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REVIEW OF THE PROGRAMME OF WORK FOR 2007-2008

ENVIRONMENTAL MONITORING

MAKING MONITORING AND ASSESSMENT AN EFFECTIVE TOOL IN ENVIRONMENTAL POLICY

Note by the secretariat

Summary

This note has been prepared in response to a request by the Bureau of the Committee on Environmental Policy expressed at its meeting in January 2007. It focuses on specific areas of monitoring and assessment where progress has been and/or should be made to link closer observations, data collection and management, and reporting with environmental policy- and decision-making. The note presents proposals for discussion and action by ministers at the sixth Ministerial Conference "Environment for Europe" (Belgrade, October 2007) under a subsession on Monitoring and Assessment. It is based largely on the recent findings of the Working Group on Environmental Monitoring and Assessment and its proposed contributions to the Conference. The Committee may wish to decide to transmit this paper to the Conference through the Working Group of Senior Officials ***under category I***.

Introduction

1. Environmental monitoring and assessment systems are crucial for environmental policy: they are the "eyes and ears" of policymakers, researchers, and members of the public seeking to understand and improve the environment. Providing data and information to support national policies is a key objective of these systems.

2. Improving and harmonizing data availability, parameters and quality are important, both at the national and international levels. National decision makers need the best available data and high-quality assessments in order to take immediate action to prevent and reduce adverse environmental impacts and to develop legislation, policies, plans and programmes. International forums, such as the "Environment for Europe" Ministerial Conferences, can review environmental information across countries, and governing bodies of multilateral environmental agreements (MEAs) can check country compliance with international obligations.

3. UNECE environment ministers have been continuously highlighting the importance of environmental information for policymaking and public awareness. In their Kiev Ministerial Declaration of 2003, the ministers agreed that environmental monitoring and assessment was ***a key prerequisite for the achievement of policy objectives*** and for regional and subregional cooperation on policy responses.[1] The fourth pan-European assessment report on the environment (Kiev Assessment)[2] served as a valuable source of inspiration for the ministers in Kiev in identifying the main challenges the region was collectively facing and deciding on responses to these challenges. The ministers called ***for improving monitoring capacities*** in the region and for the use by all countries of ***indicator-based mechanisms*** for periodic environmental assessments and the evaluation of the effectiveness of environmental policies and decision-making.[3]

4. This paper focuses on specific areas of monitoring and assessment where progress has been and/or should be made to link closer observations, data collection and management, and reporting with environmental policy- and decision-making. It is largely based on the results of analytical and capacity-building work implemented since Kiev by the UNECE Working Group on Environmental Monitoring and Assessment (WGEMA) in cooperation with the European Environment Agency (EEA) and other partners. Findings of UNECE country environmental performance reviews (EPRs) were also used. The paper is intended to stimulate the discussions by ministers, at the Belgrade Conference's subsession on Monitoring and Assessment.

I. ENVIRONMENTAL INDICATORS AND REPORTING

A. Indicators

5. Environmental indicators are a key tool for environmental assessment, reporting and policymaking. Appropriately chosen indicators based on sufficient time-series data can show key trends and help describe causes and effects of environmental conditions. They can also make it possible not only ***to track and evaluate*** environmental policy implementation but also to update environmental and other policies in such environmentally relevant sectors as energy and

transport; ***to set priorities and quantitative targets****;* and ***to assess compliance*** with international commitments adopted.

6. The UNECE countries currently use a wide variety of environmental indicators when publishing governmental state-of-the-environment (SoE) reports and compendia of environmental statistics. Many countries that are members of OECD and/or the European Union produce data regularly on agreed lists of indicators (those of OECD, Eurostat and EEA), not only to meet their reporting obligations to these organizations or institutions but also for publication in national environmental assessment reports and policy documents.

7. Since the late 1990s, countries of South-Eastern Europe (SEE) have been reporting data to EEA on its indicators (see a discussion of the Serbian example in box 1). There are wide gaps in this reporting, and the reported data are rarely used for the production of national environmental assessment reports.

8. Until recently, countries of Eastern Europe, Caucasus and Central Asia (EECCA) had no agreed list of environmental indicators. When indicators were published at the country level, they frequently represented bulky figures in tons and cubic metres that did not help decision makers or the general public to understand the causes and effects of environmental conditions, to link these with economic and social developments, to assess the cost-effectiveness of policy implementation or to make comparisons with other countries.

Box 1: Reporting on indicators in Serbia

Before 2002, assessment and indicators processing were a very weak part of the information provision process. Some progress has been made since then, mostly due to the establishment of the Environmental Protection Agency (EPA). In cooperation with EEA, a set of indicators has been produced for the preparation of the Belgrade Assessment in 2007. Out of the set of 37 EEA core indicators (of which three related to the sea are not applicable in Serbia), Serbia was able to report on 20 indicators, with varying degrees of quality and compliance with the proposed methodologies. The situation is worse for air, with only one indicator (exceedance of air quality) calculated, and with low reliability. No indicators are available on emissions, including greenhouse gases. For water the situation is better, although data are by far not comparable within the country or in the international context, because of the use of a methodology different from that proposed by EEA.

Source: Second EPR of Serbia, UNECE, forthcoming.

9. The involvement of the EECCA countries in the preparation of pan-European assessment reports for "Environment for Europe" Ministerial Conferences triggered their interest in the development of an agreed set of indicators. Consequently, experts from EECCA countries in UNECE/WGEMA, in close cooperation with EEA, selected ***a core set*** of environmental indicators for application in EECCA.[4] To make the core set of the EECCA countries' environmental indicators operational, UNECE/WGEMA agreed to prepare practical guidelines for their application. The resulting ***Guidelines for the Application of Environmental Indicators in Eastern Europe, Caucasus and Central Asia***[5] cover 36 indicators that were evaluated as being (a) most important from the viewpoint of national and international requirements, (b) understandable to the public and (c) supported, to the extent possible, by international

methodological guidance. Presence on other international indicator lists (e.g. those of UNCSD, EEA and WHO) was an important additional selection criterion.

10. The *Guidelines* highlight the importance of the environmental issues for which particular indicators have been designed; refer to international targets; specify requirements for measurements and data collection in the development of each indicator; and provide references to internationally agreed methodologies and recommendations for the development of indicators, as well as to international databases, useful literature and Internet sites. Depending on their role in the assessment of particular environmental issues, the indicators are classified using the EEA DPSIR framework: Driving forces (D) – Pressures (P) – State (S) – Impact (I) – Responses (R).

11. The *Guidelines* are expected to help in:

(a) Improving the ***systems*** of environmental monitoring and reporting for the purpose of environmental decision-making and public awareness raising;
(b) Making national environment assessments ***comparable*** with those of other UN member states; and
(c) Facilitating data gathering for future ***pan-European*** environmental assessment reports.

12. The *Guidelines* are intended for use primarily by officials in government agencies in the EECCA countries who have responsibility for environmental assessment, reporting and the publication of statistical compendiums and bulletins on environmental issues. They might also be of interest to other parties in the EECCA countries, such as business and industry, academics and non-governmental organizations (NGOs), as well as to other UNECE countries, especially those in SEE. The work on the *Guidelines* has already had an impact in some countries (see box 2).

Box 2: Environmental indicators in Uzbekistan

The Government of Uzbekistan, with support from the United Nations Development Programme, recently completed a project on "Environmental indicators for monitoring the state of the environment in Uzbekistan". The main task of this project was to develop a system of environmental indicators on the basis of available international and national experience, with a view to improving the system for monitoring specific environmental parameters. The indicators were mostly selected on the basis of the criteria used by UNECE. 91 indicators were selected, 68 of them from the UNECE list recommended to the EECCA countries, and 23 indicators characterizing conditions specific to Uzbekistan. Guidelines for monitoring the selected indicators were prepared following the methodological approach of the draft UNECE *Indicator Guidelines*. As a follow-up, an Internet-based environmental information system (EIS) integrated with a geographic information system for Uzbekistan is being developed. The data stored in the EIS database result from monitoring activities at the national, oblast and local levels. They help produce the above-mentioned 91 indicators and the national state-of-the-environment report.

Source: UNECE and the State Committee for Nature Protection of Uzbekistan.[6]

B. Indicator-based reporting

13. Until recently, UNECE countries have been publishing various types of environmental assessments and reports, each with its own scope, level of detail and periodicity. Most have been of a descriptive nature. The *Guidelines for the Preparation of Governmental Reports on the State and Protection of the Environment,*[7] as endorsed by the Kiev Ministerial Conference "Environment for Europe", have played an important role in helping the EECCA countries to improve and harmonize, to some extent, their SoE reports. At the same time, recent developments in the UNECE region have led to new requirements for environmental reporting at the national level.

14. Many OECD and EU countries have recently transformed their national SoE reports into indicator-based assessments that link data and information to policy targets and make it possible to evaluate progress in achieving these targets. Most SEE and EECCA countries are lagging behind in this area. The UNECE overview of SoE reporting notes that in EECCA countries, the "development of SoE reports is prone to serious difficulties". Common problems include a need to better define report objectives, structure, indicators used and target audiences. Moreover, countries across the subregion have to strengthen the legislative basis, financing and inter-ministerial coordination in this field.[8] There is a similar situation in several SEE countries (see box 3).

15. The ***Guidelines for the Preparation of Indicator-based Environment Assessment Reports***[9] recently prepared by UNECE/WGEMA represent an important contribution to improve the situation. Their objective is to provide the relevant government bodies with practical guidance on improving the analytical parts of state (national and territorial) environmental assessment reports so that these reports can ***support the setting of priorities and targets*** for environmental policy and the assessment of efficiency of environmental measures. Implementation of these guidelines will also help the EECCA and SEE countries ***to compare*** their national indicator values with those in neighbouring countries and in other UN member States.

Box 3: Lack of environmental reporting in Bosnia and Herzegovina

There is no environmental reporting either to the state or to the entities. Parliaments and governments do not receive state-of-the environment reports to use as a basis for law- and policymaking. The absence of regular objective scientific assessments of the state of the environment and of trends in the main environmental indicators leads to difficulties in appreciating the impacts and the effectiveness of decisions taken. Information to the general public is provided mostly through newsletters and irregular brochures and upon request.

Source: UNECE.[10]

16. Countries are advised to revise the structure of their SoE reports to permit the use of environmental indicators in accordance with the *Guidelines*. This should lead to the conversion of conventional (descriptive and often compilation-like) reporting into indicator-based environmental reporting. The focus should be more on the transformation of environmental information ***into clear messages*** about assessment and implementation of environmental policy.

17. The *Guidelines* include specific advice on the structure and content of basic sections of reports. Should the countries follow this advice, new reports will be ***better structured*** and shaped, all indicators will be presented in the same format, and conclusions and recommendations will be ***more prominent***. Furthermore, the *Guidelines* recommend supplementing the regular publication of national assessment reports with the publication of separate assessment reports characterizing trends involving particular groups of indicators (e.g. transport or energy indicators).

C. Tasks for implementation

18. To implement the *Guidelines for the Application of Environmental Indicators* and the *Guidelines for Indicator-based Environment Assessment Reports*, Governments of EECCA countries and interested SEE countries will have to undertake effective measures for the ***adaptation*** of their systems for environmental monitoring, data collection and environmental reporting. The legal and regulatory basis should ensure, first of all, that ***a specially authorized state body*** responsible for the preparation, publication and dissemination of reports has been designated, and that publication of environmental reports is financed ***from the state budget***.

19. Countries will have to review and clarify, where necessary, responsibilities of public authorities to ensure that each of the environmental indicators included in the *Indicator Guidelines* is backed by measurements, calculations and regular data collection. The existing coordination mechanisms among monitoring institutions will have to be reviewed to strengthen inter-agency cooperation.

20. In countries where this has not yet been done, state statistical services will need to develop and introduce into practice classifications corresponding to those of the International Standard Industrial Classification of All Economic Activities of the United Nations and its derivates. International standard classifications will have to be used by all institutions dealing with the collection and treatment of data and the publication of environmental and statistical reports.

21. Countries will need to regularly review the lists of indicators that are applied at the national level to incorporate new indicators that would primarily respond to evolving national environmental priorities and international obligations, help in measuring progress in the implementation of environmental policy targets and the effectiveness of environmental protection measures, and serve as communication tools for public awareness.

22. It is expected that the ***Recommendations*** *to Governments of East European, Caucasian and Central Asian Countries for the Application of Environmental Indicators and the Preparation of Indicator-Based Environment Assessment Reports,*[11] once adopted by the Committee, would promulgate the implementation of both sets of *Guidelines* and help interested countries in strengthening the relevant legal and regulatory bases and institutional arrangements; improving the training of experts, information management and data access and publication; and promoting international cooperation and environmental information exchange.

II. MONITORING BY ENTERPRISES

A. Challenges

23. The preparation of pan-European environmental assessments, data collection for country environmental performance reviews and reporting under MEAs reconfirmed that substantial improvements in environmental monitoring and data collection are needed in some parts of the UNECE region, especially in areas such as air emissions, water discharges and waste management. Such improvements are difficult to achieve without the commitment and cooperation of enterprises.

24. The main problems with the existing enterprise environmental monitoring and reporting systems in EECCA and SEE are the following:[12]

(a) Shortcomings or contradictions in basic requirements for enterprise environmental monitoring and reporting in legislation;

(b) Weak coordination and communication between various environmental, health and statistics authorities at different levels in handling and exchanging environmental data that are collected and reported by enterprises;

(c) Lack of trust between public authorities and enterprises;

(d) Lack of a commitment by the general management of industries to environmental issues and a tendency to delegate these to an environmental department or an individual within the company.

25. As a rule, enterprises report data on emissions, discharges and waste and some additional environmental data (e.g. on land use, environmental expenditures) to statistical offices only. Although in a few EECCA and SEE countries these data are also made available to environmental authorities, in most cases the data on environmental pressure are not related to environmental quality or impact data collected by environmental authorities. This greatly inhibits the analysis of interlinkages in the environmental causality chain, which is indispensable for decision-making (see box 4).

Box 4: Compliance monitoring in EECCA

In a few countries, enterprises are obliged to report quarterly or annually specific emission data to local environmental authorities. Annual reporting on polluting emissions into the atmosphere in Kazakhstan is one example. These data are generally used for checking compliance with environmental permits or established limit values and adjusting the payments due for air emissions, wastewater discharges and waste generation. These payments are established for long lists of polluting substances and compounds. For instance, air pollution charges in Azerbaijan are levied on 88 different pollutants, while in Tajikistan charges for the discharge of pollutants into water bodies are specified for 197 compounds. Neither the reported data nor the results of sporadic checks by environmental authorities are assembled and published in environmental or statistical reports. As the mandatory statistical forms do not cover most of the compliance monitoring data, they remain in the archives of enterprises, local environmental inspectorates and state analytical laboratories.

Source: UNECE.[12]

26. Self-monitoring requires that enterprises have reliable monitoring equipment and quality control standards for monitoring and record-keeping. This is not always the case in EECCA and SEE. Generally only large enterprises have their own environmental analytical laboratories (see the example of Ukraine in box 5).

Box 5: Enterprise self-monitoring in Ukraine

From 2000 to 2004 the number of enterprise laboratories in Ukraine conducting air monitoring decreased from 479 to 445, while the number of such laboratories monitoring water quality increased from 608 to 703 and those analysing soil and waste increased from 35 to 62. While 66% of these laboratories were accredited in 2003, two years later some 92% were accredited. The JSC Concern Stirol in Horlivka (Gorlovka) in Donetsk Oblast is an example of an enterprise that operates a modern self-monitoring system. It has five automated stations monitoring air quality at the enterprise and in its vicinity. It is ISO 14001 certified and has a modern environmental management system.

Source: Second EPR of Ukraine, UNECE, forthcoming.

27. Increasing the quantity of environmental information produced by enterprises, improving the quality of this information and enhancing access to it by the general public will help decision-making at various levels concerning the prevention and reduction of adverse environmental impacts by enterprises. This will strengthen monitoring of enterprise compliance with environmental regulations. It will also help to improve data collection in order to produce national environment assessment reports and other assessments for decision-making. Last but not least, it will help public authorities report data under multilateral environmental agreements and programmes.

28. The development and implementation of effective environmental monitoring programmes by enterprises will have value added for them as well. Better enterprise environmental data collection will help the management to understand the effects of the company's environmental performance on profitability, market value and investment decisions. It will help increase efficiency in energy and resource use and the overall cost-effectiveness of the process, since good enterprise environmental monitoring provides useful information relating to energy use and materials flow.

29. Cooperation with business and industry on this issue will be an effective response to the general need to make environmental protection a shared responsibility of different stakeholders and to promote socially responsible behaviour by industry, especially in the environmental field. Such cooperation would be a good example of a strategic partnership between public authorities and the private sector.

B. Responses

30. There are some initiatives in EECCA to link data on the environmental pollution load of enterprises with local ambient environmental quality data in order to establish environmental impact. The development of a "local" monitoring programme in Belarus is one example (see box 6).

Box 6: Linking enterprise monitoring with environmental quality monitoring in Belarus

Belarus has been developing a new monitoring system since 2000 to provide information about the pollution load of major pollution sources and their compliance with environmental regulations. The intention is to link this information with ambient environmental quality to establish environmental impact. Initially, 33 enterprises were covered by this so-called local monitoring programme. Most of these were part of the Belneftekhim concern, which included large plants and conglomerates with aggregate emissions ranging from 2,000 to 55,400 tons per year. Municipal wastewater treatment plants with wastewater flows ranging from 243,000 to 270,430,000 m^3 per year were also included. In 2003, 80 enterprises reported data on their wastewater discharges. This covered 75% to 88% of all discharges in the basins of the Neman, Zapadnaya Dvina, Zapadnyi Bug and Dnepr rivers. The discharge data were compared with data from the Hydrometeorology Department on water quality in the recipient water bodies upstream and downstream from the discharge points to establish an environmental impact.

In 2003, 76 enterprises, representing 53% of total air emissions in Belarus, reported their emission data. Data covered total annual emissions and monthly average and maximum single emission volumes, and were compared with the emission limits. By 2004, the system covered 156 enterprises, which report data on their air emissions and their wastewater discharges into surface waters.

Source: UNECE, 2005.[13]

31. To support these initiatives and to help EECCA and other interested countries resolve existing problems with enterprise monitoring, UNECE/WGEMA, in cooperation with other international entities, prepared the ***Guidelines for Strengthening Environmental Monitoring and Reporting by Enterprises.***[14] The *Guidelines* result from the examination of good practices throughout the UNECE region and from discussions with major stakeholders, including government bodies at the national and subnational levels responsible for environmental policy, environmental monitoring and compliance monitoring, as well as with statistical agencies, business and industry representatives and associations, and civil society organizations.

32. To implement the *Guidelines*, forceful action will be needed at various levels by different stakeholders in coordination and cooperation. Constructive dialogue will have to be established between operators, public authorities and members of the public in order to strengthen the ***motivation of industry*** to adequately perform enterprise environmental monitoring and reporting.

33. Mandatory environmental monitoring requirements may relate, first of all, to enterprises with a ***certain threshold capacity in the main polluting sectors*** of economic activity in the country, irrespective of their ownership. The legislation may also include detailed monitoring requirements regarding measurement programmes, basic measurement parameters, reference standards and validation of results. This may help to prevent disputes between the public authorities and individual operators and to avoid corruption. The operator may generally be required to develop a draft ***enterprise*** environmental ***monitoring programme*** and to include a proposal for such a programme in the permit application, subject to ***approval by the public authorities***. A "single-window" approach should be introduced, step by step, to facilitate enterprise environmental reporting to the public authorities.

34. Enterprise environmental monitoring will generally have to include not only operation and emission monitoring but also monitoring of ***environmental quality***. The latter would monitor pollution levels in the environment surrounding the facilities and, step-by-step, the effects of operation on human health and ecosystems.

35. Members of the public will have to be given ***access*** to review draft monitoring programmes as part of the permitting process. Information obtained through mandatory self-reporting needs to be made available to the general public through databases kept by the public authorities and through annual corporate reports and corporate databases open to the general public.

36. To facilitate enterprise data management, the public authorities may establish ***standardized*** reporting ***formats*** for operators and make electronic reporting forms available on websites. Providing operators with ***guidance documents*** related to pollution measurement, calculation and estimation would be helpful. The public authorities will also have to provide methodological support to enterprise analytical laboratories through creation of national reference laboratories, involvement of enterprise laboratories in the international inter-calibration and training of personnel.

37. The legal and institutional structures for the collection and verification of enterprise data may vary. Although legal competence may be divided between various public authorities, ***one institution*** at the national level will have to be responsible for compiling the complete data set for the whole country. The same data need to be used for all reporting purposes to ensure conformity between the different databases. For instance, consistency of reported emission data will have to be ensured, as these data are used in preparing national emission inventories and in reporting to the governing bodies of MEAs.

38. The public authorities may encourage operators to establish and enhance enterprise environmental monitoring programmes that go ***beyond regulatory requirements***. Specific legal approaches, policy considerations and inducements may be considered to promote voluntary auditing and environmental management systems (EMS), which frequently include additional (voluntary) enterprise environmental monitoring. The public authorities may encourage operators to establish EMS based on ISO 14001 or the EU Eco-Management and Audit Scheme (EMAS) and publication of open ***environmental and sustainability reports*** through which stakeholders, clients and members of the public get information about the operator’s environmental performance.

39. The public authorities may promote the creation of independent environmental performance industry ***rating schemes*** based on enterprise environmental monitoring data and may support the use of such ratings by industry associations, insurers, banks and the like for business self-regulation and to help simplify enterprise information so as to make it more acceptable and meaningful for the general public.

III. MONITORING NETWORKS

A. Challenges

40. There is sufficient evidence of gaps, weaknesses and inconsistencies in raw data collection in several areas of importance for environmental policymaking in the UNECE region. The preparation of the Kiev Assessment report identified priority areas for improving environmental monitoring capacities, including air quality, soil contamination, waste management, water quality, biodiversity and chemicals.[15] The development of appropriate data flows in these areas is required so as to allow regular national and international indicator-based reporting that enables progress to be assessed and preventive or corrective measures to be taken.

41. The subsequent preparation of the Belgrade Assessment reconfirms that substantial efforts are still needed to develop proper networks for providing environmental data and information in the above-mentioned and other areas. For example, significant gaps in country coverage are revealed by the submission of data from international databases. A number of UNECE member countries, although members of relevant MEAs and international organizations, do not submit data, or else their submissions are incomplete or do not cover the agreed time intervals (see the example of Moldova in box 7).

Box 7: Major environmental data gaps in Moldova

The current monitoring networks remain insufficient to meet the requirements of the national legislation and international obligations of Moldova. Monitoring does not cover several important point sources of groundwater pollution, diffuse pollution of surface waters is not measured and there is not a single background monitoring station in the country. The lists of ambient quality parameters have not been revised or harmonized with international standards since Moldova became independent, except the drinking water quality parameters, which are being revised to meet WHO requirements.

Source: UNECE.[16]

42. In many Western European countries it is widely recognized that some of the systems for monitoring and gathering information about the environment are inefficient and wasteful. They generate excessive amounts of data on subjects which do not merit it, and they fail to provide timely and relevant information on other subjects where there is an urgent policy need for better-focused information, and for consistent environmental assessment and reporting.[17]

43. Nor do existing environmental monitoring system in EECCA and SEE meet all policy needs. In some countries, the large volume of data produced on certain topics contrasts sharply with the difficulty in using these data to support decision-making. Many countries still follow obsolete monitoring approaches, concepts, standards and methodologies, which are not harmonized with evolving international methodologies and do not meet data requirements for policy- and decision-making.[18] In many EECCA and SEE countries, owing to economic difficulties, the number of stations measuring aspects of the quality of the environment has been reduced compared with the early 1990s. As a result, many EECCA countries, for instance, self-assessed their current ability to report data on the core list of EECCA environmental indicators as being from 40 to 80 per cent.[19]

44. Box 8 presents an example of air-quality monitoring in EECCA.

Box 8: Air-quality monitoring in EECCA

Most measurement stations in EECCA have incomplete or reduced programmes. Monitoring is based on manual sampling; there are very few automated monitors. The existing air observation networks in most EECCA countries have not been reviewed or revised since their inception. Overall, the current ambient air monitoring networks do not meet the requirements of current national regulations. Only four countries currently have background and transboundary (EMEP)* stations. The current networks are insufficient and non-representative even for participating countries. The measurement programmes at the EMEP stations do not match the requirements under the Convention on Long-range Transboundary Air Pollution.

Reductions in sampling periodicity, decreases in the reliability of measurements owing to aging equipment and a lack of basic supplies affect many parts of the subregion. For instance, the national inventory of air monitoring devices in use in Ukraine lists equipment dating back to 1946. Many stations measure only a limited number of meteorological and chemical parameters (SO_2, NOx, PM total, CO, B(a)P and Pb) in urban air. There are practically no regular measurements of ground-level ozone concentrations. There are barely any measurements of PM_{10} or $PM_{2.5}$. Monitoring of volatile organic compounds (VOCs) and persistent organic pollutants (POPs) is in the initial phase in some countries.

The results obtained from various air quality monitoring activities are frequently not comparable or complementary. There is no interpretation of dose relationships between different data sets. The current air quality networks are generally unable to link air pollution levels with emission patterns and thereby identify activities that violate emission norms or air quality standards. Monitoring data are rarely used in developing environmental policy plans and programmes.

*Cooperative Programme for Monitoring and Evaluation of the Long-range Transmissions of Air Pollutants in Europe.

Source: UNECE, 2006.[20]

B. Responses

45. The importance of environmental monitoring should be adequately backed at the ***political level***. A higher level of national investment, in particular in EECCA and SEE countries, is required. Environmental monitoring investments are needed especially for raw data collection (networks), processing capacities (human resources) and equipment (computer hardware and software).

46. Furthermore, there is a need to establish an effective bridge between a responsive monitoring system and a relevant reporting process in support of decision-making. Countries in EECCA and SEE should start revising their monitoring programmes by making monitoring a practical tool for ***policy target setting***, ***pollution abatement strategies*** and ***measuring progress*** in achieving policy targets and effectiveness of abatement measures. Measures to be taken to this end are presented in box 9.

Box 9: Promoting interaction between monitoring and environmental strategies in EECCA and SEE

Increasing the role of monitoring in policymaking can be achieved primarily by:

(a) Integration of environmental quality monitoring data with emission inventories and modelling activities;
(b) Revision of environmental quality standards and their harmonization with relevant international standards and guidelines in order to use them effectively in policy- and decision-making;
(c) Better use of monitoring data in permitting, compliance monitoring, setting policy targets and developing abatement policies and measures; in environment assessment reports; and for informing and warning populations, taking urgent actions in cases of extreme exceedance of limit values, and monitoring compliance with international targets or obligations;
(d) Improvement of coordination of national environmental quality monitoring programmes with monitoring activities by environmental inspectorates, sanitary and health inspectorates, subnational (oblast and city) authorities, and enterprises;
(e) Modernization and upgrading of national monitoring networks and information systems, with a particular focus on:

(i) Monitoring points (stationary and mobile points, background stations, transboundary stations) and their location and densities;
(ii) Parameters measured;
(iii) Technical capacities, particularly automated measurements;
(iv) Reliability of measurements and analysis;
(v) Data management;
(vi) Mobilization of funds from various sources.

Source: UNECE.

47. When extending and upgrading their monitoring networks, EECCA and SEE countries may take into account the requirements of relevant MEAs, ***guidelines, standards and manuals*** developed by international organizations as well as good monitoring practices in other parts of the UNECE region.

48. There are encouraging examples of positive developments in various parts of the UNECE region that may be successfully replicated in other countries concerned. Some EECCA countries, for instance, have recently prepared, or initiated the preparation of, ***conceptual documents or programmes*** to extend and modernize their monitoring networks mainly by domestic financial resources.

49. Armenia, for instance, has developed a monitoring concept for 2007–2010. The objective is to set up, by 2010, 53 fixed automated sampling points and to expand the measurement programme to ground-level ozone, ammonia, fine particles, VOCs, POPs, radon and some other pollutants. The Government of Armenia has earmarked US$ 420,000 for upgrading air and surface water monitoring networks in 2007–2008.

50. Belarus is currently implementing a programme of technical modernization of its air monitoring network. This will include expanding monitoring of PM_{10} and ground-level ozone in ambient air. By the end of 2006, VOC measurements were expected to start in eight industrial centres. Nineteen fixed automated sampling points will be set up by 2010.

51. In the Russian Federation, a departmental programme of the hydrometeorological service to develop its monitoring networks in 2006–2008 foresaw the allocation of the equivalent of some US$ 41 million to support the programme's implementation, including modernization of the monitoring network. In fact, seven times as much funding will be allocated as for the previous (2003–2005) monitoring programme. The Commission on State Sanitary and Epidemiological Standardization under the Federal Service for Supervision of Consumer Rights and Welfare is currently considering several dozen updated environmental quality standards for approval.

IV. PROPOSALS FOR DISCUSSION AND ACTION IN BELGRADE

52. The ministers meeting in Belgrade might wish to discuss the following issues:

(a) What type of ***impact***, if any, has countries' involvement in the preparation of pan-European assessment reports had ***on national environmental assessment*** reporting? What could be a feedback to EEA and UNECE/WGEMA to take into account in future pan-European assessments?

(b) What type of measures could be taken at the national level to implement effectively the *Guidelines for the Application of Environmental Indicators* and the *Guidelines for the Preparation of Indicator-Based Environment Assessment Reports?* What ***follow-up*** actions could promote further strengthening and harmonization of environmental reporting in the region?

(c) What are the ***opportunities and barriers*** for the implementation at the national level of the *Guidelines for Strengthening Environmental Monitoring and Reporting by Enterprises?* What might be the best practical approaches to achieve substantial improvements in enterprise monitoring without imposing excessive costs on operators? What type of effective public/private partnerships could promote the achievement of this goal?

(d) What types of ***initiatives*** could be launched at the regional level to support efforts of EECCA and SEE countries to link monitoring activities with environmental policy- and decision-making?

53. In the light of their discussion, the ministers might stress in their ***Declaration*** the need to make monitoring and assessment an effective instrument in environmental policymaking at both national and international levels. They might endorse the *Recommendations to Governments of East European, Caucasian and Central Asian Countries for the Application of Environmental Indicators and the Preparation of Indicator-Based Environment Assessment Reports* that will help these and other interested countries in transforming environmental data into policy messages and will enhance the comparability of national environment assessments throughout the region. The Ministers might also endorse the *Guidelines for Strengthening Environmental Monitoring and Reporting by Enterprises* and call upon EECCA and other interested countries to

establish strategic partnerships with business and industry in improving environmental data collection and observations. They might, furthermore, invite UNECE, in cooperation with the EEA and other partners and stakeholders, to continue building monitoring and assessment capacities of EECCA and SEE.

Notes

[1] *Fifth Ministerial Conference Environment for Europe, Kiev, Ukraine, 21-23 May 2003. Declaration by the Environment Ministers of the region of the United Nations Economic Commission for Europe (UNECE)* (ECE/CEP/94/Rev.1, para.66) (http://www.unece.org/env/proceedings/files.pdf/Item%2014$15/14&15Documents/ece.cep.94.rev.1.e.pdf)
[2] *Europe's Environment: The Third Assessment* (EEA, 2003) (http://reports.eea.europa.eu/environmental_assessment_report_2003_10/en/index_html)
[3] Ibid, paras. 20 and 30
[4] http://www.unece.org/env/europe/monitoring/Indicators/Core_indicators_for_EECCA.En.pdf
[5] http://www.unece.org/env/europe/monitoring/Belgrade/CRP1.Indicators.En%20edited.MK..pdf
[6] *Work on the Application of Environmental Indicators in Uzbekistan* (UNECE, 2005) (CEP/AC.10/2005/4/Add.1) (http://www.unece.org/env/europe/monitoring/5thMeeting/CEP-AC.10-2005-4-Add.1.e.pdf) and http://eis.uznature.uz/about/
[7] http://www.unece.org/env/europe/monitoring/C2K_en.html
[8] *Use of Environmental Indicators in Government Reports on the State of the Environment in the Countries of Eastern Europe, the Caucasus and Central Asia* (UNECE, 2003) (CEP/AC.10/2003/6/Rev.1) (http://www.unece.org/env/documents/2003/cep/ac.10/cep.ac.10.2003.6.e.pdf). See also: *Status of Environment Record-Keeping in the Newly Independent States* (UNECE, 2002) (CEP/AC.10/2002/18) (http://www.unece.org/env/documents/2002/cep/ac.10/cep.ac.10.2002.18.e.pdf) and *Electronic Networking And Databases* (UNECE, 2005) (CEP/AC.10/2005/3) (http://www.unece.org/env/europe/monitoring/5thMeeting/CEP-AC.10-2005-3.pdf)
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[11] ECE/CEP/2007/8 (http://www.unece.org/env/europe/monitoring/Belgrade/Recommendations.11.12.06.En.pdf)
[12] On EECCA, see *Enterprise Environmental Monitoring and Reporting in Eastern Europe, The Caucasus And Central Asia* (UNECE, 2005) (CEP/AC.10/2005/5) (http://www.unece.org/env/europe/monitoring/5thMeeting/CEP-AC.10-2005-5.pdf)
[13] *Second Environmental Performance Review – Belarus* UNECE (New York and Geneva, 2006) (http://www.unece.org/env/epr/countriesreviewed.htm)
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[16] *Second Environmental Performance Review – Republic of Moldova* (UNECE, 2006) (ISBN 92-1-116939-9) (http://www.unece.org/env/epr/countriesreviewed.htm)
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[18] for EECCA see *Environmental Monitoring and Reporting in Eastern Europe, the Caucasus and Central Asia* (UNECE, 2003) ISBN 92-1-116848-1) (http://www.unece.org/env/europe/monitoring/EnvMonRep/index.html) and *Environmental Monitoring and Assessment – Eastern Europe, the Caucasus and Central Asia* – CD-ROM (UNECE, 2004) (ISBN 92-1-002114-2)
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