

# **GUIDELINES FOR THE PREPARATION OF GOVERNMENTAL REPORTS ON THE STATE AND PROTECTION OF THE ENVIRONMENT<sup>1</sup>**

## Introduction

1. If environmental protection is to be effective, priorities must be kept under constant scrutiny and reviewed when necessary in the light of changing circumstances; this may allow limited resources to be concentrated on the areas of environmental protection that command the highest priority. It is important for this purpose to have objective and up-to-date information on the state of the environment and natural resources available to both governmental bodies and the general public. Regular State reports on environmental status and protection are key information products in this sense, important components of the corpus of information available and of the entire process by which environmental information is distributed.
2. The present recommendations are based on a study of how reports are produced in 12 countries in Eastern Europe, the Caucasus and Central Asia. They take account of the particular role played by environmental status reports in these countries, notably the fact that they present multidisciplinary environmental information, reflect countries' individual needs as regards solutions to environmental improvement and protection problems, present findings essential to the adoption of environmentally meaningful decisions, provide information for use in preparing national environmental protection and environmental health plans and sustainable development strategies, help to integrate environmental policy into States' social and economic policies, help to select prime requirements and priorities in the environmental protection field, and facilitate exchanges of environmental information between countries.
3. The recommendations take account of international experience with the production of national reports amassed by the European Environment Agency, the Organisation for Economic Cooperation and Development and the United Nations Environment Programme (GRID-Arendal).
4. The objective of these recommendations is to provide the 12 countries' State bodies empowered to deal with environmental protection with methodical guidance on how to improve their production of State reports on the status and protection of the environment. Following such guidance will also help to harmonize the approaches taken by these countries and others in Western and Central Europe, and this will make it easier to conduct overall evaluations of the state of the environment in the UNECE region.
5. Special attention is paid to the choice of environmental indicators needed to evaluate the state of the environment, to the use of modern information technology in the production and distribution of publications, to the use of reports in the design of environmental policy and the taking of environmentally important decisions, to public access to the material in reports, and to methods of assessing the quality of reports once issued.

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<sup>1</sup> Prepared by the UNECE Working Group on Environmental Monitoring and endorsed by the Fifth Ministerial Conference "Environment for Europe".

# I. RECOMMENDATIONS ON ORGANIZATIONAL ARRANGEMENTS FOR THE PRODUCTION OF GOVERNMENTAL REPORTS ON THE STATE AND PROTECTION OF THE ENVIRONMENT

## 1. Legal status of reports

6. Reports should preferably have the status of official documents issued on behalf of the national Government concerned. That status may derive from a specific article in a law (an Environmental Protection Act, for example) requiring the Government to produce and circulate regular reports on the state of the environment, natural resources and nature-protection activities. With a view to stricter compliance with the law in force, it is important to strengthen the system that ensures transparency in the production of the reports and prevents arbitrary administrative decisions, such as decisions to tone down descriptions of serious environmental problems, the reasons why they have arisen or spread, ineffectual action to improve the environmental situation, or failure to respect deadlines for the production of reports.

## 2. Analytical approach to the preparation and presentation of material

7. Unlike the corresponding compilations of statistics, State reports on the status and protection of the environment should be analytical documents, i.e. present an assessment of the environmental situation and an analysis of the cause-and-effect relationships affecting it. This will allow them to be used as information resources when environmentally significant decisions on improvements in environmental, social and economic policy, laws and regulations, and in the State machinery regulating natural-resource use and environmental protection and monitoring compliance with environmental legislation are taken; when targeted environmental programmes and scientific and technical environmental security schemes are drawn up and put into effect; and when the effectiveness of action taken to protect the environment and make rational use of natural resources in support of sustainable development is assessed.

8. In essence, an analytical approach to the preparation and presentation of material for reports entails:

- The identification, when analysing data on the status of the environment and natural resources, of trends over the period since the production of the previous report as shown by comparisons of the data concerned;
- Identification of the reasons for the changes;
- Forecasts of changes over the forthcoming period;
- An assessment of the effectiveness of State environmental protection policy and steps taken to reduce adverse environmental impacts;
- Qualitative and quantitative evaluations of the status of the environment and natural resources and how they are affected by economic and other activity and by elemental forces.

## 3. Use of indicators to assess the status of the environment and natural resources

9. The production of environmental status and protection reports must be based on the selection and use of indicators enabling the environmental situation to be assessed with sufficient thoroughness.

10. In selecting indicators, it is important to bear in mind that as a first requirement they must help to give a correct impression in a readily comprehensible form of the processes taking place and the state of the items under observation, and to show how matters progress over time.

11. Indicators may be subdivided into the four main groups below:

- (a) Indicators describing environmental impact;

- (b) Indicators characterizing the state of the environment;
- (c) Indicators describing environmental consequences;
- (d) Indicators describing action taken.

12. Various environmental indicators that can be used to assess environmental quality and the state of natural resources, or for the purpose of monitoring, on behalf of the State, compliance by natural resource users with nature-protection laws, can be considered by way of example.

13. Each country must decide, in accordance with its natural, climatic and economic characteristics and the severity of the environmental problems confronting it, how much detail to go into under each heading and what indicators to use for the purpose. In all cases an effort should be made to use internationally developed series of indicators. As an illustration of such environmental indicators one may take those used to produce the Kiev Report on the state of the environment in the countries of the ECE region.

#### **4. Purpose of reports**

14. It will be helpful to Governments to define clearly the purposes their reports are to serve and basic report layout and content. It must be stressed that reports should provide a basis for clarifying priorities and aims in environmental protection work, and for the design and execution of programmes to improve the environmental situation in individual countries. They should directly further the goals of environmental policy.

#### **5. Sources of financing for report production and printing**

15. Governments need to define clearly the sources of financing for the production and printing of reports. In the main, outlays should be covered by State budgets and the budgets of regional and local State bodies. Budgetary resources must be used to finance report production and printing, but also the distribution of reports to their intended readerships at the State, regional and local levels.

16. Resources for producing, printing and distributing reports may also come from all interested parties: businesses, companies, entrepreneurial associations, domestic and foreign donor organizations and funding bodies.

17. Help with meeting the costs of report production, printing and distribution need not only take the form of financial resources. For instance, non-governmental organizations may help run campaigns to inform the intended readership of the main points in a report, conduct press conferences and briefings, and organize seminars and information meetings on the topics the report covers.

#### **6. Target readership**

18. It will be helpful to Governments to define who will make direct use of the report: the findings will be chiefly addressed to those users. Such users may include:

- Legislative and executive bodies;
- Federal ministries and departments;
- Regional and local authorities.

19. It will be helpful if the target readership of environmental status reports also includes the following:

- Scientific and academic organizations;
- Business associations;
- Voluntary organizations (environmental groups, consumer associations, professional associations, women's and youth organizations, invalids' associations) which can make use of the material published in reports to inform the public at large about environmental issues, the use of natural resources and public health.

### **7. Institutional setting for report production**

20. Governments need to ensure that within the institutional setting there is close cooperation between State and other bodies involved in report production by designating a permanent, specially authorized State environmental protection body to be responsible for the production and subsequent distribution of reports. This State body should:

- (a) Be entitled to obtain necessary information from State institutions engaged in:
  - Monitoring the environment and environmental resources and the state of the country's cultural and archaeological heritage;
  - State regulation and control of natural-resource utilization;
  - Protection of the natural environment and natural resources;
  - State environmental assessment;
  - Producing State statistics on natural-resource utilization, environmental impact and expenditure on environmental protection;
  - Health and epidemiological monitoring and other functions associated with assessing the effects of the state of the environment on public health;
- (b) Determine the principal sources of information for producing reports:
  - Organizations assigned to supply information for a report;
  - State statistics;
  - Data at the disposal of organizations supported by the State budget;
  - Data at the disposal of independent experts and voluntary organizations (chiefly for comparison with official information and to identify the reasons for discrepancies);
  - Data from international nature-conservation information centres;
  - Data obtained by national academic institutions through grant funds;
  - Data available from the management of privatized enterprises;
- (c) Build up the environmental monitoring system as the primary source of information on the state of the environment with a view to establishing an objective database for subsequent use in producing reports; and institute a unified system of pollution indicators and critical pollution-level and environmental-burden levels;

- (d) Launch and update a basic collection of environmental indicators for use at the national and regional levels;
- (e) Establish an electronic databank for use in report production;
- (f) Consult, and coordinate the activities of, co-users;
- (g) Be responsible for systematizing and analysing the information it obtains, drafting a report and submitting it in good time to the Government for consideration and approval;
- (h) Make sure that the report covers an optimum range of topics;
- (i) See to the creation of an interdepartmental group of experts and consultants comprising responsible representatives of key ministries and governmental departments, academic and voluntary organizations to produce different chapters of the report;
- (j) Analyse the material submitted for the report;
- (k) Establish a procedure for review of the draft report before it is submitted to the Government, ensuring that representatives of all ministries, governmental departments and services are involved, along with representatives of leading academic organizations and the public environmental movement helping to produce the draft;
- (l) Consult the group of experts and consultants at various stages during the production of material for the report, including the final version before submission to the Government;
- (m) Draft Government instructions to the various ministries, governmental departments and regional administrative heads requiring them to take action in response to the proposals and recommendations for improving the environmental situation made in the report;
- (n) Determine how often the report should come out;
- (o) Help to circulate the report widely after publication;
- (p) Initiate an assessment of the quality of the report after it is issued and distributed to its target readership and immediate users.

21. In principle, it would be expedient to have the layout of the report determined by the Government; it is important, however, to allow the State body assigned to produce the report to amend the layout in the light of changing environmental circumstances, priorities, opportunities to obtain essential material and so forth.

### **8. Use of modern information technology in reports**

22. It is important for Governments to initiate the use of modern information technology for the production of reports. This will make reports easier to use, will reduce the volume of material and allow information to be better presented. Tables, diagrams, graphs, sketches and maps accompanied by explanations, analysis and interpretation are examples of modern information technology.

23. Numerical material should not be confined to absolute quantities accompanied by the appropriate symbols and values. Figures must be compared with current health and hygiene standards, emissions standards, established values for critical loads on elements of the environment and standards governing rational natural-resource use.

24. The combination of text with illustrative material helps information to be better understood. This kind of presentation makes reports easy to use not only for an initiated professional readership but also for the public at large.

25. Satellite data have been winning increasing recognition of late. It is important, however, to accompany photographs produced from satellite data with detailed descriptions and interpretation.

26. At the same time, it is a good idea to include maps showing pollution sources, the spread of pollution from particular sources, contaminated areas and specially protected natural areas.

27. It is useful to give diagrams showing, among other things, the ratio in percentage terms between given values, and graphs accompanied by similar interpretations. Presenting information in graph form is a particularly good idea in cases where certain parameters display a trend over a defined period of time.

### **9. Report distribution procedure**

28. It is useful for Governments to establish a procedure for the distribution of reports with due regard for the requirements of the target readership. Reports need to be distributed:

- To the target ministries and governmental departments concerned;
- Over the Internet;
- In the mass media;
- Through voluntary organizations' information services;
- During information meetings with the general public;
- At seminars and conferences on topics relating to nature conservation.

### **10. Report evaluation**

29. It is useful for Governments to initiate an evaluation of the quality of a completed, published report based on the opinions of report users. The evaluation should rest on the following primary considerations:

- The quality, completeness and accuracy of the material presented;
- The layout of the publication;
- Ease of use;
- How easy it is to make use of material from the report in reaching environmentally important decisions and formulating environmental policy.

30. A completed report can be evaluated as follows:

- Polling experts in ministries and governmental departments for their opinions on the utility of the report in their work;
- Polling public opinion;
- Using questionnaires;

- Comments by experts involved in producing the report;
  - Media coverage of report content;
  - Readers' comments;
  - Telephone hotline;
  - Surveys.
31. After evaluating the report it is important to consult experts, representatives of the ministries and governmental departments concerned and the general public on how to improve the report and make it more useful in the decision-making process.

## **II. RECOMMENDATIONS ON BASIC SECTIONS OF THE REPORT**

32. The basic sections of a report include:
- Introduction;
  - Environmental quality and state of natural resources;
  - Environmental impact;
  - Environmental situation in the regions;
  - Environmental policy measures and governmental regulation of natural-resource use and environmental protection;
  - Conclusion.

### **1. Introduction**

33. It is helpful to include in the introduction a short description of particular features of the socio-economic situation in the country and changes in the volume and composition of industrial output (greening of production, reductions in energy intensity of output, depreciation of capital assets, extent to which innovative, resource-conserving and nature-conserving technology is used, changes in per capita consumption of natural resources, per capita environmental emissions), in the urban and rural economies and in the transport sector that have occasioned these and other changes in the state of the environment and environmental resources. An effort should be made to show the environmental impact of social factors such as poverty.

34. The introduction should also list the State, academic, voluntary and other organizations that took part in the production of the report.

### **2. Environmental quality and state of natural resources**

35. Under environmental quality features it is useful to consider the following.

#### **A. Air quality**

36. Air quality in cities and industrial centres should ideally be described using the monitoring data below:

(a) The number of cities where, in the reference year, annual average maximum permissible concentrations were exceeded once or more in the case of at least one pollutant, and the proportion of the population exposed;

(b) The number of cities where maximum permissible concentrations for a single occurrence were exceeded 10 or more times, and the proportion of the population exposed;

(c) The number of cities with high air pollution as defined by a combined indicator, e.g. levels more than five (seven) times as high as aggregate yearly average maximum permissible concentrations of all substances measured, expressed in terms of the maximum permissible concentrations of sulphur dioxide, and the proportion of the population exposed to pollution at this level;

(d) The number, and a list, of cities with very high air pollution as defined by a combined indicator, e.g. levels more than 10 (14) times as high as aggregate yearly average maximum permissible concentrations of all substances measured, expressed in terms of the maximum permissible concentration of sulphur dioxide, and the proportion of the population exposed to pollution at this level.

37. Descriptions should also be given of:

(a) Overall nationwide emissions of principal atmospheric pollutants;

(b) Background air quality (preferably in biosphere reserves and other such relatively unpolluted areas);

(c) Transboundary atmospheric pollution by acidifying and eutrophying substances, heavy metals and persistent organic pollutants covered by the 1979 Geneva Convention on Long-range Transboundary Air Pollution and its protocols, and by the 2001 Stockholm Convention on Persistent Organic Pollutants.

38. It is also important in this section of the report to identify the most difficult periods of time as regards declining air quality over the reporting period and to list the reasons for the decline (drought, forest fires, industrial emissions, vehicle exhaust and so forth).

39. This section should be accompanied by a discussion of the reasons for declining air quality (non-compliance with nature-conservation legislation, inadequate financing, poor management skills, breaches of administrative requirements, etc.).

40. The section should close with a list of specific steps to improve the current situation (legislative initiatives, participation in international nature-conservation programmes and projects, investment projects, donor assistance, technical assistance, advanced training for technical experts, etc.).

#### B. Climate change and change in the ozone layer

41. In presenting information about climate change and change in the ozone layer it is appropriate to:

(a) Describe the climatic features of the year (the course of air temperatures, temporal and geographical distribution of precipitation, when snow cover accumulated and dispersed, etc.) in comparison with the corresponding multi-year averages;

(b) Provide data on greenhouse gas emissions;

(c) Provide data on ozone-depleting substance production and imports;

(d) Describe the status of the ozone layer using figures on overall ozone content across the territory of the country or individual regions in the reporting year by comparison with multi-year averages;

(e) Describe solar activity and its environmental impact, including natural disasters, biodiversity, human health and the climate.

### C. Surface and underground water

42. In presenting information on water quality it is helpful to:

(a) Indicate water levels in rivers in the reporting year in comparison with multi-year average flows throughout the country and in individual river basins within it, since the dissipation of run-off depends on water levels in watercourses and reservoirs, and provide figures on average run-off of each of the most widespread pollutants by comparison with the preceding year(s);

(b) Present water quality indicators for specific pollutant content as multiples of the maximum permissible concentration;

(c) Provide figures on both maximum measured values and values averaged over a fairly dense series;

(d) For fished bodies of water, also provide data on acidity; if this drops to dangerous levels it is important to establish the reasons, whether natural or man-made.

43. The report should provide information on the specific action taken by the bodies concerned to improve water quality (water protection, restoration and improvement projects; securing financing and technical assistance for projects; effectiveness of monitoring arrangements; involvement of the general public in efforts to improve water quality, etc.).

### D. The marine environment and coastal areas

44. The report can describe the marine environment and coastal areas using indicators of coastal and estuarial water pollution, migration areas and spawning grounds for commercially fished species, and pollution of recreational marine and coastal areas. There may also be movement of the shoreline under the influence of tides and currents and intensified elemental or man-made factors.

45. When looking at coastal areas contiguous with those of other countries, it is important to present information on transboundary pollution and data from reports not only by the country currently preparing its report but also other countries along the coast. For each pollutant, it is important to furnish indicators of how much enters the water from sources within the reporting country and of transboundary pollution as a percentage of the total.

### E. Land resources and soil

46. When substantial alterations in land use are taking place, it is important for reports to show the changes: what kinds of land or reserve are diminishing in area and what kinds are expanding owing to shifts of category, and what kinds are shrinking owing to wind and water erosion, becoming desert, being overgrown with scrub and woodland, etc. What changes are occurring as regards soil quality - changes in humus content, acidity, nutrient content, persistent pesticide content, swamp formation, salination, etc.

47. On the basis of the material received it is important to list the main causes of land degradation (urban development, construction of transport systems, hydraulic engineering work, mining ventures), besides erosion, salination, swamp formation, etc.

48. The report should list the main kinds of action taken at different levels to combat erosion and land degradation (sustainable farming, reductions in livestock numbers, establishment of recreational areas, etc.).

#### F. State of natural plant life

49. In the coverage of this topic special attention deserves to be paid to changes in the state of natural plant communities peculiar to tundra, taiga, steppe, desert and other such environments.

50. The state of woodland should be assessed not only from changes in the overall area of wooded land but also from the ratios of areas of woodland assigned to various use categories, changes in areas under the most valuable species, estimates of annual timber growth, areas harvested, maintenance and preventive felling, forest restoration, losses due to poaching, fire, disease, pest incursions, man-made pollution, etc.

51. This section must include information about action to restore and preserve forest ecosystems: to reduce man-made pollution, plant trees, fight forest pests and diseases, fight forest fires, do drainage and irrigation work, establish recreational areas, conduct sustainable forestry programmes, carry out international technical cooperation programmes and so forth.

52. It is also important to provide information about the activities of national and international companies logging and felling and to consider how well these activities conform to environmental standards and requirements.

53. The report should devote some space to the utility of cultivating genetically modified trees and the preservation of natural diversity among forest ecosystems.

54. The section should close with specific recommendations for improving the state of woodlands, namely increasing the amount of forested land, planting, preventing disease, fighting forest fires and promoting sustainable forestry.

#### G. State of animal life

55. It is useful, in covering this topic, to present data on changes in numbers of hunted species of wild animals and how they relate to the availability of food, the hunting trade, natural conditions during the year and so forth. It is important to assess the reasons for declining numbers of some hunted species (poaching, injudicious hunting, pollution, etc.). It is worth while presenting information on national, regional and local action to boost numbers of hunted wild species, such as legislative initiatives, efforts to combat poaching, and artificial breeding.

56. It is sensible to assess the state of fish resources from fish stocks, quality (prevalence of disease resulting from water pollution, presence of contaminants in the flesh) and both marine and inland fisheries. In so doing it is useful to assess the environmental state of rivers and lakes (in terms of fisheries requirements) and provide data on artificial restocking. Countries with a marine fishing industry will also find it helpful to ascertain the status of marine animals, molluscs, crustaceans and so forth. It is important to give such information in comparison with the preceding period.

57. It is important to analyse changes in the state of fish resources and assess the reasons for any deterioration, such as declining catches. Information must be given about national action to increase fish stocks (action to combat poaching, artificial breeding and introduction of valuable species, participation in the implementation of international agreements).

#### H. Specially protected natural areas, biodiversity, rare and endangered species

58. It is advisable to report on biodiversity in the sense of changes that have occurred over the country as a whole during the reporting period and in those districts where the greatest changes are apparent.

59. It is useful to look separately at each category in the case of changes within specially protected natural areas:

- (a) State nature reservations;
- (b) State reserves;
- (c) National parks;
- (d) National monuments;
- (e) Spas, health resorts, etc.

60. Among rare and endangered species, priority coverage needs to be given to those that are already listed in the Red Book, and those that ought to be.

61. It is helpful to present information on resources earmarked for supporting the protected-area system and improving laws and regulations with a bearing on the protection of biodiversity.

62. It is also important to present information about action under programmes to prevent degradation, international treaties and biodiversity conventions to which the reporting country is a party.

63. Besides this, reports must contain data on the expansion or shrinkage of specially protected areas; on growing or declining financial support for the protected natural area system; on support for civil initiatives; on involvement in international biodiversity-protection programmes and projects; and on efforts to secure technical and donor backing.

#### I. State of the geological environment, effects of mining and use of minerals

64. The state of the geological environment should be taken to mean the presence and development of sinkhole formation, thermokarst activity and earth creep, ground subsidence occasioned by underground mineral workings, crustal fissures, rises in ground water resulting from human activity, and other such phenomena causing damage to buildings, transport and power lines and threatening human lives.

65. These need to be evaluated in terms of their scale and the extent of the threat they pose, the speed at which they are developing, and the harm they do to the economy and the general public. It is important to include information on the steps being taken to prevent the emergence or spread of such phenomena and assess whether those steps are adequate.

66. Opencast and underground mineral working should be considered in terms of the concomitant disturbances to the landscape, surface and underground water, and air pollution resulting from blasting, spoil-heap burning and flaring, the venting of hydrogen sulphide from pits and so forth.

67. It is helpful to assess the use of extracted minerals as percentages of minerals extracted from ore, the degree of multiple mineral extraction, the quantity of spoil dumped per unit of final output, etc.

#### J. Environmental health situation and its effects on public health

68. This section may describe the effects of an unfavourable environment on human health. It should also list measures taken to reduce the health impact of unfavourable environmental conditions.

69. The purpose of this section is not to duplicate reports on public health. If omitted, however, it significantly reduces the value of the report for the purposes of taking environmentally significant decisions and formulating environmental policy.

70. It is helpful to present changes in disease levels resulting from unfavourable environmental conditions against a background of general demographic processes (births, deaths, population increase or

decline (corrected for immigration and emigration)) and an assessment of living standards among the population at large.

71. It is important to show the influence of pollution (air, water and soil) by specific contaminants on disease levels (including genetic and reproductive disorders), and on the incidence of disease among principal population groups (children and adults in various age cohorts) during the reporting year. This is usually given in the form of a comparison with disease levels among the corresponding population groups in relatively “clean” cities. It is also important to assess the impact of drinking water quality on public health.

72. In States with radioactively contaminated areas as a result of nuclear weapons tests and nuclear accidents it is important to give an estimate of radionuclide contamination of locally produced foodstuffs and the steps being taken to secure “clean produce”.

73. Problems with increasing noise levels, vibration levels and electromagnetic fields and radiation have been growing more severe in recent years, and it is therefore useful to cover these points, too, insofar as they affect people’s health.

74. Environmental health also includes matters such as the spread of cellular encephalitis and malaria and outbreaks of malignant anthrax and other dangerous animal diseases that can be transmitted to humans.

#### K. Environmental contamination with waste

75. The generation of industrial, agricultural and municipal waste, and its storage and transformation into useful products or remediation and disposal, is also an important section of the report. In covering the waste problem it is advisable to show trends in the overall volumes of toxic waste generated and accumulated over the course of the year. It is helpful to show changes in the generation and accumulation of wastes in different hazard categories and in the volumes of waste recycled, remediated, stored and buried nationwide. It is important to show changes in the amounts of land set aside for waste storage, and to establish the reliability of such storage sites together with their impact on surface and underground water quality.

76. Where applicable, the problem of liquid and solid radioactive waste, the accumulation of such waste, and the conditions in which it is temporarily held, reprocessed and buried needs to be treated separately.

77. Information should be provided on municipal-level waste collection and recycling, the financing available for such services, the status of dumps and processing sites, and new waste-processing and resource-recovery initiatives. It is helpful if the report also highlights efforts to inform the public and involve it in the waste-management process.

78. It is also important to provide information on the status of laws and regulations on waste management that are in preparation, on the amount of investment attracted, and from what sources, on technical and donor assistance in the execution of specific municipal and regional-level projects, on exchanges of experience with other countries in running programmes to maximize waste recycling into useful products and adopt low-waste manufacturing techniques, and on avoiding the danger of adopting environmentally dangerous technologies and means of destroying highly toxic waste that do not correspond to environmental requirements.

#### L. State of the historical and cultural heritage

79. It is sensible to indicate the influence of environmental factors on the state of historical and cultural monuments using data on losses of such monuments over the reporting period to the destructive effects of nature and human agency. Human agency broadly includes acidic air pollution, destructive underflooding of the foundations of historical and cultural monuments, and vibration.

80. The integrity of the historical and cultural landscape has recently come to be marred also by unauthorized construction, disfiguring reconstruction of architectural monuments, looting of architectural sites and so forth.

81. Information on such losses must be accompanied by details of the legislative action taken and of improvements to records and expert evaluations of site condition and preservation.

### 3. Environmental impact

82. The main indicators of environmental impact attributable to each branch of the national economy and the Armed Forces may be expressed with the help of the following data:

(a) Atmospheric emissions of aggregate, basic and specific pollutants (in thousands of tons/year);

(b) Volumes of waste water discharged (in millions of cubic metres/year) and discharges of basic and specific pollutants in waste water (in tons/year), and indicators such as volumes of water consumed or used and returned, volumes of water saved by using closed-cycle circuits, emissions of waste water purified to established standards, etc., quantities of manufacturing and consumer waste generated over the reporting year, disaggregated by hazard category and by quantities used, remediated and stored over the reporting year, and total volume of waste accumulated including that from previous years;

(c) Quantities of manufacturing and consumer waste generated over the reporting year, disaggregated by hazard category;

(d) Quantities of waste used, remediated and stored over the reporting year and total quantity of waste accumulated including that from previous years;

(e) Land set aside for construction, for mineral extraction, for waste storage, etc.

#### A. Industry

83. Under industrial impact on the environment it is sensible to provide the data covered in this section for the sector as a whole and data disaggregated by principal industries (electrical power, coal, oil mining, oil refining, gas, ferrous and non-ferrous metals, building materials, chemicals and petrochemicals, timber processing, cellulose and paper manufacturing, machine tools and metal processing, light industry, food, the nuclear industry and nuclear power, etc.).

84. By comparing indicators for the environmental impact of enterprises in the principal branches of industry it is possible to set priorities for the regulation of their impact, in particular by imposing tighter checks on compliance with environmental-protection law, and by reviewing conservation standards, norms and requirements.

85. Data for this section of the report may be easier to collect if the country develops a national register of emissions and pollutant transport.

86. It is important to provide information on steps being taken, nationally and locally, to mitigate the adverse impact of industry on the environment (a review of current regulations, for example, and the introduction of new ones meeting European standards).

#### B. Transport

87. In assessing the environmental impact of transport it is sensible to provide the data covered in this section for the transport sector as a whole and data disaggregated by principal modes of transport (road, river, sea, rail, air, industrial, etc.).

88. In assessments relating to the transport sector as a whole it is important to determine what proportion of the impact arising from man-made atmospheric emissions, water pollution and waste generation it accounts for.
89. For road transport it is sensible to determine the contribution to urban air pollution due to:
- Total volume of exhaust gas emissions;
  - Emissions of individual pollutants, including carbon monoxide, nitrogen dioxide and lead;
  - The quantity of rubber dust formed during tyre tread wear.
90. The accumulation of used tyres, lubricants, etc. also merits attention.
91. Under river and sea transport, particular attention must be devoted to water pollution with petroleum products, household liquids and solid waste.
92. Under air transport, particular attention should be paid to noise impact levels on the population living near airports.
93. It is important to provide information on steps being taken, nationally and locally, to mitigate the adverse environmental impact of transport (use of lead-free petrol, adoption of new rules and regulations, increased taxes on old, foreign-manufactured vehicles and so forth).

#### C. Housing and community services

94. Experience has shown that the environmental impact of housing and community services needs to be assessed in terms of air pollution by furnaces providing heating and hot water, water pollution caused by discharges of insufficiently treated household and communal sewage, and soil pollution by waste dumps which may in turn be sources of soil, water and air pollution.
95. It is important to disclose in the reports what efforts are being made by local authorities to deal with these problems (waste-dump management, construction of new and repair of existing treatment facilities, use of environmentally clean fuels in furnaces, public education and so forth).
96. It is important to indicate how work to mitigate the adverse impact of housing and community services on the environment and human health is being financed (volume and sources of financing, estimated efficiency in the use of funds).
97. It is also of interest to present information on the effects of raising the prices for communal services (improved levels of public service, more efficient management of housing and community services, etc.).
98. It is important to provide information on involvement in international technical assistance programmes to improve the treatment facility system, attract donor support, and make effective use of existing financing.

#### D. Farming

99. The impact of farming and the environment is most often seen in:
- (a) Air pollution by ammonia emissions from poultry-breeding and stock-raising facilities;
  - (b) Water pollution when manure storage areas at stock-raising facilities are breached and manure is washed away;

(c) Helminth contamination of soil when undecontaminated manure is spread.

100. The environmentally safe destruction of animals that have died or been slaughtered in connection with outbreaks of anthrax and other such dangerous diseases is also a significant problem.

101. The quantities, storage conditions and destruction of out-of-date and banned pesticides are, likewise, very important problems. It is appropriate to provide information on the country's involvement in national and international programmes inventorying and destroying stocks of out-of-date pesticides.

#### E. Tourism

102. The impact of tourism on the environment merits attention where tourism adversely affects the preservation of declared world heritage sites or the state of nature reservations and reserves.

#### F. Technology-related accidents and disasters

103. The report should consider all basic technology-related accidents and disasters from the point of view of their consequences for the environment and public health.

104. In industry, such events may be accompanied by accidental atmospheric emissions of noxious substances following explosions and fires, loss of pressure in technological equipment, damage to tanks, factory piping systems and so forth. They may also be accompanied by the release into watercourses or spillage of harmful substances for the same or similar reasons, and by the failure of treatment facilities.

105. In all such cases it is important to estimate the damage caused to public health, plant and animal life, and the economy of the region.

106. Transport accidents and disasters with environmental consequences may be of various natures, and may be accompanied by releases into the environment of ammonia, petroleum-refining and petrochemical products, fluorine and other dangerous substances.

107. Accidents associated with communal services generally involve failures of or damage to sewers as a result of building and repair work, or the failure of water treatment facilities accompanied by releases of sewage into the environment.

108. It is important to present information on steps being taken, nationally and locally, to mitigate the adverse impact of technology-related accidents and disasters, and especially as regards preventive measures.

109. It is important to present information on the steps countries are taking to ensure nuclear and chemical safety and to deal with emergencies associated with technological activity and natural disasters.

#### G. The Armed Forces

110. It is sensible to regard the environmental impact of the Armed Forces in exactly the same way as that of industry, transport and communal services, but particular attention needs to be paid to details specifically related to military activity (effects of radar systems, ground pollution with liquid fuel components in areas where missiles are launched and parts separating from missiles land, the problems of recycling decommissioned naval vessels including nuclear submarines, removal of the reactor cores from nuclear submarines, the storage of liquid and radioactive solid waste, etc.).

111. It is sensible to present recommendations on financial and technical assistance for the Armed Forces in dealing with environmental problems.

#### **4. The environmental situation in the regions**

112. When covering the environmental situation in specific parts of the country, it is sensible to do so on the basis of established administrative divisions.

113. The regional environmental situation can be evaluated using a range of indicators. The percentages of the population living in towns and cities subject to annual average concentrations of atmospheric pollutants of above the maximum permissible concentration, above 10 times that concentration, and to above 7 and above 14 times the Air Pollution Index, aggregate atmospheric emissions of all pollutants from all categories of pollution source in the region and aggregate emissions from enterprises in each industry, and aggregate emissions from all sources of each basic and specific air pollutant may be socially significant.

114. Such estimates may also include comprehensive indicators of pollution in principal bodies of water, aggregate discharges of waste water and of pollutants in waste water, and aggregate volumes of toxic waste accumulated over the reporting period.

115. Indicators of demographic changes and the frequency and nature of illness, especially among children, may also be important socially significant estimates.

116. It is useful to compare all such estimates with those applicable to other regions, ultimately ranking regions by their levels of environmental stress.

#### **5. Environmental policy measures and State regulation of natural resource use and environmental protection**

117. It is advisable to provide in the report information on environmental policy measures laid down in legislation, national plans of action and other governmental documents. Indicators describing the outcome of such measures in terms of reduced levels of environmental pollution and better use of natural resources based on environmental monitoring data and environmental burdens must be provided.

118. An analysis of changes occurring in the factors influencing pollution levels may provide a foundation for a forecast of changes in the state of the environment and the development of recommendations for improving it through improvements to legislation, the use of economic levers to influence natural-resource users, the standardization and regulation of environmental impact, closer State monitoring of pollution sources, etc.

##### **A. Improvements to legislation**

119. It is sensible to provide, in this part of the report, information on new laws governing relations in the rational use of natural resources and environmental protection that have been drawn up during the period under consideration, and to explain their significance. It is also important to supply data on the effectiveness of existing laws in this area and gaps within them, and to recommend how the system of nature-protection laws could be improved.

##### **B. Improvements to the system of State standards, norms and regulations**

120. It is important to provide information on improvements during the reporting period to the system of State standards, norms and regulations on the reporting and limitation of atmospheric emissions, discharges of polluted waste water, the storage of solid waste from all categories of sources, the rational use of natural raw materials, the regeneration of renewable natural resources and so forth. This can helpfully be supplemented by estimates of the efficiency of particular State standards and norms, progress in updating them and bringing them into line with international norms and standards adopted under various regional and global treaties. Special attention should be given to progress in harmonizing State standards and norms in the 12 countries with those of the other countries in the UNECE region, and in particular with those drawn up by the European Union.

### C. National environmental plans and programmes

121. It is appropriate to lay out the basic principles of State environmental policy as enshrined in national plans of action for the protection of the environment and the rational use of natural resources and in programmes to improve the environmental situation in specific industrial centres and regions. A discussion of the progress of such plans and programmes, their effectiveness, and how they are provided with financing from various sources is useful. Reports must reflect the way that State authorities interact in the nature conservation and environmental protection field with regional and local authorities, especially as regards financial, administrative and organizational support, the execution of State environmental programmes, and the conduct of a single national environmental policy.

### D. Economic tools

122. It is helpful to provide information on the use of economic tools to regulate natural-resource use and protect the environment from pollution and other forms of degradation, on how such tools are bound up with established emission norms and environmental quality standards, and on how economically and environmentally effective approaches to preventing and combating pollution combine.

123. It is advisable to report on the effective application of:

- (a) Economic incentives (subsidies, preferential loans, tax advantages and so forth);
- (b) Binding economic mechanisms (payments, taxes and fines for polluting the environment, using forestry resources, water, land, etc.);
- (c) Restitutive or compensatory mechanisms (insurance liability for environmental damage, material compensation for damage and so forth).

124. In considering the use of economic tools, it is important to take into account the ability of regulatory bodies to set pollution charges at a level that will encourage avoidance of or reductions in adverse environmental impact and ensure that natural resources are efficiently used. It is also important to consider whether resource prices and tax rates are sufficiently high to bring about the desired changes in polluting businesses' behaviour, foster preventive measures and encourage the adoption of clean technology.

125. The report must present information on pollution monitoring and, in particular, the imposition of fines and penalties: how the size of fines and the severity of penalties, depending on how far established limits, standards and norms are exceeded, affect natural resource users' attitudes towards compliance with environmental protection laws.

### E. Monitoring of environmental pollution and the state of natural resources

126. The report should briefly set out the situation of the current monitoring system in the country, list monitoring stations, indicate the volume and nature of the information submitted and opportunities to make use of this information in various analytical and planning documents at the national level as a primary source of information on the state of the environment and natural resources.

127. It is important to discuss the possibilities for using data from national monitoring systems in the production of international papers, accounts and reports such as the UNECE region environmental assessments.

128. It is advisable to provide information on financing for environmental monitoring systems, the use of modern technology and future prospects.

#### F. State monitoring of compliance with environmental legislation

129. The operation of the State system monitoring compliance with environmental protection legislation (State agencies, inspection authorities, the environmental prosecutions authority, environmental police, border service, etc.) must be described and illustrated with concrete data: numbers of checks carried out, number and nature of violations discovered, penalties applied, damage averted or compensated for, etc. It is appropriate to set out the factors impeding more efficient operation of the system and offer recommendations on how to overcome them.

#### G. State environmental assessments

130. It is useful to present figures on the total number of State environmental assessments carried out at various levels, the number of construction and rebuilding projects and programmes turned down and so forth. The largest projects given an adverse rating should be identified, along with the consequences that carrying them out might have. It is advisable to present information on how the efficacy of State environmental assessment law is evaluated and what needs to be done to improve the operation of State environmental assessment services at various levels.

#### H. Outlays on environmental protection

131. It is appropriate to present figures for overall outlay on environmental protection (capital construction, major and running repairs, operating costs associated with nature conservation equipment, maintenance costs for nature conservation services, etc.) from all sources during the reporting year, and how much this represents as a proportion of GDP.

132. It is useful to indicate overall outlays in each main area (air-quality protection, protection of water, soil, forests, fish resources, etc.).

133. It is also useful to provide information on sources of financing (the State budget, local budgets, special-purpose funds, subsidies, preferential loans, non-budgetary resources, foreign aid). It is important to provide examples of financing being made available for nature-conservation programmes, indicating how much has been made available and from what sources.

134. It is also important to give figures on aid provided for fulfilling undertakings resulting from countries' accession to international treaties and conventions. Accession to the Stockholm Convention on Persistent Organic Pollutants, for example, enables countries to receive funds from the Global Environmental Facility for use in producing national plans of action to give effect to the Convention.

135. It is sensible to evaluate the effectiveness of outlays on environmental protection and the rational use of natural resources.

#### I. International cooperation, technical, financial and advisory assistance

136. It is appropriate to indicate in the report the specific outcome of cooperation with international organizations and assistance from other countries, funds and international financing institutions in coping with environmental problems. The report should detail technical assistance provided for the execution of specific environmental protection programmes and projects, indicating amounts and sources. The effectiveness of such assistance must be evaluated, along with the extent to which local experts are involved in joint programmes and projects. It is important for reports to offer specific recommendations on the proper use of technical assistance in coping with environmental protection issues of the highest priority, especially the creation of pilot versions of the most environmentally advanced technology, equipment, manufacturing processes and tools. There should also be a short description of planned technical assistance programmes in the environmental protection field which the country intends to put before donor organizations.

137. It is sensible for reports to list the international treaties and conventions to which countries are signatories or parties. It is important to provide information on how the requirements of such international agreements are reflected in national legislation.

138. There also needs to be a special section of the report assessing the implementation of resolutions, recommendations and decisions taken by the supervisory bodies of these international agreements. It is important to identify what countries must do to give fuller effect to conventions. Special attention should be given to information on possible sources of financing for attendance at a variety of gatherings held under the different conventions and participating in working groups on particular provisions of international treaties and conventions.

139. It is advisable to consider the question of accession to multilateral environmental agreements on the protection and use of water resources, air-pollution monitoring and control, the handling of dangerous waste, environmental impact assessment, the prevention of industrial accidents, climate change, protection of the ozone layer, biodiversity, protection of the marine environment and access to environmental information.

140. It is important for reports to cover compliance with bilateral treaties and agreements on the protection and use of the environment and natural resources - transboundary watercourses and protected natural areas, for example. It is helpful to describe the actual outcome of such cooperation, including exchanges of information and experience.

141. Reports must provide information on the establishment and operation of institutional machinery to improve coordination among countries in the implementation of international treaties and conventions. Special attention should be paid to countries' involvement in foreign assistance schemes supporting the execution of specific nature-conservation programmes. It is sensible to put forward recommendations on how to make it easier to attract international aid. Attention should in particular be devoted to stimulating investment, boosting potential and expanding reciprocal transfers of technology.

#### J. Involvement of environmental non-governmental organizations and other major groups

142. The principle of public involvement in efforts to address various social problems has become an inseparable part of the founding instruments of the United Nations and other international organizations.

143. It is therefore sensible for reports to reflect the involvement of representatives of environmental non-governmental organizations in State environmental assessment exercises, inspections of natural-resource users, and the organization and conduct of various activities promoting environmental awareness among the general public and involving the public in nature-conservation activities. Taking due account of public opinion in formulating environmental policy, plans, programmes and economic projects is a matter that merits particular attention.

144. Where voluntary organizations supply specific data on air and water pollution and the efficiency with which natural resources are being used for inclusion in reports, it is sensible to compare these data, at the point when material submitted for inclusion is being considered, with data from official institutions. In the event of discrepancies between the official data and data from independent experts, it is important to establish the reasons for these and to use the more reliable figures.

145. Countries that have ratified or signed the Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters need to provide information in their reports on their progress in giving effect to the Convention and the obligations they have undertaken. It is desirable for reports to include specific examples of environmental information being made available to the public, public participation in environmental conservation questions, and access to justice.

146. There should be a special section of the report dealing with the provision to the general public of information on dangerous activities, the risks of industrial accidents, safety measures, and what to do in the event of an accident.

#### K. Environmental education and awareness

147. This section should show how the system of continuing environmental education - pre-school, and general and professional - has progressed during the reporting period. It is also important to present information on the training and retraining of environmentalists in secondary and higher educational institutions, advanced courses they have taken, and the promotion of environmental awareness among the general public.

148. It is important to include figures on current publications (newspapers, journals, bulletins) in the environmental field, whether issued by government bodies or by private publishers and voluntary organizations. It is of interest to indicate what proportion of these should be categorized as specialist literature and what proportion is intended for the general reader, and whether these publications are used in the environmental education system. It is also of interest to indicate what environmental material is made available in these publications, how large the print runs are and where the financing comes from.

149. Reports should make available information on higher educational establishments training expert environmentalists, and give a shortlist of academic courses on environmental protection issues.

#### L. Environmental research and projects

150. It is useful to provide in this section brief information on the role of basic and applied science and of engineering development projects in addressing environmental problems, including environmental safety. It is important to describe the outcome of completed projects of practical significance and describe the potential effects of applying them in practice in the course of natural-resource use and environmental protection.

### 6. Conclusion

151. It is useful to present, in the conclusion to the report, basic conclusions, forecasts and proposals. There should be a brief account of successes and failures in efforts to improve and protect the quality of the environment. It is sensible to provide a short statement of the reasons for failures and prospects for overcoming environmental protection problems.