



Summary of the Kiev report – Final Draft

Notes: - Illustrations and other selected facts & figures will be added later

- Country groupings and groupings acronyms will be explicated and updated

Europe, a region in transition

The last decade of the 20th century has seen a new phenomenon in Europe – countries with economies in transition to a market economy. The influence of transitional economies on the environment and natural resources has an intrinsically continental and also a global character, which results from political and socio-economic changes.

The first years of transition in the region were characterised by a change in public financing and rapid economic restructuring. It was anticipated that industrial restructuring would lead to the collapse of wasteful and polluting industries. However, many old and wasteful power plants and industries continued to operate. At the same time, other industrial plants were closed down or worked at reduced capacity, and, in some countries, GDP has still not returned to the pre-1990 levels. Unemployment also grew to alarming levels in most countries in transition, as workers in collapsing or restructured enterprises were made redundant. Affordability limited the possibilities for immediate full-cost recovery in utility services, and much-needed long-term capital was not available on international or local capital markets. In addition, the regulatory regime did not develop rapidly enough to enable effective environmental management.

The process of accession to the European Union is fostering this transition for the countries of Central and Eastern Europe. However, the continuing danger that these countries' environment will suffer if they follow the same development path as the EU countries is becoming acute. Convergence with the EU, which implies accelerated economic growth, presents a challenge to the Accession Countries to ensure that they do not repeat the two decades of environmental neglect and mistakes that occurred in Western Europe, which eventually, in the 1970s, prompted a crash programme of remedial action at the European and national level. This challenge is becoming more and more of a political reality in the context of the difficult trade-offs that are emerging. It is perhaps more realistic and useful to consider that all countries should be in transition – transition to more sustainable development. All have some way to go but, with different starting points, their transition paths will be different.

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The Johannesburg World Summit on Sustainable Development mirrored this challenge that Europe is facing, while amplifying the fact that many of the world's environmental problems have their origin in Europe. There is a growing consensus, well supported by observation, that environmental degradation and resource depletion can cause or amplify conflict and instability. Environmental or resource problems that significantly diminish incomes or employment result in increasing poverty and crime, cause environmental and health hazards, social tensions and political instability, and pose threats to national security. Furthermore, conflicts over shared natural resources and ecosystems may lead to tensions within and between States. All this undermines the efforts of the countries themselves and of the international community to promote an economically prosperous and environmentally and socially sound region.

The WSSD regional assessment of progress in implementing Agenda 21 highlighted the diversity of the European region and underscored major problems on the path to sustainable development in individual sub-regions. The Regional Ministerial Meeting for the Johannesburg Summit recognised “that different levels of economic development in countries of the region may require the application of different approaches and mechanisms to implement Agenda 21”. Important initiatives on environment and sustainable development have been developed or are under way in the sub-regions. Examples include the development of an environmental strategy for the twelve countries of Eastern Europe, the Caucasus and Central Asia, the Central Asian Agenda 21, OECD work on sustainable development, the EU sustainable development strategy, the North American Commission on Environmental Cooperation, the Baltic Agenda 21 and the Mediterranean Agenda 21. The Environment for Europe process, under the auspices of UN Economic Commission for Europe (UNECE), encourages experience-sharing and cooperation between sub-regions to promote the environmental pillar of sustainable development.

Enlargement of the EU and the WSSD commitments provide an opportunity, indeed a need, to refocus European policy-making on more effective sectoral integration of environmental requirements and, in particular, on reversing trends in a number of economic sectors which are actually moving the region away from sustainability. The principles of sustainable development need to be built into the *design* of policies – care of the environment and proper husbandry of non-renewable resources need to be central and not peripheral to, or in competition with, socio-economic development. For example ensuring that pollutant concentrations do not exceed sustainable reference threshold levels for human health and the integrity of ecosystems are policy objectives, priorities should be set on the basis of the needs of current and future generations, and preventive approaches should be used in preference to end-of-pipe abatement measures.

Few European countries use indicator-based mechanisms for the periodic evaluation of the effectiveness of environmental policies and decision-making. Use of these mechanisms is related to the level of political awareness and the degree of implementation of the principles of sustainable development in different countries. In addition, due to their financial situation, CEE and the NIS are facing many difficulties in maintaining and improving the systems of environmental information and monitoring that should be contributing to such evaluations.

The publication of periodic assessment reports on the state of the environment, called for by successive pan-European Ministerial Conferences, is an achievement of the Environment for Europe process. The reports produced by the European Environment Agency in 1995 (*Europe's environment: the Dobris assessment*) and 1998 (*Europe's environment: the second assessment*) helped to identify major threats and challenges to the development of regional environmental policies. They have laid the ground for the preparation of the Environmental Programme for Europe, which was endorsed by the Sofia Conference as the first attempt to set long-term environmental priorities at the pan-European level and to implement Agenda 21 in the European context. The preparation of this third report in the series was accompanied by an intensified exchange of environmental data and information between countries and international organisations. There have been as well as specific efforts to improve national systems for monitoring the environment and collecting, processing and managing data, particularly in economies in transition, and to make these systems compatible throughout the region.

The report, which covers all European UNECE countries, is indicator-based. It focuses on progress in the implementation, in these countries, of international environmental Conventions and progress in environmental management in general.

Socio-economic development

The overall economic situation in Europe is one of steady growth. However there are major differences between regions. Western Europe has a significantly higher GDP per capita and shows a steady recovery from the recession of the early 1990s. The former centrally-planned economies in CEE and the NIS are still in a phase of gradual but uneven transition, with a generally lower GDP per capita. As a result there are wide variations between regions and countries in environmental pressures and in the balance between positive and negative impacts. None of the regions of Europe can claim to be 'ahead' in overall environmental performance, and the closer links that are developing between countries and regions provide an important opportunity for countries to learn and benefit from the experiences of others.

Sustainable management of natural resources remains a priority issue, even if difficult to implement in practice. In relative terms, the use of resources over the last two decades has been slowly de-coupling from economic growth in many Western and Central European countries. In other words, economic growth does not automatically imply growth in resource consumption.

However, in absolute terms, material use still remains at unsustainably high levels, and is even on the increase in many European countries. The material input flows into the EU economy – measured as - have been nearly constant since 1980, while it has been slowly increasing throughout the nineties in the Accession Countries. It is likely that Central and Eastern European countries will face difficulty in curbing the growth in the use of resources while striving to reach Western European levels of consumption. This is compounded by the low direct resource productivity in the Accession countries, currently standing at only 20% of that for the EU.

Moreover, over the last two decades, Western European economies have been increasingly importing their raw materials, thereby shifting the associated environmental burden to other regions. Similar trend applies to most CEE countries. The NIS are one of the main exporters of raw materials to the European Union. In this context, due to increased production and consumption and slow decoupling of resource use from economic growth, all countries in the region face the challenge of progressing towards a sustainable management of resources. This includes achieving a significantly higher efficiency of resource use and a shift towards a wider use of renewable energy and material resources.

Although some positive trends can be discerned in **energy** production and consumption, this sector remains a priority for policy attention because of the continuous growth of energy use and greenhouse gas emissions due to the dominance of fossil fuels. The problem of acid gas emissions from the sector has been reduced substantially as a result of switching to cleaner fuels, flue-gas clean-up and economic restructuring, and all three regions of Europe are on track to achieve their 2010 emission targets for these pollutants.

Total energy consumption in Europe has fallen during the past decade, mainly as a result of large reductions in the NIS due to their economic difficulties and restructuring. Energy consumption is expected to rise again as economies recover - the rise in energy consumption in the Russian Federation in 1999 might be a first sign of this.

Energy efficiency has improved, but in Western Europe this was not enough to prevent further growth in total consumption. Energy efficiency in CEE has improved as a result of a combination of positive measures and economic restructuring, but there has been little improvement in the NIS.

The proportion of renewable sources, both in total energy and in electricity production, has increased, but remains small and continues to be dominated by hydropower and biomass. Much faster growth in ‘new renewables’ such as wind and solar power is needed to avoid a large increase in carbon dioxide emissions, particularly in the light of the projected run-down of nuclear power production.

Facts and figures:

- Total energy use in Western Europe increased by 8 % between 1992 and 1999 and fell in the NIS by 26 %. This brought consumption in Western Europe to an average of 3.9 toe/capita, compared with 3.2 toe/capita in the NIS, dominated by industrial use in Russia and the Ukraine. The NIS average without Russia is 2.2 toe/capita, similar to CEE (1.8 toe/capita).
- The share of renewables in total energy consumption in Europe increased from 4.5 % in 1992 to 5.6 % in 1999. More efforts will be needed to reach the “substantial and urgent increase in the contribution of energy from renewable sources” asked for by the Johannesburg summit.

In Western Europe **transport** has become the largest single consumer of energy (30 %) and thus an important source of greenhouse gases. In CEE and the NIS transport is a relatively less important user (22 % and 17 %, respectively, of total energy use). The apparently inexorable increase in demand for road and air transport has resulted in transport problems rising to the top of the environmental/sustainability agenda, especially in Western Europe.

Continued growth in transport has outstripped improvements in vehicle and fuel technology which would otherwise have reduced total fuel use, emissions and noise. Despite regular increases in tax, fuel for road transport remains cheaper in real terms than it was twenty years ago. The EU recognises in principle the need to internalise the unpaid external costs of transport on society. Some Member States have begun to introduce instruments to achieve this, but a number of barriers to implementation remain. Better-integrated transport and environmental strategies and their full implementation are urgently needed to break the link between growth in GDP and growth in transport demand and promote the use of more environmentally-friendly modes - two of the key objectives of the EU Sustainable Development Strategy.

Thus far, the environmental pressures from transport situation in the Accession countries are generally lower per capita than in the EU, due to less transport demand. The rapid growth of road transport indicates that these countries risk ending up with the EU’s unsustainable transport patterns. Although the main short-term challenge in these countries is to comply with the complex and extensive EU environment and transport legislation, which already contributes to lower emissions of lead and other air pollutants, the longer-term problems (coupling of transport demand with economic growth) may be more difficult to solve. The most important short-term challenges for the NIS are to phase out leaded petrol, abolish fuel subsidies where they are

still used, introduce self-financing of the transport system via fuel taxes, and move towards cleaner vehicles and better inspection and maintenance regimes.

Investment in infrastructure remains a priority of transport policy throughout Europe. Investment in Western Europe has focused on extending the infrastructure, particularly roads, and investment in the accession countries is moving in the same direction. The multi-modal trans-European transport network and its extension to the east constitutes a major pillar of the Common Transport Policy. Although investments were originally targeted to have a dominant rail share, road network development is currently ahead of that for the railway network. Completion of the proposed 12 600 km network of high-speed railway lines is expected to take 10 years longer than planned.

Facts and figures:

- Freight volumes in CEE have been increasing again since the mid 1990s; passenger transport is back at the 1990 level and rising rapidly.
- Car ownership increased by 60 % in CEE and 20% in the NIS between 1990 and 2000; but the number of cars per 1000 people in CEE is half of that in Western European and in the NIS only 15 % of that.

Tourism is a main driver behind the increase in demand for passenger transport, with its associated environmental impacts. This demand is expected to continue to grow, including a doubling of air traffic by 2020. Cars and planes, the most environmentally damaging modes, remain the most-used forms of tourism transport.

Apart from its influence via transport, tourism increasingly burdens the environment by excessive use of water, land and energy, infrastructure, buildings and facilities, leading to pollution and wastes, land fragmentation and the increasing number of second homes. In some popular destinations, these pressures have resulted in irreversible degradation of the local environment, which will affect their attraction for tourism.

Tourism is one of Europe's fastest-growing sectors. Prices of holiday trips continue to fall and at the same time the share of tourism in household expenditures is rising. Vacation patterns are changing, with more short breaks; people are travelling more often, for shorter stays and visiting further from home. The seaside and mountains remain the favourite destinations. Some previously little-visited countries are becoming more attractive as a result of economic transition and the opening of borders, with a huge potential for tourism development. At the same time implementation of policies for more sustainable tourism is progressing slowly, for example there has been only minimal penetration of eco-labelling schemes.

Facts and figures:

- The world tourism organisation forecasts an increase of international tourism in Europe of 3.1 % per year over the period up to 2020.

- Tourism expenditure for travelling abroad increased by 7 % between 1995 and 1999 in Europe.
- In France, the world's top tourist destination, the number of second homes increased by 10 % between 1990 and 1999, mainly in coastal zones and mountains.

Overall industrial output is growing throughout Europe, and **industry** remains a dominant sector of the economy in CEE and especially the NIS. Eco-efficiency and energy efficiency are generally improving. In CEE, energy efficiency is improving at a faster rate, but remains well below that in Western Europe, while industry in the NIS is still seven times more energy-intensive than that in Western Europe.

The main challenge in Western Europe is to ensure better protection of the environment while maintaining a competitive industrial base, especially as the more polluting sectors of manufacturing industry (mining, chemicals) tend to show a stronger than average growth and as the technical improvement measures with lowest costs have been already taken. In CEE, major investment is needed to raise the environmental performance of industry to the standards required by the accession process. In the NIS, the main challenge is to build an appropriate regulatory framework and improve enforcement of environmental standards.

Facts and figures:

- Industry in CEE and the NIS generates 35 to 40 % of GDP. In the more advanced transition countries manufacturing industry has recovered. In contrast, total manufacturing in the Russian federation fell by 70 % between 1990 and 1999, with some signs of recovery only recently appearing.

There is also a legacy of significant environmental damage associated with **agriculture** in CEE and the NIS, where exploitation of resources (such as freshwater for irrigation) was often excessive. A large number of stockpiles of obsolete pesticides constitute a risk to soil and groundwater. The dramatic decline in resource use in these countries, due mainly to economic restructuring, has scaled back many environmental pressures. However, land abandonment, under-grazing and lack of capital to maintain or improve farm structures are creating new environmental problems.

The Common Agricultural Policy (CAP) has been one of the important drivers of farm intensification and specialisation in the EU. Conversion of grassland into arable land, loss of field boundaries, and high fertiliser and chemical use has led to a severe decline in biodiversity. Some reorientation of the CAP has created new opportunities, via agri-environment schemes for example, for farmers to reduce pressures on the environment.

The status of farmland biodiversity remains better in CEE and the NIS, although agriculture in the accession countries may intensify with full access

to the CAP with resulting effects on biodiversity. There is little or no agri-environmental policy framework in the NIS and few possibilities for farmers to address agricultural pressures on the environment.

Facts and figures:

- Agriculture has become the main source of diffuse phosphorus and nitrogen pollution in many water bodies, contributing continuously high concentrations of phosphate and nitrate in coastal waters.
- After a reduction at the start of the transition process, consumption of fertilisers has stabilised at around 50 kg per ha of agricultural land in CEE and 7 kg per ha in the NIS. Average consumption in Western Europe is 120 kg per ha.

Europe's total timber resource is increasing as a result of an increase in the total area of forests and more trees being planted than cut down in nearly all countries. The increase in **forestry** area has been mainly in the Mediterranean region and the south-eastern NIS.

The relatively low and sustainable level of exploitation of Europe's timber resources provides opportunities for policy makers and forest managers to diversify the functions of forests and move to a better balance of environmental, social and economic interests in forest areas. In large-scale forests, generally far from human settlements, management should also aim to provide for protection of biodiversity, soil and water catchments, and possibly also for carbon storage. The generally smaller-scale forests in countries not highly dependent on forestry or where opportunities for commercial exploitation are more limited could increasingly satisfy functions other than production, including recreation, education, nature protection and buffer zones between built-up areas.

Facts and figures:

- Of the three-quarters of Europe's total forest area that is on average 'undisturbed', most of this is in the Russian Federation. About 7 % is under some form of protection and about 3 % under strict protection.
- In all parts of Europe the annual fellings are far lower than the growth of wood. In Russia only 20 % of the annual increment is used, while in Western Europe this is 65 % and in CEE 50 %.

A complex set of driving forces has resulted in chronic over-exploitation of most of the capture **fisheries** of Europe. Many stocks are now considered to be outside safe biological limits. Government subsidies to reduce and modernise the fleet may have exacerbated the problem. There is general agreement that there is an urgent need to further reduce the capacity of many fishing fleets, which this time around should be accompanied by the use of economic instruments to remove the incentive to fish more intensively with a smaller fleet. Exit from the fishing industry could be facilitated to reduce the severity of the socio-economic impacts.

While fisheries are generally in decline, aquaculture has grown dramatically, especially marine aquaculture in Western Europe. The main environmental concerns relate to intensive cultivation of salmon and other marine finfish,

and trout in freshwater; the most urgent are the impacts on the nutrient status of surrounding waters and the effects on wild populations. These concerns call for a better management both of individual farms and of the whole aquaculture sector in an area.

Environmental developments

In such an evolving socio-economic context, the overall picture of Europe's environment is complex, but in general there is little cause for celebration yet. There have been notable reductions in air pollution, and no significant deterioration in the state of forests. However there are serious water stresses in parts of southern, western and south-eastern Europe and noticeable degradation in coastal and marine areas in southern and western Europe and the Mediterranean coastline. Generally there have been some improvements in the environment in Western Europe and a common, but (far from universal) deterioration in CEE and the NIS.

Many of the favourable environmental trends that are observed have resulted from relatively straightforward technical developments (safer alternatives to ozone-depleting substances, lead-free petrol), one-off measures (switching from coal and oil to natural gas) or economic recession following the collapse of the former Soviet Union (reduction in energy consumption and hence greenhouse gas emissions). Only in the last of these were people's living standards significantly adversely affected. When people have had a choice between the personal benefits of continuing economic growth (consumption, mobility, leisure) and avoidance of harm to the environment or overuse of resources they have generally taken the less sustainable option. And where the situation has been more favourable (e.g. fall in energy consumption in CEE and the NIS), this is likely to reverse as economies recover.

Climate Change

Mean temperature in Europe increased by 1.2 °C (0.6 °C at global level) over the past 100 years and the 1990s was the warmest decade for 150 years. Mean temperature is projected to increase by 1.4 to 5.8 °C between 1990 and 2100, with large increases in eastern and southern Europe. Global precipitation increased by about 2 % during the last century, with northern Europe and western Russia getting 10 to 40 % wetter, with a further projected increase of 1 to 2 % per decade. The risk of floods, similar to those that occurred in central Europe in summer 2002, is projected to increase and droughts are likely to become more frequent in other areas of Europe.

With ratification by the European Community, its 15 Member States and many CEE countries in 2002, and by Russia expected in 2003, the Kyoto Protocol can enter into force. The reductions in greenhouse gas emissions that occurred during the 1990s (3.5 % in the EU, 34 % in CEE and 40 % in the NIS) were,

in CEE and NIS, due mainly to one-off changes – fuel switching or economic restructuring. The WE countries are not yet fully on track to reach their Kyoto targets and will have to make extra efforts to reduce their greenhouse gas emissions. Many WE and some CEE countries have adopted national programmes to reduce emissions by means of domestic policies and measures. Some WE countries are also counting on emission trading and other Kyoto mechanisms to reach their emission limits. In CEE and the NIS, where decreases in emissions were mainly the result of economic collapse, Kyoto mechanisms provide an opportunity to put measures into place, financed by WE countries, that should limit emissions during a current and near future period of rapid growth in production and consumption. This will reduce overall costs of Kyoto implementation for WE countries. Energy efficiency improvements and increased low-carbon energy production through strong increase in renewable energy will be key concepts, which should result in an effective and lasting decoupling of economic growth from growth in energy consumption. Also many measures to reduce emissions of non-CO₂ emissions are feasible and expected to be implemented.

Of even more concern, however, is the fact that the Kyoto Protocol is only a first step towards the global emission reductions of 60 to 70% needed to attain ‘sustainable’ greenhouse gas concentrations and climate change. Such reductions will require a much more substantial shift to low and zero-carbon energy sources than is likely to occur under current projections. The projected run-down of nuclear energy is likely to be realised in some WE countries, while overall electricity consumption is still growing. Continued growth of transport in the absence of significant progress in the use of non-fossil fuels will turn out to be a major problem for the environment, due to further increases in emissions.

However, even immediate large reductions in emissions will not prevent some climate change and environmental and economic impacts. Measures are therefore also necessary to adapt to the consequences of climate change, especially in vulnerable regions.

Climate change policies can have significant positive effects (“co-benefits”) by also reducing emissions of air pollutants.

Stratospheric ozone depletion

Implementation of the Vienna Convention and its Montreal Protocol has clearly been a success story in Europe, where the use of ozone-depleting substances has fallen faster than required under the Montreal Protocol. In addition to managing remaining stocks of ozone-depleting substances, preventing smuggling and dumping, and discouraging the use of HCFCs as replacements, the main action in Europe will be helping developing countries to reduce their production and consumption of such substances.

Air pollution

In general there has been good progress in reducing air pollution and meeting the targets set in the Convention on Long Range Transboundary Air Pollution. Most of Europe's ecosystems are now protected against acidification, but many hot-spot areas remain at risk, especially in central Europe. The large overall reductions in emissions of acidifying and eutrophying substances and ground-level ozone precursors that occurred during the past decade resulted more from economic restructuring in CEE and the NIS than from targeted emission-reduction measures. In southern European countries, further reductions in emissions of acidifying substances and ozone precursors will be needed to reach the targets.

Air quality in cities appears to be improving overall, but significant exceedances of WHO standards continue in most European conurbations. Exposure to particulate matter is now the largest threat to health from air pollution in cities.

The main areas which require policy attention are transport, where technical improvements have been overwhelmed by growth in demand, and, particularly in some countries, the large-scale use of coal in power plants, for domestic heating (Poland, Bulgaria, Romania, Slovakia, Kazakhstan and the Russian federation), and in industry. Large investments will be necessary in capital-intensive clean fossil fuel technology, for which barriers in financing need to be overcome. Policies will also be needed on fuel quality, fuel substitution, and the implementation of technical solutions.

The reduction of carbon dioxide emissions to comply with the Kyoto protocol will have significant co-benefits in terms of additional reduced emissions of air pollutants, reduced costs of air pollution abatement and increased ecosystem protection against acidification, eutrophication and ground level ozone. In addition population exposure to ground level ozone and particulates will decrease. The use of flexible mechanisms to implement the Kyoto Protocol in Western Europe will shift the additional reductions of air pollutant emissions to CEE and Russia and the Western NIS, and result in higher ecosystem protection in the whole of Europe. It will also yield lower savings of control cost for emission of air pollutants.

Hazardous chemicals

Emissions of many heavy metals and persistent organic pollutants (POPs) within Europe have fallen during the past decade. This has been due mainly to the introduction of stricter national and regional regulatory frameworks, the use of improved pollution-abatement systems by industry and the development of cleaner technologies. For example the Stockholm Convention on POPs has resulted in the phase-out of production in Europe of many POPs

that threaten the environment and human health. Nevertheless, there remain several concerns where target levels are exceeded, for example for dioxins and for mercury in fish.

The policies that have reduced exposures to these well-known chemicals do not seem to provide adequate protection for a number of problems that are of increasing public concern, for example combined exposures to multiple pollutants and the impacts of carcinogens and endocrine disruptors at low concentrations. There is also concern about rising environmental concentrations of a number of newly identified chemical pollutants not classified as POPs, such as chlorinated paraffins and certain detergents, surfactants and flame retardants.

The chemical industry has grown faster than other sectors in manufacturing industry. However, the sector lags behind in providing information: there remains a general lack of knowledge of the end-uses and potential hazards of vast numbers of chemicals that are on the market in Europe. A precautionary approach to this problem has been advocated in the Stockholm Convention and the recent EU Chemicals Policy White Paper.

Waste

The Basel Convention aims not only to reduce transboundary movements of hazardous waste but also to minimise its creation. Data are scarce, but hazardous waste generation appears to have increased in several countries and large quantities are being disposed of in ways that can threaten the environment and human health. In the NIS, many known hazardous waste disposal sites are overloaded and not adequately isolated from the environment. Lack of sound law enforcement and monitoring systems create a risk that these countries could become ‘havens’ for international trading in hazardous waste.

Total waste quantities are increasing in most countries, with only limited progress towards de-coupling of waste generation from economic growth in some countries. Agreed objectives to stabilise the generation of municipal waste in Western Europe have not been met, by a large margin. Landfilling remains the dominant waste disposal option, with too little recycling.

Water

While only a minor part of European citizens suffer from the devastating shortages of water and poor water quality experienced by people in so many other regions in the world, water resources in many parts of the continent are still under threat from a range of human activities. Problems are generally highest near hot-spots resulting from a range of industrial and other activities. The situation is generally of greatest concern in some NIS, especially about the quality of drinking water, particularly in terms of microbiology and toxic

substances. This reflects the relatively poor economic conditions in these countries and the deterioration or lack of infrastructure for providing clean drinking water. The health of humans and ecosystems is also threatened in other parts of Europe, for example by water contaminated by organic and inorganic pollutants such as pesticides and heavy metals at concentrations greater than those laid down in Directives, recommendations and target levels from the EU and other international organisations.

Total fresh water abstractions fell during the last decade in most regions, however, about 31 % of Europe's population lives in countries which use more than 20 % of their annual water resource, indicative of a high water stress, particularly during droughts or periods of low river flow. Water shortages continue to occur in parts of southern Europe and the eastern NIS where there is a combination of low rainfall and high population density, or irrigated areas.

Although there has been significant progress in the management of water resources and quality, problems persist. Particularly in some eastern countries, there is a lack of capacity and financial resources for monitoring and for implementing essential measures and technical improvements.

In Western Europe and the Accession countries, river, lake and coastal water quality, in terms of phosphorus and organic matter, is generally improving, reflecting decreases in discharges, resulting mainly from improved wastewater treatment in Western Europe and lower industrial and agricultural activities in the ACs. However there is little evidence of nitrate concentrations related to intensive agriculture activities decreasing in the rivers, groundwater and coastal waters in these regions of Europe. Eutrophication, as indicated by high phytoplankton levels in coastal areas, is highest near river mouths or big cities.

Heavy metal concentrations in Western European rivers and their direct discharges and atmospheric deposition into the North-East Atlantic Ocean and the Baltic Sea have all fallen as a result of emission reduction policies. Though there is general lack of environmental monitoring and comparable data and information on the state of waters in the NIS, it is evident that many rivers, lakes, groundwater and coastal waters are highly polluted, often with hazardous chemicals and oil. The pollution tends to be in 'hot-spots' downstream of cities, industrialised and agricultural areas and mining regions. Away from these hot-spots, river and lake water quality appears to be relatively good in terms of nutrients and organic pollution.

Oil pollution from discharges from coastal refineries and offshore installations is decreasing in Western Europe. Illegal discharges, mainly from ships, are however still a concern in the North Sea and Baltic Sea. From the available information it would appear that oil pollution is of major concern in the Black Sea, Caspian Sea, and the Mediterranean. Accidental oil spills add at irregular intervals to the chronic pollution from illegal discharges by ships and

discharges by offshore installations. Russian rivers contribute to oil pollution in the Arctic Ocean.

Soil

Europe's soil is being irreversibly lost and degraded as a result of increasing and often conflicting demands from nearly all economic sectors. The main problems are irreversible losses due to soil sealing and erosion, continuing contamination from local and diffuse sources, acidification, salinisation and compaction. Pressures result from the concentration of population and activities in restricted areas, and changes in climate and land use.

In agricultural areas, the most important source of problems is harmful cultivation methods. Elsewhere, consumer behaviour and the industrial sector are contributing to increases in sources of contamination such as municipal waste disposal, energy production and transport, the problems being mainly in urban areas. Tourism is a further cause of degradation, especially along the coasts of the Mediterranean. Many soil problems stem from past activities and poor management practices in the former Soviet Union and Eastern Europe.

The combined action of these activities affects quality and limits many soil functions, including the capacity to remove contaminants from the environment by filtration and adsorption. This capacity and the resilience of soil mean that damage is not perceived until it is far advanced. This partly explains the low priority given to soil protection in Europe until recently. Moreover, since soil is a limited and non-renewable resource, damage to soil, unlike that to air and water, is not easily recoverable.

Soil erosion affects large areas of Europe and climatic conditions make the Mediterranean region one of the areas most severely affected. In the most extreme cases, erosion, coupled with other forms of land degradation, has led to desertification in some areas of the Mediterranean and Eastern Europe.

Technical and natural hazards

Technological accidents continue to occur in Europe - even with advances in the safety management of hazards - but occurrences that involve large numbers of fatalities have fallen during the past decade, with the exception of mining disasters in Ukrainian mines. Although technological accidents claim only a fraction of the lives lost as a result of natural hazards (approximately 5 % of the total between 1985 and 1996 in Europe), the risks of the two are often perceived as being similar because of a lack of knowledge of the overall situation and inherent fear of the technological hazards.

The number of nuclear installations in Europe has increased since 1970, and many European countries now have nuclear reactors which are approaching the end of their working lives. The newer more advanced designs incorporate improved safety concepts and features that reduce the chance of significant releases of radioactivity to the environment and it is likely that the overall risk from nuclear accidents has declined over the past decade. A complicating factor, nevertheless, is the increasing deterioration of the older plants in Eastern Europe. In recent years, however, the safety of all Soviet-designed reactors has improved vastly. This is due mainly to the development of a culture of safety encouraged by increased collaboration between East and West, and substantial investment in improving these reactors.

Natural disasters continue to have a far greater impact than technological accidents. The cost of natural disasters may run into billions of Euros rather than the millions associated with the more serious technological accidents. Both the probability of occurrence and the consequences of natural disasters may be increased as a result of technological advances and human activities such as agriculture and forestry.

For technological hazards and those activities that may exacerbate the effects of natural hazards, design evolution and operational experience have reduced the risk levels over the years. Holistic approaches are becoming more prevalent, with increasing attention to the reduction of risk of long-term environmental impact as well as acute health and property damage from accidents. However, there remains a residual risk that must be well managed at all times.

Biodiversity

Europe has a significant responsibility for the conservation of globally threatened mammals, birds and plant species under the UN Convention on Biodiversity, the Bern and Ramsar Conventions, and a number of marine Conventions.

Some areas of the continent, such as the Mediterranean and the Caucasus, stand out for their species richness and these regions are among the 25 regions which have been recognised as ‘biodiversity hot-spots at risk’ at the global level. In relation to its size, Europe is home to a large proportion of the world’s domestic animal diversity, representing almost half of the world’s recorded breed diversity. Of the European breeds, almost half are categorised as being at risk of extinction. However, Europe is the region where the highest proportion of breeds is under active conservation programmes, covering about 26 % of the mammalian and 24 % of the bird breeds.

Important ecosystems continue to be at risk, including wetlands, species-rich agricultural habitats, several dry and arid areas, and some marine pollution hot-spots. Most countries, however, are improving their monitoring of such

areas and some are implementing plans to halt their further decline. Species population trends are mixed – some previously highly threatened species are starting to recover, others continue to decline at alarming rates, generally as a result of the disappearance or degradation of their habitats.

As requested by the Ramsar Convention, many countries have implemented policies or national action plans to halt the decline of wetlands. These, combined with increasing wetlands restoration programmes, may be stabilising the very negative trend perceptible up to the late 1980. Rates of wetland loss due to the different economic conditions in Eastern Europe are likely to be higher now than in the mid-1980s. The trends in farm structure, farm management and farmland species leave little doubt that species-rich agricultural habitats in Europe have declined considerably during recent decades.

There are nearly 600 different types of designation and more than 65 000 designated sites in Europe. There has been a huge increase in national designations since the 1970s when most countries started to implement national laws on nature protection and when the Bern Convention came into force (1979). The extent of surface areas designated is likely to tail off for a number of reasons, at least in Western Europe. In western Europe, increasing land-use conflicts from transport, urbanisation and intensive agriculture are diminishing the remaining semi-natural remote areas, while in CEE and the NIS, land privatisation and restitution is an additional concern. On the other hand, concern for biodiversity is becoming more and more integrated into sectoral policies, for example with agri-environmental measures or sustainable forestry policies, but these do not necessarily lead to the designation of new sites. Designated areas are increasingly becoming laboratories where sustainable management practices can be tested through collaboration between different stakeholders.

Human health

There is growing concern about the links between the environment and human health. Worldwide, and probably also in Europe, one quarter to one third of the burden of disease is attributable to environmental factors. Vulnerability, however, varies markedly between different groups and areas.

There is reasonable understanding of cause-and-effect relationships between water and most air pollutants and human health, but little or often none about the health consequences of climate change and chemicals in the environment. Causal relations for the largest air pollution threat to health, particulate matter, are not available. Few relevant indicators are available, but work has started to develop and test a pan-European system of indicators covering the main environmental health issues.

While European levels of water and air pollution are generally low compared with some regions of the world and there have been significant improvements during recent decades, a number of health-related problems persist, particularly in some Eastern European countries and the NIS. Transport continues to be a significant contributor to health effects through pollution and noise, and to mortality and morbidity through accidents.

Although there is limited evidence of health effects, chemicals in the environment and the disposal of wastes continue to be of concern.

Progress in managing the environment and sustainable development

Progress towards more environmentally sustainable development requires:

- strategies and plans at the regional and national level to ensure that environmental considerations are integrated into all policy sectors;
- instruments to ensure appropriate spatial planning and management in specific types of area, notably urban areas and coastal zones;
- a wide range of policy instruments to complement traditional legislative instruments and deal with complexity in a flexible way, addressing all segments of society;
- partnerships between government institutions, economic actors and civil society at large, as well as initiatives by individual stakeholders, recognising that full integration cannot be achieved by government action alone.

There is growing awareness, in most of Europe, of the importance of achieving such progress but a general lack of urgency and impetus, except as a result of other political priorities such as the Kyoto Protocol. The overall picture is one of significant activity in the development of the necessary policy frameworks, particularly in the EU and increasingly in the accession countries, but only limited progress with implementation, and little or no progress or even deterioration in some of the more critical problem areas. Only in a few cases has there been significant environmental improvement or decoupling of economic growth from the associated environmental pressures. Many examples of progress have been the result of one-off changes, simple substitutions (for leaded petrol and CFC substitutes) or economic restructuring, suggesting that even the limited progress that has been achieved may not be sustained in the face of continuing or renewed economic growth.

Integration initiatives at the EU level have so far had only a minor impact on the political agenda and have yet to address some of the more fundamental problems. The concept of integration of environmental issues into wider policy decisions is well known, but the degree to which it is incorporated into strategic policy-making varies. At the EU level, the Cardiff integration process has led to an increased awareness among policy-makers of the importance of integration, but the process has lacked urgency and as a result has yet to have a significant impact on sectoral policy-making. At the Member State level, few strategies are beyond the stage of formulation. Integration in CEE is at an even earlier stage, and in the NIS it has scarcely begun. The analysis shows that the NIS are aware of the requirements of integration but do not generally have the administrative capacity or other resources to carry forward initiatives for drafting strategies and plans, or for their implementation.

There has been little progress in the spatial planning and management of urban areas. Urban development remains overwhelmingly dominated by market forces rather than concepts of sustainability. Urban planning has been found to be a vital tool for integration, but innovative policies, including stronger linkages to other policy areas, are needed to overcome the many pressures towards unsustainable spatial development. There has therefore been a growing emphasis on the integration of planning with sectoral policies, on the adoption of an ecosystems approach, and on better institutional support mechanisms, including procedures to improve public and stakeholder participation.

The concept of Integrated Coastal Zone Management has been spreading around the European coastlines for ten years but has failed to keep up with growing pressures, especially in the Black Sea, the south-eastern Mediterranean and the Caspian Sea. Legal instruments at international and EU levels, relating to environmental impact assessment, strategic environmental assessment and water resources management, all provide important support to the implementation of ICZM but have not yet been widely implemented.

There is increasing recognition that market-based instruments such as taxes, charges and emission-trading systems are more flexible and cost-effective than traditional instruments such as environmental licenses or generic rules, and of the importance of reducing environmentally-harmful subsidies. In practice, however, such subsidies remain widespread, for example in agriculture, the energy sector, and transport. There has been very slow progress in internalising external costs and switching the tax burden from ‘goods’ (e.g. employment) to ‘bads’ (e.g. environmental damage). Even in countries in transition, which do not have a history of using market mechanisms, useful progress has been made. However, from an overall perspective, only very limited steps have been taken towards ecological tax reform.

The useful sector-specific SEA experience which has developed in some countries cannot necessarily be duplicated for other sectors or countries

because of the different issues, institutions, legal frameworks and stakeholders involved. This is a significant problem which will require effort to overcome as SEA practice is gained in the coming years. A further factor which needs to be considered is how best to integrate SEA with other requirements, such as sustainability appraisal, as the two processes can conflict rather than complement each other because of their procedural nature. A further development will be the UNECE Protocol on Strategic Environmental Assessment which is on course for signing at the Ministerial Conference on Environment for Europe in Kiev in May 2003, and which may bring benefits in extending SEA practice across the region.

Governments and other public sector bodies on their own cannot achieve integration - a commitment from industrial and commercial sectors is also needed. Among the instruments that involve a wider range of actors, voluntary agreements between governments and industry are growing, but from a very low level. Eco-labelling remains marginal. Private initiatives by businesses such as certified Environmental Management Schemes, environmental reporting and participation in international organisations aimed at sustainable development are spreading, but these may be emerging in response to societal concerns or expected regulation or be aimed primarily at establishing a 'clean' image. Frontrunners are companies in EU countries, in particular those in north-western Europe. Companies in accession countries are catching up, those in other CEE countries and the NIS are almost entirely absent. Multinational corporations are over-represented and are well organised, SMEs are almost entirely absent.

Areas with an accumulation of problems: environmental hot-spots

The **Mediterranean region** is subject to many environmental pressures. Climate change in southern Europe, especially in parts of Spain, Greece and Turkey, is expected to cause precipitation in the summer to decrease. The increased risk erosion and wetland loss in coastal areas will have impacts on human settlements, industry, tourism and agriculture.

Urbanisation, mostly driven by tourism, has been growing. Exceedances of ground-level ozone limit values in cities are frequent. In the Aegean and Balearic islands, on the coast of Turkey, and in Croatia, the heavy seasonal and geographical concentration of tourism (including golfing) is resulting in over-pumping of groundwater and the discharge of large volumes of untreated wastewater to lakes, rivers and coastal waters.

Most (85 %) of the irrigated land in Western Europe is in the Mediterranean area. The area is particularly affected by saline intrusion due to over-exploitation of groundwater, and moderate to high salinisation is affecting agricultural soils.

In the past few years, the increase in the frequency and extent of forest fires in the region has also had a significant impact on soil erosion.

Species-rich agricultural habitats in the area have declined considerably during recent decades.

The high population density in industrialised **north-western and central Europe** is causing a range of environmental problems. As in much of Western Europe and CEE, many ecosystems are affected by eutrophication. In 1999 more than 80 % of the monitored vegetation and agricultural crops were exposed to ozone concentrations above the long-term EU target.

The highly man-made environmental conditions in the area have resulted in a ‘new paediatric morbidity’: children are at increased risk from some cancers and birth defects, as well as asthma, allergies, brain damage and behavioural disorders. Several environmental problems that directly influence the health of the population in the **NIS** persist; the classic infectious diseases, such as diphtheria, malaria, TB, cholera and typhoid, are re-emerging. Life expectancy has fallen dramatically within the last decade. Many known hazardous waste disposal sites are overloaded and not adequately isolated from the environment – thus posing risks to the environment and human health.

A major problem and concern is the quality of drinking water, particularly in terms of microbiology and toxic substances. Many of the water supply systems in the **NIS**, especially in rural areas, broke down during the first half of the 1990s due to lack of economic resources for repair and maintenance and are now beyond rehabilitation. Exceedances of microbiological standards are higher in non-centralised sources of drinking water. Cases of groundwater contamination or high natural mineralisation are numerous throughout the region. Contamination by pesticides is common. Hot-spots in rivers are numerous. These are often downstream of major cities and/or major installations (e.g. industrial or military) and/or mines. (Svisloch and Berezina in Belarus, Ural, Irtysh and the Nura in Kazakhstan. The Amu Darya River is one of the most polluted water bodies in the Central Asian region. Heavy-metal contamination is common around major industrial areas. The problem is especially acute in the mining and metallurgical complexes of Kazakhstan.

The Aral Sea was the fourth largest inland water body in the world before 1960 but the sea has been drying up since then. Central Asia uses almost 67 % of its freshwater resources each year, and almost 100 % in the Aral Sea basin, mostly for irrigation of cotton and rice. Lake Sevan in Armenia (1256 km²) is also affected by the over-exploitation of water resources. It is one of the oldest lakes in the world and has an important endemic flora and fauna. The surface of the lake has shrunk by 11 % over the past 60 years because of water over-exploitation.

Arctic areas are at high risk of receiving contamination from industrialised regions. Mercury concentrations in some areas have clearly continued to rise, and neurological development in the children of some native Arctic populations may be suffering damage because of mercury in their diet.