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WAYS TO IMPROVE ENVIRONMENTAL MONITORING IN THE RUSSIAN FEDERATION

Discussion paper submitted by the Russian Federal Service for Hydrometeorology and Environmental Monitoring (Rosgidromet)[1]

Introduction

1. The legal basis for carrying out environmental monitoring in the Russian Federation is the Federal Environmental Protection Act (No. 7-FZ) of 10 January 2002. The main purpose of monitoring, as statutorily defined, is to serve the requirements of the State, legal entities and private individuals for reliable information necessary to prevent and/or reduce the adverse effects of changes in the environment.

2. Annex 1 contains a flow chart showing how such information is provided in the Russian Federation. In the light of the extended OECD-model for environmental reporting (Drivers - Pressures - State - Impact - Reponses) used by the European Environment Agency (EEA) (see document CEP/AC.10/2002/3 of 2 January 2002), three core functional areas for obtaining the required information may be distinguished in this structure:

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- Monitoring the state of the environment (air, water and soil quality);

- Monitoring of sources (drivers) and levels of man-made pressures (emissions and discharges of harmful substances, formation of wastes, etc.);

- Monitoring the impacts of environmental changes on the biota (human health, biodiversity, etc.).

3. Data on the state of the environment in the Russian Federation are currently obtained by the National Environmental Monitoring Service. Data on sources and levels of man-made pressures are obtained in the course of environmental protection controls. The basis for obtaining data on biota impact is public health monitoring, biodiversity monitoring, and supervision of the exploitation and protection of certain kinds of natural resources (forests, aquatic bioresources, game animals, etc.).

I. THE NATIONAL ENVIRONMENTAL MONITORING SERVICE

4. The legal basis for national monitoring of the environment and its subcomponent, national monitoring of the atmosphere, which is performed by the National Monitoring Service, is the regulation on this Service ratified by Government Decision No. 622 of 23 August 2000.

5. The regulation stipulates that national environmental monitoring shall be carried out by Rosgidromet and the Ministry of Natural Resources, assisted by other federal government authorities and the authorities of the constituent entities of the Russian Federation.

6. The core units of the National Monitoring Service that obtain reliable information about anthropogenic changes in the environment, primarily chemical and radioactive pollution, are the State, departmental, territorial and local (i.e., on-site) monitoring networks.

7. A flow chart showing the operation of the national environmental pollution monitoring network is contained in annex 2, and its composition and the environmental parameters under investigation are shown in annex 3.

8. The guidelines for the principal types of monitoring activity are RD 52.04.186-89, "Guidelines for monitoring atmospheric pollution", ratified by Rosgidromet and the Ministry of Health; and RD 52.24.309-92, "Organization and performance of routine monitoring of inland surface water pollution", ratified by Rosgidromet and the Ministry of the Environment.

9. Analytical studies are carried out in accordance with techniques approved by the Committee of the Russian Federation on Standardization, Mensuration and Certification (Gosstandart), incorporated in RD 52.18.595-96, "Federal list of measurement techniques permitted for use in the monitoring of environmental pollution".

10. Technical support for monitoring work; data collection, analysis and interpretation; and management of the various sections of the integrated national database on the state of the environment are the responsibility of research institutes and Rosgidromet, as specified by the regulation ratified by the Government (see the flow chart in annex 4).

11. In accordance with RD 52.24.268-86 ("Methodological guidelines. System for monitoring the accuracy of measurements of pollution levels in the controlled environment"), research institutes perform "external" monitoring of the accuracy of the measurements made by the national network; in addition, accuracy is controlled "internally" at the analytical laboratories themselves.

12. Article 6 of the Federal Environmental Protection Act, which assigns to the jurisdiction of the constituent entities of the Russian Federation matters relating to the establishment and operation of territorial environmental monitoring systems, and article 6 of the regulation on the National Monitoring Service with regard to the coordinated operation of these systems within the Service, are implemented through agreements on cooperation in the field of hydrometeorology and environmental monitoring concluded between Rosgidromet and the authorities of the constituent entities of the Russian Federation.

13. Under these agreements, territorial programmes are being devised and executed that incorporate, on the one hand, federally prescribed environmental pollution monitoring studies and, on the other, monitoring that serves the interests of the regions. In this way, the federal and local budget resources allocated for these respective purposes are put to best use. More than 70 such agreements have been concluded to date.

14. Efforts to establish automated atmospheric pollution monitoring systems and other environmental monitoring systems in the constituent entities of the Russian Federation in the period 1991-1999 were beset by lack of coordination and incompatibility of methodological approaches and instrumentation. In many cases, previous measurements by the national monitoring network in the regions involved were simply ignored.

15. The situation is gradually improving. Thus, in St. Petersburg and Tula oblasts, the local authorities have decided to turn over the automated atmospheric pollution monitoring systems to Rosgidromet for beta testing. In Murmansk oblast, a similar decision has been taken with regard to the automated system for monitoring the radiation situation.

16. Problems relating to State regulation of the monitoring of environmental pollution are currently being addressed by Rosgidromet under the regulation on licensing activities in the sphere of hydrometeorology and related fields, as ratified by Government Decision No. 324 of 20 May 2002.

17. Annex 5 indicates which types of environmental monitoring are subject to licensing, and the requirements and conditions that must be satisfied.

18. To date, Rosgidromet has granted licences to carry out environmental pollution monitoring to more than 70 external organizations, including those engaged in on-site monitoring of specific polluter enterprises.

19. The Government's decision on licensing has set in place the legal prerequisites and appropriate mechanisms to organize the coordinated operation of the various systems for monitoring environmental pollution within the framework of the National Monitoring Service. Additionally, the licensing of these activities provides an opportunity to tackle the issue of the legal status of the information used in making decisions about the environment.

20. Forecasting levels of pollution attributable to man-made accidents in which pollutants are released into the environment is the job of the Federal Information and Analysis Centre for the provision of current information and forecasts with respect to emergencies involving accidental environmental pollution, a body subordinate to Rosgidromet. The Centre makes use of current and anticipated hydrometeorological parameters that determine the dispersion and behaviour of pollutants in the environment.

21. At the regional level, appropriate hydrometeorological support in response to pollution emergencies is provided by Rosgidromet's 89 territorial centres. In 220 towns, forecasts are made of adverse weather conditions that could result in the accumulation of pollutants in the surface layer of the atmosphere and appropriate warnings are issued.

22. Funding for the operations of the National Monitoring Service comes from the annual federal budget allocation made to Rosgidromet and other federal government bodies involved in environmental monitoring under their established terms of reference. In 2002, total public expenditure on environmental pollution monitoring studies by Rosgidromet amounted to some 200 million roubles. The anticipated funding received in the same period by the national monitoring network for projects serving the interests of specific regions and under contracts will amount to 30-40 per cent of this sum.

23. The monitoring networks that operate within the National Monitoring Service in accordance with national legislation are also components of specialized monitoring systems designed to provide information about the protection and sound use of certain types of natural resources (water and land).

24. Thus, the regulation on national monitoring of water bodies (which designates the Ministry of Natural Resources as the lead agency), ratified by the Government in pursuance of the Water Code of the Russian Federation, stipulates that monitoring of surface water using qualitative and quantitative indicators shall be carried out by Rosgidromet's national monitoring network. Monitoring of subsurface bodies of water shall be carried out by the national reference network for monitoring subsurface water within the system of the Ministry of Natural Resources.

25. Soil pollution data obtained by the National Monitoring Service is used by the State Committee of the Russian Federation for Land Policy to draft national reports on the condition and use of land. As part of the follow-up to the adoption of the Land Code of the Russian Federation, a special regulatory act on the procedure for national land monitoring is to be drafted in the third quarter of 2002.

II. MONITORING EMISSIONS (DISCHARGES) OF HARMFUL SUBSTANCES INTO THE ENVIRONMENT, AND WASTE MANAGEMENT

26. The procedure for State record-keeping of harmful impacts on ambient air and the sources thereof (art. 21 of the Federal Ambient Air Protection Act) is dealt with under a special regulation ratified by Government Decision No. 373 of 21 April 2000. In line with this document, the Ministry of Natural Resources is responsible for the following tasks:

- Registration of organizations subject to State record-keeping;

- Management of a database on organizations subject to State record-keeping, and on the quantity and composition of emissions of harmful substances (pollutants) into the air;

- Ensuring that primary record-keeping of harmful impacts on the air is performed correctly.

27. The Ministry of Health has been given similar responsibilities in respect of harmful physical impacts on the air that adversely affect human health.

28. State record-keeping is based on material used to inventory emissions of atmospheric pollutants; inventorying has been performed regularly at Russian enterprises since the 1980s in conformity with GOST (State Standard) 17.2.3.02-78.

29. Enterprises perform primary record-keeping of emissions on the basis of inventorying materials. Data prepared by enterprises using a 2-TP (Air) form are interpreted by regional bodies of the Russian State Statistical Committee (Goskomstat) and subsequently published as cumulative data in the form of annual reports on air protection.

30. At the same time, primary data on emissions are processed by regional bodies of the Ministry of Natural Resources and subsequently published as annual surveys of emissions of atmospheric pollutants in every constituent entity of the Russian Federation. This material is processed, analysed and correlated at research institutes for air protection that report to the Ministry of Natural Resources and subsequently published as a yearbook of emissions of atmospheric pollutants in towns and regions of the Russian Federation.

31. The yearbooks published by the Ministry of Natural Resources contain more detailed information about emissions of pollutants:

- The list of emissions is much longer (approximately 2,000 pollutants) compared to the 36 substances listed in the Goskomstat reports;

- Data is presented for emissions from stationary sources *and* vehicles;

- Data from many more enterprises has been summarized and included; this data was not entered in the Goskomstat reports owing to late submission of 2-TP (Air) forms.

32. Data on the emission and absorption of greenhouse gases is currently analysed by the Global Climate and Ecology Institute employing the techniques of the Intergovernmental Panel on Climate Change and its good practice Guidelines for National Greenhouse Gas Inventories, based on relevant data provided by Goskomstat, ministries and departments.

33. Article 79 of the Water Code of the Russian Federation stipulates that State record-keeping of surface and subsurface water as regards data on quantitative and qualitative waste-water indicators shall be based on recording data on the use of surface and subsurface water submitted by water users.

34. State monitoring of compliance with the procedure for primary record-keeping of water use by users and consumers according to qualitative and quantitative indicators; and of the existence, status and compliance with prescribed time limits of State certification of monitoring and measurement instruments and apparatus for determining the quantitative and qualitative characteristics of waste water, is carried out by agencies of the Ministry of Natural Resources in line with the regulation on State monitoring of the use and protection of bodies of water, as ratified by Government Decision No. 716 of 16 June 1997.

35. Recording data received from enterprises is correlated by Goskomstat in accordance with the instruction on the procedure for statistical reporting of water use, as entered on form 2-TP (Water), and subsequently published every year.

36. The legal basis for processing industrial and consumer waste is laid down by the Federal Industrial and Consumer Waste Act (No. 89-FZ) of 24 June 1998. The Ministry of Natural Resources (in conjunction with the State Committee of the Russian Federation on Architecture and Construction (Gosstroi) in all matters regarding household waste) registers hazardous wastes and keeps a national inventory that includes a federal classificatory catalogue of wastes, a State register of waste disposal facilities, and a database of wastes and technologies for recycling and processing different kinds of waste in accordance with Government Decision No. 818 of 26 October 2000. As established by law, the Ministry of Natural Resources provides data from the State inventory of wastes and data in connection with State statistical monitoring of waste management to the relevant State bodies and local authorities and also to other users (consumers).

37. Goskomstat has developed a corresponding statistical recording system for waste management (2-TP (Waste) forms) and the data thus obtained are published on a regular basis.

III. MONITORING BIODIVERSITY AND THE ADVERSE EFFECTS OF ENVIRONMENTAL CHANGE

38. At present, the principal sources of information about the state of bioresources are sectoral services in agriculture, forestry, fisheries and game reserves, the health and disease control service, the land registry service, water management, the system of specially protected areas, and the biological departments of the Russian Academy of Sciences. However, their activities are not sufficiently coordinated; they do not address the whole range of biodiversity issues and use different parameters and data-collection techniques.

39. The National Strategy for the Preservation of Biodiversity in the Russian Federation, which was adopted at the National Forum for the Preservation of Russian Wildlife in June 2001 in Moscow, defines the principal objectives in the field of monitoring biodiversity as follows:

- Inventorying of biodiversity in regions with a high degree of ecosystem degradation;

- Establishment and operation of a monitoring system.

40. Based on this Strategy, a National Plan of Action for the Preservation of Biodiversity is currently being prepared that provides for appropriate monitoring tasks.

41. Unlike this type of monitoring, obtaining information about the effects of adverse environmental factors on human health (public health monitoring) is essentially concentrated in one department, namely the Ministry of Health. The procedure for performing this type of monitoring is laid down in a special regulation ratified by Government Decision No. 426 of 1 June 2000.

42. The use in the course of public health monitoring of essential environmental data obtained by the national monitoring network is covered by the Agreement of 6 July 2001 between the Ministry of Health and Rosgidromet, relating to the sharing of information in the areas of public health and environmental monitoring. Similar agreements are being concluded at the regional level between centres of the State Committee for Health and Epidemiological Oversight of the Russian Federation (Gossanepidnadzor) and centres for hydrometeorology and environmental monitoring.

IV. USE OF ENVIRONMENTAL MONITORING DATA

43. The principal publications at the federal level that use environmental monitoring data (official reports, surveys, yearbooks, etc.) are indicated in annexes 1 and 4.

44. Monitoring data are similarly used in the preparation of relevant material by the constituent entities of the Russian Federation.

45. Monitoring data are the raw material for nearly all the environmentally related programmes at different levels (federal, regional, territorial, sectoral, etc.) that are being implemented and drawn up in the Russian Federation. Feasibility studies and assessments of the effects of planned economic activity on the environment and the elaboration of standards governing emissions of harmful substances into the atmosphere or discharges into bodies of water are an important area in which environmental monitoring data are put to use.

46. Wide use of these data is made by the mass media, and especially environment-oriented media, to keep the public informed.

47. Annex 6 contains information about the participation of Russian organizations in international data-sharing within the framework of international environmental monitoring systems and the measurement programmes established by a number of conventions and agreements.

V. PRINCIPAL AREAS IN WHICH ENVIRONMENTAL MONITORING CAN BE IMPROVED

A. Identification of environmental monitoring priorities

48. At present, based on national legislation, the priorities in this area may be stated as follows:

49. Fulfilment of international obligations with respect to the submission of environmental data under the relevant conventions, agreements, plans of action and international and regional programmes, and participation in international and regional environmental monitoring systems, etc. Priorities are:

- Inventorying of work currently being performed from the standpoint of the comprehensiveness and quality of the data;

- In the light of the results of the inventorying process, elaboration of specific measures to develop this work based on international requirements, standards and protocols for the submission of information;

- Gradual implementation of these measures on the assumption that they can actually be funded with the possibility of diverting resources from lower-priority work and tapping external financial support.

50. Sets of environmental indicators and criteria to be developed in the light of international experience and introduced at national level to facilitate decision-making. Existing monitoring programmes to be refined in order to yield sufficient information to assess environmental situations in the light of the adopted indicators and criteria and avoid the unjustified expense of obtaining superfluous data (removal of "information noise" for decision makers).

51. Environmental information and data to be provided to consumers at the federal level. Priorities are:

- Identification of specific environmental information/data needs that are essential and sufficient for decision-making purposes, bearing in mind the respective jurisdictions of the federal and regional authorities in this sphere;

- Development and coordination with consumers of forms and protocols for supplying them with information. Procedure for submitting information, and identification of possible gaps in the required data;

- Development and implementation of means of filling existing gaps in data.

52. Information to be provided to consumers at the regional level (in the federal areas) and territorial level (in the constituent entities of the Russian Federation). Priorities are:

- Identification of specific environmental information/data needs, bearing in mind the respective jurisdictions of the regional and territorial authorities in this sphere;

- Development and coordination with consumers of forms and protocols for supplying them with information. Procedure for submitting information, and identification of possible gaps in the required data;

- Development and implementation of means of filling existing gaps in data.

53. Procedure for providing local authorities with information on the basis of the environmental powers delegated to them. To this end, wider use to be made of environmental information from polluter enterprises, and also the establishment of local monitoring systems funded by these enterprises.

Topics for discussion

54. Health and hygiene standards (maximum permissible concentrations) are currently in force for assessing ambient air quality, and there are also maximum permissible concentrations for forest vegetation. The quality of surface water is evaluated by determining maximum permissible concentrations in respect of health and hygiene and fisheries. Monitoring programmes are geared towards obtaining the necessary data for comparison with these maximum permissible concentrations. There are no "ecological" criteria per se for measuring environmental quality that could be used to redirect monitoring programmes. Accordingly, the introduction of such criteria, including those taking account of international approaches, standards and criteria, would be of particular interest.

55. "Decentralizing" the operations of the National Monitoring Service is a hotly debated issue. It depends in large measure on the respective jurisdictions of the federal centre and regions over environmental protection issues. What are the environmental information requirements at federal, regional and municipal level?

B. Normative and legal support

56. The following action needs to be taken when further developing the legal basis of environmental protection:

- Provide for the establishment, at the federal level, of responsibility for the activity of its core functional units in line with the OECD-model for reporting on environmental issues (anthropogenic pressures - state of the environment - impacts). Effective mechanisms for interdepartmental cooperation should be established;

- Specify the jurisdiction and responsibilities of the various authorities (federal, regional, territorial and municipal) in this area, as well as those of polluter enterprises.

Topics for discussion

57. The functions of monitoring emissions and discharges of pollutants and supervising waste management have been integrated into environmental decision-making structures. Formal constraint (e.g. the size of the managerial apparatus) hamper progress in this area. What structural models could be proposed to tackle these problems?

C. Financing

58. The principle of mixed funding of environmental monitoring operations (federal and local budgets, funds provided by enterprises, and other extrabudgetary sources, including international programme and project financing) is to be consistently applied.

59. Bearing in mind the limited opportunities for budget funding, the practice of enlisting the help of polluter enterprises in obtaining environmental information should be widened, thereby enabling budgetary funds to be focused on environmental monitoring objectives at the federal, regional (basin) and territorial levels.

Topics for discussion

60. In a country such as the Russian Federation, the national environmental monitoring system can be improved only by drawing on domestic funds and resources. At the same time, international support would help to expedite this process and reduce possible costs. Which of the existing mechanisms could be most effectively used to achieve this end?

D. Submission of information and reporting

61. The practice of using up-to-date information technologies in the existing infrastructure to obtain, gather, analyse, collate and submit environmental information is to be significantly widened.

62. Access systems using computer networks and various thematic environmental databases should be developed and introduced at the interdepartmental level.

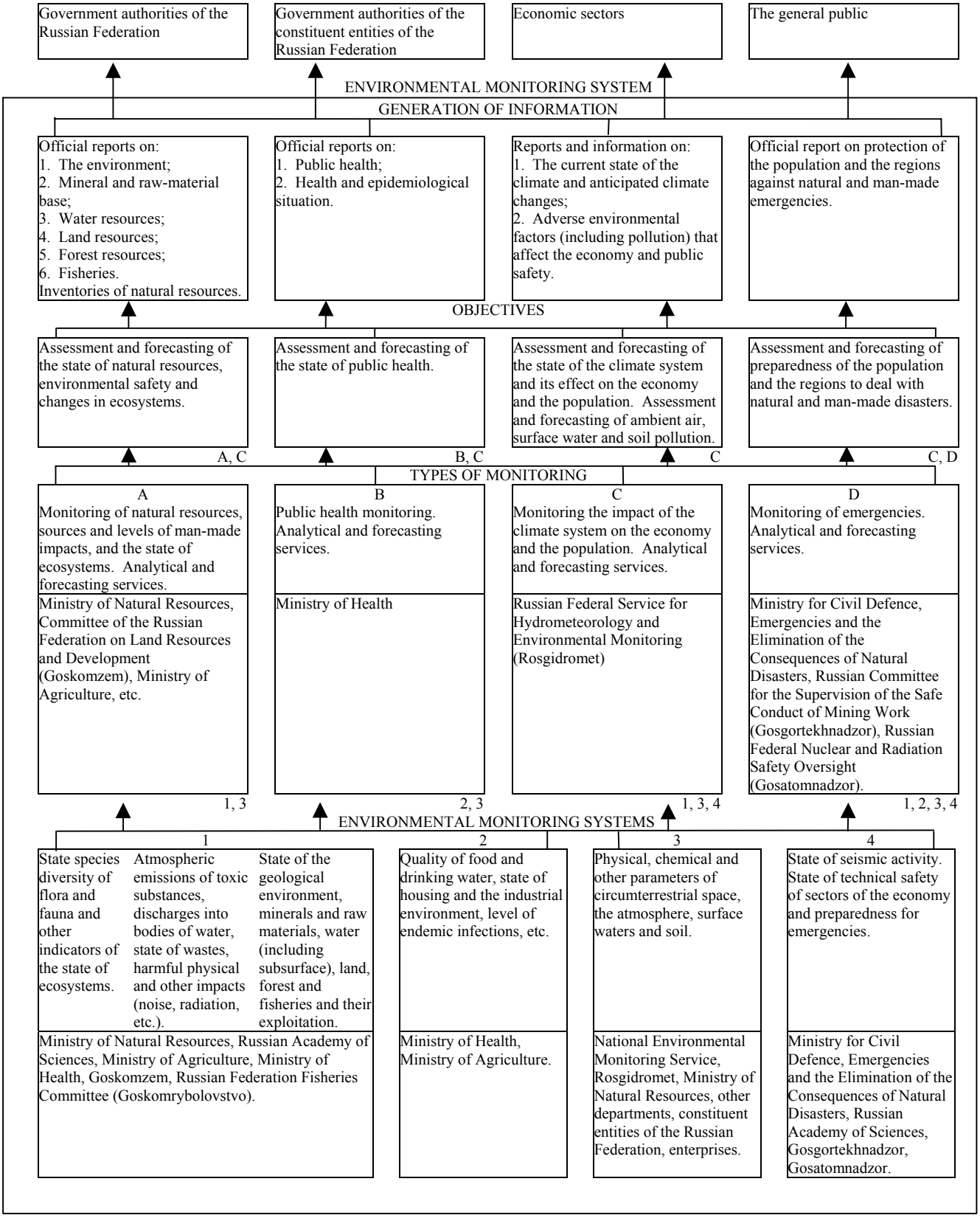
63. The form and content of regular publications (reports, surveys, etc.) should be improved in the light of international experience in order to focus the attention of the authorities, public organizations and the general population on key environmental issues. Measures should be taken to ensure that this information is accessible on the Internet.

Topics for discussion

64. Considerable experience in sharing information will be gained during the preparation of the Kiev report ("Environment for Europe"). How can this experience be used most effectively?

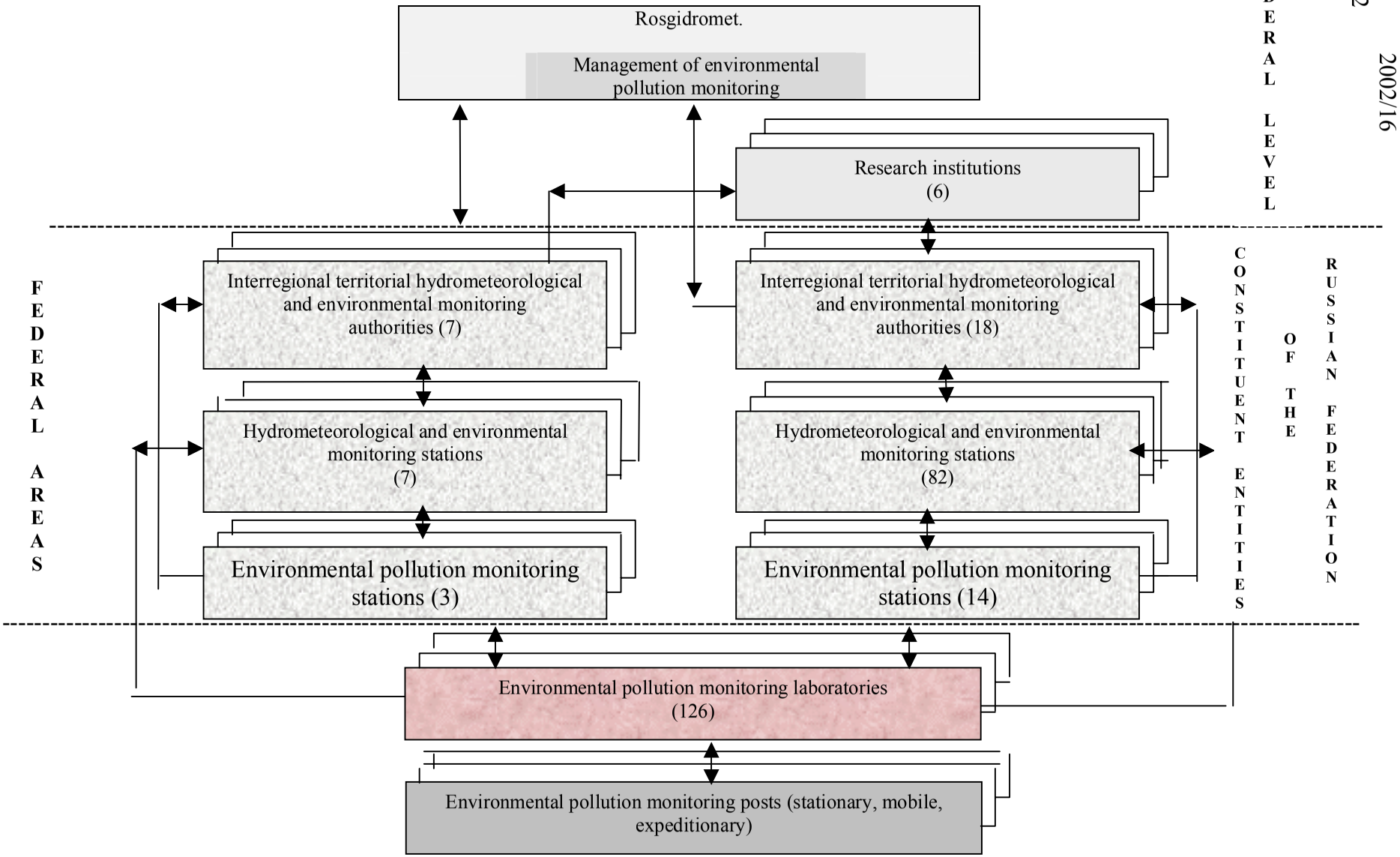
Annex 1

ORGANIZATIONAL STRUCTURE FOR PROVIDING ENVIRONMENTAL INFORMATION



Annex 2

OPERATION OF THE NATIONAL MONITORING NETWORK (ORGANIZATION AND STRUCTURE)



Annex 3

COMPOSITION OF THE NATIONAL MONITORING NETWORK, AND ENVIRONMENTAL PARAMETERS UNDER INVESTIGATION

Controlled environment/type of monitoring	Stationary monitoring network (number of towns, bodies of water/posts, stations, sites, etc.)	Parameters under investigation	Number of analytical laboratories	Methodological, information and analysis centres
Air				
Pollution in towns, town/locality	225/618	Concentrations of contaminants (between 4 and 25) and meteorological characteristics	153, including 50 data-collecting stations	A.I. Voeikov Central Geophysical Observatory
Transboundary movement	4	Surface ozone, sulphur and nitrogen dioxides, sulphate and nitrate aerosols, ammonia, ion composition of precipitation	1	Global Climate and Ecology Institute
Precipitation - Acidity (pH) - Chemical composition	 118 124	Acidity and chemical composition of precipitation, specific conductivity, total acidity	5	A.I. Voeikov Central Geophysical Observatory
Greenhouse gases	1	Carbon dioxide, methane	-	A.I. Voeikov Central Geophysical Observatory
Ozone layer	24	Total ozone content, UV-radiation	-	Central Aerological Observatory
Comprehensive background monitoring in biosphere reserves	4	Concentration of pollutants in ambient air, precipitation, soil, biota; hydrometeorological parameters	1	Global Climate and Ecology Institute A.I. Voeikov Central Geophysical Observatory

Annex 3 (continued)

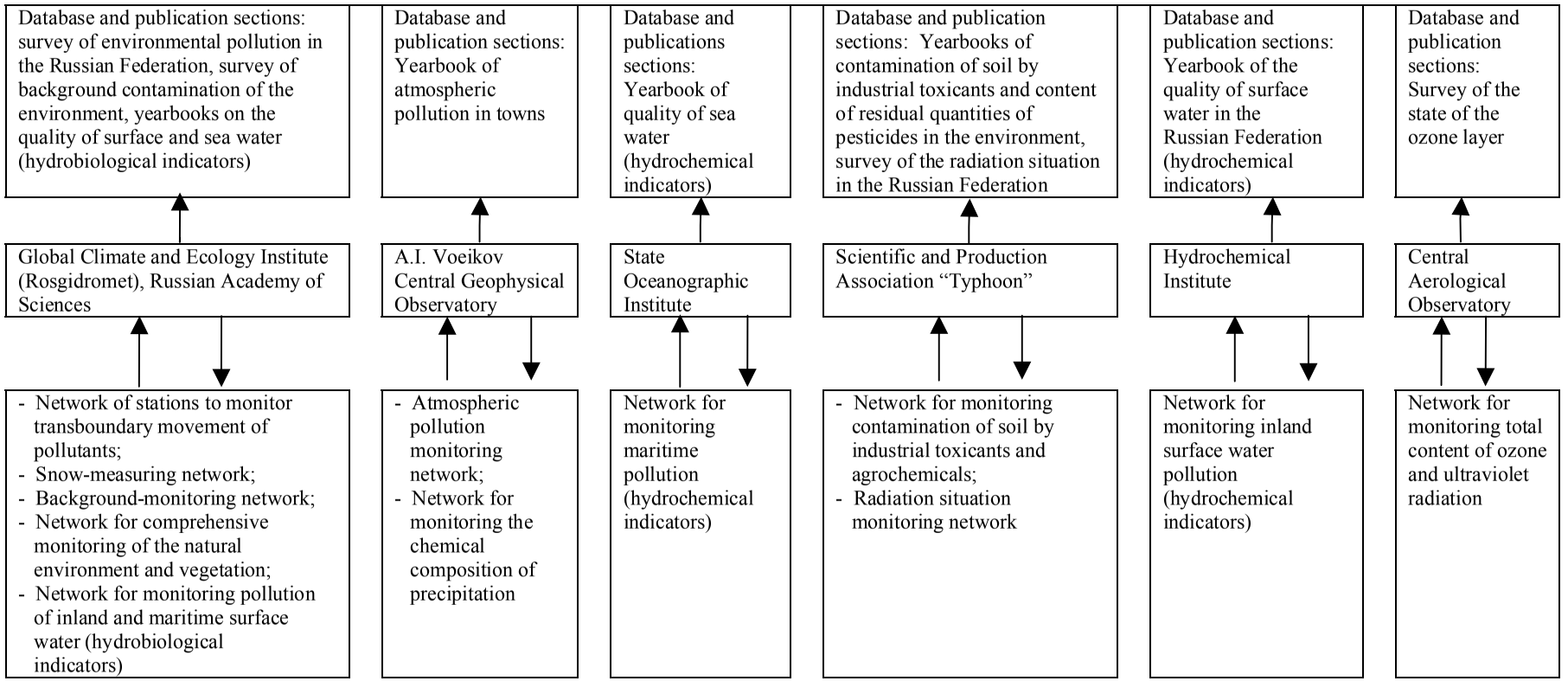
Controlled environment/type of monitoring	Stationary monitoring network (number of towns, bodies of water/posts, stations, sites, etc.)	Parameters under investigation	Number of analytical laboratories	Methodological, information and analysis centres
Surface water				
Water quality (hydrochemical indicators)				
- Inland (post/site)	1 716/2 290	Hydrological, hydrochemical, principal ions, biogenic elements, principal pollutants, heavy metals, pesticides. (Total: 116.)	95	Hydrochemical Institute
- Sea	573	Hydrological, hydrochemical, principal ions, biogenic elements, principal pollutants, heavy metals, pesticides. (Total: 101.)	13	State Oceanographic Institute
Water quality (hydrobiological indicators)				
- Inland	198	Phyto-plankton and zooplankton, zoobenthos, periphyton, production and destruction of organic substances, macrophytes, toxicological indicators (biotesting)	9	Global Climate and Ecology Institute
- Sea	46	Phyto-plankton and zooplankton, zoobenthos, periphyton, production and destruction of organic substances, macrophytes, toxicological indicators (biotesting)	5	Global Climate and Ecology Institute

Annex 3 (continued)

Controlled environment/type of monitoring	Stationary monitoring network (number of towns, bodies of water/posts, stations, sites, etc.)	Parameters under investigation	Number of analytical laboratories	Methodological, information and analysis centres
Soils				
Contamination by industrial toxicants	101 towns (approximately 2,000 sample-recovery points)	29 (petroleum products, heavy metals, benzo(a)pyrene)	9	Scientific and Production Association "Typhoon"
Contamination by agricultural toxicants	612	52 (pesticides)	8	Scientific and Production Association "Typhoon"
Radioactivity				
Monitoring for radioactivity in the natural environment, including: Surface layer of the atmosphere Precipitation Surface water - Inland - Sea	 1 295 406 27 30 11	 Minimum effective dose at site Quantitative radionuclide content (total beta-intensity, volume intensity in air, density of radioactive fallout from the atmosphere, volume intensity in water, isotope composition of abnormally high contamination)	40	Scientific and Production Association "Typhoon"

Annex 4

TECHNICAL SUPPORT, DATA INTERPRETATION AND MANAGEMENT OF THE VARIOUS SECTIONS OF THE INTEGRATED NATIONAL DATABASE ON THE STATE OF THE ENVIRONMENT



Annex 5

LIST OF PRINCIPAL TYPES OF ACTIVITY OF LEGAL ENTITIES AND INDIVIDUAL ENTREPRENEURS SUBJECT TO LICENSING

1. Determination of pollution levels (including radioactive contamination) in the environment (air, soil, surface water and the marine environment, including the use of hydrobiological indicators).

2. Preparation of and provision to consumers of forecasts, analyses and estimates concerning the state of the environment and environmental pollution (including radioactive contamination).

3. Establishment and management of databases.

List of requirements and conditions for licensing the above activities

1. Presence of trained permanent staff with at least three years' work experience in the relevant field.

2. Possession of the apparatus and equipment necessary to conduct work in the relevant field.

3. Possession by the licensee of a properly issued certificate of accreditation to perform monitoring (inter alia, by the collection and analysis of samples) with a view to determining levels of environmental pollution (including radioactive contamination).

4. Prompt transmission to the licensing body and its territorial agencies of information concerning the state of the environment, environmental pollution and man-made emergencies with a negative impact on the environment.

5. Transmission of information to the integrated national database concerning the state of the environment and environmental pollution.

* * * * *

Monitoring of compliance with these requirements and conditions shall be the responsibility of Rosgidromet.

Annex 6

PARTICIPATION IN INTERNATIONAL SHARING OF INFORMATION

International organizations, conventions, agreements	Type of information and data	Data collection centre	Russian participants
Intergovernmental agreement between the northern European and Baltic countries on the exchange of radiation monitoring data	Radiation monitoring data (minimum effective dose)	National centres of States parties	Federal Information and Analysis Centre, Rosgidromet
Global Atmosphere Watch (World Meteorological Organization)			
	Chemical composition of precipitation	World Data Centre for Precipitation Chemistry (Atmospheric Sciences Research Centre, Albany, United States of America)	A.I. Voeikov Central Geophysical Observatory
Vienna Convention for the Protection of the Ozone Layer	Total ozone content	World Ozone and Ultraviolet Radiation Data Centre (Toronto, Canada), Daily Ozone Mapping Centre (Salonika, Greece)	Central Aerological Observatory, A.I. Voeikov Central Geophysical Observatory
United Nations Framework Convention on Climate Change	Concentration of carbon dioxide in the atmospheric boundary layer	Carbon Dioxide Information Analysis Center (Oak Ridge, United States of America), World Data Centre for Greenhouse Gases (Tokyo, Japan)	A.I. Voeikov Central Geophysical Observatory
	National reports on climate change	Secretariat of the Framework Convention on Climate Change	Global Climate and Ecology Institute
Convention on Long-range Transboundary Air Pollution (Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP))	Concentrations of ozone, sulphur and nitrogen dioxides, sulphates, nitrates, ammonia, ion composition of precipitation	EMEP Chemical Coordinating Centre at the Norwegian Institute for Air Research (Oslo, Norway)	Global Climate and Ecology Institute

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