

# **ENVIRONMENTAL MONITORING**

## **POLICY AND INSTITUTIONAL CONTEXT<sup>1</sup>**

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## Introduction

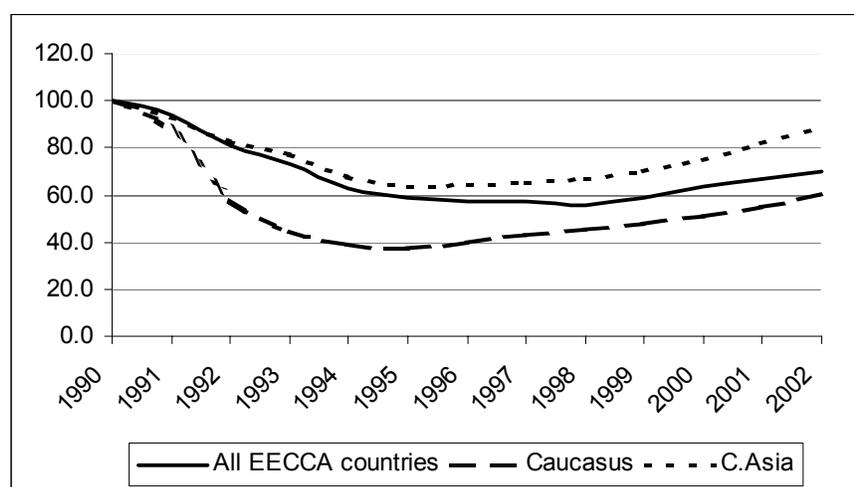
Under the former Soviet Union, research institutes, hydrometeorological services, public health agencies and other bodies collected large volumes of data related to environmental conditions and trends. Often, however, agencies did not share their data. Moreover, data quality varied, and data series were often not directly compatible (covering, for example, different sampling areas, time series, etc.). The data collected contributed to environmental research and to overview reports on environmental conditions. Nonetheless, difficulties in compiling and comparing data limited a systematic evaluation of the state of the environment. Moreover, little work was done to analyse, integrate and synthesize data for policy development and environmental information was rarely released to the public. (UNECE, 2000d)

As part of their efforts to establish and strengthen national environmental policy and management, the countries of Eastern Europe, the Caucasus and Central Asia have sought to improve environmental monitoring systems over the past decade. However, difficult economic conditions, together with other factors (including political instability and conflict), have hampered reform and investment across the EECCA subregion (see fig. I). The subregion has returned to economic growth since the mid-1990s (the solid line presents an average across all EECCA countries). Nonetheless, economic conditions in many countries remain well below levels of a decade ago. For the three Caucasus countries, GDP trends have been worse than the EECCA average. In contrast, the Central Asian countries, many of which have extensive oil and other natural resources, have on average done better.

Economic problems have created severe difficulties for government budgets and public services, including environmental monitoring systems. The situation concerning environmental monitoring systems varies substantially across EECCA countries. Nonetheless, two main groups can be identified.

The first group of countries has maintained the scope of monitoring activities over the past 10 years, or seen only limited decreases. These countries have launched institutional reforms and introduced new programmes for specific geographic areas and environmental issues. Ukraine provides one example (see box 1). Belarus and the Russian Federation are also in this category.

**Figure I. GDP trends in EECCA (1990 = 100)**



Source: UNECE

### **Box 1. Environmental monitoring in Ukraine**

In Ukraine, environmental monitoring systems have continued to operate over the past decade. Networks of monitoring stations have remained fairly stable with, for example, about 150 fixed ambient air monitoring stations in about 50 cities. Wastewater monitoring stations have increased slightly, from almost 850 in 1991 to over 1,100 in 2001. Across monitoring networks, however, equipment is ageing and needs replacement.

For biodiversity, although Ukraine has greatly increased its protected areas over the past 10 years, the monitoring of species and ecosystems has been reduced to a minimum.

Ukraine's Government has strengthened the legal basis for and the overall coordination of monitoring work, and current programmes seek to improve environmental monitoring (see box 3).

*Sources:* Ukraine, 2002; UNECE, 1999.

The second group includes countries, in particular in the Caucasus as well as in Central Asia, that have faced severe economic conditions and in some cases political uncertainty and conflict. As a result, these countries have had difficulty maintaining existing monitoring systems: the number of monitoring stations, the volume of data collected and the range of environmental media covered have declined drastically. Georgia provides an example of this group of countries (see box 2).

### **Box 2. Environmental monitoring in Georgia**

Georgia's difficult economic situation brought severe cutbacks in funding for environmental monitoring. Over the past decade, monitoring stations and equipment have deteriorated and many have become unusable. In general, budget allocations cover only salary costs and minimum services at monitoring institutions, leaving little money for essential maintenance or new equipment.

The Ministry of Environment's 12 subnational departments oversee the self-monitoring by companies: this is based mainly on energy and mass balance calculations with little actual emission measurements, as equipment is either obsolete or non-existent. Similar resource problems affect State agencies involved in direct monitoring, such as the State Department of Hydrometeorology (Hydromet), which is responsible for collecting, storing and analysing data on surface water quality, air quality and soil. Hydromet currently monitors ambient air pollution in only four cities, tracking but five pollutants. At the State Department of Geology, responsible for mineral resources, only 30 of its 500 stations to monitor groundwater levels are operating. Moreover, there has been little work to update operating methods, guidelines and protocols over the past 10 years. Quality control for monitoring data is uncertain. Overall, Georgia at present does not have systematic environmental monitoring.

Georgia's Ministry of Environment, in cooperation with other agencies, has drafted a strategy to strengthen environmental monitoring to be implemented in stages through 2010 – however, funding for this initiative remains uncertain.

*Sources:* UNECE, 2003a; Georgia, 2002.

## Policy context

All EECCA countries have developed new environmental policies over the past decade, including environmental strategies and NEAPs. They have also established new environmental laws, typically starting with framework laws. In this process of reform, governments and environmental authorities have sought to improve the policy relevance of their monitoring systems.

The linkage between policy and monitoring priorities remains an important area for work across the EECCA subregion. Existing environmental monitoring systems do not meet all policy needs. In some countries, a contrast remains between the large volume of data produced on certain topics and the difficulty in using these data to support decision-making (UNECE, 2000d). In many EECCA countries, however, the decline in monitoring work means that data are incomplete or simply not available in key environmental policy areas.

## Institutions

The new national framework laws in EECCA countries typically refer to environmental monitoring, as well as to public access to environmental information. In addition, many countries have developed specific legislation and regulations that define monitoring responsibilities and tasks among public authorities. For example, table 1 lists the various agencies involved in monitoring in Belarus. Subnational and local offices, as well as research institutions, are often involved.

A few countries have sought to consolidate the agencies involved. For example, in a few countries, hydrometeorological agencies, which are commonly responsible for a broad range of monitoring, such as ambient air quality, have been placed under ministries responsible for environmental protection.

**Table 1. Agencies involved in environmental monitoring in Belarus**

Health, including environmental health	Ministry of Health, National Health and Epidemiology Centre, Belarus Hygiene and Epidemiology Research Centre, Belarus Health and Hygiene Research Institute
Air, surface water, radiation, agriculture-related soil contamination	Radiation Control and Environmental Monitoring Centre of the Ministry of Natural Resources and Environmental Protection
Groundwater	Belarus Geological Survey Research Institute of the Ministry of Natural Resources and Environmental Protection
Land/soil	State Committee on Land Resources, Geodesy and Mapping, the Soil Science and Agro-chemistry Institute (a State-owned research establishment), Belarus State University
General atmospheric ozone content	National Ozone Monitoring Centre, Belarus State University
Earthquakes/seismic activity	Belarus Academy of Sciences Institute of Geological Science
Environment – Complex	Belarus Ekologia Research Centre of the Ministry of Natural Resources and Environmental Protection
Flora	Belgosles State forestry association, Bellesinvest unified enterprise, Belarus Academy of Sciences Institute of Experimental Botany, Belarus State University
Fauna	Belarus Academy of Sciences Institute of Zoology, Ministry of Natural Resources and Environmental Protection
Emergencies	Ministry of Emergency Situations, Radiation Control and Environmental Monitoring Centre
Local environmental monitoring	Ministry of Natural Resources and Environmental Protection

Source: Belarus, 2002a.

Given the broad array of agencies involved, however, most EECCA countries have instead focused efforts on improving coordination and cooperation among these bodies and establishing a unified environmental monitoring system. In Belarus, the Government approved the National Environmental Monitoring System Programme in 1995, assigning the Ministry of Natural Resources and Environmental Protection to implement it. An interdepartmental supervisory board oversees reforms. The Russian Federation created the Unified State System on Monitoring in 1993. The 2000 Government Decree on the National Monitoring Service further strengthened coordination: the Federal Hydrometeorology and Environmental Monitoring Service (Roshydromet) and the Ministry of Natural Resources have the main responsibility for environmental monitoring, assisted by other agencies. Ukraine established the Interdepartmental Commission on Environmental Monitoring Issues in 2001 (see box 3). These national coordinating bodies and unified systems have worked to establish common standards and procedures for monitoring activities and ensure data exchange.

In a few other EECCA countries, however, national monitoring responsibilities remain loosely defined, resulting in a duplication of effort and a lack of coordination and cooperation among agencies. In one country, data exchange between public authorities is based on payments.

Coordination between central agencies and subnational and local offices is also a major challenge. Subnational and local monitoring needs to respond to specific conditions, policy priorities and institutional arrangement. In the Russian Federation, the Federal Environmental Protection Act gives the local entities some jurisdiction over monitoring. The National Monitoring Service is negotiating cooperative agreements with these entities to devise programmes that provide the necessary data for both national and subnational purposes. More than 70 such agreements had been concluded by mid-2002. (Roshydromet, 2002). Ukraine is also seeking to improve coordination across levels of government (see box 3).

### **Box 3. Ukraine: improving institutional coordination**

While the Ministry of Environment and Natural Resources has a key role in monitoring, in particular through its Hydrometeorological Service, a series of other ministries and State committees are also involved.

In 1998, Ukraine's Council of Ministers established the State Environmental Monitoring System to integrate the different monitoring networks at these entities, improve the compatibility of equipment, data and software and provide timely, accurate data to end-users. In 2001, the Council passed a series of amendments, creating an ad hoc Interdepartmental Commission to strengthen coordination. The amendments also call for the development of common monitoring standards and indicators. The Commission itself created several sections for air, water, land and waste monitoring, as well as an expert board.

The System also intends to integrate subnational environmental monitoring programmes: monitoring of pollution emissions is organized at the sub-national level. In specific areas, such as Zaporozhye *oblast* (in the highly polluted Donetsk-Dnieper area), a regional monitoring system and observation network was created to bring together all active monitoring entities. Similar programmes are under way or planned for other *oblast* networks, though funding difficulties slow their implementation. Coordination within the national system, however, is an important challenge.

A recent strategy proposes short- (2002 and 2003), medium- and longer-term actions to strengthen the System. Key actions include: further coordinating and unifying the different elements of the System; improving harmonization with European approaches in areas such as indicators; setting priorities for data collection; and improving data quality.

*Sources:* Ukraine, 2002; UNECE, 1999.

Despite these goals and actions, coordination among the organizations involved in environmental monitoring remains poor overall across many EECCA countries (EEA, 2003).

## **Funding**

Financing remains a significant obstacle to improving monitoring systems across EECCA countries. As noted, a few EECCA countries have been able to maintain the basic outlines of their monitoring systems and start reforms. In some cases, in particular in Belarus and the Russian Federation, off-budget environmental funds have at times played a vital role by financing environmental monitoring in the face of budget cuts. However, even in these countries, monitoring equipment is ageing and needs replacement. Modern computer systems are needed to collect, analyse and share data (see the documents in this CD-ROM on Information systems: using computer-based technologies). In addition, environmental authorities have difficulty hiring and retaining monitoring experts.

In other EECCA countries, funding problems are much more acute, and routine monitoring activities have been sharply reduced or discontinued altogether. Many industrial facilities also lack the financial resources to maintain the equipment that measures their pollution. The reliability and accuracy of available ambient data are highly uncertain for some areas. Thus, it is impossible to fully evaluate the environmental situation in these countries (UNECE, 2000d).

International assistance programmes have provided some support for new equipment and ongoing monitoring work. International assistance has also supported monitoring programmes, for transboundary ecosystems such as the Caspian and Aral Seas. For example, the European Union (EU) TACIS Programme has financed water pollution accident and emergency warning stations in the Republic of Moldova and Ukraine for the Danube River Basin Programme.

## **Further materials**

This CD-ROM contains a series of documents providing further information on monitoring systems in EECCA countries, as well as UNECE Recommendations for their strengthening.

The following documents are included:

- A description of key areas for strengthening specific monitoring activities;
- A case study on Monitoring transboundary air pollution;
- A case study on Air pollution inventories, monitoring and modeling in Kazakhstan;
- A case study on Waste classifications and inventories in the Caucasus
- Recommendations on strengthening national environmental monitoring and information systems in countries of Eastern Europe, the Caucasus and Central Asia
- Recommendations to EECCA, new CLRTAP Parties on strengthening air pollution inventories, monitoring and modelling;
- Recommendations on waste classifications and inventories

Other sections of the CD-ROM provide documents on topics that link monitoring activities to environmental assessment: Information systems, specifically computer-based technologies; Environment reports, focusing on state-of-the-environment reporting; and the use of Environmental indicators.