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Monitoring Air Quality in Eastern Europe, Caucasus and Central Asia

A number of updates and reforms are needed to restore the efficacy of the existing air quality monitoring networks in most EECCA countries, which were generally established in the 1970s and 1980s. Most of the monitoring stations are located in residential areas, and consequently give a good indication of the population's exposure to air pollution. However, the stations do not always capture the full impact of pollution episodes. More specifically,

current air quality networks are generally unable to link air pollution levels with emission patterns and thus cannot identify activities that violate emission norms or air quality standards under normal operating conditions.

Decreased networks ...

While a few countries over the past 10 years have been able to continue operating monitoring stations – Ukraine has maintained and Belarus and the Russian Federation have somewhat increased the total number of fixed sampling points – other countries have reduced their total number of monitoring networks. The largest network decreases have come in Georgia and Tajikistan; in Tajikistan 17 air-quality monitoring posts were destroyed during the civil war. Consequently, air quality is no longer monitored in five cities.

... and quality

During the 1990s, under-financing caused a number of difficulties that significantly decreased the quality of monitoring in many parts of the subregion. Specifically, lack of funding led to: reductions in sampling periodicity, decreases in the reliability of measurements due to ageing equipment, and a lack of basic supplies. In Azerbaijan only 70% of the planned air pollution samples and 45% of the planned precipitation samples were taken in 2003 while monitoring equipment in Ukraine dated back as far as 1946. As a result of these funding issues, many stations, especially in Armenia, Georgia, Kyrgyzstan, Republic of Moldova and Tajikistan, are currently only measuring a limited number of meteorological and chemical parameters in urban air.

There are practically no regular measurements of ground-level ozone concentrations in EECCA countries except at a few stations in the Russian Federation, two stations in Belarus and one station in Uzbekistan. Furthermore, there are barely any measurements of fine suspended particulates, such as PM10 or PM2.5 (particles smaller than 10 and 2.5 microns, respectively), which are known to

Background Monitoring Station Borovoe, Kazakhstan

have the most serious impact on human health, and dioxin/furan concentrations in ambient air are not monitored at all. Monitoring of volatile organic compounds is in the initial phase in some but not all countries.

MDGs — The way ahead

The Millennium Development Goals (MDGs) translate into tangible targets the most vital and pressing development goals agreed upon by the international community at UN global conferences and summits, in particular at the Millennium Summit held in December 2000. Effectively reached, they would generate considerable economic, social and environmental progress for the benefit of the most disadvantaged part of the population worldwide.

In most UNECE countries, the MDGs appear to have been reached in terms of the minimum standards. However, in many of the less advanced economies in the region, most MDGs still require significant efforts to be fully achieved. And there are some MDG areas, in particular poverty reduction and gender equality, where all UNECE countries need to make substantial progress.

This report provides an overview of the major trends of the MDG indicators in the UNECE region, highlighting the progress achieved so far and the gaps still needing to be filled. It then develops an integrated policy framework for achieving the MDGs, based on the view that these are interrelated and cannot be reached on a sustainable basis through targeted policies and measures only. This framework therefore defines major policy areas and presents for each of them a range of policy options. Finally, the report makes the case that regional cooperation and the provision of regional public goods matter for the achievement of the MDGs, and outlines the UNECE support to this regional dimension through its activities of a transboundary nature. ⁂

The report can be obtained from the UNECE Information Service (for address see below).

cont.

Shortcomings in sampling strategies

In addition to funding problems, current sampling strategies in EECCA also have many shortcomings. In general, ambient monitoring systems were designed to detect longer-term pollution trends rather than high pollution peaks and thus did not help daily air quality management. The monitoring is based on manual sampling and thus there are very few automated monitors. In the Russian Federation, for instance, only 57 of existing 755 stations are automated stations. Monitoring at a time two or three times a day is not effective in establishing mean or transient air quality data indicators, and it is especially unsuitable in areas where concentrations of pollutants change rapidly. In several countries there are no joint inter-calibration or training exercises; their laboratories do not participate in national or international inter-laboratory comparisons, so quality assurance and quality control are areas of concern.

Ecosystems and amenities

Air quality standards are only health-based and do not take into consideration the protection of ecosystems and amenities. There are standards (maximum permissible concentrations) in EECCA for more than 650 air polluants which could be halmful to health (SO_2, CO, NOx, Pb, Cd, H_2S, H_2CO, phenol etc). While an assessment of the hazards presented by such a broad range of pollutants might be justified, their comprehensive and regular control is extremely difficult and costly. Overall, the excessively large number of regulated pollutants imposes unrealistic monitoring and enforcement requirements on public authorities. National monitoring strategies of EECCA countries address only a tiny proportion of regulated pollutants. EECCA standards are generally more stringent than international ones, but they are also more basic.

Owing to an overall lack of coordination, the results obtained from various air quality-monitoring activities in a country are frequently not comparable or complementary. There is no interpretation of close relationships between different data sets. There are no centralized or inter-connected distributed electronic networks for transmission of air monitoring data. The lack of common data interpretation and exchange of air monitoring results makes a full assessment of air quality difficult. Furthermore, monitoring data are rarely used in developing environmental policy plans and programmes.

What next?

In the light of the challenges discussed in the previous paragraphs, the UNECE Working Group on Environmental Monitoring and Assessment is currently appraising air quality monitoring networks in EECCA to advise on priority needs for expanding, upgrading and optimizing these networks, taking into account the requirements of relevant multilateral environmental agreements, guidelines, standards and manuals developed by international organizations as well as approaches to and experiences with developing air quality monitoring in other parts of the UNECE region. ⁂

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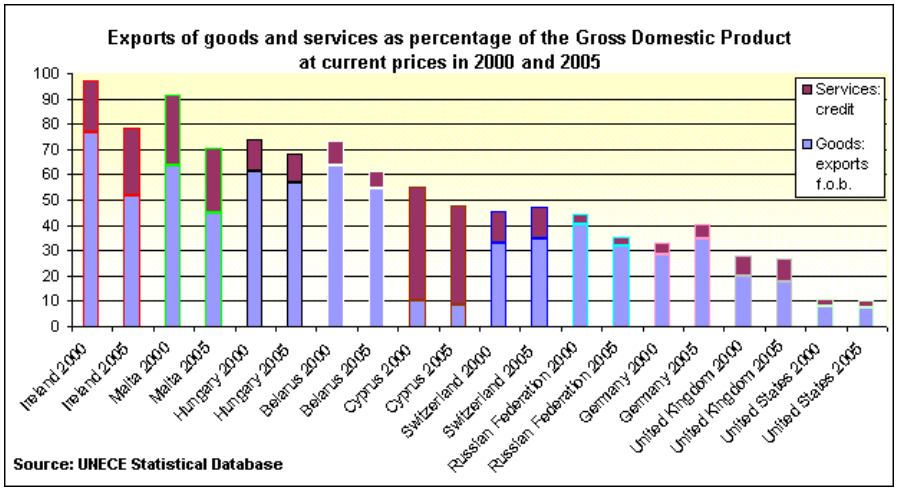
Every year a large number of interns from all over the region come to UNECE. On 27 July Mr. Marek Belka, Executive Secretary of UNECE, welcomed them during a briefing session.

Facts and figures

Exports of goods and services in selected UNECE countries



The graph shows the value of exports of goods and services as a percentage of Gross Domestic Product (GDP) for the years 2000 and 2005. Out of the 10 selected UNECE countries, Ireland had the highest ratio of exports to GDP at 97% (76% goods and 21% services) and 78% (51% goods and 27% services) in 2000 and 2005 respectively. Malta had the second highest ratio of exports to GDP at 92% (63% goods and 29% services) and 71% (45% goods and 26% services) in 2000 and 2005 respectively. At the other end of the scale, the United States of America had the lowest ratio of exports to GDP at 11% (8% goods and 3% services) and 10% (7% goods and 3% services) in 2000 and 2005 respectively.

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