01

Europe's environment in an age of transition

1 Europe's environment in an age of transition

Photo: Crossroad of two continents, Bosphorus, Turkey
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1.1 Is the pan-European region meeting its environmental challenges?

The UNECE 'Environment for Europe' process today brings together 56 countries across three continents (the UNECE region covers 53 countries in the pan-European region, see Table 1.1, plus Canada, Israel and the United States of America) to address jointly environmental challenges. To support this process, environment ministers in their Kiev Declaration of 2003 called on the European Environment Agency to prepare a fourth assessment report (see Box 1.1). The report covers the entire pan-European region, which stretches from the Atlantic Ocean in the west to beyond the central Asian plains in the east, from the Arctic Ocean in the north to the Mediterranean Sea in the south. To meet the ministerial request, the report sets out to provide policy-relevant, up-to-date and reliable information on the interactions between environment and society for the pan-European region and to highlight progress made towards meeting the region's environmental challenges over the past four years.

The pan-European region harbours a rich cultural and environmental diversity. It is home to a multitude of natural and semi-natural habitats and ecosystems — ranging from wetlands to deserts, from coastal lowlands to alpine mountains and from dense forests to treeless steppes. With diversity comes both complexity and dynamics, therefore it is no surprise that the pan-European region has had its share of changes and transitions. The region has developed through centuries of history marked by evolution and revolution, with change and diversity seeming to be among the few constants the region may rely on.

Over the last twenty years, the social, political and economic maps of the pan-European region have been redrawn and a range of transition processes have unfolded and are still unfolding. The socio-economic climate today is significantly different from ten to twenty years ago. Again, security issues and concerns about food and health are high on the agenda, and to this is added a popular disquiet about globalisation. At the same time, environmental concerns such as climate change, loss of biological diversity and global environmental degradation, are regularly seen in news stories adding to people's

Box 1.1 Excerpt from the Declaration by the Environment Ministers of the region of the United Nations Economic Commission for Europe (UNECE) at the Fifth Ministerial Conference 'Environment for Europe'

'We call on the EEA to prepare the fourth assessment report for the next EfE ministerial conference building on new partnerships, especially with UNECE and UNEP. We encourage international collaboration to enhance the international comparability of environmental information in priority areas such as air emissions, urban air quality, transboundary inland and groundwater pollution, marine pollution, chemicals, hazardous waste, waste management, human health and biodiversity […]'.

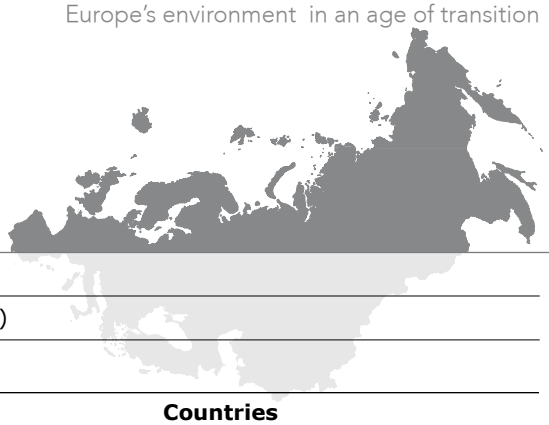


Table 1.1 The pan-European region, sub-regions and countries (1)

Region (group)	Sub-regions		Countries
Western and Central Europe (WCE)	EU-25	EU-15 (Western Europe)	Austria (AT), Belgium (BE), Denmark (DK), Finland (FI), France (FR), Germany (DE), Greece (GR), Ireland (IE), Italy (IT), Luxembourg (LU), the Netherlands (NL), Portugal (PT), Spain (ES), Sweden (SE), the United Kingdom (UK)
		EU-10 (Central Europe)	Cyprus (CY), Czech Republic (CZ), Estonia (EE), Hungary (HU), Latvia (LV), Lithuania (LT), Malta (MT), Poland (PL), Slovakia (SK), Slovenia (SI)
	European Free Trade Association (EFTA)		Iceland (IS), Liechtenstein (LI), Norway (NO), Switzerland (CH)
	Other WCE countries		Andorra (AD), Monaco (MC), San Marino (SM)
Eastern Europe Caucasus and Central Asia (EECCA)	Eastern Europe		Belarus (BY), Republic of Moldova (MD), Russian Federation (RU), Ukraine (UA)
	Caucasus		Armenia (AM), Azerbaijan (AZ), Georgia (GE)
	Central Asia		Kazakhstan (KZ), Kyrgyzstan (KG), Tajikistan (TJ), Turkmenistan (TM), Uzbekistan (UZ)
South-eastern Europe (SEE)	Western Balkans		Albania (AL), Bosnia and Herzegovina (BA), Croatia (HR), Former Yugoslav Republic of Macedonia (MK), Serbia (RS)*, Montenegro (ME)*
	Other SEE countries		Bulgaria (BG)**, Romania (RO)**, Turkey (TR)

Note: * = In many instances throughout this report, information on 'Serbia' and/or 'Montenegro' is given jointly for 'Serbia and Montenegro' (Montenegro and Serbia were proclaimed independent republics on 3 and 5 June 2006, respectively).
** = Bulgaria and Romania joined the European Union on 1 January 2007.

increasing sense of insecurity. Indeed, the resources of both the pan-European region and the planet are recognised as being under increasing stress due to human-induced pressures, including those brought about by economic growth, industrial development and modern consumption patterns.

Environmental concerns range from the pollution of air, soil and water (all of which have improved significantly, but nevertheless remain of concern in parts of the pan-European region, see Chapter 2), to Europe's significant contributions and vulnerability to the consequences of global problems. Current challenges addressed in this report include:

- **Patterns of production and consumption**, driven by society's desire for ever higher standards of human well-being together with increasing resource needs, deplete and contaminate natural resources within and beyond Europe's borders. Since the Kiev conference, the issue of sustainable consumption and production has become more prominent on the policy agenda although few substantive results have emerged. Patterns of consumption are changing rapidly across the region, with increases in the shares for transport, communication, housing, recreation and health. Total waste generation is increasing in the pan-European region. At the same time, the legacy of old waste sites still presents a major problem in some EECCA and SEE countries, although many have developed waste strategies and legislation for specific waste streams. However, waste management plans and effective legislation have yet to be implemented in some countries (see Chapter 6).

(1) For practical reasons the groups used are based on established political groupings (as of 2005) rather than environmental considerations only. Thus there are variations in environmental performance within the groups and substantial overlaps between them; where possible, this has been highlighted in the report.

- **Environment-related health concerns** result from continuing pollution of air, water and soil. Despite considerable reductions in air pollutant emissions in much of the pan-European region, atmospheric pollution (in particular current levels of fine particles and ozone) still poses a significant threat to human health and the environment as a whole — in EECCA countries most air polluting emissions have increased by more than 10 % since 2000 as a result of economic recovery, increase in transport, and the persisting poor effectiveness of air pollution protection strategies. Similarly, although water quality appears to have improved in rivers across the region, some large rivers and many smaller watercourses remain severely polluted. More than 100 million people in the pan-European region still do not have access to safe drinking water and adequate sanitation; and in EECCA and SEE the quality of water supply and sanitation services has deteriorated continuously over the past 15 years. Soil degradation, in particular contaminated sites, remains to be an issue of concern across the region. Yet, some progress has been made in terms of policy development and the availability of information on soil issues (see Chapter 2).

- **Climate change**, mainly driven by energy consumption and the resulting emission of greenhouse gases (GHG), exacerbates extreme weather events (such as flooding or droughts) and has an impact on a range of socio-economic activities such as agriculture and tourism. Impacts of climate change on society and natural resources are already occurring both across the pan-European region and worldwide, and are projected to become even more pronounced. A global emission reduction of up to 50 % by 2050 is necessary to achieve the target proposed by the EU to limit temperature increase to a maximum of 2 degree Celsius above pre-industrial levels. However, even if global emissions of greenhouse gases are drastically reduced, some unavoidable climate change impacts make adaptation measures an urgent need (see Chapter 3).

- **Biodiversity loss** in the pan-European region (particularly in farmland, mountain regions, forests and coastal zones) is occurring as a result of land use changes, urban sprawl, infrastructure development, acidification, eutrophication, desertification, resource overexploitation, both intensification and abandonment of agriculture, as well as climate change. The global target of halting biodiversity loss by 2010 will not be achieved without considerable additional efforts. More than 700 species are currently under threat in the pan-European region, while the number of invasive alien species in the pan-European region continues to increase. National forest plans that link sustainable forest management with an ecosystem approach are being implemented. Nevertheless, illegal logging and human-induced forest fires are a growing problem, particularly in EECCA and SEE (see Chapter 4).

- **Overuse of marine resources** and pressure on coastal environments continue to be high. Eutrophication remains a problem in all enclosed seas and sheltered marine waters across the pan-European region. Over-fishing and destructive fishing practices are still widespread in all pan-European seas. Improved policies and stricter enforcement are needed to stop illegal fishing and enable fish stock recovery, but also to reduce fisheries impacts on the whole ecosystem. Major accidental oil spills have generally decreased in European seas, although oil discharges from day to day activities, such as maritime transport and refineries, are still significant (see Chapter 5).

In response to these and other environmental challenges, the concept of sustainable development addresses the need for an increased understanding of the complexity and interconnectedness of the socio-economic and environmental systems. It calls for a fundamental change in the way society approaches its own economic, social and environmental future. Increasingly, Europe has been embracing the concept of sustainable development as more and more responses to environmental challenges make use of integrated approaches that link environmental policies directly to transport, energy and agricultural policies in particular.

In western Europe (EU-15), but also increasingly in many of the central European (EU-10) and

south-eastern European countries as well as in countries in eastern Europe, the Caucasus and Central Asia, first steps have been taken towards implementing more integrated approaches to environmental issues. Despite this, traditional regulatory instruments are still widely used to deal with environmental issues, and impacts caused by general patterns of production and consumption are rarely taken into account. In addition, policy instruments that link market mechanisms and environmental protection, such as economic market-based instruments and voluntary agreements, are being developed but are not yet used to any large degree across the pan-European region.

In many cases, environmental progress and the use of integrated policy approaches are hampered by an 'implementation gap'. While a range of multilateral agreements and declarations on environmental protection and sustainable development have been signed and adopted, a number of these do not attain a subsequent full and swift implementation (see Annex 1 for an overview of multilateral environmental agreements, and their signature, ratification and entry into force at national level). Thus, continuing with the transition towards sustainable development, as emphasised in the 'Environment for Europe' process and reinforced by the 2002 Johannesburg World Summit on Sustainable Development, will require more impetus towards full implementation of agreed-upon environmental policy measures (see also Section 1.3 and Annex I). Indeed, the upcoming 'Environment for Europe' ministerial conference to be held in Belgrade in October 2007 has been designated as a 'conference of deliveries'. The main objective of the meeting will be to assess the progress made in the implementation of the legal instruments adopted in the pan-European context.

Furthermore, a transition towards sustainable development will require attention and action at all levels: local, regional, national, international and global, as well as involvement of all parties from government, business and civil society, and by organisations and individuals. The tools and capacity for this are still weak across the pan-European region but progress is being made. While scientific research and knowledge development are increasingly needed to meet these new challenges and while much knowledge is already available, it is often not in a form or place which is readily accessible or usable. Still greater access to, and appraisal of, existing relevant information and research results is needed. This should include a better understanding of the importance and significance of different types of knowledge held for example by lay, local and indigenous people. Actions are being taken to improve the access to and use of this knowledge, for example by making use of the spread of information technologies such as the internet in recent years. Politically, these developments are, amongst others, supported by the implementation of the Aarhus Convention (which calls for improved access to environmental information, public participation in decision-making processes and access to justice) and the furthering of the concept of education for sustainable development — thereby providing the building blocks for a long-term transition towards sustainable development.

1.2 Key socio-economic developments across the pan-European region

Today's environmental challenges are ever more closely linked to a variety of socio-economic developments. While each of the challenges we face has its own characteristic dynamics, many share common underlying driving forces which are often directly or indirectly linked. A full review of each of the many individual drivers of environmental change is beyond the scope of this pan-European assessment. Rather, this section focuses on a limited number of socio-economic developments that underlie or may exacerbate many of the key environmental changes outlined in this report. Key issues highlighted include the changing demographic patterns, recent trends in migration, as well as economic developments and poverty across the pan-European region. The relationship between political transitions, conflicts and environmental risks is also emphasised. Finally, this section illustrates that the demands of modern consumption can in most cases no longer be met by domestic resources alone. This has led to growing interdependence across the region and the globe.

This needs to be reflected in approaches aimed at addressing shared environmental concerns and securing environmental resources more equitably for current and future generations.

Demographic patterns and migration

Demographic patterns play a key role in how environmental challenges unfold since they govern consumption and determine the demand for resources, goods and environmental services. Generally speaking, population size and density within a region give a first indication of pressures on environmental resources, such as air pollution, freshwater use, land use and soil degradation, as well as biodiversity loss. The age structure of populations also inevitably shapes their consumption patterns and demands for environmental services. The current trend across Europe towards an 'ageing society' may further alter the susceptibility to adverse environmental changes and health risks, both positively and negatively.

Today, more than 870 million people live in the pan-European region although population size and distribution vary considerably across the region (Table 1.2). More than half of this total population live in western and central Europe, making this sub-region one of the most densely populated regions of the world, with an average of nearly 110 persons per square kilometre. This is in stark contrast to the relatively small populations in eastern Europe and Central Asia, where the average density is well below 20 persons per square kilometre.

The diversity of demographic developments in the pan-European region is also reflected in the evolution of population trends over time. Trends vary significantly and highlight the very different dynamics across the region. Between 1960 and 2000, Central Asia (more than 120 % population increase), the Caucasus (60 % increase) and south-eastern Europe (80 % increase) have experienced considerably higher growth rates than those reported for countries in western and central Europe, and particularly, eastern Europe (World Bank, 2006b). Eastern Europe, and to a lesser extent the Caucasus region and most of the central European countries, witnessed a turning point in population growth in the early 1990s. Since then, population growth has stagnated or even declined, and this trend has continued into the new century (Table 1.3).

Table 1.2 The pan-European region: key socio-economic indicators for 2005

	Land area (1 000 km²)	**Population** (million)	**Density** (population per km²)	**Income** (GDP per capita in USD)	**Total GDP** (as percentage of regional total)
WCE					
EU-15	3 243	385	119	22 337	83.4 %
EU-10	739	74	100	5 594	4.0 %
EFTA (IS, NO, CH)	468	12	26	36 550	4.4 %
EECCA					
Eastern Europe	17 943	204	11	2 034	4.0 %
Caucasus	186	16	85	1 112	0.2 %
Central Asia	4 003	58	15	955	0.5 %
SEE					
Western Balkans	264	22	82	2 236	0.5 %
Other SEE	1 132	102	90	3 052	3.0 %
Pan-European total	**27 980**	**874**	**31**	**11 869**	**100.0 %**

Note: See also Annex 2, Country statistics.

Sources: GDP and population data: World Bank, 2006b (World Development Indicators Database).
Land area data: FAOSTAT, 2007 (FAO Statistical database).

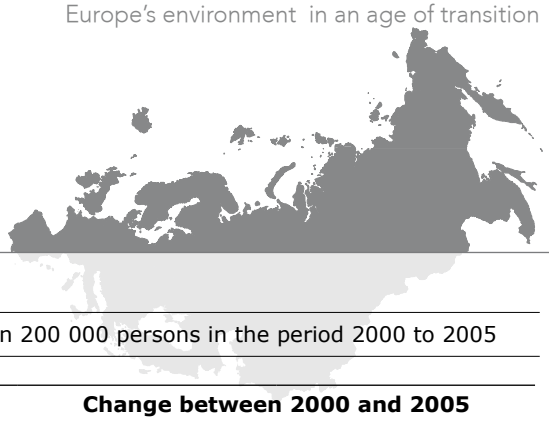


Table 1.3 Countries experiencing population declines of more than 200 000 persons in the period 2000 to 2005

	Population (thousands)		Change between 2000 and 2005	
	2000	**2005**	**(thousands)**	**(%)**
Russian Federation	146 000	143 000	– 3 000	– 2.1
Ukraine	49 200	47 100	– 2 100	– 4.3
Romania	22 400	21 600	– 800	– 3.6
Poland	38 600	38 200	– 400	– 1.0
Bulgaria	8 060	7 741	– 319	– 4.0
Georgia	4 720	4 474	– 246	– 5.2
Belarus	10 000	9 776	– 224	– 2.2
Italy	57 700	57 500	– 200	– 0.3

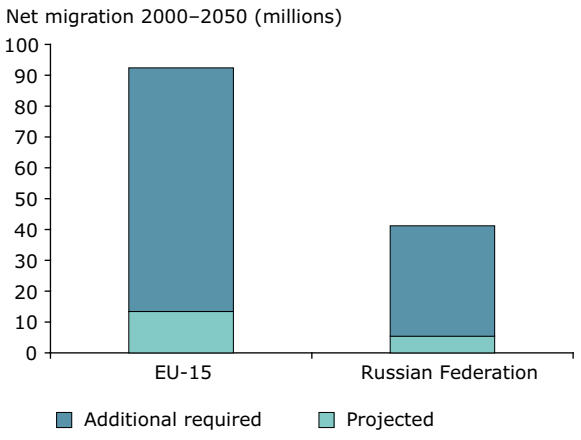
Source: World Bank, 2006b (World Development Indicators Database).

For most countries of western and central Europe, a trend towards stable or even declining population totals is discernable — although Cyprus, Ireland and Spain are noteworthy exceptions and currently show population growth of more than 1 % per year. Turkey and all Central Asian countries (with the exception of Kazakhstan) are experiencing equally growing populations. According to data provided by the World Health Organization, life expectancy at birth has increased substantially across the region over the last four decades, although a significant gap remains between EECCA countries (life expectancy ranging from 66 to 73 years) and the other countries in the region (ranging from 69 to 81 years) — see Annex 2.

World Bank data for 2005 (World Bank, 2006b) highlights that the balance between young and elderly people varies considerably across the region. While in Central Asian countries those under the age of 15 make up well above 20 % of the total (the highest in Tajikistan with 39 %), they account for less than 20 % in most other countries (with exceptions in Albania, Armenia, Azerbaijan, Ireland, Iceland and Turkey). Conversely, in many western and central European countries, the proportion of the population over the age of 60 has increased significantly, leading to an 'ageing society' with a demographic pattern characterised by a relatively low proportion of children. At the same time, fertility rates are low in much of Europe, and almost everywhere have fallen below two infants per woman (although exceptions include Albania, Iceland, Ireland and most of Central Asia), which is insufficient to maintain current populations without inward migration (Figure 1.1).

Migration of people across the pan-European region has been on the rise in the region since the 1990s. The movement of people in an increasingly interconnected world reflects not only changes to countries' economies and distribution of industry, but also results in political, social and even cultural transitions. Several characteristic trends in migration can be identified, including

Figure 1.1 Net migration (millions) required to hold working age population constant at 1995 levels in 2050



Note: For the sake of comparison, there was a net migration of about 8.8 million into the EU and about 3.3 million into the Russian Federation during the 1990s.

Source: Based on data from World Bank, 2006a — page 55.

migration across the region along gradients of political stability or economic prospects, in-country migration from rural into urban areas often driven by employment opportunities, and also seasonal migration of both workers and retirees.

The consequences of this increased migration can be both positive and negative for the origin and receiver regions. As the migration is often focused in specific areas, such as urban (in the case of economic migrants) or coastal (in the case of retirees), this may have both environmental and social impacts. For those countries losing people through migration, there are equally important implications. Those emigrating tend to belong to the younger, economically active age group, and often have a higher than average level of education or training. On the one hand, this often results in significant transfers of money by foreign workers to their home countries (i.e. remittances). For some countries, such as the Republic of Moldova, Tajikistan, Bosnia and Herzegovina, and Albania, remittances constituted more than 15 % of national GDP in 2004 (World Bank, 2006a). On the other hand, countries of origin may experience gaps in their skilled workforce which can also reduce national or local capacity for environmental management and good governance in general.

Patterns of migration across the pan-European region are unique and significant. The region (especially the EECCA countries) is both a major recipient and source of migrants. Recent World Bank estimates show that that the region accounts for one-third of all global emigration and immigration. Migration to western and central European countries remains high, including large numbers of migrants from the Russian Federation, Ukraine and Kazakhstan (Map 1.1). At the same time, the countries in Central Asia and the Caucasus experienced particularly high emigration between 2000 and 2005, often into the Russian Federation, (during this period, Tajikistan and Georgia, for example, saw net outward migration of more than 10 %, according to United Nations Statistics Division (UNSD, 2005)).

In parallel to migration patterns across the region, recent urbanisation trends show a varied picture over the last decade. Generally speaking, urbanisation tends to alter the type of environmental pressures experienced. While population increases in urban areas lead to a spatial concentration in material consumption and its associated pollution, environmental pressures associated with urban sprawl include both local effects (such as urban waste and water pollution problems) as well as more widespread impacts (for example, the overall 'environmental footprint' that an urban area imposes on the country). In many cases, the likelihood that the environmental impacts will be severe is greater the more rapid and unplanned the transition from rural to urban living.

On balance, the proportion of urban versus rural population has remained relatively stable in western and central Europe since 1990. Notable exceptions are Portugal, Norway and the Netherlands, all of which saw increases in urban population in excess of 6 %, and Latvia, which experienced a decrease of just over 4 %. Countries in south-eastern Europe, however, have experienced large increases in urban population. The largest increases in this region have occurred in Albania and Turkey, which have seen the proportion of people living in urban areas increase by around 8 % and 7 % respectively.

Economic development and poverty

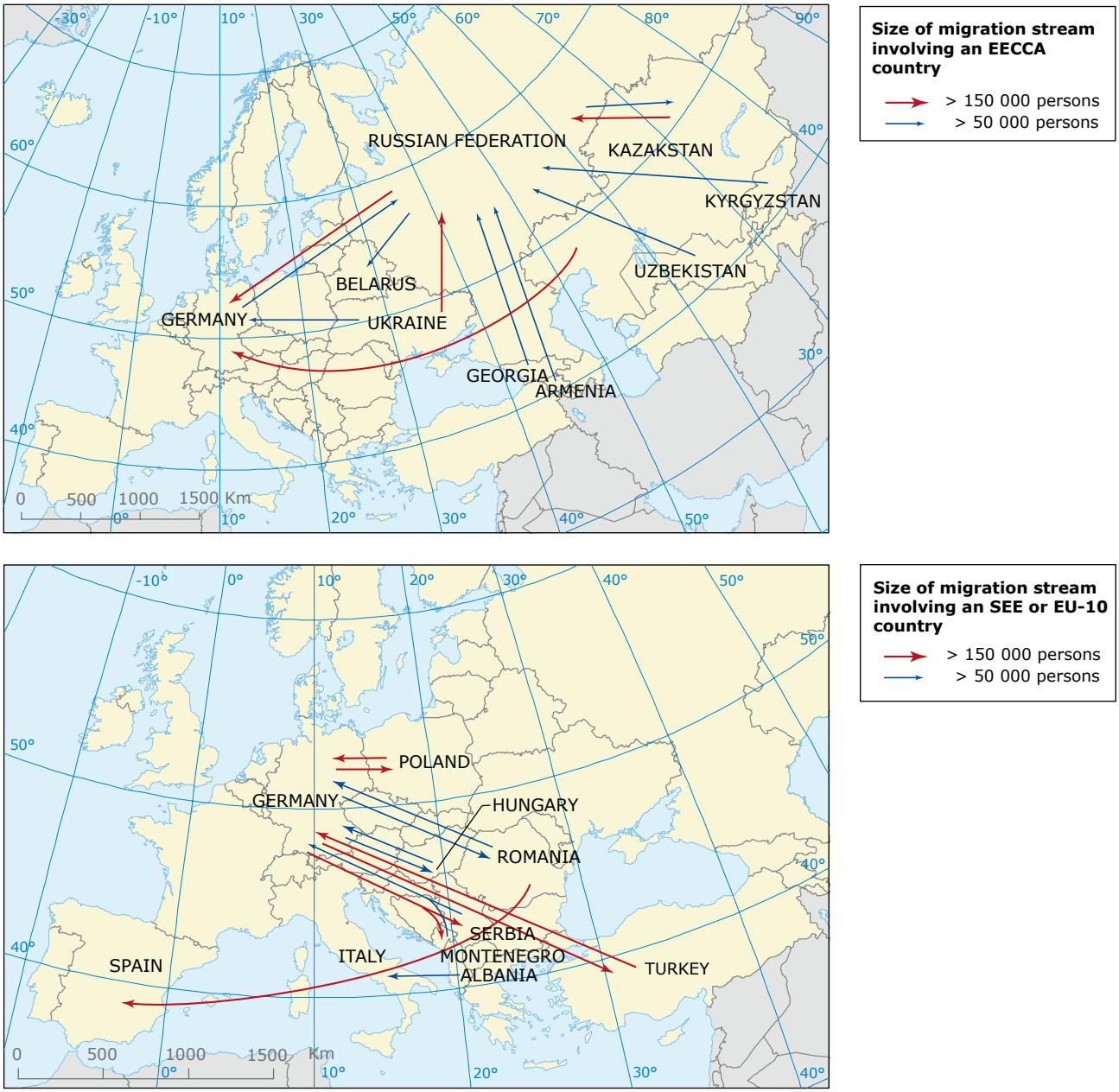
The pan-European region is a highly diverse region with respect to both patterns of demography and economic development. Some of its countries are among the richest in the world, while others — particularly those whose economies have been in transition during the 1990s — are still working hard to catch up with the global average. Per capita levels of gross domestic product (GDP) vary widely, from the highest average annual incomes of well over USD 20 000 reported in EU-15 and EFTA countries, to less than an eighth of this figure in the Caucasus and Central Asia — see Annex 2.

In 2005, the GDP of the whole pan-European region amounted to approximately 28 % of global GDP — more than a third of the total. However, while Western Europe is amongst the wealthiest regions in the world, the EECCA and SEE countries each account for only 1 % of the global GDP (Figure 1.2).

The patterns of economic growth also differ across the region. The EU-15 and EFTA countries have seen continuous increases since the 1990s. After an initial drop in economic growth in the very early 1990s, the remaining countries of western and central Europe (i.e. the EU-10) and south-eastern Europe are now experiencing an increase. In the countries of Eastern Europe, Caucasus and Central Asia, the economic downturn of the early 1990s lasted somewhat longer. Their national incomes are only now returning to pre-1990 levels due to recent stronger economic growth, although even in 2005, real GDP for the Republic of Moldova and Georgia had not yet recovered to half that of 1989 (World Bank, 2006b).

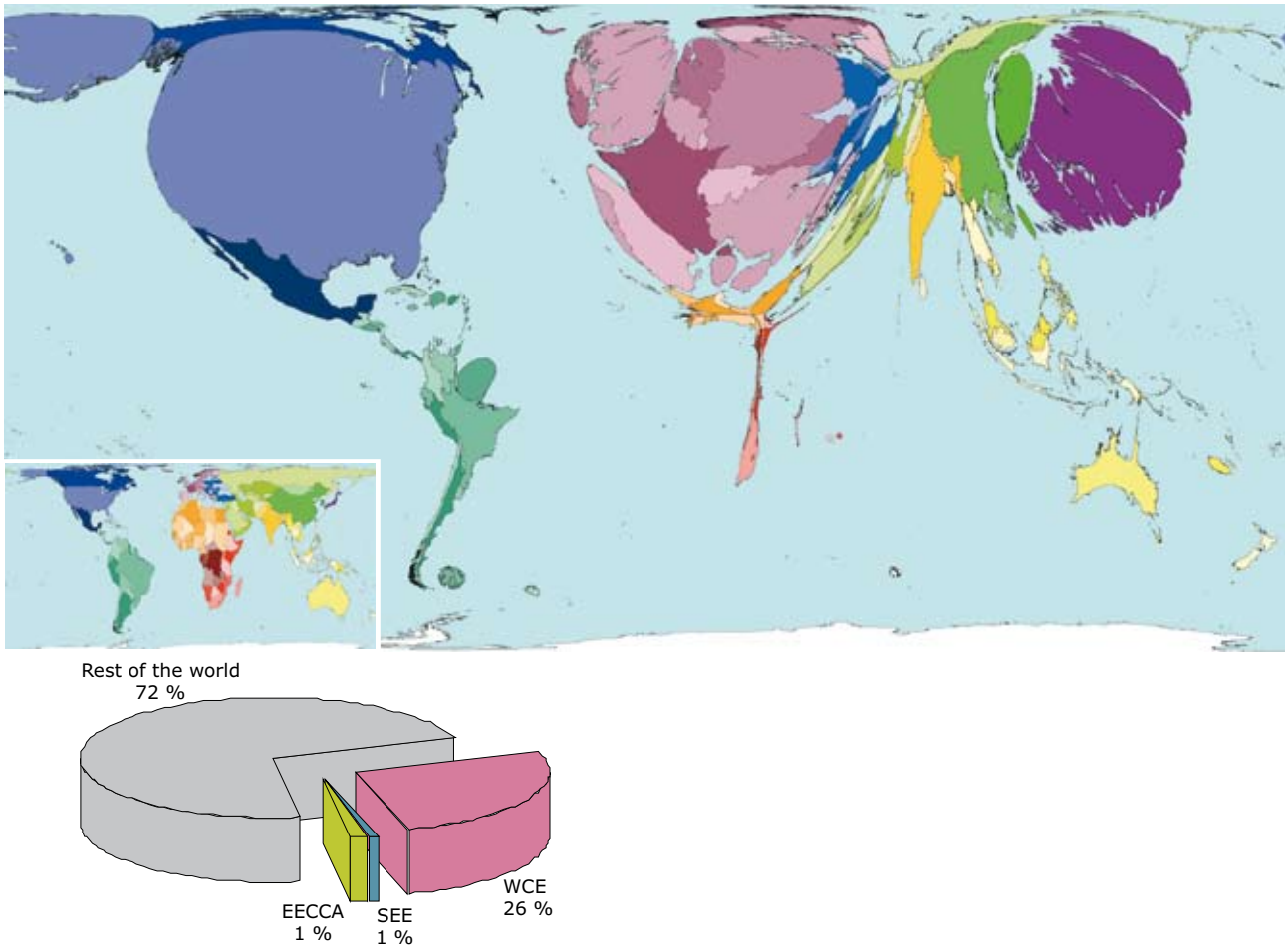
Nevertheless, it is encouraging that national incomes have been increasing in virtually all

Map 1.1 Largest migration streams



Source: World Bank, 2006a.

Figure 1.2 Top: GDP Map (the territory size shows the proportion of worldwide wealth measured as GDP, based on exchange rates with the USD, that is found there)
Bottom: Total GDP in the pan-European region and the rest of the world in 2005 (based on constant 2000 USD)



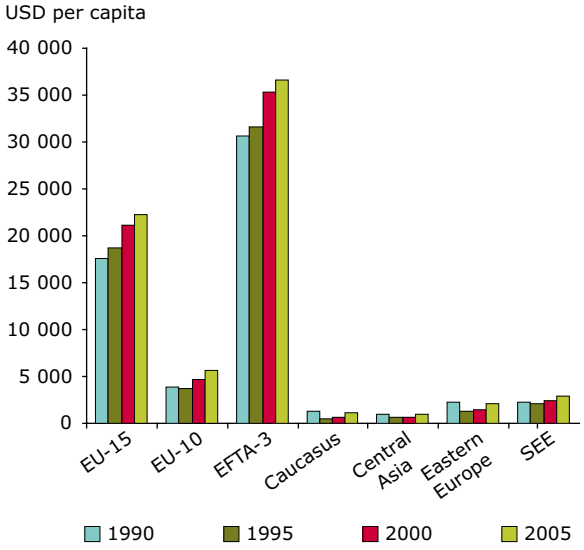
Sources: The map: www.worldmapper.org; copyright 2006 SASI Group (University of Sheffield) and Mark Newman (University of Michigan).
The pie chart: World Bank, 2006b (World Development Indicators Database).

countries in the pan-European region since the turn of the century. This increase has been particularly pronounced in all EECCA and SEE countries, where total economic growth between 2000 and 2005 ranged from 7 % in the Former Yugoslav Republic of Macedonia to a staggering 88 % in Azerbaijan (see Annex 2). The World Bank's most recent estimates (Figure 1.3) show that annual economic growth has continued across the region during 2006 at rates of 6 % or more in most EECCA countries. Exceptions are Kyrgyzstan and the Republic of Moldova where rates are estimated at 4.3 % and 3.0 %, respectively ([2]). Current forecasts expect the rate of GDP increase to continue at this level for both 2007 and 2008 (World Bank, 2007).

In moving away from dependency on primary production and heavy industry towards service and knowledge-based economies, general economic development in western and central Europe has brought some environmental benefits — largely related to reductions in 'traditional' point-source pollution. However,

([2]) Please note that no data for Turkmenistan was available for this assessment.

Figure 1.3 GDP per capita growth by region, 1990–2005 (see Annex 3 for international comparison)



Note: GDP at constant 2000 USD.
WCE: no data for LI, no data for CY in 2005;
SEE: no data for BA from 1990 to 1993, no data for CS from 1990 to 1992;
EECCA: no data for TM from 2002 to 2005.

Source: World Bank, 2006b (World Development Indicators Database).

serious issues of cleaning up contaminated wastes and polluted industrial infrastructures remain (see Section 2.4, Soil). Eastern Europe, and to a lesser degree Central Asia and the Caucasus, are now showing marked post-industrial structural change with a move away from economic reliance on agricultural output towards service industries. Nevertheless, in relative terms, a larger dependency on mineral extraction and agriculture remains in the EECCA region, often resulting in environmental pressures and high volumes of wastes.

Alongside this economic development, trade flows between countries within the region, as well as with the rest of the world, have increased significantly. Both imports and exports have increased substantially across the region over the last years. However, trade statistics highlight a marked asymmetry of trade flows within the pan-European region, especially between EECCA countries and the other European sub-regions. While predominantly manufactured goods are traded eastwards within the region, the main commodities exported from EECCA countries to western and central Europe are fuels and mining products (see Chapter 6 for more details).

This marked difference in economic development and trade flows across the pan-European region can also be understood to be a *de facto* 'export' of environmental burden to countries with higher reliance on raw mineral extraction and processing and other branches of industry commonly associated with high environmental pressures and emissions to air, soil and water (see example in Box 6.5, Chapter 6, Sustainable consumption and production). This can be seen as part of the wider trend of globalisation that has unfolded over recent decades.

Despite the more recent economic growth, the economic decline and restructuring of the 1990s have taken a toll across the EECCA countries, in particular in terms of poverty and inequality. Increasingly, poverty and human well-being are being addressed in the context of environmental assessments (for example in the Millennium Ecosystem Assessment or Fourth Global Environment Outlook, see Box 1.2). Poverty, and the resulting increase in environmental vulnerability, has often been typified as one of the worst forms of pollution. Beyond the immediate harm caused to individuals and society, poverty can have direct implications for environmental quality as well as indirect consequences through poor education, health care and other services. People with low incomes are more likely to use inefficient fuels that have a direct adverse impact on air quality, and to live in substandard housing with inadequate insulation and therefore inefficient heating. Poverty can also directly drive unsustainable behaviour such as cutting down trees for fuel-wood or grazing animals in protected areas.

According to World Bank estimates (see Table 1.4), the number of people living in absolute poverty (i.e. those earning less than USD 2.15 per day) decreased from 102 million to less than 62 million over the period 1999–2003 in the EECCA region,

Box 1.2 Poverty and human well-being in an environmental context

The Millennium Ecosystem Assessment identified security aspects, material needs, health, social relations and freedom of choice as the main components of the cross-cutting concept of human well-being. It is a continuum from high attainment (experience of well-being) to extreme deprivation (poverty). Human well-being is underpinned through the supporting, provisioning, regulating and cultural services that ecosystems provide. Well-being also depends on technology, institutions and human services (MA, 2005).

In the Fourth Global Environment Outlook (GEO-4), well-being is broadly defined as human capabilities, that is the extent to which individuals have the ability to live the kinds of lives they have reason to value. Equity is a key component and implies the degree of distribution of human well-being among people, groups, communities, countries, regions and generations. Poverty is defined as the deprivation of basic capabilities that give people the ability to achieve minimal adequate living conditions, such as avoiding serious malnourishment, premature mortality and avoidable morbidity (UNEP, 2007a).

Table 1.4 Poverty in SEE and EECCA countries during 2000–2003

	Population			
	Below national poverty line (%)			< 2 USD* per day (%)
	Total	Urban	Rural	Total
SEE				
Albania (c)	25	20	30	12
Bosnia and Herzegovina (c)	20	14	20	—
Bulgaria (d)	—	—	—	6
Croatia (b)	—	—	—	2
Romania (d)	—	—	—	13
Turkey (c)	27	22	35	19
EECCA				
Armenia (b, d)	51	49	52	31
Azerbaijan (b)	49	55	42	33
Belarus (a, c)	42	—	—	2
Georgia (c, d)	55	53	56	26
Kazakhstan (d)	—			17
Kyrgyzstan (b, d)	48	41	51	23
Republic of Moldova (c)	49	43	67	64
Russian Federation (c)	—	—	—	13
Turkmenistan	—	—	—	—
Tajikistan (d)	—	—	—	43
Ukraine (d)	20	—	28	5
Uzbekistan (a)	28	23	30	72

Note: * = at PPP rate.
(a) data for 2000; (b) data for 2001; (c) data for 2002; (d) data for 2003.

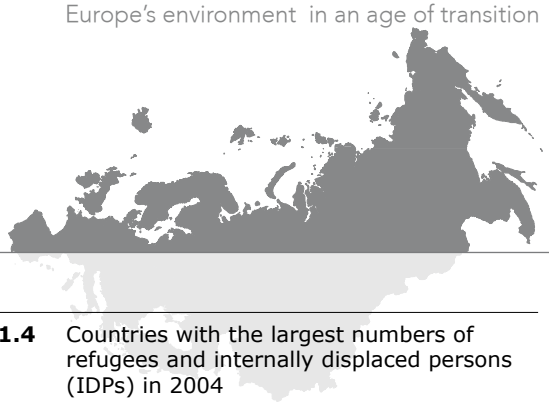
Source: World Bank, 2006b (World Development Indicator Database).

resulting in the percentage of the population classified as poor or vulnerable falling from 55 % to 45 % over this short period. However, notwithstanding the general recent economic growth coupled with decreasing inequality, low income countries, such as Armenia, Georgia, Uzbekistan, Republic of Moldova, Kyrgyzstan and Tajikistan, still experience high levels of poverty (OECD, 2007).

Political transitions and security concerns

For centuries, the pan-European region has been highly dynamic — a region in constant cultural, political, social and economic transition. However, over the last 20 years, it has witnessed a near-unprecedented transitional process. The region has faced formidable challenges, including deep economic distortions, major trade disruptions and times of political upheaval. During the last two decades, the number of independent states in the pan-European region has increased from 33 in 1990 to 53 in 2007, the most recent additions being the Republic of Serbia and the Republic of Montenegro.

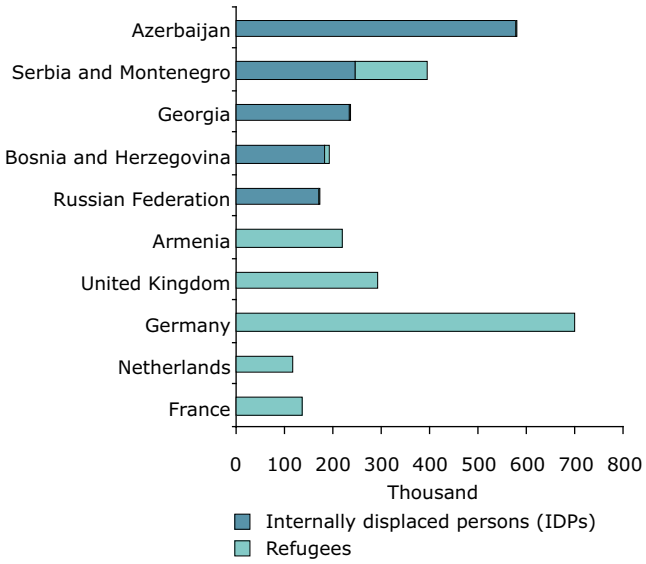
Not only have these changes influenced economic development, particularly in the countries of central Europe, eastern Europe, the Caucasus and Central Asia — they have also redrawn the political landscape across the region. In 2004, the European Union welcomed 10 new Member States (EU-10), leading to a new dimension of political integration across western and central Europe. As recently as January 2007, Romania and Bulgaria also joined the European Union, effectively



expanding the Union to the Black Sea, something that was unthinkable 20 years ago. In the EECCA region the aftermath of the political changes of the 1990s continue to impact the stability and security situation in several countries even today — recent examples include the political changes in Georgia in 2003, in Ukraine in 2004 and in Kyrgyzstan in 2005.

Yet even when transitions are relatively smooth and devoid of major conflict, they entail considerable political, societal and economic adjustments that shape the way environmental challenges are addressed. Thus, those areas that witnessed major changes or even armed conflicts over the past two decades have felt and are still feeling the impacts. Not only were lives lost, but national assets and infrastructure were also destroyed, causing pollution from damage to industrial as well as military installations. Large numbers of refugees fleeing conflicts or natural disasters have placed additional environmental stress on receiving areas. In the pan-European region, large numbers of people remain displaced within their own countries, or have become refugees either due to natural disasters or political developments (Figure 1.4).

Figure 1.4 Countries with the largest numbers of refugees and internally displaced persons (IDPs) in 2004



Source: UNHCR, 2006.

Other key areas where security concerns are linked to negative environmental impacts are in disputes and tensions among states and communities over access to shared natural resources. Countries that experience an economic transition or political stress are also particularly vulnerable to environmental damage and resource competition. In the Russian Federation, for example, environmental monitoring suggests that in the Chechnya province oil spills and pollution from sewers are badly affecting the region's rivers ([3]).

Whether and how environmental stress contributes in turn to the incidence and escalation of conflict depends on a number of socio-economic, political and other contextual factors, including economic vulnerability and resource dependency, institutional, socio-economic and technological adaptive capacity, cultural and ethno-political factors, internal security structures, public participation, international interaction and mechanisms of conflict resolution. The socio-economic and political context can thus have both facilitating and inhibiting effects on the relationship between environmental stress and conflict.

Efforts to address challenges resulting from the linkages between environment and security can include using environmental policy as a bridge to building cooperation and peace amongst groups in conflict. Furthermore, addressing 'asymmetric threats to security' that cannot be resolved by military force or within traditional domains of security policy such as defence, foreign relations and strategic planning, may benefit from seeking partnerships to deal with international and transboundary environmental concerns (see Box 1.3 and Map 1.2 for examples).

([3]) BBC, 22 June 2006 — Chechnya habitat 'ravaged by war' — http://news.bbc.co.uk/2/hi/europe/5108416.stm.

Box 1.3 Environment and security: transforming risks into cooperation

The Environment and Security Initiative (ENVSEC) is a partnership between the United Nations environment and development programmes (UNEP and UNDP), the Organization for Security and Co-operation in Europe (OSCE), the United Nations Economic Commission for Europe (UNECE) and the Regional Environment Center for Central and Eastern Europe (REC). The North Atlantic Treaty Organisation (NATO) has joined the initiative as an associated partner. The initiative was launched at the Environment for Europe conference in Kiev and the OSCE Economic Forum in Prague in May 2003. ENVSEC works to assess and address environmental problems which threaten, or are perceived to threaten, security, societal stability and peace, human health and/or sustainable livelihoods, within and across national borders in conflict-prone regions. Over 50 projects have been launched and implemented with total funds amounting to USD 12.5 million, covering 19 countries from the Adriatic Sea to the Pamir Mountains. New geographical areas recently added to the ENVSEC portfolio are the East Caspian region and the Amu Darya river basin, where cooperation extends to Afghanistan. Recent examples of ENVSEC activities include:

- Through assessments and in-depth research of the transboundary impacts of industry and hazardous waste, ENVSEC has provided practical and strategic recommendations on how to foresee and mitigate the impacts on specific sites (such as the 'Mining for Closure' process in south-eastern Europe). Eighteen industrial (including uranium mining) and hazardous waste sites have been investigated in the Balkans and in the Ferghana valley of Central Asia, and such work is to be expanded to the Caucasus and eastern Europe. By drawing attention to concrete problems and investigating solutions, ENVSEC is in many cases becoming a bridge to ensure remediation of 'hot spots'. For example, it is playing a role in the containment and destruction of left-over rocket fuel in Armenia and Ukraine and obsolete pesticides in the Republic of Moldova, in Belarus and in Tajikistan.

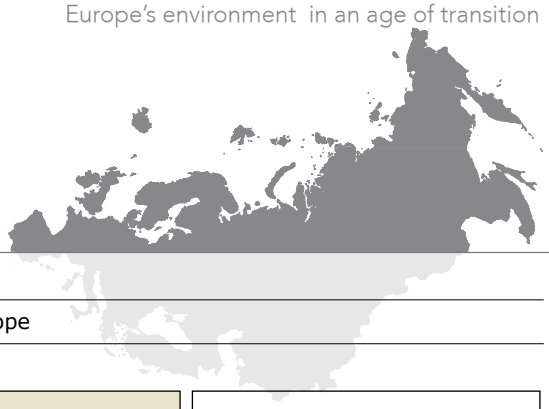
- ENVSEC fosters information exchange, agreements and practical cooperation over shared waters. In specific cases this has helped to build understanding, cooperation and long-term development. Examples include environmental-agricultural cooperation in the Prespa Lake, a management agreement and improved information exchange for the Dniester basin, and cooperative monitoring in the Prut, Kura, Araks/Aras basins and Central Asia. In the Balkans, ENVSEC has been looking for arrangements and locations for cross-border 'peace parks', and in the 'greater Caucasus' it has helped reopen a discussion towards a region-wide environmental convention.

- In the areas of 'frozen conflicts' in the Caucasus and the Republic of Moldova, ENVSEC has promoted broad environmental cooperation, thus trying to add a 'softer' dimension to a difficult process of political settlement. A mission to Nagorno Karabakh in 2006 helped Azerbaijani and Armenian authorities not only to identify causes of powerful grass fires, but also reflect upon various options of how a dialogue over environmental problems and emergencies in the area could be strengthened. Bringing together local environmental authorities in the turbulent Ferghana valley and preparing local communities to anticipate natural disasters such as floods or landslides not only increases mutual understanding but also mitigates major environmental risks to human security.

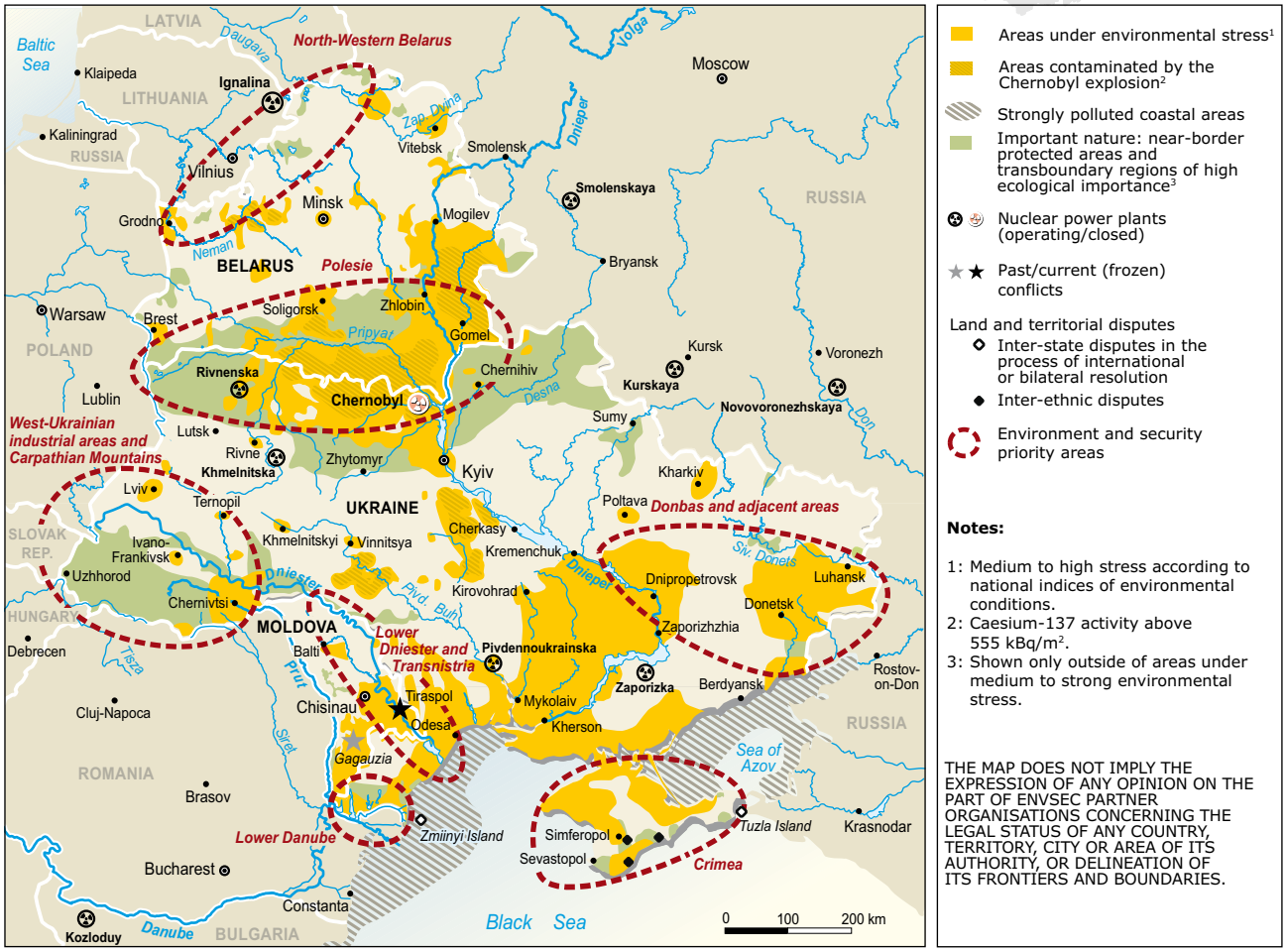
- Finally, ENVSEC has contributed to strengthening environment and security institutions and policies in vulnerable areas. For example, in the Ferghana valley it helped to establish 'Aarhus centres' and helped local authorities to better inform the public about the environmental situation. Elsewhere, it has systematically mainstreamed reporting on environment and security in the mass media of the Caucasus and Central Asia, promoted public participation in decision-making on related issues, and helped to implement existing policies (such as regional environmental conventions) or develop new ones (such as the new Environmental Security Strategy of the Republic of Moldova).

As a catalytic initiative, ENVSEC relies on follow-up by, and alliances with, larger financial and implementation mechanisms that are able to pursue major clean-up or remediation projects in a systematic and comprehensive manner. Increasingly the Initiative's work is continued or replicated by others. Recent examples include the rehabilitation of industrial hot spots in south-eastern Europe, which was supported by the Dutch government outside ENVSEC but in line with its findings, and the destruction of rocket fuel in a number of EECCA countries where ENVSEC provided initial momentum and support. This gives hope that the initiative's work will have a longer-term impact and has the potential to inspire the continent not only towards 'greening European security', but equally towards political agendas and concrete action.

Source: Environment and Security Initiative, UNEP Regional Office for Europe, see also www.envsec.org.



Map 1.2 Environment and security priority areas in Eastern Europe



Map by UNEP/GRID-Arendal, May 2007

Source: UNEP, UNDP, UNECE, OSCE, REC, NATO, page 34, 2007. Based on: Belarus State University. Atlas of Belarus geography. Minsk 2005; State Committee for Land Resources, Geodesy and Cartography. National Atlas of Belarus. Minsk 2002; Botnaru V. and O. Kazantseva. Republic of Moldova. Atlas. Chisinau 2005; State Committee for Natural Resources. Integrated Atlas of Ukraine. Kyiv 2005. Baloga V.I. (ed.) 20 Years after Chernobyl Catastrophe. National Report of Ukraine. Kyiv 2006; Shevchuk V. E. and V. L. Gurashevsky (eds.) 20 Years after the Chernobyl Catastrophe. National Report. Minsk 2006; Ministry of Environment Protection of Ukraine. On-line environmental maps (www.menr.gov.ua); ENVSEC consultations 2006–2007.

Growing interdependence

Meanwhile, the world economy is characterised by growing globalisation and interdependence, within which the countries of the entire pan-European region have become increasingly connected with each other and with the rest of the world. As highlighted above, the mobility of people and trade is substantial across the pan-European region. In parallel, the flow of resources, services, capital, technology and information between countries within the region has grown, resulting in a web of interdependence across the region (see Chapter 6).

This economic interdependence is well illustrated in the context of on-going discussions on energy supply and demand across the region. Today, nearly a third of all fuel imports into the western and central Europe region come from EECCA countries, mostly from the Russian Federation — making the Russian Federation the single most important external supplier of natural gas and oil to the European Union (Table 1.5).

Western and central Europe is the main trading partner of the EECCA region. In 2005, more than two-thirds of all merchandise trade of EECCA

Table 1.5 Exports of fuels to the European Union from selected economies by region and supplier

Supplier	Value (USD million) 2005	Share (%) 2005	Annual change (%) 2000 to 2005
WCE, SEE	211 099	43.2	+ 17
European Union (internal trade)	(156 717)	(32.1)	
Norway	(49 972)	(10.2)	
EECCA	107 873	22.1	+ 24
Russian Federation	(90 433)	(18.5)	
Kazakhstan	(9 806)	(2.0)	
Africa	65 435	13.4	+ 14
Middle East	52 390	10.5	+ 10
North America	7 957	1.6	+ 15
Asia	7 762	1.6	+ 31
South and central America	6 778	1.4	+ 18
World	**488 434**	**100.0**	**+ 18**

Source: WTO, 2006.

countries was with countries in the pan-European region, whilst the total export volume accounted for more than USD 175 billion. Conversely, exports to EECCA countries make up less than 10 % of the total exports from the European Union (just below USD 100 billion). However, with an annual growth of 36 % in 2004 and 23 % in 2005, the EECCA region has recently been the fastest growing export market of the EU (WTO, 2006).

Alongside the economic dimension, globalisation in the social, political, technological and cultural realms has also become a defining trend of our time — with significant consequences for the environment. Many of the current environmental challenges have become shared concerns, most prominently land-use changes, climate change and global warming, reduced water availability and quality, biodiversity loss and sea level rise, all of which have impacts across the region. In addition to these global environmental changes, a number of local-scale environmental concerns have also become so widespread that they can be regarded as pan-European and even global phenomena, for example soil degradation and water scarcity. This report addresses many of these transboundary and global environmental challenges in more detail.

An overarching consequence of the increasingly global nature of environmental concerns is that it is no longer possible to tackle these on a national or regional basis only. Instead, broad approaches and international partnerships are needed to complement domestic efforts. Due to the interdependence and interconnectedness between societies and ecosystems, failures in any part, whether they are economic downturns, political conflict, or environmental disasters, have implications across the region. Thus, linkages between environmental degradation and poverty as well as those between political insecurity and environmental stress noted above — even when distant at first glimpse — are easily brought closer to home via the developments and processes that govern globalisation.

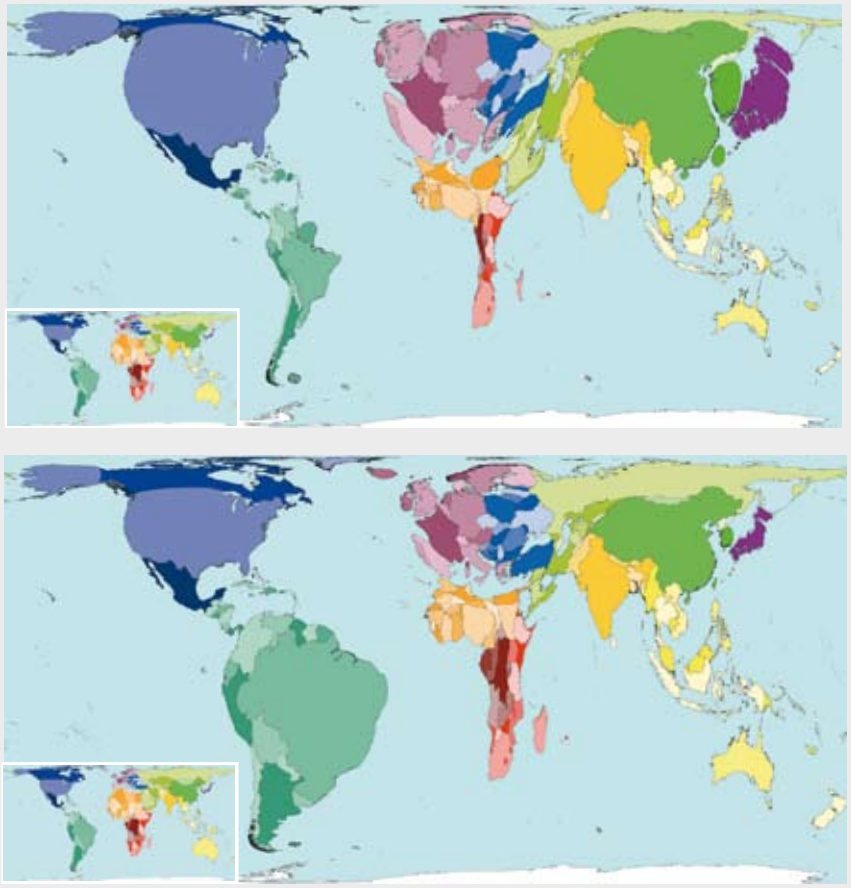
Another important environmental dimension of growing international interdependence is the increased geographical decoupling of consumption from the availability of natural resources. As noted above, growing energy demands have created a high degree of interdependence between western and central European countries and the rest of the world in general and the major energy exporters in the EECCA region in particular. This development can be seen as part of a more general trend of increasing consumption which, in many parts of Europe, causes resource needs to extend well beyond the available resource-base of the region. In other words, current consumption patterns can no longer be supported locally in most of the region (see Box 1.4).

Box 1.4 Comparing ecological footprint and biocapacity in the pan-European region

In 2005, the 'global ecological footprint' was 2.2 global hectares per person (a global hectare is a hectare with world-average ability to produce resources and absorb wastes). This is believed to be three times the footprint of the 1960s (WWF, 2006). For most pan-European sub-regions the ecological footprint of consumption is estimated to be well above the respective regions' biocapacity, effectively implying that most of the region is running an ecological deficit. (In 2002, the ecological footprint amounted to about 1.2 global hectares versus a biocapacity of 1.1 in the Caucasus; 2.2 versus 1.9 in Central Asia, 2.2 versus 1.6 in south-eastern Europe, 3.9 versus 5.5 in eastern Europe, and 4.7 versus 2.3 in western and central Europe — based on data available at www.eea.europa.eu/highlights/Ann1132753060).

The discrepancy between footprint and biocapacity (see Map 1.3) gives an indication of a widening sustainability gap from an environmental perspective. At the same time, this gap shows the extent to which western and central Europe is dependent on using environmental resources supplied by third countries and makes a strong case for ensuring that resources, both across — but also beyond — the pan-European region, are used in a sustainable manner. This becomes all the more important in the wider context of other global environmental changes that threaten to diminish the planet's biocapacity, such as climate change, water scarcity and biodiversity loss.

Map 1.3 Ecological footprint (top) and biocapacity (bottom)



Note: Top: Ecological footprint — the size of each territory shows the proportion of the global footprint. (The ecological footprint is a measure of the area needed to support a population's lifestyle. This includes the consumption of food, fuel, wood, and fibres. Pollution, such as carbon dioxide emissions, is also counted as part of the footprint.)
Bottom: Biocapacity — territory size shows the proportion of all biocapacity that is found there. (Biocapacity measures how biologically productive land is. It is measured in 'global hectares': a hectare with the world average biocapacity. Biologically productive land includes cropland, pasture, forests and fisheries).
Note: Global map of land area in identical projection in bottom left corner of respective maps, for comparison.

Source: www.worldmapper.org (copyright 2006 SASI Group (University of Sheffield) and Mark Newman (University of Michigan)) based on data from WWF, 2006).

1.3 Towards pan-European sustainable development

Facing the challenge: environmental policy across the pan-European region

In progressing towards sustainable development, sound environmental governance is needed to tackle the environmental challenges and safeguard Europe's environment. To do so, it will be necessary to adapt effectively to the dynamics and transitions outlined above, and continue to integrate environmental values in all relevant areas of international cooperation, not least by implementing agreed international strategies and policies. Environmental and sustainability principles feature prominently in various international, regional, national and local policy agendas and plans. At the global level, the Millennium Development Goals (MDGs) establish a set of internationally accepted targets, and the World Summit on Sustainable Development (WSSD) calls for strengthened cooperation to reach these goals.

At the pan-European level, the intergovernmental 'Environment for Europe' (EfE) process provides a platform for member countries of the United Nations Economic Commission for Europe (UNECE) to jointly address and tackle environmental concerns in Europe. The First Ministerial Conference of the EfE process in 1991 was hosted at Dobris Castle in what was then Czechoslovakia. Since then, four further Ministerial Conferences have promoted environmental protection and sustainable development in the region (see Box 1.5). Today, this process provides a unique partnership that includes governments from more than 50 countries — involving virtually the entire pan-European region, from Albania to Uzbekistan, as well as the transatlantic UNECE member countries: Canada and the United States of America.

Box 1.5 The Ministerial Conferences in the 'Environment for Europe' process

Year	Ministerial conference in	Key outcomes
1991	Dobris, Czechoslovakia	Development of a set of basic guidelines for a pan-European cooperation strategy. Call for a first pan-European State of the Environment Assessment.
1993	Lucerne, Switzerland	Adoption of a Ministerial Declaration setting out the political dimension of the 'Environment for Europe' process, aiming at harmonising environmental quality and related policies on the continent, and securing peace, stability and sustainable development.
1995	Sofia, Bulgaria	Adoption of a Ministerial Declaration reaffirming commitment to cooperation in the field of environmental protection in Europe based on the principles decided upon at the Second Conference in Lucerne.
1998	Aarhus, Denmark	Adoption of the Resolution and Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters.
2003	Kiev, Ukraine	Adoption of a Ministerial Declaration underlining the importance of the 'Environment for Europe' (EfE) process as a tool to promote environmental protection and sustainable development in the region, and adoption of the Environment Strategy for Eastern Europe, Caucasus and Central Asia (EECCA Strategy).
2007	Belgrade, Serbia	The Belgrade conference is designated to be a 'conference of delivery' and sets out to address three themes: 1) evaluation of progress in the implementation of agreed commitments; 2) capacity building and partnerships to support implementation; and 3) setting the way forward for EfE process towards a sustainable future.

Source: Based on www.unece.org/env.

One of the key outcomes of the EfE process so far has been the 'Environment Strategy for Countries of eastern Europe, Caucasus and Central Asia' (EECCA Strategy) adopted at the ministerial conference in Kiev in 2003. The strategy's overall aim is to strengthen efforts in environmental protection and to facilitate partnership and cooperation between countries in the Eastern Europe, the Caucasus and Central Asia region as well as with the rest of Europe. Seven initial key objectives and their respective areas for action have been identified:

- Objective 1: Improve environmental legislation, policies and institutional framework;
- Objective 2: Reduce the risks to human health through pollution prevention and control;
- Objective 3: Manage natural resources in a sustainable manner;
- Objective 4: Integrate environmental considerations into the development of key economic sectors;
- Objective 5: Establish and strengthen mechanisms for mobilising and allocating financial resources to achieve environmental objectives;
- Objective 6: Provide information for environmental decision-making, promote public participation and environmental education;
- Objective 7: Identify and address transboundary problems and strengthen cooperation within the framework of international conventions.

At the EU level, the overarching policy goals are outlined in the Sustainable Development Strategy and the Lisbon Strategy on Growth, Jobs, and Competition. These are complemented by the Environment Action Programmes (EAP), which provide key planning tools for environmental policy within the European Union. The current 6EAP (adopted in 2002 by the European Parliament and European Council) focuses on the priority areas of climate change, nature and biodiversity, natural resources and waste, as well as environment and health and quality of life. In addition, it lists seven areas for thematic strategies (see Box 1.6).

Box 1.6 Thematic strategies in the EU's Sixth Environment Action Programme (6EAP)

The thematic strategies introduced in the 6EAP represent an innovative approach to policy development and a shift away from the previous incremental policy-making that led to fragmented legislation. The thematic strategies focus on cross-cutting environmental issues and problems, seeking to address them in a systematic and comprehensive manner, by establishing clear objectives and timetables for implementation and an overall framework for future legislative development, where appropriate. Thematic strategies have been drawn up for seven areas: air pollution, waste recycling and prevention, marine environment, soil protection, sustainable use of pesticides, sustainable use of resources, and urban environment.

Five of the seven strategies are accompanied by legislative proposals. In two cases (air pollution and waste), these proposals are aimed at revising and simplifying existing Community legislation. The three other legislative proposals are proposals for new framework directives (on the protection of the marine environment, the protection of soil, and the sustainable use of pesticides), designed to achieve the objectives of the respective strategies. These proposed directives do not, however, include quantified environmental targets for EU Member States. Two of the thematic strategies (urban environment and sustainable use of natural resources) do not include proposals for any legislative measures, but instead focus on formulating recommendations for national action and soft forms of cooperation at EU level.

The development process for the thematic strategies involved several stages. Following initial research and a review of existing policies, the European Commission issued a communication analysing each issue, examining various policy options and inviting comments from Member States and stakeholders. This served as a basis for extensive consultations through the internet and through various meetings convened by the Commission services. Subsequently, each proposed Thematic Strategy was subjected to a comprehensive Impact Assessment (IA) in accordance with the Commission's general guidelines for major policy proposals. The broad participatory approach to the development of the Thematic Strategies was intended to involve all relevant stakeholders, in accordance with the principles of the Aarhus Convention, thereby increasing political support for and ownership of the strategies.

The increase in the European Union from 12 Member States in 1990 to 27 Member States by 2007, led to the implementation of common environmental regulations across most of western and central Europe. Meanwhile the enlargement of the membership of the European Environment Agency to 32 member countries in 2007 (the latest additions being Turkey and Switzerland) ensures a shared perspective on environmental issues. As countries of south-eastern Europe prepare for accession, environmental regulations of the EU are being and have been transposed and implemented in this region. In addition, the EU actively promotes cooperation on environmental issues with its immediate neighbours through the European Neighbourhood Policy ([4]) and the Stabilisation and Association and Accession processes for the countries in South Eastern Europe. The EU–Russia Strategic Partnership provides an umbrella for strengthening cooperation on environmental issues, in particular transboundary elements.

In the next few decades, environmental and sustainable development (SD) strategies will be increasingly put to the test of bridging the gap between policy decisions and the achievement of goals — the 'implementation gap'. Coordination across strategies — and between global, international, regional, national and local programmes, plans and strategies — will be the other key challenge. Responses are particularly needed to impacts from long-term environmental shifts including climate change. Even well coordinated strategies, conventions, and programmes can only achieve so much. To bridge the gap it is equally important to better inform, train and educate people in general about the environment and sustainable development. The younger generation should be a priority focus, as they are tomorrow's environmental guardians.

Strengthening education for sustainable development

The relatively new and developing concept of education for sustainable development (ESD) aims to expand environmental education. Whilst environmental education has previously focussed on the transmission of scientific facts, education for sustainable development addresses relevant participatory and democratic processes as well as placing environmental issues in a wider development context.

The concept of ESD typically builds on three main components. The first component is the formal education system in schools, which often includes environmental topics. This is relatively well developed in much of western and central Europe as well as in many SEE and EECCA countries. However, often this still relies on passive transfer of information, but increasingly there are developments towards a more interactive processes (involving, for example, Non-Governmental Organisations (NGOs)) and addressing environmental issue in the context of sustainable development.

A second component of ESD focuses on non-formal education and raising awareness of all sections of society. Public awareness is essential in encouraging active public participation in decision-making on matters concerning the environment. Examples for this type of non-formal education are provided in the Aarhus centres on environmental information (named after the Aarhus Convention) and through information centres established by environment ministries in several countries across the pan-European region.

The third component is adult training and retraining. This area can contribute substantially towards changing behaviour and working practices for both decision-makers and employees across society as a whole. NGOs and other independent agencies can play an important role in delivering such training.

The need and the commitment to strengthen ESD in the region and globally were recognised during the preparation of the World Summit on Sustainable Development (WSSD) in 2001, the WSSD in Johannesburg in 2002, and through the adoption by the UN General Assembly in December 2002 of the resolution 57/254 declaring the period 2005 to 2014 as the 'Decade of Education for Sustainable Development'.

([4]) See also ENP/Progress reports: http://ec.europa.eu/world/enp/documents_en.htm#3. Enlargement/Progress reports: http://ec.europa.eu/enlargement/key_documents/reports_nov_2006_en.htm.

Building on these developments, the Ministerial Environment for Europe Conference in Kiev in 2003 agreed to develop a UNECE Strategy on ESD, pulling together ongoing ESD activities across the pan-European region (see Boxes 1.7 and 1.8). The strategy was adopted in 2005 at the High Level Meeting of Environment and Education Ministries in Vilnius, Lithuania. It should be noted that a platform of NGOs (i.e. the ECO-Forum) played an important role in promoting, drafting and finalising the UNECE Strategy for ESD.

Alongside the ESD Strategy, the 'Vilnius Framework' was established in recognition of the challenges

Box 1.7 A diversity of actions and initiatives addressing Education for Sustainable Development

At the **EU level**, the renewed EU Sustainable Development Strategy (2006) highlights the importance of ESD as a 'cross-cutting policy contributing to a knowledge society'. It defines the following guiding principles: the participation of citizens in the decision-making process; the promotion of SD through education and public awareness; and informing of citizens on their environmental impact as well as on their options for more sustainable choices. Member States are encouraged to further develop national action plans, making particular use of the EU Education and Training 2010 work programme. An integrated action programme on lifelong learning was adopted for 2007–2013 (European Parliament and Council, 2006).

In the **Mediterranean region**, the launch of the UN Decade of Education for Sustainable Development (DESD) took place in 2005 in Greece. A resolution was adopted, calling for the development of a Mediterranean Strategy on ESD, following the UNECE model. Other initiatives in the region include the Mediterranean Network on ESD (MEdIES), which aims to engage the educational community in Agenda 21 and the MDGs, through the implementation of innovative educational programmes on sustainable development (www.medies.net).

Since 2000, the **Baltic region** has benefited from a comprehensive framework for ESD (with the adoption of the Hague Declaration). The education component of Baltic Agenda 21 is a specific initiative to create a network of relevant authorities and educational institutions involved in the implementation of sustainable development by means of education and training. Furthermore, an Agenda 21 programme for Education in the Baltic Sea region, the 'Baltic 21E' was agreed in 2002. Also in the region, UNESCO has set up a network of 300 schools in Baltic Sea countries (the Baltic Sea project), to focus on the specific environmental problems of the region, giving particular emphasis to sustainable development (the Baltic Sea Project webpage at www.bspinfo.lt).

In **Central Asia** a pilot review by CAREC (Regional Environment Centre for Central Asia) with support from OSCE Almaty and using the UNECE set of indicators revealed, amongst other things, that:

- the concept of ESD is relatively new in the region; and,
- in spite of significant progress, the distinction between environmental education and ESD is still not clear (for example, traditional environmental education activities are often presented in national reviews as ESD).

(CAREC — Regional Environmental Centre for Central Asia, 2006).

Box 1.8 Six objectives of the UNECE Strategy for Education for Sustainable Development

The basic aims of the UNECE Strategy for Education for Sustainable Development are to:

- ensure that the policy, regulatory and operational frameworks support ESD;
- promote SD through formal, non-formal and informal learning;
- equip educators with competence to incorporate SD into their teaching;
- ensure that adequate tools and materials for SD are accessible;
- promote research on and development of SD;
- strengthen cooperation on ESD at all levels within the UNECE region.

The UNECE Strategy provides a comprehensive framework for implementation covering national state implementation, areas for actions, international cooperation, roles and responsibilities of all involved stakeholders, financial matters, and monitoring and evaluation.

Source: Strategy for Education for Sustainable Development, Vilnius, 18 March 2005, see www.unece.org/env/esd/Strategy&Framework.htm.

for implementation. This framework envisages a three-stage implementation timetable. The first phase, in which countries identify their current practices and set priorities for future action, is due for completion in 2007. The regional implementation of the UNECE Strategy started to take shape in dedicated regional workshops. A UNECE workshop hosted by Greece in November 2005, for example, highlighted that in almost all SEE countries, the introduction of ESD principles will coincide with general educational reforms. A second UNECE workshop, hosted by the Russian Federation in November 2006, registered progress in promoting ESD both at the national and regional level in EECCA countries whilst noting that many initiatives are either informal or extra-curricular due to limitations in ESD funding.

One of the priority actions identified under the 'Vilnius Framework', and at the same time an important tool for measuring progress in the implementation of the ESD Strategy, was the development of a specific set of indicators. These indicators are structured around the six key objectives of the Strategy. Based on the voluntary participation of countries, a first progress report will be presented at the Belgrade Environment for Europe conference.

It should be noted, that at national level, the range of initiatives strengthening education for sustainable development (ESD) or environmental education is diverse (see Box 1.9). Nevertheless, they show a broad recognition of the topic across the whole pan-European region.

Box 1.9 Examples of national level initiatives on education for sustainable development (ESD) or environmental education

- In Armenia and Azerbaijan laws on environmental education were adopted in 2001 and 2003, respectively.
- Belarus is currently preparing a national programme 'Promotion of ESD to the system of formal and informal education'.
- In the Czech Republic a national programme of ESD was approved by the government in 2000 and complemented by a Third Action Plan for the period 2007–2010. A strategy on ESD is subject for adoption in 2007.
- France has a comprehensive ESD framework through the adoption of both the National Strategy for Sustainable Development as well as the 'Charte de l'environnement'. The aim is to develop the attitudes of active and responsible citizens through appropriate education and awareness-raising. Since 2004, ESD has been introduced and integrated in all schools, including training and adult education programmes. A national institution for ESD ('Observatoire national pour l'éducation a l'environnement pour un développement durable') was created to provide pedagogical support and elaborate educational programmes.
- Greece is preparing a national strategy on ESD following the UNECE model. Furthermore, since 2005 special subjects addressing the ESD components have been introduced in school curricula for the period of 2005–2014.
- In Kyrgyzstan an ESD Coordination Council has been established at government level.
- In Slovakia a national strategy on SD was adopted in 2001, complemented more recently by the adoption of an action plan of sustainable development covering the period 2005–2010 and aligned to UNECE strategy objectives.
- The Russian Federation is developing a national Strategy and Action Plan on ESD in line with the UNECE strategy.
- In the United Kingdom education is recognised by the government as a key part of the solution to sustainable development and features prominently in the British Government's own strategy of 2005 'Securing the Future'. A multitude of initiatives are under development throughout the country. In Northern Ireland, for example, sustainable development will have a high profile and become a key theme in the revised school curriculum at primary and post-primary level from September 2007.
- In Ukraine and Kazakhstan the concept of environmental education has already been recognised in national legislation since 1991 and 1998 respectively.
- Uzbekistan has established a programme and a national network on environmental education and ESD.
- Education was also identified as an important component of the national environmental strategies, as is the case regarding Armenia's National Action Plan on Environmental Protection, and Turkmenistan's Programme on Biodiversity Conservation (see also Chapter 4, Biodiversity).

Sources: Various sources; including materials presented at UNECE workshops on the implementation of the UNECE Strategy for ESD for the sub-region of South-East Europe in November 2005 (UNECE, 2005b), for Eastern Europe, Caucasus and Central Asia in November 2006 (UNECE, 2006a), and the UNECE Steering Committee on Education for Sustainable Development in December 2006 (UNECE, 2006b).

Enhancing environmental awareness and public participation

Across the pan-European region it is recognised that public participation in decision-making is central to sustainable development. The Aarhus Convention (i.e. the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters), adopted in 1998, sets out requirements for facilitating public participation, including timely and effective notification of public concern, reasonable timeframes for participation, as well as prompt public notification of decisions and their underlying justification (see Box 1.10).

The availability and accessibility of information is essential for public participation. New communication and networking tools have reshaped the way information is provided and how it feeds into policy making and implementation.

Box 1.10 Public participation in EECCA and SEE regions

In 2005 the UNECE Secretariat assessed the implementation of the Aarhus Convention on the basis of reports prepared by countries. The review showed that EECCA countries have been most active in implementing the access-to-information pillar while the other two pillars are still lacking behind. As regards country progress, implementation appeared most advanced in Belarus, Kazakhstan, Republic of Moldova and Ukraine, somewhat less so in the three Caucasus countries, whereas Kyrgyzstan, Tajikistan and Turkmenistan seemed to have made the least progress (Excerpt from UNECE, 2005a).

Access to official environment information, including national state of environment (SoE) reports, is regarded as a prerequisite for public participation in the environmental decision-making. National SoE reports are prepared regularly in seven EECCA countries (every year in Ukraine, Republic of Moldova, Russian Federation, and in Kyrgyzstan, every two years in Tajikistan, every three years in Uzbekistan, and every four years in Belarus). Real practices of public participation are emerging. The public is increasingly allowed, and even encouraged, to provide input to draft laws. On-line forums and other forms of consultations are being established to receive feedback from stakeholders during the design of new environmental regulations. In Kyrgyzstan it has become mandatory. Examples of government/NGO collaboration keep increasing — such as work of NGOs in Tajikistan on compliance assurance and in Kazakhstan on promoting eco-tourism (Excerpt from OECD, 2007 (Chapter 6.2, Public participation in environmental decision-making)).

In SEE significant progress was mainly achieved in the field of specific legislation related to public participation by the ratification of the Arhus convention and/or through the adoption of national laws and strategies in this area. However, the implementation of access to information acts is not going smoothly across the region. For example the Croatian Environmental Agency has, as one of its main tasks, to ensure availability of information at different levels to all stakeholders from the general public to professionals. Also the Public relations office in the Former Yugoslav Republic of Macedonia has amongst its tasks the provision of environmental information and education. A variety of the projects focused on raising public awareness about, and public participation in, environmental policy and decision-making and implementation is carried out. […] In this, framework strategies for implementation of the Aarhus Convention have been developed in several SEE countries along with implementation guides and a capacity building/ training programmes regarding implementation practices at national and local levels. Through technical assistance projects, notable progress has been made with respect to stakeholder participation in the development of policies and programmes, but participation of NGOs and civil society in permanent coordination committees and/or working groups that have significant influence on the environmental policy-making has been low. Public participation in project level decision-making has also not yet become a general practice (Excerpt from UNDP, 2007 (Chapter 3.5, Access to information and public participation)).

A variety of projects focused on raising public awareness about, and public participation in, environmental policy and decision-making and implementation have been carried out. Strategies for the implementation of the Aarhus Convention have been developed in several SEE countries alongside implementation guides and a capacity building programmes to strengthen implementation at national and local level. Through technical assistance projects, notable progress has been made with respect to stakeholder participation in the development of policies and programmes, although participation of NGOs and civil society in permanent coordination committees and/or working groups has been low. Furthermore, public participation in project level decision-making has not yet become a general practice (Excerpt from UNDP, 2007 (Chapter 3.5, Access to information and public participation)).

This is as true for environment as it is for other policy areas. Indeed, never before have people been as connected as they are today. The internet has not only revolutionised access to information and knowledge and facilitated the spreading of ideas, it has also empowered citizens more than ever before to express their opinions and to be engaged in and influence policies. Already we see a growing public awareness, albeit uneven, of environmental issues across the pan-European region. On-line debates about the future of the European Union reveal that concerns for environment and the quality of life of future generations are high on EU citizens' agenda.

Nevertheless, it should be noted that access to the internet is still uneven across the region. In 2006, on average more than half of households in WCE had access to the internet, ranging from 23 % in Greece to above 75 % in the Netherlands, Denmark and Sweden (Eurostat, 2006). Large differences can also be seen within the EECCA region: Tajikistan and Turkmenistan have virtually no access to internet (0.1 % and 0.5 % respectively) while in Belarus 35 % of the population have access. However, these gaps are disappearing fast. Growth figures for 2000–2007 show a more than 20-fold increase for some countries (Internet World Stats, 2007).

Environmental information available through the internet has generally or partly increased since 2005 throughout the region. Most countries maintain national web portals or other sites of interest to ensure that environmental information is available electronically. Several countries have an Aarhus Clearinghouse web portal ([5]) in operation to promote the exchange of information, and to ensure public access to information and participation in decision-making. Such web portals have often been used in public consultation processes. The Belgian website ([6]), for example, regularly features consultations on environmental decisions and acts as a portal to direct citizens to national or local level e-consultation websites. Nevertheless, much work is still needed to improve procedures for e-participation in both the EU and EECCA region.

Thus, new communication and networking opportunities provide a platform to further enhance transparency in policy making, public participation and environmental justice. However, environmental awareness does not always lead to a change in behaviour. 'E-government' initiatives are radically improving access to information, but not necessarily motivating public participation in policy processes. In many WCE countries, governments have formulated and implemented national 'e-government' strategies for the use of electronic tools to facilitate administrative processes and services. Nevertheless, taking the step from increased awareness of the public to enhanced individual, corporate and local-level responsibility remains a challenge for policy makers and society at large (see Box 1.11).

Improving and sharing environmental information

The formulation of environmental policies and monitoring of their impacts relies on the availability and quality of the underlying data and information. Measuring the environmental impact of human activities is a complex issue requiring a holistic approach, extensive inter-disciplinary cooperation and access to a vast amount of data. Today, information and communication technology is already widely used to ease the tasks of gathering, storing and processing environmental data, and available computational power can deal with huge amounts of data, opening new perspectives for advanced modelling.

Overall, the European capacity to access and manage the wide range of information and services required for environmental management is still fragmented and suffers from considerable heterogeneity in terms of organisation, system architecture, technical implementation and data structure as well as data access policy. The challenge is to interconnect the many information sources and to build an integrated and dynamic information system for environmental management. Currently activities regarding integrated assessment and reporting on the state and outlook of the environment increasingly rely on spatial information, including remote sensing

([5]) For further details see http://aarhusclearinghouse.unece.org.
([6]) See www.aarhus.be.

Box 1.11 Local Agenda 21 achievements

Local governments are important actors in implementing sustainability strategies. They are essential partners of the European Commission and national governments in supporting environmental and sustainability targets. At the same time, many local governments across Europe have started their own initiatives in developing and disseminating innovative approaches towards public participation, environmental protection and resource management, as well as integrating the social, economic and environmental perspective into their future development.

In 1994, the first European Sustainable Cities and Towns Conference, in Aalborg (Denmark) adopted the Aalborg Charter which outlined the concept of 'urban sustainability' and local action. It has since been signed by more than 300 local governments across 40 European countries. Ten years later, in 2004, the Aalborg Commitments reinforced the existing Local Agenda 21 processes and opened new prospects for actions, by designing flexible tools to be used at local level in the context of existing and future action plans (for more information see www.sustainable-cities.eu).

This umbrella initiative covers a range of important local government activities, such as:

Leadership: Local leaders and decision-makers increasingly show commitment to moving communities towards sustainability; urban sustainability and environmental protection have become important political themes independent of party politics.

Public awareness: Increasingly, among thousands of cities and towns in Europe, sustainability issues are rated higher on the local agenda. The City of Oslo, for example, has calculated its impact on the globe through an 'ecological footprint' analysis — as starting point for raising awareness.

Implementation: In moving from awareness to action a multitude of local governments has successfully developed and implemented policies for urban sustainability. The City of Växjö in Sweden, for example, set the target of becoming 'fossil fuel free' by 2050.

Active involvement: Local Agenda approaches that incorporate various stakeholders have become a precondition for successfully defining and implementing local policies. Increasingly, joint implementation has become a key purpose to encourage early cooperation of stakeholders.

Local sustainability management: Following the process outlined in the Aalborg Commitments, Cities and Towns build on planning cycles including the following steps: Baseline Review, Target Setting, Political Commitment, Implementation and Monitoring, as well as Evaluation and Reporting.

Partnerships: An increasing number of local governments are joining European-wide projects for pioneering and advancing innovative policies. For example, 25 cities, towns, and regions have joined the R&D project 'Managing Urban Europe 25'; see www.mue25.net.

European impulses: Ideas, support systems, directives, and funding from the European level have instigated activities on the local level and continue to provide an important catalyst for action. For example The European mobility week initiates car-free days in many cities.

Research and action: The European Commissions' Framework Programmes for Research have supported a multitude of cooperation projects between researchers and local governments. One of many results is the Internet portal 'local sustainability'; see www.localsustainability.eu.

Support mechanisms: Available support mechanisms substantially increase the efficiency of local action, helping local authorities to fulfil their responsibilities towards targeted environmental protection and sustainable development. Examples of such support mechanisms include the Italian Local Agenda 21 Association; Service-Agency Communities in One World; local government associations such as ICLEI, CEMR, Climate Alliance, Energie-Cités, Union of Baltic Cities and support agencies such as the Regional Environmental Centre in Budapest.

Source: ICLEI-Local Governments for Sustainability, European Secretariat, www.iclei-europe.org.

data. European and other international initiatives such as the development of an Infrastructure for Spatial Information in Europe (Inspire), the Global Monitoring for Environment and Security (GMES) and the Global Earth Observation System of Systems (GEOSS) support this trend.

Current technology allows us to build integrated information systems where environmental institutions and service providers can share data and information without barriers, irrespective of the issue (e.g. water, air, soil, climate change), mandate (local, sub-regional, regional, or global), technology (*in situ* or satellite monitoring), language or location.

In dialogue with the Member States, the EU has recently agreed upon the concept of a Shared Environmental Information System for Europe (SEIS). This is progress since the Third Assessment, where the idea was presented only as a vision. The scope of SEIS is to establish an integrated and sustained environmental information system to improve the sharing of data within Europe and beyond. Such an information system should lead to an improvement in both the quality of environmental data and information, and in its management, use and dissemination. The benefits of such a shared information system are compelling and have already been recognised by regional and international organisations beyond Europe. For example, at the regional level, within the framework of the Barcelona Convention, UNEP/MAP (Mediterranean Action Plan) has proposed to establish a shared environmental and sustainable development information system for the Mediterranean region, *InfoMAP*. This will be based on the SEIS concept and will make use of tools and technologies which already exist at the European level and can be customised. Such an approach will allow *InfoMAP* to evolve as an integral component of a Mediterranean SEIS, while meeting the specific requirements of the Barcelona Convention and user needs across the region.

At the international level, UNEP has expressed interest in learning from European experiences over many years of networking and sharing data and information. In addition, some convention secretariats are looking closely at the organisational and content-related aspects of SEIS, in order to facilitate a more coherent approach to data and information delivery and dissemination at the global level.

SEIS will be built incrementally upon the information and systems that already exist in the EU Member States, other European countries and at the international level. The concept of SEIS is based on similar principles to those applied in the Directive for developing an infrastructure for spatial information in Europe (Inspire):

- information should be managed as closely as possible to its source;
- information should be provided once and shared with others for many purposes;
- information should be accessible to enable clients to make comparisons at the appropriate geographical scale (e.g. countries, cities, catchment areas); and
- information should be made available to the public after due consideration of the appropriate level of aggregation, given possible confidentiality constraints, and at national level in the national language(s).

SEIS is based on a distributed or decentralised network of public information providers for sharing environmental data and information. This concept reflects, on the one hand, Europe's commitment to an open society and good governance, and, on the other hand, the possibilities offered by today's information and communication technology. SEIS is seen as an evolution, not a revolution, building on discussions that began in the late 1990s on how to streamline reporting of data and information by countries to the European and international level. Effective implementation of SEIS will contribute considerably to the EU policy agenda of better regulation and streamlining of reporting processes. In particular, if the objective of SEIS can be achieved, it should be possible to replace or reduce many of the existing data reporting requirements — to the European Commission, international conventions, EEA and others — while at the same time not only maintaining, but also improving, access to the information and assessments needed for policy work.

Major challenges of SEIS are to: organise, among the many actors in Europe, the vast array of existing environmental data and information; to integrate these, where desirable, with existing data and information from the social and economic realms; make them available together with tools that allow experts to do their own analyses; and finally, communicate them in ways which the public can readily understand and use as a basis for their own actions. Thus, 'collaboration' and 'coordination' are essential for the success of SEIS.

Box 1.12 Strengthen environmental monitoring and information management

Data collection: EECCA countries have a long history of collecting environmental data. These efforts involve a broad array of institutions such as hydro-meteorological and geological services, environmental inspectorates, water and forestry committees, and health ministries. However, institutional coordination is loose, at best, and often results in incompatible data. To start solving this problem, inter-agency monitoring commissions have been established in Belarus and Ukraine. Belarus' model emphasises streamlining of information flows (11 agencies are obliged by law to provide data), while Ukraine's model emphasises harmonisation with the EU. Little coordination seems to be taking place in most other countries — such as Republic of Moldova or Tajikistan.

Environmental monitoring: Overall, progress in environmental monitoring is mixed. Little progress on monitoring priority-setting has taken place, with the exception of Belarus. Progress on harmonisation is also slow — for example, air quality data generated by hydro-meteorological services and ministries of health are still generally incompatible as they use differing equipment and methods. In most cases, existing observation networks have not been reviewed since their inception decades ago and do not meet current national requirements. Some significant efforts are being made. Armenia, Azerbaijan and Uzbekistan have developed, or are in the process of developing, monitoring plans. Armenia, Belarus, Russian Federation and Tajikistan have installed a number of new air quality monitoring stations. Funding for monitoring has multiplied by seven in the Russian Federation, and Armenia has earmarked USD 420K for air and water monitoring in 2007–2008. Thanks to those efforts, monitoring of fine particulate matter (PM_{10}) has finally started in the region — in Moscow since 2004 and in Minsk since 2006. In addition to ambient data, getting hold of emissions data is crucial for the environmental information system to produce usable results.

Dissemination: Website-based communications are taking off — several countries have worked on developing their websites and Azerbaijan has included an environmental electronic information centre where a state-of-the-environment bulletin is posted daily. But those websites are not fully used for communicating environmental information (whether statistical data, environmental analyses, strategies or programme implementation reports).

Data storage and management is still a major issue. Environmental data are not always stored using electronic media, databases being sketchy and generally inaccessible (Tajikistan measurements are still recorded on paper). Although in many EECCA countries the publication of the national state of the environment report serves as a driving force for environmental data coordination and exchange, this has not yet resulted in the creation of centralized electronic databases. Environmental statistics are frequently published in statistical yearbooks and specialised environmental statistical compendiums. But with few exceptions these data are unavailable on the internet.

Source: Excerpt from OECD, 2007.

Progress in the management and sharing of environmental information is gradually observed also in the EECCA, region although the picture is relatively mixed across the region (see Box 1.12). Over the past few years the UNECE Working Group on Environmental Monitoring and Assessment (WGEMA) has continued to provide capacity building and in particular develop guidelines for indicator and assessment reporting leading to, among other things, the development of a compenduim of EECCA indicators in coorporation with UNEP and EEA (UNECE, 2007 (ECE/CEP/2007/7)).

Meanwhile, environmental indicators have become a major instrument for assessing performance and for communicating complicated issues in simple terms. In the field of environment, the past few years have seen a number of initiatives to identify key indicators, update them or look for ways of streamlining. Driven by the EEA, the establishment of a set of indicators for monitoring environmental progress across all member countries was initiated in 2001. The first outcome was completed in 2004 with the establishment of an EEA core set of indicators, fed primarily through the EEA priority data flows and designed to answer key policy questions at both international and Community levels. Since then, the set has been updated annually and reviewed regularly to maintain its policy relevance. Moreover the information is freely available on-line via the EEA website. Wherever possible the report makes use of these indicators for conveying key findings.

The western Balkan countries, which have been cooperating with the EEA for several years and have put in place most of the priority data flows, have also initiated a process of using the EEA core set of indicators in the region. Consequently, in 2006 within a CARDS/EEA support project, the first indicators for the western Balkan countries using the EEA methodology were produced. This activity has brought a number of benefits. Among others, a detailed analysis of the existing reporting obligations at national and international level was made, additional monitoring requirements for regular indicator production were identified, and considerable expertise was accumulated at the national level while producing the indicators.

In 2002, within the preparation phase of the Kiev report, the development of key indicators was extended to the EECCA countries through UNECE/WGEMA with TACIS/EEA assistance. With the EEA core set of indicators as a reference, the EECCA core set gradually took shape with substantial input from the EECCA experts assisted by partner organisations. Indicators which are similar to the EEA core set in structure, methodology and policy relevance have been established. The key products of this work are a methodological guide to producing the EECCA indicators, complemented by a trial compendium which contains a number of selected EECCA indicators. These are important steps towards streamlining environmental reporting across the pan-European region. These two products accompany this report as they underline the need for long-term cooperation and partnership in building a sustainable process.

In the long term it is expected that all these activities will be integrated into one single process aiming towards the establishment of a coherent coreset of environmental indicators for the pan-European region. Furthermore, SEIS could represent the information platform to regularly present key indicators for various policy needs at different levels. It is expected that a process of streamlining and harmonisation of environmental information will gradually facilitate the production of various assessment reports, among which the future pan-European assessments will feature.

One additional challenge will be to collect data and develop indicators for the less established policy issues which are of increasing importance. There are many 'traditional' policy areas, including, for example, air emissions and water quality, where a significant amount of information has been collected over the years. On the other hand, more recent policies identify new areas where information is needed, such as environmental impacts of resource use, consumption patterns, health and environment, global shifts of environmental burdens, or chemicals in the environment. It will be necessary to provide relevant data and information on these emerging areas to better target policies and monitor their implementation.

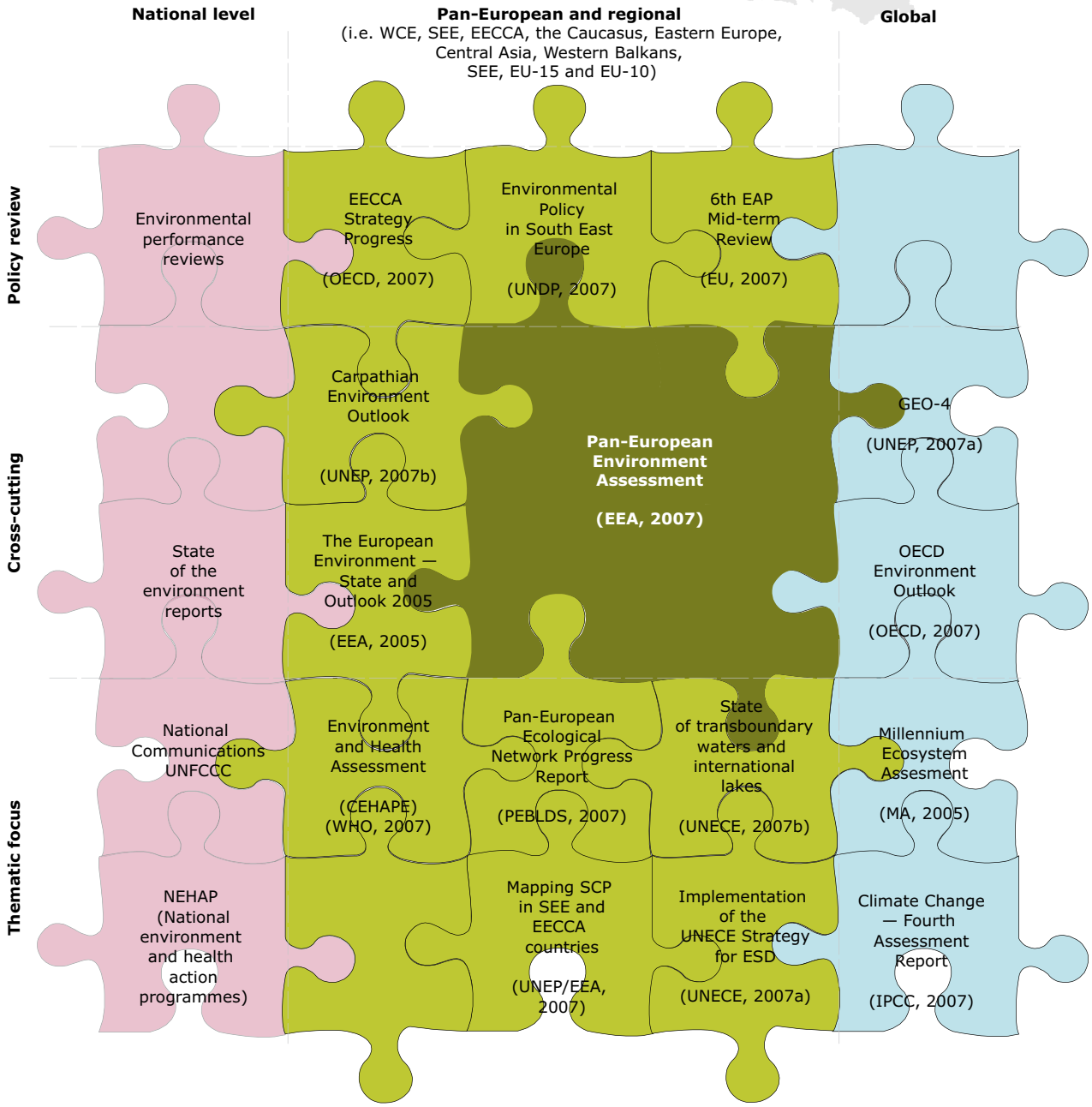
1.4 Assessing the pan-European state of the environment

Background and context of the report

In support of the 'Environment for Europe' process, the European Environment Agency has been regularly requested to prepare state of the environment assessments that provide policy-relevant, up-to-date and reliable information on the interactions between environment and society for the pan-European region. The first such pan-European assessment entitled 'Europe's Environment' was presented in Sofia in 1995, in response to a request for such a report at the First Ministerial Conference. Since then, the EEA has produced and presented, updated assessments to further support the 'Environment for Europe' (EfE) process (see Section 1.3) at the Ministerial Conferences in 1998 and 2003.

For its fourth assessment, the EEA has been called upon to give particular attention to priority areas such as: air emissions, urban air quality, transboundary inland and groundwater pollution, marine pollution, chemical, hazardous waste, waste management, human health and biodiversity. This fourth pan-European state of the environment report assesses progress towards goals and targets for these and other environmental priorities. It does this by building on, and complementing, the work of a suite of international organisations and institutions as well as individual countries (Figure 1.5).

Figure 1.5 Context of the EEA's pan-European State of the Environment Assessment report



Source: EEA, 2007.

Thus, this report should be seen and read as a step in the journey towards a hitherto unprecedented cooperation and partnership between European countries and a range of regional and international organisations, including the European Environment Agency, to provide better and more coherent environmental information. In particular, this report complements the regional-focused policy reviews provided by OECD (for the EECCA region, see Box 1.13), UNDP (for South East Europe, see Box 1.14) and the European Union (see Box 1.15).

A brief guide to reading the report

The fourth assessment report focuses on a number of pressing concerns which the pan-European region currently faces. Although it provides a broad overview of key environmental challenges, the report does not aim or claim to be a fully comprehensive assessment. In response to the request of the Kiev Ministerial Declaration, it highlights progress, measured against the environmental goals outlined in the 'EU Sixth Environment Action Programme' (6EAP) and in the 'Environment Strategy for Countries of Eastern Europe, Caucasus and Central Asia' (EECCA Strategy). Thus, the focus of this assessment is on the current state of the environment and developments since the turn of the century.

Chapter 2 of the report evaluates progress in air, water and soil quality in the context of reducing risks to human health. In addition, the impact of hazardous chemicals on these environmental media is highlighted, and in a separate section the impacts on health and quality of life are considered. Chapter 3 is dedicated to the discussion of trends, impacts and adaptation to climate change. The issue of climate change is one of the four areas of priority action addressed in the 6EAP and is likely to affect society's ability to meet objectives to manage natural resources in a sustainable manner.

Both the EECCA Strategy and the EU 6EAP also specifically refer to the need for biodiversity conservation and protection of ecosystems. Chapter 4 looks in detail at the challenge of halting biodiversity loss. Chapter 5 then expands the discussion of managing natural resources to the marine and coastal environment. In doing so,

Box 1.13 Progress in Environmental Management in Eastern Europe, the Caucasus and Central Asia

The OECD report concludes that progress across different policy areas is uneven. It highlights that notable progress seems to have been made in the context of compliance, water supply and sanitation, water resources management and agriculture. In contrast, less progress seems to have been made on waste management, biodiversity, transport, and energy efficiency. The report also notes that progress is rarely consistent — there is little evidence of countries taking a coherent approach to reform in any single policy area. It is not random, however, it is driven by various factors such as donor support, industrial lobbying, presidential attention, and determined leadership.

A key problem is the implementation status — from lack of implementing regulations to weak enforcement capabilities. The implementation gap is particularly evident at the sub-national level — where progress in many environmental issues will ultimately be decided. Another finding relates to the relationship between environmental authorities and line ministries. While it is increasingly recognised that progress on environmental policy integration will largely determine overall progress towards environmental sustainability, environmental authorities are still ill-prepared to engage in meaningful cross-sectoral policy dialogue and little progress has been made towards adopting integrated policy responses.

The experience since 2003 confirms that environmental progress in EECCA will take much longer than in central European countries. But there are signs that consistency and patience will pay off — recent progress in some countries was made possible by the foundations established several years earlier.

Although there is no single roadmap for accelerating progress in environmental management across EECCA countries, a number of key, common areas for action have been identified:

- a clear vision of where each EECCA country wants to go and how to get there
- a step-by-step approach to reform
- a stronger focus on implementation
- an approach that focuses on providing real incentives to encourage improved environmental performance
- an improved institutional framework
- a comprehensive approach to environmental financing
- a strategic investment in skills
- a stronger engagement of stakeholders
- a more supportive international cooperation framework.

Source: Based on OECD, 2007.

it provides the first update of a comprehensive assessment of the state of the marine environment presented in the first pan-European assessment report in 1995.

The issue of environmental impacts of consumption and production has moved up the policy agenda over the last couple of years and is often discussed alongside the issue of waste management and resource use. Chapter 6 focuses on sustainable consumption and production as well as waste management. Finally, Chapter 7 addresses the role of key economic sectors, including agriculture, energy, transport, tourism, with respect to the state of the environment. At the EU level, but also in the EECCA strategy, the integration of environmental considerations into the development of key economic sectors is an important objective.

Where possible and meaningful, the assessment of the issues presented in this report is illustrated by indicators that reflect recent changes in the state of the environment. It makes use of the

Box 1.14 Progress in Environmental Policy in South East Europe

The UNDP report points out that the environment sector has been one of the leaders in the overall reform process in the region. With donor support key successes have been achieved:

- major progress in institutional development, drafting and adoption of new environmental legislation and capacity building for sustainable development;
- comprehensive policies and programmes have been developed and adopted in the environment sector (including NEAPs, NEHAPs, waste, water and wastewater master plans);
- international environmental agreements and the EU acquis are playing an important role in the process of environmental improvement in the region;
- regional cooperation in the environment sector has been strong especially in environmental enforcement and compliance, but needs to be extended to other sectors;
- the NGOs are progressing steadily and are gradually becoming capable of undertaking significant projects and actions, thereby influencing environmental decisions.

Meanwhile, the report sees mixed success in the following:

- Increased public participation in environmental (and in general) policy making, yet there is much room for improvements both in this area and in particular in the area of access to information;
- Most environmental legislation is in place; although implementation is lagging behind. A step-by-step approach will be needed to gradually comply with the EU standards and norms;
- climate change — still no national communications on GHG, Kyoto Protocol not ratified;
- environmental financing — some investments in environmental infrastructure are recorded in the past years, yet very low (and not growing significantly) share of environmental expenditures in state budgets;
- economic sectors (energy, tourism, transport, agriculture) — there is an evident move towards integration of environmental and sustainable development issues in sectoral policies, yet implementation remains rather slow.

Finally, the report stresses that important challenges for the future remain in the following areas:

- there is limited success of mechanisms for the integration of environmental aspects into other policies, particularly at the level of strategic documents and in sectors where the link with the environment is clear;
- effective compliance with EU legislation requires a higher level of investment and considerable administrative effort, especially in the areas of waste management and water treatment;
- only limited success in ensuring that the appropriate institutional set-up is provided around environmental projects, and in ensuring a sufficiently high quality of the proposed projects in the first place;
- major weaknesses in the country's enforcement capacity need to be addressed before the Acquis can be effectively implemented. Data collection needs to be strengthened in a number of key areas.

Source: Based on UNDP, 2007.

EEA core set of indicators (CSI) i.e. a selection of indicators that are updated regularly to describe the state of the environment in WCE countries as well as in some countries in SEE (see EEA, 2005). This set of indicators is complemented by a selection of further indicators available across the pan-European region. Annex 3 of this report presents these indicators and provides an outlook on the expected future development of selected issues described by the indicators.

However, this assessment goes beyond indicator-based reporting. Environmental changes and the pressures that cause them can only be properly understood, if they are discussed in the context of the human activities or driving forces which give rise to them. The report therefore takes an integrated perspective — as have previous pan-European assessment reports — when describing the state of the environment and the impacts these changes may entail. In appreciation of the full chain of causalities and interdependencies outlined in the driving forces — pressures — state — impact — response framework (DPSIR framework), we provide a background for discussing options to address environmental concerns in a sustainable manner.

As far as possible, this report presents environmental information on the state of the environment covering all 53 pan-European countries of the 'Environment for Europe' (EfE) process. As outlined in Table 1.1, this includes all of western and central Europe; south-eastern Europe including the western Balkans, as well as eastern Europe, the Caucasus and Central Asia. Alongside information for individual countries, some issues are discussed for groups of countries to highlight commonalities and allow more general conclusions, or in some cases, because information

Box 1.15 Progress in environmental policy in European Union

Overall EU environmental policy has contributed to the improvement of the quality of life of its citizens and significant progress has been made in areas such as: greenhouse gas emissions, wetland conservation, sustainable forest management and waste management. Sustainable development is the overarching objective of the EU. Despite the progress achieved in many areas, Europe is not yet on the path towards a genuinely sustainable development. Further actions are oriented towards:

- **on climate change:** further cutting of greenhouse gases and shift towards a low carbon economy; continue playing a leading role at global level in this area; formulation of options for action to adapt to climate change;
- **on nature and biodiversity:** full and effective implementation of existing legislation;
- **on environment, health and the quality of life**: ensure the implementation in the medium term of four pieces of legislation: Water Framework Directice, the chemicals legislation REACH, the current proposal for a directive on ambient air quality and clean air for Europe and the proposal for a framework directive on pesticides;
- **on natural resources and wastes:** implementation of the Thematic Strategy on Waste Prevention and Recycling, including the proposed framework Directive on Waste, the Landfill Directive and the Waste Shipment Regulation. An Action Plan on EU Sustainable Consumption and Production is also expected in 2007.

Apart from the four thematic areas identified in the 6th Environment Action Plan, attention will be given:

- to enhance international cooperation in addressing global concerns (climate change, biodiversity loss etc.) doubled by strengthening the regional approach (with particular focus on the Mediterranean, Baltic and Black Seas);
- to improve the use of market mechanisms, closely involving in this work all the stakeholders (such as NGOs and the private sector) and to promote good regulatory practices;
- to improve environmental information (in particular by the development of a Shared Environmental Information System (SEIS));
- to promote policy integration (by better integrating environmental concerns into agriculture, research and development policies) and to improve the implementation and enforcement of EU legislation by Member States (a revised strategy on implementation and enforcement will be presented in 2007).

Source: Based on Mid-term review of the Sixth Environment Action Programme of the European Union — COM(2007)225 final.

is either only available or meaningful at an aggregate level.

Reporting on the progress achieved over the past four years with regard to the state of the environment proved to be challenging and the results vary greatly from one thematic area to another. Environmental information is still diverse across the region, and availability and reliability differs considerably. There is substantial room for further improvement in making much-needed data and information not only available, but also more comparable and reliable. In this respect, the present report manages only partially to achieve its mandate. Nevertheless, the report highlights for each thematic area where progress has been achieved and which current challenges need to be fully and better addressed — to support the future 'Environment for Europe' process.