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BACKGROUND DOCUMENT ON THE ENVIRONMENTAL PROGRAMME FOR EUROPE

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"Environment for Europe"

BACKGROUND DOCUMENT



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Preamble

The idea of a long-term Environmental Programme for Europe emerged gradually as part of the process of pan-European interministerial meetings in this field, which started with the High-level Meeting within the Framework of the ECE on the Protection of the Environment (Geneva, 1979), followed by the Meeting on the Protection of the Environment (Sofia, 1989) held under the auspices of the Conference on Security and Cooperation in Europe. The move gathered momentum at the Regional Conference at Ministerial Level on the Follow-up to the Report of the World Commission on Environment and Development in the ECE Region (Bergen, 1990), and its efforts towards a joint regional agenda for action in preparation of the Rio Conference. The 1991 Dobris Ministerial Conference Environment for Europe, besides calling for a comprehensive assessment of Europe's environment, envisaged the development of an environmental programme for Europe in the light of the assessment, to improve the coordination of national and international efforts with a focus on central and eastern Europe. After the endorsement of a broad strategy contained in the Environmental Action programme for Central and Eastern Europe (EAP) at the Lucerne Ministerial Conference in 1993, the time seems ripe to look beyond immediate priorities in a particular part of Europe to policy actions which would require the involvement of all actors, both in the East and in the West, to improve environmental conditions and achieve sustainable development in the whole of Europe.

At the same time, all countries of Europe - much as they struggle with their own problems - share a collective responsibility for respect to the global environment in view of the pressures they place on it. The 1992 United Nations Conference on Environment and Development (UNCED) clearly reaffirmed this duty of solidarity as well as the need for a new balance of production and consumption patterns. To be sustainable in the long run, environmental programmes of European Governments and of the region as a whole will thus have to take into account specific global commitments and perspectives.

Equally significant for the viability of programmes is the recognition that environmental policy objectives are inextricably linked to the sustainability of policies in other sectors. Bringing the concept of sustainable development into operation also implies major adjustment in socio-economic priorities and strategies, including a shift from over-used environmental resources to under-used labour resources, and to a broader use of market-based instruments. The Environmental Programme for Europe offers an unprecedented opportunity for changing course in time.

I. EUROPE'S ENVIRONMENT - THE DOBRIS ASSESSMENT

For the first time ever, a report has been compiled in which the pan-European environment is appraised as a unit. In Europe's Environment - The Dobris Assessment, information from central and eastern Europe was combined with that of western Europe. This gives an integral view of environmental problems in Europe and of Europe's place and role in a global environmental context.

Preparing such a comprehensive report is part of a wider process which ranges from research, measurement, analysis and interpretation, to the dissemination of information, the raising of awareness and action taking. Preparing a report on the state of Europe's environment requires overcoming many problems dealing with the information, its availability, objectivity, reliability and comparability. Investigations must be carried out in order to ensure that environmental information properly reflects reality. Uncertainties at all stages must be assessed. Imperfect understanding of mechanisms driving environmental problems must be dealt with. Finally, a simple presentation strategy is required which nonetheless accommodates all the complexities. The report has attempted to solve many of these problems and has given special emphasis to integrating findings and confronting environmental problems of particular concern for Europe.

Within Europe there exists a variety of ecosystems which have been exposed to rapidly increasing changes related to human activities during the last 40 years. Awareness and understanding of interrelated environmental processes have to keep pace with the changes which occur globally. With the report Europe's Environment - The Dobris Assessment, a pan-European effort has been made to look into changes and their international implications.

Europe's Environment - The Dobris Assessment is based on four elements:

- The various compartments of the environment and their trends in association with human health ("the assessment");
- Agents causing stress on the environment ("the pressures");
- The sources of stress in the environment ("human activities");
- The environmental problems themselves ("the problems").

For each of these elements, data have been collected. Information on the various compartments of the environment such as air, water, soil, nature and wildlife and the urban environment is fairly objective. This holds true also for the information on the pressures resting on the environment such as emissions to air and water, waste, noise, radiation, chemicals and natural and technical hazards and the human activities as sources of these pressures. The presentation of environmental problems focuses on describing the most accepted current international thinking and disputes on each problem, their causes and consequences and the options and strategies being adopted to resolve them.

In the preparation of Europe's Environment - The Dobris Assessment, the following nine criteria were used to help assess which information should be included:

- Threat to sustainability;
- Impact of global problems in the European area;
- Prominence of a European aspect;
- Transboundary aspects;
- Long-term character;
- Risk to human health;
- Social or cultural impacts;
- Ecological damage;
- Economic loss.

The same criteria were primarily used for identifying the 12 prominent European environmental problems, which are given attention at the end of the report. For each of these, the goals and the strategies to tackle these goals, or options for action, are described. A full analysis of responses and the state of actions to protect the environment was beyond the scope of the report. Moreover, additional environmental issues of European importance may need to be highlighted, in particular the following three issues: soil degradation, desertification and environmental aspects of military activities.

One of the strengths of Europe's Environment - The Dobris Assessment lies in the link which is made between environmental problems and economic sectors. In the report, the human activities causing environmental pressures are grouped into the following sectors: energy; industry; transport; agriculture; forestry; fishing and aquaculture; tourism and recreation; households.

For each of these activities, Europe's Environment - The Dobris Assessment identifies the potential impacts on the air, water, soil and land and on nature and wildlife and landscapes. In this way, a link is made between the human activities which are at the origin of environmental pressures and the environmental problems. This allows the determination of goals and strategies in terms of human activities for each of these environmental problems. In this way, the report helps to direct policy developments aimed at integrating environmental aspects into sectoral policies.

Europe's Environment - The Dobris Assessment is the first report which appraises the pan-European environment. It is in the interest of environmental policy cooperation to continue this process by updating this report at appropriate time intervals of three to four years. This should improve the report as the data collection systems become better coordinated at the European level. At present many relevant data are still missing or not always known or accessible. The available data are often inadequate, spatially and temporally patchy, incomplete and inconsistent. Monitoring of the environment is often confined within strict geographical boundaries resulting in disjointed data collections on many environmental sectors. These do not make for a single comprehensive reliable picture of the environment at the European level. In the future, a high priority should be given to improving the state of environmental information in order to ensure that all partners, the policy makers, the economic sectors and the public at large, can respond to the actual situation and needs. As a prerequisite for such an improvement, it is important to design an integrated approach to the collection and management of environmental data.

In order to arrive at such a stage, an appropriate institutional framework is needed to coordinate the data collection and assessment. Such a framework would also contribute to improving monitoring technologies for implementing activities in the different countries. Improving the reporting on Europe's environment requires a fully coordinated data collection system at the European level. This implies effective cooperation between all partners within an integrated approach. During the preparation of Europe's Environment - The Dobris Assessment, a large network including official national and international levels, governmental and non-governmental organizations was established in order to channel data and information. This network has been indispensable, and it needs to be maintained and further developed for a long time. The European Environment Agency may significantly contribute to this through the gradual extension of its operating activities to the entire region and the involvement of ECE countries which are non-members of the European Community (EC) by agreement and approval.

Prominent European environmental problems

(1) Climate change

The anthropogenically aggravated greenhouse effect is assumed to produce an extra warming of the Earth's surface and the lower atmosphere, leading to a multitude of disturbances in the biosphere. Europe's share in the global emission of greenhouse gases is important. On the basis of the Framework Convention on Climate Change, actions are needed to reduce the emissions of greenhouse gases in all European countries. Certain trends in the European economic development still threaten the stabilization and reduction of greenhouse gas concentrations in the atmosphere. Hence, climate change is identified as a pan-European problem with a global dimension.

(2) Stratospheric ozone depletion

Anthropogenic emissions of chlorine- and bromine-containing chemicals as well as direct nitrogen oxide emissions into the stratosphere from aircraft are generally recognized as the major causes of stratospheric ozone depletion. Europe contributes approximately one third of the global annual emissions of ozone-depleting substances. The endangering effects on human health and the expected changes in aquatic and terrestrial ecosystems prompted 32 European countries to ratify the Montreal Protocol in order to curtail the production and the use of CFCs significantly.

(3) Loss of biodiversity

The genetic diversity among the Earth's species provides the variability within which life is able to constantly adapt to changing environmental conditions. Despite the current preoccupation and the measures taken, Europe's biological diversity is still declining. Therefore, the effectiveness of these measures needs to be reassessed so that this declining trend can be reversed at the European level. In this respect, a pan-European framework is of utmost importance for enhancing sustainability in the region and achieving the goals of the global Framework Convention on the Conservation of Biological Diversity.

(4) Major accidents

Economic activities are increasingly connected to the production, transport and distribution of chemical and nuclear material and energy posing a threat to human health and ecosystems. Depending on the location and inherent safety of industrial installations and other hazardous activities, the probability of an accident and its possible magnitude constitute the two basic factors which lead to the identification of major accidents as a pan-European environmental problem. The Convention on the Transboundary Effects of Industrial Accidents is a response to that effect.

(5) Acidification

The atmospheric emissions of primary pollutants such as sulphur dioxide, nitrogen oxides and ammonia can, when undergoing chemical conversion, be transported over thousands of kilometres. After their deposition they bring about changes in the composition of soil and surface waters posing threats to a variety of ecosystems. Their transboundary effects resulted in increased international efforts such as the Convention on Long-Range Transboundary Air Pollution. However, since acid deposition loads in the European area are expected to remain in excess of critical loads, the risks for a variety of ecosystems remain.

(6) Tropospheric ozone and other photo-chemical oxidants

As a substance, ozone is the only compound in the troposphere where the difference between actual atmospheric levels and toxic levels is marginal. Close to the ground, elevated ozone concentrations are harmful to human health, plant and animal life and materials. In the upper atmosphere, ozone is the main natural component contributing to the normal greenhouse warming of the lower atmosphere. Ozone is but a secondary pollution component, formed in the atmosphere by the action of sunlight on ozone precursors such as nitrogen oxides, volatile organic compounds (VOCs) and carbon monoxide. Elevated ozone levels in the lower troposphere mainly endanger health and plant life in conurbations and their vicinity.

(7)	<p><u>The management of fresh water</u></p> <p>The intensity of human activities, as well as the regional and local diversity of ecosystems, is strongly dependent on the availability of fresh water. There is a considerable surplus in the annual run-off compared to water abstraction on a continental basis. Nevertheless, regional imbalances, seasonal variations in natural run-off and growing human usage pose an increasing stress on surface and groundwater bodies. The current management of fresh water relies mostly on local and regional engineering solutions. This approach tends to underestimate the needs of downstream users. The existence of some 110 bilateral and multilateral agreements regulating transboundary issues in water management and the Convention on the Protection and Use of Transboundary Watercourses and International Lakes indicates that the need for sustainable fresh water management at the international level has been identified.</p>
(8)	<p><u>Forest degradation</u></p> <p>Despite uncertainties as to the precise cause and effect relationships, there are two primary causes of forest degradation. Air pollution contributing to soil acidification and excess nitrogen deposition on a pan-European level are responsible for the decrease in recreational value, the reduced prevention capacity of soil erosion and the reduced protection from avalanches in mountain regions. In southern Europe and parts of the newly independent countries, excessive forest fires provide a further cause of forest degradation and can contribute to desertification. The transboundary nature of cause and effect relationships threatening the forests and the importance of forests as original elements and key habitats of the pan-European landscape call for an integrated effort to prevent forest degradation.</p>
(9)	<p><u>Coastal zone threats and management</u></p> <p>The coastal zone separates the European continent from its surrounding seas along a line of at least 140,000 kilometres. The large variety of natural coastal zone biotopes is of high importance for humans as well as plant and animal life. These coastal zone biotopes represent areas of significantly high biomass production. They are increasingly influenced by pollution and stress exerted by human activities. Often they are disconnected from these sources of pollution, which include stress from urban areas, agriculture, industry, transport, tourism and fisheries. Concerted international efforts to provide for pollution control measures and effective river catchment management in terms of water quality and water quantity are of pan-European importance.</p>
(10)	<p><u>Waste production and management</u></p> <p>In Europe, waste generation is constantly increasing. Successes in the abatement of industry-related emissions to air and water have led to an increase in the concentration of hazardous substances in solid residues. Hence, waste management methods must account for the growing quantities and the decreasing qualities of wastes. In the past, improper waste management practices in all European countries significantly affected soil and groundwater, in particular on closed waste sites. Whilst the environmental impacts of waste production remain locally confined, transboundary movements of waste call for an approach at the pan-European level.</p>
(11)	<p><u>Urban stress</u></p> <p>Nearly two thirds of Europe's population live in urban areas. Although patterns of urbanization differ across Europe, growing use of land for urban development and the increasingly negative impact of urban areas on the environment are the two common features of Europe's urban environment. Specific human activities, including energy consumption and individual transport, causing environmental pollution such as waste, waste water, air pollution, noise are concentrated in urban areas. The resulting urban stress endangers human health and the environment. Efforts to reduce urban stress will also improve the environment outside urban areas and even at the pan-European if not the global level. Exchange of experience in tackling urban stress in different stages of urban development therefore requires a pan-European approach.</p>
(12)	<p><u>Chemical risk</u></p> <p>Economic development has been driven to a considerable extent by progress and innovation in the use of chemicals. Today, more than 100,000 chemicals are commercially produced. Data concerning their impact on human health and the environment in respect to their toxicity, ecotoxicity, environmental pathways and their bioaccumulation are scarce. The possible detrimental effects of chemicals on human health and all environmental compartments and the avoidance of both their deliberate and accidental release into the environment are therefore the focus of international concern and activity.</p>

Three further European environmental problems to be highlighted

(a) Soil degradation

The broad spectrum of European soils is the basis for the diversity of ecosystems and the productivity of European agriculture. Since soils result from processes which take up to several thousand years, they can be considered as non-renewable resources. The misuse of soils lead to soil degradation, which implies a reduction in the capacity of soils to support human life. The most widespread forms of soil degradation, such as soil erosion, acidification, pollution and compaction, are increasing on a European scale. Since appropriate remedies include international cooperation, soil degradation amounts to an environmental issue of pan-European importance.

(b) Desertification

Desertification constitutes an extreme form of land degradation. In Europe, it threatens mainly the Mediterranean region. Desertification is an almost irreversible process which implies a reduction in the fertility of soils and ends in the complete loss of top soils. Besides these dramatic changes in the ecosystems, economic and social structural changes which are also irreversible occur. They include a reduction in the value of land and in the quality of working and living conditions which ultimately lead to emigration.

(c) Environmental aspects of military activities

Throughout Europe there exists a high concentration of closed and operational military sites that pose a threat to the environment. Hazardous and partly toxic substances were emitted to the environment creating risks to human health. Especially the soil and the underlying groundwater layers are endangered. The contaminated soil is devalued in terms of its further use for agricultural or economic purposes. The potential groundwater pollution poses a threat to the most important source of fresh water for drinking. Furthermore, the partly restricted access to military areas and difficulties to apply the polluter-pays principle to these areas of contamination call for concerted efforts to tackle the environmental problems deriving from military activities. Cooperation among the countries in the region to exchange information on the kinds of military activities which took place on these contaminated sites and on remedial technologies may contribute to the identification of cost-effective solutions.

II. CURRENT POLICIES AFFECTING THE ENVIRONMENT

The Ministerial Conference "Environment for Europe", held in Dobris Castle (Czechoslovakia) in June 1991, underlined the need to develop an environmental programme for Europe which would serve as the framework to improve the coordination of national and international efforts in Europe. The Expert Group for the second Ministerial Conference "Environment for Europe", which was held in Lucerne (Switzerland) in April 1993, invited the Senior Advisers to ECE Governments on Environmental and Water Problems (renamed the ECE Committee on Environmental Policy in 1994) to propose initial elements for such a programme. In response, the Senior Advisers prepared a contribution to this second Ministerial Conference in which they laid down seven long-term policy tools and mechanisms promoting pan-European cooperation together with proposed actions on these elements:

- Technology cooperation for a better environment;
- Integrated pollution and prevention control;
- Economic instruments;
- Environmental performance reviews;
- Environmental information;
- Public participation;
- International legal instruments.

The Lucerne Conference endorsed these "Elements for a Long-Term Environmental Programme for Europe (EPE)" and called for the further development of a programme on the basis

of Europe's Environment report. The Ministers agreed that the EPE should represent a pan-European approach, based on a series of general principles, prevailing political and economic conditions in Europe and aspirations for a significant improvement in the state of the environment. It was recognized, furthermore, that the development and implementation of the EPE would contribute to achieving convergence between the countries of the region, taking into account the diversity of requirements in various parts of Europe, in particular the need for economic and social development and environmental restoration in countries in transition. In that context, the Environmental Action Programme for Central and Eastern Europe was considered an important step, in the immediate and short term, in promoting environmental convergence in Europe.

A. Links to other environmental programmes

EPE constitutes a framework in which partnerships for the environment are developed in order to streamline regional cooperation through the identification of gaps in the current collaborative framework. In particular, EPE strives for better cooperation in addressing transboundary environmental problems.

1. Global and regional levels

The EPE is linked with Agenda 21, which was adopted at the United Nations Conference on Environment and Development in Rio de Janeiro, Brazil. EPE is structured along the same lines as Agenda 21, addressing social and economic dimensions, the conservation and use of resources, the role of partnerships and the importance of instruments for implementation, including financial mechanisms. It addresses issues which are covered by the Global Environment Facility, such as climate change, loss of biodiversity, pollution of international waters and depletion of the ozone layer.

In this context EPE builds upon the UN/ECE Action Plan to Implement Agenda 21 presented to the Commission on Sustainable Development. This Action Plan describes the actions that are under way or envisaged to address at the European level the following set of major issues:

- Changing production and consumption patterns;
- Integration of environment and development in decision-making;
- Protection of the atmosphere;
- Water resources management;
- Sustainable development of forests;
- Sustainable agriculture and rural development;
- Environmentally sound management of toxic chemicals;
- Exchange of environmentally sound technology;
- Strengthening the role of major groups and raising public awareness;
- Information for decision-making.

EPE also broaches policy-making in the area of environment and health. European Ministers of health and of environment, at their joint conferences in Frankfurt (Germany) in 1989, and in Helsinki (Finland) in 1994, organized by the World Health Organization Regional Office for Europe (WHO/EURO) in cooperation with the European Commission, expressed the need for a policy

integrating environmental protection with the prevention of environmental risks to human health, and endorsed the Environment and Health Action Plan for Europe (EHAPE).

2. Subregional level

At the subregional level, there are two important environmental programmes upon which EPE can build. At the level of the European Community, which now comprises 15 member States, the Fifth Environmental Action Programme (now under review) serves as a source of inspiration. The approach adopted in the Fifth Programme differs fundamentally from that which was applied in the previous one as it:

- (a) Focuses on the agents and activities which deplete natural resources and damage the environment, rather than wait for problems to emerge;
- (b) Endeavours to initiate changes in current trends and practices which are detrimental to the environment, so as to ensure socio-economic well-being and growth for present and future generations;
- (c) Aims to achieve such changes in behaviour in the Community through the optimum involvement of all sectors of society in a spirit of shared responsibility, including:
 - Public administration;
 - Public and private enterprise;
 - The general public, as both individual citizens and consumers.

Rather than be specifically geared towards the protection of particular environment media, the measures to be undertaken will be primarily directed at the principal economic sectors: at Community level under the Fifth Programme these comprise industry, energy, transport, agriculture and tourism. A particular feature of the approach to the target sectors is that it is designed not only for the protection of the environment as such, but for the benefit and sustainability for the sectors themselves.

Previous action programmes have relied almost exclusively on legislative measures. In order to bring about substantial changes in current trends and practices and to involve all sectors of society in a full sharing of responsibility, the Fifth Programme recognizes that a broader mix of instruments is needed. The mix proposed can be categorized under four headings:

- (i) Legislative instruments;
- (ii) Market-based instruments, geared towards the internalization of external environmental costs and "getting the prices right";
- (iii) Horizontal, supporting instruments including improved base line data, scientific research and technological development, improved planning, as well as what some have called "social instruments", environmental information, education and training;

- (iv) Financial support mechanisms including the Community's Structural Funds, LIFE (Financial Instrument for the Environment), the European Investment Bank (and the Cohesion/Environment Fund which was agreed in Maastricht).

The Fifth Programme also differs from its predecessors insofar as it sets out indicative objectives, targets, actions and time-frames covering the period up to the year 2000. These do not constitute legal commitments but, rather, performance levels or achievements to be aimed at now in the interest of attaining a sustainable development path.

The Fifth Programme is important in view of the recent enlargement of the European Community, the implementation of the European Economic Area and the cooperation with Associated States of central and eastern Europe. The Meeting of the Environment Ministers of the European Community and of the Environment Ministers of the Associated States, held in October 1994, has resulted in the common recognition of the need to approximate environmental laws between the Associated States and the European Community. This constitutes a milestone towards a pan-European environmental approach and is linked to the prospects for membership of those States. Hence, the environmental legislation of the European Community will be of growing importance for the countries in transition. In order to ease the process of transition and approximation, EU programmes - e.g. LIFE - will be open to Associated States of central and eastern Europe.

The second environmental programme which is relevant for EPE is EAP. This Programme is based upon the recognition that improvements in the environment are rooted in economic and social change, not isolated investments. The transition from central planning to a market economy should help to improve the economic performance of the countries in central and eastern Europe. At the same time, the incentives set to encourage a more efficient use of energy, minerals and water will lead to a decline in pollution generated per unit of output.

EPE has a clear link with EAP. It is based upon the same recognition. It is committed to the integration of environmental policy in the economic and social change, opting for the setting of priorities, the creation of "win-win" investment opportunities and the promotion of capacity building. EPE is also linked with EAP through the different complementary perspectives. Whereas EAP addresses short-term environmental issues for which early action is needed, EPE provides a framework towards sustainable development in the longer term.

The EPE is also linked with other various important subregional programmes. They include, *inter alia*, the Environmental Programme for the Danube, the Baltic Sea Joint Comprehensive Environmental Action Programme and the Environmental Programme for the Black Sea.

B. Links to environmental conventions

EPE also links up with existing international conventions. In Europe's Environment, wherever appropriate, responses and policy options are presented through references to such international conventions. EPE follows a similar approach, in acknowledgement of the goals set and progress made in certain areas of international environmental policy-making through international conventions.

**Long-term goals under the 1979 Convention on Long-range
Transboundary Air Pollution**

Under the 1985 Protocol on the Reduction of Sulphur Emissions or their Transboundary Fluxes, signed by 21 Parties to the Convention, an internationally binding agreement was made to reduce sulphur emissions or their transboundary fluxes by at least 30% (by 1993 at the latest). Taken as a whole, the 21 Parties to the Protocol reached the 30% reduction target by 1990. In Europe as a whole, this target is almost met.

The 1994 Protocol on Further Reduction of Sulphur Emissions specifies a set of differentiated abatement targets for Parties.

The 1988 Protocol concerning the Control of Emissions of Nitrogen Oxides or their Transboundary Fluxes obliges the Parties to stabilize nitrogen emissions by the end of 1994 at 1987 levels. In Europe as a whole, this target was met by 1990. In addition, 12 Parties made a declaration to the effect that they would aim for a reduction in nitrogen oxide emissions in the order of 30% (based on emission levels of any year between 1980 and 1986) at the latest by 1998.

The 1991 Protocol concerning the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes specifies three options:

- A reduction of emissions by 30% by 1999 on the basis of emissions of any year between 1984 and 1990;
- The same reduction in a so-called Tropospheric Ozone Management Area in combination with the obligation to keep emissions by 1999 at 1988 levels;
- Keeping emissions by 1999 at 1988 levels if the emissions in 1988 did not exceed certain specified levels.

Although most European countries are now contracting parties to the major global treaties and relevant regional or subregional instruments in the field of the environment and sustainable development, efforts to secure wider membership are still needed with regard to a number of agreements that are of significance for the global environment or the European region as a whole. Several recent agreements, including:

- The 1991 Convention on Environmental Impact Assessment in a Transboundary Context;
- The 1992 Convention on the Transboundary Effects of Industrial Accidents;
- The 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes;
- The 1991 and 1994 protocols to the Convention on Long-range Transboundary Air Pollution;
- The 1992 conventions on the protection of the marine environment of the North East Atlantic and the Baltic;
- The 1994 Convention on Cooperation for the Protection and Sustainable Use of the Danube River,

have not yet entered into force because of a lack of ratifications. It is important that countries which have not yet ratified these instruments take the required action as soon as possible, with a view to bringing these conventions into force. Also, European countries having succeeded other former signatories to such agreements need to be invited to clarify their treaty succession by declaration to the depository concerned, and to take the necessary implementing measures at the national level.

Even more significant is the need for improved and harmonized mechanisms to ensure effective compliance with these international commitments, since EPE's success will depend on such an effective compliance. Recommendations for compliance were already made at Lucerne, for instance:

(a) Make periodic national reports on the implementation of environmental agreements publicly available in accordance with agreed guidelines, timetables and data requirements. Consider harmonized or joint reporting and monitoring under different environmental agreements;

(b) Conduct regular public reviews of progress in treaty implementation in the context of meetings of the contracting parties. This implies that treaty secretariats are equipped with the necessary financial and human resources to carry out continuous compliance monitoring and verification;

(c) In the light of experience under the ozone layer and transboundary air pollution regimes, establish permanent intergovernmental mechanisms for compliance control in the context of other suitable agreements in Europe. Mechanisms for this purpose should be non-confrontational, transparent, avoid complexity and confine decision-making to the contracting parties of each agreement;

(d) Provide assistance to countries in transition enabling them to comply with their treaty obligations, including standard reporting requirements and participation in meetings. Where appropriate, supplementary funding mechanisms should be developed by the contracting parties to support national implementation.

Obviously, the success of EPE will be enhanced if such actions are taken in the years to come. In addition to formal treaty instruments, there are several other international arrangements which are open to voluntary acceptance. These include multilateral funding mechanisms (such as the 1994 Instrument for the Establishment of the Restructured Global Environment Facility); agreements on harmonized compliance procedures (such as the 1982 European Memorandum of Understanding on Port State Control in Implementing Agreements on Maritime Safety and Protection of the Marine Environment), and arrangements concerning exports and imports of certain dangerous chemicals (such as the joint FAO/UNEP Procedure on Prior Informed Consent, which since 1992 has been mandatory in the European Community). At present, not all European countries participate in these arrangements. Whilst EPE constitutes an opportunity for deciding on participation, further technical and administrative capacity building and assistance, including professional training, at the national level might be needed.

Selected multilateral environmental agreements

(a) **Global**

- 1960 Paris Convention on Third Party Liability in the Field of Nuclear Energy (as amended)
- 1963 Vienna Convention on Civil Liability for Nuclear Damage (and related protocols)
- 1969 Brussels International Convention on Civil Liability for Oil Pollution Damage (as amended)
- 1971 Brussels International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage
- 1971 Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat (as amended)
- 1972 London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter
- 1972 Paris Convention concerning the Protection of the World Cultural and Natural Heritage
- 1973 Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, as amended)
- 1973/78 London International Convention for the Prevention of Pollution from Ships (MARPOL)
- 1979 Bonn Convention on the Conservation of Migratory Species of Wild Animals, and its European agreements (1990 Wadden Sea Seals, 1991 Baltic/North Sea Small Cetaceans)
- 1982 United Nations Convention on the Law of the Sea
- 1985 Vienna Convention for the Protection of the Ozone Layer, and its 1987 Montreal Protocol on Substances that Deplete the Ozone Layer (as amended 1990/92)
- 1986 Vienna Convention on Early Notification of a Nuclear Accident
- 1986 Vienna Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency
- 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
- 1990 London International Convention on Oil Pollution Preparedness, Response and Cooperation
- 1990 ILO Convention concerning Safety in the Use of Chemicals at Work (Convention '70)
- 1992 United Nations Framework Convention on Climate Change
- 1992 Convention on Biological Diversity
- 1993 ILO Convention concerning the Prevention of Major Industrial Accidents (Convention '74)
- 1994 International Tropical Timber Agreement
- 1994 Paris Convention to Combat Desertification

(b) **Regional**

- 1957 European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)
- 1958 Agreement concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts (especially Regulations 49 and 83)
- 1968 European Agreement on the Restriction of the Use of Certain Detergents in Washing and Cleaning Products (as amended)
- 1969 European Convention on the Protection of the Archaeological Heritage
- 1979 Geneva Convention on Long-range Transboundary Air Pollution, and its 1984 Protocol on Long-term Financing of EMEP, 1988 Protocol concerning the Control of Emissions of Nitrogen Oxides, 1991 Protocol concerning the Control of Emissions of Volatile Organic Compounds, and 1994 Protocol on Further Reduction of Sulphur Emissions
- 1979 Bern Convention on the Conservation of European Wildlife and Natural Habitats
- 1980 European Outline Convention on Transfrontier Cooperation Between Territorial Communities or Authorities
- 1989 Convention on Civil Liability for Damage Caused During Carriage of Dangerous Goods by Roads, Rail and Inland Navigation Vessels
- 1991 Espoo Convention on Environmental Impact Assessment in a Transboundary Context
- 1992 Helsinki Convention on the Transboundary Effects of Industrial Accidents
- 1992 Helsinki Convention on the Protection and Use of Transboundary Watercourses and International Lakes
- 1993 Lugano Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment

(c) **Subregional**

- 1976 Barcelona Convention for the Protection of the Mediterranean Sea Against Pollution and its 1976 Barcelona Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft, 1976 Barcelona Protocol concerning Cooperation in Combating Pollution in Cases of Emergency, 1980 Athens Protocol for the Protection of the Mediterranean Sea Against Pollution from Land-based Sources, and 1982 Geneva Protocol concerning Mediterranean Specially Protected Areas
- 1992 Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area
- 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic
- 1992 Bucharest Convention on the Protection of the Black Sea Against Pollution, and its protocols
- 1994 Sofia Convention on Cooperation for the Protection and Sustainable Use of the Danube River

C. Links to other policies affecting the environment

The prevailing decision-making processes in many countries in Europe have not yet fully integrated environmental protection into other policy concerns. But the need to progressively integrate environmental considerations in other policy areas, as stated in principle 4 of the Rio Declaration on Environment and Development, has been recognized. The Fifth Environmental Action Programme of the European Community, for instance, stresses this need and, as a result, the European Community's environment policy finds itself at a major turning-point. The EAP also calls for an integrated development in which environmental and economic targets are set in order to achieve a high quality of life. This may be achieved through investments in projects which provide both economic and environmental benefits ("win-win" policies). The integration of environmental protection in policies affecting the environment has been initiated at the level of the ECE and various other international organizations active in Europe.

D. Stimulating ongoing policy trends

EPE does not replace existing policies which affect the environment. Instead, it intends to enhance and stimulate such ongoing policies in order to achieve closer cooperation at the pan-European level. In this way, EPE contributes to the integrated approach to sustainable development through efforts to harmonize environmental and sectoral policies where needed and through appropriate instruments and partnerships.

1. Integrated approach

EPE is based upon the recognition that, in order to achieve sustainable development, environmental protection needs to be integrated in all important policies of the overall development process. EPE accounts for such ongoing policies towards this goal that have already been implemented under the auspices of the ECE, the Organisation for Economic Co-operation and Development (OECD) and the European Union. The following measures and programmes can be mentioned in the ECE region:

- ECE, in cooperation with the Food and Agriculture Organization of the United Nations (FAO), has considered economic, legal, technological and regulatory measures for the promotion of environmentally sustainable agriculture and production of healthy food;
- In the framework of activities on the protection of water resources and aquatic systems, ECE Guidelines on the Ecosystem Approach in Water Management were adopted in 1993, in order to assist Governments in developing and implementing national action plans, programmes and practices for day-to-day water management. Earlier, in 1989, the Charter on Groundwater Management was adopted in order to give broad support to ECE member Governments in their common endeavours to protect groundwater by providing planners and decision makers with appropriate policy instruments;
- With respect to the countries in transition, the 1993 Lucerne Ministerial Declaration put great emphasis on "institutional capacity building, including efficient legal and

administrative framework as well as managing capacity, training and education", when undertaking "essential policy and institutional reform" in these countries. Hence, the Guidelines on Integrated Environmental Management in Countries in Transition prepared by ECE in cooperation with the United Nations Environment Programme (UNEP) were approved in 1994;

- ECE is cooperating with OECD in the extension to the entire ECE region of programmes or practices on: country environmental performance reviews; use of economic instruments for environmental policies; environmentally sound handling of hazardous chemicals;
- At the level of the European Community, the Fifth Environmental Action Programme calls specifically for an integration of environmental policy goals into other policy areas of the European Communities.

2. Cooperation on the harmonization of standards in order to enhance trade

With the enlargement of the European Community and the preparation for access by the Associated States, national markets will increasingly open up on a pan-European level. This process calls for increasing harmonization or convergence of environmental standards where valid reasons for differences do not exist and where there are significant obstacles to trade. Even if there is little evidence that environmental product standards have been a major impediment to trade, the convergence of national approaches to determining and implementing these standards may lead to substantial advantages, such as:

- Improving economies of scale;
- Reducing competitive distortions;
- Reducing pollution havens and the downward pressure on environmental standards;
- Contributing to the achievement of environmental goals.

The regional environmental conventions on air pollution, environmental impact assessment, water management and industrial accidents contribute to the harmonization of standards, policies and approaches.

Harmonization of instruments for integrated environmental protection: the case of environmental impact assessment

In the countries of Europe, environmental impact assessment is increasingly being used as an instrument for the promotion of an integrated approach to environmental protection and management. It requires a comprehensive assessment of the impacts on the environment of a proposed activity and alternative activities. It also leads to the generation of information for decision makers and the public and may contribute to taking preventive measures towards sustainable development.

At the pan-European level, cooperation between countries takes place in the framework of the ECE Convention on Environmental Impact Assessment in a Transboundary Context (Espoo 1991). This Convention constitutes a legally binding instrument to prevent, reduce or control any potentially harmful transboundary environmental impact of proposed activities at the planning stage. It codifies the general obligation of States to notify and consult each other on all major projects under consideration that are likely to cause a significant adverse environmental impact across boundaries. Pending its entry into force, this Convention is being implemented by the Signatories through legislation, bilateral and multilateral agreements, and in concrete projects and activities.

3. Partnerships

The EPE also examines how business and industry could be encouraged to contribute to the improvement of environmental conditions in Europe as a whole and in countries in transition in particular. The process should also involve the public. Significant progress in preventing and abating contamination of the environment in Europe can be achieved only with the full understanding, strong support and participation of the public. That is indispensable at present, and, in the Rio Declaration on Environment and Development and the Lucerne Declaration, for instance, Governments have been called upon to ensure public participation in environmental decision-making. The partnership between Governments and NGOs, initiated in Bergen (Norway) and continued during preparations for UNCED, should receive further momentum through the EPE.

III. ELEMENTS FOR THE ENVIRONMENTAL PROGRAMME FOR EUROPE (EPE)

A. General issues

1. Information

Legislation at the international level and at national level requires the provision of information on various issues of policy-making, such as environmental impact assessment, land-use planning, environmentally friendly products and public transport. Meanwhile, all over Europe, many business firms also make available information on their environmental performance. In addition, various international and national legal instruments have been adopted to grant the public access to environmental information. At the international level the ECE Convention on Environmental Impact Assessment in a Transboundary Context creates a framework for international information and consultation. In the European Community, the Directive on Environmental Impact Assessment serves the purpose of providing information to citizens affected by certain public and private projects. Moreover, the European Community's Directive on Freedom of Access to Information on the Environment obliges member States to enable citizens to inform themselves. At the national level, similar legal instruments have been adopted in many countries.

In the implementation of Agenda 21 and the activities of the Commission on Sustainable Development, countries are encouraged to continue and strengthen their efforts to make available reports on the state of the environment. OECD and ECE have undertaken the expansion of the system of national environmental performance reviews to the entire ECE region. ECE is also promoting the dissemination of information on many issues, such as the implementation of environmental conventions in Europe, forests, transport, the integration of environmental issues in other policy areas and energy efficiency. International NGOs, such as the World Conservation Union (IUCN) and the Regional Environmental Center, also remain active in this field. In the countries in transition, more information on the state of the environment has become available as a result of international assistance programmes launched by the European Community (e.g. PHARE and TACIS) and international financial institutions, such as the European Bank for Reconstruction and Development (EBRD).

Within the European Union, an important step has been taken with the establishment of the European Environment Agency. The Agency's key role is to serve as an active interface between users and suppliers and in particular to supply information to the European Union institutions and Governments to assist in decision-making. To help achieve this, the Agency has set out to build and improve a European network for data collection, analysis and dissemination. Should the network countries join the Agency or other appropriate arrangements be made, the Agency may extend its activities to cover other European countries.

2. Public participation

The principle of participation has entered environmental policy-making at various levels. At the European level, ECE has developed Guidelines on Access to Environmental Information and Public Participation in Environmental Decision-making. In the Fifth Environmental Action Programme of the European Community it was named "shared responsibility" in order to stress the link between participation and responsibility. At the national level, various countries have

introduced voluntary agreements with specific groups in order to set targets, design instruments for implementation and procedures for monitoring actual performance. Moreover, legal instruments have been adopted, notably in the field of packaging-waste recovery, which rely upon the active participation of all citizens.

In many countries, public participation also forms part and parcel of the implementation of certain legislative acts, notably in respect of environmental impact assessment and the construction and operation of certain public and private installations. For the countries in transition, the Regional Environmental Center has proposed its Manual on Public Participation on Environmental Decision-making.

3. Interdepartmental cooperation

With the growing concern for the environment in all countries of Europe, dedicated bodies (departments, ministries, agencies) with responsibility for the environment have been created. With the adoption of sustainable development as the key concept for the future and its implementation along the lines of Agenda 21, the concern for the environment is to be shared by virtually all policy-making organizations. In particular, this integrative approach may place a special responsibility on ministries of the environment in Europe's countries, encouraging them to cooperate with other relevant departments at ministerial level. As environmental policy is the responsibility of the whole Government, improved cooperation between the relevant ministries to integrate environmental issues in sectoral policy has to be promoted.

National environmental policy plans or sustainability strategies have been developed and adopted as the basis for institutional cooperation at departmental levels. Various initiatives have been launched at the international level to promote interministerial cooperation and coordination on environmental issues. In ECE, OECD and the European Community, specific working groups are examining the problems and opportunities for the integration of environmental concerns and requirements into other areas of policy-making, such as agriculture, energy, transport, human settlements, industry, health, trade and finance, and development cooperation.

With the need to implement Agenda 21, further steps towards the integration of environmental concerns in other areas of policy-making will have to be taken. In the European Community, the Fifth Environmental Action Programme is now under review in order to further proceed in this direction. Other EC initiatives include the drafting of directives on integrated pollution prevention and control, and on the ecological quality of surface waters, the Ministerial Decision on transport and the environment of December 1994 and the reform of the Common Agricultural Policy. At national levels, similar steps are likely to be taken.

4. Capacity building and major groups

In view of the implementation of Agenda 21 and the need for sustainable development, environmental capacity building is not restricted to countries in transition. Moreover, new developments, such as integrated pollution and prevention control, the use of economic instruments, the establishment of national environmental accounting systems, the development of life-cycle

analysis and integrated chain management, the closing of materials cycles, the use of renewable energy sources, require substantial capacity building.

Capacity building is a major task not only for Governments at national, regional and local levels but also for major groups, such as the farming, the business and industry community and NGOs. Since available means are limited, priorities will have to be set. One important requirement will consist in closer cooperation in the fields of information and the sharing of experiences, both at international and national levels. Such cooperation might open up opportunities for more effectiveness and the avoidance of unnecessary duplications.

Critical to the effective implementation of EPE is the commitment and involvement of all major groups identified in Agenda 21. In view of the restructuring of Europe towards sustainable development, which is the core objective of EPE, all major groups - local authorities; NGOs; women, youth, and trade union organizations; farmers; the business and industry community (including finance institutions) - will have to deliver a significant contribution, both in western Europe and in the countries in transition.

Policies to incorporate major groups into environmental management are under way at the international level. For the business and industry community, several initiatives have been taken by various organizations, such as the UNEP Industry and Environment Programme Activity Centre, the OECD Ad Hoc Working Group on Industry and the Environment, the capacity building initiative of the International Network for Environmental Management (INEM) and the European Community's Fifth Environmental Action Programme. The European Community's Directive on an Eco-Management and Audit Scheme creates new tools for the self-monitoring, steering and provision of information concerning environmental performance. Incentives are also set for manufacturing environmentally friendly products, for the recovery and recycling of packaging waste and for taking into account liability for compensation for environmental damage. The International Chamber of Commerce has launched its Business Charter for Sustainable Development, whilst the European Chemical Industry Council has approved the worldwide "Responsible Care" Programme.

At the national level, the development of "environmental covenants" with various industrial sectors in several European countries has led to progress in terms of emission reductions, energy conservation and the setting of environmental product standards.

5. Compliance and enforcement

While the volume of environmental laws and regulations in all European countries has steadily increased, law-making has not always been endowed with the necessary institutional machinery and authority for enforcement and timely adjustment. Effective strategies to maximize compliance with environmental laws and regulations are required including incentives towards self-monitoring of compliance by the affected parties. National and local government authorities with powers to enforce compliance can benefit from sharing their experiences at the bilateral and international level. At the level of the European Community, regular meetings among monitoring and compliance authorities of the member States provide a forum for an exchange of experiences.

Compliance with provisions of international environmental conventions requires particular consideration. It implies, inter alia, the creation of appropriate legal instruments at the national level

and monitoring of compliance with these instruments by the actors concerned such as public authorities, industry, agriculture, the retail trade and the public at large.

6. Restructuring, privatization, employment and wider economic effects

The concept of sustainable development calls for the integration of environmental policy with economic and sectoral policies in order to allocate responsibilities for environmental management to the economic actors, such as business, trade and consumers, in a cost-effective manner. In this way, the costs of the use of the environment will be accounted for in decision-making regarding production and consumption. An important requirement towards this aim consists in the development of integrated environmental and economic accounting methods, which will also ensure that externalities and resource use costs are fully taken into consideration.

Environmental concerns are also an important factor in decisions relating to restructuring and privatization, particularly in countries in transition. Experience has shown that the adoption of sound environmental policies has positive effects at the macro-economic level. Countries with strong environmental policies have been able to provide opportunities for the creation of jobs in various fields of environmental protection, including environmental technology industries and the provision of environmental services, such as waste-water treatment and waste management. They also succeed in providing incentives to their industrial companies, noticeably small and medium-sized enterprises, to open up new markets for environmentally sound technologies, products and services.

B. Cleaner production and efficient use of energy and materials

1. Improved energy efficiency and renewable energy

Environmental policies have already had a significant effect on the energy policies of the past 20 years. Many Governments in Europe have implemented new and stricter pollution measures and have initiated advances in clean technologies and industrial processes. In many countries environmental impact assessment is now integrated into the development of energy policies and investments. A number of activities are under way at pan-European, subregional and bilateral levels to promote cooperation among the countries in the region.

Since the 1980s, efficiency has emerged as one of the main issues. At the global level, energy efficiency constitutes an instrument for the implementation of the United Nations Framework Convention on Climate Change. The European Energy Charter, with its accompanying protocols, strives for the establishment of a new framework in which cooperation in energy, trade and commerce can thrive throughout Europe.

Through its projects on energy efficiency and environmental aspects of electric power generation, coal and gas industries, and on new and renewable sources of energy, the ECE Committee on Energy makes an important contribution to achieving this objective. The ECE Energy Efficiency 2000 Project is to enhance trade and cooperation in energy efficient technology between the formerly centrally planned economies and the market economies.

At the level of the European Commission, activities in the field of energy policy and energy efficiency take place through specific programmes, addressing the design of energy policy in countries outside the European Community (SYNERGY), research on renewable energy sources (ALTENER), the conservation of energy (SAVE), energy efficiency (THERMIE), and joint opportunities for unconventional or long-term energy supply (JOULE). Participation in these programmes is open to countries in transition. Moreover, the special programmes of assistance to countries in transition (PHARE and TACIS) also contribute to the improvement of energy efficiency.

Improvements in energy efficiency have already been achieved, particularly in western Europe, but in the future, this development may stall due to low energy prices. On the supply side, differences still exist between the operating efficiency of power generation installations and energy distribution networks across Europe. On the demand side, there is still a large scope for efficiency improvements in energy use. Ongoing policies should keep concentrating on the reduction of the energy intensity of the economy. In the countries in transition, establishing prices which reflect market realities will play a crucial role in improving efficiency in those markets. Throughout Europe the increasing interest in internalizing the external environmental costs of the energy cycle into energy prices might become a key factor in influencing the demand for energy and energy efficiency.

Danish Energy 2000 Programme

In November 1993, Denmark's Government announced a follow-up to its Energy 2000 Programme of 1990. New initiatives were presented in order to uphold the agenda set in Energy 2000. With these new initiatives, the original target of reducing CO₂ emissions by 20% compared to 1988 by the year 2005 is to be met. Energy 2000 follow-up is presented in an international context:

- To contribute to global initiatives, such as the United Nations Convention on Climate Change;
- To integrate environmental objectives in a liberalized international energy market;
- To encourage Danish industry to develop appropriate technologies which can be used in improving the energy systems in the countries in transition.

Energy efficiency measures can be applied to the entire energy chain, including energy extraction, production, distribution and end-use. One of the key links in that energy chain for efficiency improvements are power stations and large industrial sources, especially for the reduction of SO₂ and NO_x emissions. In order to implement emission-reduction and control targets set out in the protocols to the ECE Convention on Long-range Transboundary Air Pollution (Geneva, 1979), specific measures have been introduced by many European countries for industrial sources and power plants, including emission standards, measures related to emission control technology and economic instruments.

New technological developments reveal that refurbishing (retrofitting and repowering) open up opportunities for an integrated approach which combines improvements in thermal efficiency with a reduction in negative environmental impact. In particular, such technologies are commercially available for retrofitting and repowering electricity generating installations fuelled by coal. International cooperation to establish a framework for selecting and introducing the most promising advanced power plant technologies based on cost-benefit analysis under the auspices of the ECE Committee on Energy, notably through the Working Party on Coal, will continue in the future.

Since 1991, the Working Group on Technology under the Convention on Long-range Transboundary Air Pollution prepares technical annexes on control technologies to protocols and develops activities for the exchange of information and engineering services and training for plant operators. The Working Group has also initiated activities aimed at strengthening and harmonizing legal frameworks for air pollution abatement technology in countries in transition. For the countries in transition, EAP also provides guidance. It proposes to reduce the environmental impact through the selection of so-called "win-win" investments which can be justified on economic grounds alone but which bring substantial environmental benefits as well.

In the European Community, legal acts aimed at curbing emissions from industrial installations and large combustion plants have been in force since 1984 and 1988 respectively. These acts provide for emission limit values, distinguishing between new and existing installations, and for programmes for the reduction in total annual emissions from existing plants. A new instrument under development is the proposal for a directive on integrated pollution prevention and control. Moreover, the Directive on Large Combustion Plants is up for revision and will lead to the setting of stricter emission limit regulations.

2. Environmentally sound technology in the ECE region

In the 1980s, efforts to reduce environmental impact were mainly achieved through so-called end-of-pipe control technologies to comply with environmental standards. These technologies, when highly efficient, were costly. Moreover, they did not prevent an excessive use of even scarce non-renewable resources, nor did they encourage the substitution in the production and use of hazardous substances, products and by-products, reduce energy consumption, strive to minimize to the extent possible the generation of waste and residues, avoid health and safety risks and prevent adverse environmental impacts.

At present, policy-making focuses on the promotion of low-waste technologies, which are conceived as integrated systems including know-how, procedures, equipment and management, and the promotion of product stewardship in order to design and develop products made from environmentally sound materials in environmentally sound production processes.

Efforts to promote these policies are made by the UNEP Industry and Environment Programme Activity Centre, ECE through a number of recent recommendations on environmentally sound technology and products, and the OECD Technology and Environment Programme. At the level of the European Community, new and amended proposals for legislation are being prepared and negotiated among member States to implement such policies.

3. Waste management

For the development of waste management policies and legislation, most European countries are building on the groundwork laid by OECD and the European Union. These efforts involve the adoption of new instruments, such as voluntary agreements, the introduction of waste-related ecotaxes, the introduction of post-consumer products take-back duties, the stimulation of deposit-

refund schemes and "reverse vending" systems, and packaging-waste management schemes implemented by packaging producers.

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal calls for the establishment of responsibilities with both the exporting and the importing countries and provides for a common framework for a pan-European transboundary waste management policy. Thirty-three ECE countries have ratified the Convention, under which a protocol on liability and compensation is being developed as well as technical guidelines for the environmentally sound management of priority waste streams and disposal operations. Within the framework of the Convention, a Regional Center of Training and Technology Transfer is being set up in Slovakia, and criteria are developed for the environmentally sound management of hazardous wastes.

In the European Community, waste management policy has been revised and amended since the late 1980s. It is based upon the principles which mandate that prevention should precede re-use, recovery and recycling, including the energy recovery from wastes, and that both prevention and re-use should take precedence over the safe disposal of wastes. Currently, legislative action is under way to establish tight environmental standards for disposal installations, mainly landfilling and the incineration of hazardous wastes.

Examples of waste management initiatives

At the beginning of the 1990s, the European Commission started a series of pilot projects under its Priority Waste Streams Programme. Its purpose consists in identifying specific waste streams which can be either reduced or treated so that they have less impact on the environment with the help of strategies developed by working groups consisting of all involved partners, including representatives of the Commission, the member States, the affected industries and the waste management and recovery sectors, and environmental and consumer NGOs. The main advantage of this new approach is the collection and incorporation of relevant information on production processes and waste recovery and management which is available to all involved partners for the design of a consensus-oriented strategy. Specific waste streams for which this approach has been used include: end-of-life vehicles, health care waste, used tyres, construction and demolition waste, and waste from electrical and electronic equipment.

The Netherlands Programme on Industrial Successes with Waste Prevention (PRISMA), which has recently been concluded, aims at assessing industry's efforts in waste prevention. The pilot projects conducted under PRISMA reveal that, in most cases, good housekeeping measures resulted in a 25 to 30 per cent reduction in chemical substances and that in those cases in which technological substitutions were made, waste and emissions could be reduced by 30 to 80 per cent. The pilot projects also reveal that the measures led to cost-savings and substantial economic pay-backs and other indirect benefits.

In 1990, the French Ministry of Environment launched an ambitious programme aimed at improving the management of waste in industry. Over 1800 businesses took part in this programme. The target was to reduce at the source the volume of waste produced and to improve the rates of recovery and recycling. This programme showed to the industry that improvement in waste management can be easy to apply and very profitable.

C. Sustainable consumption patterns

Agenda 21 concluded that the major cause of the continued deterioration of the global environment was the unsustainable pattern of consumption and production, particularly in industrialized countries. Developed countries have agreed to take the lead in achieving sustainable patterns of consumption. Since the Rio Summit, there has been a significant increase in efforts and activities at the local, national and international level to change consumption patterns, resulting in the adoption of a work programme on changing production and consumption patterns at the third session of the United Nations Commission on Sustainable Development in April 1995.

Sustainable consumption is an umbrella goal that integrates a number of key policy trends:

(a) **Improving understanding:** Governments, business, the scientific community and NGOs are developing new ways of analysing and understanding the environmental impacts of consumption patterns and trends, using notions such as life-cycle management, eco-efficiency and environmental space. Increasing emphasis is being placed on the social, cultural, demographic, economic and technological driving forces of consumption;

(b) **Upgrading product policies:** Governments are developing more sophisticated product policies based on the life-cycle approach, notably by extending producer responsibility for the environmental impact of consumption;

(c) **Focusing on facilities and infrastructures:** Governments now recognize that capital stocks of physical infrastructure, for example, in housing, energy, transport and waste management can lock societies into polluting and inefficient patterns of consumption over which individual consumers have little influence;

(d) **Revising purchasing policies:** Governments and business are beginning to help shape overall patterns of demand for environmentally sound goods and services by integrating environmental criteria into supplier policies and public procurement requirements;

(e) **Diffusing best practice:** Governments are now looking for ways to support and diffuse pioneering efforts to achieve sustainable consumption, such as demonstration projects for low-waste communities, urban transport systems with clear environmental criteria and integrating sustainability into land-use planning;

(f) **Empowering individuals and households:** national and local governments are now starting to support innovative community-based initiatives that empower individuals and households to make and sustain changes at home and in the workplace.

Environmental space

Environmental space is the total amount of absorption capacity, non-renewable resources, agricultural land and forests that can be used globally without impinging on the access by future generations to the same resources. The Action Plan Sustainable Netherlands produced by Friends of the Earth Netherlands and Towards Sustainable Europe from the Wuppertal Institute argue that each country has a right to the same amount of environmental space per capita, and set intermediate targets for achieving this for 2010. During 1995, studies and debates are taking place in 31 countries in eastern and western Europe to develop a strategy for realizing sustainable production patterns.

(Friends of the Earth Netherlands)

The sustainable consumption agenda builds on increasing examples from eastern and western Europe of successful win-win initiatives where environmental quality has been enhanced along with economic efficiency and industrial competitiveness. For economies in transition, the fundamental task is to improve resource efficiency, strengthen their positive consumption features (for example, in public transport), while avoiding the introduction of wasteful and polluting consumption patterns. There is no single blueprint for sustainable consumption in the ECE region, and the EPE aims at

reinforcing and diffusing these examples of best practice. By taking practical action in this way, Europe will be able to demonstrate to developing countries that it is taking a leading role in changing consumption patterns in line with its commitments in Agenda 21. Central to this will be the setting of sustainability targets and time-frames for achieving them.

Targets and time-frames

Quantifiable policy targets as well as indicator systems measuring progress towards these targets are needed if the appropriate policy instruments are to be chosen and evaluated. The targets should be limited in number and applicable in a cost-efficient manner. Within the framework of national sustainable development plans, Governments should strengthen their efforts to set quantified and comprehensive sustainability targets.

To move towards the goal of sustainability in Europe, the Wuppertal Institute has set the following average per capita environmental targets for 2010:

Primary energy use:	20% reduction
Non-renewable raw materials:	20-25% reduction
Land use:	12% reduction
Transport intensity:	10% reduction

Wuppertal Institute)

1. Market-based instruments

Market-based instruments seek to improve the workings of the market economy by enhancing flows of information (e.g. through environmental auditing and eco-labelling schemes), by adjusting the relative prices of goods and services (e.g. through the introduction of economic instruments, such as eco-taxes and charges) and by extending producer responsibility for the environmental performance of goods and services (e.g. through take-back requirements).

The polluter-pays principle

The polluter-pays principle was adopted by OECD in 1972 as an economic principle for allocating the costs of pollution control. The principle means that the polluter should bear the "costs of pollution prevention and control measures", the latter being "measures decided by public authorities to ensure that the environment is in an acceptable state". Generally speaking, the polluter has to bear all the costs of measures to prevent and control the pollution that he originates.

The principle started out as an economic principle but is also becoming a legal one, because it is increasingly incorporated in international environmental law and treaties. The predominant trend is to place further liability on the polluter and to alleviate the economic burden which pollution places on the authorities. The polluter-pays principle is not a principle of equity; it is designed not to punish polluters, but rather to set appropriate signals in place in the economic system so that environmental costs are incorporated into the decision-making process, and hence to facilitate a more sustainable pattern of development. The aim is to avoid wasting natural resources and to put an end to the cost-free use of the environment as a receptacle for pollution. Implementation of the principle is intended to secure economic efficiency and to reduce distortions in international trade and investment to a minimum.

(OECD, Environment Directorate)

Economic instruments are increasingly seen as a preferred way of internalizing environmental costs and steering economic activity towards sustainable development. If designed and implemented intelligently, these tools can help to significantly increase efficiency and resource productivity, thus creating win-win situations for the consumer, the economy and the environment. There is also growing interest in shifting the overall tax burden from labour onto pollution and resource use as part of a wider strategy to promote employment. Economic instruments are often set according to

environmental policy targets and agreements and can be used in conjunction with other policy tools such as regulation and education.

The role of the banking sector

An important factor in moving towards sustainable development is ensuring that investments follow environmental criteria. Since 1991, the United Nations Environment Programme (UNEP) has been working with the banking sector to increase environmental awareness and encourage integrated environmental management. Some 80 banks in 26 countries have signed UNEP's Statement by Banks on Environment and Sustainable Development, including 37 from western Europe and 18 in eastern Europe.

(UNEP Regional Office for Europe)

Among the economic instruments aimed at influencing consumer behaviour, the following are now widely used in European countries:

- Emission charges, typically for the generation of waste water and of waste;
- Product charges, e.g. related to environmentally harmful contents or to energy use;
- Deposit-refund schemes, e.g. for bottles and containers;
- Tax differentiations, e.g. for energy-saving products or transport modes.

In addition to the introduction of new economic instruments, one of the most cost-efficient means of steering the market towards sustainable development is to screen existing subsidies for consumption and production (e.g. for agriculture, energy and transport), and to restructure and, if necessary, remove those that generate environmental damage. It is also important to point out that current resource prices, notably energy and water prices and fees for environmental services, such as waste-water treatment and waste management, do not reflect real costs in all countries of Europe. It is therefore necessary to internalize environmental costs as early as possible in the life cycle of a particular consumption system.

One of the most successful instances of environment-related market instruments has been the promotion of lead-free petrol, accomplished by simple (tax-driven) price differentiation affecting consumer behaviour. Other examples are more ambitious fiscal reforms (e.g. the Belgian eco-taxes of 1993); complex arrangements with the private sector for product responsibility (such as Germany's closed substance cycle and waste management act, scheduled to enter into force in 1996); or additional import duties on old cars (> 10 years, as levied in Bulgaria since 1993, with the proceeds providing about one third of the income of the National Environment Fund).

The social effects of environmental measures

The poor suffer far more from pollution, noise, resource constraints and lack of access to recreational areas than the rich. This may even be measured in the greater incidence of environmentally-induced diseases. Therefore, an overall improvement in environmental conditions will give proportionally larger benefits to the poor.

Some measures, such as removing energy subsidies, will lead to greater energy efficiency and thus save both money and emissions. Social improvements, however, will follow depending on the specific policies that are implemented. The amount of commodity subsidy going to low-income groups must be redirected to support programmes reaching the same groups. Resource use by low-income groups is usually a small part of the total resource use, so the released funds can be ploughed back into increased social benefits, infrastructure projects or other parts of the public economy.

Similar reasoning applies to taxes to internalize environmental costs. A small portion of the increased revenue could be ploughed back into direct compensation for low-income groups while the surplus could be used to reduce general taxes on labour, thus stimulating employment.

There is no social justification for not carrying out such reforms in a rapid and targeted way. Delays will both increase environmental damage and make change more expensive due to the build-up of an inefficient infrastructure.

(Ministry of Environment, Norway)

2. Eco-labelling

Product labelling schemes can either be voluntary or compulsory. Whereas for some products in the European Community, such as refrigerators and freezers, labelling regulations on energy consumption are binding, the majority of eco-labelling schemes, including the European Community eco-label, remain voluntary. Eco-labelling schemes may pursue various objectives:

- (a) Point out health and safety concerns about a product, e.g. cigarettes, through negative labelling;
- (b) Highlight certain aspects of a product, i.e. recyclability, biodegradability, energy consumption, through single issue labelling;
- (c) Promote more environmentally friendly products through multi-issue positive labelling.

For most of the existing systems belonging to the last group, there are procedures to select product categories and to determine threshold criteria. Consumer and environmental organizations, as well as business associations, have key roles to play in managing eco-label systems. Governments need to facilitate the participation of these groups in the formulation of criteria.

Eco-labelling at the international and national level

The European Community eco-label scheme was established by a regulation adopted in March 1992. The criteria for awarding an eco-label to products of specific product categories are determined by the European Commission, which is assisted by a committee of representatives of the member States and a consultation forum made up of representatives of industry, commerce, consumer groups and environmental groups. So far criteria have been set for washing machines, dishwashers, paper towels for kitchens, toilet paper, soil improvers, detergents, paints and varnishes. Many other product categories are to follow soon.

The objective of the eco-labelling scheme in the Czech Republic is to encourage environmental protection through the production and use of products with reduced environmental impact. An advisory body to the Ministry of Environment supervises the labelling process by applying criteria for individual product categories. The system is largely financed by participating producers. In the first six product categories, 14 eco-labels have already been awarded.

Eco-labelling schemes have to be open, transparent and accountable, based on scientific evidence and public participation. Efforts at the ECE level have to focus on ensuring the comparability and reproducibility of cradle-to-grave assessments for awarding eco-labels, and on improving market access for central and eastern European goods and services through technical assistance and capacity strengthening.

In particular, countries in transition require assistance in introducing criteria for eco-products so that they can protect and develop their shares of growing environmental markets. Increasing the comparability and reproducibility of existing eco-label programmes, as well as the transparency of the details of the categories covered and the criteria and procedures for their attribution, is therefore essential. This could provide an opportunity for stimulating policy cooperation and enhancing trade between eastern and western Europe.

Harmonizing environmental life-cycle assessment

Public procurement programmes as well as environmental labelling systems may have unintended effects on international trade. But environmental requirements for products that are equally applied to both domestic and imported products and have a sound scientific basis do not run counter to the General Agreement on Tariffs and Trade (GATT). Automatic mutual recognition of eco-labels is probably unrealistic, partly because Governments may not necessarily have direct control over all labelling schemes, and partly because some countries may wish to set stricter norms for their own environmental quality.

Cooperation on standards between interested countries will minimize trade friction, but national conditions may vary so much that harmonization of the standards themselves may be less important than harmonizing the methods for carrying out the assessments. Within the framework of GATT, countries cannot discriminate between like products on the basis of features of the production process that do not affect the characteristics of the product itself. This means that Governments can only base procurement policies on the properties of the product itself.

Private procurement and labelling schemes, however, are free to demand certification of any aspect of the production process. This is routinely done with regard to food by some religious groups, and some environmental organizations have initiated labels for sustainable harvested timber. The ISO 9000 standard provides a standardized tool for documenting all aspects of the process leading up to a product, and ISO standards can be adapted to product life-cycle analysis. With published criteria for key aspects of local, regional and global impact, such a system will be open for all potential exporters. The laws in many countries against false description of goods will serve to guarantee the truth of the label even if international standards do not exist. A useful joint effort with regard to both official and private labels and procurement systems might be to give aid and guidance to potential exporting countries so that they can have easier access to the certification procedures.

(Ministry of Environment, Norway)

3. Sustainable transport

Transport poses an important threat to Europe's environment. This calls for a coordinated policy approach. To decrease the environmental impact of transport a series of measures have been taken in many countries. These measures can be classified into:

- Legislative measures on technical standards (e.g. emission standards, fuel quality standards);
- Construction measures (e.g. impact assessment, pollution and noise protection, safety);
- Transport planning and traffic management;
- Economic instruments (internalization of costs, differentiated taxes for fuels and vehicles, scrapping benefits to replace polluting vehicles with clean vehicles);
- Staggered working hours;
- Others (speed limits, time restrictions, educational campaigns, drivers' behaviour, car pooling).

However, these measures are not yet applied at the same level in all countries. As regards energy consumption, the growth in road and air transport in western European countries will cancel out the technical improvements achieved in the vehicle fleets. A common problem for policy makers in Europe today is the growing transport demand and the need to best allocate this demand to different transport modes. There is a need to consider a more wide-ranging use of different instruments (including economic instruments). Countries in transition need special help, as transport demand in these countries will increase even more than in the highly industrialized countries in relative terms, while their financial constraints will make it difficult for them to implement international targets and standards.

Restructuring of traffic management at a local level

In the city of Bergen (Norway), traffic management was restructured through a combination of measures. As a first step, road pricing was introduced at toll gates on the main access roads to the city. Supplementary actions included tighter restrictions on access for private cars and on parking, a reduction in transport requirements in general through improved public transport and land-use planning. As a result less traffic entered the city, safety was increased and noise pollution reduced.

(Ministry of Environment, Norway)

The European Council of Ministers of Transport has addressed the contribution of transport to global warming. OECD has developed indicators for the integration of environmental requirements in transport policies. In the European Community, legislation on the content of fuels, exhaust gas standards, volatile organic compounds in the ambient air, the testing of vehicles, traffic noise and on environmental impact assessment of infrastructure projects is in force and regularly updated to reflect progress in the state of the art. Attempts to integrate environmental requirements into transport policy have been made in the Green Paper on the impact of transport on the environment and in the White Paper on the future development of the common transport policy. Moreover, research efforts on cleaner fuels and environmentally friendly transport systems and vehicles have been initiated. The recent conclusions of the Environment Council of the European Union on the issue of transport and the environment raised the need for wider consideration of aviation fuel.

At the pan-European level various international initiatives have been undertaken. The 1996 Regional Conference on Transport and the Environment, being prepared under the auspices of ECE, should assess the situation, establish a common strategy and adopt a programme of action to reconcile transport development and environmental objectives within the framework of sustainable transport and mobility.

4. Recreation activities

Agenda 21 and the Fifth Environmental Action Programme of the European Community acknowledge the need for sustainable tourism. With respect to nature protection, the Council of Europe has developed recommendations for a sustainable and environmentally friendly tourism development policy. Guidelines for sustainable tourism in national parks and protected areas have been developed by UNEP and the World Tourism Organization (WTO). NGOs such as the World Conservation Union (IUCN) have developed a classification system for national parks and protected areas. The World Wide Fund for Nature (WWF) has laid down principles for sustainable tourism. At the subregional level (EC), criteria have been developed for beach tourism (Blue Flag). An EC tourism action programme is currently also being implemented. In this context, it is also important to mention the implementation of relevant EC Directives (e.g. on urban waste-water treatment) in coastal areas of the Mediterranean member States, which is reducing the impact on the environment.

In the near future, more principles and guidelines for sustainable tourism can be expected. They include the development of indicators for sustainable tourism by the WTO and by the World Tourism and Travel Environmental Research Centre (WTTERC). These indicators will be tested on a voluntary basis. Guidelines for carrying capacity assessment for tourism in Mediterranean coastal areas are in preparation. Moreover, various initiatives for the development of eco-tourism concepts have been launched within the tourist industry. They include, among others, the hotel sector for the management of energy and water consumption.

At the national level, ministries with responsibilities affecting tourism will have to pool their efforts in order to design sustainable concepts for tourism. Their implementation will require the help of all partners involved in the tourist industry.

5. Urban stress including human health aspects

Millions of urban dwellers suffer from respiratory disorders and chronic respiratory diseases due to exposure to levels of particulates and SO₂ and NO_x in ambient air that regularly exceed the World Health Organization's quality guidelines. Although differing conurbation patterns throughout Europe create particular patterns of urban stress, the underlying stress components identified by ECE, OECD and the European Community are always the same. On the one hand, there are components affecting the physical flows of material cycles such as energy consumption in human settlements and in urban traffic, waste generation from construction and households, urban water consumption and urban sprawl. On the other hand, there are components increasing human stresses such as the deterioration of housing conditions, the reduction of green areas, traffic congestion and noise.

Current national policies in Europe concentrate on urban renewal and restructuring programmes and on setting environmental quality standards. In a large number of European cities the renovation and upgrading of the building stock are the subject of extensive programmes. They combine the improvement of energy efficiency, the quality aspect of human housing and the economic revitalization of the city as a whole.

The Local Agenda 21 Initiative

The Local Agenda 21 Initiative is a project of the International Council of Local Environmental Initiatives in cooperation with the International Union of Local Authorities. It is a follow-up activity to UNCED and supports local authorities in implementing the Local Agenda 21. On the basis of the "Charter of European Cities and Towns towards Sustainability", approved by the participants of the Aalborg Conference in Denmark in 1994, a campaign was started to encourage and support cities and towns to work towards sustainability. Special attention is given to:

- Redesigning environmental planning mechanisms;
- Collecting and disseminating information on good examples at the local level;
- Supporting local policy makers in implementing appropriate recommendations and legislation of the European Community, based on the Fifth Environmental Action Programme "Towards Sustainability".

The setting of environmental quality standards focuses mainly on sectoral policies to cope with the most urgent stresses on human health. Those policies include the reduction of air pollution, tightened standards for car exhausts, standards for fuel quality and the reduction of municipal waste promoting the separation of waste at source and recycling. The individual sectoral policies are generally not coordinated however. Integrating them into the planning, building and management of human settlements is therefore one of the major issues for ECE, OECD and the European Community. Moreover, a better understanding has to be obtained of the definition and the characteristics of a sustainable city in the European context and the limits of local and global ecosystems which are affected by the urban activities. This understanding will allow for the definition of targets and the identification of policy concepts and programmes towards sustainable cities.

D. Sustainable management of natural resources

1. Soil protection

The soil is a complex system that supports nearly all land-based ecosystems and is the basis for many human activities. Soils perform many functions, which can be grouped into the following six basic categories: basis for biomass production, filtering and buffering medium, habitat and gene reservoir, foundation, raw material, and historical medium.

In 1972, Ministers of the Council of Europe emphasized in the European Soil Charter the need to protect the soil against certain farming practices, erosion, pollution and damage from human settlements and infrastructure development. Similarly, the 1981 World Soils Charter called for a more rational use of soil resources. With the adoption of Agenda 21, the importance of environmentally sound soil resource management was acknowledged. The importance of soil is furthermore emphasized by emerging concerns about global environmental problems, such as climate change, preservation of biological diversity, and the long-term sustainable potential for food

production and its implications for world food markets. Moreover, soil degradation has serious effects on other environmental media. These include: contamination of water resources and sediments with heavy metals, nutrients, pesticides and pathogens.

Public policy instruments to achieve soil protection goals are identified as regulatory, economic, and advisory. At present, European countries are at different stages in the implementation of these three instruments. Regulatory instruments mostly aim at ensuring the production potential of soils, mainly for agricultural and forestry uses, the protection of soils against erosion, and the restriction of certain activities to achieve desired standards. Certain countries rely partly on voluntary systems to introduce soil conservation measures. Among the incentive measures, direct and indirect payments to encourage soil conservation, nature protection, and afforestation have played the largest role.

In various European countries legislative policy is focusing on the integration of soil protection measures into various sectoral environmental legislation, such as environmental quality and environmental performance standards for soil and water quality, and the preservation of species and habitats, including wetland and forests. In this regard, the aspect of private ownership of land needs to be given particular consideration.

The contamination of land resulting from past and present economic activities is of special importance. The improper disposal of wastes and sludges as well as the existence of unauthorized dumps pose threats to soils on the European level. In the member States of the European Community, a tentative list of contaminated sites has been compiled. Although the process of site assessment is difficult, some countries have started to systematically record and monitor contaminated sites in combination with clean-up programmes. In countries in transition the existence of contaminated sites and the question of liability may undermine economic development and foreign investments. Contaminated military sites require particular consideration.

National policy examples

The Netherlands adopted the Soil Protection Act in 1987 to maintain and restore the multifunctionality of the soil. This is being achieved by a set of threshold values indicating the need for certain kinds of action such as further investigation or the start of clean-up programmes to be taken if the threshold value is exceeded.

To tackle the problem of contaminated sites, the Environment Protection Agency in Denmark has published an annual register of contaminated sites since 1990. The data are collected at the regional level and provide information on the location of each site, its size, the present and former use, the main contaminants present and an estimation of the risk that the site represents to surrounding water bodies and people living nearby. According to this register, priorities for the selection of remediation plans are set.

2. Integrated and sustainable water management, in particular in transboundary waters

In Europe, a number of countries have defined national strategies for the protection and use of water resources or are in the course of drawing up new strategies to respond to specific objectives of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki, 1992). These strategies aim to prevent, control and reduce water pollution, establish

ecologically sound water management, conserve water resources, and protect and restore aquatic ecosystems. The precautionary, polluter-pays and sustainability principles are the focus of these strategies. Moreover, in some countries, the provision of quantitatively and qualitatively adequate drinking-water is a concern. This calls for an integrated approach in terms of water quality and quantity in the development, management and use of water resources, as set out in Agenda 21.

Progress has been achieved in many countries, particularly those with market economies, in the development and application of waste-water treatment and sanitation technology, the establishment of appropriate design standards, and the adoption of restrictive discharge authorization procedures. The total load of effluents has been cut by introducing in-plant measures and modifying production processes. Discharge-oriented control, based on technological requirements, is applied in a wide variety of industries. For new industrial plants in countries with market economies, the application of best available technology is frequently required to treat waste waters which contain hazardous substances and to achieve maximum pollution prevention together with an optimum degree of safety. Furthermore, measures concerning pollution reduction from municipal sources were widely effective.

The ecosystem approach to water management has been embedded in a number of new water acts or recently updated water legislation in various ECE countries. It requires that the whole catchment be considered as the natural unit for integrated water management and that aquatic ecosystems be protected and restored to a target state of high ecological quality. To promote the ecosystem approach, measures such as the integrated planning of land and water use in river basins and the prevention of settlement and economic activities in sensitive and fragile areas should be implemented. Administrative structures also have to be re-arranged to facilitate coordination between relevant institutions and services.

Policy initiatives aiming to reduce toxic contaminations in surface waters and groundwater resulting from industries, transport accidents, decommissioned industrial and military sites as well as the excessive use of fertilizers and pesticides in the agricultural and non-agricultural sectors have already become prime issues of water management cooperation on a pan-European scale. Improvements will take time and require the setting of priorities and stepwise solutions.

The pollution of transboundary watercourses and international lakes is a matter of particular concern. There is also growing concern over the severity of floods in transboundary waters, particularly as a consequence of man-made alterations to river banks, river beds and flood plains.

Cooperation in the Danube basin

In 1991 the Danubian countries decided to prepare specific international agreements to protect the environment of the Danube River Basin. This led to the Convention on Cooperation for the Protection and Sustainable Use of the Danube River signed in Sofia on 29 June 1994. The Convention falls within the framework of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki, 1992), drawn up under the auspices of the United Nations Economic Commission for Europe. An ecological convention for the Danube River Basin is still in the process of negotiation.

Also in 1991, the idea of starting operational activities to support these negotiations was proposed as part of technical assistance programmes for central and eastern Europe. The Danubian countries, international financing organizations, G-24 countries and NGOs decided to launch the Environmental Programme for the Danube River Basin. Its main objective is to strengthen the operational basis for environmental management in the Danube River Basin. Support to Danubian countries to implement the above-mentioned Convention will also be given. The drafting of a Strategic Action Plan for the Danube River Basin was one of the main tasks of the Environmental Programme. It was endorsed by the Environment or Water Ministers of the Danubian countries and the Member of the European Commission responsible for the Environment in the Ministerial Declaration of Bucharest on 6 December 1994. The Action Plan lays out strategies for overcoming the water environment related problems in the Danube River Basin. It sets short, medium and long-term targets and defines a series of actions to meet them. A short-term target should be reached within a period of ten years, that is by 2005. A series of actions to achieve these targets is described for each sector - public authorities at central, district and local level; municipal water companies and utilities; industrial enterprises; the general public and NGOs; and agricultural enterprises and the farming community. These actions will be implemented through National Action Plans.

3. Integrated coastal zone management and the protection of the marine environment

Europe's seas play a key role in the maintenance of the Earth's atmosphere. Some seas are enclosed or semi-enclosed, whereas others are open. The environmental quality of the seas also depends on the size of the population living in the catchment areas. For some seas this population is small, for others it is large. Nevertheless, some problems are common to many of Europe's seas. These common problems include: overexploitation of marine resources and uncontrolled or uncontrollable pollution. As a result, contaminants are deposited, eutrophication processes develop and fish stocks are threatened by depletion. In some coastal areas and inland seas, noticeably the Black Sea, a drastic transformation of ecosystems is caused by invasions of exotic species. Moreover, a change in the Earth's climate may lead to an irreversible rise of the sea level.

For the protection of the seas, the collection of accurate information allowing for an assessment of the scale of the problems is important. In particular, better information about the relative shares of land-based and riverine and other sources of pollution is required. The management of marine areas and coastal zones will have to be integrated.

There are many activities dealing with coastal zone and marine management. Some of these take place under global conventions such as the Law of the Sea, the London Dumping Convention, which addresses the disposal of waste into the sea, and the International Convention for the Prevention of Pollution from Ships (MARPOL). Specific conventions address oil pollution from tanker accidents. In the European Community, directives are in force to protect the quality of waters, including bathing water and shellfish waters. Other legal acts, such as the Directive on the treatment of urban waste water and the Directive on water pollution caused by nitrates from agricultural sources, have an impact on coastal zones and the marine environment. The European Community also supports the Blue Flag Campaign to encourage beach operators to meet these legal and other standards.

At subregional level, multinational conventions are in force to protect certain seas, such as the Mediterranean Sea, the North Atlantic Ocean, the Baltic Sea and the Black Sea. The protection of the North Sea takes place in the framework of the North Sea Conference. International cooperative programmes have been initiated to monitor the quality of the seas, determine guidelines for the prevention and reduction of emissions into the seas and build capacity. Integrated coastal zone management is being developed in the Wadden Sea, the Black Sea and the Mediterranean Sea.

4. Spatial development

Due to its very long history of settlement, large parts of Europe's rural landscapes are no longer natural but artificially modified. These landscapes are therefore named cultural landscapes. As such, with the evolving changes of human activities, the cultural landscapes are also subject to change. Whereas it is recognized that cultural landscapes can and do have many ecologically important properties, it is important to define the criteria and conditions which must be met in order to safeguard their potential for a sustainable performance of the functions that they are attributed. Such changes include: increasing transport infrastructure, growing urbanization, industrial relocation. In many urban environments of Europe, cityscapes constitute a visual scenery of urban life, often located in and around historic centres. But urban changes and urban stresses constitute a threat. One area in which land-use planners of both western and eastern European countries have identified common interests and common opportunities is the revitalization of abandoned industrial sites with the aim of defining new functions for them.

Land-use planning constitutes an instrument to attain such objectives. Typically, it is an activity which takes place at the local level. Land-use planning addresses a variety of issues dealing with urban settlements, transport networks, the location of economic activities through zoning regulations, the designation of areas for leisure activities and the conservation of cultural heritage sites, the protection of cultural landscapes and of nature reserves and nature monuments.

For the protection of cultural landscapes, cultural heritage, nature reserves and nature monuments, cooperation at the European level has been developed by the Council of Europe and by major international environmental NGOs, such as IUCN. In the European Community, legislation such as the Habitat Directive (1992) has been passed in order to provide the member States with instruments to define certain areas as being important for the conservation of biodiversity, of landscape patterns and of cultural features. Regulation 92/2078/EEC makes grants available to member States for farmers who ensure that their application of traditional farming methods respects the environmental quality. International cooperation towards sustainable urban environments is growing through networks such as the International Council for Local Environment Initiatives (ICLEI).

E. Biological and landscape diversity

The need has been widely recognized for an innovative and proactive approach to stopping and reversing the degradation of biological and landscape diversity values in Europe. The principal aims should be to:

- (a) Significantly reduce threats to Europe's biological and landscape diversity;
- (b) Increase the resilience of Europe's biological and landscape diversity;
- (c) Strengthen the ecological coherence of Europe as a whole;
- (d) Assure full public involvement in the conservation of biological and landscape diversity in Europe.

To realize these aims the strategic objectives may comprise:

- (a) Conservation, enhancement and restoration of key ecosystems, habitats, species and landscape features;
- (b) Sustainable management and use of the positive potential of Europe's biological and landscape diversity through the optimal use of the social and economic opportunities on a national and regional level;
- (c) Integration of biological and landscape diversity conservation and sustainable use practices into all sectors managing or affecting such diversity: agriculture, forestry, hunting, fisheries, water management, energy and industry, transport, tourism and recreation, defence, structural and regional policies and urban and rural planning;
- (d) Improved information on, and awareness of, biological and landscape diversity and the processes that render them sustainable.

Measures to be undertaken may include:

- (a) Supporting and building upon national strategies under the Convention on Biological Diversity, the EC Habitats Directive, the Bern Convention on the Conservation of European Wildlife and Natural Habitats and other relevant conventions;
- (b) Establishing a pan-European ecological network and encouraging national ecological networks;
- (c) Developing pan-European public awareness and support campaigns for biodiversity and landscape conservation;
- (d) Developing comprehensive reference guides, guidelines addressing policies for the protection of the cultural and geological heritage, a code of practice and awareness techniques.

F. Sustainable agriculture, forestry and fisheries

1. Sustainable agricultural policy

The growing awareness of potential dangers to human health and the environment caused by agricultural activities all over Europe motivated policy makers to initiate the integration of environmental issues into agricultural policies. Sustainable agricultural policy is expected to ensure, inter alia, the environmentally sound management of the energy flows and nutrient cycles, and the provision and management of a diversified cultural landscape and rural amenity.

Most western countries have become more aware of the need to integrate environmental objectives in their agricultural policy. In particular, the reform of the Common Agricultural Policy of the European Community has established a series of regulations which will contribute to reducing the environmental impacts of agriculture. The introduction of agro-environmental regulations promotes various forms of extensive agricultural production, including the reversion of arable land to permanent pasture, organic farming, ecologically sound, low-input extensive farming and the protection of hydrological systems. Based on ecologically sound low external input, these production methods offer the flexibility to adapt the spectrum of alternative methodologies to different crop, farmer or consumer requirements. However, the integration of environmental objectives into agricultural policy, even though relatively easy to achieve, constitutes a long-term process which requires changes in farmers' behaviour in the European Community.

**Recent regulations adopted in the European Community
with an impact on the agro-environmental field**

- Provision of environmental services on a contractual basis (2078/92)
- Financial incentives towards extensification of beef production (Regulation EEC 3611/93)
- Set-aside regulations with the option to transfer set-aside obligations to environmentally sensitive areas (Regulation EEC 213/94)
- Relating the cost of additional environmental measures to price-support mechanisms for arable crops
- Improve the health and environmental qualities of plant protection products (Directive 91/414/EEC)
- Progressive reevaluation of active ingredients already on the market during a ten-year period beginning in 1992 (Reg. 3600/92)
- Establishment of a programme to review the use of pesticides and identify their environmentally sustainable use
- Implementation of the Nitrate Directive (91/676/EEC)
- Implementation of the Habitats Directive (Natura 2000)
- Standards for the production and labelling of organic foodstuffs (Regulation 91/2092/EEC)

In the countries in transition, the current economic framework seems to be a major obstacle to the further integration of environmental and agricultural policies. Land reform (land restitution and land privatization) and the restructuring of large-scale State and collective units are key issues. All these countries are moving from a command economy to more market-based systems.

**The Polish programme on Pro-ecological orientation in agricultural policy
in the 20th and 21st centuries**

Three major issues concerning the relationship between agriculture and the environment are dealt with in this programme:

- Transformation of big State-owned farms into smaller enterprises;
- Fertilizer production and use;
- Soil degradation in the form of soil erosion threatening almost 10 per cent of the agricultural land.

Within the programme, monitoring systems for natural resources and food products have been established. To support the structural change towards family farms with an average size of 20 to 30 ha, three governmental agencies were set up. They are to balance the production and demand patterns on a national level, grant low interest rates and credits for farmers and accompany the transition of previously State-owned farms. The use of fertilizers is connected to a local recommendation system. Furthermore, a regulation on fertilizer use, covering all agricultural and environmental problems, has been adopted. To tackle the problem of soil erosion, an assessment classifying regions at risk was set up. According to this assessment, regional countermeasures are proposed.

In order to establish sustainable management forms of energy flows and nutrient cycles, FAO focuses on two major policy issues: (1) nutrient seepage, and (2) accumulation of pesticides. The importance of the Special Action Programme on Integrated Pest Management established by FAO was recognized in Agenda 21.

The Swedish pesticide reduction programme

The programme set clearly defined targets for a 50 per cent reduction in volume of agricultural pesticide use in the first phase from 1986 to 1990. With a mixture of voluntary and regulatory measures, a wide range of constituencies and organizations were actively involved. The reduction target of 50 has been virtually met, concentrating on the reduction of herbicide use in cereals. Measures taken included: (1) the registration of pesticides in three classes according to the risk that they pose to humans and the environment; (2) training requirements for the handling of pesticides of classes one and two; (3) an approval mechanism for pesticides, supervised by the National Chemicals Inspectorate, that is linked to the potential effects on human health and the environment; (4) support through research and development programmes.

At the pan-European level the ECE Committee on Environmental Policy, through its Working Party on Water Problems and the FAO/ECE Working Party on Relations between Agriculture and the Environment, has initiated work on selected aspects of these issues. Attention has been given to environmentally sound agriculture and the production of healthy food, to external factors and their impact on the quantity of agricultural production, to water pollution, reduction of water stocks and soil degradation. Guidelines to ECE Governments on the Prevention and Control of Water Pollution from Fertilizers and Pesticides have been adopted.

2. Sustainable forestry

The nature of Europe's forests has changed over the last few decades, due to changes in the demand for wood, government policy and ownership patterns. In terms of quantity, forest areas in southern and western Europe increased, while in many countries of eastern Europe forest cover decreased or remained stable. On a pan-European scale this resulted in an overall increase in forest area of over 10 per cent since the early 1960s. The increase is mostly due to the afforestation of poor soils or abandoned agricultural land. In terms of quality, forest composition and use has also changed. The proportion of coniferous species has remained almost constant over the last 40 years.

The forest sector is still greatly influenced by developments in and demand for wood products for other sectors such as energy, construction, industry and trade. The consumption of roundwood in Europe has increased slowly over the last 25 years. The demand for cheaper wood in Europe has been met by increases in yields and the efficiency of production in terms of labour and capital inputs. To counteract, at least partially, the effects of economically managed forests, at the national level, strict laws usually apply to woodland clearance and the requirement for restocking after felling.

These general demands are met differently by the countries in Europe, depending on their social and economic structure. In many western countries, about half the forest area is operated by a multitude of private forest owners. The private forest sector is influenced both by governmental interventions such as grants, subsidies or tax concessions and by its own natural and cultural heritage motivations. The countries in transition face radical adjustments in the forest and forest industries sector. Forest ownership, support and control of private forest owners, investment in forest industries, the adaptation of trade patterns as well as the acquisition of marketing and management skills constitute priority areas.

In wood production, the aspect of sustainable yield management has traditionally been the primary objective of the majority of European foresters. Many countries in Europe therefore try to reconcile sustainable wood yield with sustainable forestry in the broad sense. The second Ministerial Conference on the Protection of Forests in Europe in 1993 in Helsinki set up guiding principles regarding the sustainable management of Europe's forests and the conservation of their biodiversity. Furthermore, a set of quantitative indicators for sustainable management has recently been adopted.

The recommendations of the Inter-governmental Panel on Forests established by the United Nations Commission on Sustainable Development at its third session, the ongoing programmes of the ECE Timber Committee and the FAO European Forestry Commission attached the highest priority to the issue of sustainable forest management. In cooperation with FAO, ECE has built up a comprehensive information base to assess the situation as regards sustainability. The assessment confirms that wood production still has a stronger position than other uses of forest land, such as the protective functions of forests, biodiversity, water-supply, grazing, hunting, nature conservation and recreation, but that the latter are increasing in relative importance.

Setting up transnational surveys of forest condition has provided a time series of large-scale spatial observations. However, these data do not readily permit cause-effect relationships to be identified. Therefore, a more detailed monitoring system has been established by ECE and the European Community. This monitoring system includes the collection of information on soil, foliage, atmospheric deposition, local climate and tree growth.

Considering the integration of sustainable forest management concerns into other sectors, a strengthened concerted effort to reduce air pollution is recognized as a necessary precautionary measure to improve the condition of endangered forests in Europe. Furthermore, the recognition of the role of forests as a carbon sink is gaining in importance. Many European countries including the member States of the European Community support the examination of the issue of certification by the Inter-governmental Panel on Forests.

3. Sustainable fisheries

Many of the marine fish species of Europe are, or have been, overexploited. This is reflected in the estimates of fish stocks in the north-east Atlantic. The fish populations of the Baltic are currently declining. Nearly all commercial stocks in the Mediterranean basins are considered fully or overexploited, with some possible exceptions. At the same time, aquaculture, either in fresh water or in marine environments, is on the increase throughout Europe. As an industry which has the potential of supplementing fish catches and offsetting the decline of some fish species, it leads to specific environmental impacts which are so far limited to the local surroundings.

Concern has been raised in Europe and elsewhere on several broad issues:

- Achieving a better balance between fishing activities and available stocks;
- Sustainable development of fish stocks;
- Need for effective monitoring, control, and enforcement measures to prevent the depletion of stocks;
- Impacts of fisheries on non-target species;
- Emissions from aquaculture on marine and freshwater ecosystems;
- Flagging and regulation of distant water fishing vessels.

At the global level, the United Nations Convention on the Law of the Sea of 1982 provides arrangements for the management of stocks which are exploited in common by one or more States. These stocks may occur within the exclusive economic zones of two or more coastal States, they may be highly migratory species or marine mammals. The 1984 FAO World Fisheries Conference endorsed a strategy for fisheries management and development and approved five programmes of action which now serve as an international framework for fishery management and development. The principal regulatory elements of fishing policies have been the establishment of exclusive economic zones (EEZ) and the fixing of total allowable catches (TACs). Within the European Area, EEZs exist for the FAO north-east Atlantic area but not for the Mediterranean Sea. TACs are set for each commercial species and quotas are allocated to each country. In practice, it is difficult to enforce TACs and quota, because there are strong pressures to increase catches in order to maintain the economic viability of fishing fleets. These pressures contrast with the need to reduce TACs in order to rebuild stocks over the long term.

Subregionally, fisheries policies are in force in the European Community, the north-east Atlantic and the Baltic Sea areas. They operate along the same lines, using TACs and quotas as regulatory instruments, but also technical conservation measures, such as minimum mesh sizes for nets, minimum sizes for landing fish and levels of by-catch and restrictions of fishing activities in certain zones. In the Mediterranean area, FAO has set up the General Fisheries Council for the Mediterranean and, in the Black Sea, the Commission for Black Sea Fisheries. In countries of those

areas, national legislation which applies to fisheries limits extending to a maximum of 12 miles is in force. With respect to fisheries limits beyond those 12 miles, there are regulatory gaps. Despite the existence of the Common Fisheries Policy of the European Community, TACs are not applied to the Mediterranean Sea. In countries of central and eastern Europe with marine fisheries interests, fishery policies were focused on supplying as much fish protein as possible to their populations and to earn as much foreign currency as possible.