbanization Prospects

People Living in Slums: UN-Habitat, Global Urban Observatory (Personal Communication, June 14, 2011)

Population Growth Rate: UNEP GEO Data Portal, as compiled from UNPD (United Nations Population Division)

Population in China's Pearl River Delta (Satellite Image): USGS (U.S. Geological Survey) Land Processes Distributed Active Archive Center (LP DAAC), located at USGS/EROS, Sioux Falls, SD. http://lpdaac.usgs.gov; Visualization by UNEP GRID Sioux Falls.

Top 10 Megacities: UNPD (United Nations Population Division), World Urbanization Prospects

Total Population: UNEP GEO Data Portal, as compiled from UNPD (United Nations Population Division)

Urban Population: UNEP GEO Data Portal, as compiled from UNPD (United Nations Population Division)

Economy

GDP- per Capita (Map): UNEP GEO Data Portal, as compiled from World Bank, World Development Indicators, UNPD (United Nations Population Division)

GDP per Capita, Change: UNEP GEO Data Portal, as compiled from World Bank, World Development Indicators, UNPD (United Nations Population Division)

GDP per Capita, Total: UNEP GEO Data Portal, as compiled from World Bank, World Development Indicators, UNPD (United Nations Population Division)

Global Material Extraction: Krausmann F.; Gingrich S.; Eisenmenger N.; Erb K.-H.; Haberl H.; Fischer-Kowalski M. (2009) Growth in global materials use, GDP and population during the 20th century. Ecol. Econ. 2009, 68 (10), 2696–2705.

Per Capita Gross Domestic Product: UNEP GEO Data Portal, as compiled from World Bank, World Development Indicators, UNPD (United Nations Population Division)

Resource Efficiency: SERI (Sustainable Europe Research Institute), material flows database (www.materialflows.net), June 2011 (Personal Communication, June 14, 2011)

Trade: UNEP GEO Data Portal, as compiled from World Bank, World Development Indicators

Environmental Trends

Atmosphere

Emissions of CO_2 - Total: UNEP GEO Data Portal, as compiled from CDIAC (Carbon Dioxide Information Analysis Center)

Emissions of CO_2 - per Capita: UNEP GEO Data Portal, as compiled from CDIAC (Carbon Dioxide Information Analysis Center) UNPD (United Nations Population Division)

Emissions of CO_2 - Total, by Type: UNEP GEO Data Portal, as compiled from CDIAC (Carbon Dioxide Information Analysis Center)

Emissions of CO_2 - Change, by Type: UNEP GEO Data Portal, as compiled from CDIAC (Carbon Dioxide Information Analysis Center)

Emissions of CO_2 per GDP: UNEP GEO Data Portal, as compiled from World Bank, World Development Indicators. CDIAC (Carbon Dioxide Information Analysis Center)

GHG Emitters by Sector (industry, agriculture etc.): IPCC 2007, Intergovernmental Panel on Climate Change, Fourth Assessment Report.

Consumption of All Ozone-Depleting Substances: UNEP GEO Data Portal, as compiled from UNEP (United Nations Environment Programme)

Ozone Hole, Area and Minimum Ozone: NASA (National Aeronautics and Space Administration), Ozone Hole Watch. Accessed on Sept 27, 2011 at http://ozonewatch.gsfc.nasa.gov/meteorology/annual_data.html

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Atmospheric CO_2 Concentration/Keeling Curve: UNEP GEO Data Portal, as compiled from NOAA/ESRL (National Oceanic and Atmospheric Administration/Earth System Research Laboratory

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September Arctic Sea Ice Extent: NSIDC (National Snow and Ice Data Center)

Temperature Deviation 2000-2009 vs. 1951-1980 (Map): NASA (National Aeronautics and Space Administration), Earth Observatory. Accessed on Sept 27, 2011 at http://earthobservatory.nasa.gov/IOTD/view.php?id=42392

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Forests

Forest Net Change: UNEP GEO Data Portal, as compiled from FAO (Food and Agriculture Organization of the United Nations) - Global Forest Resources Assessment (FRA2010)

Mangrove Forest Extent: FAO (Food and Agriculture Organization of the United Nations) - Global Forest Resources Assessment (FRA2010)

Mato Grosso, Amazon Rainforest (Satellite Image): USGS (U.S. Geological Survey), Land Processes Distributed Active Archive Center (LP DAAC), located at USGS/EROS, Sioux Falls, SD. http://lpdaac.usgs.gov; Visualization- UNEP GRID Sioux Falls

Forest Plantation Extent: UNEP GEO Data Portal, as compiled from FAO (Food and Agriculture Organization of the United Nations) - Global Forest Resources Assessment (FRA)

Roundwood Production: UNEP GEO Data Portal, as compiled from FAO (Food and Agriculture Organization of the United Nations) - Global Forest Resources Assessment (FRA)

Certified Forest: UNEP GEO Data Portal, as compiled from FSC (Forest Stewardship Council, PEFC (Programme for the Endorsement of Forest Certification)

Water

Improved Sanitation & Drinking Water Coverage: UNEP GEO Data Portal, as compiled from WHO/UNICEF - Joint Monitoring Programme (JMP) for Water Supply and Sanitation

Mesopotamian Marshlands (Satellite Image): USGS (U.S. Geological Survey), Land Processes Distributed Active Archive Center (LP DAAC), located at USGS/EROS, Sioux Falls, SD. http://lpdaac.usgs.gov; Visualization- UNEP-GRID Sioux Falls

Biodiversity

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Protected Areas, Per Cent: UNEP GEO Data Portal, as compiled from IUCN (International Union for Conservation of Nature), UNEP/WCMC (United Nations Environment Programme/World Conservation Monitoring Center; (2011) The World Database on Protected Areas (WDPA): January 2011. Cambridge, UK, UNEP-WCMC.

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Multilateral Environmental Agreements, Number and Parties: UNEP GEO Data Portal, as compiled from various MEA secretariats, IEA (International Environmental Agreements) Database Project

Number of MEAs Signed (Map): UNEP GEO Data Portal, as compiled from various MEA secretariats

Agriculture

Cereal Production, Area Harvested and Fertilizer Consumption: UNEP GEO Data Portal, as compiled from FAO (Food and Agriculture Organization of the United Nations) – FAOStat

Food Production Index: FAO (Food and Agriculture Organization of the United Nations) – FAOStat

Grazing Animal Herds: FAO (Food and Agriculture Organization of the United Nations) – FAOStat

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Selected Crops in Humid Tropical Countries, Area: UNEP GEO Data Portal, as compiled from FAO (Food and Agriculture Organization of the United Nations) – FAOStat

Selected Crops in Humid Tropical Countries, Change in Area: UNEP GEO Data Portal, as compiled from FAO (Food and Agriculture Organization of the United Nations) – FAOStat

Total Area Equipped for Irrigation: UNEP GEO Data Portal, as compiled from FAO (Food and Agriculture Organization of the United Nations) – FAOStat

Fisheries

Exploitation of Fish Stocks: FAO (Food and Agriculture Organization of the United Nations) – FAOStat

Fish Catch and Aquaculture Production: UNEP GEO Data Portal, as compiled from FAO (Food and Agriculture Organization of the United Nations) – FAOStat

Shrimp and Prawn Aquacultures (Satellite Image): USGS (U.S. Geological Survey), Land Processes Distributed Active Archive Center (LP DAAC), located at USGS/EROS, Sioux Falls, SD. http://lpdaac.usgs.gov; Visualization: UNEP/GRID Sioux Falls

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Electricity Production per Capita: UNEP GEO Data Portal, as compiled from IEA (International Energy Agency), UNPD (United Nations Population Division)

Electricity Production: UNEP GEO Data Portal, as compiled from IEA (International Energy Agency), UNPD (United Nations Population Division)

Energy Supply per Capita - Growth: UNEP GEO Data Portal, as compiled from IEA (International Energy Agency), UNPD (United Nations Population Division)

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Oil Sands (Satellite Image): USGS (U.S. Geological Survey), Land Processes Distributed Active Archive Center (LP DAAC), located at USGS/EROS, Sioux Falls, SD. http://lpdaac.usgs.gov; Visualization: UNEP/GRID Sioux Falls

Primary Energy Supply: UNEP GEO Data Portal, as compiled from IEA (International Energy Agency), UNPD (United Nations Population Division)

Renewable Energy Supply, Change: UNEP GEO Data Portal, as compiled from IEA (International Energy Agency)

Renewable Energy Supply, Total: UNEP GEO Data Portal, as compiled from IEA (International Energy Agency)

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Air Transport: World Bank, World Development Indicators (WDI-The World Bank)

Cement and Steel Production: USGS (U.S. Geological Survey) Cement Statistics, World Steel Association

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Technology

Development Indicators (WDI-The World Bank), WTO (World Tourism Organization)

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Acronyms

ADB	Asian Development Bank
BC	Years before Birth of Jesus Christ
CBD	Convention on Biological Diversity
CFCs	Chlorofluorocarbons
CO_2	Carbon Dioxide
DEWA	Division of Early Warning and Assessment (of UNEP)
EC	European Community
FSC	Forest Stewardship Council
GDP	Gross Domestic Product
GEF	Global Environment Facility
GEO	Global Environment Outlook
GHG	Greenhouse Gases
GMOs	Genetically Modified Organisms
GRID	Global Resource Information Database (of UNEP/DEWA)
HCFC	Hydrochlorofluorocarbons
HDI	Human Development Index
IADB	Inter-American Development Bank
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
ISO	International Organisation for Standardization
MDGs	Millenium Development Goals
MEAs	Multilateral Environmental Agreements
MSC	Marine Stewardship Council
N_2O	Nitrous oxide
NO_x	Oxides of Nitrogen
ODS	Ozone-depleting substances
OECD	Organisation for Economic Co-operation and Development
PA	Polyamide (known as Nylon)
pCO_2	Partial Pressure of Carbon Dioxide
PEFC	Programme for the Endorsement of Forest Certification
PET	Polyethylene terephthalate
pH	Defined as measure of the acidity or basicity of an aqueous solution
PPM	Parts Per Million
PPMV	Parts Per Million by Volume
PPP	Purchasing Power Parity
RLI	Red List Index
TPES	Total Primary Energy Supply
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNSD	United Nations Statistical Division
USA	United States of America
UV	Ultra Violet
WCPA	World Commission on Protected Areas
World Bank IFC	World Bank International Finance Corporation
WSSD	World Summit on Sustainable Development

Technical Notes

It was decided to display global values for the indicators selected, with only a few exceptions made for regional ones, as the purpose of this document is to highlight global trends. Evidently, a global statistical average in some cases hides major underlying differences, as a country aggregate figure would do at a national level. In a few cases, it was decided to include either a comparison with other regions or, more often, a general separation between developing and developed countries (for such a country breakdown, please see below). For further regional breakdowns, the reader is requested to visit either the original source or the UNEP GEO Data Portal, where most of the data are available for easy display, along with regional breakdowns and national level-data.

For the purposes of this document, separation between developed and developing countries has been made based on a common UN breakdown, although "there is no established convention for the designation of 'developed' and 'developing' countries or areas in the United Nations system. In common practice, Japan in Asia, Canada and the United States in northern America, Australia and New Zealand in Oceania, and Europe are considered 'developed' regions or areas...Israel as a developed country; (and) countries emerging from the former Yugoslavia are treated as developing countries" (UN 2011d). Eastern European countries have also been included as 'developing'.

Data collection, and at a later stage data harmonisation, is a difficult task. Statistical data are hardly ever correct to the first decimal number. Thus, care should be taken when reading the numbers. General advice—if one can give it at all—is to consider an approximately 1-5% confidence limit in both directions (upwards and downwards) from the lines, but this depends very much on the particular data set.

Due to rounding in some cases of actual data values presented in the text, there may appear to be slight differences with the reported percentage changes through time, as all changes were calculated based on the actual precise data values. Numbers as presented in the text have normally been rounded (e.g., 657 million tonnes to 660 million tonnes) in order to make for easier reading and to facilitate comparisons.

Data points have been added to a few graphs, where only limited data were available.

The metric of "Constant 2000 US$" enables the comparison of the value of money over time, as it adjusts to inflation or deflation.

GDP is displayed here in purchasing power parity (PPP) terms, which adjusts purchasing power differences between currencies, allowing for economic comparison between countries.

Due to differences in the definitions of 'billion' and 'trillion,' these terms are not used. For uniformity, 'thousand million' is used to represent 1 000 000 000 and 'million million' to represent 1 000 000 000 000.

Developing Countries

Afghanistan
Albania
Algeria
American Samoa
Andorra
Angola
Anguilla
Antarctic
Antigua and Barbuda
Argentina
Armenia
Aruba
Azerbaijan
Bahamas
Bahrain
Bangladesh
Barbados
Belarus
Belize
Benin
Bermuda
Bhutan
Bolivia
Bosnia and Herzegovina
Botswana
Brazil
British Virgin Islands
Brunei Darussalam
Bulgaria
Burkina Faso
Burundi
Cambodia
Cameroon
Cape Verde
Cayman Islands
Central African Republic
Chad
Chile
China
Christmas Island
Cocos (Keeling) Islands
Colombia
Comoros
Congo
Cook Islands
Costa Rica
CÃ´te d'Ivoire
Croatia
Cuba
Democratic People's Republic of Korea
Democratic Republic of the Congo
Djibouti
Dominica
Dominican Republic
Ecuador
Egypt
El Salvador
Equatorial Guinea
Eritrea
Estonia
Ethiopia
Falkland Islands (Malvinas)
Faroe Islands
Fiji
French Guiana
French Polynesia
Gabon
Gambia
Georgia
Ghana
Gibraltar
Greenland
Grenada
Guadeloupe
Guam
Guatemala
Guernsey
Guinea
Guinea-Bissau
Guyana
Haiti
Holy See
Honduras
Hungary
India
Indonesia
Iran (Islamic Republic of)
Iraq
Isle of Man
Jamaica
Jersey
Johnston Atoll
Jordan
Kazakhstan
Kenya
Kiribati
Kuwait
Kyrgyzstan
Lao People's Democratic Republic
Latvia
Lebanon
Lesotho
Liberia
Libyan Arab Jamahiriya
Liechtenstein
Lithuania
Madagascar
Malawi
Malaysia
Maldives
Mali
Marshall Islands
Martinique
Mauritania
Mauritius
Mayotte
Mexico
Micronesia (Federated States of)
Midway Islands
Moldova
Monaco
Mongolia
Montenegro
Montserrat
Morocco
Mozambique
Myanmar
Namibia
Nauru
Nepal
Netherlands Antilles
New Caledonia
Nicaragua
Niger
Nigeria
Niue
Norfolk Island
Northern Mariana Islands
Occupied Palestinian Territory
Oman
Pakistan
Palau
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Pitcairn Island
Puerto Rico
Qatar
Réunion
Romania
Russian Federation
Rwanda
Saint Helena
Saint Kitts and Nevis
Saint Lucia
Saint Pierre and Miquelon
Saint Vincent and the Grenadines
Samoa
San Marino
Sao Tome and Principe
Saudi Arabia
Senegal
Serbia
Seychelles
Sierra Leone
Solomon Islands
Somalia
South Africa
Sri Lanka
Sudan
Suriname
Svalbard and Jan Mayen Islands
Swaziland
Syrian Arab Republic
Tajikistan
Thailand
The former Yugoslav Republic of Macedonia
Timor-Leste
Togo
Tokelau
Tonga
Trinidad and Tobago
Tunisia
Turkey
Turkmenistan
Turks and Caicos Islands
Tuvalu
Uganda
Ukraine
United Arab Emirates
United Republic of Tanzania
United States Virgin Islands
Uruguay
Uzbekistan
Vanuatu
Venezuela, Bolivarian Republic of
Viet Nam
Wake Island
Wallis and Futuna
Western Sahara
Yemen
Zambia
Zimbabwe

Developed Countries

Australia
Austria
Belgium
Canada
Cyprus
Czech Republic
Denmark
Finland
France
Germany
Greece
Iceland
Ireland
Israel
Italy
Japan
Luxembourg
Malta
Netherlands
New Zealand
Norway
Poland
Portugal
Republic of Korea
Singapore
Slovakia
Slovenia
Spain
Sweden
Switzerland
United Kingdom of Great Britain and Northern Ireland
United States of America

Annex for Aid to Environmental Activities

Multiple projects target several sectors, thus impacting the delivery of results. This graph reflects the allotment done by AidData.org and the author's personal judgment based on the description of the projects.

Environmental Sectors (Codes represent data activities downloaded from AidData.org)

Energy Conservation and Renewables

23010.05: Energy conservation

23030.01: Power generation/renewable sources, activity unspecified or does not fit elsewhere in group

23030.02: Hydro-electric power plants

23030.03: Geothermal energy

23030.04: Solar energy

23030.05: Wind power

23030.06: Ocean power

23030.07: Biomass

Sustainable Land Management

31130.02: Soil improvement

31130.05: Land reclamation

31130.06: Erosion control

31130.07: Desertification control

31220.02: Afforestation

31220.04: Erosion control

31220.05: Desertification control

41050.02: Erosion control

41050.01: Flood prevention/control, activity unspecified or does not fit elsewhere in group

41050.03: River or sea flood control

Marine Protection

41020.03: Marine pollution control

31320.03: Fish stock protection

Environmental Governance

41010.01: Environmental policy and administrative management, activity unspecified or does not fit elsewhere in group

41005.01: General environmental protection, activity unspecified (includes miscellaneous conservation and protection measures not mentioned below) or does not fit under any other applicable codes

41010.02: Environmental policy, laws, regulations and economic instruments

41010.03: Institution capacity building, Environmental protection

41082.02: Environmental impact assessments

41081.01: All environmental education/training activities

41082.01: All environmental research activities

Natural Resources Management and Biodiversity Protection

41020.01: Biosphere protection, activity unspecified or does not fit elsewhere in group

41020.02: Air pollution control

41030.01: Biodiversity, activity unspecified or does not fit elsewhere in group

41030.02: Natural reserves

41030.03: Species protection

41040.01: All site preservation activities

Water Resources Protection

14015.01: Water resources protection, activity unspecified or does not fit elsewhere in group

14015.02: Inland surface waters

14015.03: Water conservation

14015.04: Prevention of water contamination

Waste Management

14050.01: Waste management/disposal, activity unspecified or does not fit elsewhere in group

14050.02: Municipal and industrial solid waste management

14050.03: Collection, disposal and treatment

14050.04: Landfill areas

14050.05: Composting and reuse

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This innovative publication, which is based on statistical evidence, illustrates major global environmental, economic and social changes since 1992. The numbers tell the story of how, in twenty years, the world has changed more than most of us could have ever imagined.

The report has been produced within the framework of UNEP's fifth Global Environment Outlook assessment report, which will be published in May 2012 in advance of Rio+20.

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