

THE AIR THAT WE BREATHE

G L O B A L E N V I R O N M E N T O U T L O O K

The fourth *Global Environment Outlook – environment for development (GEO-4)* assessment report is published in 2007, exactly two decades since the World Commission on Environment and Development (WCED) published its seminal report – *Our Common Future* – which placed sustainable development on the agenda of governments and other stakeholders. *GEO-4* is the most comprehensive UN report on the environment prepared by about 390 experts and reviewed by more than 1 000 others across the world.

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What are the trends in atmospheric environmental issues? And what are the drivers of change? How do they affect human well-being and development, and which population groups, ecosystems and geographical areas are vulnerable to change? What policies are in place and what action is being taken? These and many other questions are addressed in the Atmosphere chapter of *GEO-4*.

Air quality and human well-being

The *GEO-4* Report concludes that human-induced air pollution constitutes one of the most important environmental issues that affect our health, overall well-being and development across the world.

GEO-4 addresses atmospheric environment issues in all their complexities. Different primary pollutants that are emitted, and secondary pollutants formed in the atmosphere, have different lifetimes that range from hours to centuries, and are transported

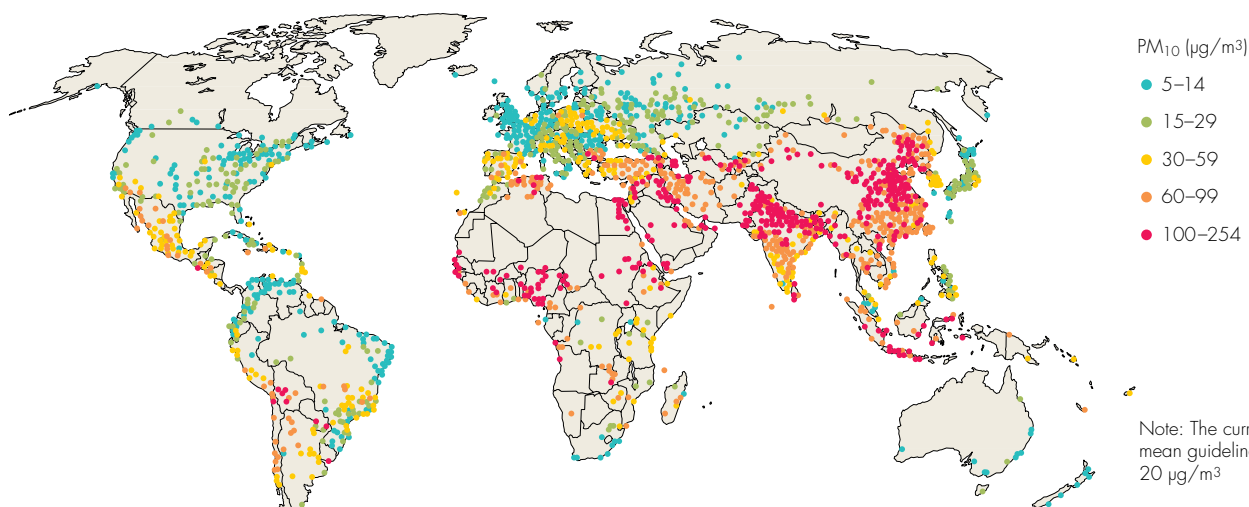
to varying distances. Their impact is felt from the local to the global level.

Current air pollution concentrations, especially particulate matter (PM), are very high in many cities, especially those located in the developing regions. Most large metropolitan areas in the world exceed the WHO guideline for NO₂, and the current levels are not showing any sign of significant decrease.

More than two million people are estimated to die prematurely each year due to indoor and outdoor air pollution. On the other hand, air quality has manifestly improved in some places around the world, especially in developed countries, since the WCED emphasized the urgent need for addressing these problems. However many major problems remain the same, or have deteriorated.

Indoor air pollution, from burning biomass, kerosene or coal for cooking, particularly affects women and young children. Every

Estimated annual average concentrations of PM₁₀ in cities with populations greater than 100 000, and in national capitals, for 1999



Source: Cohen and others, In: WHO



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Although there have been some important pollution control success stories, the atmospheric problems highlighted by the Brundtland Commission still exist (such as here in Santiago de Chile).

year, as many as 1.6 million premature deaths are attributed to indoor air pollution.

Outdoor air pollution in cities disproportionately harms the health of the poorest, in effect jeopardizing the attainment of the Millennium Development Goals, especially those of ensuring good health for all and environmental sustainability. 800 000 mortalities are believed to be related to outdoor pollution.

Location matters. For many developing regions, the highest priority issue in air pollution is the effect of indoor and outdoor particulates on human health. The widespread use of poor quality fuels for cooking, industrial processes and transport represent a critical issue for policy-makers in these regions. The priority issues for much of Europe and North America are impacts of outdoor particulates and tropospheric ozone on human health, and of these pollutants on agricultural productivity, and of nitrogen deposition on natural ecosystems.

The increasing tropospheric ozone affects the whole northern hemisphere and challenges food security. Losses in crop yields caused by tropospheric ozone impacts have been estimated in the range of \$US 6-12 billion per year in Europe alone. There is strong evidence of significant adverse effects on staple crops in developing countries, such as India, Pakistan and China.

Persistent organic pollutants (POPs) and mercury represent a global problem. There are high levels of POPs and mercury in food chains with the potential to affect the health of humans and wildlife. Many POPs are transported through the atmosphere, but their impacts are mediated by aquatic and land based food chains and mostly accumulate in polar regions.

Challenges and opportunities

Substantial reduction of harmful emissions to the atmosphere is feasible. Technology improvement and policy measures can reduce emissions. However, increasing human activities is offsetting some of the gains. The main challenges are rapid growth in transport and other forms of energy consumption which have continued to result in harmful emissions and health and environmental impacts.

Car ownership, which has almost doubled since 1997 Brundtland Report, combined with poor urban planning increases congestion and atmospheric emissions. Air transport is one of the fastest rising transport modes, with a 76 per cent increase in passenger kilometres travelled between 1990 and 2000. Shipping has also grown remarkably, mirroring the increase in global trade (rising from about 4 billion tonnes in 1990 to more than 7 billion tonnes of total goods loaded in 2005).

Economic studies on air pollution show that the costs associated with impacts usually far outweigh the costs of priority action, often by an order of magnitude. Many countries have extensive regulations, which too often are not applied effectively because of a lack of proper institutions, legal systems, political will and effective governance. Strong political leadership is essential to develop institutional capacity and effective outreach to the public, to ensure adequate funding, and to improve local, national and international coordination.

The success of policy development and implementation to control atmospheric emissions is largely determined by effective implementation involving multi-stakeholder participation at different scales, and mobilization of public-private partnerships. Fundamental changes in social and economic structures, including lifestyle changes are also crucial.

Sources and credits for the information presented here are available and fully referenced in the **Fourth Global Environment Outlook - environment for development** report.



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