

# Europe's environment

## The fourth assessment

### Executive summary





**Pan-European region – country groupings in the report**

*Western and Central Europe (WCE)*

- European Union – 25 Member States (EU-25)
- European Free Trade Association (EFTA)
- Andorra, Monaco, San Marino

*South Eastern Europe (SEE)*

- Western Balkans
- Bulgaria and Romania
- Turkey

*Eastern Europe, Caucasus and Central Asia (EECCA)*

- Eastern Europe
- Central Asia
- Caucasus

- Outside report coverage

# Europe's environment

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Executive summary

## **From Kiev to Belgrade**

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The 'Environment for Europe' process now brings together 56 countries across three continents to jointly address environmental challenges. In support of this process, the European Environment Agency has prepared a series of assessments of the environment for the pan-European region to provide policy-relevant, up-to-date and reliable information on the interactions between the environment and society.

The first comprehensive assessment of the state of the pan-European environment was presented in Sofia in 1995. Updated assessments were presented at the Ministerial Conferences in Aarhus in 1998 and Kiev in 2003.

This is the fourth report in the series. Where possible the report evaluates progress, primarily against the objectives of the Sixth Environment Action Programme of the European Community and the Environment Strategy for Countries of Eastern Europe, Caucasus and Central Asia.

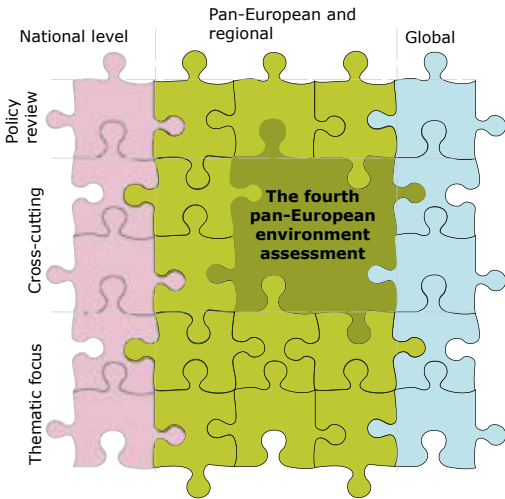
The report has been prepared in close partnership with a range of international organisations, governmental institutions and non-governmental organisations across the region.

Despite noteworthy progress in promoting environmental policy and sustainable development across the pan-European region, an 'implementation gap' in the use of integrated policy approaches remains.

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## Context of The fourth assessment

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**Source:** Based on Figure 1.5 of The fourth assessment.

Successful implementation depends on the setting of clear and realistic targets together with mechanisms to monitor progress.

Environmental information across the region still varies in quality, with the availability and reliability of data differing considerably. There is substantial room for further improvement in making much-needed data and information not only accessible, but also more comparable and reliable.

## Socio-economic trends

The pan-European region harbours rich cultural and environmental diversity. More than 870 million people live in the region; more than half of them in Western and Central Europe (WCE), making the European Union (EU) one of the most densely populated areas of the world with more than 100 people per square kilometre. This is in stark contrast to the relatively sparse populations of Eastern Europe and Central Asia, where the average density is well below 20 people per square kilometre.

Economic recovery in recent years has resulted in an increase, in relative terms, of national income in virtually all countries of the pan-European region. Economic growth rates have been particularly high in South Eastern Europe (SEE) and EECCA countries.

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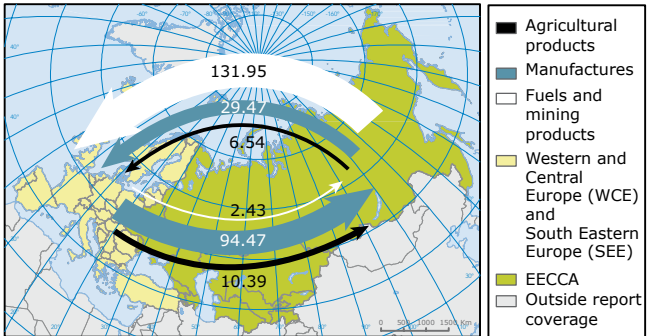
### The pan-European region and its sub-regions: key socio-economic indicators for 2005

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	Land (1 000 km <sup>2</sup> )	Population (million)	Income (GDP per capita, USD)
<b>Western and Central Europe (WCE)</b>			
EU-15	3 243	385	22 337
EU-10	729	74	5 594
EFTA and other WCE	468	12	36 550
<b>Eastern Europe, Caucasus and Central Asia (EECCA)</b>			
Eastern Europe	17 943	204	2 034
Caucasus	186	16	1 112
Central Asia	4 003	58	955
<b>South Eastern Europe (SEE)</b>			
Western Balkans	264	22	2 236
Other SEE	1 132	102	3 052

**Source:** Based on Table 1.2 of The fourth assessment.

## Trade flows between WCE/SEE and EECCA in 2005 (billion USD)



**Source:** Map 6.1 of The fourth assessment.

Increasingly, the economies of EECCA countries are moving away from reliance on agricultural output towards service industries. Nonetheless, the EECCA region is still relatively more dependent on mineral extraction and agriculture, often resulting in major environmental pressures and high volumes of wastes.

The number of independent states in the region has increased from 33 in 1990 to 53 in 2007, during which time the EU expanded from 15 to 27 Member States.

## Environment and health: Air quality

Air pollution, mainly by fine particles and ground-level ozone, continues to pose a significant threat to health: it shortens average life expectancy in WCE by almost one year and affects the healthy development of children.

Most air pollutants have increased in EECCA by more than 10 % as a result of economic recovery, increases in transport, and the lack of effectiveness of air pollution protection policies.

In EECCA the poor quality of the data precludes an in-depth assessment of air quality and its consequences. However, the limited data available indicates that the main health threat in EECCA and SEE is, as in WCE, from small particles and their toxic constituents.

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### Percentage change in emissions (2000–2004)

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Pollutant	WCE	SEE	EECCA
Nitrogen oxide (NO <sub>x</sub> )	- 8.7 %	+ 5.7 %	+ 13.1 %
Sulphur dioxide (SO <sub>2</sub> )	- 19.6 %	+ 1.5 %	- 10.3 %
Volatile organic compounds (VOC)	- 13.6 %	- 12.3 %	+ 11.2 %
Ammonia (NH <sub>3</sub> )	- 2.6 %	- 5.7 %	- 14.4 %
Ozone precursors	- 11.3 %	- 2.1 %	+ 11.5 %
Particulate matter (PM <sub>10</sub> )	- 9.7 %	+ 2.2 %	+ 12.6 %

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**Source:** Table 2.2.1 of The fourth assessment.

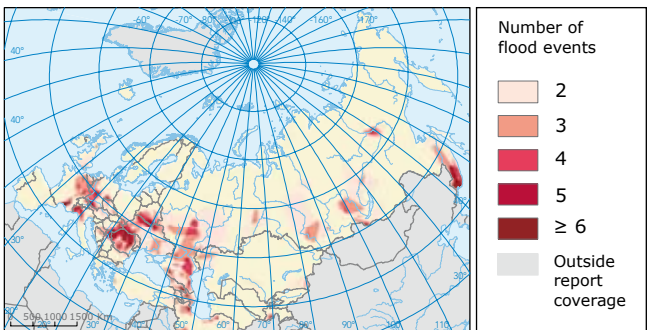


## Environment and health: Inland waters

More than 100 million people in the pan-European region still do not have access to safe drinking water and adequate sanitation. In EECCA and SEE the quality of the water supply and sanitation services has deteriorated continuously over the past 15 years, with the rural population being most affected.

One-third of the pan-European population lives in countries where water resources are under substantial pressure. High leakage losses in water distribution systems, poor management and maintenance of irrigation systems, and unsustainable cropping patterns exacerbate the impacts of droughts and water scarcity.

### River catchments affected by flooding (1998–2005)



**Source:** Map 2.3.1 of The fourth assessment.

# Environment and health: Soil

Since the Kiev Conference, progress has been made both in policy development and in the availability of information. However, it is still too early to record any marked improvement in the status of soil resources.

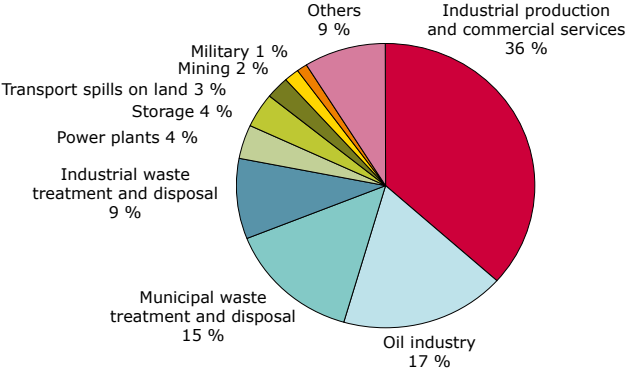
Given the complexity of current risks, especially climate change, new thinking on mechanisms to improve the evidence base to support action on soils is needed.

The exchange of best practices between countries and regions with similar soil conditions could reduce remediation costs across many soil threats, and provide an important basis for cooperation.

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## Overview of economic activities causing soil contamination in some WCE and SEE countries (% of investigated sites)

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**Source:** Figure 2.4.2 of The fourth assessment.

## **Environment and health: Hazardous chemicals**

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The chemical industry has been growing worldwide. In the European Union the production of toxic chemicals has increased at almost the same rate as total chemical production, and both have grown faster than GDP.

Globalisation is resulting in a shift of environmental burdens to developing countries and the re-import of hazards via transboundary pollution and contaminated products.

Recently, significant new policies and legislation addressing the management of chemicals have been agreed upon, both in Europe and globally. For the EU, this includes the legislation on Registration, Evaluation and Authorisation of Chemicals (REACH), which entered into force in 2007. At the international level, the Strategic Approach to International Chemical Management (SAICM) was adopted in 2006.

Additionally, the Global Harmonised System on classification and labelling (GHS) was agreed and the Stockholm Convention on Persistent Organic Pollutants (POPs) and the Rotterdam Convention on Prior Informed Consent (PIC) entered into force.

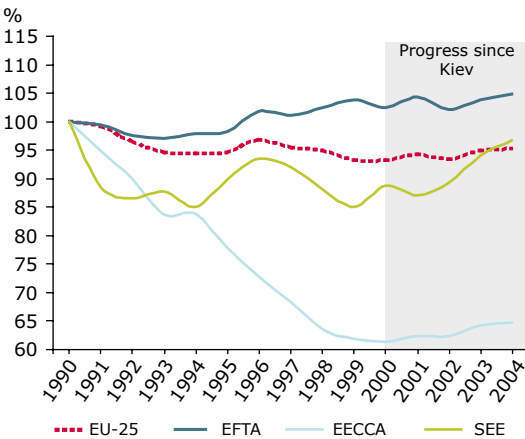
# Climate change

Emissions of greenhouse gases have increased in recent years in most European countries and are projected to continue to do so in the future. Many European countries have adopted national programmes to reduce emissions, but some of them will still have difficulties in reaching their Kyoto targets.

The Kyoto Protocol, under the UN Framework Convention on Climate Change, and its first commitment period represent only a first step in addressing climate change.

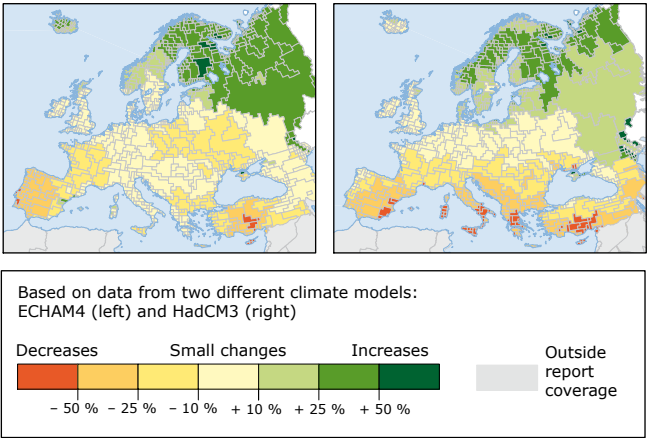
Global emissions will have to be reduced by up to 50 % by 2050 to limit temperature increases to a maximum of 2 °C above pre-industrial levels, the target proposed by the EU as necessary to avoid unacceptable climate change impacts in the future.

## Trends in total greenhouse gas emissions



**Source:** Figure 3.4 of The fourth assessment.

## Projected changes in annual river discharge in Europe for the 2070s compared with 2000



**Source:** Map 3.3 of The fourth assessment.

Some unavoidable climate change impacts are projected to affect most sectors of the economy and natural resources — even with strong mitigation programmes. It is therefore also urgent to adapt to those impacts in developing and implementing policies and measures in all sectors of society.

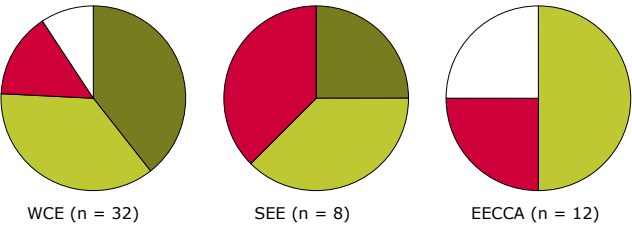
# Biodiversity

Biodiversity decline and loss of ecosystem services continue to be a major concern across the pan-European region. In addition, the number of invasive alien species in the region continues to increase.

The Kiev Resolution's overarching target of halting biodiversity loss in the region by 2010 will not be achieved without considerable additional efforts and resources. Communication, education and public awareness programmes, however, are being implemented according to the Kiev Resolution.

There has been significant progress in creating ecological networks: the Pan-European Ecological Network and Natura 2000 Network are taking shape, but there is still insufficient information on their conservation status.

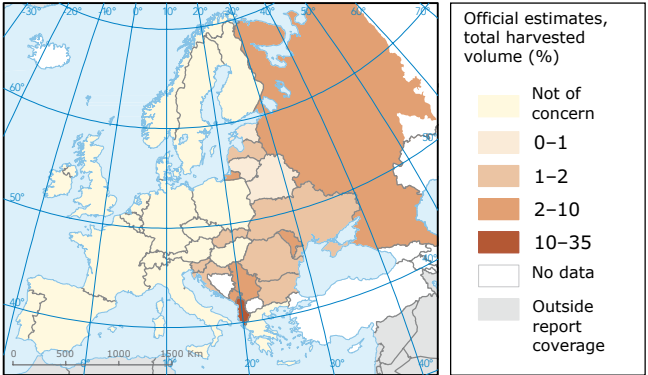
## Progress in developing national strategies for invasive species



- A national strategy on invasive alien species is established or the work developing such a strategy is in progress
- Invasive alien species explicitly recognised in national biodiversity strategy/action plan reported to CBD
- Action for invasive alien species not identified on national level
- No information

**Source:** Figure 4.12 of The fourth assessment.

## Extent of illegal logging in selected countries (2000–2004)



**Source:** Map 4.5 of The fourth assessment.

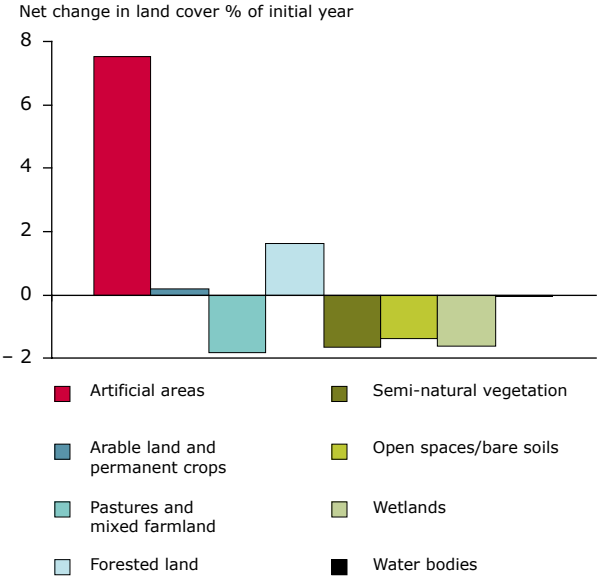
Environmental concerns are becoming increasingly integrated into the forestry and agricultural sectors. Nonetheless, agriculture still exerts considerable pressure on biodiversity. The specific policy target of identifying all 'high nature value' farmland by 2006 has not been reached.

# Marine and coastal environment

Eutrophication remains a problem in all enclosed seas and sheltered marine waters across the pan-European region. Reducing diffuse nutrient sources, particularly from agriculture, remains a major challenge and requires increased action.

Overfishing is still widespread in all pan-European seas. Improved policies and stricter law enforcement are needed for fish stock recovery — especially to stop illegal fishing, but also to reduce the impacts of fisheries on the whole marine ecosystem.

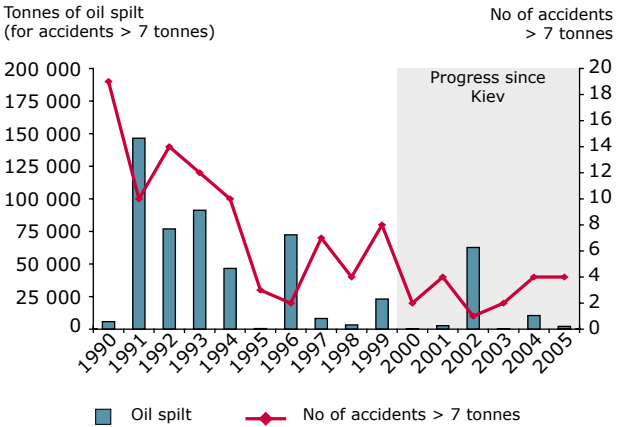
## Land-cover change within the 10 km coastal zone in 17 of 22 coastal EU Member States (1990–2000)



**Source:** Figure 5.11 of The fourth assessment.



## Accidental oil tanker spills in European seas



**Source:** Figure 5.8 of The fourth assessment.

Climate change is likely to affect seas and coasts, including marine organisms. Adaptation policies should include measures to reduce other, non-climatic pressures in order to increase the resilience of marine ecosystems and the coastal zone to climate change.

Actions under regional sea conventions and EU policies have improved water quality in the western seas, for example with regard to some hazardous substances. Policies geared towards improving the generally poor state of Europe's marine and coastal environment should be based on an ecosystem approach.

## **Sustainable consumption and production**

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The concept of sustainable consumption and production has become more prominent on the policy agenda since the Kiev Conference. However, few concrete outcomes have emerged, and implementation strategies and tools to measure environmental impacts need to be put in place.

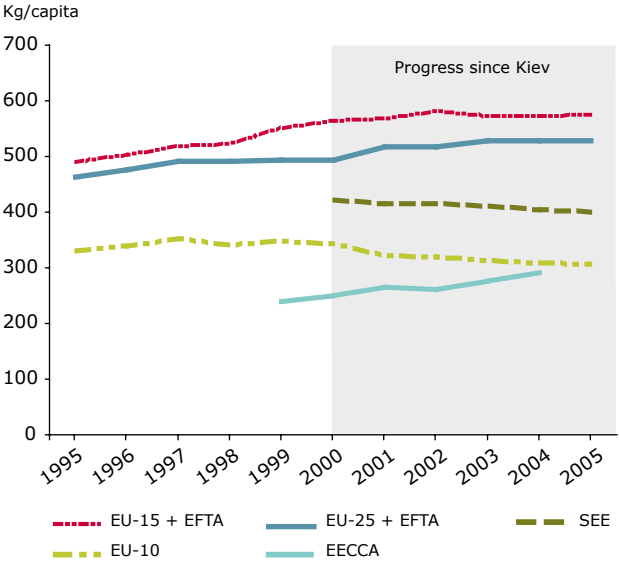
Per capita resource use levels have remained stable in all regions over recent years, and some decoupling has been achieved between resource use and economic growth. Resource use efficiency varies significantly between countries, and is several times higher in the EU-15 than in the EU-10 and SEE countries, and up to twenty times higher than in EECCA.

Patterns of consumption are changing rapidly, driven by socio-economic changes. The consumption categories causing the highest life-cycle environmental impacts are food and beverages, private transport, and housing. In the EU, tourism and air travel are emerging as key areas of future impacts.

The pan-European region is generating ever more waste. Landfill, environmentally the least preferred option, is still the most common method of waste management across the pan-European region. EU Member States have made some progress in limiting the share of municipal waste going to landfill.

Many EECCA and SEE countries have developed waste strategies and legislation for waste, but these still need to be implemented effectively.

## Municipal waste collected



**Source:** Figure 6.20 of The fourth assessment.

Proper waste collection and safe landfilling remain a challenge. In some EECCA countries an even bigger challenge is ensuring the environmental safety and clean-up of hazardous waste sites inherited from the past.

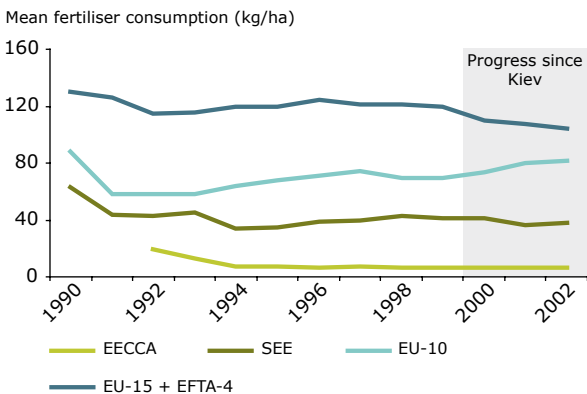
## Sectors: Agriculture

Modern, intensive agriculture often has a negative impact through its use and pollution of air, water and soil. On the other hand, farming still plays a positive role in preserving Europe's landscapes and biodiversity.

The area of irrigated land in the southern EU-15 and SEE has increased, showing a continuing trend of agricultural intensification. Irrigation has often caused declines in water resources and quality, salinisation and land degradation — especially in southern and eastern EECCA.

Most of SEE and EECCA will require continued international support to achieve better environmental management of the agricultural sector.

### Fertiliser input per hectare of agricultural land



**Source:** Figure 7.1.1 of The fourth assessment.

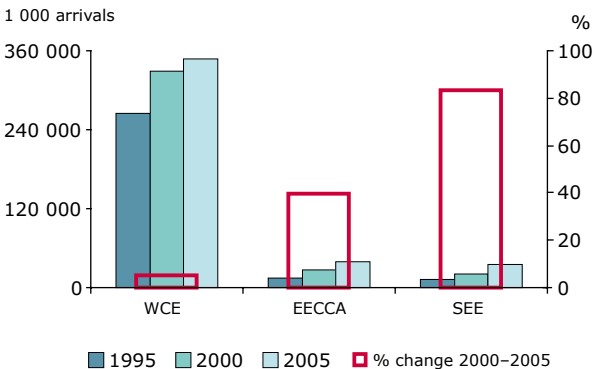
## Sectors: Tourism

International tourist arrivals in the pan-European region continue to grow. Tourism is one of the main drivers of increased demand for the most environmentally damaging transport modes: private cars and, more critically, air transport.

Coasts, islands and mountains remain particularly sensitive to tourism development. Degradation, sometimes irreversible, has already occurred in some popular mass-tourism destinations.

The impacts of tourism are projected to grow as a result of increasing affluence and lifestyle and demographic changes. Tourist behaviour remains a crucial factor for the sustainability of the sector.

### International tourist arrivals and percentage change



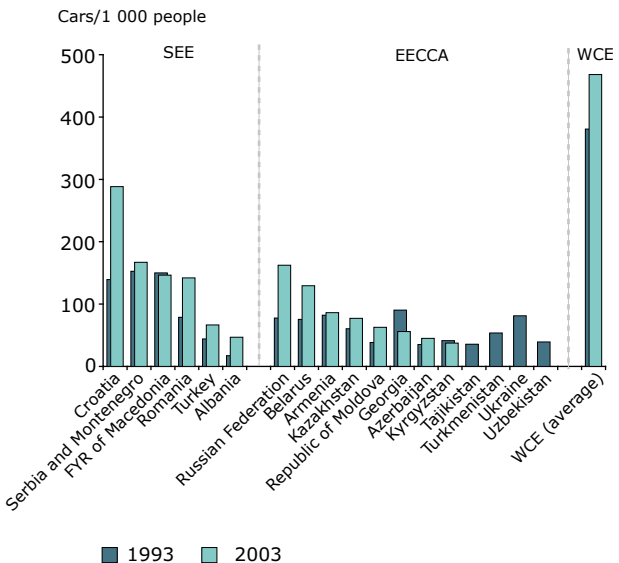
**Source:** Figure 7.4.2 of The fourth assessment.

# Sectors: Transport

Energy consumption and greenhouse gas emissions from transport in SEE and WCE are growing rapidly along with the general growth in transport. Transport energy consumption and the resulting CO<sub>2</sub> emissions per capita in WCE continue to be two to four times higher than in SEE and EECCA.

Developing competitive urban transport solutions is a way of fighting traffic congestion and air quality problems as well as improving transport safety. For public transport to become competitive, cities need to be planned and developed with public transport in mind.

## Car ownership in Europe



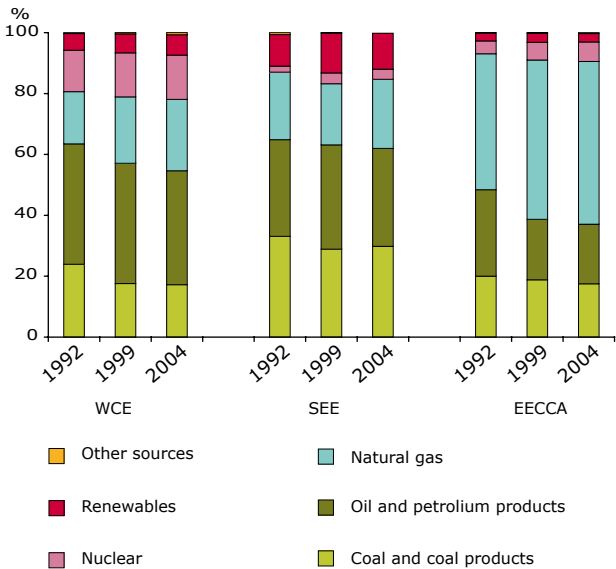
**Source:** Figure 7.2.5 of The fourth assessment.

## Sectors: Energy

Energy consumption and resulting greenhouse gas emissions have been increasing in the pan-European region since the Kiev Conference, despite energy efficiency improvements and an increased use of renewable energy in some areas. This trend is expected to continue if no additional policies and measures are implemented.

Energy markets in the three pan-European sub-regions are closely linked. A significant share of natural gas and oil imports into WCE and SEE come from EECCA and this share is projected to rise substantially to 2030.

### Total energy consumption by fuel source



**Source:** Figure 7.3.3 of The fourth assessment.

# 'Environment for Europe' highlights

 <b>1991</b>	<b>First Ministerial Conference in Dobris</b>
	Signature: Convention on Environmental Impact Assessment in a Transboundary Context (EIA Convention); VOC Protocol to Convention on Long-range Transboundary Air Pollution (CLRTAP)
	Entry into force: NO <sub>x</sub> Protocol to CLRTAP
<b>1992</b>	Signature: Transboundary Water Convention (TWC); Convention on Transboundary Effects of Industrial Accidents (CTEIA)
 <b>1993</b>	<b>Second Ministerial Conference in Lucern</b>
<b>1994</b>	Signature: Sulphur Emissions Protocol to CLRTAP
 <b>1995</b>	<b>Third Ministerial Conference in Sofia</b>
<b>1996</b>	Entry into force: Transboundary Water Convention (TWC)
<b>1997</b>	Entry into force: Convention on Environmental Impact Assessment in a Transboundary Context (EIA Convention); VOC Protocol to CLRTAP
 <b>1998</b>	<b>Fourth Ministerial Conference in Aarhus</b>
	Signature: Aarhus Convention (AC); POPs Protocol to CLRTAP; Heavy Metal Protocol to CLRTAP
	Entry into force: Sulphur Emissions Protocol to CLRTAP
<b>1999</b>	Signature: Water and Health Protocol to TWC; Ground-level Ozone Protocol to CLRTAP
<b>2000</b>	Entry into force: Convention on Transboundary Effects of Industrial Accidents (CTEIA)



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**2001** Entry into force: Aarhus Convention (AC)

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**2002**

**2003**

**Fifth Ministerial Conference in Kiev**

Adoption of EECCA Strategy  
Kiev Resolution on Biodiversity  
*Signed, but not in force (Status June 2007):  
PRTR Protocol to AC; Civil Liability Protocol to  
TWC; SEA Protocol to EIA*

Signature: Convention on Environment  
Protection and Sustainable Development of the  
Carpathians (Carpathian Convention)

Entry into force: POPs Protocol to CLRTAP;  
Heavy Metal Protocol to CLRTAP

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**2004**

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**2005** Entry into force: Water and Health Protocol to  
TWC; Ground-level Ozone Protocol to CLRTAP

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**2006** Entry into force: Carpathian Convention

**2007**

**Sixth Ministerial Conference in Belgrade**

**2008**

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**2009**

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**2010**

**2011**

**Seventh Ministerial Conference in Astana**



## 'Environment for Europe' countries

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Albania	Lithuania
Andorra	Luxembourg
Armenia	Former Yugoslav Republic of Macedonia
Austria	Malta
Azerbaijan	Republic of Moldova
Belarus	Monaco
Belgium	Montenegro
Bosnia and Herzegovina	Netherlands
Bulgaria	Norway
Canada	Poland
Croatia	Portugal
Cyprus	Romania
Czech Republic	Russian Federation
Denmark	San Marino
Estonia	Serbia
Finland	Slovakia
France	Slovenia
Georgia	Spain
Germany	Sweden
Greece	Switzerland
Hungary	Tajikistan
Iceland	Turkey
Ireland	Turkmenistan
Israel	Ukraine
Italy	United Kingdom
Kazakhstan	United States of America
Kyrgyzstan	Uzbekistan
Latvia	
Liechtenstein	



Europe's environment  
The Dobris assessment

*Sofia, 1995*



Europe's environment  
The second assessment

*Aarhus, 1998*



Europe's environment  
The third assessment

*Kiev, 2003*



Europe's environment  
The fourth assessment

*Belgrade, 2007*

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