



FIFTH MINISTERIAL CONFERENCE  
ENVIRONMENT FOR EUROPE

KIEV, UKRAINE  
21-23 May 2003

---

**REPORT ON ENVIRONMENTAL POLICY IN TRANSITION:  
LESSONS LEARNED FROM TEN YEARS OF UNECE  
ENVIRONMENTAL PERFORMANCE REVIEWS**

submitted by

the Committee on Environmental Policy of the United Nations Economic  
Commission for Europe

through the Ad Hoc Working Group of Senior Officials



UNITED NATIONS  
ECONOMIC COMMISSION FOR EUROPE





**Economic and Social  
Council**

Distr.  
GENERAL

ECE/CEP/98  
13 March 2003

ORIGINAL: ENGLISH

---

**ECONOMIC COMMISSION FOR EUROPE**

**COMMITTEE ON ENVIRONMENTAL POLICY**

Fifth Ministerial Conference  
"Environment for Europe"  
Kiev, Ukraine, 21-23 May 2003

**ENVIRONMENTAL POLICY IN TRANSITION: LESSONS LEARNED FROM TEN  
YEARS OF UNECE ENVIRONMENTAL PERFORMANCE REVIEWS**

## CONTENTS

	<u>Paragraphs</u>
<b>INTRODUCTION.....</b>	<b>1-19</b>
Transition.....	1-8
“Environment for Europe”.....	9-10
Scope of Environmental Performance Reviews.....	11-16
The EPR process.....	17
Objectives of this report.....	18-19
<b>I. ENVIRONMENTAL LEGAL AND INSTITUTIONAL REFORM .....</b>	<b>20-49</b>
A. Legislation for the environment and natural resources.....	25-32
B. Establishment of environment ministries and agencies.....	33-36
C. Inspectorates and enforcement.....	37-41
D. Decentralization of environmental management.....	42-46
E. Role of NGOs.....	47-49
<b>II. RESOURCE MANAGEMENT AND TRENDS .....</b>	<b>50-92</b>
A. Air.....	50-53
B. Water.....	54-61
C. Waste and contaminated sites.....	62-78
D. Biodiversity.....	79-87
E. Mineral resources.....	88-92
<b>III. DEVELOPMENT OF ENVIRONMENTAL POLICY TOOLS .....</b>	<b>93-152</b>
A. Policy framework.....	93-103
B. Regulatory instruments.....	104-118
C. Economic instruments.....	119-123
D. Domestic environmental financing.....	124-136
E. Information tools.....	137-152
<b>IV. POLICY INTEGRATION .....</b>	<b>153-209</b>
A. Agriculture.....	156-161
B. Forestry.....	162-165
C. Energy.....	166-174
D. Transport.....	175-181
E. Tourism.....	182-184
F. Coastal zone management.....	185-187
G. Industry.....	188-199
H. Human health.....	200-206
I. The challenge.....	207-209
<b>V. INTERNATIONAL ENVIRONMENTAL COOPERATION .....</b>	<b>210-237</b>
A. Global processes and commitments.....	219-222
B. UNECE regional environmental conventions.....	223-224
C. Other regional cooperation.....	225-227
D. EU accession.....	228-237
<b>VI. CONCLUSIONS .....</b>	<b>238-260</b>
Future of the EPR programme.....	253-260
<b>VII. RECOMMENDATIONS</b>	

**Annex I** The Environmental Performance Review process

**Annex II** Ratification by countries in transition OF selected global and regional Conventions

## INTRODUCTION

### Transition

1. In the early 1990s, the eastern parts of Europe were in the middle of a political, economic and social transition process following the collapse of communism. The transition to a market economy had just begun. In the absence of effective pricing mechanisms, the former economic policy had created certain distortions that led, in some instances, both to a waste of natural resources, such as energy and water, in industry and in public utilities, and to the development of energy- and raw-material-intensive production.
2. Priority was given to mining, chemical and metallurgical industries. All of this left many areas and cities of the countries in transition with a crumbling and inefficient infrastructure. Heavily polluted sites and areas were widespread. Industries caused severe air and water pollution, and risks related to hazardous waste also left areas with severe environmental problems.
3. At the same time, a long tradition of nature conservation, combined with vast areas of untouched military zones, had left a rich biodiversity in the region. Furthermore, in some parts of Central and Eastern Europe, the environmental problems related to intensive farming and urban traffic congestion were not yet serious.
4. The first years of transition in the region were characterized by a change in public financing and a rapid restructuring of the economies. It was expected that industrial restructuring would lead to the collapse of wasteful and polluting industries. However, many of the old and wasteful power plants and industries continued to operate. At the same time, others were closed or are working at reduced capacity, and, in some countries, GDP has still not reached the pre-1990 levels. Unemployment also grew to alarming levels in most countries in transition, as workers were made redundant from collapsing or restructured enterprises.
5. Affordability limited the possibilities for immediate full-cost recovery in utility services, and much needed long-term capital was not available on international or local capital markets. In addition, the regulatory regime did not develop fast enough to enable efficient environmental management. Political developments in the region were mixed; in some countries, there was strong opposition to the harsh introduction of a market economy due to its social consequences, leading to delays in the reform process.
6. In the process of constitutional and administrative reforms, municipalities and regions have received broader authority, including for local environmental management and for the provision of services. Important issues related to local and regional reform have been the allocation of tax revenues between the national and sub-national levels, defining the respective institutional responsibilities, for instance, for inspection and permitting, and building the capacity of local and regional authorities.
7. In the first years of transition, the focus was on drafting new constitutions and establishing new government institutions such as multi-party parliaments, cabinets of ministers, ministries, independent courts, and reforming municipal and regional structures. In this period, important steps were taken in many countries to secure appropriate institutions and a legal framework for the environment and sustainable development.
8. There was very little progress in the countries and regions affected by war and political instability. The military activities and disruption of normal civil life generated new

environmental problems such as landmines, contamination, chemical stockpiles, expired medicines and waste, and the breakdown of public infrastructure. In these countries, solving the environmental problems is seen as an important part of post-conflict reconstruction because it can provide human security and offer scope for cooperation between former warring parties.

### **Environment for Europe**

9. As part of the transition process, in 1991 the environment ministers from the member States of the United Nations Economic Commission for Europe (UNECE) met at Dobris Castle near Prague upon the initiative of the Czechoslovak Minister of the Environment, the late Jozef Vavroušek. The Conference discussed ways of strengthening cooperation to protect and improve the environment, and long-term strategies toward an environmental programme for Europe. Thus began the process of cooperation called “Environment for Europe”.

10. Since this first meeting in Dobris, “Environment for Europe” ministerial conferences have taken place in Lucerne, Switzerland (1993), Sofia, Bulgaria (1995), and Aarhus, Denmark (1998). The fifth Conference takes place in Kiev, Ukraine, in 2003. Under the umbrella of this process, countries, international organizations, non-governmental organizations (NGOs) and businesses work together to assist the countries in transition. Several regional conventions have also been negotiated and signed in the process. One of the tools for sharing experience among countries in the region and for promoting good environmental management in specific countries is the Environmental Performance Reviews conducted within the framework of UNECE.

<b>Box 1: UNECE member States</b>			
All references to UNECE member States or to the “region” in this paper include all 55 member States of the United Nations Economic Commission for Europe:			
Albania	Estonia	Liechtenstein	Slovakia
Andorra	Finland	Lithuania	Slovenia
Armenia	France	Luxembourg	Spain
Austria	Georgia	Malta	Sweden
Azerbaijan	Germany	Monaco	Switzerland
Belarus	Greece	Netherlands	Tajikistan
Belgium	Hungary	Norway	The former Yugoslav Republic of Macedonia
Bosnia and Herzegovina	Iceland	Poland	Turkey
Bulgaria	Ireland	Portugal	Turkmenistan
Canada	Israel	Republic of Moldova	Ukraine
Croatia	Italy	Romania	United Kingdom of Great Britain and Northern Ireland
Cyprus	Kazakhstan	Russian Federation	United States of America
Czech Republic	Kyrgyzstan	San Marino	Uzbekistan
Denmark	Latvia	Serbia and Montenegro	

### **Scope of Environmental Performance Reviews**

11. At the second Ministerial Conference “Environment for Europe”, which took place in Lucerne in April 1993, the Ministers decided that the Performance Review Programme, initiated by the Organisation for Economic Co-operation and Development (OECD) for its own member States, should be gradually extended to the whole of Europe. They mandated UNECE to carry out this extended programme for the countries in transition.

12. At the outset, three pilot reviews were carried out jointly by OECD and UNECE, from 1994 to 1996, in Poland, Bulgaria and Belarus. In 1996, the Committee on Environmental Policy decided to make the Environmental Performance Reviews a part of the regular programme of UNECE.

13. The objectives of Environmental Performance Reviews (EPRs) are to assist countries in transition to improve their management of the environment by establishing baseline conditions and making concrete recommendations for better policy implementation and performance; to promote dialogue among UNECE member countries; to integrate environmental policies into sectoral policies and to integrate further health aspects into environmental performance; to harmonize environmental conditions and policies throughout the region and to contribute to sustainable development.

14. Since 1994, UNECE has carried out Environmental Performance Reviews in 16 countries. These include: Estonia (1995); Slovenia (1997); Republic of Moldova (1998); Lithuania (1998); Latvia (1998); Ukraine (1999); Croatia (1999); Kazakhstan (2000); Kyrgyzstan (2000); Armenia (2000); Romania (2001); Uzbekistan (2001), Albania (2001), the former Yugoslav Republic of Macedonia (2002), Yugoslavia (2002) (now Serbia and Montenegro) and Georgia (2002). UNECE also cooperated with OECD in its review of the Russian Federation (1999).

15. UNECE has undertaken second reviews in Bulgaria (2000) and Estonia (2001) and follow-up reviews in Slovenia, Republic of Moldova, Lithuania, Latvia and Ukraine.

16. At the request of the EPR Expert Group and the UNECE Committee on Environmental Policy, all Environmental Performance Reports are available on the Web, at <http://www.unece.org/env/epr/>

### **The EPR process**

17. As a voluntary exercise, the Environmental Performance Review is undertaken only at the request of the country itself at the ministerial level. It starts with an agreement on the structure of the report between UNECE and high officials of the candidate country. The assessing team is made up of experts from all over the ECE region, and is flexible to meet the needs of the reviewed country. This team meets with national experts to discuss the problems encountered in environmental management and the integration of environmental considerations in economic sectors. The team's final report contains recommendations for further improvement, taking into consideration the country's progress in the current transition period. The ad hoc Expert Group on Environmental Performance Reviews conducts an expert review of each country; the UNECE Committee on Environmental Policy carries out a peer review.

### **Objectives of this report**

18. The general purposes of this document are to review and analyse what has been learned through the Environmental Performance Review programme and to use this analysis to recommend the future scope and direction of the Programme.

19. To fulfil this purpose, the specific objectives of the study are:
- To highlight what has been achieved by the countries in transition over the past decade in environmental policy and management;
  - To describe the most significant obstacles and problems encountered;

- To identify key areas that require further attention; and
- To draw lessons and make recommendations for future policies at the national and regional levels.

#### Box 2: Geography of countries in transition

The term "countries in transition" describes those countries in the UNECE region that had centrally planned, socialist systems until around 1990 and have since then been reforming towards democracy and a market economy. In this process a number of independent countries emerged after the dissolution of three federations (Soviet Union, Yugoslavia and Czechoslovakia). Different terms have been used to describe these countries and various subsets among them. The group distinctions used in this report are used solely to better describe and understand the various types of commonalities in their situation and have no political implications.

**Central and Eastern Europe** is a general term sometimes describing all the countries in transition, but recently used mainly to describe the EU applicant countries and South East Europe.

**EU applicant countries:** Ten countries in transition that are negotiating full EU membership.

Bulgaria  
Czech Republic  
Estonia  
Hungary  
Latvia  
Lithuania  
Poland  
Romania  
Slovenia  
Slovakia

**South East Europe:** countries beneficiaries of the Stability Pact of South East Europe, except Bulgaria and Romania, which are already EU applicant countries.

Albania  
Bosnia and Herzegovina  
Croatia  
Serbia and Montenegro  
The former Yugoslav Republic of Macedonia

**Baltic States:**

Estonia  
Latvia  
Lithuania

**Eastern Europe, Caucasus and Central Asia (EECCA).** This group is also sometimes referred to as the Group of 12 or newly independent States (NIS) and includes the countries that used to be part of the Soviet Union, except for the three Baltic States:

Armenia  
Azerbaijan  
Belarus  
Georgia  
Kazakhstan  
Kyrgyzstan  
Republic of Moldova  
Russian Federation  
Tajikistan  
Turkmenistan  
Ukraine  
Uzbekistan

**Caucasus:**

Armenia  
Azerbaijan  
Georgia

**Central Asia:**

Kazakhstan  
Kyrgyzstan  
Tajikistan  
Turkmenistan  
Uzbekistan

## I. ENVIRONMENTAL LEGAL AND INSTITUTIONAL REFORM

20. The "Environment for Europe" process has provided a policy forum for promoting and setting priorities for the legal and institutional reforms of environmental management and natural resources protection in Central and Eastern Europe.

21. The drafting of new environmental and accompanying legislation, as well as the establishment of environment ministries and related institutions, has formed part of the overall reform process in all the Central and East European countries. The legal and institutional reforms in many cases build upon recent constitutional provisions, which lay down the right to a safe and healthy environment. The environment and natural resource laws were among the first to introduce provisions supporting participatory democracy and a market economy as well as the sharing of responsibilities among national, regional and local government.



22. The EU approximation process has been a major driving force for the legal and institutional reforms in EU applicant countries. Though some of the applicant countries have made more progress in bringing their legal and administrative frameworks into compliance with EU requirements than others, all have significantly improved their capacity for environmental management. The recent Partnership and Cooperation Agreements between the European Union and the EECCA countries, the Stabilisation and Association Agreements between the EU and the five SEE countries that are not yet applicant countries and associated assistance programmes are likely to further support the environmental reform process.

23. Steps have been taken in the EECCA countries and in South East Europe to reform environmental management through changes in legislation and institutions, but the reform process has generally been slow. In the meantime, the public budgets of most of these countries are shrinking and much of the region's environmental infrastructure, e.g. water management and supply systems, are in a critical condition and require urgent rehabilitation due to a lack of maintenance.

**Box 3: Environmental management in Georgia**

Steps are currently under way in Georgia to reform environmental management, at all government levels and within enterprises. Georgia had already adopted various economic instruments for environmental financing in 1993 and 1994, including a tax on environmental pollution with harmful substances and a tax on the use of natural resources. However, tax receipts have not been earmarked for environmental purposes, and the sector relies almost completely on external financing. This is now under review. Georgia also adopted its framework Law on Environmental Protection, in October 1996. Although many of the necessary by-laws have not yet been adopted, the process of drafting new legislation, in conformity with EU standards to the extent possible, is underway.

Source: EPR Georgia, UNECE 2003

24. Despite the progress made in the adoption of environmental legislation, the countries' capacity to implement and enforce it effectively remains inadequate, in many cases because of weak institutional and administrative structures. Efforts are needed in particular in the areas of water, chemicals and waste management, contaminated sites, industrial pollution control and nature protection, both with regard to strengthening and enforcing legislation and to institutional capacity.

**A. Legislation for the environment and natural resources**

25. Over the past decade, Central and East European countries have started reforming their environmental legislation. Overall the adoption of legislation for the environment and natural resources management has progressed well, in particular in the EU candidate countries. Most environmental legal systems are now based on framework environmental laws that need to be complemented by and enforced through specific laws and regulations. In many of the South East European and EECCA countries, the work of preparing and adopting these by-laws has only recently got under way.

26. The framework environmental laws set out the rights and responsibilities of actors in the environment sector, often incorporating such principles as the polluter pays and the precautionary principle, liability for environmental pollution, environmental standard setting, environmental impact assessments (EIA), public participation and access to information, among others.

27. Other environment and nature protection-related legislation includes laws on the management of air, water, waste, minerals and chemical substances, radiation protection and

nuclear safety, environmental impact assessment, nature protection and physical planning. One important target of new legislation has been the environmental and social rehabilitation of heavily polluted areas and contaminated sites.

**Box 4: Legal reform in Ukraine**

Since its independence, Ukraine has adopted basic environmental legislation and introduced a new environmental policy. The 1991 Law on Environmental Protection contains general provisions on nearly all aspects of environmental protection and management. Other important environmental legislation adopted since 1991 includes laws on the following: Ecological Expertise, public health, the animal world, ambient air protection, the natural reserve fund of Ukraine, pesticides and agrochemicals, the use of nuclear energy and radiation safety, the handling of radioactive waste, emergencies and wastes. Four Codes have also been adopted: the Land Code, the Water Code, the Forest Code and the Mineral Resources Code. Ukraine is seeking to harmonize its laws with EU legislation.

*Source:* EPR Ukraine, UNECE 1999.

28. In some of the reviewed countries, the use of natural resources (oil, gas, minerals, forests, wild animals and plants, water) is an important part of the economy. Legislation for their management, relating to issues, for example, of ownership, contracting and licensing, and the respective roles of public and private sectors, has been reformed in all of the countries in the past decade.

**Box 5: The legal framework for environment in Kazakhstan**

Kazakhstan has taken the strategic decision to support sustainable development and the corresponding sectoral integration of environmental targets. This decision has resulted in a new legal framework. However, the Law on Environmental Protection, like other laws, requires by-laws before it can be fully implemented. Many of these by-laws are still missing, especially those that provide operational procedures. This creates many problems, leads to inconsistency in the implementation of environmental policies and limits their effectiveness. Of particular importance are operational regulations on environmental monitoring, on procedures for environmental expertise, on environmental auditing, on environmental insurance, on public access to information and public participation, and on procedures for certification, and on handling emergencies.

*Source:* EPR Kazakhstan, UNECE 2000.

29. The natural resource management sectors had been very powerful in the previous systems and have strongly influenced the legislative developments in their respective fields. In some cases the result has been an institutional conflict between the environment ministry and other authorities managing natural resources; in others, some or all of the responsibility for resource management has been integrated into the environment ministry. These conflicts have been related to two main relationships: the environment versus revenues from resource extraction, and existing structures versus transparency and accountability.

**Box 6: Mineral resources legislation in Uzbekistan**

In Uzbekistan, the primary mineral sector regulatory instrument is the 1994 Subsoil Code, which regulates the use and protection of the subsoil, mining-related issues, mining safety and property rights. It includes some environmental requirements, such as State ecological expertise, monitoring of groundwater regimes, protected land and mine reclamation, but these are stated in very broad terms. The Code does not address mine closure and post-closure maintenance, surface-mine reclamation, mineral waste recycling and recovery, public and community involvement in EIA. During the active period of a mine, land reclamation and environmental protection measures are the responsibility of the company, but accountability for rehabilitation measures after mine closure is not specified. With the current privatization of parts of the mineral sector, clarifying environmental liability within a transparent legal system is considered extremely important to attract foreign investment.

*Source:* EPR Uzbekistan, UNECE 2001.

30. In the mid-1990s, the candidate countries for EU accession started the process of transposition and implementation of EU legislation. Transposition of the body of EU environmental law requires amendment and changes to most existing legislation and the adoption of several new laws as well as ensuring administrative and other structures for implementation and enforcement. The applicant countries are also required to ratify all international conventions to which EU is a party. Overall the adoption of legislation for alignment with the body of EU law has proceeded well in applicant countries.

31. Laws and regulations have been adopted in most countries at a very decent rate. This has left a considerable implementation gap; created a lack of coherence among various legal acts; kept in force overlapping and contradictory laws and standards from the period before 1990; and delayed the adoption of the requisite implementing by-laws and regulations. In such circumstances, classic enforcement action has had very limited scope.

32. Institutional reforms within the countries in transition have at times created additional confusion. For example, institutions designated by law to be the legal implementing agencies have been dissolved or changed without amendment to the law. In addition, the extensive enactment of environmental legislation is placing a major burden on the administrative capacity not only of the ministries preparing the legislation, but also, and in particular, on the implementing agencies and local administrations.

#### **Lessons learned**

- Framework environmental protection laws are an effective means of consolidating requirements into a comprehensive structure. However, it is important to move quickly to develop the by-laws and regulations required to provide the specificity necessary to implement the framework law in a meaningful way. If this is not possible, it may be preferable to adopt horizontal legislation for the most significant sectors (e.g. water, waste) first.
- New framework and other major environmental legislation provide an important opportunity for raising public awareness, particularly through public hearings on the new laws.
- The revenue-generating role of natural resources can outweigh the environmental concerns associated with their extraction, processing and use.

#### **Major challenges ahead**

- Harmonize legislation related to environmental protection.
- Ensure that the means of enforcement and implementation are integral parts of the law.
- Advance effective implementation and enforcement of environmental legislation, including international environmental agreements.
- Require accountability and transparency in natural resource management and strategic environmental assessment of the natural resource policies.
- Raise public awareness through consultations on the legislative process.

## **B. Establishment of environment ministries and agencies**

33. Considerable progress has been made in the establishment of ministerial structures for environmental protection. Almost all of the countries in transition now have environment ministries, although their structures and competencies vary widely. Most environment ministries are responsible for the protection of natural resources, including nature protection. This requires good coordination and cooperation with other ministries, including, for example, the ministries responsible for agriculture, transport, tourism and construction. Where this cooperation does not exist, it is difficult for environment ministries, which are generally relatively weak and have insufficient political backing, to carry out their mandates fully.

34. With few exceptions, environmental institutions today are stronger, in terms of both their legal mandate and their capacity, than they were a decade ago. They have benefited from general administrative reform in the countries and from special capacity-building programmes supported by donors and international organizations. They have also benefited from an inflow of young experts and former environmental activists, who have been educated in the emerging programmes of environmental studies at home and abroad.

**Box 7: The growth of Slovenia's environmental institutions**

In Slovenia, the Ministry of Environment and Physical Planning was reorganized several times in recent years. Between 1991 and 1995, the number of staff, including that of the associated institutes, grew from around 300 to nearly 1200. Over the same period, the Ministry's task steadily expanded its focus on water management to other areas of pollution control, physical planning, and nature and biodiversity protection. At the same time, the environmental capacity of local administrations was also strengthened.

*Source:* EPR Slovenia, UNECE 1997.

35. The institution building process was, however, anything but straightforward in most countries. The accumulation of legal mandates that had previously been with other ministries has caused rivalry between ministries and in some cases duplication of capacities, for example with ministries of health or agriculture. One of the most problematic areas in many countries in the region is responsibility for water management, which is often divided among three or four ministries and additional institutes, boards or other structures. Clashes between ministries responsible for the economic use of natural resources (e.g. minerals, water, land) and the environment ministry, which is often responsible for the sustainable use of natural resources, are also not infrequent. Economic considerations usually take precedence.

**Box 8: Ministry of Environment in Albania**

Albania established its first Ministry of Environment in September 2001. The institutional history for environmental protection dates back to 1991, when the Committee for Environmental Protection and Preservation was established within the Ministry of Health. This was followed, in 1991, by the establishment of the Committee on Environmental Protection, within the Ministry of Health and Environment. In 1998, the Albanian Parliament, through Law No. 8364, transformed the National Environmental Agency into an independent institution reporting directly to the Prime Minister. The creation of the Ministry in 2001 continued the trend of giving greater importance and power to the environmental protection authorities.

*Source:* EPR Albania, UNECE 2002.

36. Another significant problem for many countries has been the lack of institutional continuity. Environment ministries have been established, disbanded or restructured, re-established and again restructured, creating a climate of uncertainty for ministry staff, policy makers and civil society. Strategies developed by one group may be abandoned by the next due to a lack of a sense of ownership. The uncertainty, and its impact on long-term policy and plans, may also deter support from the international community.

#### **Lessons learned**

- Environment ministries need strong mandates, predictable and sufficient financing and institutional security. A lack of continuity weakens the institution and makes implementation virtually impossible.
- Inter-ministerial cooperation is essential. Many policies and laws are interdependent; this is particularly an issue where economic and environmental considerations appear to conflict.
- Issues of staffing of the ministry, at central, regional and municipal levels, are key concerns. Ministries need a critical mass of qualified and adequately paid staff.

#### **Major challenges ahead**

- Establish ministries of environment in countries where they do not exist.
- Develop effective mechanisms of inter-ministerial cooperation.
- Build the technical and professional capacity of environment ministries.
- Strengthen the role and position of the Ministry of Environment in relation to other ministries.
- Provide sufficient incentives to ministry staff to retain them.

### **C. Inspectorates and enforcement**

37. In most countries inspectorates are organized at the national and sub-national level. In some cases the sub-national inspectorates are part of the regional environmental authorities; in others, they perform the functions of the regional authority. The basic role of the inspectorates is to inspect facilities to check their compliance, but in many countries it is the inspectorates that also issue environmental permits or decisions on environmental impact assessment. In some countries inspectorates are also involved in ambient monitoring for the purpose of identifying environmental violations, helping municipalities in preparing programmes for environmental rehabilitation and providing information to the public. Municipalities can also designate local inspectorates to enforce the regulations within their purview.

38. Inspectorates are generally under the responsibility of the environment ministries, but there may also be forestry inspectorates, health inspectorates, agriculture and water inspectorates. Duplication of inspection units and lack of coordination exist not only at the central level but also between national and regional or local enforcement agencies. A basic issue in developing enforcement is the extent to which responsibilities should be centralized at the national level or decentralized at a more local level. Involving local government in enforcement is important because it is the closest to the actual environmental problems and generally the most affected.

#### **Box 9: Environmental inspection in the former Yugoslav Republic of Macedonia**

The main environmental enforcement institution is the State Environment Inspectorate, which works within the Ministry of Environment and Physical Planning. The Inspectorate itself is centralized, but most of the national inspectors are located in sensitive areas (heavily industrialized areas or protected areas), such as Veles and Bitola. Although all the polluting enterprises are subject to inspection, the State Environment Inspectorate focuses on the most heavily polluting industry.

There are a number of other central and local inspectorates. The Ministry of Agriculture, Forestry and Water Economy and the Ministry of Health have inspectorates, and there is a State Communal Inspectorate for communal enterprises of national importance. Enterprises of municipal importance are subject to the authority of local inspectorates. Problems occur because inspections are not properly coordinated among the different inspectorates. To improve the situation, new acts, including standards, implementation and enforcement in conformity with the relevant EU directives are being drafted. This will be followed by institutional reorganization at all levels. In addition, it is expected that the future delegation of some responsibility for environmental monitoring and inspections to local self-governments will improve the enforcement of environmental legislation.

*Source:* EPR the former Yugoslav Republic of Macedonia, UNECE 2002.

39. The environmental enforcement institutions play an important role in ensuring compliance with environmental laws and regulations and the implementation of environmental policy, but their weak institutional framework and limited financial and human resources hamper environmental compliance and enforcement. In addition, the movement of information is often top-down only. There is little institutionalized feedback to ensure that information on the results of environmental policy implementation flows from inspectors on the ground back to policy makers. Policy instruments are ineffective, and policy design is very often driven by a regulatory process that is independent of enforcement efforts and compliance.

40. The environmental institutions responsible for enforcement currently face a number of common difficulties such as a lack of human, technical and financial resources; institutional reform and instability; insufficient regulatory and compliance frameworks, compliance control procedures and enforcement tools; ineffective enforcement activities; weak environmental permitting systems; non-compliance with multilateral environmental agreements; and a lack of public participation in enforcement.

#### **Box 10: Inspection in Uzbekistan**

Inspectors from the State Inspectorate for Analytical Control monitor pollution emissions from enterprises and enforce permit conditions. Regional inspectors regularly visit the enterprises (public and private). Inspection frequency varies from every month to once or twice a year, depending on the category of industrial enterprises. The inspection schedule is determined every year by the Coordination Board of the Cabinet of Ministers, following a proposal by the State Committee for Nature Protection. The Inspectorates cannot impose fines directly when an enterprise exceeds permitted pollution limits. Permission is first needed from the State Taxation Committee. This means that at least two inspections must precede penalization. The environmental inspectorates cooperate with other agencies of the Ministry of Health, the Ministry of Agriculture and Water Management, the Ministry of Internal Affairs, and the State Committee for Geology and Mineral Resources.

*Source:* EPR Uzbekistan, UNECE 2001.

41. While the enforcement institutions have a variety of informal and formal enforcement tools at their disposal, greater use of enforcement powers is constrained not only by their weak positions but also by the low levels of fines and penalties. In many cases, polluters choose to pay fines rather than invest in pollution control. The low collection rate of fees and fines also contributes to the problem.

#### **Lessons learned**

- Enforcement has been lagging behind the legal provisions for several reasons: the lack of capacity and resources of the inspectorates and other enforcement institutions; legal and institutional uncertainties, including those regarding existing permits and enterprises in the process of privatization and restructuring; and the lack of political support for radical actions such as temporary or permanent plant closures that could make even more people jobless.
- Enforcement is also made difficult by the lack of coordination among different inspection and policing services and by a poor definition of their respective responsibilities.
- In some countries, corruption has also undermined enforcement.

#### **Major challenges ahead**

- Restructure and rationalize the administration of all inspection services of relevance to the environment and nature protection.
- Strengthen the inspectorates through training and necessary equipment.
- Ensure coordination among enforcement bodies and policing services.
- Provide the legislative basis to strengthen enforcement procedures.

#### **D. Decentralization of environmental management**

42. Decentralization of environmental management has formed part of the institutional restructuring and reform processes. It has offered an opportunity to strengthen environmental management by bringing it closer to the public and to local concerns, thereby enabling greater accountability, transparency and participation, and it continues to do so.

43. However, while the overall devolution of competences may be reflected in laws and policies in many of the reviewed countries, decentralization of environmental management has not always been supported by the resources necessary for implementation. There has been a failure by the central government to provide funding to the local government, but constraints have also been imposed by the government on the ability of municipalities to generate income, for example, by capping public utility user fees.

##### **Box 11: Decentralization of environmental authority in Serbia and Montenegro**

In Yugoslavia, most of the environmental responsibilities that do not have international or transboundary implications lie with the governments of the constituent republics, not with the Federal Government. Consequently, it is the relationship between the republics' governments and the local authorities that defines the decentralization of environmental management. In addition, with the passing of the Law on the Transmission of Competences from the Republic to autonomous Provinces-Vojvodina in 2002, a number of environmental competencies were given to Vojvodina.

There are 161 municipalities in Serbia (excluding Kosovo), and 21 in Montenegro; most, but not all, have environmental secretariats. The municipalities, through their secretariats for environmental protection, are responsible for local air protection, noise protection, urban planning and municipal waste management (collection, landfill site selection and operation). Water and waste management are generally carried out by a municipal enterprise. Environmental competencies in the municipalities in Montenegro include nature protection, water, parks and forests of local importance.

There is no legal obligation on municipalities to develop local environmental action plans (LEAPs), but several are under way in Serbia. Two have been completed: one in Nis and the other in Subotica.

*Source:* EPR Yugoslavia, UNECE 2002.

44. Many environmental services that used to be provided centrally, like water supply and sewage, waste management and district heating, have become the responsibility of local and regional authorities. In order to maintain them, they have had to introduce user charges to cover the costs of operation. These services were heavily subsidized before, so it is now hard for people to accept price increases. On the one hand, the charges are still too low to cover the full cost of investment and maintenance, and, on the other, non-payment is widespread. In the more advanced countries, municipalities have made use of various kinds of private-public partnerships to develop or improve the quality of the services.

45. Implementation is also hindered by an insufficient number of staff in the local administrations as well as by their lack of experience in environmental matters. It is crucial not only to expand the staff but also to provide them with the necessary training. This should include training in managing public utilities, for instance, for water and waste management, and establishing criteria for monitoring performance.

46. Despite these obstacles, an increasing number of local and regional governments have developed their own environmental policies to tackle their priorities. These include local and regional environmental action plans (LEAPs and REAPs), local environment and health action plans (LEHAPs) and Local Agenda 21 initiatives. Local and regional environmental action plans have been efficient means for strengthening local environmental authorities and fostering

stakeholder dialogues and public participation. However, these plans need to be more fully and universally supported.

**Box 12: Sustainable development in Estonia**

The Estonian Agenda 21 process began in 1997 and includes the promotion of Local Community Planning and Local Agenda 21 processes. As a first step, a guidebook for applying Agenda 21 locally was widely distributed throughout the country to local government officials, community members and development groups. A sustainable development database was developed with a similar aim. The Ministry of Environment is coordinating Agenda 21 at the national level and participates in this process at regional levels (Baltic 21), while the Association of Estonian Cities coordinates the local Agenda 21 processes.

In 2000, a second booklet was issued to provide information on what had been achieved and to mobilize those communities that had remained inactive. The result was a fruitful exchange of information at grass-roots level. Web sites were created to provide information on how to establish the process and a web forum was set up. The process, however, has met with a temporary hiatus as municipalities anticipate a major administrative reform that would reduce the number of municipalities and counties.

*Source:* EPR Estonia, Second Review, UNECE 2001.

**Lessons learned**

- Decentralization requires preparation to be effective. It is important to review local conditions; to determine carefully the logic for a new distribution of functions to map out not only the new structures and functions but also their interrelationships; to develop new administrative procedures at the local level; and to anticipate the financial and technical support that will be required.
- Decentralization is important for effective implementation, but it can succeed only if it is supported with sufficient financial resources from the central level; local governments also need to be provided with the legal means to raise their own revenue.
- If users do not pay for the municipalities' environmental and other services, the infrastructure further deteriorates due to a lack of maintenance. This not only creates environmental problems and interferes with the services that should be provided to the public, but it also makes it more difficult to attract either lenders or private operators to invest in new infrastructure.
- Decentralization requires capacity-building at municipal and regional levels, for policy development, planning and implementation; municipalities also need technical support at the early stages of privatizing municipal services in order to ensure that the privatization is effective, efficient and fair.
- Municipalities have a major role to play in public participation and awareness-raising, and they should use every opportunity to exploit this role.

**Major challenges ahead**

- Provide sufficient funding, from the central budget and through municipal revenue-raising, to support the requirements of the municipalities.
- Develop local environmental action plans and local environmental health action plans in full consultation with civil society.
- Strengthen the managerial and technical capacity of municipalities in environmental and all other areas within their competence.

**E. Role of NGOs**

47. In the past, NGOs could not always be clearly distinguished from government. Civil society, and especially environmental NGOs, underwent a process of fundamental change in the 1990s. In the first wave of transition many NGO leaders moved to government and to donor-supported activities. With economic hardship, the time available and the will of people to do voluntary work diminished along with domestic resources. The NGOs have depended mainly on donor funding programmes that were established in most countries. This has led to the establishment of more professional NGOs and fewer membership-based NGOs. Today NGOs fall roughly into the following categories:



- Expert-based organizations (already formed before transition);
- NGOs whose members are often older, locally influential people (many founded before 1990);
- NGOs that focus on raising awareness;
- Private institutes, non-profit organizations performing professional environmental services;
- Umbrella NGOs that represent networks of environmental and other NGOs in the national context or in relation to specific issues.

**Box 13: The role of NGOs in environmental legal and institutional reforms in Romania**

Environmental NGOs have been playing an increasingly important role in addressing environmental issues in Romania during the past ten years. They participate with local, regional or national governments, agencies and institutions in various cooperative projects, and they are active in educational activities, nature protection (including monitoring fauna and flora), biodiversity and climate change. There is good cooperation between NGOs and the Ministry of Waters and Environmental Protection, but the relationship with local authorities is generally stronger. Membership in environmental NGOs is very low (ranging from 10 to 60), and they are dependent on external financing programmes and fund raising, mainly from international organizations.

*Source:* EPR Romania, UNECE 2001.

48. In many countries NGOs are actually better staffed and equipped and receive far better salaries than the governmental institutions dealing with the environment, which cannot receive direct support from donors.

**Box 14: Environmental NGOs in the Republic of Moldova**

There is a variety of environmental NGOs in the Republic of Moldova, which like all NGOs have to be registered with the Ministry of Justice. Most are members of two umbrella groups: the Environmental Movement of Moldova and the Green Alliance. The Environmental Movement of Moldova is the only nationwide organization with branches throughout the country. Many NGOs focus on single issues and have between 3 and 50 members. The economic difficulties of transition have hindered the effectiveness of NGOs as membership numbers have dwindled. For example, in 1990 the Environmental Movement of Moldova had 70,000 members; in 1998, it had 10,000.

*Source:* EPR Republic of Moldova, UNECE 1998.

49. Environmental NGOs have played an important role in introducing participatory democracy in the international, national and sub-national decision-making processes. They also help to disseminate knowledge and raise awareness of environmental issues and possible solutions at all levels. NGOs have been particularly successful in mobilizing the public at the local level.

**Lessons learned**

- Non-governmental organizations have been among the most dynamic actors in the environment sector and have sometimes been able to play a stronger role than the weaker government (central and local) institutions and the business sector.
- Where NGOs are better funded than environment ministries, they often attract the best qualified persons, resulting in a further weakening of the ministries.
- Where NGOs do not have sufficient financial support, they may fail to assume their important advocacy role, choosing instead to qualify as experts and consultants with the environment ministries.

**Major challenges ahead**

**For NGOs:**

- Develop internal sources of funding and reduce or end dependence on international donor assistance.
- Strengthen the role of NGOs as environmental advocates.
- Increase public awareness-raising activities and assist environment ministries to disseminate basic environmental documents.

## II. RESOURCE MANAGEMENT AND TRENDS

### A. Air

50. Around 1990, air quality was critical in many towns, cities and regions of the countries in transition due to inefficient technologies and the lack of environmental management. Generally, air pollution significantly decreased in the 1990s. This was due primarily to the decline in industrial production. Air pollution with NO<sub>x</sub>, O<sub>3</sub>, CO and volatile organic compounds (VOCs) from road transport, however, has been increasing since the early 1990s. In spite of decreasing industrial air pollution, air quality has not improved in most cities and regions because of the increase in transport pollution from old cars imported from Western countries. Greater focus than earlier has been put on global environmental problems, such as the depletion of the ozone layer and global warming by greenhouse gasses largely because of the global conventions and their pro-active financing mechanisms, which have played an active role in raising awareness and political support.

#### **Box 15: Improved enforcement in Latvia**

Following its first Environmental Performance Review, Latvia greatly improved its enforcement of the regulatory and control instruments for combating air pollution. For example, EU air quality standards were enforced and a number of new instruments, including the Regulation (1998) on the quality of fuel used for vehicles; the Regulation (1999) on air quality; the Regulation (2000) on emission limits for stationary sources; the Regulation (2000) on the vehicle type approval system; the establishment of an Environmental Investment Fund, supplying local governments with soft loans for the improvement of energy efficiency; and emission ceilings for SO<sub>2</sub>, NO<sub>x</sub>, VOC and methane, were created. In addition, leaded petrol is no longer used.

*Source:* EPR Latvia Follow-up Report, UNECE 2000.

51. In the past, the main source of SO<sub>x</sub> and NO<sub>x</sub> were coal-fired thermal power plants, oil shale power plants (Estonia) and district heating plants. In the countries with rich mineral resources, industrial sources of pollution were the metallurgical industry, with heavy metals and SO<sub>x</sub>, and oil and gas industries, with methane and VOCs. The cement industry is the main source of local dust and particulates. At present in Central and Eastern Europe, where the economy has recovered, some obsolete technologies are being replaced with modern technology that pollutes less and runs on cleaner fuels. Across the entire region there is the beginning of a switch in industry and households from coal or fuel oil to natural gas, less polluting imported coal, light oil and, on a much smaller scale, even renewable sources such as solar and biomass. However, the price of this conversion and the availability of the less polluting fuels remain a constraint for many countries.

52. In many countries, outdated technologies are still in operation because of a lack of funding and unprofitable activities continue operating to maintain employment levels. Existing pollution abatement equipment may not be in operation because of a lack of company revenues. This situation has led to higher pollution levels per unit of GDP than before 1990.

#### **Box 16: Positive developments in air management in Slovenia**

Following the EPR in Slovenia, there were three improvements in air management. First, a detailed programme was established for the desulphurization of power plants, involving realistic funding schemes. Second, fuel switching to natural gas and the adoption of stricter standards for light oils helped to reinforce the general downward trend in urban air pollution. Third, PHARE funds became available to support the development of a monitoring network.

*Source:* EPR Slovenia Follow-up Report, UNECE 1999.

53. Car fleets are growing all over the region, leading to more air pollution from mobile sources, as in some countries where the increase in CO<sub>2</sub> emissions from road transport has already undone the reduction in emissions from industry. In the more affluent countries in Central and Eastern Europe, car fleets are rapidly renewed, leading to much lower per vehicle emissions of NO<sub>x</sub> from new cars with mandatory catalytic converters. In the less affluent countries, the main problem is the age of the car fleet. Most countries have introduced restrictions on car imports in terms of age and technical specifications, along with tax incentives for cars with catalytic converters and lead-free petrol. Several Central and East European countries have completely phased out leaded petrol, while others are doing so based on the Strategy to phase out leaded petrol adopted in Aarhus in 1998. Phasing out leaded petrol is one of the biggest challenges for countries that have significant refining capacity and few resources to introduce new refining technology.

#### **Lessons learned**

- The more advanced countries in transition have succeeded in reducing emissions from stationary sources significantly as a result of the introduction of new technologies and products and better management. The situation in the CEE and EECCA countries, however, is not comparable. While they have also reduced emissions from stationary sources, this has resulted primarily from the breakdown of the industrial sector, not from technological or managerial improvements.
- In virtually all reviewed countries in transition, the pollution from mobile sources is increasing disproportionately. This is a result not only of the rapid increase in the vehicle fleet but also of the age and condition of the fleet, an inadequate tax structure, poor inspection requirements and the continuing use of leaded fuel.

#### **Major challenges ahead**

- Improve monitoring systems for air quality control in urban and rural areas.
- Introduce clean technology and production processes into all working enterprises through, e.g., legislation, regulations and voluntary agreements; where these requirements do not exist or are not properly enforced, make installation and use of clean technology and production processes a condition within the privatization process.
- Provide opportunities for enterprise personnel to be trained in good environmental management procedures.
- Give greater attention to the improvement or development of good public transport systems.
- Introduce and enforce more stringent vehicle inspection standards.
- Phase out leaded fuel as a matter of priority.

## **B. Water**

54. The problem of water resources management in almost all countries in transition is one of the most important environmental priorities. It includes water supply, especially drinking water; water use for industrial purposes; irrigation systems for agriculture; industrial and municipal waste-water treatment and recycling, and water conservation and protection of watercourses and lakes from pollution. Flooding is also becoming a priority for action in the region.

55. The water resources in the countries in transition are very diverse in terms of quality and quantity, but they have some important common characteristics. Most catchments are shared among several countries, and they drain into closed seas: the Baltic, the Black Sea, the Mediterranean, the Caspian and the Aral Sea, or into landlocked lakes. Many areas in the region are also sensitive in terms of water management, especially dry grasslands, semi-deserts, wetlands and karstic areas.

56. In the past, major development programmes were based on the use or diversion of water, such as hydropower plants, navigation, drainage and irrigation. Such programmes altered water regimes significantly, in some cases leading to large-scale ecosystem change, such as the depletion of the Aral Sea or Lake Sevan in Armenia. Drainage for agricultural purposes and river regulation destroyed wetlands and made flooding patterns worse. Large dams and flood-control dykes blocked fish populations from reaching their spawning grounds and severely threatened species such as Black Sea and Adriatic sturgeon. Irrigation has led to soil salinization and the subsequent loss of productive land in countries like Uzbekistan, Turkmenistan, Kyrgyzstan and Armenia.

**Box 17: Action Programme for Lake Sevan**

Lake Sevan is among the most ancient lakes on earth, and it shelters important endemic flora and fauna. However, as a result of overuse from irrigation and other activities, the Lake has shrunk by 11 per cent, and it has been seriously degraded by agricultural pollution.

In 1995 the Action Programme for Lake Sevan with an integrated management approach was initiated. The Action Programme does not aim at restoring the initial level of the Lake, because this is unrealistic, but it does seek to raise the level gradually to the extent possible. It seeks a sustainable management of the Lake for tourism and recreation, protecting and enhancing biodiversity, improving fisheries, controlling and minimizing pollution discharges, improving institutional arrangements for integrated resource use, and restoring the strategic value of the Lake.

*Source:* EPR Armenia, UNECE 2000.

57. The biggest water polluters used to be industry (especially mining and heavy industry), agriculture with intensive use of fertilizers and pesticides, and urban settlements with few waste-water treatment plants. Many rivers in the countries in transition have been seriously polluted with heavy metals, nutrients, phenols, petrochemicals, salt and other substances since before 1990. With the closing of many industries and the use of fewer agriculture inputs, the quality of many surface waters has somewhat improved. This is not the case, however, for areas that still rely mainly on mineral resource extraction and processing and intensive agriculture.

58. In addition, water pollution from human settlements has not diminished. Many (but not all) cities have some sort of waste-water treatment facilities, but they are often obsolete and non-effective. Because of the lack of investment capital, only a limited number of waste-water treatment plants have been modernized or built in the past ten years.

59. In Central and Eastern Europe, most investment in waste-water treatment has taken place in the framework of the Baltic Sea cooperation in Estonia, Latvia, Lithuania and Poland with co-funding from Scandinavian and other donors. The countries in the Danube River basin signed the Convention on Cooperation for the Protection and Sustainable Use of the River Danube in 1994. In the Joint Action Programme of the International Commission for the Protection of the Danube River (ICPDR) for the years 2001-2005, Contracting Parties to the Convention agreed to invest in projects in the field of sewerage and waste water treatment from municipalities and industries and also to undertake wetlands projects. Other international programmes are under way with the support of donors to protect and manage the water resources in the Black Sea, Caspian and Aral Sea basins.

**Box 18: Water resource crisis in Central Asia**

Irrigation for agriculture has been used in Central Asia for more than 5,000 years, but during the past 40 years this has become unsustainable. It has resulted in an ecological crisis in the Aral Sea and significant environmental problems throughout the region. The main problems in the Aral Sea basin can be summarized as follows: the level of water has dropped by 15 metres and only 5 km<sup>3</sup> of water reaches the Sea; the Sea has shrunk to less than half its size; the amount of drinking and irrigation water in the region is insufficient and its quality poor; both water and more than 50 per cent of irrigated land have high salinity, and salinization continues to increase; sea water is contaminated by fertilizers and pesticides that are transported with collector-drainage water and by the wind; biodiversity has been drastically reduced as a result of the desiccation and shrinking of the Sea; and desertification of the Amu-Darya and Syr-Darya deltas is changing the climate in the region. All of these factors have had an adverse socio-economic impact on the population in the region through health risks, poor nutrition and unemployment.

The countries in the Aral Sea basin need to integrate their planning of energy and agriculture, and, equally important, they need to improve cooperation among themselves. There is agreement on water-resource sharing and energy production in the region, but it is not consistently implemented, nor does it address social, economic and environmental impacts.

International cooperation for solving these problems is crucial. The Special Programme for the Economies of Central Asia (SPECA), supported by the UNECE, focuses on strengthening the cooperation among the States, including on water and energy issues.

*Source:* EPR Uzbekistan, UNECE 2001.

60. Groundwater is the main source of drinking-water supply in Central and Eastern Europe and an important source along with surface water among EECCA countries. In the past, the upper layers of groundwater were affected by pollution from agriculture, industrial activities, waste and tailings, as well as in some places by military installations. Supplying safe drinking water to the population is therefore an important issue in many countries. The issue is further complicated by the inability of national governments, municipalities and water-supply companies to ensure maintenance and investment in the water-supply systems. Losses from the pipelines range between 30 and 80 per cent, and the water treatment facilities are in many cases inadequate.

61. In the EU applicant countries, the challenge in the coming years will be to meet the EU standards for the quality of drinking water, but in the EECCA countries, the drinking-water-supply situation is still deteriorating because of a lack of funds and effective management tools. There are high losses in the distribution system, metering is rare, and users are charged only for operating and maintenance costs and not for the resource itself. Drinking water increasingly fails to meet standards due to pollution, poor operation of treatment facilities, lack of disinfection and the poor condition of supply systems and sewerage systems. In rural areas, water is pumped from wells that are often chemically and biologically contaminated. Although water prices have increased significantly since 1990, they still cannot cover the full investment and maintenance costs. Municipal and national governments are reluctant to increase water prices further because of concern for poorer households. In any case, a large proportion of the population does not pay its water bills. This creates a vicious circle of diminishing revenues and rising costs for water companies, and subsequent deterioration of the infrastructure.

#### **Lessons learned**

- Wastewater is the primary source of contamination of rivers, lakes and groundwater, including transboundary waters. Water quality in most areas could be improved with investment in waste-water treatment, but this requires funds and the ability of the population or industry to pay.
- There are serious problems with underground and surface water contamination by poorly stored hazardous chemicals and waste. Many of these areas have been classified as “hot spots,” and require major funding for remediation and the removal of the source of contamination.
- In South East Europe and EECCA countries, in particular, huge losses of water occur as a result of both poorly maintained infrastructure and water-pricing policies.
- Irrational decisions about water distribution may lead to acute shortages of drinking water and, through poorly managed irrigation, serious problems of soil erosion and salinization.
- Overall, water policies have suffered from a highly fragmented decision-making structure and, in some cases, short-sighted economic considerations that have failed to consider long-term environmental and economic impacts.

#### **Major challenges ahead**

- Develop comprehensive, intersectoral water policies that address water distribution and water quality.
- Rationalize the decision-making structure for water.
- Develop and implement an appropriate pricing policy for households, industry and agriculture to promote water conservation, reduce water pollution, cover operating and maintenance costs and finance investments in infrastructure, water supply and waste-water treatment.
- Develop and implement flood management plans.
- Provide wastewater treatment facilities for both industrial wastewater and sewage.

### **C. Waste and contaminated sites**

#### **1. Municipal waste**

62. The countries in transition generate between 190 and 380 kg of domestic waste per person per year, which is somewhat less than, but comparable to, Western countries. The quantity of domestic waste has been rising, but not all households are served by waste collection. Consequently, fly-tipping is common and there are a large number of uncontrolled and illegal waste dumps. The waste that is collected is taken to municipal landfills that are usually municipal property and have been operated by the waste-collection companies more or less free of charge. Most municipal waste-collection systems are subsidized, and landfill investment and maintenance costs are covered by municipal budgets or municipal environmental funds. The consequence of this is, on the one hand, poor management of municipal landfills and, on the other, a lack of incentives for waste minimization, recycling or some more demanding forms of treatment.

63. The uncontrolled and poorly managed dumpsites pose a particularly severe environmental and health hazard. All kinds of waste, including municipal, industrial and medical waste, are deposited there. Waste is burned in open areas. Smoke containing toxic substances (dioxins, furans) is a source of serious air contamination. Some people scavenge reusable materials from the waste, and some even live on the waste tips. There are no drainage systems nor waterproof layers to prevent leaching and percolation into groundwater.

**Box 19: The new Dnepropetrovsk landfill in Ukraine**

The old landfill of Dnepropetrovsk is plagued by problems similar to most other landfills in Ukraine. However, a recently built landfill incorporates environmental measures that can compete with West European standards. These include: good groundwater protection using both insulating clay and a 2-mm HDPE bottom film, leachate inspection holes, provisions for future biogas exploitation, and weekly waste covering with clay and soil to keep animals away. The construction of the landfill was financed by private investors. The investment will pay for itself partly through the recovery of metals, glass, paper and plastics.

The expected success of the new Dnepropetrovsk landfill is the result of a number of factors, including foreign investment and creative management, the creation of a payback mechanism based on the recycling of materials, the development of successful arrangements and processes for the collection and transport of waste, the adoption of realistic prices for waste treatment and disposal that can be paid by the generators of waste, and the design of other imaginative income mechanisms permitting full recovery of costs.

*Source:* EPR Ukraine, UNECE 1999.

64. One of the most serious problems is the disposal of medical waste. Few countries in transition have any or sufficient facilities for medical waste separation and treatment. As a result, medical waste is stored at landfills together with municipal waste, exposing people, from health-care workers to scavengers at the landfills, to the risk of infectious diseases.

65. To reduce investment costs, most governments in the Central and Eastern Europe have been promoting the development of a smaller number of regional landfills and waste management centres. Progress has been slow, however, because of the lack of incentive for municipalities. The development of landfills to Western standards and the introduction of separate waste collection have been linked to an increase in waste collection fees and in many cases public-private partnerships with foreign waste management companies. More successful have been the countries that opened up the waste market and privatized the landfills. In such a situation, the landfill's investment and maintenance costs are reflected in the price of landfilling, and the owners have a clear responsibility for good management as well as an incentive to develop larger landfills and recycle in order to extend the lifetime of a landfill.

**Box 20: State strategy for municipal waste management in Latvia**

The Government approved the State strategy for the management of municipal wastes (1998-2010) in 1998. It covers all non-hazardous waste. The strategy is intended to reduce the number of dumpsites, to integrate regional waste management systems and to construct new regional landfills, serving at least 100,000 people. A hazardous waste strategy (2000-2010), containing plans for the construction of a hazardous waste incineration plant and a hazardous waste landfill, as well as for the improvement of hazardous waste collection systems, was adopted in 1999.

*Source:* EPR Latvia Follow-up, UNECE 2000.

66. The EU applicant countries have to meet the requirements of the EU Landfill Directive, and their populations are increasingly able to pay for Western-standard waste management services. Municipalities in the EECCA countries, however, cannot afford major investments in waste management. The focus in these countries is therefore on improving the regulatory framework for waste management, on introducing economic instruments to provide an incentive for better waste management and on cleaning up those production processes and waste sites that pose an immediate threat to human health.

## 2. Industrial waste

67. Most solid waste comes from mining, energy generation and heavy industry. In some countries these industries do not work at all. The main problems are accumulated industrial waste, tailings and contaminated industrial sites. In the past, incompatible classifications and

reporting systems have been used for waste, so it is hard to make comparisons across the region. In general, amounts of new industrial waste declined in the 1990s owing to reduced production and some efficiency gains; the generation of hazardous waste also declined because of better control, the costs of disposal and environmental management in industry.

68. Industrial waste from large industrial facilities, such as tailings, slag, ash or sludge, is usually stored close to the site in heaps or ponds. Depending on the composition, this waste threatens groundwater, surface water and soil, or is a source of wind-blown airborne particles that contain heavy metals or are even radioactive.

**Box 21: The Baia Mare and Baia Borsa accidental spills in Romania**

After a combination of heavy rain and snowmelt on 30 January 2000, there was a break in the Aurul tailing dam containing used cyanide solution. Some 100,000 m<sup>3</sup> of cyanide-contaminated water flowed into the Somes River and down to the Tisza River in Hungary and Yugoslavia and via the Danube to the Black Sea. A number of water intakes from the Tisza and Danube Rivers stopped their operation for a few days, among them the Tulcea (Danube Delta region) municipal water intake. There were no human casualties. But the accident has led to a modification of aquatic life (fauna and flora have reappeared but not necessarily the same species).

On 10 March 2000, as a consequence of an overflow and breach of the Novat tailing dam operated by the State-owned mining company REMIN S.A. in Baia Borsa, 100,000 m<sup>3</sup> of water with about 20,000 tons of solid tailings sludge was released into the river system. Although the amount of cyanide in these tailings was very small and not at all comparable with the cyanide concentrations at the Aurul dam, the heavy metal concentration was relatively high.

Acute effects, such as the immediate killing of plankton and fish, were observed where the cyanide plume passed along the river system. The spill also drastically increased the heavy metal contents (especially copper, lead and zinc) of sediments near the broken dam. However, heavy metal contamination decreased rapidly further downstream. Today, the ecosystem of the river Somes-Tisza basin seems to be naturally regenerated as wildlife is recovering along the river.

*Source:* EPR Romania, UNECE 2001.

### 3. Hazardous waste and contaminated sites

69. The centrally planned economies left a significant legacy of hazardous waste such as surplus pesticides on large farms and stockpiles of waste containing hazardous substances on industrial sites. In South East Europe the war exacerbated the situation with destroyed industrial sites, unexploded ordnance and surplus pharmaceuticals that were sent as humanitarian assistance.

**Box 22: Hazardous industrial waste in Albania**

At present industrial production consists of mining and the enrichment of copper and chromium ores, coal (lignite) mining, oil exploration and oil processing, and construction materials, so most industrial waste is generated by these industries. For the industrial facilities that were closed down, the main environmental problem is accumulated waste from previous operations. In 2000 the highest quantities of industrial hazardous waste were generated in the chromium and copper industry. This waste contains hexavalent chromium, which is highly toxic and a threat to people and the environment. Nearly all copper-ore mining and enrichment has been discontinued, but surface water and groundwater are still contaminated by copper and other heavy metals from industrial waste storage sites.

*Source:* EPR Albania, UNECE 2002.

70. In Central and Eastern Europe, significant progress has been made in the management of hazardous waste. The ratification and implementation of the Basel Convention have had an important catalytic role in the development of hazardous waste classification, reporting and management systems. The reporting and monitoring of hazardous waste have also established a market for hazardous waste management services such as storage, recycling, incineration and



other types of disposal. Industries have taken advantage of hazardous waste disposal services in Western countries, especially for the most demanding substances such as polychlorinated biphenyls (PCBs). At the same time, many stockpiles of hazardous waste are still awaiting proper disposal in monitored storage sites.

#### 4. Radioactive waste

71. Radioactive waste and tailings from uranium mining and processing industries are particular problems in countries with a nuclear industry. In addition, some lignite mines have been associated with uranium deposits resulting in large radioactive fly ash dumps. Most countries temporarily store radioactive waste at the nuclear sites and only a few in separate locations. The use of storage facilities is reported to be reaching or in some cases to already exceed the available capacity. In many cases, the nuclear waste storage facilities do not meet international safety standards or existing legislation. There are no facilities for waste treatment or pretreatment. There is no regular safety monitoring system at the facilities or in the vicinity. The population and the environment are exposed to high levels of radiation. Radioactive contamination also comes from uranium mining and milling (radioactive gas radon), and tailings from the uranium industry. In many countries, tailing management is absent, and abandoned uranium tailings are commonly used as construction material due to their fine sand texture, raising the level of people's exposition to gamma radiation emitted from these tailings.

##### **Box 23: Environmental issues in Ukrainian mining regions**

Kriviy Rig city, located in Dnepropetrovsk oblast, is the centre of a densely populated industrial and mining belt, measuring about 140 kilometres from north to south. The iron ore mining and processing complex of Kriviy Rig comprises nine open pit mines and five ore-processing plants. This huge complex is spread over 30,000 hectares, of which 26 per cent is covered by 3 billion m<sup>3</sup> of tailings from mining operations. The iron ore mines and plants produce almost 220 million m<sup>3</sup> of effluent a year. Of this, 50 million m<sup>3</sup> are directly pumped from mines. Acid waste waters are discharged without any treatment into local rivers. Though the volume of water is much smaller than that discharged from coal mines, it is far more toxic in the short term, given its high concentration of heavy metals. Despite being the largest mining and processing company in Irvibass, Ingulets has no water-treatment facilities for mining and ore-processing operations and the equipment is outdated.

Waste water with radionuclides from the Zhovti Vodi uranium ore plant is discharged without any treatment or with low-efficiency treatment into the Inghul river. The concentration of radium-226 exceeds the legal limits in this watercourse. The Zaporizh'ya iron ore plant discharges between 18 and 20 million m<sup>3</sup> of mining waste waters per year into the Utlyuisky estuary, north of the Sea of Azov. These waste waters contain insoluble iron at 10 to 50 times the MACs. In areas around evaporation ponds, dust-containing iron contaminates the environment and kills birds that are listed in the Red Book of Ukraine.

Coal mines in the Donbass region produce 75 million m<sup>3</sup> of effluent a year, of which 46 per cent is from western Donbass. About 20 per cent of mining water discharge has a higher salt concentration than sea water, ranging from as little as 30 mg/l to an environmentally hazardous 4 000 mg/l or more. Discharge of this water has raised the saline concentration in some rivers to levels that severely limit the use of the water for water supply or irrigation. More than 10 harmful components (e.g. cadmium, phosphorus, lithium, titanium, manganese) are fixed in surface waters and groundwater of the coal mining areas of Donbass, with concentrations exceeding MACs. In some cases mining water is used to dilute municipal waste water, including sewage, before disposal in the nearest river system.

*Source:* EPR Ukraine, UNECE 2000.

72. At the moment, all countries are studying their options for long-term radioactive waste storage, especially for the highly radioactive spent fuel. Urgent measures should be taken to prevent radioactive contamination.

## 5. Contaminated sites

73. One of the consequences of poor environmental management in the past is the contaminated sites that are spread throughout the region. They include:

- Industrial properties, polluted by the chemicals and waste from technological processes, with stockpiles of accumulated hazardous waste;
- Unsafe and abandoned landfills with mixed municipal and hazardous waste;
- Obsolete pesticide storage sites and dumps;
- Mining tailings;
- Areas surrounding metallurgical plants contaminated with heavy metals;
- Soviet military bases polluted with leaked fuel, unexploded ordnance and other substances;
- Large areas contaminated with radioactive fallout such as the Chernobyl area in Ukraine, Belarus and the Russian Federation, Semipalatinsk in Kazakhstan and closed nuclear cities in the Russian Federation.

### Box 24: Contaminated Sites in the Russian Federation

Soil contamination due to industrial activity is estimated to have impacted 2.3 million hectares. In particular, 730,000 hectares is considered dangerously contaminated as a result of activities in the chemical, oil and petrochemical, and ferrous and non-ferrous metals industries. In the most industrialised cities, approximately 12 percent of land is considered dangerously contaminated. The most serious contamination recorded is associated with heavy metals, hydrocarbons and organic chemicals.

*Source:* EPR Russia, OECD, in cooperation with UNECE 1999.

74. The countries in the region have not had the resources to deal effectively with contaminated sites, which would require billions of dollars per country. Although these sites were seen as one of the main environmental threats in the early days in transition, only a limited number of top priority sites have actually been cleaned up.

### Box 25: The Semipalatinsk relief and rehabilitation programme in Kazakhstan

The Semipalatinsk nuclear test site is an 18,500-km<sup>2</sup> zone in the north-east of Kazakhstan. The official number of nuclear tests at the site published in 1996 by the Russian authorities is 456, comprising 26 surface, 87 air and 343 underground tests. Among them were also so-called peaceful nuclear explosions, the largest of which produced a lake about 500 m in diameter and 100 m deep with cliffs up to 100 m high, called Lake Balapan or the Atomic Lake. Six surface and one excavation explosion between 1949 and 1965 had the biggest impact on local and regional radioactive contamination of the environment and on the exposure of the population near SNTS. The most egregious event by far in terms of collective dose of fallout on humans was the very first Soviet atomic bomb test on 29 August 1949, which, for the local population, was comparable to the Chernobyl accident. Ten to twenty-five per cent of the radioactive fallout of these explosions occurred within a distance of 100 to 300 km from the explosion site.

The United Nations General Assembly adopted resolution 52/169 M at its 52nd session on 16 December 1997, in which it called on the international community to assist the Government of Kazakhstan in its efforts to meet the needs of those affected by nuclear testing at the Semipalatinsk nuclear test site. In early 1998, the Government of Kazakhstan established a Governmental Inter-Ministerial Committee to identify the issues affecting the Semipalatinsk region.

*Source:* EPR Kazakhstan, UNECE 2000.

75. In Central and Eastern Europe, the most common approach has been to set up longer-term remediation programmes, registering the sites, investigating them and setting up a monitoring system. The actual remediation takes place where there is an immediate need or

when it makes sense economically because of the possible site redevelopment, or, as in the case of several Soviet air bases, the possibility to recover commercially interesting quantities of fuel. Only a few countries can afford a systematic clean-up of the sites. Some sites have been cleaned up in relation to privatization. Where this has occurred, environmental audits were made during the privatization process, and the remediation obligations were then included in the sales contract, usually as an obligation on the government to accept liability for past environmental damage and use the proceeds from privatization for remediation.

76. In EECCA countries, where the contaminated sites are much bigger, very little has been done for site remediation apart from programmes and projects supported by donors. In view of the magnitude of the problem these also targeted only the most immediate threats.

77. A particular legacy of contaminated sites was left by the wars in South East Europe. The most important contaminated sites include: destroyed and burned-down chemical plants and oil refineries, minefields, emergency waste dumps, stockpiles of obsolete pharmaceuticals, spilled PCBs from electrical transformers and military vehicles, and impact sites of depleted uranium shells.

**Box 26: Environment and health effects in Serbian hot spots**

The United Nations Environment Programme (UNEP)/United Nations Centre for Human Settlements (UNCHS) Balkans Task Force identified environmental hot spots in four areas in Serbia: Pancevo, Kragujevac, Novi Sad and Bor. Among the more problematic pollutants identified were: in Pancevo, 1,2-dichloroethane (EDC) in water and sediments and mercury contamination of the ground; in Kragujevac, dioxin and PCB contamination of the ground; in Novi Sad, volatile hydrocarbons, polyaromatic hydrocarbons (PAHs), PCBs and mercury in water and sediments; and in Bor, large amounts of SO<sub>2</sub> released into the air; PCBs and heavy metals in the soil. PCBs, dioxin, PAHs, mercury and SO<sub>2</sub> pose significant hazards to human health. The extent of the hazard depends on the length, exposure pathway, and dose of exposure. No systematic research, apart from occasional case reports, into possible harm to health from these pollutants in the hot spots has been undertaken. There has also been concern about the possible health effects of depleted uranium.

Where the 1999 bombing damaged or destroyed industrial sites, environmental pollution was added to pre-existing environmental pollution, mainly in those areas that were already highly polluted due to the presence of industrial activities. The extent of the damage to health from increased exposure to environmental hazards as a result of the armed conflict has not been assessed and so is unknown.

Source: EPR Yugoslavia, UNECE 2002.

78. Major international efforts are under way to clear the minefields, but it will take several years before most of the areas are safe. In the meantime human casualties are regular. The industrial sites that are reconstructed are also cleaned up in the process, although little is known about the standards. For other remediation the South East European countries lack resources and they rely heavily on international assistance.

#### **Lessons learned**

- The lack of an effective legal and policy framework for waste management has given rise to serious problems. Poorly managed and illegal landfills pose a significant health hazard to the population living in their vicinity. This is especially the case where medical and other hazardous waste is not handled separately. Internal migrants may be at particular risk since they often have to settle in the least desirable areas, including those near landfills.
- The best results in improving municipal waste management seem to have been achieved by opening the waste management market and assigning clear responsibility for waste to its producers. This may be facilitated by training the appropriate municipal staff in how to proceed with the privatization of waste management.
- Active industries need to be held accountable for the waste that they generate and its environmental impact. Accumulated industrial waste, and particularly hazardous waste, from industries that are no longer in operation needs to be inventoried and addressed through government action plans.
- Contaminated sites, and especially “hot spots,” require huge amounts of capital for clean-up and rehabilitation. This cannot be done in a short time, and it cannot be done without external financial assistance.
- Special attention needs to be given to radioactive contaminated sites, including former nuclear test sites and abandoned military sites, which are the main sources of radioactive contamination of the population and the environment.

#### **Major challenges ahead**

- Improve the legal and regulatory framework for waste management (including hazardous waste) and introduce economic instruments as an incentive for better waste management and clean-up of production processes and waste sites that pose a threat to human health.
- Develop and implement an overall strategy for waste management.
- Assess the environmental impact of existing municipal landfills and take measures to reduce that impact; assessment should proceed on the basis of priority landfill areas.
- Allocate more responsibility to local authorities for municipal and industrial waste, and support them in this responsibility.
- Improve the management of health-care waste by standardizing record-keeping, monitoring and good waste-management practices.
- Monitor groundwater and surface water in the vicinity of landfills, hazardous waste and contaminated sites, and ensure that contaminated groundwater is not used for drinking or irrigation.
- Launch public information campaigns on municipal waste management, focusing on waste prevention, through the educational system and the mass media.
- Relocate people and farm animals away from contaminated sites.
- Assess the environmental impact, and especially the human health impact, of all contaminated sites.
- Collect and find ways to contain, store and destroy obsolete pesticides and other toxic chemicals in order to reduce risk.
- Decontaminate sites and prevent any further contamination; establish a framework for international cooperation in this area.

### **D. Biodiversity**

79. Within the countries in transition there are several biogeographic regions and a vast variety of habitats and ecosystems, some of which disappeared from Western Europe in the past two centuries. Large steppes, a variety of karstic and alpine habitats, deserts and semi-deserts as well as wetlands in river deltas and floodplains are characteristic of the area. Certain areas, such as karst (Slovenia, Croatia, Lithuania), landlocked seas and large lakes with endemic flora and fauna (Caspian, Aral, Sevan, Issyk-Kul), and wetlands (Baltic, Danube delta, Black Sea) are biodiversity hot spots. The area is also an important migratory corridor and wintering area for birds from Northern Europe (Baltic and Black Seas, the large lakes). The Caucasus and Central Asian mountains are the origin of some of the fruit and animal species that were domesticated thousands of years ago and are now bred throughout the world. The countries host populations of mammals that are mostly much larger than in Western Europe or have vanished from there, e.g. large bear and wolf populations in Southeast Europe, the Carpathians and the Caucasus, the only

population of European bison in Poland and Belarus, snow leopard in Kyrgyzstan, tiger in the Russian Federation's Maritime Territory.

80. While the industrial towns and regions in Central and Eastern Europe and EECCA were heavily polluted, a wealth of biodiversity was preserved due to agricultural policies and strong State control of forests and protected areas, including extensive zones of prohibited access along borders and around military sites. At the same time, agriculture had a significant negative impact on biodiversity too. Forests were cut, steppes ploughed, wetlands drained (e.g. 70 per cent of all the marshland in Lithuania) and extensive irrigation systems built. Large dams for irrigation and hydropower production have disrupted spawning areas and changed microclimate and flooding patterns, while irrigation in some cases caused salinization of the soil.

81. Industry had a more indirect impact. Use of space, acid rain and water pollution had the largest impacts, causing changes in species composition, defoliation of trees and eutrophication of waters. Mining has led to land degradation and pollution from ore processing and sludge disposal. Recently quarries for construction material have been expanding and increasing in numbers, quite often illegally. The Chernobyl accident had a dramatic effect on the natural environment, from acid rain, mutations and long-term damage, to changes in species composition and the appearance of new pathogenic fungi.

**Box 27: Biodiversity in Albania**

Albania is rich in biodiversity, hosting a wide variety of ecosystems ranging from marine and coastal ecosystems to broadleaved forests and alpine grasslands, and many rare and endemic species (e.g. 91 globally threatened animal species). However, biodiversity was largely affected by intensive agriculture in the past and urbanization, poaching and illegal logging in the present. Since the 1960s drainage, reclamation of swamps and deforestation for new agricultural land, terracing and cultivation of pastures have all been widespread, and turned almost 30 per cent of the forestland and about half the pastureland into cultivated land. As a result, the area of agricultural land almost doubled between 1960 and 1980, resulting in soil erosion and in the loss or degradation of ecologically important ecosystems.

Over the past decade, biodiversity has been threatened by urbanization and uncontrolled land use as well as by the overuse or illegal use of natural resources. Deforestation is one of the major environmental problems, particularly in peri-urban and rural forests. Hunting is attracting numerous foreign tourists, and has a significant impact on some species populations. Foreign vessels fishing offshore damage the habitats of fish and crustaceans, and cause severe damage to benthic forms off the Ionic coast.

Biodiversity conservation is based mainly on the designation of protected areas using World Conservation Union (IUCN) categories and guidelines. The protected area network is being extended and reformed with the objective of covering more than 10 per cent of the national territory.

*Source:* EPR Albania, UNECE 2002.

82. The economic situation in a country has a considerable impact on how the natural resources are preserved and managed. In countries where the economic situation has improved (e.g. Slovenia, Lithuania, Estonia) forests are expanding on former farmland and populations of large carnivores and hoofed animals are increasing as extensive agriculture and grazing are abandoned in less favourable areas. At the same time in countries in economic hardship pastures and forests are overused owing to illegal cutting near settlements (Armenia, Kyrgyzstan, Albania) as well as poaching and illegal fishing endangering some of species (e.g. drastic fall in the snow leopard population in Kyrgyzstan after the country opened up to foreigners and trade).

83. In the transition period, the use of fertilizers and pesticides plummeted, which resulted in richer biodiversity and growing populations of some species, (e.g. insects, birds of prey). The transport infrastructure, however, is an increasing threat to biodiversity owing to habitat fragmentation, air pollution and other pollution risks. In the Baltic, the seaports are increasing

capacity for oil transport, which threatens migratory bird species. Road construction takes up a lot of space and fragments habitats (e.g. highways crossing the bear range in Slovenia, Via Baltica crossing marshlands, large road infrastructure plans in Armenia).

84. Where tourism is well managed and, particularly, where ecotourism is being developed, biodiversity benefits. However, in those countries where tourism is not well managed and is leading to uncontrolled construction and infrastructure development, it also poses a significant threat to biodiversity.

85. The abundance of biodiversity is creating a strong case for designating protected areas and for biodiversity conservation outside protected areas. But the institutional and financial resources are insufficient to respond adequately to this pressure. The consequences are an important implementation gap between legislation and conservation on the ground, difficulties with institutional development and significant involvement of domestic and international NGOs in the conservation efforts.

**Box 28: Biodiversity management in the Russian Federation**

Russia has responsibility for managing and conserving a large share of the world's wilderness and biodiversity. It has made significant strides in addressing some of its nature conservation challenges. The legislative and regulatory base of nature conservation has evolved quickly and comprehensively and is being refined to facilitate implementation. A number of natural resource inventories have been compiled, and the Russian Red Book of Endangered Species has been published. There has been a continuing expansion of the system of protected areas, which, in 1999, covered 5.5 per cent of the country (or close to 1 million square kilometres).

However, without the infusion of additional financial support, protected areas will not be able to fulfil their main functions. Such a setback would be of both national and global significance. Outside protected areas, Russia's immense forests and related wilderness have a major role in regard to biodiversity and the global carbon cycle. The 70 per cent decline in timber harvesting in the 1990s has partly relieved forest resources from pressures associated with often unsustainable forestry practices. Nevertheless, in some instances, unsustainable and sometimes illegal forestry practices continue to affect highly valuable old growth forest and protected areas.

*Source:* EPR Russia, OECD in cooperation with UNECE 1999

86. All countries have some areas protected for nature conservation, the total protected area ranging from 3 per cent (Kyrgyzstan) to 11.2 per cent (Lithuania).

**Box 29: Nature conservation management in Lithuania**

As recommended in its Environmental Performance Review in 1998, Lithuania began to take a systematic approach to nature conservation management in late 1999. Major concrete actions include: the creation of the unified classification of Lithuanian habitats; the preparation of an overview comparing national classification systems with the EU Palearctic habitat classification system; the identification of NATURA 2000 areas in accordance with national and EU criteria; the verification of plant species which are supposed to be extinct or poorly documented in Lithuania; and the compilation of a list of species covered by the EU Habitats and Birds Directives, noting whether they receive national protective measures or not.

*Source:* EPR Lithuania Follow-up Report, UNECE 2000.

87. Protected areas are mostly managed by State agencies under the environment ministries, in some cases also by national academies of science or national forestry services. In some countries protected areas have advisory boards. Much importance is given to monitoring, licensing (hunting, fishing, gathering) and control of use, but rarely to the provision of guidelines for sustainable use. Management is hindered by complex administration and management

problems of landownership (privatization and restitution), conflicting mandates of various authorities, outdated or non-existent management plans, a lack of funding, as well as insufficient collaboration and integration with other sectors. The borders of protected areas were often set arbitrarily in a way that avoids larger settlements but ignores natural borders between ecosystems. Where zoning exists, zones are often regarded as indicators of the potential and constraints for development rather than as a management tool, and buffer zones are too small, therefore development and exploitation that reach the boundaries of the protected area often damage the habitats within. Several countries avoided the problem of private ownership by not allowing the privatization of land in protected areas; others are trying to achieve more sustainable resource use through the conditional leasing of some plots of land to private tenants.

#### **Lessons learned**

- Effective biodiversity conservation requires overall spatial planning and sustainable economic development for the population surrounding the protected areas.
- Biodiversity conservation must be viewed in an intersectoral context, taking into account, for instance, agricultural practices, tourism and recreation, energy, and trade, as well as the environment.
- The enforcement of laws for biodiversity and protected areas has been hampered by a lack of institutional clarity among various inspectorates and licensing authorities.

#### **Major challenges ahead**

- Develop, adopt and implement, preferably in tandem, national biodiversity strategies and national spatial plans.
- Rationalize inspection and licensing services.
- Establish effective management regimes for commercial uses of protected areas or other areas of significant biodiversity (e.g. forests, fisheries, game).
- Develop ecotourism.

### **E. Mineral resources**

88. Countries in the region have significant reserves of mineral resources, including oil, natural gas, coal, ferrous and non-ferrous metal ores and construction materials (e.g., gravel and ornamental stones). For a number of them, especially SEE and EECCA countries, mineral resources represent the most important sector of the economy. In the more affluent Central European countries, mineral resources have lost their economic importance. EECCA countries face the challenge of implementing sustainable resource extraction and processing practices.

89. Mineral resource extraction has multiple direct and indirect impacts on the environment. Mines cause degradation of the landscape including land subsidence and the related destruction of human settlements. Tailings from mining and ore processing are stored in heaps, ponds or tailing dams. They are sources both of air pollution from dust containing heavy metals that are sometimes radioactive, and of surface water, groundwater and soil contamination through leaching chemicals. Mines and ore processing produce waste waters that contain heavy metals, chemicals used in processing, high levels of salinity or particles, for example, from coal washing. Oil and natural gas extraction and transport also cause soil, water and air contamination through waste and leakage of products from wells and pipelines, for instance in the Caspian region, where the soil in extensive areas is soaked with oil due to poor extraction practices.

**Box 30: The Madneuli mining and processing complex, Bolnisi region, Georgia**

The Madneuli non-ferrous metal (copper, lead, zinc, barite and gold) deposit was discovered in 1956 and is one of the largest in the Caucasus. It has been exploited since 1975, and in 1996 it became a joint-stock company (JSC Madneuli). Although Madneuli produces high quality copper concentrate, that is exported mainly to Bulgaria, Turkey, Russia, Yemen, and Iran, about 75-80% of its fixed capital asset is obsolete and new technologies for copper exploitation are required. About 12.5 million tons of gold-containing overburden rocks from open-pit operations have been accumulated in the Madneuli mine area. In 1994, a Georgian-Australian joint venture – “Quartzite” – was established to extract gold using the “in situ” cyanide leaching method. Seven million tons of materials containing 1.3 g/t of Au have been already processed.

The mine is located in an agricultural region where about 20-30,000 people live. Local products, mainly vegetables, are supplied to the inhabitants of Tbilisi and its surroundings. The local environment is very degraded and arable lands are becoming useless. The design of the mine and processing operation includes a closed water circuit. However, during the periods that the mine has been shut down, wastewater was discharged directly into the river, without pre-treatment. Also, open pit acid waters containing heavy metals pollute the Kura river tributaries. In 1992, the copper content in the Kazretula River was 220 times higher than the legal standard and the zinc content was 65 times higher. Monitoring of groundwater in strategic places near the tailing dam and the gold extraction operation, that uses a highly toxic sodium cyanide solution, is not carried out. Mining waste heaps are accumulated in more than 240 hectares near the open pit, exposed to wind and rain erosion. They are sources of dust, soil, surface and groundwater pollution. About 31 tons of dust containing heavy metals such as cobalt, chromium, cadmium, nickel, arsenic, and others, are emitted annually. Environmental rehabilitation of damaged areas is not a common practice in Madneuli. So far, only 42 hectares have been recultivated and some trees have been planted in the walls of the tailing dam to avoid erosion. Due to its huge volume (20.8 million tons) and area (68.2 hectares), the tailing dam requires a more effective water balance monitoring in order to prevent accidental spills.

*Source:* EPR Georgia, UNECE 2003

90. Indirect impacts of mineral resource extraction include a high share of coal used for energy generation in coal-rich countries, leading to air pollution by SO<sub>x</sub>, NO<sub>x</sub> and higher emissions of CO<sub>2</sub>. Mineral extraction and processing require large inputs of energy.

91. In the short term, mineral resources are an important or even the main source of export revenues in many countries in transition. In all the countries, the underground resources are State-owned, and mining permits or concessions are issued to qualified companies. Some, but not many, mining and oil companies have been privatized. Overall, there has been little investment in the mining sector, which has led to a deterioration of the facilities. Virtually all investment that has taken place has been made by foreign companies. Much more investment is needed to introduce modern, efficient technologies that also have a lower impact on the environment.

92. In Central and Eastern Europe, economy ministries are usually responsible for mining, while in EECCA there are a number of natural resources ministries that are responsible both for mineral resources and the environment. Some countries have introduced new mineral resource legislation, introducing rules that should secure sustainable resource management in a market economy, including the polluter pays principle. Mining permits are usually issued to qualified domestic and foreign operators, and should generally be based on an application that includes, inter alia, an environmental impact assessment and an environmental rehabilitation plan. Operators have to pay royalties, environmental charges and in some countries set up a liquidation fund to pay for the clean-up at the end of operation. In practice, however, given the economic importance of the mines, these requirements are not systematically enforced.



#### **Lessons learned**

- Mineral resource extraction and processing can have a serious environmental impact on soil, groundwater and surface water, air quality, and biodiversity. Heavy metals can also enter the food chain. It should be regulated with care, also in cases where new technologies and international investors are involved.
- Mine tailings, which contain heavy metals and may also contain other toxic substances (e.g., cyanide), pose a significant potential threat of accidents with catastrophic effect. Plans to manage the tailings must take into account not only human error and infrastructure maintenance but also natural disasters, such as the possible impact of heavy rainfall or snow causing, for example, severe flooding.
- The inability to monitor emissions and effluent discharges, and their environmental effects, will defeat any attempt to implement an effective environmental management system.

#### **Major challenges ahead**

- Approve new mining plants based on international mining standards and practices, and encourage the introduction of environmental management systems in existing plants, including the adoption of ISO 14000 and EMAS systems.
- Introduce cleaner technologies in mining and mineral processing, focusing on the source of pollution (the process), on recycling where possible, and on reducing pollution by treating air and water to minimize the environmental impact.
- Undertake a detailed assessment of mining hot spots (e.g., abandoned tailings and active mine sites) and develop rehabilitation plans for these sites; implement fully the Polluter-Pays-Principle.
- Establish mechanisms to ensure high-quality environmental monitoring and establish and enforce self-monitoring of water and air pollution.
- Assert the authority of environmental authorities in planning, permitting and compliance management of the mineral resource industry.

### **III. DEVELOPMENT OF ENVIRONMENTAL POLICY TOOLS**

#### **A. Policy framework**

93. Nearly all countries in the region have developed new national environmental policies in the transition period. The scope and objectives of these new policies have varied widely. Following the adoption of the Environmental Action Programme for Central and Eastern Europe (EAP) at the Lucerne Conference in 1993, many countries developed National Environmental Action Plans (NEAPs). Many of these plans were developed in cooperation with the World Bank and others were usually prepared with the assistance of other donors. In some cases, countries first prepared broader environmental strategies and, in others, the broader framework was set by the national economic development strategies. Most countries in transition have recently concluded or are in the process of preparing the second generation of NEAPs.

#### **Box 31: Environmental policy documents in Estonia**

Estonia adopted its first National Environmental Strategy (NES) in 1997. The Strategy was immediately followed by the 1998 National Environmental Action Plan (NEAP) and, in mid-2001 the second NEAP was issued. While NEAP 1 was worked out in close cooperation with the European Union, NEAP 2 has been managed entirely by Estonian experts. The broad involvement of all potential stakeholders that characterized the NEAP 1 was even more evident during the formulation of NEAP 2. More than 250 specialists combined their efforts to update and refine the action necessary to maintain progress toward achievement of the ten NES policy goals. The Internet was extensively used during this exercise as a communication tool between partners and to invite public comments.

*Source:* EPR Estonia, Second Review, UNECE 2001.

94. According to the Environmental Action Programme (EAP), NEAPs should be documents defining a limited number of priorities within a realistic budget framework. In the best cases, priority-setting exercises have brought together a wide range of stakeholders, who have helped gather and examine environmental information and have participated in the priority-setting

exercises. Priority-setting also requires strong analysis of policy issues, based on objective and transparent criteria. In reality, NEAPs usually turned out as comprehensive lists of environmental programmes and projects, ranging from institution building and public participation to infrastructure investments. It seems that environmental policy and investment has been a low priority in the economic and fiscal policies of virtually all the countries in the region, and that the NEAPs were an attempt to increase this priority.

95. One year after the EAP was adopted, Ministers at the Second Ministerial Conference on Environment and Health in Europe agreed to establish National Environmental Health Action Plans (NEHAPs) as well. These have provided an important opportunity for discussions involving both health and environment ministries, as well as others, but, in general, coordinated implementation has fallen short of expectations.

**Box 32: The National Environmental Health Action Plan in  
the former Yugoslav Republic of Macedonia**

The National Environmental Health Action Plan (NEHAP) was developed by the Ministry of Health, and adopted by the Government in 1999. It was drawn up with WHO support and the participation of a large working group which, in addition to the Ministry of Health, involved many other agencies and research institutions, including the Ministry of Environment and Physical Planning. Several of the recommendations made in the NEHAP are consistent with those made in the NEAP, which was adopted in 1996 and developed also with the participation of health sector representatives.

NEHAP forms the policy roadmap for progress on key environmental health issues. However, the lack of finance for implementation, too many priorities and the need to further work out a number of actions to be taken are slowing down implementation. In addition, the decentralization and reform process is now shifting attention and resources towards Local Environment and Health Action Plans (LEHAPs).

*Source:* EPR the former Yugoslav Republic of Macedonia, UNECE 2002.

96. Almost all environmental policies have lacked adequate financing strategies – a key problem, in particular for implementation, and a common one across all sectors of public policy in the region. NEAPs did have some effect on the allocation of national investment resources in the countries that had some funds available for the environment because of the high priority of environmental issues during the democratic changes. In the less affluent countries, there have been virtually no increases in domestic funding as a result of NEAPs. Because of the overall low priority for the environment, NEAPs are still seen as sectoral programmes of the environment ministries, and even integration of NEAPs with NEHAPs has proven a major challenge.

97. In order to assist local and regional authorities in defining their policies and setting priorities two approaches were introduced across the region with the assistance of donors and support of NGOs. Local Environmental Action Plans (LEAPs) or Regional Environmental Action Plans (REAPs) are intended as a tool for setting environmental policy objectives and investment priorities, and Local Agendas 21 (LA21) are broad-based participatory processes for developing a long-term vision of sustainable development. LEHAPs are also being developed as a means of integrating municipal environmental and health planning. All of these local plans employ methodologies that are based on public participation and stakeholder dialogue.

98. Hundreds of LEAPs, LA21s and LEHAPs have been developed so far across the region, often with strong support from local NGOs. Some donors have focused on the regional and local levels, and have used LEAP and LA21 processes to programme their activities. LEAPs, LEHAPs and LA21 have strengthened the local capacity for implementation of environmental policies and have focused the limited resources of local and regional authorities, even if many of them (like NEAPs) present very long lists of proposed actions. In some cases, however, implementation has

been constrained by poor cooperation between central ministries and local and regional authorities.

99. One of the most interesting areas of development in environmental policy has been the introduction of various policy instruments. Countries have used a “mix” of policy instruments for pollution management, in which ambient standards, environmental permits and pollution charges for industrial facilities have all played prominent roles. Many countries introduced these instruments under central planning. In the early years of the transition, new democratic governments strengthened existing instruments and added new ones.

### **Spatial planning**

100. In the transition period, the countries have been facing a number of challenges related to physical planning and territorial development:

- Deteriorating housing building and poor maintenance because of inability of many to pay the service;
- Overcrowded living conditions, burdened with noise;
- Migration of people from rural areas to the cities where they expect better economic opportunities and significant numbers of refugees from wars and internal conflicts, putting additional pressure on housing and urban infrastructure;
- Growing demand for detached, single family houses in suburban areas around the cities because of lack of quality housing in the cities;
- Prevalence of unauthorized construction and land speculation in conditions of undeveloped real estate markets;
- Villages with few or without basic municipal services such as roads, water supply and sanitation;
- Redevelopment of old industrial and mining cities and regions;
- Integration of Trans-European Networks in the territorial structure of the countries;
- Reconstruction after conflicts and natural disasters such as earthquakes or floods.

#### **Box 33: Spatial planning issues in the former Yugoslav Republic of Macedonia**

Changes in the economic structure of the country, the opening-up of previously protected markets, the increasing roles of the private sector and communities, decentralization and the new role of local governments, are creating new challenges and opportunities for the former Yugoslav Republic of Macedonia's spatial planning system. Large cities have emerged as places of economic growth and investment at the expense of growing unemployment and poverty in rural communities. These trends have exacerbated previous imbalances in the distribution of the population and long-standing inequalities in access to essential social and infrastructure services. The new spatial planning system will need to respond to significant economic, social and environmental challenges in order to address these concerns.

*Source:* EPR the former Yugoslav Republic of Macedonia, UNECE 2002

101. One of the important processes in the transition has been land restitution and privatization. Different approaches were taken in terms of giving land back and providing compensation for agricultural land, forests, buildings and parts of buildings. But in all cases the process has taken a long time because of poor land information systems and conflicts with recent users of the properties. All the countries are developing integrated spatial information systems and land cadastres as a precondition for land management in the market economy.

102. In most CEE countries, spatial planning is integrated in the same ministry as environmental protection, while in most EECCA this responsibility remains with separate ministries of construction or urban development. New legal systems for physical planning

consist of laws on physical planning, construction, and housing. These are complemented by legislation on agricultural land, forests, and environment. The systems usually include three levels of spatial plans: national, regional and local. The national government is responsible for the national level and the local authorities are responsible for regulating land-use and spatial planning at the local level. There are different solutions for the regional level, depending on the institutional structure, but they usually involve the local authorities. The objectives of these new systems are linked to balanced socio- economic development, protection of environment, natural and built heritage, and rational use of space. In some sub-regions there is also good cross border cooperation in planning for common infrastructure and areas along the borders.

103. Spatial planning and construction permit processes are prominent fields where public participation is applied in practice. Most laws require it in the decision making process, and, in more and more countries, physical plans are subject to Strategic Environmental Assessment.

#### **Lessons learned**

- NEAPs have been important exercises as first attempts to articulate national environmental concerns comprehensively. They have also been successful in inviting stakeholder dialogue and raising public awareness. However, they have failed in most cases to define clear priorities that match available resources.
- An important obstacle to successful implementation of LEAPs and LEHAPs has been insufficient cooperation and coordination between the central ministries and the local and regional authorities owing to the lack of institutional capacity at both ends and in some cases rivalry between them. This problem can be compounded when two ministries – health and environment – are involved.
- Spatial planning can be an effective tool not only for environmental planning but also for sustainable development, since it is an instrument of integration.

#### **Major challenges ahead**

- Develop the second generation of national environmental policies with a limited number of justified priorities, realistic implementation schedules, and secure institutional capacity and financial resources.
- Integrate environmental policies into general economic policies and sectoral policies, and strengthen inter-ministerial cooperation in the development of environment policies and the identification of priorities.
- Strengthen spatial planning as a tool for integration and introduce strategic environmental assessment.
- Promote LEAPs and LEHAPs with broad public participation in all local communities.
- Involve local authorities more actively in carrying out and implementing EIAs.

## **B. Regulatory instruments**

### **1. Environmental permits**

104. There are several types of permits for new projects and existing installations: construction permits, pollution and environmental permits, natural resource licences (resource use permits) and operating permits. Different types of permits apply in different countries, but usually the procedure for obtaining permits is rather complex and involves a number of different authorities that have to give their consent or even conduct studies, such as ecological expertise or setting maximum allowable pollution for individual installations. This complexity threatens the effectiveness of the system.

105. In nearly all countries, industrial plants and other large, stationary pollution sources must have environmental permits. These set air and water emission limits, which, in principle, are based on ambient standards and conditions. Most Central and East European and EECCA environmental authorities have set separate emissions requirements for each point source at a facility and for each pollutant emitted. Pollution charges and non-compliance fees are in turn tied to emissions. Polluters pay charges on their air and water pollution discharges up to their permit

limits; they pay non-compliance fees, usually at rates several times higher, for pollution levels above these limits.

**Box 34: Examples of licensing in the Republic of Moldova**

Water users in the Republic of Moldova have to obtain an environmental licence and pay tax on this use. A licence also has to be obtained for waste-water discharges. Waste-water discharges into bodies of water are authorized only where they cannot result in an increase of the pollution level above the limits. Otherwise, the water user has to ensure treatment so that water effluents meet the established standards.

The Republic of Moldova also operates a system of permits to pollute. Emission limits are established on the basis of an ecological examination and are included in ecological passports. National standards are based on the State Standards GOST. When a licence is issued by the Department for Environmental Protection for a stationary source, regional agencies monitor the construction. The operator has to prepare and regularly verify norms identifying emission sources and their annual limits on the basis of what is permitted. Larger emission sources, e.g. power plants, measure some of their own air emissions, although not continuously. In most cases, verification is done on the basis of energy and mass balance.

*Source: EPR Republic of Moldova, UNECE 1998.*

106. There is often a separation of permitting and inspection functions within and between institutions. In some countries central governments and environmental authorities are responsible for permitting. In others, environmental inspectors who work at regional or local environmental authorities carry out that function. In some cases, problems occur when permitting and control functions are within the same institution, and the institution issuing the permits is also involved in inspection. The credibility of the system may be affected, as there is a conflict of interest.

107. Even though environmental officials and inspectors can be part of the same institution, serious lack of communication in issuing and controlling permits is another complicating factor, with the inspectors not being adequately informed about the detailed contents of permits granted to the enterprises. This weakens the ability of inspectors to check compliance and undermines their credibility.

**Box 35: Permitting, licensing and inspection in Georgia**

Environmental permits are issued by the Ministry of the Environment. Licensing for natural resource extraction requires an environmental permit and is also issued by the Ministry of the Environment, but the actual decision on licensing is taken by an inter-ministerial licensing council, of which there are four: one for mineral resources, one for surface water, one for flora and one for fauna. Oil and gas extraction, however, were exempted from this process. Licensing decisions for their use are solely the responsibility of the Oil and Gas Agency. Use of forest resources used to be subject to a decision by the Licensing Council for flora, but this was moved in 1999 to the Forestry Department. In both these cases, there would appear to be a conflict of interest between licensing and operation of economic activities.

Most problematic, however, is the inspection process. In what was considered an anti-corruption move, a law was passed requiring the prior permission of the Court before any inspection can take place. The Court also has the authority to deny permission to inspect. While this may have reduced what was an unnecessary number of inspections in the past, it has seriously hampered the appropriate implementation of a key control mechanism for ensuring compliance with the environmental permit and licence.

*Source: EPR Georgia, UNECE 2003.*

108. There may also be a number of institutions involved in issuing permits, including non-environmental permits (e.g. construction, sanitation, safety). This separation of permitting procedures means that operators have to go through fragmented, time- and resource-consuming application processes. Some Central and East European and EECCA countries are moving towards integrated permitting in line with the EU Directive on Integrated Pollution Prevention and Control (IPPC).

## 2. Environmental standards

109. Ambient standards set maximum concentrations of a pollutant in a specific medium, such as air, water or soil, to protect human health and ecosystems. Such standards can indicate targets for policy measures. Before transition, nearly all countries in the region had developed ambient standards for air and water; however, air and water standards in Central and Eastern Europe and the former Soviet Union were often much more stringent than those in Western Europe or than the guidelines recommended by the World Health Organization (WHO).

110. The number of ambient standards also exceeded the administrative capacities of countries to monitor them. In effect, although countries set a great many standards, they could measure pollution levels for only a few. For many pollutants, monitoring equipment is not sensitive enough to measure concentrations at the low levels they specified.

### **Box 36: Environmental standards in Uzbekistan**

Uzbekistan inherited its standards from the former Soviet Union. Many are outdated and inconsistent with WHO guidelines, and are not backed by realistic implementation plans and targets. Since 1994, the country has been revising its system of air and water quality standards, based on maximum allowable concentrations (MACs), which are defined as the maximum permitted concentrations of toxic substances in air, water and soil that are not harmful to human health. These MACs are set by the Ministry of Health according to their measurement frequency and toxicity. There are 479 air quality standards, 1,138 safety standards and 1,050 MACs for water. Discharge or emission limits for enterprises are listed in their operating permits and are derived from MACs. Different standards apply to drinking water, surface water, groundwater, effluent discharges, and fisheries; air quality standards, specified as MACs; soil standards, including standards for toxic substances in soil; safety standards, which oblige all industrial enterprises to incorporate environmental and safety features in their design plans.

*Source:* EPR Uzbekistan, UNECE 2001.

111. In many countries (mainly EECCA) these standards are still in force, while in others they have gradually been replaced by more realistic ambient standards and permissible limits for a limited number of air pollutants, emission standards such as on exhaust gas from motor vehicles, product standards such as UNECE motor fuels standards, limits and bans on the use of ozone-depleting substances, health protection regulations, water quality standards for drinking and bathing water, quality objectives for soil and groundwater, and regulations on waste-water discharges.

112. National systems of standardization comparable to Western systems have been established especially in Central and Eastern Europe. In the EU applicant countries EU standards are being introduced in the process of transposition of EU legislation.

## 3. Environmental impact assessment

113. Environmental impact assessment (EIAs) is the obligatory assessment of the impact of proposed activities on the environment and an identification of measures that would be needed to comply with existing standards and regulations. EIA is also a mandatory part of the environmental permitting procedure in terms of use of nature, pollution and construction.

114. All countries in the region have a system of project environmental assessment linked to the permitting system for facilities and installations. The environmental assessment model differs from country to country.

115. In EECCA countries, environmental assessments are based on the Soviet system of ecological expertise introduced in the late 1980s. Under this system, expert committees review

the environmental impacts of almost all new industrial projects, as well as many modifications to existing activities. The committees can make binding decisions to block or modify the projects. There were few provisions for public information or participation, and in most EECCA countries these have remained underdeveloped.

116. Since 1989, nearly all Central and East European countries have adopted EIA procedures. In some countries, the EU 1985 EIA legislation and the 1991 Espoo Convention on EIA in a Transboundary context have encouraged the development of these procedures. EIA legislation in most countries requires public access to impact studies and provides for a notice and comment period, and often a public hearing.

**Box 37: EIA in Bulgaria**

EIA, environmental audits and environmental management are the cornerstones of the integration of environmental objectives into enterprise activities in Bulgaria. The law on EIA was among the earliest pieces of legislation in the transition period and was modelled on the EU Directive. Implementation of EIA is adapted to changing circumstances every two years. From the beginning the EIA process included a permitting system that is not normally found elsewhere. The Environment Ministry has also developed a national programme for environmental audits of enterprises, carried out by licensed experts and paid for by the enterprise. The experiences with EIA as well as with environmental audits have had two major effects. First, they increased the Ministry's confidence that it could implement the IPPC Directive of the European Union at an early date (foreseen for 2003). Second, EIA and environmental audits have been included in the privatization process, enabling past environmental damage to be assessed together with compliance requirements.

*Source:* EPR Bulgaria, UNECE 2000.

117. In a number of countries, EIA may explicitly include the assessment of health impacts too. There may also be separate environmental health assessments not only for projects, but also for policies and programmes.

**Box 38: Environmental health assessment in Uzbekistan**

In Uzbekistan, the Sanitary Epidemiological Stations systematically assess compliance with the sanitary and epidemiological environmental health rules of land-use planning for the development of new settlements, or new industrial areas, as well as of any activity with a potential effect on health and the environment (e.g. construction, reconstruction and improvements of industries, development of new products, materials, foods; pollution prevention and remediation of surface and subsoil). From a conceptual point of view, these assessments are similar to carrying out environmental health assessments of projects, policies and development plans. Importantly, no activity can be initiated without a certificate of compliance. The scope of both the health and the ecological expertise is defined by law, which stipulates that the two processes are complementary.

*Source:* EPR Uzbekistan, UNECE 2001.

118. In several countries, environmental authorities have faced capacity problems in trying to implement EIA procedures. This has been a particular problem in countries that have carried out many assessments without strong institutional capacities. It has been difficult for them to ensure quality assessments. In these countries, the authorities should consider applying stricter screening procedures to make sure that limited resources are used to review the most important projects. A further problem is that many officials who work on EIAs – in particular locally – could use additional training and standardized manuals on technical issues related to EIA procedures, as well as training in managing public participation and conducting public hearings. In addition, environmental impact statements have often been of poor quality. Several Central and East European countries, including the Czech Republic and Croatia, have addressed this issue by establishing accreditation systems for consultants who prepare these documents. A few countries have introduced a formal “scoping” process to specify elements and approaches for each impact statement. This process should help focus analysis on key project impacts.

#### **Lessons learned**

- The permitting and licensing process is a very important environmental policy tool, because it sets conditions for projects and provides the framework for subsequent compliance and enforcement. It also provides a crucial opportunity for public participation. Very complex permitting systems are not very helpful because, apart from deterring investors, they spread responsibility over many institutions and may reduce transparency.
- A limited number of realistic standards can be more effective than many very high standards that cannot be adequately monitored or enforced.
- EIA is generally more rigorous and participatory than the system of State ecological expertise and is therefore preferable. EIA is an important and effective mechanism not only for assessment but also for integration, but its implementation often requires capacity-building within the environment ministries.

#### **Major challenges ahead**

- Establish integrated permits in line with IPPC and with other sectors.
- Clarify and rationalize institutional responsibilities for permitting and licensing and facilitate implementation.
- Streamline ambient standards to ensure that the most important pollutants are monitored.
- Develop product standards and follow the development in relation to new chemical substances.
- Develop the capability to implement EIA fully with independent expertise for assessment and participation of the public.
- Ensure that the results of EIAs are transparent and accessible to the public.

### **C. Economic instruments**

119. Most transition countries have established systems for pollution charges and non-compliance fees, mainly for air emissions, water effluents and waste disposal. Fairly similar charges for the use and extraction of natural resources, such as water abstraction, logging, mineral extraction as well as hunting and fishing, are also in use. These charges have generally been introduced in conjunction with a permit system: a base charge is applied for permitted emissions and a penalty rate encourages compliance with the permitted standard.

120. Before their independence, several countries had no experience with economic instruments for the environment. In the 1990s many countries introduced pollution charges and payments for natural resource use to raise revenue for environmental investment, create incentives for pollution control and reduction, enforce permit requirements and implement the polluter pays principle. Although the present systems of pollution charges are extensive, they do not function properly. They fail to meet what should be their main goal: to modify the behaviour of people and institutions toward better environmental protection. The instruments provide little incentive for pollution reduction, and revenue-raising has been their most important purpose.

#### **Box 39: Environmental charges in Armenia**

A 1997 government decision on environmental charges introduced nature conservation and use charges for the use of surface and groundwater; the extraction of mineral resources; air emissions of dangerous substances from stationary sources; fuel, road motor vehicles and emissions from mobile sources; discharges of dangerous substances to water; and waste disposal. The system was intended chiefly to raise revenue. However, of a projected revenue of 890 million drams in 1998, only about 30 million were collected. Apparently, families on average incomes could not afford the new charges.

*Source: EPR Armenia, UNECE 2000.*

121. The underlying reasons for this are:
- Low prices for the use of natural resources;
  - The low level of pollution charges, which are not high enough to influence the polluter's behaviour significantly;



- The low effectiveness of fines and penalties for non-compliance, which do not provide real incentives for keeping emissions within allowable limits;
- The high number of pollutants on which charges are levied and the administrative complexities of the system;
- The low collection rate of pollution charges, because of poor enforcement and limited monitoring capacity; the absence of strong inspection mechanisms to control payment of fines and penalties; and the lack of complementarities with command-and-control instruments;
- The wide discretionary powers of environmental authorities, which give them the right to adjust emission limits and waive payments;
- A lack of or poor understanding of the links between policy instruments, environmental priorities and environmental investment;
- A limited institutional capacity to design the detailed programmes and mechanisms for implementing the instruments;
- The perception that economic instruments are not viable under the present economic situation;
- Controversies regarding the use of revenues, which also influences cross-ministerial and sectoral cooperation.

122. A few countries have taken (and others have considered) steps to strengthen pollution charge and non-compliance fee systems, and pollution management more generally. However, from the start of the transition, environmental authorities have concentrated on maintaining existing charge rates in the face of inflation and opposition from polluters. Lithuania has simplified its system for air pollution charges, reducing the number of rates and pollutants covered. In Ukraine, a proposal was made to cut the number of pollutants subject to charges from hundreds to 25 air and 9 major water pollutants. These improvements could be useful for other countries.

**Box 40: Framework for partnerships in Estonia**

In general, the State has regulated and controlled industrial pollution through instruments such as media-specific permits accompanied by ambient standards. The level of the standards and the strictness of enforcement have determined the actual level of performance. Recently, co-regulatory instruments, such as negotiated agreements, have attracted the attention of policy makers in Estonia. These voluntary agreements contain commitments by enterprises to certain investments for further pollution abatement and environmental management initiatives such as the implementation of accredited environmental management systems.

After the recent restructuring of the Ministry of Environment the tasks of issuing and enforcing permits have been strengthened and clearly divided between County Environmental Departments and the Environmental Inspectorate respectively, thus avoiding possible conflicts of interests. Fines for violations of permits, however, are still low and do not offer a real incentive to industry to invest in order to prevent violations. Implementation of the EU Integrated Pollution Prevention and Control Directive (96/61/EC) is a major development that will affect the industrial sector for years to come.

The number and use of economic instruments have increased over the past few years and so has the level of pollution charges. In view of the deadlines for meeting EU requirements, a 20 per cent annual increase in the rate of pollution charges is envisaged for the next decade.

The privatization and public-private partnership initiatives have shown Estonia's potential to attract investors and to include environmental concerns in the sales contracts.

*Source:* EPR Estonia, Second Review, UNECE 2001.

123. The introduction of full-cost user pricing in sectors such as energy, water and waste management has also been initiated in most of Central and Eastern Europe and, to a lesser degree, in EECCA countries. Current user charges still remain well below full cost, and further increases in rates in line with increases in the purchasing power of citizens are inevitable for both

environmental and economic reasons. Although reducing price controls is generally a politically and socially sensitive issue where incomes are low, in the long term the benefits of improved services, environmental quality and more efficient resource use are expected to outweigh the initial price increases.

#### **Lessons learned**

- Pollution charges have been widely accepted as a revenue-raising instrument and, in some countries, also as an economic incentive for improving environmental performance. However, in only a few countries is the revenue earmarked for environmental purposes.
- In general, pollution charges and non-compliance fees have been set at a level too low to be effective.
- Non-payment of charges, even when they are relatively low, has been a serious and on-going constraint to raising sufficient revenue to support operations and investment.
- There has been a lack of consistency in the application of charges, largely due to institutional weaknesses.

#### **Major challenges ahead**

- Develop further and enforce pollution charges to provide real economic incentives.
- Ensure that the pollution charge system is designed in such a manner that charges only apply for emissions that can be measured at reasonable costs, and focus on increasing the charges for these emissions.
- Reduce the scope for discretion in implementation and enforcement of pollution charges.
- Use revenue from pollution charges and non-compliance fees to the extent possible for environmental programmes and projects.
- Ensure that decision-making regarding the allocation of revenue is transparent and the information accessible to all.
- Move toward the polluter pays principle and the user pays principle as quickly as possible.

### **D. Domestic environmental financing**

124. Macroeconomic imbalances and weak financial institutions have constrained the supply of affordable capital for investment by enterprises and public institutions throughout the region, though this is now changing in the countries where reform is more advanced. Environmental funds (usually capitalized by pollution charges) and policy reforms that have prompted enterprise demand for environmental investment have been important factors in this respect. In countries where reform has been slower, the economic context has been more difficult. In many countries, output is at about half its pre-transition levels. Environmental policies rarely provide sufficient incentives for action, while environmental funds have been smaller than in the more advanced countries. In a few countries, environmental investment appears to be negligible. Throughout the region, policies and institutions require further strengthening to mobilize and channel domestic resources for priority investment.

125. Sources of finance for environmental investment include enterprises, State, regional and local budgets, commercial banks and extrabudgetary environmental funds. In Eastern Europe and Central Asia, the State remains the major source of finance but the share of the State budget allocated to the environment is about 0.5 per cent or less.

126. Many environment ministries have established funds for specific environmental investments such as municipal infrastructure (water, waste, heating conversion), industrial pollution control, prevention technologies, education and the establishment of monitoring systems. These funds usually redistribute environmental fees, fines, eco-taxes and other resources, disbursing them in the form of grants and soft loans.

127. Furthermore, an effective financing system requires environmental strategies with clear goals and priorities, another area where progress is needed. There is a need for training and education in environmental management and financing, especially at the local level where local

governments are becoming increasingly responsible for providing major investments for public services such as water and waste management. In many countries, the capacity for preparing financially- and environmentally-sound projects should be increased.

### **1. Provision of environmental services and user fees**

128. In the transition period the responsibility for municipal services, such as water, solid waste, district heating and gas networks, along with full or partial ownership of the infrastructure and service companies, has been transferred to municipalities in most countries. In the process of restructuring of both municipalities and companies, sometimes larger regional companies were divided into smaller ones serving single municipalities, which caused additional, unnecessary cost. In other cases companies remained integrated, but their ownership was divided among municipalities. In waste management, municipal waste collection and landfills are usually run by municipalities, while hazardous waste and recycling schemes are managed or regulated nationally.

129. Various corporate structure models for the provision of these services have emerged. Most of the companies are still run by the municipalities in the form of public enterprises. Often the ownership of pipe networks and installations is public, while the service delivery is the responsibility of private or mixed public/private companies. In a few cases, usually involving the development of new infrastructure, private companies provide the entire service under concession contracts.

130. The prices of services are regulated by municipalities and by the national government. They have increased several times in this period in a move to substitute user payments for subsidies. Due to declining income and the deficient system of collecting payments, many individual users do not pay. Industries that were traditionally used to very low water prices are heavy users of drinking water, and many of them cannot pay their higher priced bills. Regardless of the low level of wages and potential efficiency gains in water use, still higher relative water prices will be required in the future to meet EU standards for drinking water and waste-water treatment. This will pose a serious challenge within the next years for social and economic reasons. Effective growth in revenues from drinking-water sales takes years to materialize and is linked to economic recovery.

131. The situation has improved significantly in the countries with a higher GDP, where the population could afford to pay user fees close to the full-cost recovery rate. This means that monthly utility bills as a share of household income are several times higher than in West Europe. But the sufficient revenue flow has enabled the municipalities to upgrade the level of service through investments and financing from environmental funds, international financial institutions, donors or even commercial banks. Investments include metering and better regulation of networks, more efficient pumps and boilers in district heating, repair and maintenance of pipeline networks, and new waste-water treatment plants. These investments have made up the lion's share of the total environmental expenditure of the Central and East European countries. The private sector has been especially involved in the development of local natural-gas distribution networks.

132. In less affluent countries, the levels of user charges are still much too low to secure cost recovery. New investment is limited to donor-funded demonstration projects and hot spots with the most acute problems, but the infrastructure in general is still deteriorating and occurrences of water-borne diseases such as hepatitis are frequent. The absence of a revenue stream has kept

private companies away from these countries. International financial institutions have a hard time justifying investments with very remote possibility of cost recovery.

## 2. Environmental funds

133. The earmarking of public revenues and the use of environmental funds offer a number of opportunities, but also raise some concerns. Earmarking remains a much debated issue: it can lead to the inefficient allocation of resources if the money could generate greater net social and environmental benefits by being spent elsewhere than the earmarked sector.

134. Some of these funds are basically budget lines earmarked for environmental purposes and managed by a designated section of the ministry, regional or local authority. Others are independent organizations with their own corporate and governance structure and relative financial independence from the government, but under policy guidance from the environment ministry. With debt-for-environment swaps two environmental funds were established in Poland and Bulgaria. They are replenished from the outstanding debt of the country and jointly governed by the country and the donors.

### **Box 41: The municipal environmental protection funds in Bulgaria**

Parallel to the establishment of a national fund, municipal funds have also been established. The two types of funds are governed by the same regulation. The funds available to the municipalities are used to finance mainly the priorities listed in the National Environmental Protection Fund, but within the territory of the municipality. Assistance is normally given in the form of small grants, but the regulation does not exclude loans. The principal sources of income of municipal funds are: (i) a percentage of the municipal taxes for the use of natural resources; (ii) a percentage of the pollution fines collected; (iii) a percentage of the taxes on (permitted) pollution up to the maximum permissible level; (iv) fines imposed for breaking municipal regulations; and (v) donations from local or foreign sources.

*Source:* EPR Bulgaria Second Review, UNECE 2000.

135. The environmental funds receive money from a variety of sources, including pollution charges, pollution fines, loans and grants from international donors and international financial institutions, loan repayments with interest, proceeds from privatization, debt swaps, and profits from financial operations. From these funds they offer a number of financing products, including grants, interest-free and soft loans, interest subsidies and equity investments. The choice of product for an individual fund depends on the level of development of the financial market in the country and the environmental policy objectives. In some cases too rigid an earmarking of funds has proven counterproductive in view of the very quickly changing needs and demand of the environment sector.

### **Box 42: The Environmental Fund in the former Yugoslav Republic of Macedonia**

The establishment of an environmental fund was first considered in the 1996-1997 Law on the Environment and Nature Protection and Promotion. Three articles in the Law contemplated a source of funding for environmental projects. The Environment Fund was created in April 1998 within the Ministry of the Environment. The legal basis for the establishment of an independent fund is provided in article 66 of the Law on the Organization and Work of the State Administration; however, implementation requires a separate law, establishing the structure and activities of the Fund, and this law is still awaiting governmental approval.

According to the Law on the Environment and Nature Protection and Promotion, the basic aim of the Fund is to provide finance for encouraging preventive and remedial measures for the environment and natural resources. The Fund's assets are spent in accordance with a programme based on NEAP and LEAP priorities. The Fund has recently prepared a list of priority projects, taken from among project applications from local governments. To improve this process, the Fund has been sending questionnaires to municipalities and visiting municipalities and local government officials to identify potential environmental investment projects.

*Source:* EPR the former Yugoslav Republic of Macedonia, UNECE 2002.

136. The State and regional funds in Central and Eastern Europe are in general large enough to finance environmental investments, and focus on water infrastructure, air protection measures and solid waste. Their clients are municipalities and municipal companies and industrial enterprises. Some funds also provide grants for other environmental activities such as education, nature conservation, monitoring and research. In the EECCA countries, the funds support investments to a lesser extent, mainly because they do not have enough money. They focus more on education, monitoring and nature protection, and are an important source of funding for the environmental authorities themselves.

#### **Lessons learned**

- The provision of environmental services has improved considerably where user charges cover the cost of services, and declined where revenues from user charges were too low.
- The use of environmental funds as mechanisms for managing earmarked revenues and delivering subsidized finance for environmental investments has helped many governments to overcome or mitigate a number of conditions during economic transition that hamper the full application of the polluter pays principle and impede the emergence or effective use of financing mechanisms characteristic of mature market economies. These conditions include weak or ineffective enforcement of environmental policy, severe financial constraints on enterprises and households, uncertainties in fiscal systems, poorly developed commercial capital markets and inadequate information about the cost of environmental damage. While the funds may be considered a “second-best” and transitional alternative to a more direct application of the polluter pays principle, in many countries they have proven useful.
- In other countries, however, experience with environmental funds has been mixed. Often governments have not permitted separate funds but have preferred to establish a designated line in the State budget. In many of these cases, there has been little to no transparency in how the funds are used.
- In countries that are having difficulty in paying staff salaries or that have insufficient funds for the operating costs of the environment ministries, including their regional and local offices, funds earmarked for environmental projects and programmes have been used to cover civil service payrolls and to support, for example, travel and participation in environment-related international meetings.

#### **Major challenges ahead**

- Eliminate, as far as possible, subsidies that have detrimental effects on the environment.
- Secure cost-effective services that meet environmental standards and can be afforded by the population.
- Explore possibilities to find more financial resources for the environment as well as mechanisms to channel revenue to environmental projects, e.g., through the establishment of an Environmental Fund alone or in combination with other policy instruments.
- Where environment funds exist or are envisaged, set up independent review mechanisms or oversight boards and rules of procedure that ensure transparency.

### **E. Information tools**

#### **1. Monitoring**

137. Countries in transition have complex systems of environmental monitoring involving a number of government agencies and scientific institutions. These include hydrometeorology committees or institutes, health authorities and institutes, inspectorates, the polluting enterprises and in some case environmental agencies. Because of the variety of actors and complex reporting duties there are problems with coordination, incompatible formats and management of databases.

**Box 43: Environmental monitoring in Croatia**

Environmental State monitoring is financed from the State budget. The Environmental Protection Information System contains emission inventory data, selected administrative data on the state of the environment, expert and scientific data from local and foreign institutions and international organizations, metadata and other vital environmental information. The Government prescribes the monitoring contents and methodologies, the reporting obligations and the procedures for both data transmission and management (including processing and disclosure). If a company plans a project that requires an EIA, it must measure its emissions and keep records and take part in the monitoring of natural and other phenomena caused by its environmental pollution. As part of the Environmental Protection Information System, an environmental emission cadastre was established in 1995. This is an integrated pollution register, including data on air emissions, solid waste and waste-water generation, as well as general information about the respective pollution sources. Emission sources are obliged to provide data, which are integrated into a central database (ORACLE). An inter-sectoral body was established to coordinate the cadastre. This system will comply with EU data requirements.

Source: EPR Croatia, UNECE 1999.

138. To streamline the monitoring systems some countries have established special coordination bodies involving all the institutions concerned. The monitoring systems are generally divided into three levels: national, municipal, and industrial. The ministries are responsible for national monitoring, and municipalities and regions are responsible for monitoring that is specific to their needs. At the industrial level the countries are moving toward self-monitoring and reporting.

139. Most countries are establishing integrated information systems, but this is a significant challenge as they lack staff and equipment funds to upgrade the monitoring systems. In information collection, manual sampling still prevails over online monitoring equipment. The quality of the information collected is improving with more and more laboratories involved in environmental monitoring receiving international accreditation.

140. The EU candidate countries have already become full members in the European Environment Agency and participate in its information network EIONET. Other countries cooperate with the Agency in preparation of the pan-European state-of-the-environment reports. So far two reports have been published, one in 1995 and another in 1998. The "Kiev assessment" will be published in 2003. The countries also participate in the UNEP Environment and Natural Resource Information Network (ENRIN).

## **2. Availability of information**

141. Effective environmental information systems are vital for environmental management, including the design and implementation of policy measures. At the start of the transition, most countries collected a large volume of environmental data, but the different agencies involved rarely shared data. Data quality was often uncertain, data collected were often incomplete, little work was done to analyse or synthesise data for policy development, and environmental information was rarely released to the public.

142. Countries in transition have now created national institutions and networks to bring together data from different monitoring networks (where available and in operation) and to share, analyse and disseminate them. The amount of environmental data provided to the public has increased, and most countries now produce annual *state-of-the-environment reports*. An increasing number provide this information through the Internet and other electronic networks too.

143. Despite this progress, some important weaknesses remain. In all countries in transition, emissions monitoring is poor and does not fulfil the needs of complex pollution charge systems. In addition, environmental information systems have faced budget cuts.

### **3. Access to information, public participation and access to justice**

144. Public information and participation play an important role in encouraging pollution reduction. Over the course of transition, most governments have increased public access to environmental information, as well as opportunities for public participation in decision-making. These measures have helped to improve public knowledge and awareness of environmental issues. In a number of countries, NGOs, industries and other stakeholders have participated in the formulation of environmental policies. This has helped develop consensus for environmental goals as well as the actions to achieve them.

145. In the region, the legal framework and institutions needed to secure public participation and access to information and justice have slowly begun to emerge since 1989. The rights and freedoms of citizens, and general rights to information were included in the constitutions. Aside from constitutional rights, several countries have provisions guaranteeing the right to participation in decision-making either in environmental protection laws or in administrative laws or codes. However, these are usually general, declarative provisions that rarely give specific rights or lay down concrete procedures for participation in the different types of decisions. In several countries, the absence of specific regulations or guidelines means that the real access to information and public participation has yet to happen. Although the situation varies from country to country, the general trend shows that the strongest tools for citizen participation are EIA and local referendums. The situation regarding public participation in law-making, policies, programmes and plans, especially nationally, is rather mixed.

#### **Box 44: Right to environmental information in Armenia**

The Principles of Legislation on Nature Protection (1991) grant every citizen the right to demand and obtain complete and reliable information on environmental conditions. There is no special regulation on the conditions and procedures for accessing environmental information, but one of the NEAP priorities is to develop a detailed stakeholder participation plan. It is expected to become a communication activity, involving the collection, processing and analysis of environmental data and their effective dissemination to all stakeholders. The participation plan is being developed jointly by the Government and NGOs.

*Source:* EPR Armenia, UNECE 2000.

146. A few countries plan to introduce new instruments that will promote public awareness such as pollutant release and transfer registers. Their use in the region will need to take account of data quality problems related to self-reported emissions data. In addition, environmental management systems can encourage enterprises to undertake voluntary environmental management efforts and to disclose their emissions levels and enterprise goals to the public. As yet, few environmental authorities have considered the full potential of public awareness and participation in regard to enforcement. For many countries, greater public access to information and participation – together with closer cooperation between government, environmental NGOs, and business and industry – can provide new pillars for strengthening pollution management, as well as for environmental policy in general, particularly regionally and locally.

147. Citizens in many of these countries experience difficulties due to administrative barriers to court access, lack of liberal standing rules, high court fees, lack of interim and permanent injunctive relief, and slow court procedures.

148. An important impulse for improving public access to information has been the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to

Justice in Environmental Matters. So far most ratifications have been in the countries in transition, and the Convention itself is to a significant extent linked to the work done on linking participatory democracy and environment in these countries. Using this experience the Convention set a new standard that requires improvements in legislation and practices also in the Western countries, and is becoming a global benchmark for governance.

#### 4. Environmental training and education

149. Environmental education has been an important priority in the countries in transition for two reasons: to raise public awareness and influence the behaviour of the population, and to secure sufficient human resources for the growing demand of environmental management. Environmental programmes have been included in curricula of kindergartens, primary and secondary schools, usually as a part of existing subjects and in some cases as an optional subject in secondary schools. Universities have introduced environmental curricula and courses at various schools. Because of the interdisciplinary nature of the environment several universities have established interdepartmental centres for the environment. Some newly established private universities have made the environment an important part of their curricula, many times in cooperation with universities from Western Europe and North America. Schools and universities have been involved in international environment education networks and programmes such as Eco-schools Network and GLOBE. Many students have studied environmental sciences at universities in the West.

##### **Box 45: Environmental education in Latvia**

Latvia prepared a National Environmental Communication and Education Strategy in 1999 with wide public discussion, followed after adoption by an action programme. The Strategy included tasks and objectives of environmental communication and education as well as separate communication strategies for eight different major target groups, and it foresaw the creation of a national environmental information centre.

For primary schools in Latvia, environmental education was defined by the Ministry of Education in 1998 as an interdisciplinary theme, which has been integrated into different subjects, and the Ministry prepared a "Guide" on environmental education. Within each district there is a network of coordinators for environmental education. In vocational schools, environmental education is carried out through environmental science, with an approved curriculum for 120 lessons.

*Source:* EPR Latvia Follow-up Report, UNECE 2000.

150. Effective environmental education has been hindered by the rigidity of the traditional education systems and the lack of dialogue between environment and education ministries. In some countries the lack of textbooks and teaching materials has been a problem. On the other hand, many NGOs, companies and other institutions involved in the environment have been actively participating in environmental education, either working with schools or organizing special short-term training for environmental professionals.

#### 5. Eco-labelling

151. In a few countries in transition environmental labels have been created for the promotion of environmentally acceptable products and manufacturing procedures. They are modelled on similar labels in Western Europe as instruments for changing consumption patterns and awarded to manufacturers of consumer goods that market environmentally friendlier products – either in terms of their use, or in terms of their waste characteristics. A number of products have received these labels, but there is little information on their commercial effect. Probably the main effect of eco-labels has been to recognize the environmental efforts and motivate the producers, and to establish a dialogue between industry and environmental authorities.



152. International eco-labels have also had an impact. Several international organic food certification networks are present in the region through their local NGO counterparts, along with numerous domestic organic and quality labels for food products. In a few cases, forests and wood-processing companies are applying for Forest Stewardship Council certification to be able to sell wood and wood products to Western markets.

#### **Lessons learned**

- In the more advanced of the countries in transition, there has been considerable progress toward integrated monitoring systems and self-monitoring by enterprises. However, in South East European and EECCA countries, in particular, systematic and reliable monitoring has almost ceased. All of the countries recognize the importance of re-establishing their monitoring systems, but this takes time and financial resources.
- Many of the countries in transition are Parties to the Aarhus Convention, and most of them are committed to providing access to environmental information to civil society. However, this is constrained both by the absence of reliable monitoring data and, often, by the capacity of environment ministries to organize the data and respond to all requests.
- In most countries, access to information is generally available only through the environment ministry; other ministries with environmental information, such as the ministry of agriculture or the ministry of industry (and privatization) rarely acknowledge their roles in this matter.
- Many countries also support public participation in environmental decision-making, especially through the EIA procedure; however, the absence of specific regulations or guidelines limits participation.
- NGOs, usually working in partnership with environment ministries, have been among the most active in informal environmental education, including through public awareness campaigns; but insufficient attention has been paid to environmental education through the formal education system at all levels.

#### **Major challenges ahead**

- Re-establish, strengthen and integrate environmental monitoring systems.
- Overcome the culture of secrecy and information control in various government institutions and ministries, and particularly those other than the environment ministries that also deal with environment-related information.
- Make environmental decision-making more transparent and establish the necessary procedures to implement laws and regulations on access to information and public participation in decision-making.
- Integrate environmental education into the formal school curricula at all levels, including technical and professional schools (e.g. hotel and other schools to train people in the tourist sector).
- Link environmental education to specific environmental issues in the country and in the local communities.
- Establish good cooperation with the media and work with them to educate the public on environmental issues.

## **IV. POLICY INTEGRATION**

153. One of the first achievements of environmental policy in the transition process in most countries was the establishment of an environment ministry. With this a new policy portfolio was established and the responsibility for national environmental management clearly assigned.

154. The newly established ministries have fought for their budget, staff and mandate in tight fiscal and economic conditions, as well as a general drive towards reducing government administration. They have developed environmental legislation based on the principles agreed at the United Nations Conference on Environment and Development (the Rio Conference), secured environmental financing and gradually started enforcement action. But in the early phases of institutional development the emphasis was on establishing the identity and authority of environment ministries in the government and society as a whole. At the same time, the sectoral institutions were restructuring and building capacity to operate in the new context, and the level of inter-ministerial dialogue and communication, as well as dialogue with stakeholders, has been

significantly lower than in mature Western democracies. To solve the major environmental problems of today, environmental concerns have to be integrated into sectoral policies.

**Box 46: Sustainable development as a tool of integration in Estonia**

In 1995, Estonia adopted the Act on Sustainable Development, the first of its kind in the ECE region. The National Commission on Sustainable Development was set up in 1996, headed by the Prime Minister, co-chaired by the Economy and the Environment Ministers and involving representatives of all other ministries. The Commission meets once a year. Its mandate includes: (1) assessing progress in sustainable development policy; (2) assessing the impact of sectoral activities such as energy, agriculture, natural and mineral resource exploitation, water use, fishery and territorial marine zone exploitation; (3) consulting all relevant stakeholders on sustainable development problems; and (4) proposing draft legislation on sustainable development and research on forestry and transport. The terms of reference for a national sustainable development strategy were approved in April 2001. Following the NEAP example, it will be formulated after wide democratic consultation.

*Source: EPR Estonia, Second Review, 2001.*

155. The environment ministries have been among the first to initiate sectoral integration through the development of environmental strategies, action plans, sustainable development strategies, physical plans and other policy initiatives. Other ministries and stakeholders were invited to participate, but the level of their involvement and cooperation, as well as of public participation, was usually below expectations. The consequence is a proliferation of sectoral strategies with uncoordinated and many times conflicting goals, even when they do include environmental objectives.

**A. Agriculture**

156. Agriculture in many transition countries was characterized by large-scale (cooperative) farms, monoculture crops, inefficient irrigation schemes and high input of fertilizers and pesticides. Environmental problems associated with the agricultural sector included eutrofication, desertification, air pollution, soil and ground water pollution. Following the collapse of many export markets in the early 1990's and the privatization of land environmental pressures from agriculture greatly eased.

**Box 47: Lithuania's agricultural strategy**

The Strategy on Agriculture, approved in June 2000, includes reference to organic farming and agro-environmental issues. Implementation of this policy is facilitated by good cooperation between the Ministries of Environment and of Agriculture. The main objectives of the national environmental policy for agriculture are sustainable development, conservation of biodiversity, application of agricultural production methods compatible with the requirements of environmental protection, primarily of groundwater and surface waters. Current programmes include the promotion of organic farming with economic instruments. Since 2000, organic farms have been certified according to the organic farming rules adopted in 1999, which are in full agreement with EU Regulation 2092/91 and its amendments.

*Source: EPR Lithuania Follow-up Report, UNECE 2000.*

157. With transition the agricultural sector in many countries came close to collapse owing to its inefficiency, landownership issues and competition from less expensive, higher-quality products from Western countries. The use of pesticides and fertilizers dropped sharply with the end of subsidies. Many people moved to the cities looking for better job opportunities.

158. Significant problems remain, however, particularly concerning practices that lead to the exhaustion and erosion of the land, the irrational use of water through poor irrigation systems, and a lack of proper drainage. Furthermore, there is little in place in South East European and EECCA countries to prevent a return to the heavy use of fertilizers and pesticides once the economic situation improves.

**Box 48: Cotton and wheat in Uzbekistan**

Two crops have strategic significance for Uzbekistan: wheat for domestic purposes and cotton as a source of income from export. Cotton is the most important crop. Uzbekistan is the world's fifth largest producer of cotton, and more than half of the irrigated land is under cotton production. Water scarcity has been one result. Desertification has also been accelerated through intensive agriculture, wind, water and pasture erosion and secondary salinity. At present, 46 per cent of the irrigated land is saline, an increase from 38.2 per cent in 1982 and 42.8 per cent in 1995. The Government has begun a policy of "self-sufficiency in wheat," and wheat production has increased by more than 200 per cent since 1994.

*Source:* EPR Uzbekistan, UNECE 2001.

159. Some countries have introduced environmental objectives into their agricultural policies, and many have passed more stringent legislation on pesticide and fertilizer use, as well as codes of good agricultural practices.

160. The Central and East European countries have also introduced policies and programmes supporting environmentally friendly farming and especially organic farming in cooperation with domestic and international NGOs. The number of participating farms is growing, as is their market share.

**Box 49: Good agricultural practices in Latvia**

The Code of Good Agricultural Practice for Latvia was prepared by the Ministry for Environmental Protection and Regional Development and the Ministry of Agriculture, according to EU requirements and Helsinki Commission recommendations. Most of the new demands will be obligatory for farmers operating in sensitive zones and those receiving assistance from the EU Special Accession programme for Agriculture and Rural Development (SAPARD). Big farms will be regulated by the Law on Pollution, since they fall under IPPC requirements.

*Source:* EPR Latvia Follow-up Report, UNECE 2000.

161. Still, agriculture is one of the main environmental threats to groundwater quality. In most countries, there is little evidence of any real integration of environmental concerns into the agricultural sector. Where the (relatively weak) environment ministries try to play a role, they are often overpowered by the much stronger agriculture ministries.

## **B. Forestry**

162. Forests cover vast areas in the countries in transition, with the Russian Federation's forests accounting for nearly one fifth of the world's standing timber. These forests are home to numerous plant and animal species.

163. Roundwood harvesting has fallen dramatically as a result of the decline and restructuring of the wood-processing industry, increasing logging costs in terms of energy and labour, and falling global timber prices. But wood remains an export product. The more affluent countries have seen a decline in private owners' extraction of forest products, while in lower-income countries forests came under severe pressure as a source of firewood and construction timber in times of hardship. Illegal logging is an important factor in these countries, especially in regions with low forest cover.

164. Institutionally, forests are usually the responsibility of agriculture ministries, although in a few countries they are under the mandate of environment ministries. New forest, hunting and freshwater fishing laws were adopted in most countries in order to adapt to the new situation. In

recent years certification of sustainable forest management has emerged under the pressure of buyers in the global wood market.

**Box 50: Forests in Kyrgyzstan**

Forest cover has halved during the past 50 years. High energy prices, together with spreading poverty, have made illegal cutting a danger for forests in recent times. The high number of grazing livestock added pressure on forests, but the previous large-scale transport of livestock to mountainous areas for grazing has been progressively reduced. Today, a sharp decline in livestock numbers and an increase in areas covered with forest can be observed in mountainous regions, but pressure on forests close to settlements has increased. As forest cover has disappeared, floods and mudslides have become common, causing death and further accelerating erosion.

*Source:* EPR Kyrgyzstan, UNECE 2000.

165. Forests also have an important role in terms of ecosystem services, such as water retention, soil conservation, habitat for species as well as recreation. The picking of non-timber products such as berries, medicinal plants and mushrooms has traditionally been popular in the region, and various rules have been introduced to guarantee the right of people to use forests for these purposes and to maintain the ecological balance.

### C. Energy

166. The countries in transition are rich in energy sources, including coal, oil and natural gas, as well as hydropower in the mountains and on big rivers. Energy production and supply were synonymous with progress throughout the twentieth century, and the energy sector was considered of strategic importance during the socialist period. The countries were aiming mostly at energy self-sufficiency rather than cost-efficiency. This led, for example, to the development of a brown coal and lignite-based power industry that employed entire regions in mining and related activities. These regions became the hot spots of air and water pollution as well as land degradation. The exploitation of hydropower was characterized by large dams on rivers that significantly altered river habitats and water regimes. The oil and gas industry was also managed in a way that disrupted the environment during extraction, transport and processing.

**Box 51: National Energy Strategy in Lithuania**

The National Energy Strategy of Lithuania, approved in 1999, takes into account the essential requirements and guidelines of the European Association Treaty, the Energy Charter Treaty and other international agreements in energy, and the principles of the energy policy of the European Union and its member States. One of the main priorities of the Strategy is to reduce the negative impact of the energy sector on the environment, including nuclear safety requirements.

*Source:* EPR Lithuania Follow-up Report, UNECE 2000.

167. Because of the lack of market mechanisms and exposure to global markets, the socialist countries responded to the 1973 oil crisis by increasing domestic supply rather than by increasing energy efficiency. The strong, but polluting, power supply sector and energy-intensive basic industries led to very high energy and pollution intensities in the countries in transition at the end of the 1980s, and problems such as forest decline and widespread respiratory diseases in the big cities.

168. During the transition process, energy consumption and the pollution linked to it fell with the drop in industrial production. Energy policies have been determined by two conflicting

considerations. One has been increasing economic and environmental efficiency through market liberalization, including the closure of unprofitable lignite mines and power plants. The other has been the social problems resulting from redundancies in the energy sector as well as price increases for industry and households. In these circumstances privatization, market liberalization, more efficient production and demand-side management have progressed rather slowly. Polluting power plants were refurbished rather than shut down, and energy prices for households have remained below prices on the European market. Direct and indirect subsidies continue for social reasons.

**Box 52: Energy and environment in Serbia and Montenegro**

The energy sector and the transport sector are Serbia and Montenegro's biggest air polluters. Its emissions of SO<sub>2</sub> and CO<sub>2</sub> per capita are higher than those of other countries. As investment in emission-reduction equipment has more or less ceased and the monitoring and enforcement of emissions limits have not been successful, emissions from the energy sector have grown considerably during the past decade.

There was a decrease in air emissions in the early 1990s mainly because of the marked decline in industry and the small decrease in transport. For the rest of the 1990s, air emissions increased much more than industrial output owing to higher household consumption resulting from low prices and energy loss. The price of household electricity is subsidized and covers only 20 per cent of the cost of production. During 2001, prices were increased by more than 50 per cent, but this is still short of full-cost recovery. Price increases have been postponed several times for social reasons. Most of the population, however, can afford higher energy prices and reducing energy use would save money. Higher energy prices will also reduce demand on the overloaded electric power system and reduce consumption of imported oil and gas products. Increased tariffs would strengthen the financial situation of the energy generation companies, which means that they can start to invest in rehabilitation and efficiency measures that have been very limited the past decade.

*Source:* EPR Yugoslavia, UNECE 2002.

169. Most countries did introduce some sort of policies to promote energy efficiency and renewable energy sources. Significant motivation for this came from donors and international financial institutions and in recent years from opportunities emerging from the flexible mechanisms of the Kyoto Protocol, but they are not yet showing a major impact because of the inertia and resistance in the power sector. Existing policies include energy efficiency agencies or centres, subsidized energy audits, energy conservation funds, EU energy-efficiency standards for home appliances, consumer information and other tools.

170. District heating systems were well developed in the socialist countries, especially in the large housing blocks surrounding industries. But the systems were inefficient in terms of losses and regulation, and there was no metering. In those countries where district heating is profitable, significant improvements were achieved by adequate management, the gradual introduction of regulation technology and metering, mostly paid for by energy savings. However, in the low-income countries, many district heating systems collapsed owing to the collapse of the industry that used to supply excess heat or because of a lack of revenues. In these cases the use of wood and coal for home heating increased, contributing to local air pollution and putting pressure on forest resources.

171. One of the notable successes in several Central and East European countries was fuel switching for home heating from coal to natural gas, both in district heating systems and in individual houses. This process was facilitated by the competitive price of natural gas, the drop in consumption by industrial users and the supply of sufficient quantities from the Russian Federation and other sources. A number of international financial institutions' projects in Central and Eastern Europe provided financing for investment in fuel switching, and private sector operators developed local networks in many towns based on concession contracts.

172. Many thermal power plants that could technically and politically switch their supply of coal (i.e. they are not tied to a specific coal mine) started using more energy-rich and less polluting imported coal, which decreased their emissions considerably. Also, the quality of oil products improved because new technologies were introduced to keep up with competitors. First attempts to introduce renewable energy have been made in Central and Eastern Europe with biomass, micro hydro, wind and solar (mainly for heating water) energy.

173. Energy intensity per unit of GDP is still several times higher than in the West, so there is a huge potential for more efficiency in power generation, industry and housing, as well as for meeting Kyoto targets with win-win projects. The obstacles to these are the energy intensity of the economy and social concerns.

174. Nuclear energy is an important and controversial industry in the countries in transition. Significant nuclear capacity was built throughout the region and some power plants were only completed recently or are still being built.

#### **D. Transport**

175. In the past countries in transition developed an extensive network of roads, railways and public transport services. Since 1990 the overall freight transport and passenger travel have decreased owing to economic decline. At the same time, road haulage and the use of private cars have shot up, creating demand for more motorways and urban roads.

176. Both the demand for, and the capacity of, public transport decreased in this period. This was to some extent the result of the unsatisfactory quality of service and obsolete vehicles. In addition, public subsidies were largely discontinued. This caused significant increase of fare prices. The situation is deteriorating further with emerging urban sprawl, a lack of cooperation between the environment and transport authorities and the inability of local governments to develop and finance complex urban public transport projects.

##### **Box 53: Transport policy in Slovenia**

After its Environmental Performance Review was completed, Slovenia adopted a Resolution on Transport Policy as the new basis for transport policy. It sets the three top priorities: reducing transport bottlenecks, increasing traffic safety (including environmental sub-goals) and easing the social impacts of opening of the transport market. In preparing the Resolution, the Ministry of Transport consulted with the Ministry of Environment and Physical Planning.

*Source:* EPR Slovenia Follow-up Report, UNECE 1999.

177. In those countries that could invest, most funds have been directed towards road reconstruction, or the upgrading and building of motorways. This was also seen as a contribution to the development of international transport corridors. The countries in transition inherited a well-developed road and other transport infrastructure. However, they have had few funds for maintenance, which has led to infrastructure deterioration and exacerbated environmental problems, such as dust in the cities.

**Box 54: Transport trends in Romania**

Since the early 1990s, there has been a tremendous increase in the number of passenger cars. In 1990, there were about 1.3 million passenger cars in Romania. Eight years later, the number had more than doubled to 2.8 million and the number of motor vehicles per 1,000 inhabitants had increased from 93 in 1990 to 164 in 1997. Public transport development has been completely the opposite. Between 1990 and 1999 the volume of intercity public transport dropped by more than 50 per cent. The number of people using urban public transport also plummeted by about 40 per cent during this period. The number of towns with urban passenger transport systems decreased, from 169 in 1993 to 142 in 1998.

The amount of freight transported by rail started to decline some 20 years ago. As a result, road transport has taken on a larger share of freight transport. In 1997, the railways and the roads carried almost the same volumes (measured in ton-km).

*Source:* EPR Romania, UNECE 2001.

178. Air emissions from road transport have been the most rapidly increasing environmental problem in the past decade owing to the remaining old vehicle fleets and the import of cheap used cars from the West. In very few countries have the negative effects been mitigated by the introduction of unleaded petrol, fuel standards, restrictions on the import of used cars, emission standards with annual inspections and the pricing of fuel.

179. Vehicle emissions comprise several hundred compounds. Significant pollutants include particulate matter (PM) (dust and soot), CO, CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>x</sub>, and hydrocarbons (HC). Vehicle emissions also include persistent compounds. Some toxic pollutants (e.g. Pb) are largely related to fuel composition or additives. Some emissions (e.g. NO<sub>x</sub>) are associated with the formation of secondary pollutants (e.g. ozone (O<sub>3</sub>)).

180. Other negative effects of growing road transport have been the use of space and the fragmentation of habitats, increasing noise, more and more severe traffic accidents, as well as risks and events related to the transport of hazardous goods in countries with shallow aquifers and karst.

181. In spite of the move towards more road transport and the use of private cars, the modal split between public transport and cars is still favourable compared to the West. This presents an opportunity for achieving more sustainable mobility with appropriate transport policies and investments. Most transport policies do mention sustainable mobility, but most environmental objectives are related to mitigation instead of structural change. The EU has made rail a priority in its Instrument for Structural Policies for Pre-accession (ISPA), so that transport-related disbursements for road and rail are about equal. But there is still a need to develop effective policies that will ensure the success of public transport projects.

## **E. Tourism**

182. Tourist regions are scattered around the countries in transition, and for some countries, such as Croatia, tourism is a major economic activity. Most popular are the coasts and mountains. In the past the tourism infrastructure was largely developed without regard to the environment or sustainable development. The consequences were air pollution from increased traffic, water pollution (sea and freshwater) from the discharges of waste water and solid waste, and soil pollution from litter and the proliferation of open dumps. Some areas are overcrowded in the tourist season, straining the environmental resources and infrastructure.

**Box 55: Environmental issues in Croatian tourism**

Before the war in the former Yugoslavia, tourism played a major role in the Croatian economy. Tourism from the West flourished along the Adriatic coast, particularly in the northern region of Istria, bringing in between US\$ 3.5 billion and 5.3 billion a year. Revenues generated directly or indirectly by tourism in 1998 reached almost US\$ 3 billion. The tourism sector employs around 90,000 workers, i.e. half the number it employed in the 1980s, but is expected to grow.

Tourism is more sensitive to environmental degradation than other economic activities, as the environment is its primary resource. The problem is largely due to the concentration of tourist activities in space and time. Another serious problem is the uncontrolled (and often illegal) building of secondary homes, which now occupy large areas envisaged as "tourist areas". This land-grabbing for the construction of tourist facilities, often in the most valuable places, overburdens the natural carrying capacity, and degrades the coastal landscape by altering the local vegetation, settlement pattern and architectural heritage.

Still, the quality of Croatia's natural environment is generally better than that of other European Mediterranean countries and the negative environmental impact of tourism does not yet prevent Croatia from being an attractive tourist destination from an environmental point of view. The Ministry of Tourism in its Tourism Strategy makes it clear that space and the environment should be preserved as the basis for tourism development.

*Source: EPR Croatia, UNECE 1999.*

183. The tourism industry has been undergoing change both in terms of structure – from State to private ownership – and in terms of tourist product. It is predicted that tourism will grow further with increasing security and prosperity in the region, improved transport infrastructure and more open borders.

184. A good environment is recognized as the prerequisite for a high-quality, high added-value tourism, and most national tourism strategies in the region claim sustainable tourism as the future model of development. At the same time, new infrastructure, for example, for resorts, roads, golf courses and ski lifts, is planned. These types of projects are subject to EIA in most countries, although this is not systematically enforced everywhere. Most coastal countries in Central and Eastern Europe also participate in the European Blue Flag for Beaches and Marinas programme, which is designed to inform tourists about beaches with good water quality by flying a blue flag.

**Box 56: Sustainable tourism development in Montenegro**

Montenegro has a large variety of natural attractions that have not yet been developed. These include sandy beaches, a rocky coastline and fjords, dramatic mountain scenery enhanced by lakes and river canyons. All of this is enriched by historical sites left by the different cultures that have inhabited the region throughout the centuries. However, in the main coastal tourist destinations that have been developed, unauthorized building developments have ruined many of the natural characteristics of the sites. There is a shortage of basic resources such as water and power during peak tourist periods, and sewage is a major problem. The Bay of Kotor, for example, has no sewage network; all houses or groups of houses have their own outlets and discharge directly into the sea. There are no waste-water treatment plants, and the outlets along the coastline are in bad condition.

The Government of Montenegro adopted its Tourism Master Plan in 2001. The Plan covers all aspects of the tourist industry, such as general infrastructure (transport, waste management, waste-water treatment and water and power supply) and nature conservation. This Master Plan must be implemented urgently, and planning regulations enforced, or Montenegro could lose its potential to serve as a major tourist destination.

*Source: EPR Yugoslavia, UNECE 2002.*

**F. Coastal zone management**



185. There are many coastlines of environmental, economic and recreational importance in the countries in transition, including along the Baltic, Adriatic, Black Sea and Caspian coasts. Some are areas of outstanding natural beauty and very important ecosystems. In the past they were developed for economic activities such as ports and industries linked to sea transport, oil refineries of PVC factories, and tourism. Some coastlines were closed to the public for military reasons. Coastal development was subject to strict zoning rules, including a public zone belt along the coastline itself.

**Box 57: Albania's new coastal zone management plan**

Pressures on the coastal area are extremely high. Rapid urban coastal development; a tendency to put short-term profits before the long-term conservation of coastal resources; recent events that have forced the hinterland population, particularly from the mountainous regions, to migrate towards the coast and to find new livelihoods, very often at the expense of the coastal environment; compensation schemes for land that have absorbed large tracts of the valuable coastal land; the non-existence of coastal plans and very little or no respect for them even when they do exist; the legacy of the former regime's lack of respect for the environment resulting in the location of polluting industries in the most attractive coastal areas; a general lack of human and financial resources for coastal management and law enforcement, are only some of the problems that the Albanian authorities are facing today and which allow very little optimism about the future of the coastal region.

In 2002, Albania adopted an integrated coastal zone management plan that will begin to address these problems comprehensively and effectively.

*Source:* EPR Albania, UNECE 2002.

186. In the transition period, various pressures on the coastal zone increased, including the development of new tourist facilities, the construction of secondary homes and population increases owing to better economic opportunities along the coast in some countries. These developments use the limited high-value space along the coast at the expense of natural ecosystems and generate water pollution that adds to the pollution load brought by the rivers from inland. In some places, intensive recreational activities, hunting and fishing threaten the very ecosystems that they rely on. The sea is also threatened by the pollution caused by marine transport and the penetration of exotic species.

187. Coastal countries have developed various approaches to dealing comprehensively with coastal zone management. These include physical planning, the designation of marine and land-based protected areas, pollution monitoring, waste-water treatment and rules on the environmental management of shipping. An important aspect of coastal zone management in all countries in transition is guaranteeing public access to the entire coastline.

## **G. Industry**

188. Industrial policy in the countries in transition has focused mainly on privatization, based on the assumption that private ownership will restructure and improve the performance of enterprises. Because of the high stakes and political interference from many sides, privatization became a long and complex process, which is still not finished in many countries.

189. Privatization, technological renewal and the requirements of the international market, as well as the enforcement of environmental standards, have helped to improve environmental management in industry. In some countries, the emergence of environmental liability issues in the privatization process has made industrial policy makers understand that environmental performance is a significant part of overall industrial performance.

190. The successful market leaders have introduced environmental management systems such as “Responsible Care” or ISO 14 000 and voluntarily improved their environmental performance ahead of, and beyond, legal standards. At the same time some of the most polluting industries have closed down for economic reasons.

191. Further significant results can be achieved by focusing initially on a few of the large and heavily polluting sectors where most of the (low-cost) investment needed appears to be financially viable. The main problem is that few of these industries have yet been privatized (like mines and power plants); they are generally unprofitable but subsidized and are not exposed to international markets.

**Box 58: Environmental management in a Croatian enterprise**

Croatia's largest company for oil and gas exploration and the production, refining, transport and distribution of gas and oil products has invested in waste-water treatment, thermal treatment of waste and abatement of air emission, and it provides information on its activities to the public. The representatives of company management together with specialists organize meetings in the vicinities of the industrial facilities to inform the public of new developments in the production processes, the environmental measures being taken, as well as the interest of developing local industrial facilities and its benefit to the public. Its basic policy objectives in environmental protection are EIA of new facilities, risk assessment in the case of accidents, R&D into cleaner technologies, the introduction of an environmental management system in accordance with ISO 14000, the improvement of the quality of products, and training of staff in environmental protection measures. Each sector and technological unit of the company has a department responsible for environmental protection. Since 1995, the company has drawn up an inventory of air, water and soil emissions, as well as of the generation of solid waste.

Most hazardous waste (floating and heavy sludge, unpumpable residues from waste-water pretreatment) is incinerated in-house. Oil waste is recycled as fuel and highly toxic waste is incinerated in a special furnace or treated at specialized, authorized companies. The company started to produce unleaded petrol in 1986.

*Source:* EPR Croatia, UNECE 1999.

192. While in the EU candidate countries the forthcoming creation of the common market and the implementation of the IPPC Directive are forcing the introduction of good environmental management in all companies, the situation in EECCA countries and South Eastern Europe is less favourable. Industry in these countries is dominated by large and very large enterprises, primarily within the heavily polluting sectors of mining and processing of metals, oil extraction and processing, and food production. Their technology is outdated, low production cost is viewed as their main competitive edge, and virtually no investment has been made in technologies for pollution prevention and control.

193. Industrial and trade associations have evolved along with privatization, from parts of the political establishment towards organizations that genuinely represent the business sector. This happened faster in the countries with more rapid privatization and was helped by the emergence of associations of foreign-owned companies, which introduced more Western modes of operation. With this process a structured dialogue between environmental institutions and industry started, especially in relation to the drafting of new laws and regulations. The results were not always in favour of stringent environmental standards, but they contributed to implementation. In some countries the dialogue has been particularly intensive regarding the rules on packaging and solid waste.

194. Industrial and trade associations also facilitate the development of voluntary agreements in the countries in transition. This instrument seems to be in its very early stages of application. One crucial element is the enforcement capacity of the government authorities to implement command-and-control measures should voluntary agreements not work. Another is the existence of credible and representative industrial associations that are able to negotiate on behalf of

industry. The few real voluntary agreements have been negotiated in countries where these circumstances exist.

195. What is more frequent in the countries in transition are local and national agreements of informal, non-binding cooperation between authorities and industry. They cover general cooperation between industrial associations and ministries on the environment, simplified and improved self-monitoring, pollution abatement investment, cooperation between municipalities and enterprises in providing environmental services, and others.

### **Integrating environmental concerns in privatization**

196. The privatization of enterprises and land has been one of the main economic and social reforms in the region in the past decade. It consisted of two processes: the restitution of property to the previous owners and the transfer of State or “socially owned” assets to private legal and physical persons. In most countries privatization was long and cumbersome. The procedures were very demanding from the legal, administrative and management point of view, and privatization generated much political controversy. The approach to restitution differed from country to country, ranging from giving back the land, buildings and other assets in their current state, to paying compensation. In some countries, forests and land in protected areas are exempt from restitution “in kind.”

197. Privatization also offered an important opportunity for the environmental clean-up of enterprises, especially where fresh investment was considered. Early in the transition, the business sector asked for clear rules about the transfer of environmental liability, but some governments started dealing with the issue only once some deals were blocked by uncertainty regarding clean-up.

198. Two basic methods were applied: holding the government liable or transferring liability to the investor but granting an appropriate discount on the price of the assets. In the first case, the government accepts liability and then actually performs the clean-up according to the risk assessment of the sites and the funds available. In the second, the new owner undertakes to clean up the site by a certain deadline. In both, the sale requires an environmental audit of the site and a rehabilitation or compliance plan, followed by clear provisions on liability in the legal documents of the transaction.

#### **Box 59: Privatization in Bulgaria**

The privatization of industry began following the adoption of the Privatization Law in 1992. The Privatization Agency was created for the privatization of larger enterprises, and any proceeds from the privatization were paid directly into the State budget. Environmental policy objectives were prominent in industrial privatization. In fact, no other sector's policy concerns were singled out in the process and the final purchase contracts. The Ministry of Environment and Waters is mandated to implement the related provisions with a view to: (a) encourage remediation of environmental damage caused by the enterprise prior to privatization; and (b) conclude a phased programme with new owners for full compliance with current environmental norms and standards. Different instruments are applied to the management of each of these objectives, but consistency is achieved through an underlying EIA, together with an analysis of past damage and an environmental audit.

*Source:* EPR Bulgaria Second Review, UNECE 2000.

199. Corporate governance and performance have improved more rapidly where foreign direct investment was involved in the privatization than in cases of voucher privatization and internal buyout. The privatized companies that compete on global markets were quite successful in improving their environmental performance, while the industries that remain under government control continue with old technologies and are politically immune to environmental action.

Where there are no legal provisions on past ecological damage clearly stating the respective responsibility of the previous (State) and new owners, privatization has not had a universally favourable impact on the environmental performance of enterprises. Some foreign investors are deterred by the prospect of possibly having to assume liability for past environmental damage and by the lack of clear and credible rules for ongoing pollution control.

**Box 60: Environmental concerns in privatization in Slovenia**

Slovenia's privatization scheme encouraged new environmentally friendly owners. The legal framework addresses environmental liabilities in a way that stimulates interest in tackling past pollution by making privatization easier. The Environmental Protection Act adds to the legal framework for the privatization of Slovenia's economy, since it lays down environmental protection requirements for businesses. As a result, buyers are obliged to assume the burden of past environmental pollution and negligence by their newly acquired enterprise.

The privatization regulation enables companies to reserve long-term funds to deal with past liabilities and invest in environmental improvement. Companies that are committed to making such investment need to obtain project endorsement from the Nature Protection Authority before submitting their ownership transfer programme to the Agency for Privatization and Restructuring. This provision was introduced to force environmental protection investment. At the same time, it reduces the privatization price of an enterprise, thereby facilitating the process.

*Source:* EPR Slovenia, UNECE 1997.

## H. Human health

200. According to several indicators, the health of the population in transition countries is poorer than that observed in the other countries of the region. The situation varies, with the worst health conditions found in the EECCA and SEE countries. Although a combination of social, economic and institutional issues impact on health and health care, the poor state of the environment is one of the most contributory causes.

201. The most prominent health risk factor is the poor quality of drinking water, especially in rural areas. Many decentralized water-supply systems do not have either protected sanitary zones around their drinking water sources or disinfecting facilities, and microbiological contamination of the water is not uncommon.

**Box 61: Waste water, solid wastes and the impact on health in Kyrgyzstan**

The discharge of waste water constitutes a significant burden on the environment and poses a health risk to the Kyrgyz population. Out of 350 waste-water treatment plants only 30 per cent meet sanitary standards. Even some health-care facilities, such as the hospital for infectious diseases in Bishkek, have no local waste treatment facilities. A large proportion of the population does not have access to collective sewage collection systems. Even in Bishkek, the communal sewage collection system covers only 63 per cent of the population. Sanitary installations are often lacking in schools and other public buildings. Combined with the common lack of piped water supply, such conditions create a high risk of the spread of infectious and parasitic diseases. Solid wastes, both uncollected and dumped in unprepared landfills, pose a risk to health through people's direct contacts with hazardous materials, through the possibility of diseases being spread by insects and rodents, the possible contamination of ground and surface water, and the drinking water supply systems. Of special concern are accumulated mining wastes. The contaminants can be spread through the wind-blown dust from the tailings and through the seeping of the water from the tailing ponds to the rivers.

*Source:* EPR Kyrgyzstan, UNECE 2000

202. The pollution of ambient air with suspended particulate matter is high in the cities and can lead to a range of adverse effects, such as respiratory and cardiovascular morbidity, as well as increases in the risk of premature death. High levels of NO<sub>2</sub>, associated with particulate pollution, indicate that transport is the main source of urban pollution. The poor technical condition of the cars, the poor quality of the fuel and the lack of effective emission control,

combined with an increase in traffic, will continue to be a threat to the health of the urban population. Energy production, using poor-quality fuel oil, contributes to the problem in some cities. Urban residents living close to busy roads are also heavily exposed to outdoor air pollutants when they are indoors.

203. There remain many areas in countries in transition that are highly polluted, mostly as a result of past industrial and mining activities. Accumulated industrial waste creates a potential risk to public health, due to the possibility of accidental contamination of the environmental media, e.g. rivers, or as a result of long-term emission of hazardous materials to air and water (surface and ground). Industrial wastes create chemical and radiological risks.

**Box 62: Environment and health in Kazakhstan**

In Kazakhstan, although there are health risks from past and present human-made environmental causes (like radiation, the Aral Sea disaster and traffic-related air pollution), it seems that environmental mortality and morbidity are more related to such issues as drinking-water quality, food quality, and nutrition. While the NEAP deals with environmental issues related to past and present industrialization and pollution prevention, the NEHAP deals more specifically with sanitary-hygiene issues related to present human health problems. Taking both plans together, the most important topics in environmental health are (1) drinking-water quality, sewage disposal and personal hygiene; (2) food quality and nutrition; (3) radiation safety; and (4) ambient air quality in large cities.

Source: EPR Kazakhstan, UNECE 2000

204. The leading role in protecting public health usually lies with the Ministry of Health and its subordinate institutions. The institutes of public health play a specific role in this system as centres of professional support and scientific resource for decision-making and implementation. In some countries these networks lack the resources to successfully conduct their work. At the same time, many actions necessary for improving health and living conditions also require the involvement of other sectors, including the economy, industry, transport, housing and environmental protection.

205. There is also an increased role for the public in the determination of environmental health conditions and actions. Several initiatives have been taken to increase the involvement of stakeholders and for effective measures, such as National Environmental Health Action Plans and participation of municipalities in the network of Healthy Cities.

**Box 63: Health effects of the Chernobyl accident**

The direct health impacts of the Chernobyl nuclear power plant accident and subsequent release of radionuclides include the effects of exposure to ionizing radiation, and those resulting from stress and relocation. They occurred largely in three groups of people: clean-up workers, especially those active in the first two years of decontamination; resident populations living in areas of high deposition of radionuclides; and populations who had to move home quickly to avoid radiation exposure. The large costs of clean-up activities may also indirectly have had health consequences. Two people died in the explosion; 134 people had radiation sickness, 28 of whom died in the first three months. The most striking effect is the unprecedented and unexpected increase in the incidence of thyroid cancer in children. Around 700 cases have been reported in Ukraine since the accident -- a massive increase in what is usually a very rare disease. These thyroid cancers were clearly associated with exposure to the radioactive iodine plume that followed the accident.

Source: EPR Ukraine, UNECE 2000

206. The development and adoption of NEAPs and NEHAPs represent an opportunity for looking at environmental and health issues from a cross-sectoral perspective, and for identifying priorities and areas for action on the basis of a broad consensus of stakeholders. This potential, however, remains largely untapped.

## I. The challenge

207. In the past ten years, the transition from a sectoral approach to a more integrated and preventive one has been steady in most countries. Many have seen the allocation of environmental responsibilities to national environmental committees and eventually to the highest level in environment ministries. In addition, (new) instruments have been adopted and applied to integrate environmental concerns better into economic transition and development. Environmental impact assessment, spatial planning, permit systems and user and polluter fees can all contribute to minimizing the environmental impact of economic sectors.

208. One important challenge is the strengthening of institutional coordination and cooperation amongst ministries linked to the environment, such as the ministries of energy, industry, agriculture, transport, health, the economy and social affairs. Some ministries have environmental departments. However, these departments do not have enough power and responsibility to cope, and are often understaffed. There are other forms of cooperation, from the most formal, through the councils of ministers, to inter-ministerial working groups, to the informal contacts between individual professionals.

209. Integrating environmental concerns into sectoral policies remains the main challenge for many countries. Sectoral development policies of direct concern to the environment are being drawn up, but do not identify environmental impacts or specify programmes for prevention and mitigation.

### **Lessons learned**

- In most of the countries, there has been no discernable decoupling of economic growth and environment; in many of the countries, particularly among the SEE and EECCA countries, there has also been little economic growth, so it is difficult to identify patterns. However, the actions required to move toward decoupling once economic activity resumes to normal levels (e.g., introduction of clean technology; energy efficiency; broader use of economic instruments) have, for the most part, not yet taken place on a major scale.
- Despite a greater push for the integration of environment into other sectors, such integration has fallen short in most countries for a number of reasons. Lack of institutional rationalization has contributed to institutional competition and impeded functional integration; for example, the lack of functional clarity between Ministries of Agriculture (exploitation of forests, fishing, hunting) and Ministries of Environment (biodiversity, conservation and rational use of natural resources). Scarce resources and the rise in poverty, particularly in SEE and EECCA countries, have tended to give precedence to short-term economic gains over longer-term sustainability issues. And ministries outside of environment may not even have sufficient awareness of the environmental issues and their economic implications to make informed integrated decisions.
- The absence of integrative policy-making and planning has led to a number of significant problems in a range of sectors, including, for example, in tourism, where poor waste and water management, unchecked and illegal building, weak infrastructural base and vehicle congestion threaten future development; in agriculture, where irrational use of water, poor grazing practices, and lack of management of pesticide and fertilizer stocks has led to severe salinization and erosion of soil, desertification and contamination of both surface and groundwater; in industry, where lack of environmental management, introduction of clean and efficient technologies and slack monitoring and reporting have led to continued pollution of air, water and soil as well as to serious health risks; and in transport, where poor inspection and enforcement capabilities, low import tariffs on used cars, lack of investment in public transport and the failure to ban leaded fuel have led to the highest rate of growth of air emissions in almost all countries.
- At the same time, there has been an increase in the number of integrative tools used in decision-making, including EIA, strategic environment assessment (SEA), voluntary agreements and some economic instruments targeted toward improving the environment.
- While the privatisation process has provided an important and essential opportunity for integration, in many of the countries in the region, environmental concerns have played little to no role, leaving unanswered questions regarding remediation of past environmental pollution and future behaviour.

- The development and adoption of NEAPs and LEAPs represent an opportunity for looking at environment and health issues from a cross-sectoral perspective, but this potential has been largely untapped.

#### **Major challenges ahead**

- Make better use of the planning process for inter-ministerial consultations and involvement at the central level; ensure consideration of environmental issues in all areas of national priority (e.g., in development of industry, tourism, transportation and agriculture).
- Support the development of LEAPS, LEHAPS and Local Agenda 21 as a means of integration at the community level.
- Implement fully EIA and develop strategic environmental assessment as tools of integration and coherence among different policies.
- Promote environmental awareness among all ministries and institutions.
- Implement programmes for cleaner technologies, energy efficiency and environmental management within enterprises.
- Integrate environmental concerns into privatisation agreements and address the issues of environmental liability and insurance.

## **V. INTERNATIONAL ENVIRONMENTAL COOPERATION**

210. International cooperation has been a dominant feature and a driving force for environmental and other reforms in the transition process. Donor assistance has facilitated policy formulation and funding for demonstration projects. Most importantly for the future, a fair share of policy formulation has been done internationally through global, regional and subregional conventions, as well as geographically or topically oriented programmes and strategies. Environmental cooperation has played an important part in establishing a dialogue among the member States of UNECE and in the future can be an important element of preventing new divisions in Europe.

211. Countries in the region are parties to many of the worldwide and regional environmental conventions currently in force. They also participate in the further development of multilateral environmental agreements and participate in all major processes and international institutions. They are putting considerable effort into fully implementing the international agreements to which they are parties.

#### **Box 64: Regional Cooperation and the Russian Federation**

Russia has 14 neighbouring countries and borders 13 seas. It has major responsibilities for solving bilateral and regional environmental problems and has ratified a large number of bilateral and regional agreements on environmental protection. During the 1990s, it signed over 30 bilateral agreements and ratified over 25 regional multilateral agreements on environmental protection.

*Source:* EPR Russian Federation, OECD with the cooperation of UNECE 1999.

212. International cooperation in environmental protection is important for the countries in transition for a number of reasons:

- Institutional capacity can be strengthened through participation in environmental agreements and through bilateral, regional and multilateral cooperation;
- The legislative framework can be strengthened through the ratification of international environmental conventions;
- International funding and technical assistance can accelerate the implementation of environmental protection policies.

213. Countries in transition hope to attract additional international funds in order to accelerate the implementation of environmental protection measures because of the lack of financial resources in the State budget, and low private investment in environmental protection.

### **International financing**

214. Throughout transition, donor countries and international financial institutions have provided technical assistance (for training, policy reform and similar activities) and financing (usually for investment projects) in a number of areas. The bulk of international assistance from the International Monetary Fund, the World Bank and other international financial institutions has been directed towards macroeconomic stabilization and structural reforms. Limited support was given to infrastructure and the environment. The ministries have sought grants for technical assistance leading to much policy advice, planning and capacity-building programmes in the environment sector.

215. The countries in transition sought international financial assistance from the international financial institutions and donor countries for a large number of projects early in the transition process. This approach proved to be unsatisfactory for both donors and recipients, and at the Lucerne "Environment for Europe" Ministerial Conference in 1993 the Environmental Action Plan for Central and Eastern Europe was agreed to assist in setting priorities, and the Project Preparation Committee (PPC) was established to facilitate the process of preparing and implementing environmental investments in countries in transition and better channel the appropriate funds.

#### **Box 65: The Project Preparation Committee**

The Project Preparatory Committee (PPC) was established in 1993 together with the EAP Task Force (see below) to facilitate implementation of the Environmental Action Programme for Central and Eastern Europe. While the Task Force focuses on policy and institutional issues, the PPC was asked to seek funding and other support for specific initiatives and to facilitate cooperation between international financing institutions and donors to accelerate environmental investment in the region. The purpose of the Committee is to increase the impetus of Western environmental assistance in Eastern Europe. The PPC is made up of representatives of the major donors and international financing institutions involved in environmental assistance in Eastern Europe. One of the PPC's key achievements has been in the area of matching grants programmes from donor countries with loans from multilateral development banks. The PPC was credited with facilitating 26 environmental infrastructure projects worth a total of 1.2 billion ECU between the Lucerne and Sofia meetings. In total, the PPC has implemented and matched environmental investment funds in the countries of Central and Eastern Europe and the EECCA of more than 4 billion ECU. The PPC secretariat is located at the European Bank for Reconstruction and Development in London.

216. Later the recipient countries developed capacity for project preparation. Different models of coordination in the country have been developed, including project implementation or management units, special centres and inter-ministerial committees. Donor coordination and project management have required a significant effort by the environmental institutions, but have also had an important capacity-building effect on those involved. However, in many countries, there are still significant problems with coordination, both between ministries at the national level and between the State and donors.

217. The level of loans and grants for investments has depended on the borrowing and co-financing capacity of the countries. This capacity has been limited in most cases, so international funding contributed only a small share of total environmental expenditure. The internationally funded projects have a lead time of several years, involving preparation and decision making by the donor and the recipient and procurement procedures. Because of these, some countries have had problems using the funds in the timeframes set by the donors.



218. In many countries, the international funding has exceeded the funding provided for the environment by the national government. The absence of domestic resources and the availability of donor funds have shifted the focus of the environmental authorities and stakeholders away from cost effective solutions for environmental problems towards attracting foreign funding to secure the survival of their institutions. It has also established a pattern in some countries of donor-driven priorities and projects. In these cases, there is a tendency of some countries to identify as “most important” whatever is likely to secure funding.

#### **A. Global processes and commitments**

219. In the global context the countries in transition belong to the group of industrialized countries that have major responsibilities for solving global environmental problems. The Rio Summit on Environment and Development in 1992 took place at a time of major upheavals in the region. The special situation of the countries in transition was recognized in the Rio documents, enabling them also to receive technical and financial support. Most of the countries of the region have signed or acceded to the United Nations Framework Convention on Climate Change, the Convention on Biological Diversity and the Convention to Combat Desertification. Many are also parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.

220. The countries in transition have participated actively in the processes related to global conventions in the past decade and have started implementation within their national environmental policies. The ratification and implementation of multilateral environmental agreements have been significant driving forces for setting national environmental policy objectives and priorities.

221. The countries in transition also actively participated in the preparation of the 2002 World Summit on Sustainable Development and in the Summit itself.

222. The “Environment for Europe” process has proven to be very successful and innovative in its approach to international environmental cooperation. It combines analysis, strategic planning, legal drafting, as well as technical cooperation and financial support, in an open-ended networking arrangement between countries and between stakeholder groups. This network provides an important stimulus for the environmental policy makers in the countries in transition during the period of restructuring, when it is vital to set the right course. The process also supports the harmonization of policies in the region through the drafting of multilateral environmental agreements. The Aarhus Convention is an achievement of worldwide importance that benefited from the structure of this process.

#### **B. UNECE regional environmental conventions**

223. The Economic Commission for Europe of the United Nations (UNECE) has an important mandate in international environmental policy in the region. Its Committee on Environmental Policy is the main forum for debating, creating and implementing environmental policies. The UNECE Division for Environment and Human Settlements carries out the Environmental Performance Reviews for countries in transition. And it provides the secretariat for five regional conventions: the Convention on Long-range Transboundary Air Pollution; the Convention on Environmental Impact Assessment in Transboundary Context; the Convention of the Protection and Use of Transboundary Watercourses and International Lakes; the Convention on the

Transboundary Effects of Industrial Accidents; and the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters.

224. The regional conventions' many signatures and ratifications indicate the will of the countries in transition to contribute to solving common environmental problems and to harmonize environmental standards across Europe. The conventions are also an important source of policy objectives and tools for the countries themselves. Countries in transition have used two approaches to the ratification of conventions. They have ratified the conventions as a way of introducing a new policy in the country and started preparing for implementation afterwards; or they have begun implementation before or at the time of ratification. The first approach is consistent with the overall tendency to draft laws that can be implemented only gradually as the transition progresses, and with the importance that countries are assigning to international recognition. The second approach is becoming possible with the increasing capacity of ministries and other stakeholders for policy analysis and implementation.

### **C. Other regional cooperation**

225. Countries in transition benefit also from environmental cooperation with the United Nations Development Programme, the United Nations Environment Programme, the Council of Europe, particularly through the Pan-European Biological and Landscape Diversity Strategy, the Task Force of the Environmental Action Programme, and the Organization for Security and Cooperation in Europe (OSCE).

226. There are several general agreements on environmental cooperation between neighbouring countries or small groups of countries, providing for cooperation in areas like sustainable use of natural resources, monitoring, reduction and control of transboundary pollution and others. Most countries have agreements and standing committees for the management of transboundary rivers. Many important areas of biodiversity are located in borders and several transboundary protected areas have been established in the past decade.

227. In recent years a number of sub-regional frameworks and processes of cooperation started in the region. They are related to shared ecosystems such as river basins and seas or to cooperation on common environmental issues. These processes have contributed to solving environmental problems, harmonizing policies and building confidence and cooperation among neighboring countries. Examples include the following:

- **Baltic Sea Area:** Cooperation among the Baltic States, the Nordic States and the European Union that has led, inter alia, to the 1992 Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area, a Baltic Sea Joint Comprehensive Environmental Action Plan and an Agenda 21 for the Baltic Sea Region, adopted in 1998;
- **Danube and Black Sea:** Cooperation among the States sharing the Danube river basin and the Black Sea that has led to two conventions: the Convention on the Protection of the Black Sea against Pollution, in Bucharest in 1992, and the Convention on Cooperation for the Protection and Sustainable Use of the Danube River, in Sofia, in 1995;
- **The Caspian Sea:** Cooperation among the States surrounding the Caspian Sea within the framework of the Caspian Environment Programme;
- **The Aral Sea:** Cooperation among the Central Asian countries for funding projects related to the Aral Sea, through the International Fund of the Aral Sea, and through a broader

process of cooperation for sustainable development. In April 1998, a Joint Declaration of the Environmental Protection Ministers of the Central Asia Region was signed; a Regional Environmental Action Plan is under preparation;

- The Black Triangle: Cooperation among Czech Republic, Germany and Poland over a heavily-polluted region at their common border, which has led, inter alia, to the establishment of a Joint Air Monitoring System (JAMS);
- The Regional Environmental Reconstruction Programme for South Eastern Europe: Cooperation among the countries of South Eastern Europe that led, in 2000, to the creation of a common Regional Environmental Reconstruction Programme (REReP);
- Regional Environment Centres: Establishment in 1990 of the Regional Environmental Centre for Central and Eastern Europe in Budapest, which serves 17 countries with a network of country offices and headquarters in Szentendre, Hungary. Similar centres are being established in EECCA countries; to date these include RECs for Moldova (Kishinev), Russia (Moscow) for Ukraine (Kiev), for the Caucasus (Tbilisi), and for Central Asia (Almaty).

#### **D. EU accession**

228. Negotiations for membership in the European Union were concluded in December 2002 with eight Central and East European countries, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia (along with two Mediterranean countries: Cyprus and Malta). Bulgaria and Romania are in negotiation for possible membership in 2007 and many of the South East European countries have also expressed their intention to accede to EU in the future and have signed Association and Stabilisation Agreements.

229. The process of EU accession started in the mid-1990s when the candidate countries signed Association Agreements with the European Union. Before becoming an EU member State the applicants have to harmonize their legislation with that of the European Union, implement it, and ensure that their administrative systems are fully in compliance with EU requirements. In 1997, the European Commission published an opinion recommending that the European Union should open membership negotiations with the applicants. At a meeting in Luxemburg in 1997, the European Council created the Accession Partnership to provide assistance to the applicant countries within a single framework. The applicants drew up national programmes for the adoption of EU legislation (*acquis communautaire*), which set out the timetable for achieving the Accession Partnership priorities.

230. The Accession Partnerships are monitored within the framework of the European agreements, which identify short- and medium-term priorities on the basis of the Commission's opinion. The first accession negotiations with the European Union opened in 1998. The first phase of the negotiations was the Commission's bilateral screening process, identifying 31 chapters for negotiation, which was completed by the summer of 1999. After the initial screening process, negotiations are conducted chapter by chapter and each chapter is closed when a satisfactory agreement has been achieved.

231. The environment was dealt with under chapter 23 and most applicants closed this chapter at the end of 2001. The main questions at the end of negotiations were the transition periods in which the candidate countries would fully implement certain aspects of EU legislation. Each country was able to request transition periods in the fields where it thought they were justified. Horizontal legislation such as environmental impact assessment could not be subject to transition

periods. The transition periods were mainly related to the directives requiring heavy investment, such as waste-water treatment, waste and air pollution. The transition periods agreed vary, the longest extending to around ten years.

232. The negotiation of the environment chapter was conducted by the Directorate-General for Enlargement and Directorate-General for the Environment on the EU side and the environment ministries from the candidate countries. It was facilitated by the experience and existing cooperation in the "Environment for Europe" process, which improved mutual understanding and communication. The process was also facilitated by several studies developed by the DG Environment such as the environmental cost and benefit assessments of EU enlargement and the guide to implementation of EU legislation.

233. During and after the negotiations the candidate countries were busy transposing EU law into their domestic legislations. Because of the large body of environmental directives and regulations, this was a demanding task for the environment ministries, almost fully occupying their policy and legal capacity for several years. The countries with framework environmental laws were in a favourable position as they could transpose many directives through government regulations. The countries without framework laws had to take more new legal acts to parliament, which took time and in some cases the parliaments even tried to lower the environmental standards in the discussion.

234. EU has provided pre-accession financial assistance to the candidate countries through three instruments:

- ISPA, the precursor of the cohesion funds, which is dedicated to transport and environmental infrastructure in equal shares.
- PHARE, the precursor of the structural funds, which covers various structural actions agreed with the country,
- SAPARD, the precursor of the agricultural subsidies, which targets restructuring of the agricultural sector and rural development.

235. All three instruments require co-funding from the country and can be used for environmental purposes. They have significant environmental safeguards to avoid damaging the environment through the use of EU funds but their actual impact on the environment remains to be seen.

236. The accession process has been a major driving force for modernizing environment-related legislation and standards among the candidate countries. In some cases, however, transposition has not included the most advanced policies that were or are still being negotiated, including, for example, CO<sub>2</sub> taxes, Kyoto mechanisms or the Aarhus Convention, which EU has not yet ratified. There is a potential problem especially with the EU transport and agricultural policies, which, if implemented in the candidate countries the way they are now, will have a serious negative impact on the environment. Both policies are being reconsidered in the EU, but the final decisions are still pending. The problem was partly solved by introducing some of the advanced policy elements in the regulations on pre-accession instruments such as ISPA and SAPARD.

237. Overall the EU accession process has focused and quickly advanced environmental policy development in the candidate countries. Most of their priorities are consistent with the EU priorities, and the policies in the remaining areas will catch up quickly because of the increased policy capacity of the ministries.

#### **Lessons learned**

- International financial assistance has been critical for the countries in transition, but it cannot and should not replace domestic financing for most environmental problems and concerns.
- For major investment, however, particularly for the clean-up of contaminated sites and other hot spots, external assistance is necessary.
- Both the “Environment for Europe” process and the regional environmental conventions have been important vehicles for countries in transition for harmonizing policies across the region, establishing standards, building capacity, sharing experience and securing assistance.
- The European Union accession (and pre-accession) process has been a significant catalyst for environmental legal reform and implementation in the candidate countries.
- At the same time, countries that are trying to transpose their legislation to EU standards before the requisite human and institutional capacity are in place may be setting goals that cannot be reached, thereby weakening implementation and the authority of the State.
- Effective implementation of MEAs depends to a large extent on the availability of funding under the relevant conventions and strongly reflects the priorities of those funding mechanisms.

#### **Major challenges ahead**

- Provide more resources from domestic budgets for the environment; introduce effective economic instruments and pricing policies to support the clean-up of pollution and protection of the environment.
- Fully implement regional conventions and other agreements to which the countries are parties.
- Develop national priorities and policy initiatives within the context of the accession process.

## **VI. CONCLUSIONS**

238. The transition has put in motion a fundamental structural change in environmental policy-making and implementation in the countries in transition. What started as a movement to clean up polluted air, water and land in the region, turned into a process contributing to the reform of institutions, the economy and civil society. Pollution from inefficient industry and agriculture declined sharply with the decline in production. In countries where economic growth has resumed, the decoupling of pollution from economic development has begun. Structural reforms were slower and have had a less positive effect in the countries where the economy stagnated or in those affected by war and instability.

239. The main obstacles to achieving the environmental goals in the countries in transition were:

- The lack of management capacity;
- The lack of strong environmental institutions and institutional continuity; and
- The lack of funds.

240. Countries have taken a number of important initiatives to build capacity, often with external technical support. They have developed legislation, strengthened and restructured institutions, introduced innovative policy tools and supported public participation. With the increasing institutional capacity of the government and other stakeholders, the performance in policy implementation has improved across the region. The result is a wealth of experience and know-how related to the management of the environment in the context of transition. This information is captured in the Environmental Performance Reviews, and it represents an important contribution to the general knowledge about environmental management.

241. The lack of funds has so far been overcome only in the countries where economic growth has resumed, economic instruments can be enforced and industries are in a position to assume their environmental responsibilities (e.g. application of the “polluter pays” principle). In these countries, the government and the business sector have been able to commit significant funds for

environmental protection, and they should be able to achieve international environmental standards in the foreseeable future. The environmental situation has remained poor or even deteriorated in the countries where the economy has not yet recovered and sufficient funds are not yet available from any source.

### **The environmental management system**

242. With the introduction of democracy and a market economy, the restructuring of regulations proved more complex than expected. It meant new principles, legislation, policies, economic instruments, standards, and enforcement and management tools. This has taken time and has inevitably left an implementation gap between the legal requirements and policy objectives, and the results on the ground. The gap is gradually closing. Most countries are making serious efforts to strengthen implementation. It is difficult, however, for countries in economic crisis where the environmental infrastructure and services continue to deteriorate.

243. The experience from the countries in transition shows that environmental improvement is facilitated when polluters take financial and management responsibility for pollution abatement and control, and users pay for the full cost of environmental resources and services. This usually also implies the application of a wide array of policy tools, including technical standards, permitting and enforcement, monitoring, information and public participation, pollution charges, targeted subsidies and financing arrangements. In conditions of economic growth and available financing from international and domestic banks, these tools will increase polluters' and users' expenditure for environmental investment.

244. However, in the conditions of economic decline and widespread poverty, polluters and users cannot afford to pay. The regulatory and economic instruments are designed or implemented in such a way that they do not shut down polluting facilities. Instead, pollution charges and fines are collected at levels well below pollution abatement costs, basically to raise revenue, and the revenues are rarely channelled back into pollution reduction.

245. The countries in transition are important providers of biological and landscape diversity, water and carbon sinks. By actively conserving these goods, the countries and their populations should be able to enjoy the economic benefits arising from their management. They are among the most important markets for the flexible mechanisms under the Kyoto Protocol, which will fully develop in the next few years after the ratification or commitment to ratify it made at the World Summit in Johannesburg (South Africa) by all the Central and East European and EECCA countries and the EU.

246. The countries will also focus on the conservation of biodiversity and water resources. Both offer important benefits for rural development and the quality of life of the population. There is significant scope for various types of partnerships that would aim at conservation combined with economic development. The countries in transition share the Baltic, Mediterranean, Black, Caspian and Aral Seas and their catchment areas. Even if they are landlocked regional seas, they are of global importance and need to be preserved and managed in an international context because of their cross-border nature. Their future is of primary importance for the riparian countries as well as the global environment.

### Looking forward

247. The “Environment for Europe” process began in order to assist the countries in transition in the process of restructuring and solving their environmental problems. This was seen as a contribution to the end of the ideological, political and economic division of the European continent, as a way of improving the livelihoods of people in countries in transition and as a cost-effective means of reducing overall pollution on the continent and the planet. After 13 years of transition more and more countries are emerging as capable of solving their problems and actively contributing to the international agenda.

248. Eight Central and East European countries will become full members of EU in the near future. Accession countries will continue to focus on the transposition and implementation of the body of EU law, but will need another decade to comply fully. Because of their size and problems, new member States will play an important role in future environmental policy setting in the European Union. This way they will also have an impact on the global environmental and sustainability agenda.

249. The countries of South Eastern Europe, which have all expressed their intention of applying for EU membership, will continue their efforts to develop their environmental institutions and management capacity. Because of the past war and instability in the area, some of these countries really started the transition process only a few years ago, and are now rapidly learning from the experience of their EU candidate neighbours. The political and economic situation in these countries is still quite difficult, but environmental cooperation can contribute to building up general security, political stability and economic prosperity. The environmental authorities from these countries participate and cooperate very well in the “Environment for Europe” framework and, in particular, the Regional Environmental Reconstruction Programme for South Eastern Europe.

250. Because of a much more difficult economic situation, the environment generally was a lower priority in EECCA countries in the early years of transition. The situation is gradually changing, however. One example is their initiative to develop a common environmental strategy in cooperation with donors and international organizations to be presented at the Kiev Ministerial Conference. Similarly, they took an active role during the Johannesburg Summit.

251. With progress in transition, the focus of the “Environment for Europe” process is shifting from West – East assistance towards joint policy-making in the pan-European context, resulting in significant conventions and pan-European strategies. The countries in transition have committed to a number of these. With growing experience, they will play an increasingly active and qualified role in international policy-making. At the same time, there is also a growing emphasis on sub-regional cooperation within the context of the UNECE-wide cooperation, and particularly on the EECCA and South East European countries.

252. It is also worth noting that most of the countries in transition have voluntarily requested Environmental Performance Reviews. They have seen this as a key tool for documenting the range and complexity of their environmental problems; for understanding possible next steps, sharing experience and monitoring progress; and for engaging fully in regional and global processes. By participating in the Environmental Performance Review programme, the countries have underscored their desire and commitment to move ahead.

### **Future of the EPR programme**

253. One decade has passed since Ministers at the 1993 Lucerne Conference asked the United Nations Economic Commission for Europe (UNECE) to undertake Environmental Performance Reviews (EPRs) in the countries in transition. During these ten years, the UNECE EPR programme has generated continued demand from countries in transition for both initial and follow-up reviews.

254. The usefulness of the Reviews has been articulated by national policy makers and civil society, particularly those engaged in environmental policy. The environmental review process has provided a framework for the systematic in-depth analysis of a number of sectoral and cross-sectoral issues that affect the environment, including policy development, the legal and institutional structure, and the integration of the environment with other sectors. It has been important for the environmental institutions in the countries to receive an independent and authoritative review from an international organization like UNECE that strengthens their position inside the country. The process also provides for the sharing of experience and dialogue among the stakeholders in the country and between different countries in transition.

255. During follow-up reviews and informal consultations, a number of countries that have undergone reviews have emphasized the direct impact of an EPR on implementation. Two examples are the Republic of Moldova and Romania.

#### **Box 66: EPR implementation in Romania**

As a result of its Environmental Performance Review in 2001, Romania, at the end of the same year, established its Inter-ministerial Committee, headed by the Minister of Waters and Environmental Protection, for the coordination and integration of environmental protection; set in motion the creation of a national agency for environment protection as a matter of priority; set up a new inspection and enforcement mechanism, called the Environmental Guard; and finalized the legal and administrative framework for an environmental fund.

*Source:* Personal communication, October 2002.

#### **Box 67: EPR implementation in the Republic of Moldova**

During the same year of its Environmental Performance Review (1998), the Republic of Moldova established its first Ministry of the Environment, replacing the former Department for Environmental Protection. In early 2000, it became the Ministry of the Environment and Territorial Development when it was also given responsibility for physical planning.

*Source:* EPR Republic of Moldova Follow-up Report, UNECE 2000.

256. The first round of reviews covers a broad range of issues, identified jointly by the country and UNECE. Very often, these reports result in the first comprehensive picture of the environmental situation in a country and, as such, are extremely important for the country as a basis for action and as a benchmark against which to measure progress. The second round of reviews is focused on a more limited set of issues, also jointly chosen. Experience with second reviews has been limited so far to only two reviews because priority has been given to completing the first round.

257. The strength of the reviews lies not only in the end-product, but also in the process itself. First, the reviews are undertaken by an international team of experts chosen from both Western countries in the region and from countries in transition. This mix of experience and knowledge has proven to be considerably important.



258. Second, the contents of the ensuing EPR reports, and particularly their recommendations, are reviewed by an ad hoc EPR Expert Group with the full participation of experts from the reviewed country. This approach achieves three things. The Expert Group has an opportunity to check the merits and accuracy of the text and the recommendations. The Expert Group enters into a dialogue with the reviewed country to determine, among other things, the appropriateness of the recommendations and their relative weight. Finally, the country's experts commit themselves to implementation.

259. Third, the UNECE Committee on Environmental Policy carries out a peer review during its regular session. In its peer review, the Committee focuses on the key policy issues highlighted through the reviews, and it provides an opportunity for all UNECE member States to enter into a dialogue with the reviewed country. The reviewed country is usually represented at a very high, decision-making level.

260. Some countries in transition have not yet been reviewed. If conditions allow, first reviews should be carried out in these countries as a matter of priority. In general, however, the first round of Environmental Performance Reviews is coming to an end, and attention should now be given to designing the most appropriate format for the second round of reviews.

## VII. RECOMMENDATIONS

The Ministers at the fifth Ministerial Conference "Environment for Europe," in Kiev, Ukraine, in May 2003, may wish to **recommend** the following:

- (a) **The process of Environmental Performance Reviews should continue, taking into account the experience from the first ten years.** Countries and organizations are encouraged to make broader use and support wider dissemination of the Reviews, through, for example, press conferences, or by bringing the reports to the attention of staff of embassies, national aid organizations, all relevant ministries, departments and institutes within the country and national information centres;
- (b) **The first round of reviews should be completed and the second round proceed.** All countries that are member States of UNECE but not members of OECD are eligible for first and second reviews;
- (c) **The second Environmental Performance Reviews should measure progress made in implementation,** including implementation of the recommendations from the first review, using a relevant set of indicators;
- (d) **The second Reviews should focus more on issues of implementation.** With the most dynamic legislative phase of the early transition over, the future EPRs should devote more attention to performance in implementation of the national policy targets, national legislation, best practices, and international commitments, such as conventions and regional strategies. This could be valuable for the further development of international instruments;
- (e) **The second Reviews should remain flexible and focus on the priorities** of the countries, including, in particular, new concerns that have arisen;
- (f) **The second Reviews should examine issues of financing.** This would include, for example, the generation and allocation of public domestic financing for the environment; the position of environmental funds; the use of economic instruments; funds derived from the private

sector; donor support; and foreign direct investment, as well as an assessment of the cost-effectiveness of environmental policy measures;

(g) **The second Reviews should give greater emphasis to the integration of the environment with other sectors at all decision-making levels and to its socio-economic interface.** In this regard, the Reviews should further assess how environmental issues could be viewed comprehensively and in an integrated manner. This could assist countries, inter alia, to implement decisions taken at the fifth Ministerial Conference “Environment for Europe” and the Johannesburg World Summit and to meet the Millennium Development Goals. They should also assess environmental issues in the context of environmental democracy, environmental justice and poverty eradication, among other critical economic and social concerns common to all countries;

(h) **The second Reviews should make maximum use of existing data.** The first reviews have dedicated considerable resources to collecting and assessing data that have not been available outside the country or in electronic format. Many countries in transition have now had an opportunity to strengthen their monitoring and reporting systems and are providers of data to, for example, the European Environment Agency. UNECE should work in close cooperation with these and other organizations to maximize efficiency;

(i) **Cooperation with the Environmental Performance Review programme of OECD** should be continued and strengthened;

(j) **Reviewed countries could provide an interim report to the Committee on Environmental Policy on implementation** of first Review recommendations within three years of the conclusion of their first Review.

## Annex I

### **THE ENVIRONMENTAL PERFORMANCE REVIEW PROCESS**

#### **The process of the first review**

1. The structure of the EPR process consists of:
  - The preparation
  - The review mission
  - The peer review
  - Publication
  - Follow-up and monitoring
  
2. The process begins when a country requests UNECE to undertake a review. The decision to proceed with a specific country is taken by the UNECE intergovernmental Committee on Environmental Policy. Guidance is provided by the ad hoc ECE Expert Group on Environmental Performance (EPR Expert Group).
  
3. UNECE consults with the country to be reviewed on the structure of the review. Eight core topics are always included. These are (1) legal instruments, (2) economic and regulatory instruments, (3) international cooperation, (4) human health, and (5) the management of waste, (6) air, (7) water, and (8) biodiversity. Additional chapters are decided on jointly based on the specific concerns of the country to be reviewed. Examples of such chapters have included nuclear safety, industrial safety and cleaner production, the management of specific seas and coastal zones, the management of mineral resources, and environmental concerns in agriculture, in energy and in transport.
  
4. The secretariat assembles a review team, which is typically made up of experts from UNECE member States, including countries in transition, as well as the staff of UNECE, the United Nations Environment Programme and the World Health Organization's European Centre for Environment and Health. This stage also includes data and information gathering by the secretariat in cooperation with the reviewed country. Relevant information and documentation are sent to all team members so that they can familiarize themselves with the situation in the reviewed country well before the review mission.
  
5. Once this preparatory stage has been completed, the expert team travels to the country under review and meets with government and non-government representatives, including industry, trade unions, NGOs, experts and local government representatives. The focus of discussion is on the evaluation of environmental performance. The assistance from national experts in the review country and their participation in the EPR expert teams also brings invaluable guidance and experience.
  
6. Each team member prepares a first draft of a chapter of the review report after the mission. Chapters contain both descriptive text and a series of recommendations on ways to improve problem areas. Further drafting and editing of a consolidated draft text are done by the secretariat. Draft chapters are circulated for comment to all experts concerned, and the recommendations are circulated for comment to the country under review. In a few cases, it is necessary to organize an additional mission to the country to update the text.

7. Final drafts are discussed by the Ad Hoc Expert Group on Environmental Performance and then submitted to the UNECE Committee on Environmental Policy for peer review, with a focus on the key policy issues identified in the EPR, and for consideration and adoption of the EPR report.

8. Publication of the report is the last step of the review process. Updated facts and figures are requested from the reviewed country. The secretariat incorporates these changes, as appropriate, together with possible changes in line with the conclusions of the Committee on Environmental Policy.

### **Follow-up and second reviews**

9. To date, UNECE has used two tools for follow-up and monitoring: a second review and follow-up reports to the first review.

10. First is the follow-up report, which focuses on short-term implementation of the recommendations in the review and obstacles to implementation.

11. The second step is the second review. The second review assesses medium-term implementation. It also analyses in depth a few specific problems identified by the country after the first review. The process of a second review is similar to that of the first review, but its focus is narrower. The intention is to carry out second reviews when sufficient progress has been made in the implementation of the recommendations and when second-generation problems occur. In general, this is about five years after the first review.

**Annex II**

**Ratification 1) by countries in transition in selected global and regional conventions**

Parties	Global Conventions						UNECE Regional Conventions				
	Convention on Biological Diversity	United Nations Convention to Combat Desertification	United Nations Framework Convention on Climate Change	Basel Convention on the control of Transboundary Movements of hazardous Wastes and Their Disposal	The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	Ramsar Convention on Wetlands 2)	Convention on Access to Information, Public participation in Decision-Making and Access to Justice in Environmental matters	Convention on Environmental Impact Assessment in a Transboundary Context	Convention on Long-range Transboundary Air Pollution	Convention on the Protection and Use of Transboundary Watercourses and International Lakes	Convention on the Transboundary Effects of Industrial Accidents 2)
Albania	X	X	X	X		X	X	X		X	X
Armenia	X	X	X	X		X	X	X	X		X
Azerbaijan	X	X	X	X	X	X	X	X	X	X	
Belarus	X	X	X	X	X	X	X		X		
Bosnia and Herzegovina	X	X	X	X		X			X		
Bulgaria	X	X	X	X	X	X		X	X		X
Croatia	X	X	X	X	X	X		X	X	X	X
Czech Republic	X	X	X	X	X	X		X	X	X	X
Estonia	X		X	X	X	X	X	X	X	X	
Georgia	X	X	X	X	X	X	X		X		
Hungary	X	X	X	X	X	X	X	X	X	X	X
Kazakhstan	X	X	X		X		X	X	X	X	X
Kyrgyzstan	X	X	X	X			X	X	X		
Latvia	X		X	X	X	X	X	X	X	X	
Lithuania	X		X	X	X	X	X	X	X	X	X
Poland	X	X	X	X	X	X	X	X	X	X	X
Republic of Moldova	X	X	X	X	X	X	X	X	X	X	
Romania	X	X	X	X	X	X	X	X	X	X	
Russian Federation	X		X	X	X	X			X	X	X
Slovakia	X	X	X	X	X	X		X	X	X	
Serbia and Montenegro	X		X		X	X			X		
Slovenia	X	X	X	X	X	X		X	X	X	X

**Ratification 1) by countries in transition in selected global and regional conventions (continued)**

Parties	Global Conventions						UNECE Regional Conventions				
	Convention on Biological Diversity	United Nations Convention to Combat Desertification	United Nations Framework Convention on Climate Change	Basel Convention on the control of Transboundary Movements of hazardous Wastes and Their Disposal	The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	Ramsar Convention on Wetlands 2)	Convention on Access to Information, Public participation in Decision-Making and Access to Justice in Environmental matters	Convention on Environmental Impact Assessment in a Transboundary Context	Convention on Long-range Transboundary Air Pollution	Convention on the Protection and Use of Transboundary Watercourses and International Lakes	Convention on the Transboundary Effects of Industrial Accidents 2)
Tajikistan	X	X	X			X	X				
The former Yugoslav Republic of Macedonia	X	X	X	X	X	X	X	X	X		
Turkmenistan	X	X	X	X			X				
Ukraine	X	X	X	X	X	X	X	X	X	X	
Uzbekistan	X	X	X	X	X	X					

- 1) Ratification is intended here to include the following: ratification, acceptance, approval and accession.
- 2) Contracting parties.