

# MEASURING PROGRESS

Environmental Goals & Gaps



Word cloud containing the following terms:

- JPOI
- CMS
- UNFCCC
- Montreal Protocol
- UNCED
- Kyoto Protocol
- Basel Convention
- RAMSAR Convention
- Agenda 21
- UNCLOS
- General Assembly
- Global Environment Outlook
- Rio Earth Summit
- Sustainable Development
- UNCCD
- MDGs
- Stockholm Convention
- Aichi Targets
- Chemicals
- CBD



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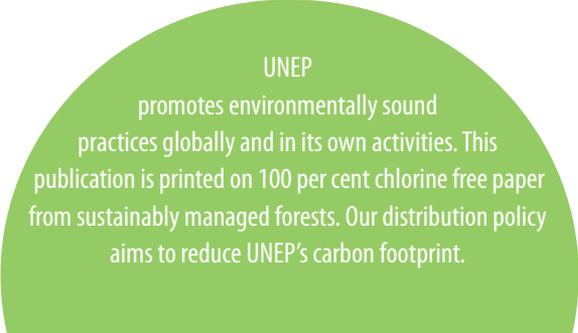
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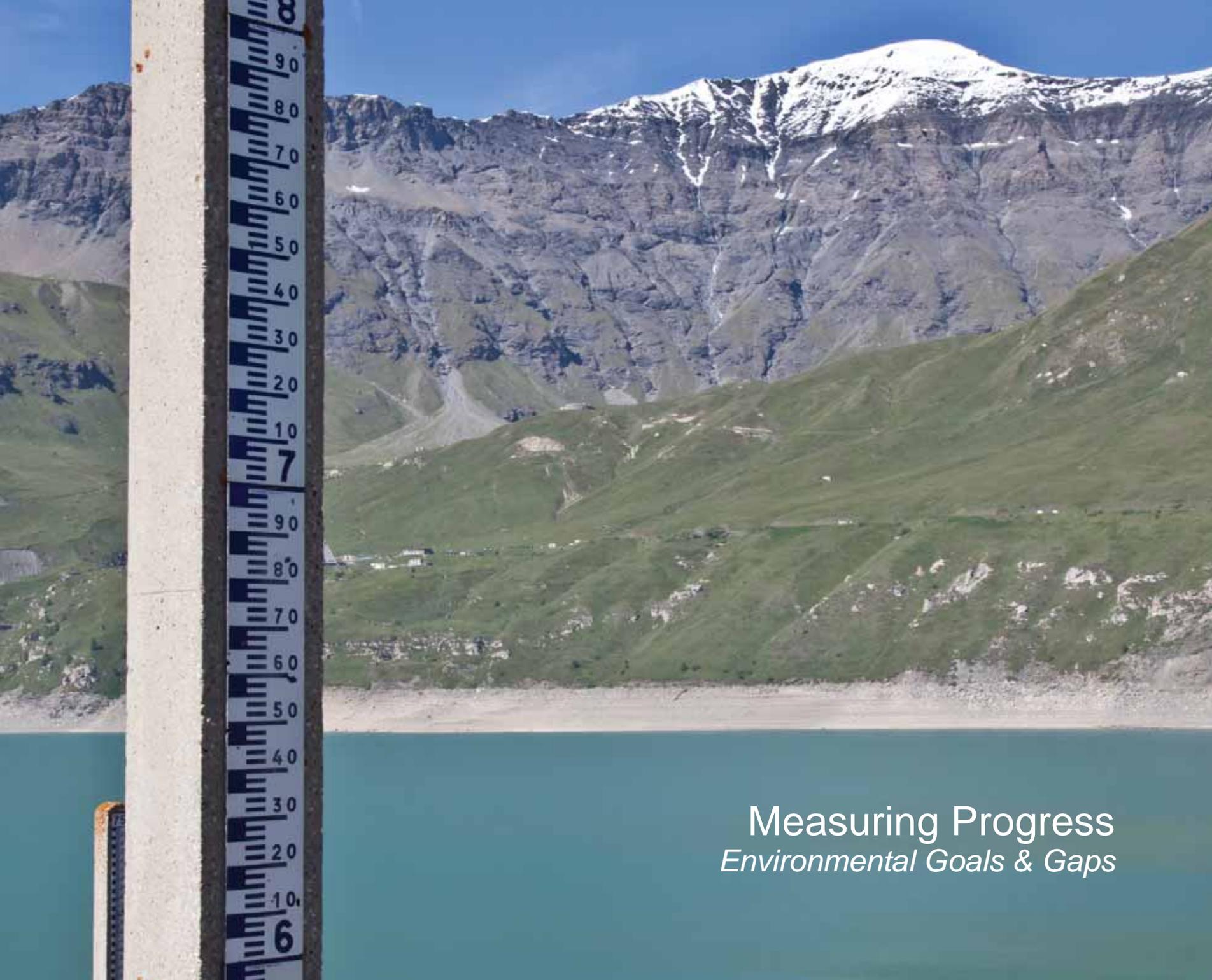
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Measuring Progress  
*Environmental Goals & Gaps*

# Foreword

If we measured the world's response to environmental challenges solely by the number of treaties and agreements that have been adopted, then the situation looks impressive. Over 500 international environmental agreements have been concluded since 1972, the year of the Stockholm Conference and the establishment of the United Nations Environment Programme (UNEP).

These include landmark conventions on issues such as trade in endangered species, hazardous wastes, climate change, biological diversity and desertification. Collectively, these reflect an extraordinary effort to install the policies, aims and desires of countries world-wide to achieve sustainable development.

Yet despite the impressive number of legal texts and many good intentions, real progress in solving the environmental challenges themselves has been much less comprehensive, a point clearly underlined in the Global Environment Outlook-5, for which this report "*Measuring Progress: Environmental Goals and Gaps*" and a previous publication "*Keeping Track of Our Changing Environment: From Rio to Rio+20*" are companion products leading up to Rio+20.

This report outlines findings from a UNEP study that, with support from the Government of Switzerland, has catalogued and analyzed existing "Global Environmental Goals" contained in the international agreements and conventions. It asks the fundamental question as to why the aims and goals of these policy instruments have often fallen far short of their original ambition and intentions. One possible reason is that many of the goals are simply not specific enough; the few goals that are specific and measurable appear to have a much better record of success.

These include goals to phase out lead in gasoline, ozone depleting substances (ODS) and certain persistent organic pollutants (POPs), specific Millennium Development Goal targets calling to halve

the number of people without access to safe drinking water and improved sanitation, and targets to increase the number and extent of protected areas. Indeed, even when measurable targets have been set but not actually met, they have usually led to positive change and often to significant change.

The vast majority of goals, however, are found to be "aspirational" in nature. They lack specific targets, which generate obvious difficulties in measuring progress towards them. In addition, many aspirational goals are not supported by adequate data that can be used to measure progress, global freshwater quality being one stark example.

It is clear that if agreements and conventions are to achieve their intended purpose, the international community needs to consider specific and measurable goals when designing such treaties, while organizing the required data gathering and putting in place proper tracking systems from the outset.

A set of "Sustainable Development Goals", as proposed by the Secretary-General's High-Level Panel on Sustainability, could be an excellent opportunity and starting point to improve this situation while representing another positive outcome from Rio+20, two decades after the Rio Earth Summit of 1992 and four decades after the Stockholm Conference.



**Achim Steiner**

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# Introduction

UNEP's Global Environment Outlook (GEO) reports provide the international community with up-to-date information on the state and trends of the global environment. The fifth report in the series, GEO-5, published in 2012, measures progress towards - and gaps in - achieving global environmental goals (GEGs).

## Concept of global environmental goals

Over the last few decades, a great number of legally binding and non-legally binding goals and objectives have been adopted as part of over 500 multilateral environmental agreements (MEAs) negotiated through a variety of different international and regional forums to address environmental degradation. Despite this growing body of norms, the global environmental situation continues to deteriorate. In a complex and fragmented system of rules, the first challenge is to have a clear understanding of what goals exist. To assist the international community in that task, the idea was conceived to establish a compilation of global environmental goals (GEGs). As the debate on the establishment of sustainable development goals (SDGs) intensifies, the compiled GEGs, along with

the findings of GEO-5, may serve as useful contributions to this process.

## How did the GEGs come about?

A compilation of GEGs (UNEP/GCSS.XII/CRP.2 of 2012) was based on a thorough consultation with experts and governments. A first draft list of global environmental goals was compiled by a small group of independent experts and was shared with senior government officials during a meeting on the Montevideo Programme IV in Nairobi, Kenya, in late



2008. The draft compilation then underwent a review by the secretariats of multilateral environmental agreements. Building on those discussions, the compilation was shared with all governments for review in March 2009. During an open-ended, multi-stakeholder meeting which convened government representatives of 75 countries and representatives of 13 international organizations

in Geneva, Switzerland, in March 2010, the methodology for selecting the goals was decided and the compilation finalized by the UNEP Secretariat.

# Introduction

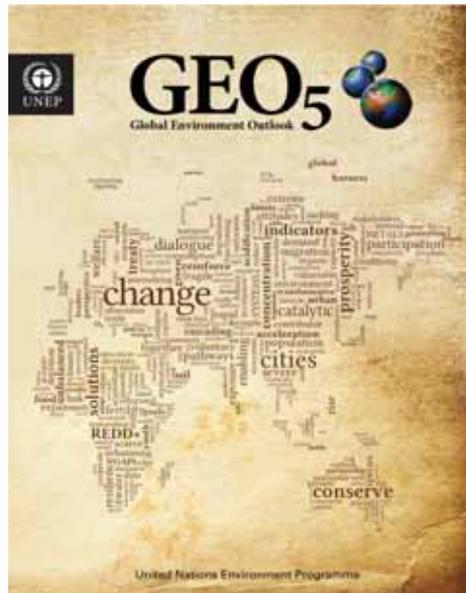
## Overview of the GEGs

The compilation provides an overview of internationally agreed environmental goals and objectives. These are drawn from existing global and regional multilateral environmental agreements and international non-legally binding instruments. While some are explicitly set out as commitments within a treaty, declaration or other instrument, others are drawn from the instrument's preamble or a substantive provision. The compilation also contains goals both with and without specific targets. The source of a particular goal, its legal status, i.e. whether or not it is legally binding, as well as its geographical application, are clearly set out in the compilation.

The sources of goals include the major multilateral environmental agreements, such as the Vienna Convention on the Protection of the Ozone Layer and the Montreal Protocol, the Convention on Biological Diversity (CBD), the Basel Convention on Transboundary Movements of Hazardous Waste, the United Nations Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol, as well as the United Nations Convention on the Law of the Sea (UNCLOS). Goals are also derived from non-legally binding instruments such as the 1972 Stockholm Declaration, the 1992 Rio Declaration and Agenda 21, the 2002 Johannesburg Plan of Implementation, the Millennium Summit Declaration as well as outcomes of conferences convened under the auspices of specialized agencies.

## Global environmental goals in GEO-5

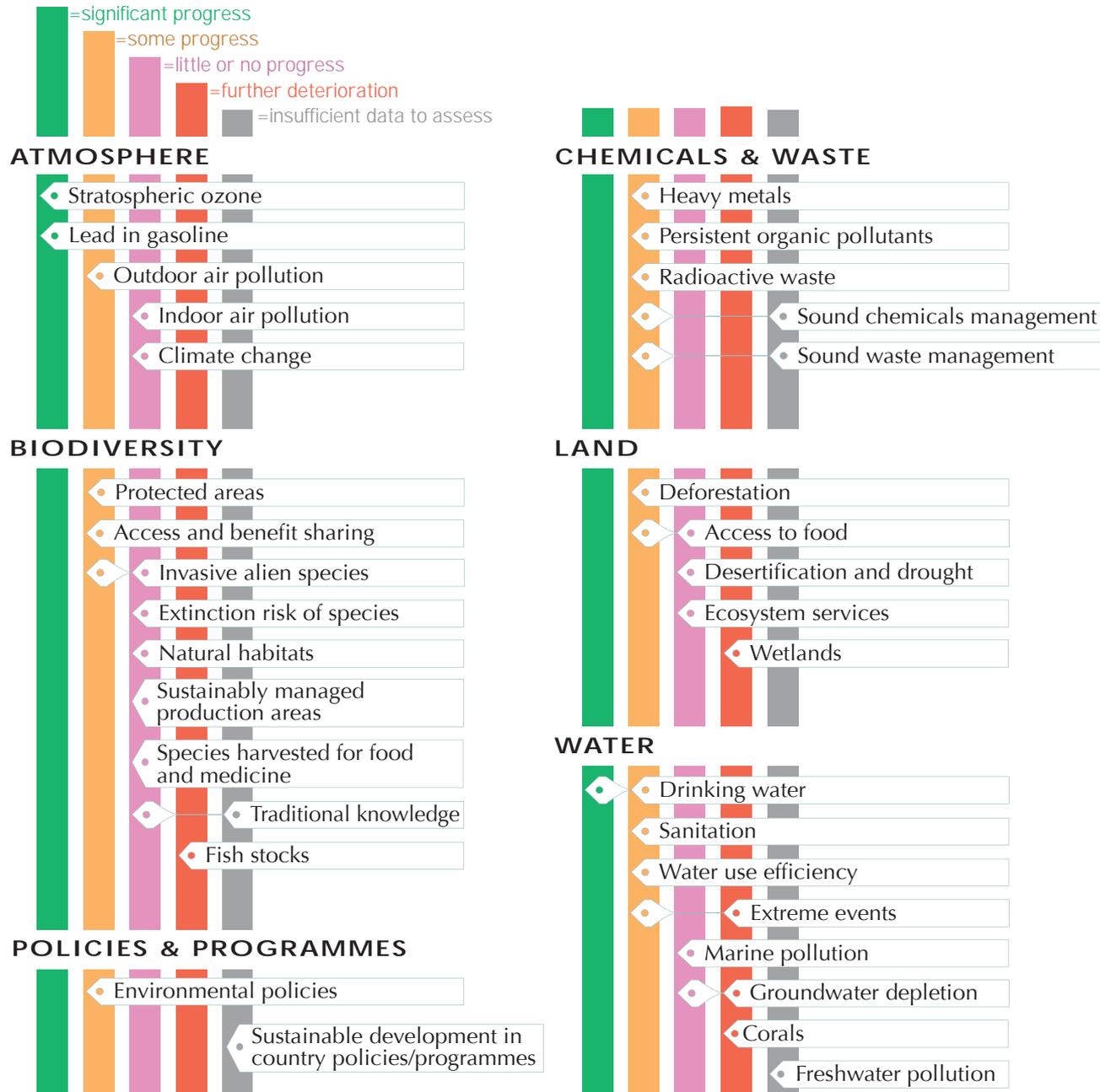
The process for the fifth Global Environment Outlook (GEO-5) established a High-level Intergovernmental Panel that identified the most important and appropriate goals for analysis in GEO-5, using the GEGs compilation as a starting point. The panel consisted of 20 government representatives from all six UNEP regions.



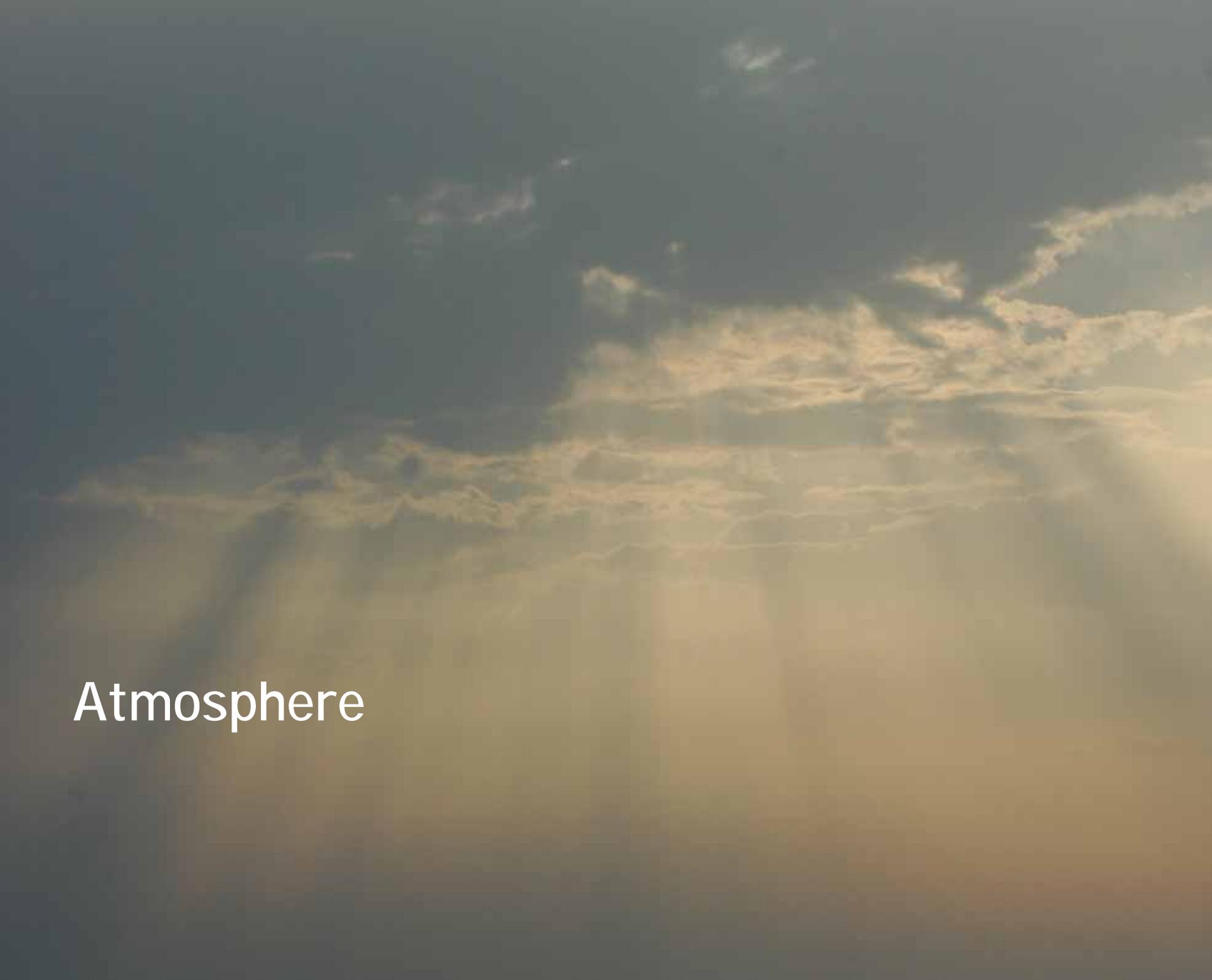
GEO-5 assessed progress towards 90 goals and objectives specifically geared to respond to some of the world's most pressing environment and development challenges. It also identified important gaps, using key indicators and time-series datasets, where available, to measure progress. In many cases, however, specific, measurable targets and/or sufficient data were lacking. In these cases, GEO-5 authors—both independent and government-nominated—made an assessment of progress based on the best available data and findings in the scientific literature, which was peer-reviewed and reflected in the final GEO-5 report.

A summary of the GEO-5 assessment of progress towards a number of environmental goals is presented in the “Environment Scorecard 2012”. Progress on each issue is analyzed in more detail in the rest of this publication.

# Environment Scorecard 2012



This Scorecard's rating of progress on each issue (including ratings split between two categories) is explained in the text of this report.



Atmosphere

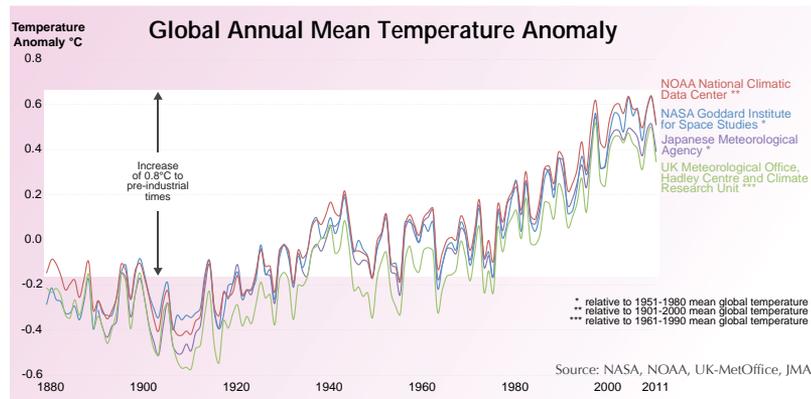
# Climate Change

...deep cuts in global greenhouse gas emissions are required according to science ... with a view to reducing global greenhouse gas emissions so as to hold the increase in global average temperature below 2°C above pre-industrial levels...

The Cancun Agreements, Decision 1/CP.16 of the Conference of the Parties of the UN Framework Convention on Climate Change.

little or no progress

Atmospheric concentrations of greenhouse gases continue to increase to levels that are likely to push global temperatures to more than 2°C above the pre-industrial average. Four independent analyses show that 2000-2009 was the warmest decade on record, with atmospheric CO<sub>2</sub> concentrations also increasing.<sup>1</sup> Fossil fuel use continues to rise.<sup>2</sup> The threats of climate change include more frequent heat waves and severe storms, shifts in rainfall patterns, rising sea levels, ocean acidification, and threats to freshwater supply, agricultural productivity and human health. Various studies estimate the annual economic damage from climate change to be from 1-2% of world GDP by 2100 if temperatures increase by 2.5°C above pre-industrial levels, up to a possible 11.3% of world GDP if temperatures increase by 7.4°C.<sup>3</sup> Possible solutions include continuing to increase the share of renewable energy and improving energy efficiency. Reducing emissions of black carbon, methane and ground-level ozone would help to combat climate change, while also greatly improving public health. Serious impacts from climate change are unlikely to be avoided on the basis of current emission reduction pledges,<sup>4</sup> and there are gaps in monitoring and reporting of existing pledges, as well as financial and technical support to developing countries.



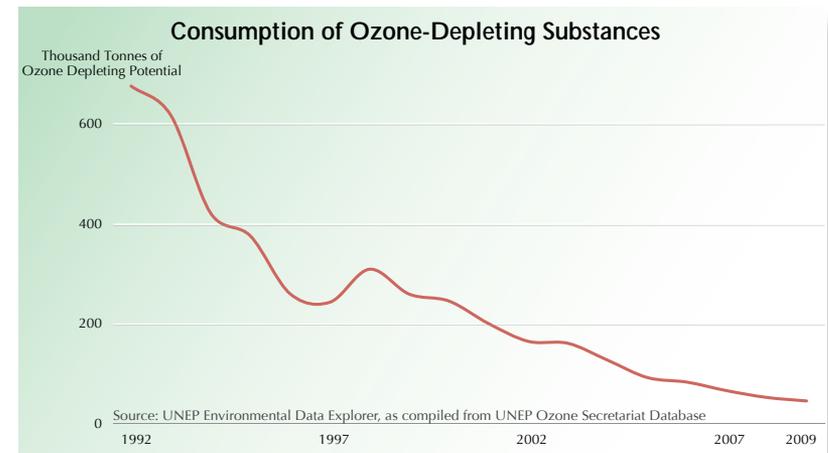
# Stratospheric Ozone

Determined to protect the ozone layer by taking precautionary measures to control equitably total global emissions of substances that deplete it, with the ultimate objective of their elimination...

Montreal Protocol on Substances that Deplete the Ozone Layer, Preamble

significant progress

The world has nearly eliminated the production and use of substances that deplete the protective ozone layer in the upper atmosphere. Further expansion of the Antarctic 'ozone hole' has been halted, but full recovery of the ozone layer is not expected until mid-century or later.<sup>5</sup> Some ozone-depleting substances are still present in old equipment and need to be destroyed or recycled, and continuing monitoring of the ozone layer is needed. One type of replacement chemical for ozone-depleting substances — hydrofluorocarbons — has a high global warming potential and now also needs to be phased out. It is estimated that implementation of the Montreal Protocol will result, in the United States alone, in 22 million fewer cases of cataracts in people born between 1985 and 2100, and 6.3 million fewer skin cancer deaths up to 2165.<sup>6</sup>



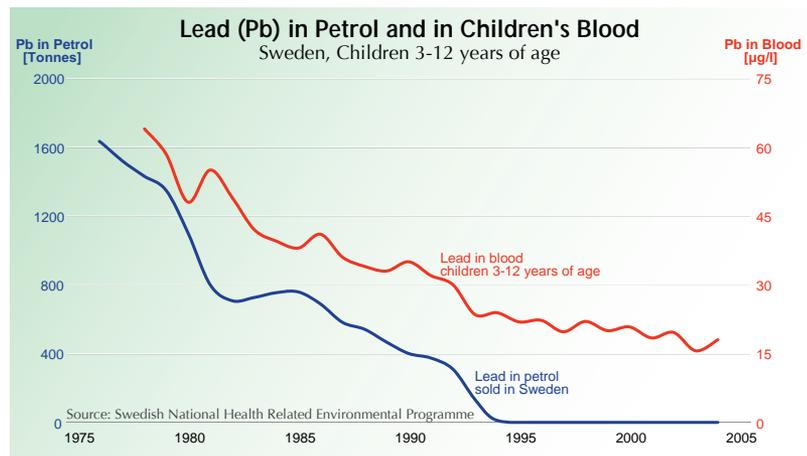
# Lead in Gasoline

Reduce respiratory diseases and other health impacts resulting from air pollution, with particular attention to women and children, by... supporting the phasing out of lead in gasoline

Johannesburg Plan of Implementation, para. 56(b)

## significant progress

Nearly all countries have phased out lead in gasoline - an outstanding global success story. There is evidence that leaded petrol is still sold in six countries.<sup>7</sup> Lead from other sources such as paint still needs to be tackled globally. Lead poisoning, at all levels of exposure, causes adverse and often irreversible health impacts, in particular in children.<sup>8</sup> The removal of lead from petrol and the consequent reduced health risks (to the nervous, immune, reproductive and cardiovascular systems) has estimated economic benefits of US\$ 2.45 trillion/year, or roughly 4% of global GDP.<sup>9</sup>



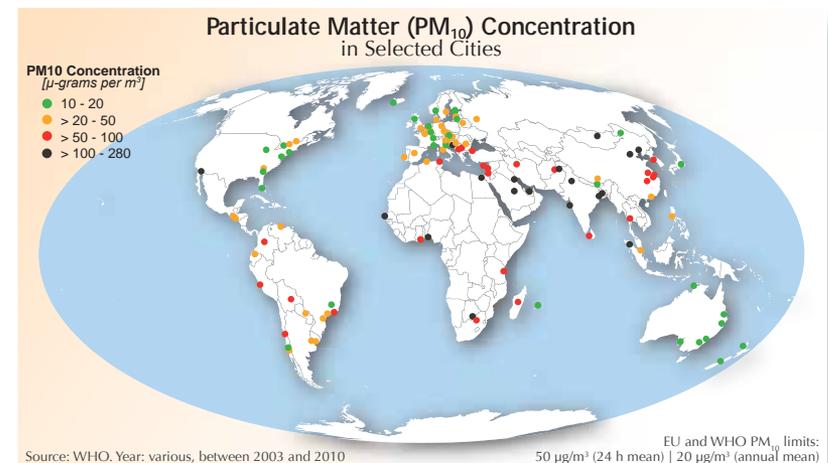
# Outdoor Air Pollution

Enhance cooperation at the international, regional and national levels to reduce air pollution, including transboundary air pollution [and] acid deposition...

Johannesburg Plan of Implementation, para. 39

## some progress

Despite some progress, outdoor air pollution continues to have serious impacts on the environment and human health. The World Health Organization (WHO) estimates that it causes about 1.2 million premature deaths each year, 2% of the total number of deaths worldwide,<sup>10</sup> but a more recent study has estimated there are 3.7 million deaths each year from outdoor particulate matter alone.<sup>11</sup> Ground-level ozone causes an estimated 700 000 respiratory deaths each year,<sup>12</sup> over 75% of them in Asia, and reduces agricultural yields, with global economic losses estimated at US\$ 14-26 billion.<sup>13</sup> Sulphur dioxide emissions have serious health impacts and are a leading cause of acid rain. Emissions have fallen considerably in Europe and North America but have increased in some rapidly developing countries in Asia.<sup>14</sup> Nitrogen emissions have remained constant worldwide with regional differences.<sup>15</sup> They have significant health impacts and damage aquatic ecosystems. Particulate matter (PM), including extremely small dust and soot particles, is the leading cause of health damage (mostly lung and heart disease) from air pollution. There has been little progress in addressing high PM levels and ground-level ozone in some countries and large urban areas in Asia and Africa. Some countries lack national standards for PM and do not monitor PM levels.



# Indoor Air Pollution

[Assist] developing countries in providing affordable energy to rural communities, particularly to reduce dependence on traditional fuel sources for cooking and heating, which affect the health of women and children

Johannesburg Plan of Implementation, para. 56(d)

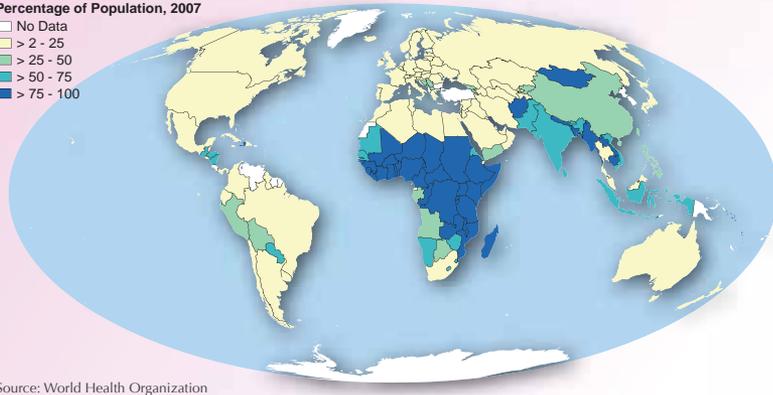
little or no progress

**Indoor air pollution from particulate matter (PM) continues to have major health impacts, particularly on women and children.** It is one of the leading causes of child mortality, with an estimated 900 000 deaths a year from pneumonia in children under the age of five.<sup>16</sup> The total toll — nearly 2 million premature deaths each year or 3.3% of deaths worldwide — is even higher than that from outdoor air pollution based on WHO estimates.<sup>17</sup> Indoor PM pollution remains very high in poor rural areas of the world, especially in parts of Africa and Asia. Other indoor air pollutants include carbon monoxide from improperly adjusted gas stoves, lead from paint, and other chemicals used in consumer products. Modern fuels and improved cooking facilities can reduce indoor smoke, but many people cannot afford them. Monitoring of indoor air pollution levels involves privacy issues and other challenges, and there are many gaps in knowledge. Awareness raising about indoor air pollution is a high priority.

Population Using Solid Fuels for Indoor Cooking

Percentage of Population, 2007

□ No Data  
■ > 2 - 25  
■ > 25 - 50  
■ > 50 - 75  
■ > 75 - 100



Source: World Health Organization



Biodiversity



# Extinction Risk of Species

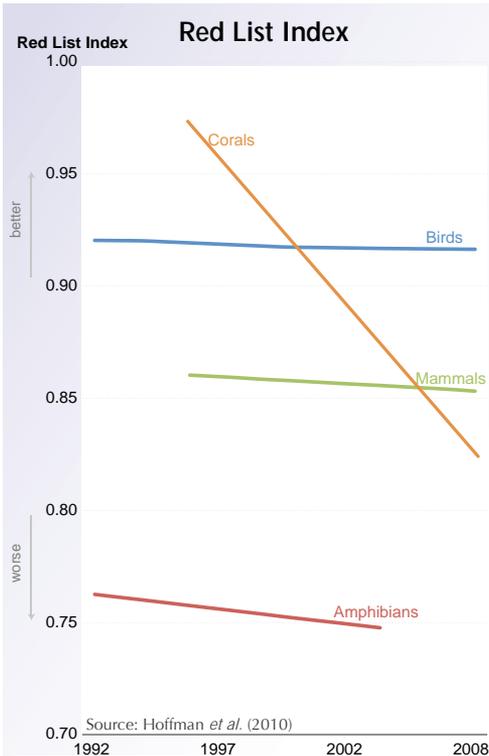
Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss

Millennium Development Goal 7, Target B

little or no progress

The world failed to reach the Millennium Development Goal target of reducing the rate of biodiversity loss by 2010.<sup>18</sup> Ever more species are threatened by extinction, including almost 20% of vertebrate species (comprising birds, mammals, amphibians, reptiles and fish).<sup>19</sup> Levels of threat are increasing fastest for corals.<sup>20</sup> On average, species populations are also declining worldwide — vertebrate populations have declined by 30% since 1970; a continuing decline is expected.<sup>21</sup> Declines are most rapid in the tropics, in freshwater habitats and for marine species utilized by humans, and are due in part to poverty. Conservation actions have been effective in some cases (for example, North American waterbirds).<sup>22</sup> Systematic monitoring is mainly confined to birds in developed countries; knowledge is poorer on trends in tropical

regions, and for plants and invertebrates. International financing for biodiversity protection is estimated to have grown by about 38% in real terms since 1992, to US\$ 3.1 billion per year.<sup>23</sup>



The Red List measures the risk of extinction of species in seven classes, ranging from Least Concern to Extinct. A value of 1.0 indicates that species are not expected to become extinct in the near future, while 0 means that a species is extinct. A small change in the level of threat can have significant impacts on species decline.

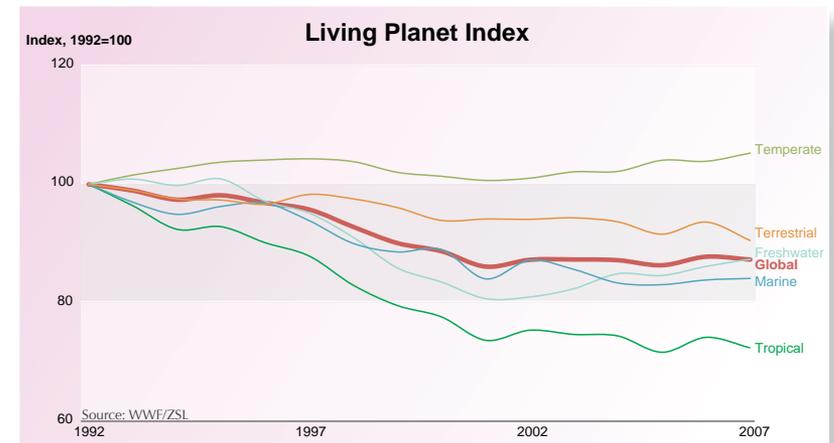
# Natural Habitats

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

Aichi Biodiversity Target 5

little or no progress

The condition and extent of natural habitats continue to decline, with some habitats experiencing declines in extent of 20% or more since 1980.<sup>24</sup> Expansion of agriculture is the main reason for the loss of habitat on land, with more than 30% of the Earth's land surface now used for agricultural production.<sup>25</sup> Wetland and coastal habitats are perhaps the most seriously affected (see later sections on "Wetlands" and "Corals"). Climate change is an increasingly important threat. For instance, in the Arctic, tundra habitats are retreating owing to tree-line advance and the Arctic ice cap is shrinking rapidly, with likely effects on ice-dependent species.<sup>26</sup> Recent studies have projected shifts in distribution of marine fish and invertebrate species towards the poles at an average rate of 40 km per decade, leading to likely disruption of ecosystems and local extinctions.<sup>27</sup> Natural habitats are also becoming more fragmented: 80% of remaining forest fragments in the Brazilian Atlantic Forest are now smaller than 50 hectares.<sup>28</sup> Future priorities include consistent and regular monitoring of both forest and non-forest areas by remote sensing, and development of indicators to measure the condition and fragmentation of habitats.



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.

# Invasive Alien Species

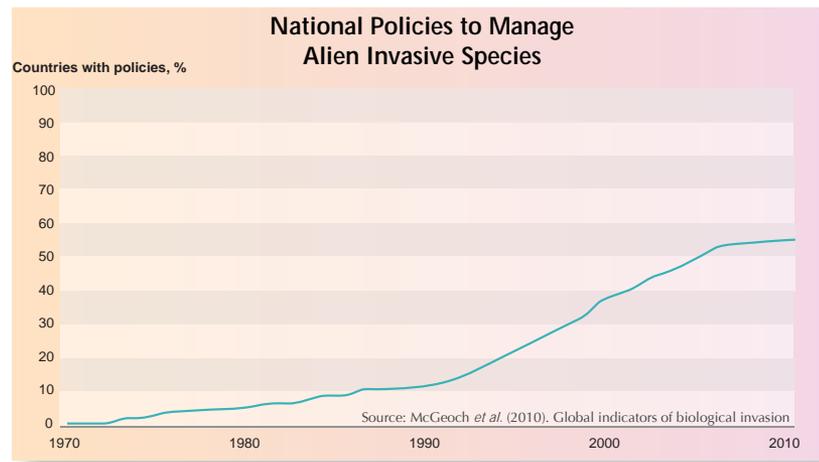
# Traditional Knowledge

By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment

Aichi Biodiversity Target 9

**some progress on policy responses**  
**little or no progress on trends in invasive alien species**

The numbers of invasive alien species continue to increase, but there are significant gaps in knowledge. Data from Europe show the number has increased by 76% since 1970, a pattern that is likely to be similar on other continents.<sup>29</sup> Invasive alien species have large economic costs, estimated by one study to total US\$ 1.4 trillion annually.<sup>30</sup> According to another study, invasive alien species were a factor in more than half of vertebrate extinctions where the cause was known, and the sole cause of 20%.<sup>31</sup> Governments can reduce the impacts of invasives with eradication and control programmes. An increasing number of countries — now about 55% — have legislation to prevent the introduction of new alien species and control existing ones, but fewer than 20% have comprehensive strategies and management plans. Finally, there is a lack of data on the effectiveness of these programmes.<sup>32</sup>

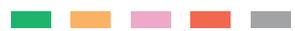
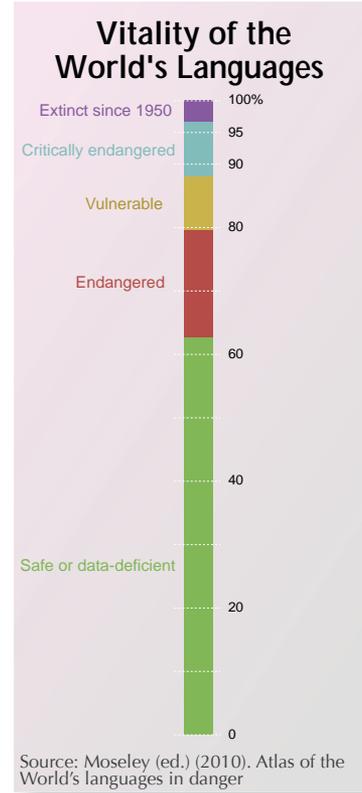


Subject to its national legislation, [each contracting Party shall] respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge...

Convention on Biological Diversity, article 8(j)

**little or no progress, based on data on languages**  
**insufficient data to assess more broadly**

The number of languages is declining, suggesting a broader loss of traditional knowledge. Since data on the status of traditional knowledge are very limited, information on languages is the most commonly used proxy. Nearly 40% of the world's languages spoken in 1950 are now extinct, endangered or vulnerable. UNESCO estimates that, if nothing is done, half of 6 000 plus languages spoken today will disappear by the end of this century.<sup>33</sup> Data are needed on the status and trends of traditional occupations and changes in land use and land tenure in indigenous and local communities.



# Access & Benefit Sharing

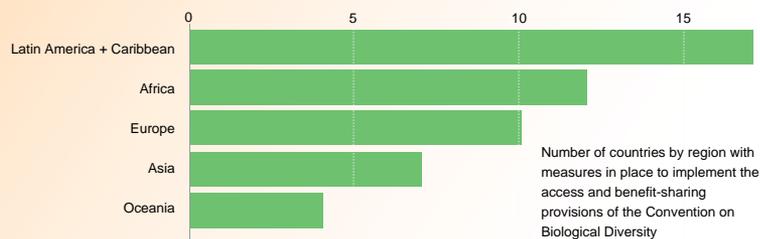
By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation

Aichi Biodiversity Target 16

some progress

The recently adopted Nagoya Protocol is an important milestone towards ensuring that the benefits of biodiversity and traditional knowledge are widely distributed and shared. An example is pharmaceutical products developed in one country using traditional knowledge from another.<sup>34</sup> At present ten countries own 90% of the patents related to marine biodiversity, with 70% belonging to just three countries, which between them have only 20% of the world's coastline.<sup>35</sup> The Protocol is unprecedented in its recognition of the right of indigenous and local communities to regulate access to traditional knowledge in accordance with their customary laws and procedures. The number of signatories and countries with relevant legislation is increasing. Complete data are not available on the number of access and benefit-sharing agreements, the number and distribution of beneficiaries, and the nature, extent and sustainability of benefits from genetic resources.<sup>36</sup>

## Access and Benefit Sharing Provisions



Source: Secretariat of the Convention on Biological Diversity

# Protected Areas

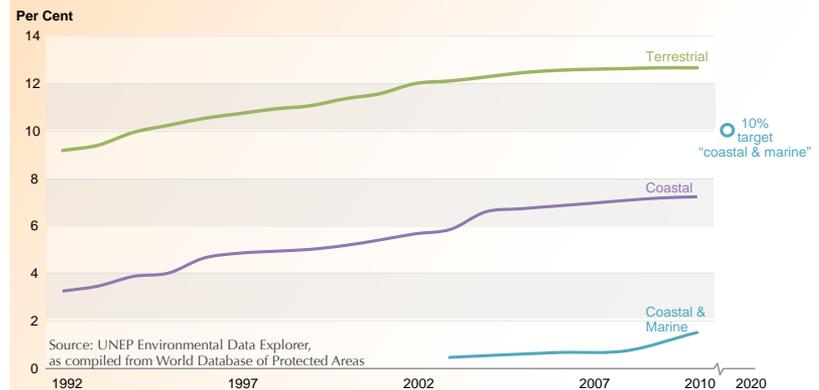
By 2020, at least 17% of terrestrial and inland water, and 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes

Aichi Biodiversity Target 11

some progress

Protected areas cover nearly 13% of the world's land surface but only about 1.6% of the marine area.<sup>37</sup> However, coverage is uneven — less than 10% in 2010 for 6 of the 14 global biomes and half of the 821 terrestrial eco-regions.<sup>38</sup> It is estimated that about 15% of the global terrestrial carbon stock is stored in protected areas.<sup>39</sup> Community-based approaches cover 400-800 million hectares, but factors such as insecure tenure undermine the potential to conserve biodiversity and there are data gaps on location, extent, legal status and effectiveness.<sup>40</sup> Priorities include adequate resource levels for protected areas, clear and effective management arrangements, and indicators to assess the effectiveness of protected areas.

## Protected Areas



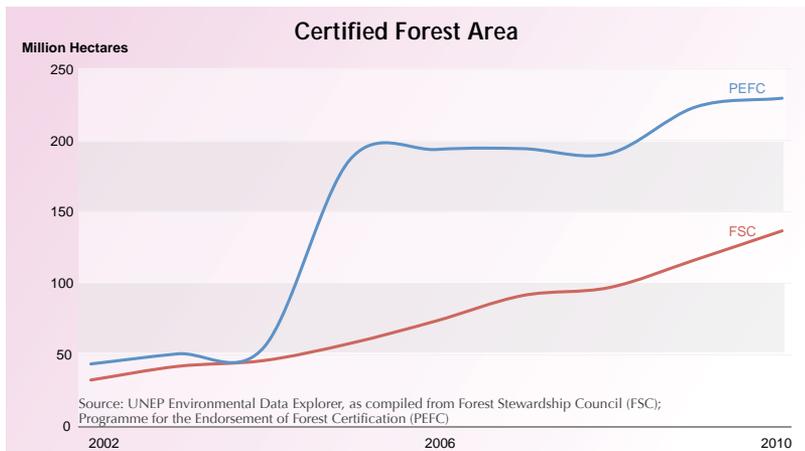
# Sustainably Managed Production Areas

By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity

Aichi Biodiversity Target 7

little or no progress

The total area of forests and agricultural land certified as sustainably managed is increasing, but the proportions remain minimal, particularly in developing countries. In continuously cultivated, low-input agricultural systems, rapid declines in soil fertility and yield, together with international commodity price changes, continue to impact human well-being in agricultural communities, in particular in developing countries.<sup>41</sup> Soil erosion in conventional agricultural systems is now over three times that in systems practicing conservation agriculture, and over 75 times that in systems with natural vegetation.<sup>42</sup> The yield gains achieved by modern conventional agriculture therefore come with ecological costs. There appears to be an improvement in forest management, as evidenced by a 20% annual increase in forests certified as sustainably managed by two major agencies between 2002 and 2010, although the overall percentage remains minimal.<sup>43</sup>



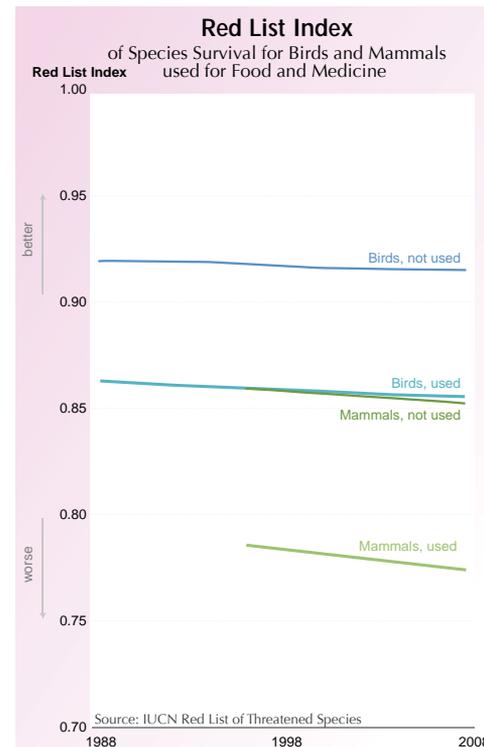
# Species Harvested for Food and Medicine

By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity

Aichi Biodiversity Target 13

little or no progress

Harvesting of natural products is often unsustainable, resulting in declining populations of species used by humans. In general, extinction risks appear to be higher for species harvested for food and medicine. The legal trade in wildlife (live animals, animal products for clothing and food, ornamental and medicinal plants, fish and timber) was estimated at more than US\$ 300 billion in 2009 and illegal trade is believed



to be substantial, possibly US\$ 10 billion.<sup>44</sup> The Food and Agriculture Organization (FAO) valued trade in primary wood products at US\$ 189 billion in 2009.<sup>45</sup> Although global data for plants are not available, medicinal plants face a high risk of extinction in those parts of the world where people are most dependent on them. The World Health Organization (WHO) estimates that 80% of the population of some Asian and African countries relies on traditional medicines.<sup>46</sup> Genetic diversity of cultivated crops and domesticated animals has declined, but data on this issue need to be strengthened.

*Utilized species have lower values, indicating greater extinction risk than species not used for food and medicine.*

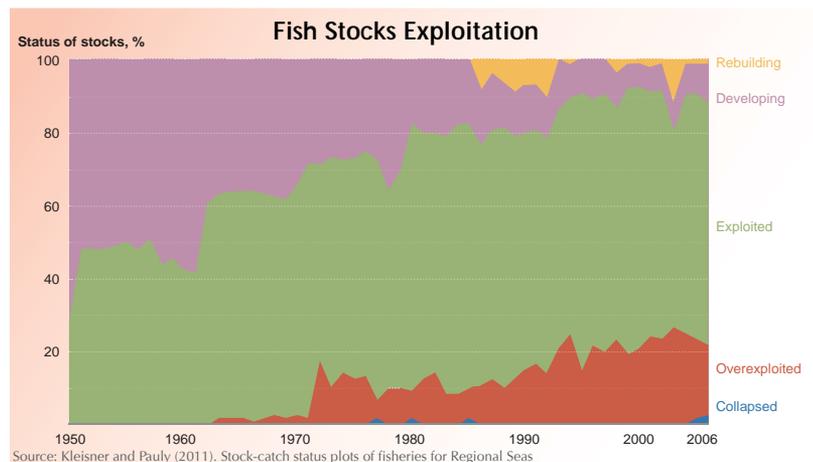
# Fish Stocks

To achieve sustainable fisheries... maintain or restore stocks to levels that can produce the maximum sustainable yield with the aim of achieving these goals for depleted stocks on an urgent basis and where possible not later than 2015

Johannesburg Plan of Implementation, para. 31 (a)

## further deterioration

The proportion of marine fish stocks that are overexploited or collapsed has increased considerably in recent decades.<sup>47</sup> Fisheries are a major source of food, revenues and employment, with more than 90 million tonnes of fish captured in 2008 with trade valued at more than US\$ 100 billion.<sup>48</sup> Fisheries more than quadrupled their catch from the early 1950s to the mid-1990s, but since then, catches have stabilized or diminished despite increased fishing effort.<sup>49</sup> Estimates suggest that in 2000, catches would have been 7-36% higher were it not for stock depletion; this translates to a landed value loss of US\$ 6.4-36 billion, an amount that could have helped prevent 20 million people suffering from undernourishment.<sup>50</sup> Commercial fisheries are the main threats to stocks. Overfishing is also a problem in freshwater wetlands, although in many cases adequate data are not available. Fish products certified by the Marine Stewardship Council (MSC) constituted only 7% of global fisheries in 2007.<sup>51</sup> Marine protected areas appear effective: a recent review found strikingly higher fish populations inside reserves than in surrounding areas, and as compared with the same areas before reserves were established.<sup>52</sup>



# Chemicals & Waste



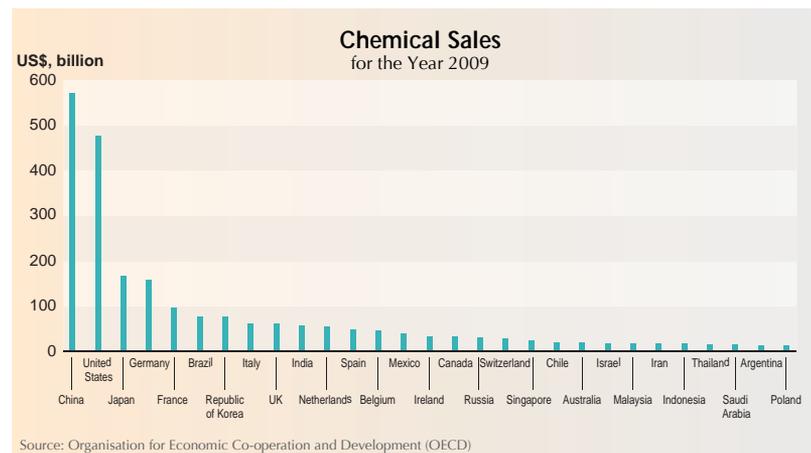
# Sound Chemicals Management

Renew the commitment, as advanced in Agenda 21, to sound management of chemicals throughout their life cycle... aiming to achieve, by 2020, that chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment...

Johannesburg Plan of Implementation, para. 23

**some progress**  
insufficient data to assess globally

A recent WHO study estimates that 4.9 million deaths in 2004 were attributable to environmental exposure to chemicals.<sup>53</sup> More than 248 000 chemical products are now commercially available.<sup>54</sup> In response, a globally harmonized system to classify and label chemicals, based on the levels of hazard they present, has been established. 17 multilateral agreements address sound chemicals management, 23 countries have a functioning national chemicals register, and the number of developing countries with a chemicals management regime is increasing.<sup>55</sup> Global monitoring programmes are in place for some chemicals, such as persistent organic pollutants (POPs), but management of chemicals throughout their life cycle needs to be strengthened. There remains great uncertainty about the levels of risk posed by many chemicals, and there is no global framework for chemicals on the market to undergo risk assessment and risk management. Chemicals present in some products are often not identified, sometimes for reasons of commercial confidentiality. Specific risks to children are seldom considered. Risk assessment in many developing countries is constrained by lack of data, capacity, information sharing and adequate finance.



# Heavy Metals

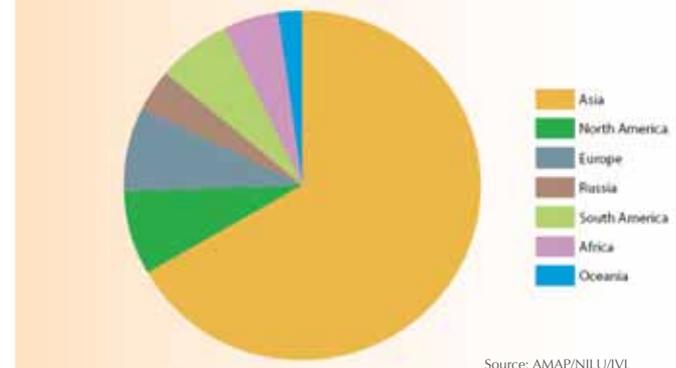
Promote reduction of the risks posed by heavy metals that are harmful to human health and the environment...

Johannesburg Plan of Implementation, para. 23(g)

**some progress**

Developed countries have made some progress in controlling the production and use of heavy metals. As a result, there have been fewer cases of acute poisoning by metals such as lead, mercury and arsenic, but exposures still occur at industrial and 'legacy' contaminated sites,<sup>56</sup> and there is increasing concern about the effects of long-term exposure, even at low concentrations. Significant gaps remain in many developing countries, where heavy metals are often mined, processed, used and recycled with limited environmental controls, and where most cases of serious poisoning occur. More stringent occupational, human health and environmental standards are needed, and more research into alternative chemicals for use in consumer goods would help reduce the burden on the environment and impacts on human health. Global negotiations for a treaty on mercury are moving forward, but other heavy metals are not covered by international agreements.

**Proportion of Anthropogenic Emissions of Mercury to Air**  
from Various Regions for the Year 2005



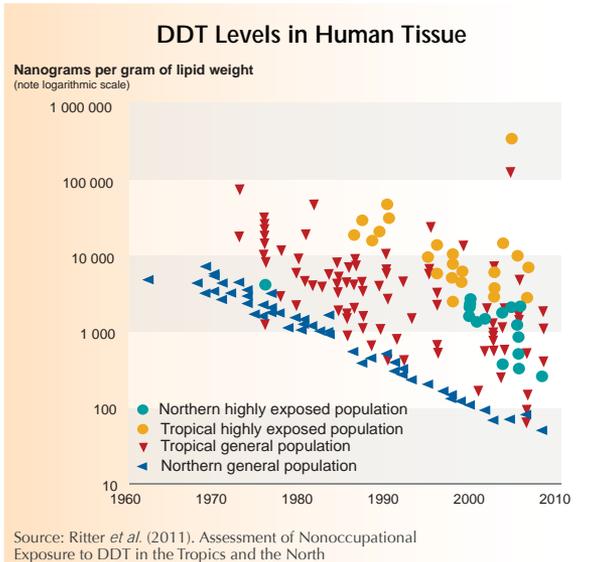
# Persistent Organic Pollutants

Each Party shall... prohibit and/or take the legal and administrative measures necessary to eliminate its production and use of the chemicals listed in Annex A [selected persistent organic pollutants] subject to the provisions of that Annex

Stockholm Convention on Persistent Organic Pollutants, article 3.1(a)(i)

some progress

There appears to have been progress in eliminating the production and use of persistent organic pollutants (POPs), a group of chemicals with common features including persistence, bioaccumulation and long-range transport. However, pollution by POPs is still widespread, affecting remote areas such as the Arctic and Antarctic.<sup>57</sup> Long-term measurements show a decrease in POP concentrations in the air during the 1980s and 1990s, but this decrease has come to a halt for several compounds, and concentrations of some compounds such as polychlorinated biphenyls (PCBs), chlordane and dichloro-diphenyl-trichloroethane (DDT) appear to be rising.<sup>58</sup> DDT concentrations in humans are considerably higher in tropical than in northern regions.<sup>59</sup> Continuing exposure to POPs in all parts of the world is likely, a result of past emissions. Urban regions in developed countries are emitting about 0.1-1 grams of PCBs per person per year. The Stockholm Convention on POPs entered into force in 2004; many developing countries require support for national implementation plans. Waste electronic equipment often contains POPs and requires particular attention.



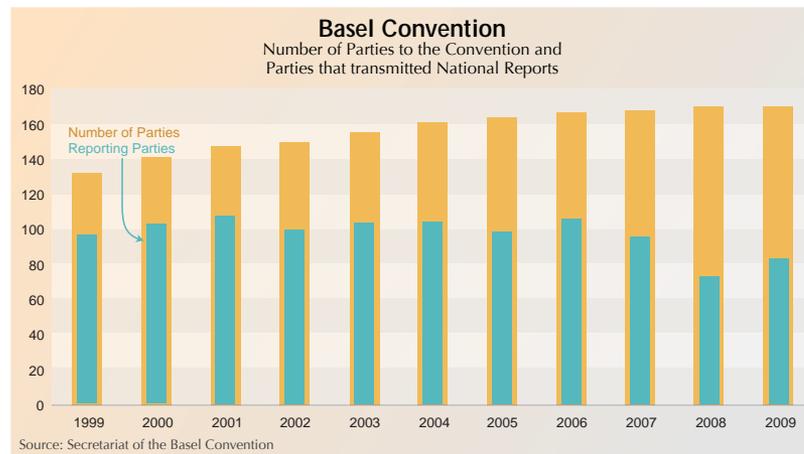
# Sound Waste Management

Determined to protect, by strict control, human health and the environment against the adverse effects which may result from the generation and management of hazardous wastes and other wastes

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, Preamble

some progress  
insufficient data to assess globally

**Inadequate hazardous waste management and illegal traffic is a continuing threat.** The frequency of new reports to the Basel Convention on this issue is falling, and data are sparse and difficult to interpret, especially from developing countries and countries with economies in transition. It is estimated that there are 2 million contaminated sites in Europe, the United States and the Russian Federation alone.<sup>60</sup> Many developing countries lack policies governing the import of hazardous waste, resulting in unregulated dumping and human exposure. Waste electronic products (e-waste) are the world's fastest-growing waste stream, at 20-50 million tonnes per year.<sup>61</sup> Trade and movement of e-waste to some developing countries is increasing because of their often lower labour costs and health and environmental standards. People that recycle e-waste in the informal sector are exposed to heavy metals, endocrine-disruptors and other harmful substances.<sup>62</sup> Full national implementation of the Basel Convention and associated capacity building is a high priority. There is a new global trend to transform waste into resources, which has the potential to reduce pollution, save raw materials and improve energy efficiency.



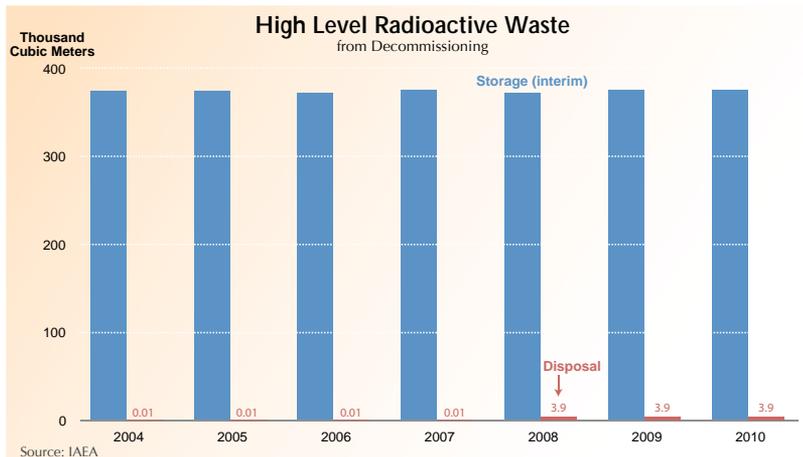
# Radioactive Waste

The objectives of this Convention are (i) to achieve and maintain a high level of safety worldwide in spent fuel and radioactive waste management... (ii) to ensure... effective defenses against potential hazards... (iii) to prevent accidents with radiological consequences...

Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, Article 1

## some progress

Radioactive waste continues to be generated by the nuclear industry, medical and industrial sectors, and from mining of substances like uranium. As of February 2012, 435 reactors were in operation in 30 countries, of which about 75% were more than 20 years old, and 63 plants were under construction.<sup>63</sup> Despite some progress, much still needs to be done to establish adequate management and disposal facilities, in particular the often contentious process of deciding where they should be located. Some legacy sites from nuclear weapons production and testing still need to be remediated, as well as legacy uranium mines in Africa and Central Asia. The International Atomic Energy Agency (IAEA) predicted in 2008 that the use of nuclear energy would increase by 15-45% by 2020 and 25-95% by 2030,<sup>64</sup> but the Fukushima disaster is likely to affect future trends, with a number of countries deciding to phase out their nuclear programmes following the accident.



*Storage (interim): The placement of radioactive waste in a nuclear facility where isolation, environmental protection and human control (for example, monitoring) are provided with the intent that the waste will be retrieved. Disposal: The emplacement of waste in an approved, specified facility without the intention of retrieval. IAEA (1995), The Principles of Radioactive Waste Management*





Land

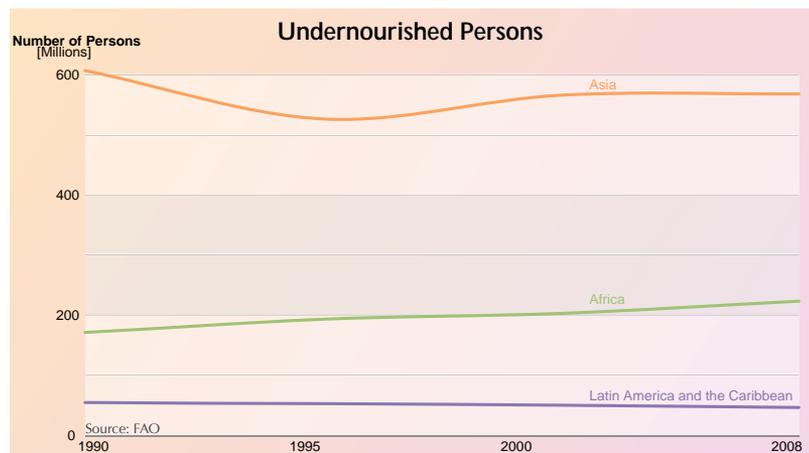
# Access to Food

Halve, between 1990 and 2015, the proportion of people who suffer from hunger

Millennium Development Goal 1, Target C

some progress on reducing hunger  
little or no progress on ensuring sustainable food supply

In 2010 about one-sixth of the world's population, an estimated 925 million people, were undernourished.<sup>65</sup> The proportion is decreasing slowly, but the absolute number is still increasing; the world is not on track to meet the MDG target.<sup>66</sup> Sub-Saharan Africa has the highest proportion of undernourished, about 30%, but the highest absolute numbers are in Asia and the Pacific (578 million).<sup>67</sup> Many undernourished people live in areas most vulnerable to climate variability, in particular in developing countries. Poor rural households now spend more than half their income on food. Rising demand for biofuels has contributed to food price volatility. FAO estimates that food production will need to increase by 70% from 2005 levels to reduce the proportion of developing countries' populations that are chronically undernourished to 4% by 2050.<sup>68</sup> About one-third of food produced for human consumption is lost or wasted.<sup>69</sup> Agricultural yields are generally increasing, but a large gap remains between regions, and yields in developed countries may not continue to increase at historic rates.<sup>70</sup> Meeting the global need for food will be one of the most important challenges of this century, and a range of policy measures are needed that include reducing food waste, stimulating agricultural growth, promoting affordable access to land, water and tenure rights for poor households, and coordinating domestic and regional biofuel policies to avoid food insecurity.



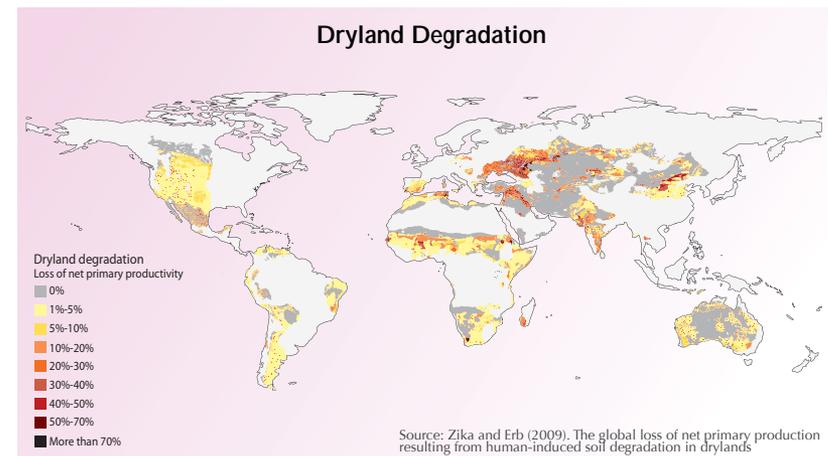
# Desertification & Drought

...combat desertification and mitigate the effects of drought in countries experiencing serious drought and/or desertification, particularly in Africa...

United Nations Convention to Combat Desertification (UNCCD), Article 2(1)

little or no progress

**Agricultural productivity in drylands is continuing to decrease because of the effects of desertification and drought.** About 4-10% of dryland productivity is lost each year because of degradation.<sup>71</sup> Net primary productivity (NPP) measurements indicate that around one-quarter of the terrestrial land area is degraded, including around 30% of forests, 20% of cultivated zones and 10% of grasslands.<sup>72</sup> Dryland degradation is most widespread in the Sahelian and Chinese arid and semi-arid regions, followed by Iranian and Middle Eastern drylands, and to a lesser extent the Australian and Southern African regions.<sup>73</sup> Pressures on drylands, as a result of agricultural practices and a range of other causes, are likely to continue, and to be aggravated by global climate change.<sup>74</sup> Globally, soil erosion is contributing to a decline in available agricultural land per capita as degraded land is abandoned.<sup>75</sup> Better data and information are needed on the status of drylands worldwide. Countries have adopted a set of indicators regarding actions they take under UNCCD (e.g. advocacy, awareness and education).



# Deforestation

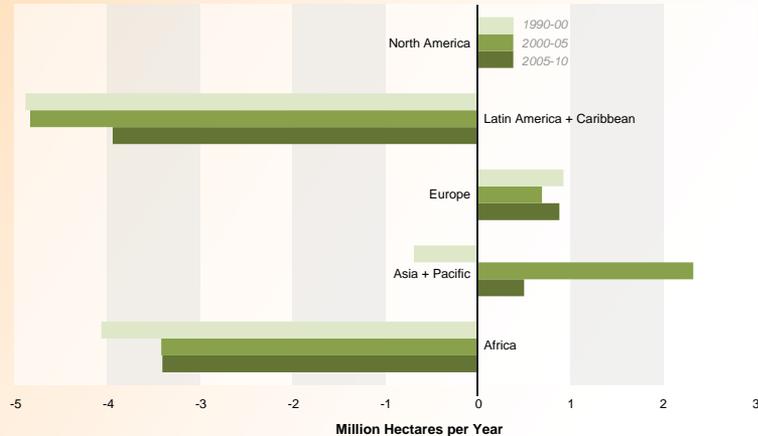
Reverse the loss of forest cover worldwide through sustainable forest management, including protection, restoration, afforestation and reforestation, and increase efforts to prevent forest degradation

General Assembly resolution 62/98 of 31 January 2008, section IV, Global Objective 1

some progress

The world lost over 130 million hectares of forest between 2000 and 2010.<sup>76</sup> Deforestation is now mostly in the tropics, especially South America and Africa.<sup>77</sup> Deforestation and forest degradation can produce attractive short-term returns, but the cost of annual losses of natural capital due to deforestation and degradation has been estimated at US\$ 2-4.5 trillion per year, more than the losses of recent economic crises.<sup>78</sup> The rate of loss remains alarmingly high but is slowing,<sup>79</sup> and there has been some forest regrowth in temperate areas. Forest degradation is widespread in many areas but trends are poorly understood. Regional policy coordination is important to avoid deforestation shifting from regulated to unregulated areas. Better data are needed on a number of issues such as forest carbon stocks; it is currently estimated that about 1 150 gigatonnes of carbon are stored in forests, with 30-40% in biomass and 60-70% in soil.<sup>80</sup> Techniques for evaluating the ecosystem services of forests are being improved, but capacity building is needed to use the information for decision-making.

Forest Net Change



Source: UNEP Environmental Data Explorer, as compiled from FAOstat

# Wetlands

The Contracting Parties shall formulate and implement their planning so as to promote the conservation of the wetlands included in the List, and as far as possible the wise use of wetlands in their territory

Ramsar Convention on Wetlands, article 3(1)

further deterioration

The condition and extent of the world's wetlands are declining significantly. The 20<sup>th</sup> century saw a 50% loss in wetland extent, 95% in some regions, and there has been a 20% loss of seagrass habitat since 1970 and 20% of mangrove habitat since 1980.<sup>81</sup> Two-thirds of the world's largest rivers are now moderately to severely fragmented by dams and reservoirs.<sup>82</sup> The rate of loss of coastal wetlands has slowed since the 1980s, but more than 100 000 hectares are still lost each year as a result of agriculture, aquaculture and human infrastructure, pressures that are likely to remain constant or increase.<sup>83</sup> Climate change is expected to have major impacts on remaining wetlands. Inland wetlands and coastal marine habitats also face a major threat from waterborne pollutants, as well as eutrophication and acidification from nitrogen, sulphur and other substances.<sup>84</sup> An investment of US\$ 10-15 billion in restoring the Mississippi Delta in the United States could generate the equivalent of US\$ 62 billion by avoiding losses from storm damage and achieving other benefits.<sup>85</sup> United Nations guidance on subjects such as wise use and valuation of wetlands is being applied in several countries. There is a need for better monitoring of the location and condition of global wetlands and renewed commitment to the Ramsar Convention at the national level.



# Ecosystem Services

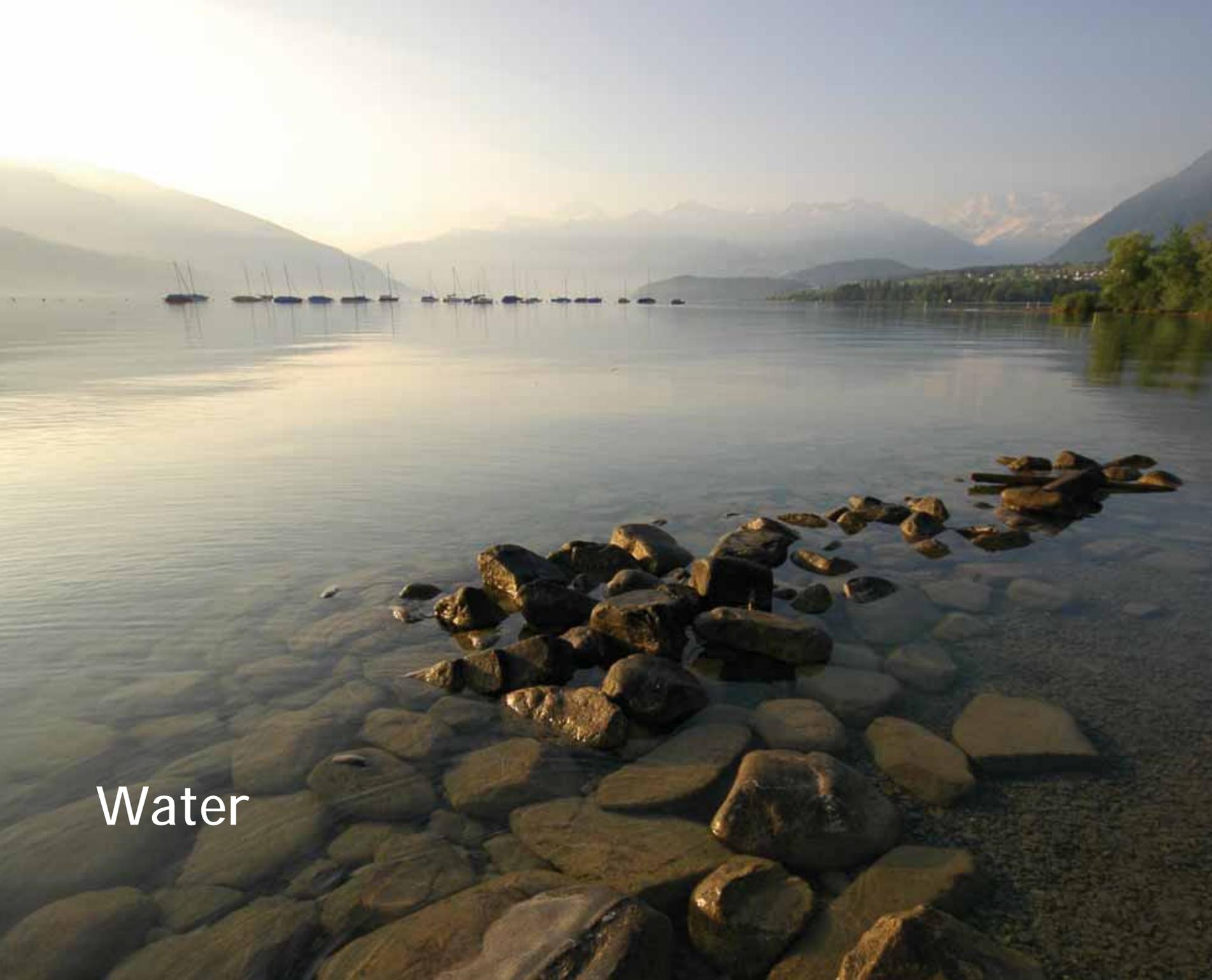
To improve recognition of the social, economic and ecological values of trees, forests and forest lands, including the consequences of the damage caused by the lack of forests; to promote methodologies with a view to incorporating social, economic and ecological values of trees, forests and forest lands into the national economic accounting systems...

Agenda 21, Chapter 11, paragraph 21(a)

## little or no progress

**Ecosystems are the cornerstones of economies, but their real value remains effectively invisible in national profit and loss accounts.** They also have priceless spiritual, aesthetic and cultural dimensions. Energy for much of the world's population comes from biomass, hydropower depends on large and regular water flow (and is affected by deforestation and siltation of catchments) and freshwater is a critical provisioning service for drinking, sanitation, cooking and agriculture. Overall, the global economy has quadrupled during the past 25 years,<sup>86</sup> but 60% of the world's major ecosystem goods and services that underpin livelihoods have been degraded or used unsustainably.<sup>87</sup> Allowing profits from extraction of natural capital to be privatized is a pervasive problem across all land covers and uses. Loss of ecosystem services tends to affect poor people most directly, as they are the most dependent on local ecosystems and live in areas most vulnerable to ecosystem change.<sup>88</sup> Economic valuation of ecosystem services — although not universally accepted — is one way to ensure that they are considered by decision-makers. Priorities also include improving techniques to value 'non-market' aspects. For example, the Mau Forests complex in Kenya is estimated to provide goods and services worth US\$ 1.5 billion per year through water for hydroelectricity, agriculture, tourism and urban and industrial use, as well as erosion control and carbon sequestration.<sup>89</sup>





Water

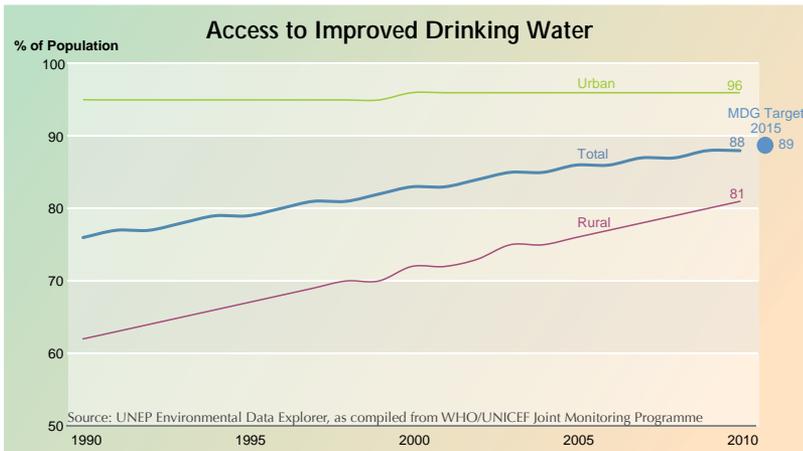
# Drinking Water

Halve, by 2015, the proportion of people without sustainable access to safe drinking water

Millennium Development Goal 7, Target C

**significant progress**  
more progress in urban than in rural areas

The MDG target for 2015 was already met, but more than 600 million people will still lack access to safe drinking water in 2015.<sup>90</sup> The proportion of people without access to improved drinking water supply fell from 23% in 1990 to 13% in 2008, and is projected to be 9% in 2015.<sup>91</sup> Less progress has been made in rural areas and in Africa and the Pacific.<sup>92</sup> Despite improvements, lack of access to drinking water of adequate quality and quantity remains one of the largest human health problems globally. Achievement of the MDG target has mostly relied on increased use of technology and infrastructure to overcome poor water quality or water scarcity.<sup>93</sup>



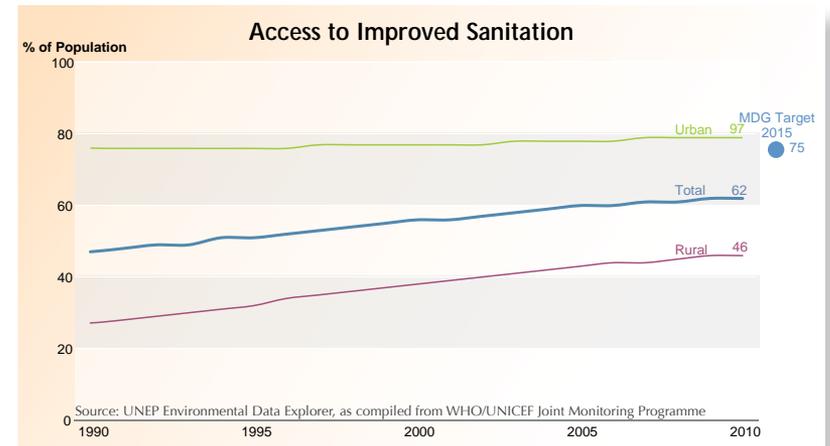
# Sanitation

Halve, by 2015, the proportion of people without sustainable access to... basic sanitation

Millennium Development Goal 7, Target C

**some progress**

More than 2.5 billion people still lack access to basic sanitation, and the MDG target for 2015 is unlikely to be met.<sup>94</sup> In particular, improved sanitation continues to bypass the poorest communities and individuals, especially in Africa, South Asia and the Pacific.<sup>95</sup> Three and a half million people continue to die each year from water-related diseases, which are a leading cause of child mortality. There were 1.3 million diarrhoea-related deaths of children under 5 in 2008, 70% of which were in Africa.<sup>96</sup> Cholera cases fell by about two-thirds between 1990 and 2009 (to 221 226 cases), but an epidemic followed the 2010 earthquake in Haiti.<sup>97</sup> Achieving the MDG sanitation target should include provision of wastewater collection and treatment facilities, to avoid unintended negative impacts of releasing more untreated wastewater into the environment.



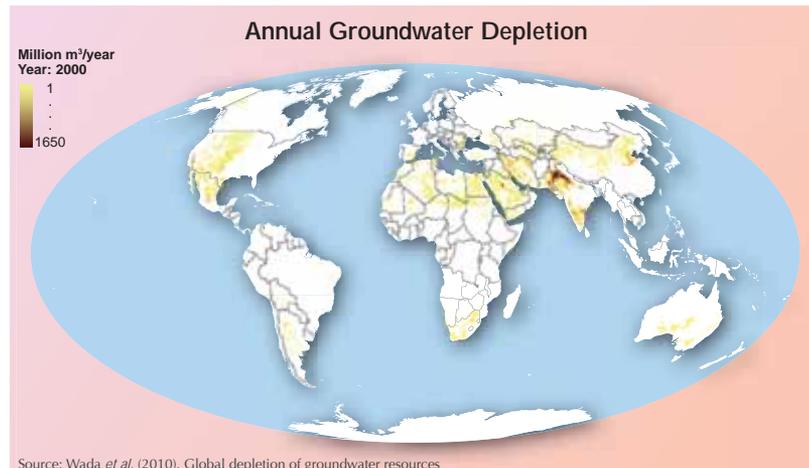
# Groundwater Depletion

To stop the unsustainable exploitation of water resources by developing water management strategies at the regional, national and local levels, which promote both equitable access and adequate supplies

Millennium Declaration, General Assembly resolution 55/2 of 18 September 2000, para. 23

little or no progress on groundwater pollution and monitoring  
further deterioration on groundwater supply

Eighty per cent of the world's population lives in areas of high threat to the freshwater supply, with nearly half of the world — 3.4 billion people — living in areas under the most severe threat.<sup>98</sup> Global water withdrawals have tripled over the past 50 years.<sup>99</sup> Between 1960 and 2000, groundwater depletion (where water use exceeded renewable supply) increased from 126 km<sup>3</sup> to 283 km<sup>3</sup> per year.<sup>100</sup> Agriculture accounts for 92% of the global water footprint; and many globally important agricultural centres are particularly dependent on groundwater, including northwest India and northeast Pakistan, northeast China and the western United States.<sup>101</sup> Climate change and further population growth are likely to result in even greater water shortages in many regions.<sup>102</sup> As water scarcity increases, some regions will be forced to rely more on energy-intensive desalination technologies. The cost of additional infrastructure needed by 2030 to provide a sufficient quantity of water for all countries is estimated at US\$ 9-11 billion per year, 85% of this in developing countries.<sup>103</sup> At present, about 158 of the 263 international freshwater basins still lack cooperative management frameworks.<sup>104</sup> Comprehensive water monitoring systems are currently lacking, as well as a water security indicator and related data to track trends over time.



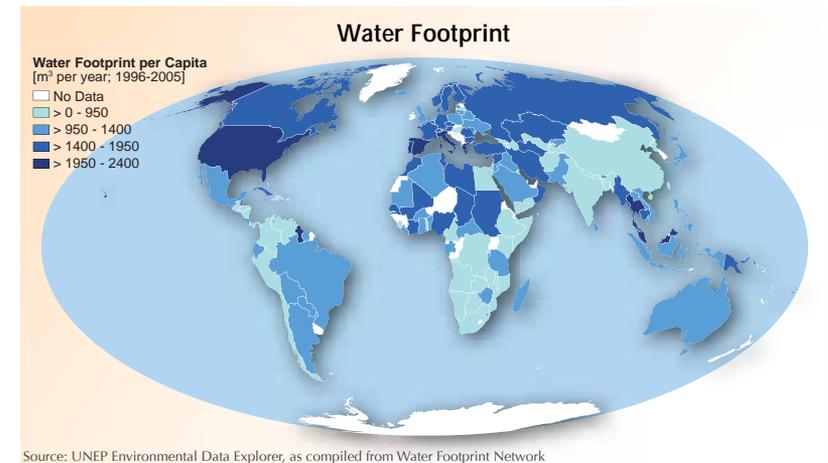
# Water Use Efficiency

Improve the efficient use of water resources and promote their allocation among competing uses in a way that gives priority to the satisfaction of basic human needs...

Johannesburg Plan of Implementation, para. 26(c)

some progress

Some regions have made significant gains in water-use efficiency, but these have been outstripped by increasing demand. The efficiency of irrigation and water reuse in many regions is poor. Irrigation technologies have become more efficient, but the best available technologies are not widely applied.<sup>105</sup> There are no global quantitative targets for water-use efficiency, and many gaps in data. Targets and data for each water-using sector would better guide and inform policy in this area.



*Per capita water footprint: The total volume of freshwater that is used to produce the goods and services consumed by an individual.*

# Freshwater Pollution

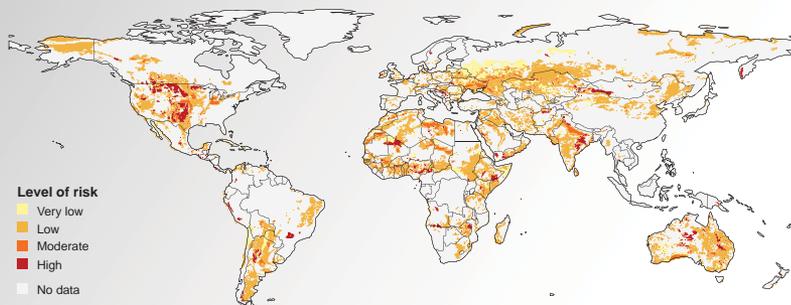
Intensify water pollution prevention to reduce health hazards and protect ecosystems by introducing technologies for affordable sanitation and industrial and domestic wastewater treatment, by mitigating the effects of groundwater contamination and by establishing, at the national level, monitoring systems and effective legal frameworks

Johannesburg Plan of Implementation, para. 25(d)

insufficient data to assess

**Water quality in at least parts of most major river systems still fails to meet WHO drinking water standards.** Freshwater pollution generally seems to be increasing, but freshwater monitoring has declined in many regions, meaning no proper assessment is possible because of inadequate data. Nitrate concentrations are increasing and are projected to increase further because of inadequate sanitation and heavy fertilizer use, which has direct human health impacts and reduces oxygen in the water ('eutrophication'), killing aquatic life. It was estimated more than a decade ago that about 130 million people had been exposed to levels of arsenic in drinking water above WHO standards,<sup>106</sup> but evidence has since mounted of toxic effects at even lower levels;<sup>107</sup> 35-75 million people are affected by arsenic naturally occurring in groundwater.<sup>108</sup> There are no globally-agreed water quality standards, no rigorous global water quality index based on long-term data, and data gaps exist for concentrations of contaminants of emerging importance. Measures to reduce a variety of water pollutants could result in health benefits of more than US\$ 100 million in large OECD economies alone.<sup>109</sup>

Estimated Risk of Arsenic in Drinking Water



Source: Schwarzenbach *et al.* (2010). Water pollution and human health

# Marine Pollution

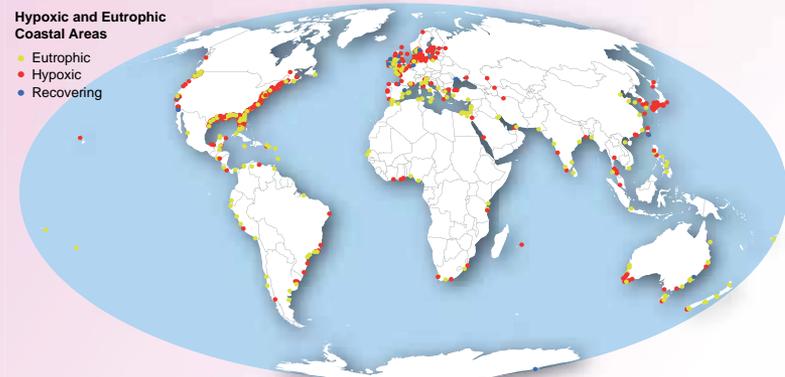
States shall take all measures necessary to prevent, reduce and control pollution of the marine environment resulting from the use of technologies under their jurisdiction or control...

United Nations Convention on the Law of the Sea, article 196, para. 1

little or no progress

**The number of coastal dead zones has increased dramatically.** There are now at least 169 coastal dead zones, with only 13 recovering, and 415 coastal areas suffer from eutrophication.<sup>110</sup> Eighty per cent of marine pollution comes directly from sources on land.<sup>111</sup> Levels of some persistent organic pollutants in fish appear to have decreased, but pollution events continue. Of 12 seas surveyed between 2005 and 2007, the South-East Pacific, North Pacific, East Asian Sea and Caribbean contained the most marine debris.<sup>112</sup> Ratification of the MARPOL Convention by 150 countries is resulting in reduced pollution from ships, but there are gaps in implementation, including disposal facilities in ports. The United Nations Convention on the Law of the Sea (UNCLOS) has been ratified by 160 countries, and the Global Programme of Action on Protection of the Marine Environment from Land-based Activities has been adopted by 108 countries. There are legal frameworks for industrial and municipal wastewater discharge in most developed countries, but less regulation of diffuse sources. Governance of marine areas beyond national boundaries is weak and fragmented.

Marine Dead Zones



Source: Diaz *et al.* (2010). Global eutrophic and hypoxic coastal systems

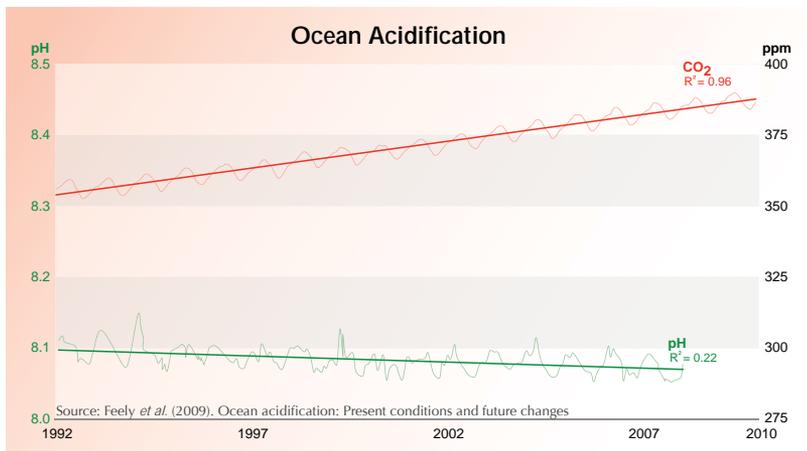
# Corals

States should identify marine ecosystems exhibiting high levels of biodiversity and productivity and other critical habitat areas and should provide necessary limitations on use in these areas, through, inter alia, designation of protected areas. Priority should be accorded, as appropriate to: (a) coral reef ecosystems...

Agenda 21, Chapter 17, para. 85

## further deterioration

The extinction risk is increasing faster for corals than for any other group of living organisms. The condition of coral reefs has declined by 38% since 1980, with a rapid contraction projected by 2050.<sup>113</sup> One of the most serious threats is climate change, which is causing widespread die-off through rising temperatures and ocean acidification. The mean surface ocean pH has already decreased from 8.2 to 8.1, and a decrease to 7.7 or 7.8 is projected by 2100 if current trends persist.<sup>114</sup> Overfishing of herbivores can also transform corals into algal-dominated systems. Loss of corals is likely to have significant effects on ecotourism; for example, coral reef tourism in Belize is estimated to be worth US\$ 150-196 million per year.<sup>115</sup> Coral reefs also provide spawning and nursery grounds for some commercially important fish species. An important gap is the lack of an internationally agreed pH target for oceans.



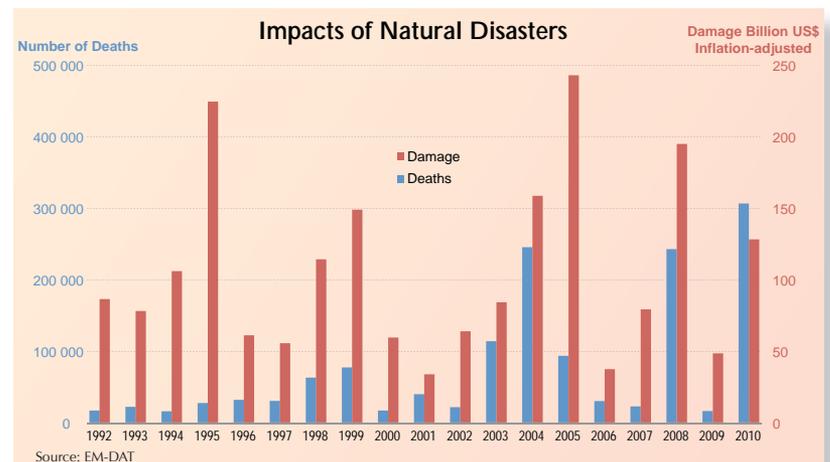
# Extreme Events

Support efforts to prevent and mitigate the impacts of natural disasters...

Johannesburg Plan of Implementation, para. 134

## some progress in disaster response and risk reduction further deterioration in disaster impacts

The number of flood and drought disasters has risen since the 1980s, as have the total number of people affected and the level of damage. The number of flood disasters increased by 230% and the number of drought disasters by 38% between the 1980s and the 2000s.<sup>116</sup> More than 95% of the deaths from natural disasters between 1970 and 2008 occurred in developing countries.<sup>117</sup> Floods and droughts still cause losses of billions of dollars annually, with economic losses higher in developed countries. River channelization, floodplain loss, urbanization especially in coastal areas, and changing land use are important environmental factors increasing impacts of floods and droughts; economic and social development and governance are also important.<sup>118</sup> Higher precipitation intensity is projected for the northern hemisphere and equatorial areas, whereas many areas that are already arid or semi-arid are expected to get even drier.<sup>119</sup> The cost of coastal adaptation to climate change is estimated to reach between US\$ 26 billion and US\$ 89 billion by the 2040s, depending on the magnitude of sea-level rise.<sup>120</sup> Healthy ecosystems play an important role in reducing the risk from disasters; protecting them is a type of intervention often more attainable for the rural poor than alternatives based on infrastructure and engineering.



# Policies and Programmes



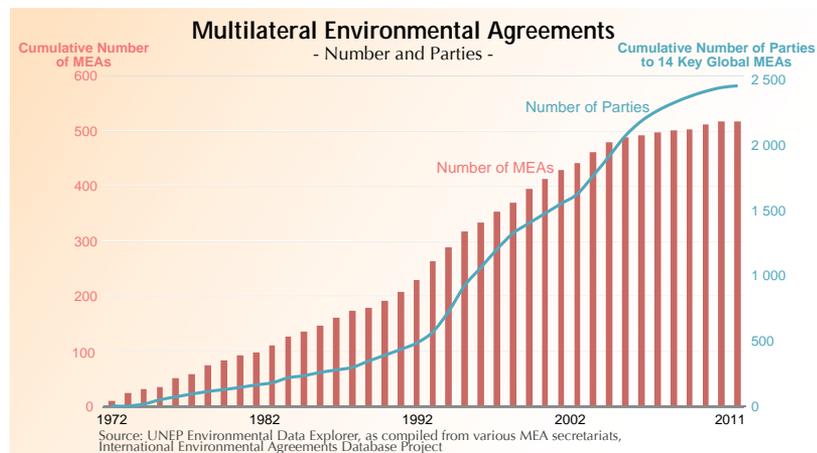
# Environmental Policies

Accordingly, we assume a collective responsibility to advance and strengthen the interdependent and mutually reinforcing pillars of sustainable development—economic development, social development and environmental protection—at the local, national, regional and global levels

Johannesburg Declaration on Sustainable Development, para. 5

## some progress

**GEO-5 contains many examples of policies that could speed up achievement of global environmental goals.** Measures include public investment, green accounting, subsidies, taxes, charges, sustainable trade, creation of new markets, planning, standards, regulations, technological innovation, technology transfer and capacity building. Many national policies are based on commitments under more than 500 international treaties and other agreements that relate to the environment, of which 323 are regional and 302 date from between 1972 and the early 2000s.<sup>121</sup> While negotiation of the various conventions and protocols is a clear achievement, there has been insufficient emphasis on implementation of commitments. There needs to be continuing support to harmonize treaty regimes, which have been developed through a piecemeal approach, and support to developing countries with multiple reporting requirements. In general, environmental problems are rarely tackled in an integrated fashion, despite the strong links between issues such as air pollution, climate change, water resources, desertification and biodiversity loss.



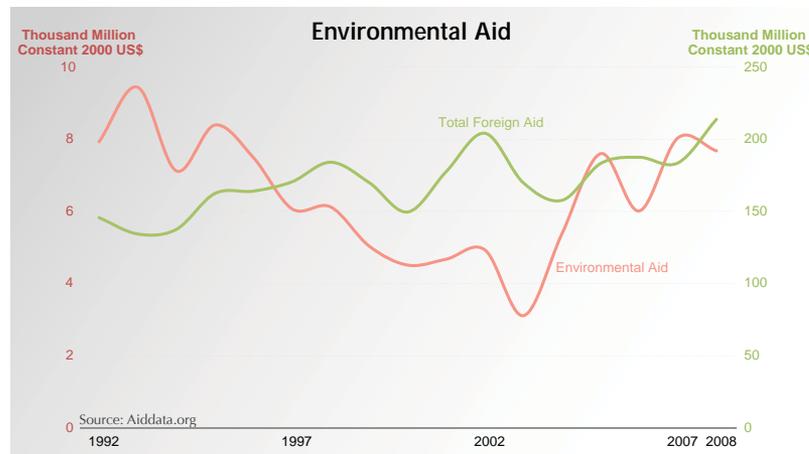
# Sustainable Development in Country Policies/Programmes

Integrate the principles of sustainable development into country policies and programmes...

Millennium Development Goal 7, Target A

insufficient data to assess

**Significant financial investments are being made in country programmes on climate change and the environment, but they fall well short of the scale required to address the challenges.**<sup>122</sup> The United Nations Environment Management Group (EMG) includes 44 organizations with an environment portfolio, but there has been no systematic assessment of the performance of environmental institutions in relation to their mandate. A UN system-wide framework for capacity building on the environment is also lacking. Organisation for Economic Co-operation and Development (OECD) countries allocated US\$ 4.3 billion to supporting biodiversity and US\$ 1.9 billion to preventing desertification in 2009,<sup>123</sup> but data on support from donors outside OECD are often not available. Findings from GEO-5 reinforce the importance of setting measurable goals and targets to advance the sustainability agenda. MDG 7, Target A has proven challenging for most countries to implement, partly because of a lack of measurable indicators.



# Findings

## What does this publication tell us?

Many environmental goals have been adopted, dispersed across a broad range of subject areas and taken from a vast number of legally binding and non-binding agreements. More than 320 goals have been identified in the GEGs process. By looking more closely at those objectives, it becomes clear that the overwhelming majority are action-oriented rather than target-oriented. This means they express commitment of governments to take action rather than commit governments to achieving specific, measurable and time-bound targets. This finding is common across the whole range of environmental commitments. Thus, the GEGs compilation presents goals and objectives adopted by governments, and also reveals those areas where concrete targets for addressing a particular environmental problem are still missing.

Overall, while there has been little or no progress or further deterioration on about half of the goals and objectives assessed by GEO-5, most issues for which a specific, measurable target exists achieved at least some progress according to the GEO-5 assessment. Examples of goals linked with measurable targets on which progress has



been made include eliminating substances that deplete the ozone layer, phasing out lead in gasoline, and to some extent increasing the supply of safe drinking water.

This finding lends some support to the adage *what is not measured is not managed*, especially for the many environmental challenges that can be tackled only by a concerted international effort.

## Research and data gaps

A number of research and data gaps identified by GEO-5 need to be addressed in order to track more accurately the state and trends of the global environment. Data need to be strengthened on issues such as freshwater pollution, groundwater depletion, land degradation and chemicals and waste. In addition, it is often difficult to compare the situation in different countries

even when data are available, since many countries follow their own national guidelines when collecting them, rather than standard international guidelines.

One source of standard international guidelines is the United Nations, which has developed a set of 50 core Sustainable Development

# Findings



Indicators.<sup>124</sup> These cover all three pillars of sustainable development: economic development, social development and the environment. They can be assessed using standard methodologies and cover some but not all of the priority areas identified by GEO-5.

The establishment of the Millennium Development Goals shows how the adoption of specific, measurable targets can spur greater efforts to collect and coordinate data on the issues they cover. As the 2011 Millennium Development Goals report states:

*'As a result of recent efforts, more data are now available in the international series for the assessment of trends for all MDGs. In 2010, 119 countries had data for at least two points in time for 16-22 indicators; in contrast, only four countries had this data coverage in 2003. These advances are the result of increased national capacity to venture into new data collection initiatives, as well as to increase the frequency of data collection.'*<sup>125</sup>

## **What can the GEGs and the GEO-5 process contribute to sustainable development goals (SDGs)?**

A selection of the GEGs could form an essential building block of potential SDGs. To enhance the potential and impact of the GEGs, the selection could be further refined by specific targets that are measurable and time-bound. Upon their refinement, the selected GEGs could form targets under the proposed sustainable development goals. Areas where the GEG compilations have identified gaps could be taken up at the global level and considered in the development of SDGs in that particular area.

The basis for the prioritization and selection of GEGs to support the SDGs could be their relevance to the achievement of sustainable development, those that address more imminent environmental problems that have irreversible detrimental effects for human livelihoods, and goals that the international community is currently addressing with the least success. According to the GEO-5 review summarized in this publication, environmental goals currently being addressed with least success include: climate change; indoor air pollution; extinction risk of species; extent and condition of natural habitats, especially coral reefs and wetlands; invasive alien species; loss of traditional knowledge; access to food; desertification and drought; freshwater supply; fish stocks; marine pollution; and extreme events.

Scientific understanding of the functioning of the Earth system and recent changes in it indicate a risk of crossing thresholds, tipping points, or planetary boundaries,<sup>126</sup> which would lead to fundamental ecosystem changes with major implications for human societies. These changes might include the transformation of rainforest to savannah or of hard to soft coral reefs, or changes in rainfall patterns. In addition, it is important for the process of setting goals and targets to consider how they could interact. For instance, climate variability and extreme weather influence food security,<sup>127</sup> and land-use change and deforestation can provide conditions that increase the spread of malaria.<sup>128</sup> Therefore, an Earth system perspective should also be considered when prioritizing goals and setting measurable targets.

# Conclusions



A large number of goals and objectives are in place aimed at addressing environmental challenges. Despite some notable successes, the international community has made very uneven progress in achieving these goals and improving the state of the environment.

.....

There has been little or no progress, or further deterioration, on about half of the environmental goals and objectives reviewed in the GEO-5 assessment.

.....

More progress has been made on goals that are linked with specific, measurable targets. Therefore, the international community should consider establishing targets covering a broader range of environmental challenges, particularly those currently being addressed with least success, those with more irreversible and imminent effects on human livelihoods, and overall those with greatest relevance to the achievement of sustainable development.

.....

GEO-5 also identifies other factors that appear to increase the chances of success in meeting environmental goals, including support from an organized scientific community, scientific consensus on the problem, leadership from international institutions, and cost-effective solutions to the problem.

Many global environmental goals have been developed in a fragmented way, but the interconnectedness between climate change, water resources, desertification and biodiversity loss, for example, makes isolated governance responses less effective. The fragmented international framework has also resulted in a heavy burden for some countries, in terms of reporting and fulfilling their obligations.

.....

Measurable targets can encourage the collection and coordination of data, thereby improving our state of knowledge on the subjects they cover. Efforts should also be made to make data from different countries easier to compare, by promoting the use of international standards.



# Conclusions



*Without clear metrics for measuring progress towards sustainable development, achieving internationally-agreed goals will remain elusive. In bringing sustainability to the core of decision-making, rethinking the way economic development and human well-being are currently measured and monitored becomes crucial. This requires a broader set of indicators for measuring economic, social and environmental dimensions of sustainable development that go beyond GDP, the most used indicator of development.*

United Nations (2012). Resilient People, Resilient Planet: A Future Worth Choosing. Report of the United Nations Secretary-General's High-Level Panel on Global Sustainability. United Nations, New York, NY.

*Building on the lessons of the Millennium Development Goals is critical to the possible development of any sustainable development goals. Metrics should track sustainability progress, strengthen accountability and facilitate learning. Such goals could also guide a public and private sector investment roadmap to a green and inclusive economy to stimulate economic development and job creation by the sustainable use of ecosystems and natural resources, as well as infrastructural investments and technologies. New goals, related to the critical drivers including the consumption and production of food, energy and water, could be explored. Systematic monitoring and periodic reviews of progress on the agreed universal goals would promote continuous improvement and social learning as well as institutional and individual accountability.*

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This publication reviews and illustrates, in a succinct manner, the world's progress towards meeting international environmental goals for a set of critical issues. It also highlights gaps in our ability to measure progress, including the absence of clear numerical targets and important data gaps on many issues.

Despite the large number of international environmental goals, the international community has made very uneven progress in improving the state of the environment. In general, more progress has been made on goals that have specific, measurable targets.

This publication is based on findings of the fifth Global Environment Outlook (GEO-5).



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