

Global Environment Outlook

GEO₄

environment for development

SUMMARY FOR DECISION MAKERS



United Nations Environment Programme

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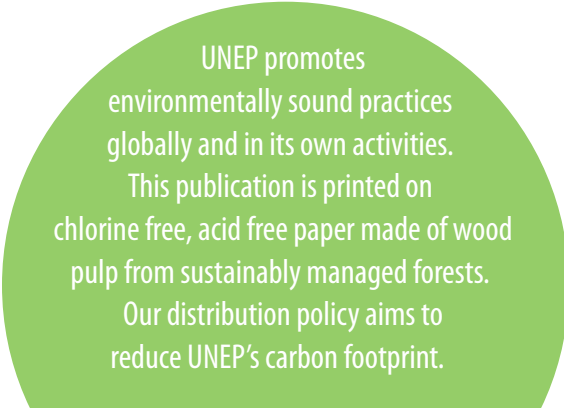
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The GEO-4 assessment process

Since 1997, UNEP has produced *Global Environment Outlook* (GEO) reports providing assessments of the interactions between environment and society. With its core mandate of “keeping the global environment under review,” UNEP coordinated a series of scientific assessments that included extensive consultations and participatory processes, resulting in the production of GEO reports in 1997, 1999 and 2002.

The fourth assessment, *Global Environment Outlook: environment for development (GEO-4)*, is the most comprehensive GEO process to date. It was designed to ensure synergy between science and policy, while maintaining its scientific credibility and making it responsive to policy needs and objectives. The launch in 2007 of the GEO-4 report coincides with the 20th anniversary of the launch of the report of the World Commission on Environment and Development, *Our Common Future*. GEO-4 uses it as a reference to assess progress in addressing key environment and development issues. GEO-4 highlights the vital role of the environment in development and, more importantly, for human well-being.

GEO-4 is more than a report: it is also a comprehensive consultative process which began in 2004. In February of that year, *an intergovernmental consultation on strengthening the scientific base of UNEP*, which involved more than 100 governments and 50 partner organizations, called for a further strengthening of the GEO process. The global consultation was followed by *regional consultations* in September-October 2004, which identified key regional and global environmental issues. Building on these consultations, the scope, objectives and process of the GEO-4 were finalized and adopted by the *First Global Intergovernmental and Multistakeholder Consultation* in February 2005.

The assessment was carried out by 10 chapter expert groups consisting of *coordinating lead authors* and *lead authors* supported by *chapter coordinators* provided by the UNEP secretariat. The draft outputs from the expert groups were subjected to an additional round of *regional consultations* and two rounds of extensive *expert and government peer review*. The review process was overseen by *chapter review*

editors. The assessment was also guided and supported by a *High-level Consultative Group* of senior government policy-makers, funding partners, scientists and academics as well as representatives of some UN agencies, international organizations, the private sector, GEO collaborating centres and civil society.

In 10 chapters, the GEO-4 assessment provides: an overview of environmental issues; state-and-trends of the environment between 1987 and 2007; human dimensions of environmental change; an outlook for the future using four scenarios; and the policy options available to sustain our common future:

Chapter 1: Environment for Development

Chapter 2: Atmosphere

Chapter 3: Land

Chapter 4: Water

Chapter 5: Biodiversity

Chapter 6: Sustaining a Common Future

Chapter 7: Vulnerability of People and the Environment:
Challenges and Opportunities

Chapter 8: Interlinkages: Governance for Sustainability

Chapter 9: The Future Today

Chapter 10: From the Periphery to the Core of Decision
Making – Options for Action

The *Summary for Decision Makers (SDM)* was prepared by UNEP with technical inputs from the coordinating lead authors and inputs from the members of the High-level Consultative Group. It underwent two rounds of extensive expert and government peer review. Finally, the SDM was subject to in-depth consideration by the *Second Global Intergovernmental and Multistakeholder Consultation* in September 2007. The consultation adopted a statement which endorsed the SDM.

The basis for this *Summary for Decision Makers* can be found in the GEO-4 chapters. Reference sources for graphics used in this report are provided at the end of the report.

This Summary for Decision Makers synthesizes the findings of the main report: *Global Environment Outlook: environment for development (GEO-4)* and is prepared by UNEP with:

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The Second Global Intergovernmental and Multistakeholder Consultation on the fourth Global Environment Outlook Report

Afghanistan, Argentina, Azerbaijan, Bahrain, Bangladesh, Belgium, Burundi, Canada, Chile, China, Colombia, Cuba, Czech Republic, Denmark, Democratic Republic of Congo, Djibouti, Egypt, Estonia, Finland, Gambia, Georgia, Germany, Greece, Holy See, Honduras, Hungary, India, Indonesia, Iran, Iraq, Italy, Japan, Kenya, Liberia, Libya, Madagascar, Mauritius, Mexico, Morocco, Myanmar, The Netherlands, Nigeria, Norway, Oman, Pakistan, Panama, Philippines, Portugal, Republic of Korea, Russian Federation, Saudi Arabia, Spain, St. Kitts and Nevis, Sweden, Sudan, Switzerland, Syria, Tanzania, Thailand, Togo, Uganda, United Kingdom, United States of America, Uzbekistan, Venezuela, Viet Nam, Yemen, Zambia, and Zimbabwe

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KEY MESSAGES FOR DECISION MAKERS

Humankind depends on the environment, which is critical for both development and human well-being. Natural resources – compared to financial, material and human resources – are the foundation for much of the wealth of countries. Environmental change can affect people's security, health, social relations and material needs.

There is evidence of unprecedented environmental change at global and regional levels:

- **The Earth's surface is warming. This is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level.** Other major impacts, include changes in water availability, land degradation, food security, and loss of biodiversity. The projected increase in frequency and intensity of heat waves, storms, floods and droughts would dramatically affect many millions of people including those in small island states and Polar regions. While in the past century the global average temperature increased by 0.74°C, the best estimate of the Intergovernmental Panel on Climate Change (IPCC) for additional warming over the current century is projected to be from 1.8 to 4.0°C. Climate change may further exacerbate the loss of biodiversity and degradation of land, soil, forest, freshwater and oceans.
- **More than 2 million people globally die prematurely every year due to outdoor and indoor air pollution.** Although air pollution has decreased in some cities due to technological and policy measures, increasing emissions in other cities are intensifying the challenges. Indoor air pollution due to the improper burning of solid biomass fuels imposes an enormous health burden.
- **The "hole" in the stratospheric ozone layer over the Antarctic – the layer that protects people from harmful ultraviolet radiation – is now the largest it has ever been.** Due to decreased emissions of ozone depleting substances and assuming full Montreal Protocol compliance, the ozone layer is expected to recover, but not until between 2060 and 2075 as a result of long lag times.
- **Unsustainable land use and climate change are driving land degradation**, including soil erosion, nutrient depletion, water scarcity,

salinity, desertification, and the disruption of biological cycles. Poor people suffer disproportionately from the effects of land degradation, especially in the drylands, which support some 2 billion people, 90 per cent of whom live in developing countries.

- **The per capita availability of freshwater is declining globally, and contaminated water remains the greatest single environmental cause of human sickness and death.** If present trends continue, 1.8 billion people will be living in countries or regions with absolute water scarcity by 2025, and two-thirds of the people in the world could be subject to water stress. The decline of quantity and quality of surface and groundwater is impacting aquatic ecosystems and their services.
- **Aquatic ecosystems continue to be heavily exploited, putting at risk sustainability of food supplies and biodiversity.** Global marine and freshwater fish catches show large-scale declines, caused mostly by persistent overfishing.
- **The great majority of well-studied species are declining in distribution, abundance or both.** Although the decline in the area of temperate forest has been reversed, with an annual increase of 30 000 km² between 1990 and 2005, deforestation in the tropics continued at an annual rate of 130 000 km² during the same period. More than 16 000 species have been identified as threatened with extinction.

These unprecedented changes are due to human activities in an increasingly globalized, industrialized and interconnected world, driven by expanding flows of goods, services, capital, people, technologies, information, ideas and labour, even affecting isolated populations. The responsibility for global environmental pressures is not equally distributed throughout the world. For instance, in 2004, United Nations Framework Convention on Climate Change Annex 1 countries with 20 per cent of world population produced 57 per cent of gross

world product based on purchasing power parity and accounted for 46 per cent of greenhouse gas emissions. Industrial development, natural resource extraction and carbon-intensive industrial production, may have significant environmental consequences, which need to be addressed. Responses include the use of the best available technologies and practices as appropriate.

Environmental change affects human development options, with poor people being the most vulnerable.

For example, in the period between 1992 and 2001, floods were the most frequent natural disaster, killing nearly 100 000 people and affecting more than 1.2 billion people. More than 90 per cent of the people exposed to disasters live in the developing world.

Biophysical and social systems can reach tipping points, beyond which there are abrupt, accelerating, or potentially irreversible changes.

The four *GEO-4* scenarios show an increasing risk of crossing tipping points, even as some global environmental degradation trends are slowed or reversed at different rates towards the middle of the century. Changes in biophysical and social systems may continue even if the forces of change are removed, as evidenced in the stratospheric ozone depletion and the loss of species.

The transition towards sustainable development needs to be pursued more intensively by nations and the international community, including through capacity building and technological support to developing countries.

Actions to reduce the drivers of environmental change by all stakeholders, including the private sector and consumers, require trade-offs, which may involve hard choices, among different values and concerns.

Decision-makers can promote timely action by integrating prevention, mitigation and adaptation efforts into the core of decision-making through sustained efforts which include:

- **Reducing people's vulnerability to environmental and socio-economic changes** by decentralization, strengthening resource rights of local people, improving access to financial and technical support, improving capacities to cope with natural disasters, and empowering women and vulnerable groups;

- **Integrating environmental activities into the broader development framework**, including by ascertaining the environmental impacts of proposed public spending, identifying sectoral and inter-sectoral environmental targets, promoting best practices, and monitoring long-term achievements;
- **Enhancing treaty compliance** by overcoming administrative costs and the heavy reporting burden of Parties, improving monitoring and compliance, and enhancing coordination, particularly at national level;
- **Creating enabling environments for innovations and emerging solutions** by using economic instruments, new and existing technologies, empowerment of stakeholders, and more adaptive approaches which break away from the traditional segmented institutional management and production systems, and result in more sustainable consumption and production patterns;
- **Strengthening environmental knowledge, education and awareness** by making the best-available scientific research and data accessible through improved monitoring, assessments and knowledge infrastructure, building on the rapid developments in information and communication technologies;
- **Mobilizing financial resources to address environmental problems** through innovative approaches, including payments for ecosystem services while achieving an open, non-discriminatory and equitable multilateral trading system as well as meaningful trade liberalization benefiting countries at all stages of development.

Knowledge on the interlinkages between environment and development, and the impacts on human well-being, gained since the release of *Our Common Future*, the report of the World Commission on Environment and Development, can be used effectively for the transition towards sustainable development. Concerns about the global environment may have reached a tipping point of their own, with the growing realization that, for many problems, the benefits of early action outweigh the costs. **Now is the time to pursue the transition towards sustainable development supported by well-governed, innovative and results-oriented institutions.**

1 INTRODUCTION

In 1987, the World Commission on Environment and Development (WCED) presented its report, *Our Common Future*. The Brundtland Commission, as it was known, brought international attention to the concept of sustainable development – a challenge to meet today’s development needs without compromising the ability of future generations to meet their own needs. Twenty years on, the challenges as set out in the Millennium Development Goals (MDGs) are even more profound, and the importance of the environment in sustaining development is becoming ever clearer.

2 ENVIRONMENT FOR DEVELOPMENT

Development depends on the environment while its impacts on the environment affect human well-being. The world has changed radically over the past two decades. Significant changes to geopolitical borders have occurred. Global population has grown from 5 billion to 6.7 billion. There has been a net annual rise in gross domestic product (GDP) per person of almost 2 per cent and continued increases in trade volume, CO₂ emissions and agricultural land (see **Figure 1**). Technological innovations have improved livelihoods and health. Low transportation costs, coupled with market liberalization and the rapid development of telecommunications have fuelled globalization and altered trade patterns, expanding the flow of goods, services, capital, people, technologies, information, ideas and labour. While millions have worked their way out of poverty and have access to improved services, such as healthcare, there are still more than 1 billion poor people in the world. They lack essential services such as clean water, adequate nutrition, shelter and clean energy, making them especially vulnerable to environmental and socio-economic changes.

The responsibility for the mounting global environmental pressures is not equally distributed throughout the world. For instance, in 2004, United Nations Framework Convention on Climate Change Annex 1 countries with 20 per cent of world population, produced 57 per cent of gross world product based on purchasing power parity and accounted for 46 per cent of greenhouse gas emissions.

- reducing and managing risks; and
- taking a long-term perspective with regard to intra- and inter-generational equity.

Ecosystems provide the natural resources capital needed for development. Natural resources, account for more than a quarter of the wealth of low-income countries and somewhat less in higher income countries.

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