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Paving the way for EU enlargement

Indicators of transport and environment integration

TERM 2002

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Foreword

The forthcoming enlargement of the European Union is one of the greatest challenges the EU has faced. Transport policy has a critical role to play in this. Transport forms an essential backbone for socio-economic development, but if not developed sustainably it also imposes significant costs on society in terms of environmental and health impacts.

The early integration of environmental concerns into transport policies for an enlarged EU is a prerequisite for minimising these costs. It is therefore important to provide policy makers with information that can help to pinpoint problems at an early stage in the development of policy. This is the primary role of the transport and environment reporting mechanism (TERM). This report represents an important milestone since it is the first to take the new member countries of the EEA — the accession countries of the EU — on board.

The TERM analysis indicates that the main challenge for the accession countries is to maintain the advantage they still have in certain aspects of transport and environment compared to the EU, and at the same time meet societal needs for improved standards of living and consequent increased mobility demands. With a rail share still well above the EU average, lower transport energy use and pollutant emissions per capita and less fragmentation of their land, the accession countries still have lower environmental pressures arising from transport than is currently the case in the EU. It would be highly regrettable if this opportunity were lost. Current trends in the accession countries are however worrying. The modal split is evolving towards a predominance of road transport typical in the EU. After a significant decrease following the economic recession of the early 1990s, transport volumes are on the rise again, and so are the sector's energy consumption and greenhouse gas emissions. Of equal concern is the high number of road fatalities; safety improvements are more and more offset by transport growth.

Many of these trends indicate that the accession countries risk ending up with the present EU's unsustainable transport patterns unless preventive action is taken. So what role can policy play to minimise these risks? The accession countries' policy efforts are currently focusing mainly on bringing their legislation on vehicle, fuel and infrastructure standards into line with EU legislation. Infrastructure development, and in particular the linking up to the trans-European transport network (TEN-T), is another priority and a major pillar of the common transport policy. These policies will undoubtedly continue to deliver improvements. However, they do not take full account of the trade-offs between economic, social and environmental considerations. For example, it is indicative that no strategic assessment of the TEN-T and its extension to the east has yet been made.

The focus on implementation of EU legislation and infrastructure development means that the accession countries are lagging behind in implementing other instruments for environmental integration that are gradually gaining ground within the EU. These include strategies such as 'fair and efficient pricing', better coordination of transport and land-use planning, voluntary agreements with industry, and the use of monitoring and assessment to support policy-making. The EU Transport Council has invited the accession countries to adopt the integration principle of the EU Cardiff Summit in 1998. But more needs to be done to ensure that this invitation is turned into action.

Action has to be supported by facts. The European Environment Agency will therefore continue to monitor, assess and report on progress. We will also continue to improve the TERM information system and where necessary adapt it to evolving policy needs. I am convinced that we will help put transport policy for an enlarged EU on the right track towards sustainability, as we deliver better and better information on the state of progress in individual countries and in the EU as a whole.

Gordon McInnes
Interim Executive Director

This report is dedicated to the memory of Michele Fontana, member of the EEA team working on this report when he was tragically killed at Milan airport on 8 October 2001.

The Interim Executive Director and staff of the European Environment Agency

TERM 2002 content and key messages

Summary

This third report developed under the EU's transport and environment reporting mechanism (TERM) is the first to include the accession countries (ACs). As in previous reports, the TERM indicators are used to answer a set of policy questions related to the integration of environmental concerns into transport policies. This comparative analysis of the differences and similarities between the EU and the ACs should contribute to the continuing debate on how to achieve more sustainable transport within an enlarged EU.

The accession countries: a different starting position, but moving rapidly towards the EU's unsustainable transport patterns

Political and economic restructuring in the ACs during the past decade has led to substantial changes in their transport systems. Transport volumes, which fell significantly following the economic recession of the early 1990s, are now rising again as economies recover. The modal split — although still much better than in the EU — is evolving towards a road-orientated system. So, just as for the EU, transport trends in ACs point away from the objectives of the sustainable development strategy, i.e. to decouple transport growth from economic growth and shift from road to rail, water and public transport.

Transport energy consumption and associated greenhouse gas emissions per capita in the ACs are still three to four times lower than in the EU, and NO_x emissions per capita are around 50 % lower. Road and rail networks are less dense, and the fragmentation of their territory is therefore less pronounced. But this position is changing rapidly. As in the EU, transport greenhouse gas emissions and energy consumption are on the rise. Motorway lengths have doubled over the past 10 years, extending fragmentation of land. The car fleet is on average four to five years older, so ACs lag several years behind the EU in terms of uptake of cleaner technologies and fuels. The decreases seen in emissions of certain air pollutants (e.g. NO_x) shows that the ACs are on the way to bridging this technology gap. Urban air quality, however, remains poor. The growth in traffic is increasingly offsetting safety improvements in cars and infrastructure; the number of fatalities is now stabilising around 21 000 a year in the ACs compared with 41 000 in the EU.

Current policies prioritise infrastructure development and technology and fuel regulation; a more integrated approach is not yet emerging

In recent decades, the EU has focused its transport and environment policies mainly on infrastructure investment (e.g. the trans-European transport network (TEN-T)) and on environmental and safety regulations. A similar pattern is emerging in the ACs, not surprisingly since integration of the EU *acquis* is the prerequisite for accession. The indicators presented in this report already show the benefits of the early introduction of EU vehicle, fuel, environmental and safety standards in ACs.

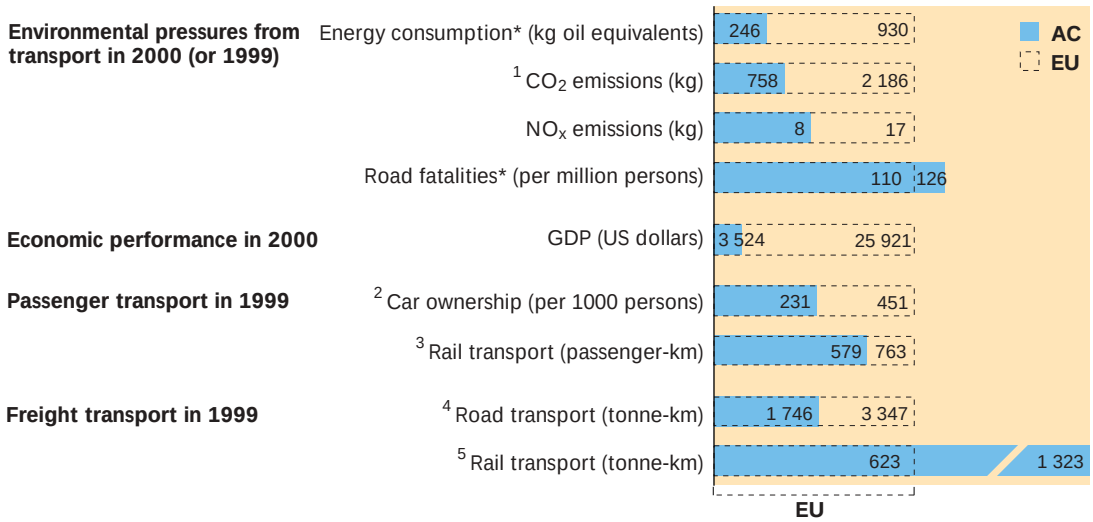
A good-quality transport infrastructure network is an essential backbone for society and the economy and for the ACs' future integration in the EU. The development of the TEN-T and its extension to the east is therefore one of the common transport policy's key priorities. However, no strategic environmental assessment of the TEN-T and its extension has yet been made, nor have the network's economic and social benefits and impacts been assessed.

Data on infrastructure investments are old, but recent figures on funding by international banks indicate that road-building is now given higher priority than rail development. This indicates a risk for

Figure 1 **Ratios between ACs and the EU (with absolute values) for environmental pressures, GDP and transport performance, all expressed per capita**

Notes
* Data refers to 1999.
[1] Cyprus, Malta and Turkey not included in AC data.
[2] Bulgaria and Turkey not included in AC data.
[3] Estonia and Turkey not included in AC data.
[4] Bulgaria, Cyprus, Malta, Slovak Republic and Turkey not included in AC data.
[5] Turkey not included in AC data.

Sources
IEA, 2001a; EEA, 2002a-e and EMEP, 2002; UNECE, 2001a-b; Eurostat, 2002a; World Bank, 2002.



further erosion of the contribution rail transport has made in the past to the transport systems in the ACs.

More recently, additional policy lines that aim to restrain the growth in transport and improve the modal split have emerged in the EU. These include internalisation of external costs, voluntary agreements with industry, revitalisation of rail and inland waterways, setting of objectives and targets, better coordination with spatial planning, and the use of strategic environmental assessment to support infrastructure planning. Some progress is being made in these areas in the EU. The ACs could learn from the EU's experience with these relatively new tools.

Since the 1998 Cardiff Summit, seven Member States have developed national integrated transport and environment strategies and seven have set up or are setting up national indicator-based monitoring systems. The Transport Council has also invited the future member countries to adopt the EU's integration principles. National integrated strategies and indicator-based monitoring systems are, however, still lacking in the ACs.

Next steps

This report highlights substantial data gaps for several indicators, and inconsistencies between data reported to different international organisations. These are more pronounced for the ACs, but statistics are also often incomplete or poor in quality for the current Member States. Concerted action is needed by various international organisations to improve data and their comparability. Countries also need to improve the data flows to these organisations and improve data on rail, water transport, aviation, and non-motorised modes (walking, cycling).

The lack of clear policy targets or objectives against which indicator trends can be evaluated is another difficulty. The transferability of the EU's current policy objectives/targets to its future new member countries may also sometimes be questionable. The communication on environmental objectives for the sector, announced in the White Paper on the common transport policy, could be a good forum for addressing such problems.

Given the wide geographical coverage of TERM and the limited resources available, it may be necessary to focus future work on a more limited range of indicators and to reduce the reporting frequency in order to prioritise work on data and assessments.

Introduction

This is the third indicator-based report under the transport and environment reporting mechanism (TERM). Previous reports (EEA, 2000; EEA, 2001c) described the progress the EU is making towards the integration of environmental concerns into its transport policies. This report also includes the countries that have applied for EU membership — the accession countries (ACs) — and compares the trends there with recent EU developments. This comparative analysis of the differences and similarities between the two regions should help countries to learn from their respective experiences. TERM 2002 constitutes a first step towards gearing the ACs fully into the TERM information system.

Why enlarge the transport and environment reporting mechanism?

The accession process is already shaping the future of transport and environment policies and systems in the ACs. With accession, transport volumes are expected to increase strongly, particularly for road traffic — one of the most polluting forms of transport. The enhancement of east-west trade patterns will also lead to a significant growth in transport in the current Member States. In the recent White Paper on the common transport policy (CTP) the Commission identified enlargement of the EU as one of the major transport policy challenges for the next 10 years (European Commission, 2001a).

In future, the ACs will be actively involved in implementing the EU sustainable development strategy (SDS) and the sixth environmental action programme, both of which have transport as a priority concern. The integration of environmental concerns into sectoral policies — initiated by the Cardiff Council in 1998 — has meanwhile become a major policy pillar of the SDS. The EU Transport Council has therefore invited the ACs 'to follow the integration principle as it is being developed in the Community when formulating national and local strategies during the pre-accession period' (European Council, 1999).

On accession, several hundred pieces of EU environmental and transport law — covering a vast range of market, social, technical, fiscal, safety and environmental requirements — will have to be integrated into national legislation, implemented and enforced. As a consequence, the environmental performance and inter-operability of the ACs' transport systems is expected to change significantly.

Infrastructure investment is another area where the future of the ACs' transport systems is being shaped rapidly, with financial assistance from the Community and the international banks, among others. The extension of the trans-European transport network to the east is one of the major pillars of the CTP.

All these policy developments need to be carefully managed to avoid or limit irreversible environmental impacts. The integration of the new countries in TERM is therefore a prerequisite. This should help to pin-point potential problems earlier and to put things on a right track from the start.

Finally, with 11 of the 13 ACs now being members of the European Environment Agency (EEA) — Turkey's and Poland's membership to be finalised soon — the EEA is also gradually extending its overall data collection and reporting activities to those countries.

Box 1: Enlargement and the EU sustainable development strategy, sixth environmental action programme and common transport policy

Thirteen countries have applied for EU membership: Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic, Slovenia and Turkey. The EU has opened accession negotiations with all of them except Turkey. The objective is to complete the negotiations by the end of 2002 with those countries that are ready to join the Union.

Sustainable development strategy (European Commission, 2001b)	The ACs 'should be actively involved in implementing the [sustainable development] strategy'. Transport-related threats to sustainable development identified in this strategy are greenhouse gas emissions, transport congestion and regional imbalances.The Gothenburg European Council endorsed this strategy highlighting 'Ensuring sustainable transport' as one of its priorities. The conclusions of the Summit stress that a sustainable transport system should tackle rising volumes of traffic.
Sixth environmental action programme (European Commission, 2001c)	The sixth environmental action programme's key actions related to accession are the full implementation of the environment *acquis*, with emphasis on the Community's environment and health standards. This should go hand in hand with strengthening administrative capacity. Another main topic is to promote the adoption of policies and approaches that permit sustainable development, e.g. by promoting strategic environmental assessment (SEA) and mainstreaming environmental objectives and policies into other departments. Dialogues with administrations in the ACs on sustainable development and awareness-raising by cooperation with environmental non-governmental organisations (NGOs) and businesses should contribute to this topic. Another objective related to transport/enlargement is to support alternatives to road, e.g. by the way in which the Community gives financial support, and to carefully plan road transport so that new developments are not damaging to towns, cities, nature or wildlife.
White Paper on the common transport policy (European Commission, 2001a)	The White Paper's enlargement priorities are to connect the infrastructure of the ACs to that of the EU and further develop infrastructure within the ACs, with priority for projects that eliminate traffic bottlenecks, in particular in frontier regions, and that modernise the railway network. At the same time, the railway sector should quickly reform so that it can truly compete with the road sector. Full advantage should be taken of the available well-developed railway network and know-how to rebalance the modal split in an enlarged Europe. The transport *acquis* should, as far as this has not already been done, be implemented soon. Again, strengthening administrative capacity is of key importance to ensure transposed regulations will really result in cleaner, safer and quieter vehicles, vessels and aircraft.

Comprehensive information on the aims and status of the enlargement process can be found on http://europa.eu.int/comm/enlargement/index_en.html

Scope of the report

This report aims to cover the current 15 Member States and the 13 countries that have applied for EU membership, i.e. Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovak Republic, Slovenia and Turkey, even though Turkey is still in the phase of pre-accession negotiations. However, due to data limitations AC-10 is used on several occasions, referring to all ACs except Cyprus, Malta and Turkey. The indicator trends for the ACs are compared with those in the EU. For the latter the indicators have been updated if new data or information have become available since the publication of TERM 2001.

TERM 2002 follows the pattern of previous reports, using the TERM set of indicators to answer a set of policy questions. The suitability of the TERM structure — and in particular the seven policy questions that are at its core — to match the information needs of the main policy issues in the ACs was discussed with country representatives during an EEA workshop on 8 June 2001. It was recognised that the ACs still have a different economic, transport and environmental starting position from the EU (Box 2), and that therefore some of the TERM policy questions — which derive from EU policy documents — may not yet reflect the policy priorities in the region. However, the participants

recommended adhering to the original TERM concept and policy questions, to ensure coherent reporting on an enlarged EU in the future.

Some indicators could not be quantified and included in this report because of data limitations, methodological problems or recently emerged needs for redefinition (e.g. the noise indicator will have to be redefined to match the indicators proposed in the new noise directive). In addition, coverage of the various transport modes is unbalanced given the data shortages on non-road modes. A section on 'spatial planning and accessibility' had for the same reason to be omitted, and the chapter on transport costs and prices is also limited in scope. In some cases, such as the infrastructure capacity indicators, 'proxy' indicators had to be used. By taking stock of such data and information gaps, this report should help the countries and the EU statistical system to improve data delivery accordingly.

Since the indicator list in Table 1 (page 14) cannot yet be fully implemented it should still be considered as a long term vision of an ideal indicator list.

The 'smiley' faces next to each indicator aim to give a concise assessment of the indicator trend in the ACs:

☺ Positive trend, moving towards policy objective or target

😐 Some positive development, but either insufficient to reach policy objective or mixed trend within the indicator

☹ Unfavourable trend, moving away from policy objective or target

? Impossible to evaluate the trend because of data gaps or lack of policy objective or target.

Assessing indicator trends against policy objectives and targets

As with previous reports, TERM 2002 evaluates the indicator trends with respect to progress towards existing 'integration' objectives or targets. These were drawn from EU policy documents such as the sixth environmental action programme (6EAP), the common transport policy, the EU sustainable development strategy and various environmental and transport directives. Where relevant, the objectives and targets set by other international conventions and agreements — and adopted by the EU — have been considered. Since the proposed indicators are intended for use mainly by European Community institutions, Member States and ACs, a balance had to be sought between EU and AC-13 aggregation and comparisons between countries.

The key messages in this report – with their 'smiley' evaluation – are focused on the AC indicator trends and how these relate to current EU policy objectives or targets. The underlying assumption is that, upon accession, the new member countries will have to adopt the EU's policy objectives and targets that are stated in the EU Treaty, the sustainable development strategy, the sixth environmental action programme and the White Paper on the common transport policy, among others.

However, since the current EU policy objectives and targets are not always adapted to the specific situation, policy needs and priorities of the ACs, the assessments may sometimes result in a biased view of the position in the ACs. The current key EU transport objectives (decoupling transport growth from economic growth, stabilising the modal split by 2010 and shifting from road to rail and inland waterways thereafter) are illustrative of this. Given their different socio-economic starting positions, it is questionable whether the decoupling objective — in particular for passenger transport — can realistically be achieved in the next 10 years in the ACs. With their rail share in transport being well

Box 2: ACs' economies and transport systems: a different starting position, but evolving rapidly

After the beginning of the transition to market economies, the AC-10 experienced an economic downturn, of various degrees of seriousness. From a baseline of 100 in 1989, gross domestic product (GDP) had by 1993 dropped to 49 in Latvia, although only to 88 in Poland. Inflation soared when prices were liberalised, and unemployment increased sharply when enterprises that were no longer protected went bankrupt. By 1997, GDP had risen to 112 in Poland and to 54 in Latvia. In most countries economic growth was restored in the second half of the 1990s.

Economic growth in the AC-10 remained substantial (3.1 %) in an otherwise gloomy 2001. Annual growth is expected to reach an average of 3.9 % by 2003, which is higher than the expected 2.9 % growth for the EU-15. Most of the AC-10 countries are reaping the fruits of economic reforms that started in the 1990s. Direct foreign investment continues at a substantial level. Domestic demand is up and the competitiveness of export sectors is growing. Inflation rates are expected to fall from 15 % in 2000 to 6.7 % by 2003.

The slowdown of world demand reduced exports in 2001, but an increase is expected in 2002–03. Although the trade balance will remain negative, with imports exceeding exports by about 7 %, the financial balances of most countries will improve slightly. Most countries share this positive economic picture. Poland — representing 25 % of AC-10 economic activities — forms an exception with a growth of only 1.1 % in 2002. This is expected to pick up to 3.3 % by 2003.

In most countries unemployment remains at a high level, ranging from 12 % to almost 20 %. The Czech Republic, Hungary, Romania and Slovenia have a more favourable labour situation with 6 to 9 % unemployment. Continued economic growth is expected to improve the labour market. The trade and account balances are negative in all countries with only Slovenia being almost in balance financially with the outside world.

The political and economic restructuring in the ACs during the past decade has led to substantial changes in transport systems. Volumes decreased significantly following the economic recession of the early 1990s, and are now on the rise again following economic recovery. The modal split has evolved from a predominance of rail transport towards a more road-orientated system. Given the current strong link between GDP and transport demand, these trends are expected to continue, given the forecast economic growth.

Sources: European Commission, 2002a; European Commission, 2002b, OECD, 2002b.

above the EU level, but dropping rapidly, they currently outperform the EU. Stabilisation of such a high rail share will be a major challenge for the ACs, and one that would far exceed EU performance.

Another continuing methodological problem is the lack of clear policy objectives or targets against which indicator trends can be evaluated. In addition, existing environmental targets, such as the Kyoto targets, are not differentiated for particular sectors and equal burden-sharing among sectors has to be assumed. The DG Environment — DG Transport Joint Expert Group on Transport and Environment has strongly recommended the setting of intermediate and long-term sectoral targets, and the linking of indicator development to these. Following a similar request from the Transport Council, the Commission has announced that it will submit a communication on medium and long-term environmental objectives for a sustainable transport system (European Commission, 2001a). EEA will continue to keep track of new policy developments and target objectives using its STAR database as a tool (http://star.eea.eu.int).

TERM: a two-layered information system

TERM has to address various target groups, ranging from high-level policy-makers to technical policy experts. It is therefore set up as a two-layered information system, with different degrees of analytical detail.

This report aggregates the key messages for each indicator. Indicator fact sheets constitute a much more detailed information layer. These provide an in-depth assessment for each indicator, including an overview of the main policy context and existing EU and AC policy targets related to the indicator, an analysis of data quality and shortcomings, a description of meta data and recommendations for future improvement of the indicator and data.

The TERM indicator fact sheets form the reference information system of this report and can be downloaded from the EEA web site: http://themes.eea.eu.int/Sectors_and_activities/transport/indicators

Data and information sources

The purpose of TERM, as far as data are concerned, is to put existing international statistical databases to good use, to identify the main gaps and shortcomings, and to gradually help to improve and streamline EU data collection systems. As in previous reports, Eurostat is the main source of the EU transport-related statistics used in this report. Although Eurostat is currently in the course of extending its databases to the ACs, its statistics on these countries are as yet limited. TERM 2002 therefore also draws heavily on United Nations Economic Commission for Europe (UNECE) transport statistics for those countries. Other international organisations, such as the International Energy Agency (IEA), the Organisation for Economic Cooperation and Development (OECD), the European Conference of Ministers of Transport (ECMT) and the World Health Organization (WHO), and experts from various countries have also greatly contributed by supplying the EEA with data, data analysis and assessments.

The European Topic Centres (ETCs) for Air Quality and Climate Change (ACC), Water, Waste Management and Material Flows (WMF), Terrestrial Environment (TE), Nature Protection and Biodiversity (NPB) assisted the EEA in compiling and analysing the environmental data.

For the qualitative information, various studies, reports and policy documents have been consulted.

Box 3: TERM policy context, process and concept

The Amsterdam Treaty identifies integration of environmental and sectoral policies as the way forward to sustainable development. The European Council, at its Summit in Cardiff in 1998, requested the Commission and transport ministers to focus their efforts on developing integrated transport and environment strategies. At the same time, and following initial work by the EEA on transport and environment indicators, the joint Transport and Environment Council invited the Commission and the EEA to set up a transport and environment reporting mechanism (TERM), which should enable policy-makers to gauge the progress of their integration policies. The sixth environmental action programme (6EAP) (European Commission, 2001c) and the EU strategy for sustainable development (European Commission, 2001b) re-emphasise the need for integration strategies and for monitoring environmental themes as well as sectoral integration.

The main aim of TERM is to monitor the progress and effectiveness of transport and environment integration strategies on the basis of a core set of indicators. The TERM indicators were selected and grouped to address seven key questions:

1. Is the environmental performance of the transport sector improving?
2. Are we getting better at managing transport demand and at improving the modal split?
3. Are spatial and transport planning becoming better coordinated so as to match transport demand to the need for access?
4. Are we optimising the use of existing transport infrastructure capacity and moving towards a better-balanced intermodal transport system?
5. Are we moving towards a fairer and more efficient pricing system, which ensures that external costs are internalised?
6. How rapidly are cleaner technologies being implemented and how efficiently are vehicles being used?
7. How effectively are environmental management and monitoring tools being used to support policy-and decision-making?

The TERM indicator list covers the most important aspects of the transport and environment system (driving forces, pressures, state of the environment, impacts and societal responses — the so-called DPSIR framework). It represents a long-term vision of the indicators that are ideally needed to answer the above questions.

The TERM process is steered jointly by the Commission (DG ENV, DG TREN, Eurostat) and the EEA. The EEA member countries and the other international organisations also provide input and are consulted on a regular basis.

Table 1 **Envisaged TERM indicators, data sources and quality (for EU and ACs)**

Groups and indicators		EU Main source	EU Data quality	ACs Main source	ACs Data quality	Page number
Transport and environment performance						
Environmental consequences of transport	Transport final energy consumption and primary energy consumption, and share in total by mode and by fuel	Eurostat	★★★	IEA	★★	17
	Transport emissions of greenhouse gases (CO_2 and N_2O) by mode	ETC/ACC	★★★	ETC/ACC	★★	18
	Transport emissions of air pollutants (NO_x, $NMVOC_s$, PM_{10}, SO_x, total ozone precursors) by mode	ETC/ACC	★★	ETC/ACC	★★	20
	Population exposed to exceedances of EU air quality standards for PM_{10}, NO_2, benzene, ozone, lead and CO	ETC/ACC	★★	ETC/ACC	★	21
	% of population exposed to and annoyed by traffic noise, by noise category and by mode	EEA	★	Not available		TERM 2001
	Fragmentation of ecosystems and habitats	ETC/TE	★★	ETC/TE	★★	23
	Proximity of transport infrastructure to designated areas	ETC/TE, ETC/NPB	★★	ETC/TE, ETC/NPB	★★	24
	Land take by transport infrastructure by mode	ETC/TE	★	ETC/TE	★	22
	Number of transport accidents, fatalities, injured, and polluting accidents (land, air and maritime)	Eurostat	★★★	UNECE	★★★	25
	Illegal discharges of oil by ships at sea	Bonn agreement and HELCOM	★★	Bonn agreement and HELCOM	★★	26
	Accidental discharges of oil by ships at sea	ITOPF	★★★	Not available		26
	Waste from road vehicles (end-of-life vehicles)	ETC/WMF	★★	ETC/WMF	★★	27
	Waste from road vehicles (number and treatment of used tyres)	ETRA	★	Not available		27
Transport demand and intensity	Passenger transport (by mode and purpose)	Eurostat	★★	UNECE	★	29
	Freight transport (by mode and group of goods)	Eurostat	★★	UNECE	★★	31
Determinants of the transport/environment system						
Spatial planning and accessibility	Access to basic services: average passenger journey time and length per mode, purpose (commuting, shopping, leisure) and location (urban/rural)	Various	★	Not available		TERM 2001
	Regional access to markets: the ease (time and money) of reaching economically important assets (e.g. consumers, jobs), by various modes (road, rail, aviation)	Eurostat	★	Not available		TERM 2001
	Access to transport services	Various	★	Not available		TERM 2001
Supply of transport infrastructure and services	Capacity of transport infrastructure networks, by mode and by type of infrastructure (motorway, national road, municipal road, etc.)	Eurostat	★★	UNECE	★★	35

Groups and indicators		EU Main source	EU Data quality	ACs Main source	ACs Data quality	Page number
	Investments in transport infrastructure/capita and by mode	Eurostat	★★	ECMT	★★	36
Transport costs and prices	Real change in passenger transport price by mode	Eurostat	★★	Not available		TERM 2001
	Fuel prices and taxes	Eurostat	★★★	IEA	★	43
	Total amount of external costs by transport mode (freight and passenger); average external cost per passenger-km and tonne-km by transport mode	Infras, ECMT	★	Not available		39
	Implementation of internalisation instruments i.e. economic policy tools with a direct link with the marginal external costs of the use of different transport modes	Various	★	Various	★	40
	Subsidies	Not available		Not available		
	Expenditure on personal mobility per person by income group	Eurostat	★	Not available		TERM 2000
Technology and utilisation efficiency	Overall energy efficiency for passenger and freight transport (per passenger-km and per tonne-km and by mode)	ODYSSEE	★★	Not available		45
	Emissions per passenger-km and emissions per tonne-km for CO_2, No_x, NMVOCs, PM_{10}, So_x by mode	ETC/ACC	★★	Not available		46
	Occupancy rates of passenger vehicles	Eurostat	★	Not available		TERM 2001
	Load factors for freight transport (LDV, HDV)	Eurostat	★	Not available		TERM 2001
	Uptake of cleaner fuels (unleaded petrol, electric, alternative fuels) and numbers of alternative-fuelled vehicles	Eurostat	★★★	REC	★	48
	Size of the vehicle fleet	DG TREN	★★★	UNECE	★★★	31
	Average age of the vehicle fleet	Eurostat	★★	REC	★	47
	Proportion of vehicle fleet meeting certain air and noise emission standards (by mode)	Eurostat	★	REC	★	48
Management integration	Number of Member States that have implemented an integrated transport strategy	Various	★	Various	★	50
	Number of Member States with a formalised cooperation between the transport, environment and spatial planning ministries	Various	★	Various	★	51
	Number of Member States with national transport and environment monitoring systems	Various	★★	Various	★★	52
	Uptake of strategic environmental assessment in the transport sector	Various	★	Various	★	53
	Public awareness and behaviour	European Commission	★	Not available		TERM 2001
	Uptake of environmental management systems by transport companies	European Commission	★	Not available		TERM 2000

Note: The data quality scores of high (★★★), medium (★★) and low (★) are obtained by adding, with equal weights, the scores for relevancy, accuracy, comparability over time and comparability over geographic area.'Various' refers to information received from countries or obtained from studies (in cases when data could not be obtained from international databases).Indicators for which no updates (since TERM 2001 or TERM 2000) are available are not included in this report.

Is the environmental performance of the transport sector improving?

In the ACs, emissions of acidifying pollutants, ozone precursors, particulates and greenhouse gases by transport dropped markedly at the beginning of the 1990s, following a decrease in transport volumes. Economic recovery in the second half of the 1990s led to a rise in transport demand, with volumes almost reaching the 1990 levels again in 1999. This trend is expected to continue. Although transport greenhouse gas emissions are still about 9 % below the 1990 level, they have been on the rise again since 1995. Emissions of acidifying substances have stabilised since 1995; the introduction of EU technical standards for vehicles and fuels helped to counter the effects of growing traffic.

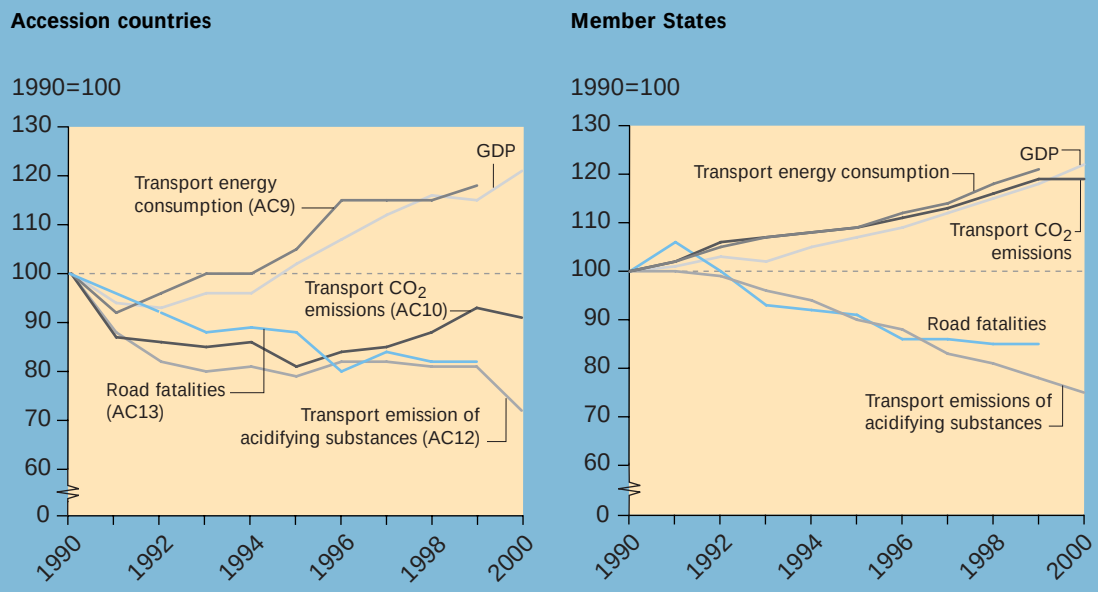
In the EU, air pollutant emissions also fell significantly. Additional reductions (from all sectors) are, however, needed to reach the 2010 targets of the national emission ceilings directive. The reductions are mainly the consequence of technical improvements to vehicles and fuels, as transport volumes increased continuously throughout the decade. While emission reductions in other sectors allowed the EU to stabilise its greenhouse gas emissions at 1990 levels in 2000, transport emissions have increased by 19 % since 1990.

Despite reductions in emissions, transport is still one of the main causes of exceedances of air quality limit levels, particularly in urban areas. Also, expansion of transport infrastructure networks — in the EU as well as ACs — is leading to increasing land take and fragmentation, and increasing the pressure on designated nature conservation sites. Fatality rates of road traffic have improved significantly following the introduction and enforcement of more stringent speed limits and vehicle and infrastructure safety standards. But the growth in traffic is increasingly offsetting these improvements; the number of fatalities is now stabilising around 21 000 a year in ACs compared with 41 000 in the EU.

Figure 2 **Environmental pressures from transport for ACs and EU-15, 1990–2000**

Notes: Energy consumption includes road, rail, domestic and international aviation, inland navigation, oil pipelines and non-specified transport (AC-9 excludes the Baltic States and Slovenia due to missing 1990 and 1991 data). Emission data include all transport modes except international aviation and maritime shipping; AC-10 excludes Cyprus, Malta and Turkey, AC-12 excludes Malta.

Sources: IEA, 2001a; EEA, 2002a-e and EMEP, 2002; UNECE, 2001b; Eurostat, 2002a; World Bank, 2002.



Energy consumption by transport is increasing rapidly, mainly as a result of growth in road transport

Energy consumption — in particular the consumption of fossil fuels — is a major policy concern as it is closely linked to emissions of greenhouse gases and the security of energy supply. In the ACs, the share of energy consumed by transport in total final energy consumption is 19 %. In the EU this share is much larger, 34 % in 1999. Transport energy consumption per capita in the EU is around three to four times higher than in the ACs (depending on the selection of transport modes).

In both regions, the transport sector is the fastest-growing energy consumer, with an increase of around 22 % between 1992 and 1999[1] in the AC-13 and 17 % in the EU. In the EU as well as in ACs, road transport consumes most energy (see Figure 3). In ACs, road transport is also the fastest growing energy consumer (20 % increase between 1994 and 1999), followed by aviation (6 %). In the EU, aviation is the fastest growing transport energy consumer (34 %), followed by maritime shipping (24 % increase between 1994 and 1999). Energy consumption by maritime bunkers for ACs is not available.

In the ACs, energy consumption by rail fell by 19 % between 1994 and 1999, following a dramatic decrease in rail transport volumes. The (limited) statistics available on energy consumption by aviation (domestic and international) show an increase over the same period in most ACs, most strikingly for Malta (115 %), a popular holiday destination.

The European climate change programme focuses on improving the energy efficiency of cars, changing driver behaviour, promoting modal shift and introducing transport pricing and economic instruments for aviation (European Commission, 2000). The slight improvement in energy efficiency of passenger and freight road transport that can be observed in some EU countries (see page 45) has proved, however, insufficient to slow down the growth rate of transport energy consumption. This emphasises the need to tackle transport volume growth in addition to the above-mentioned measures.

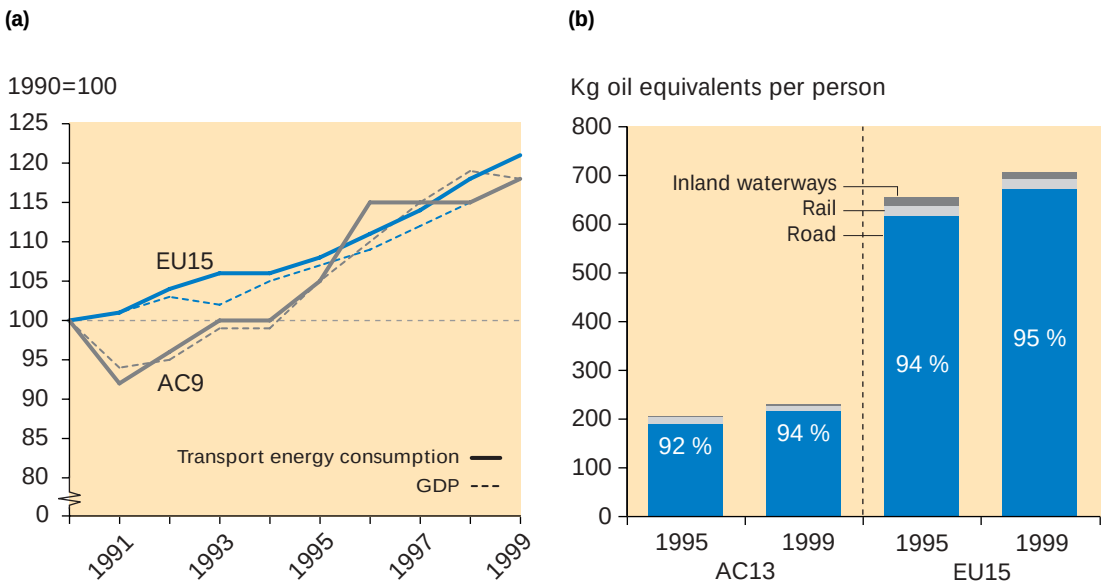
Quality of data
AC: ★★
EU: ★★★

Fact sheet(s)
Transport energy consumption

[1]Transport energy consumption data by mode for all ACs is in general only available for 1994 to 1999; transport energy consumption data by sector is available for all countries from 1992 onwards, and for AC-9 from 1990 onwards.

(a) Trends in transport energy consumption in AC-9 and EU-15, 1990–99, and (b) modal split in 1995 and 1999 (road, rail and inland waterways)

Figure 3



Notes:
AC-9 refers to all ACs except the Baltic states and Slovenia.

Sources:
IEA, 2001a; Eurostat, 2002a; World Bank, 2002 (GDP).

AC transport CO_2 emissions dropped in the early 1990s, but are now growing with traffic volumes

Quality of data
AC: ★★
EU: ★★★

Fact sheet(s)
Transport greenhouse gases emissions

In the ACs, CO_2 emissions from transport (about 98 % of transport greenhouse gas emissions) fell by 9 % between 1990 and 2000. This is mainly the result of the strong decrease in transport demand in the first half of the 1990s. However, this decrease proved not to be sustainable. Transport demand, energy consumption and CO_2 emissions have been increasing rapidly since the mid-1990s. The small decrease in emissions, reported in 2000, will probably not persist.

Trends in transport CO_2 emissions are closely linked to economic trends. As AC economies recover, transport volumes — and CO_2 emissions — shall increase. Transport CO_2 emissions per capita are however still three times lower than in the EU.

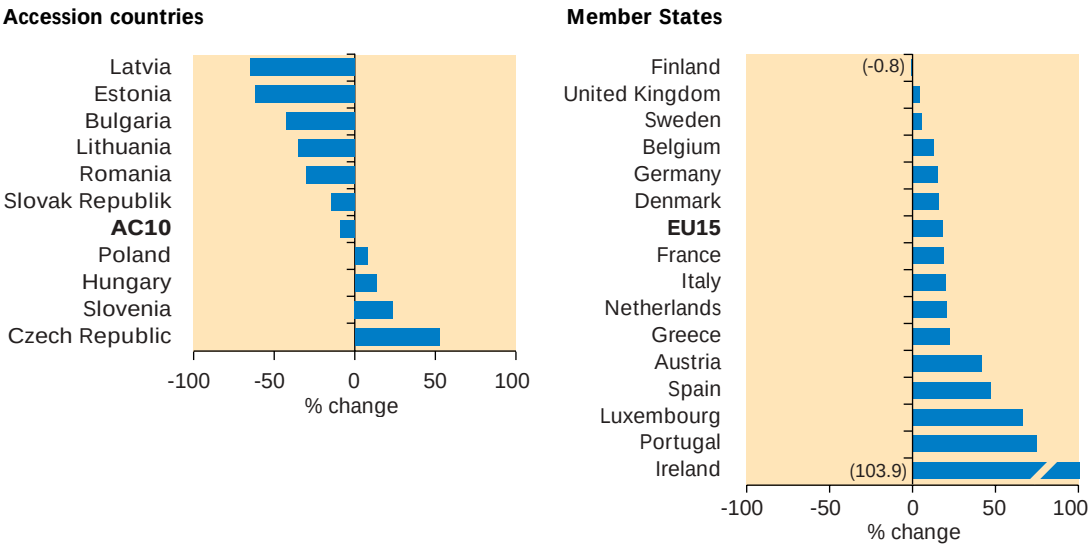
In the EU, emissions of greenhouse gases from transport (excluding international aviation and maritime shipping) increased by 19 % between 1990 and 2000, contributing a fifth of total greenhouse gas emissions in 2000. CO_2 is the main contributor to transport greenhouse emissions (97 %) and road transport is in turn the largest contributor to these CO_2 emissions (92 % in 2000). The voluntary agreement with the car manufacturers to reduce average CO_2 emissions from new cars is helping to slow the growth of car transport emissions (European Commission, 2002g). Road and domestic aviation are the fastest-growing contributors to transport CO_2 emissions with increases of 20 and 29 % respectively between 1990 and 2000. In 2000, domestic aviation produced 4 % of transport CO_2 emissions.

Although greenhouse gas emissions from international flights and maritime shipping are excluded from the emission reduction targets of the Kyoto Protocol and from emission inventories, they represent a significant and growing concern. In the EU, these emissions represented 4 % (157 million tonnes CO_2 equivalent) of total emissions in 1990 and 6 % (234 million tonnes CO_2 equivalent) in 2000.

Figure 4 **Change in transport CO_2 emissions, 1990–2000**

Notes:
Transport CO_2 emissions include all transport modes except international aviation and maritime shipping. Data for Bulgaria, Lithuania, Poland, Romania and Slovenia are estimated for the year 2000.

Sources:
EEA, 2002a; EEA, 2002b; EMEP, 2002

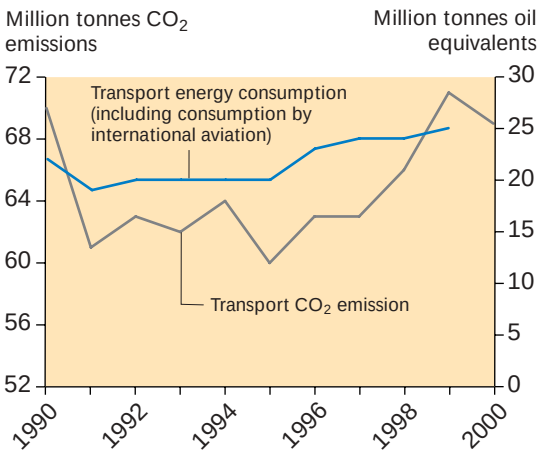


Box 4: Discrepancy in transport greenhouse gas emissions and energy consumption statistics

Figure 3 shows that there is a conflict between transport energy consumption and transport CO_2 emissions statistics for the ACs. According to the energy balances of the International Energy Agency (which are based on annual questionnaires) transport energy consumption increased by 15 % between 1990 and 1999 in a selection of six ACs (Bulgaria, Czech Republic, Hungary, Poland, Romania and Slovak Republic). In contrast to this rather strong increase, transport CO_2 emission data submitted by the same ACs under the international conventions (mainly UNFCCC) show an increase of only 1 % over the same period (IEA estimates show a 23 % increase). Estimations of energy consumption from international aviation show that differences in mode coverage can be ruled out as an explanation for the discrepancy between the two data sets.

The absolute trends of both data series, however, show more consistency than the indexed ones (see Figure 5). When the 1990 'outlier' is ignored (base year for most ACs with respect to the Kyoto Protocol), both series show a similar increase. The Baltic states, Bulgaria and Romania form the exceptions, with declining energy consumption and CO_2 emissions, which is consistent with their economic development.

Transport energy consumption and transport CO_2 emissions, AC-6 1990–99 Figure 5



Notes:
AC-6 consists of Bulgaria, Czech Republic, Hungary, Poland, Romania and Slovak Republic, representing around 87 % of total transport CO_2 emissions and transport energy consumption (with international aviation) in 1999. Energy consumption by international aviation could not be excluded from the data series for AC-6, as such a data split is not available for Slovak Republic.

Sources:
EEA, 2002a; EEA, 2002b; EMEP, 2002; IEA, 2001a.

Box 5: Emissions from maritime shipping in EU sea areas

A recent inventory of all ship emissions shows that, in 2000, shipping movements in EU sea areas contributed 3.6 million tonnes of nitrogen oxides (NO_x), 2.6 million tonnes of sulphur dioxide (SO_2), 157 million tonnes of carbon dioxide (CO_2), 134 tonnes of hydrocarbons and 21 tonnes of (in-port) primary particulates. The bulk of the pollution was concentrated in the North, Baltic and Mediterranean Seas. The volume of NO_x and SO_2 being produced is well over half that expected to be emitted by all land-based sources by 2010 under the EU's national emission ceilings directive. As increasingly stringent controls are placed on land-based sources of atmospheric emissions, there is mounting pressure to bring ship emissions more closely within air quality policy across the European Community. Under a new directive being drafted by the European Commission, for publication later in 2002, all shipping in EU territorial waters in the Baltic and North Seas would be obliged to burn fuel with a sulphur content below 1.5 %. In port areas and inland waterways throughout the EU the requirement would be even stricter, with sulphur content limited to 0.2 %. Sale of marine gas oils with sulphur content higher than this would be banned. A separate strategy paper will set out longer-term plans to address emissions of other pollutants, including urging stronger global NO_x standards for ships' engines via the International Maritime Organization (IMO). For volatile organic compounds (VOCs) the Commission considers tackling other sources, such as paints and varnishes, to be more important at this stage. This is because ship VOC emissions are currently relatively small and expensive to abate compared with other sectors. Regarding CO_2 emissions, the Commission will urge EU Member States to contribute to the IMO's ongoing work on a global greenhouse gas strategy.

Source: European Commission, 2002i.

AC transport emissions of air pollutants dropped at the beginning of the 1990s, and have since stabilised

Quality of data
AC: ★★
EU: ★★

Fact sheet(s)
Transport air pollutants emissions

In the ACs, transport emissions of ozone precursors, secondary particulates and acidifying substances fell by around 25 % over the past decade (with wide variations among countries). This is mainly due to the emission decrease at the beginning of the 1990s following the drop in traffic volumes (Figure 2). The stabilisation of emissions — despite rising transport volumes — in the second half of the 1990s was a result of fleet renewal. It is not yet clear whether the drop of emissions reported in 2000, due mainly to reductions in Poland and Turkey, will persist.

In the EU as a whole, emissions also fell (24 to 33 % for the above pollutants), mostly as a result of increasing use of catalytic converters and reduced sulphur concentrations in fuels.

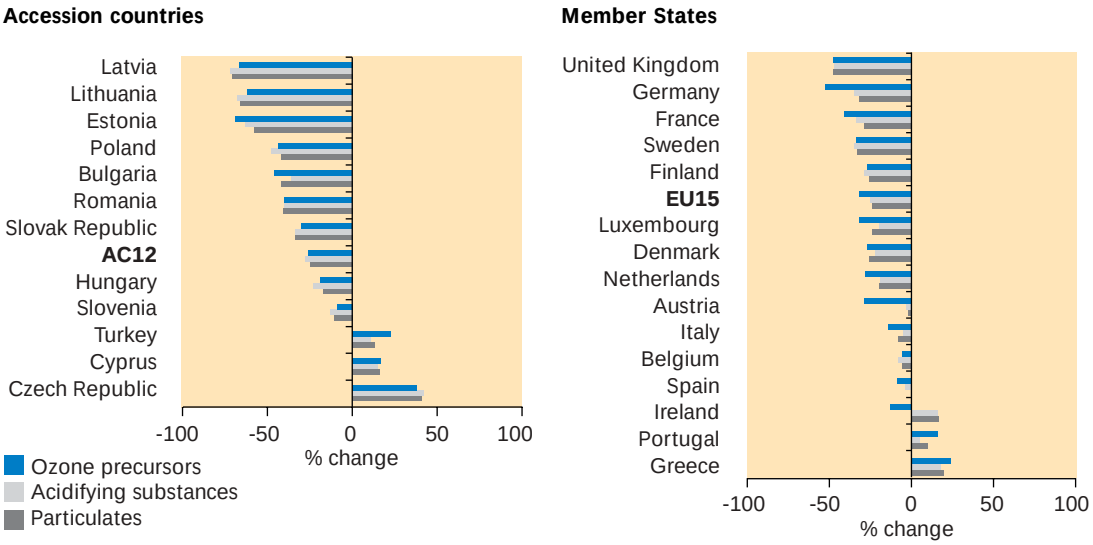
In the ACs the share of transport in the above three emission categories is increasing (and in the EU for the latter two), indicating that the reduction efforts of other sectors have been more effective.

There are wide variations among countries (see Figure 6), from an almost halving of transport pollutant emissions in the UK to a quarter increase in Greece. In the Czech Republic, Greece, Ireland and Portugal transport pollutant emissions increased, following a strong growth in road transport volumes and — in the case of the Czech Republic, Greece and Portugal — relatively old vehicle fleets. In the near future, some increases in emissions can therefore be expected in the ACs, as vehicle fleet characteristics in most ACs are the same as or worse than those in the Czech Republic, and transport demand will continue to rise (IEA, 2002). However, in the long run (up to 2020) transport pollutant emissions are projected to decline significantly, provided fleet renewal continues (OECD, 2002a).

Figure 6 **Change in pollutant emissions from transport between 1990 and 2000**

Note: Emissions include all transport modes, except international aviation and maritime shipping.

Sources: EEA, 2002c; EEA, 2002d; EEA, 2002e.



Urban air quality is improving but urban populations are still exposed to pollution levels that pose health risks

In many places and for certain pollutants, urban air quality has improved significantly over the last two decades, both in the EU and in the ACs. In the EU, this is mainly the result of the introduction of catalytic converters and better fuel quality. In the ACs, the improvement is attributable mainly to economic decline in the beginning of the 1990s and efforts made in other sectors, such as the energy sector where coal and lignite-based pollution sources have been reduced (EEA, 2001a). Current measures will further improve urban air quality (see the results of the Auto-Oil II programme), but in 2010 the European urban population will still be exposed regularly to high concentrations of air pollutants.

The pollutants of greatest concern with regard to their impact on human health at present are fine particles (PM_{10}) and ground-level ozone (O_3), to both of which the transport sector is an important contributor. In 1999, 44 % and 97 % of the urban population (covered by monitoring stations) was exposed to exceedances of the air quality objectives for particulates and ground-level ozone respectively. For nitrogen dioxide (NO_2) and sulphur dioxide (SO_2) the situation is much better: in 1999 only 14 % of the urban population was exposed to concentrations of NO_2 above the objective and a mere 2 % to exceedances of the SO_2 objective.

Insufficient data are available to meaningfully distinguish between the ACs and the EU with respect to air quality. Furthermore, no sufficient data are available for an evaluation of ambient air concentrations of lead and benzene.

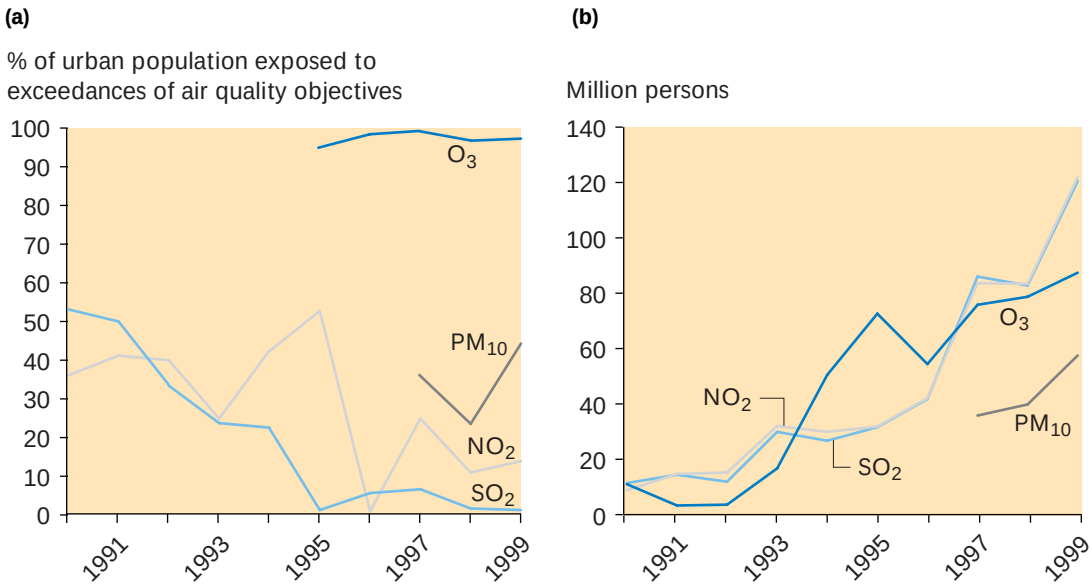
A long-term strategic and integrated policy to protect human health and the environment from the effects of air pollution is currently under development by the EU clean air for Europe programme (CAFE).

Quality of data
EU (including some ACs): ★★

Fact sheet(s)
Air quality SO_2
Air quality O_3
Air quality PM_{10}
Air quality NO_2

(a) Proportion of European urban population exposed to exceedances of air quality objectives; and (b) number of people covered by monitoring stations (EU and ACs)

Figure 7



Notes:
Air quality objectives considered are:
O_3 110 µg/m³ 8-h;
NO_2 200 µg/m³ 1-h < 19 exceedances; PM_{10} 50 µg/m³ 24-h < 36 exceedances; SO_2 125 µg/m³ 24-h < 4 exceedances.

Sources:
EEA, 2002c; EEA, 2002d; EEA, 2002e.

Land take by transport infrastructure is increasing

Quality of data
AC: ★
EU: ★

Fact sheet(s)
Land take

Land resources in most of Europe are relatively scarce, and achieving a sustainable balance between competing land uses is a key issue for all development policies. The spatial impact of policies (including transport) on the European territory is therefore one of the key issues in the European spatial development perspective (ESDP) and the sixth environmental action programme.

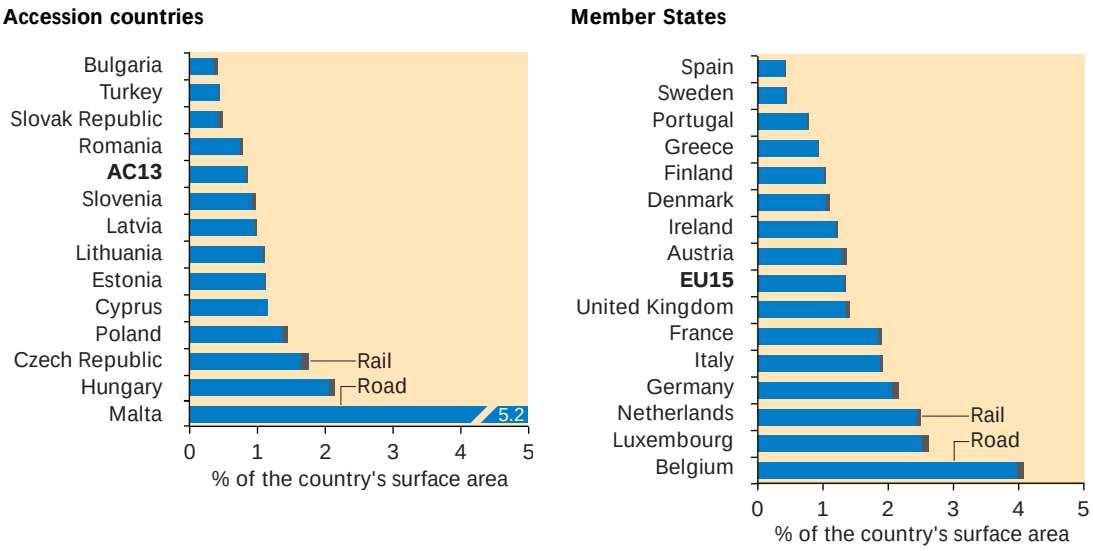
The ESDP proposes the integration of transport policy and land-use planning to specify the appropriate location of activities requiring journeys, with focus on the development of Euro-corridors. The common transport policy aims for an optimal use of existing infrastructure and some Member States have developed land-use policies restricting additional transport developments in certain areas.

Lack of up-to-date and historical land coverage data (e.g. GIS data) hampers the accurate assessment of land 'consumption' by transport. However, the increasing length of roads, particularly motorways, and the development of other roads shows that more and more land is being used for transport in the ACs as well as in the EU.

Because of its denser infrastructure networks, land taken by transport in the EU is greater than in the ACs. It is estimated that, in 1998, road and rail infrastructure claimed around 0.82 % of total surface area in the ACs and 1.3 % in the EU. Road is the biggest land consumer in the ACs as well as in the EU.

Figure 8 **Land take by roads and railways as percentage of country surface, 1998**

Source: EEA, 2002g.



Land fragmentation in the ACs is less than in the EU, but is increasing with infrastructure development

The UN Convention on Biological Diversity considers fragmentation to be a major threat to habitats and species populations. This is reflected in the pan-European biological and landscape diversity strategy as well as in the European Community biodiversity strategy (European Commission, 1998) and the EC habitats directive.

The average size of contiguous land units in ACs not cut through by major transport infrastructure is 175 km², which is about 40 % higher than the EU average. This can be partly explained by the lower density of road and rail networks in the ACs. The historical difference in land ownership has also played a role, with larger, previously state-owned patches in the ACs against smaller, privately owned parcels in the EU.

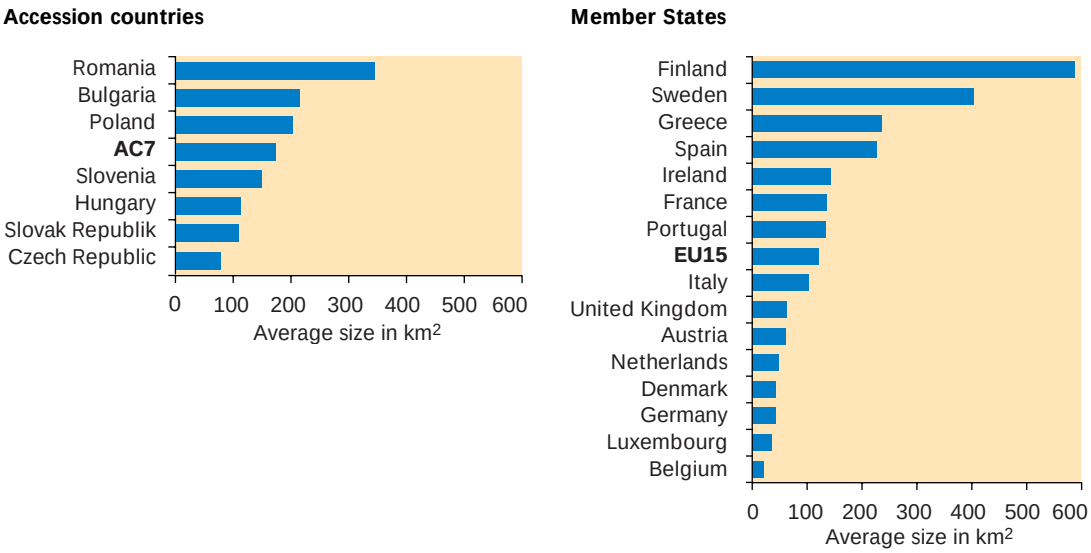
With infrastructure development in the ACs focusing on road development, there is a risk that fragmentation of their territory will increase. Already, fragmentation by transport infrastructure in the Czech Republic, Hungary and the Slovak Republic is more severe than the EU average.

Quality of data
AC: ★★
EU: ★★

Fact sheet(s)
Fragmentation

[2] OJ L197, 21/07/2001, pp. 30–37.

Average size of non-fragmented land, 1998 Figure 9



Source:
EEA, 2002g.

Extension of infrastructure networks is increasing pressures on designated nature areas

Quality of data
AC: ★★
EU: ★★

Fact sheet(s)
Proximity to designated areas

The designation of areas for nature protection is one of the longest-established and most common measures for the protection of biodiversity. The EU birds[3] and habitats[4] directives aim at protecting more than 10 % of the territory of the EU by 2010.

In the EU, 1 089 of the 1 650 areas designated under the EU birds directive up to 1997 have at least one major transport infrastructure within 5 km of their centres, as have 270 out of the 430 Ramsar wetlands (designated up to 1998). For the seven ACs for which data are available, 57 Ramsar sites are designated, of which 41 have a major transport infrastructure in close proximity, and this despite the fact that infrastructure density in those countries is still relatively low. In the EU, roads constitute the largest pressure on Ramsar sites, while in the ACs it is railways.

The development of the trans-European transport network (TEN-T), and its extension to the east (see page 35), risks aggravating further the conflicts between infrastructure development and nature conservation.

A study by BirdLife International found that 85 important bird areas (IBAs), corresponding to 21 % of all IBAs investigated, would be potentially affected by the eastward extension of the TEN-T. Road developments pose the greatest risk (affecting 52 sites), but a surprisingly high number of sites (34) would be in close proximity to waterways (BirdLife International, 2001).

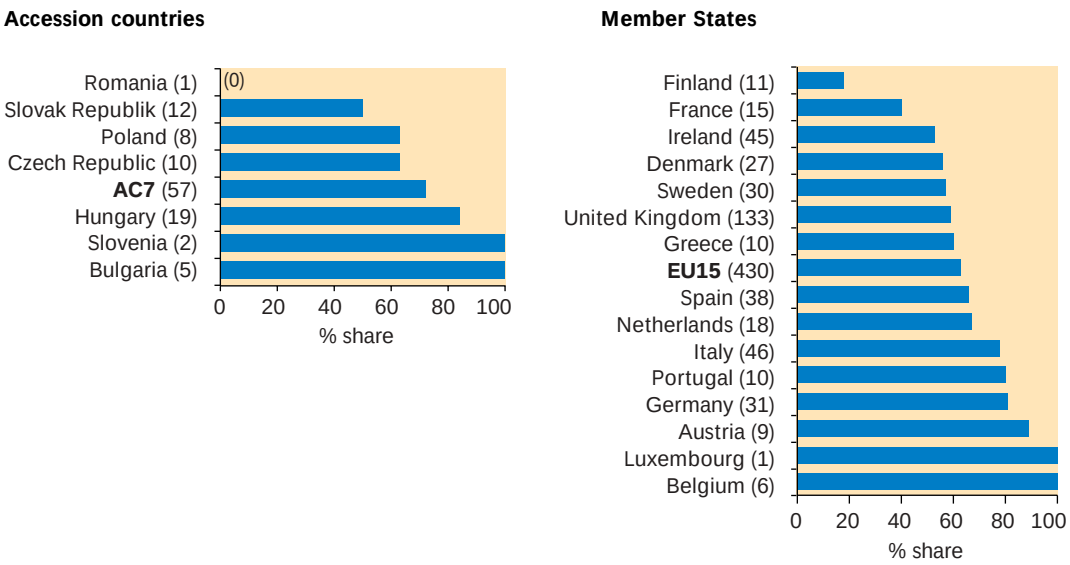
Implementation of the directive on the assessment of the effects of certain plans and programmes on the environment (see page 53) could in future help to avoid conflicts between transport infrastructure planning and nature conservation.

[3] OJ L 103, 25/04/1979 pp. 1–18.
[4] OJ L 206, 22/07/1992 pp. 7–50.

Figure 10 **Percentage of designated Ramsar sites with transport infrastructure closer than 5 km to their centres, 1998**

Notes: Statistics on Ramsar areas date back to March 2001; statistics on transport infrastructure date back to 1998. The numbers in brackets indicate the total number of designated sites in the country.

Sources: EEA, 2002g; EEA, 2002h.



Road fatalities in the ACs fell in the early 1990s, but are now levelling at around 21 000 a year

The number of people killed per capita in road accidents in the EU and ACs are fairly equal, but the number of deaths per number of road vehicles is still on average three times higher in the ACs than in the EU. The severity of road accidents is, however, falling, following gradual implementation of EU vehicle and infrastructure safety standards, changes in legislation on drinking and driving and the implementation and better enforcement of more stringent speed limits. The EU also saw a significant drop in fatality rates over the past decade. As a result the annual number of fatalities decreased significantly compared with 1990 (by 18 % in the ACs and 15 % in the EU). This reduction rate has, however, been slowing down recently, as transport growth offsets safety improvements.

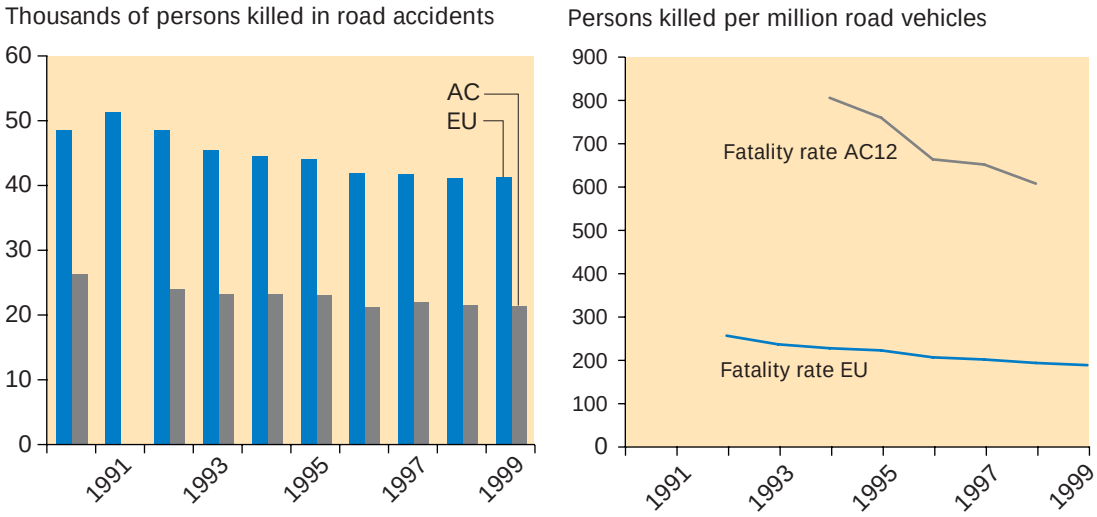
Substantial additional efforts are needed to meet the common transport policy target of halving transport fatalities by 2010. In 1999 road accidents still claimed more than 21 000 deaths in the ACs and more than 41 000 in the EU. In the ACs (and in the EU since 1993), the increase in road accidents has offset the decrease in injury rates, resulting in an increase in the number of injuries of 18 %.

Compared with road transport, rail, shipping and air transport are relatively much safer modes of transport. But for these modes, too, several hundreds of fatalities are recorded each year. To avoid these in future, the Commission has proposed various sets of measures (European Commission, 2002c; European Commission, 2002d; European Commission, 2002e)

Quality of data
AC: ★★★
EU: ★★★

Fact sheet(s)
Transport accident fatalities

(a) Number of road accident fatalities, and (b) fatality and injury rates, 1990–99 Figure 11



Notes:
Fatality rates are based on fatalities per year per number of road vehicles (cars, motorcycles, buses and coaches, and goods vehicles). Fatality rate AC-12 excludes Lithuania due to missing data on roadvehicles.

Sources:
UNECE, 2001b; Eurostat, 2002a; ECMT, 2000.

The number of detected illegal oil discharges from shipping remains stable in the Baltic Sea and is not monitored the Black Sea

Quality of data
Illegal discharges
AC: ★★
EU: ★★
Accidental discharges
EU: ★★★

Fact sheet(s)
Illegal oil discharges
Accidental oil discharges

More oil is released into seas by illegal discharges than by shipping accidents. Operational discharges by ships are prohibited in the North Sea, Baltic Sea, Black Sea and Mediterranean Sea — all International Maritime Organization (IMO) 'special areas'. Under the Bonn Agreement, North Sea states carry out aerial surveillance as an aid to detecting and combating pollution and to prevent violations of anti-pollution regulations. The Helsinki Convention established an aerial surveillance over the Baltic Sea and nine countries participate in this, including four ACs: Estonia, Latvia, Lithuania and Poland. The number of detected illegal oil spills decreased in the North Sea and the Baltic Sea. The implementation of Directive 2000/59/EC[5] requiring Member States to set up adequate port reception facilities for ship-generated waste and cargo residues will help to decrease the occurrence of illegal discharges in seas.

No aerial surveillance is in place for the Black Sea and the Mediterranean Sea. This is worrying as much of the Black Sea is severely polluted with oil — especially near ports and river mouths — and oil pollution along shipping lanes in the Black Sea is heavy. Hydrocarbon pollution in the French and Italian Mediterranean areas of responsibility exceeds 200 slick occurrences per year. But the data are available only at national level and not commonly reported under the Barcelona Convention. No information on Cyprus, Malta or the Mediterranean coast of Turkey is available.

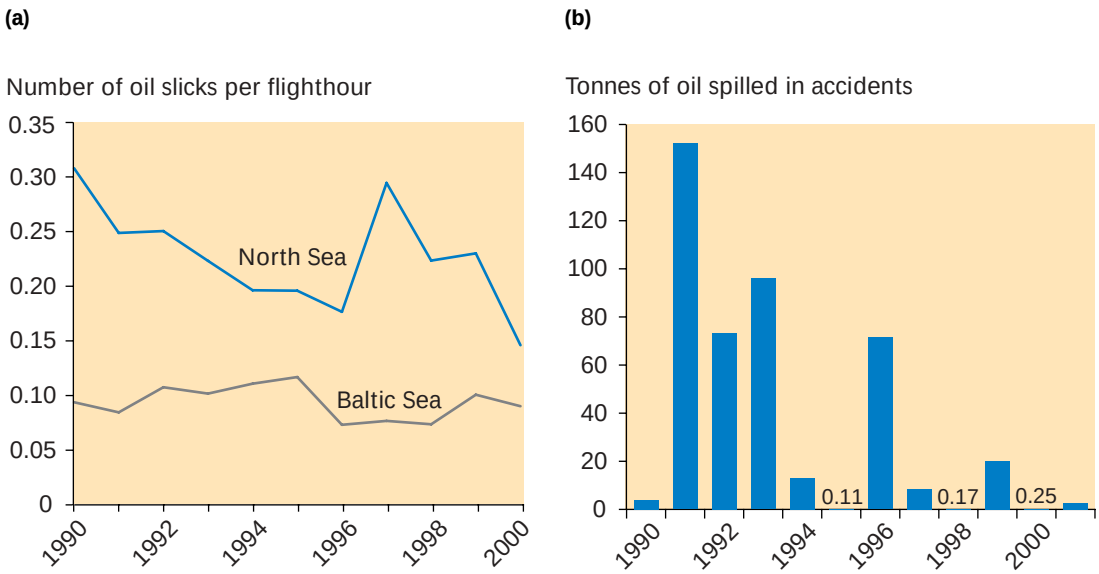
In spite of being a smaller source of maritime oil pollution, major accidental oil tanker spills (i.e. those greater than 7 tonnes) have occurred sporadically in EU waters over the past decade, totalling 830 000 tonnes of spilled oil. No data were obtained for the ACs. The Commission's Erika I and II packages — created shortly after the Erika disaster in December 1999 — aim to improve ship inspection, phase out single-hull oil tankers from EU waters by 2015, and establish a Maritime Safety Agency, which will support the Commission in stepping up maritime safety.

[5] OJ L332, 28/12/2000, pp. 81–90.

Figure 12

(a) Annual number of observed oil slicks per flight hour in the Baltic Sea and North Sea and (b) tonnes of oil spilled accidentally in the EU-15

Sources: Helsinki Convention (http://www.helcom.fi/); Bonn Agreement (http://www.bonnagreement.org); ITOPF, 2002.



Numbers of end-of-life vehicles and used tyres are expected to grow significantly

The number of scrapped cars is expected to grow significantly throughout Europe, as growing welfare will enable more and more people to own cars, or to replace older vehicles with more modern ones. The increase in the number of scrapped cars is modelled to be steeper for the ACs than for the EU, as their vehicle fleet is growing more rapidly and more old vehicles are being scrapped following better inspection and maintenance programmes, and environmental or safety concerns.

Insufficient information is currently available on the recycling performance of the different waste flows from scrapped cars within the EU or ACs. In the EU, the end-of-life vehicle directive (Directive 2000/53/EC[6]) aims to improve recovery, reuse and recycling of cars, so as to minimise the final disposal of the increasing number of scrapped cars. For used tyres — one of the waste flows — some data exist. From these it appears that the EU is on track to meet the objective to abolish the landfilling of waste tyres by 2006. However a few EU countries still have to find alternative outlets for more than two thirds of their waste tyres to meet the target.

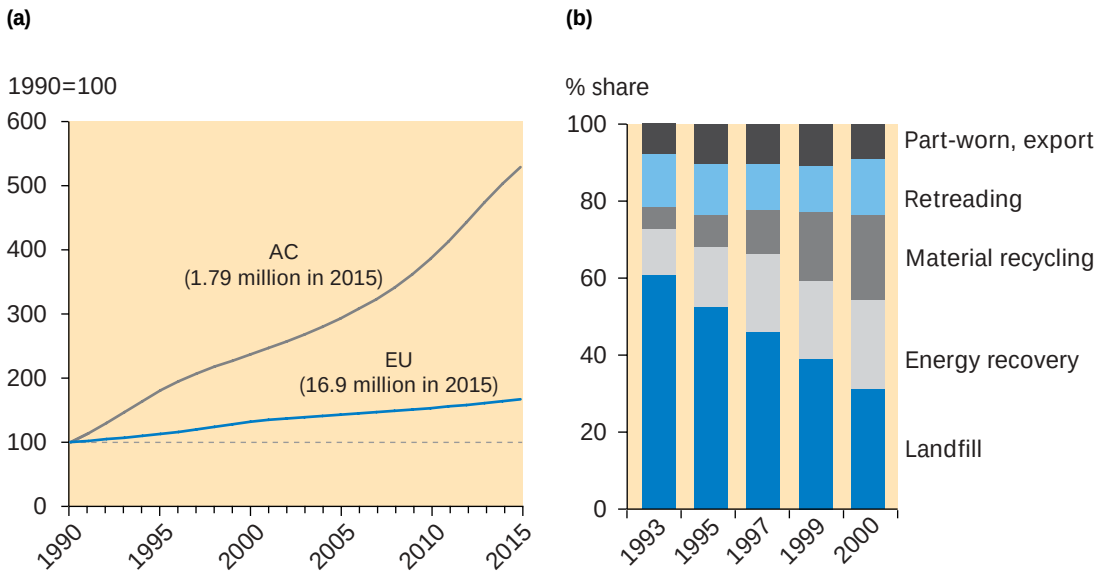
Quality of data
End-of-life-vehicles
AC: ★★
EU: ★★
Used tyres
EU: ★

Fact sheet(s)
End-of-life-vehicles
Used tyres

[6] OJ L 269, 21/10/2000 pp. 34–43.

(a) Projected number of scrapped cars in the ACs and EU+3 (1990–2015) and (b) treatment of waste tyres in the EU+3

Figure 13



Note:
EU+3 refers to EU and Iceland, Liechtenstein and Norway. For treatment of waste tyres percentages are based on tonnes of tyres.

Sources:
EEA-ETC/WMF, 2001; ETRA, 2002.

Are we getting better at managing transport demand and at improving the modal split?

The 'decoupling' of transport growth from economic growth and the shifting of traffic from road to rail, water and public transport are two important objectives of the sustainable development strategy. As a first step, the common transport policy aims to stabilise modal shares at 1998 levels by 2010. In the ACs as well as in the EU, however, transport growth is still closely linked to economic development, and is shifting to road and aviation rather than to rail and water.

The economic transition initiated in the ACs after the 1989 events led to a period of economic recession in the early 1990s, and transport volumes consequently dropped. War and changes in political circumstances in certain eastern European regions also had a significant impact on transport. Transport flows in the Baltic states, Bulgaria and Romania were constrained by the political changes in the former Soviet Union. Economies and traffic volumes in Hungary and Slovenia suffered from the 1991–95 and 1998–99 wars in the Balkan region.

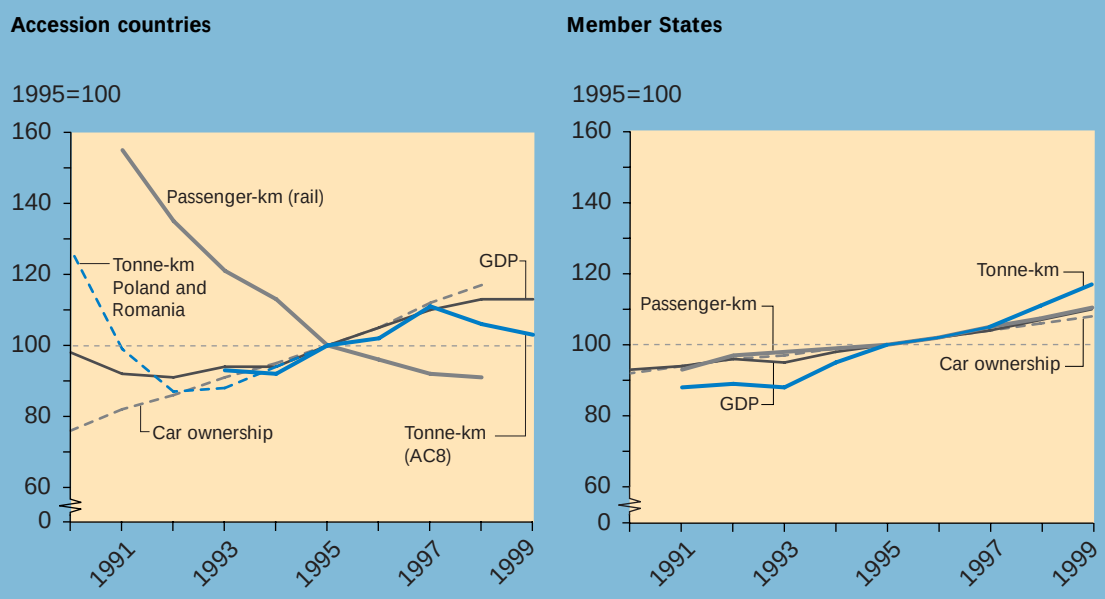
Countries positioned closer to the EU and further away from these 'problem' and areas proved to be better capable of avoiding the economic consequences and subsequent collapse of their transport systems by altering their trade patterns. From 1994 onwards, both economy and transport volumes recovered (Figure 14). In the EU, passenger transport grew at around the same rate as GDP, whereas freight transport outstripped GDP growth.

The ACs had a much more favourable modal balance than the EU at the beginning of the 1990s, with rail having a dominant share. The subsequent rapid reform of the road sector, while railway operations deteriorated, has resulted in a significant shift away from rail. Equally important driving factors are the rapid increases in car ownership and investments that prioritise the building of road infrastructure. This risks pushing the system into the same unsustainable pattern as that in several EU countries.

Figure 14 **Transport volumes, GDP and car ownership, 1990–99**

Notes: GDP in 1995 prices. Freight transport includes road, rail and inland waterways. Data for ACs refers to Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania and Slovenia. Passenger transport (EU) includes car, bus/coach, rail, tram/metro and domestic, intra- and extra-European aviation. Data on road passenger transport in the ACs are scarce; car ownership is shown as a proxy-indicator.

Sources: UNECE, 2001a; Eurostat, 2002a; World Bank, 2002.



Freight intensity in the ACs is falling, but is still on average five times higher than in the EU

Freight transport volumes (road, rail and inland waterways) increased by 11 % between 1993 and 1999 in the ACs, while GDP increased by 24 %. While tonne-km growth was closely linked to economic growth after 1993, this link was broken in 1998, following a collapse of rail freight transport in the Czech Republic and Romania, related to a period of economic recession in both countries. In the EU, the link between economic growth and freight transport growth remains strong; freight volumes increased by 15 % while GDP grew by 16 % over the same period (Figure 14). In more recent years (1995–99) in the EU the growth rate of freight has even exceeded the GDP growth rate. This runs counter to the EU objective of decoupling transport growth from economic growth.

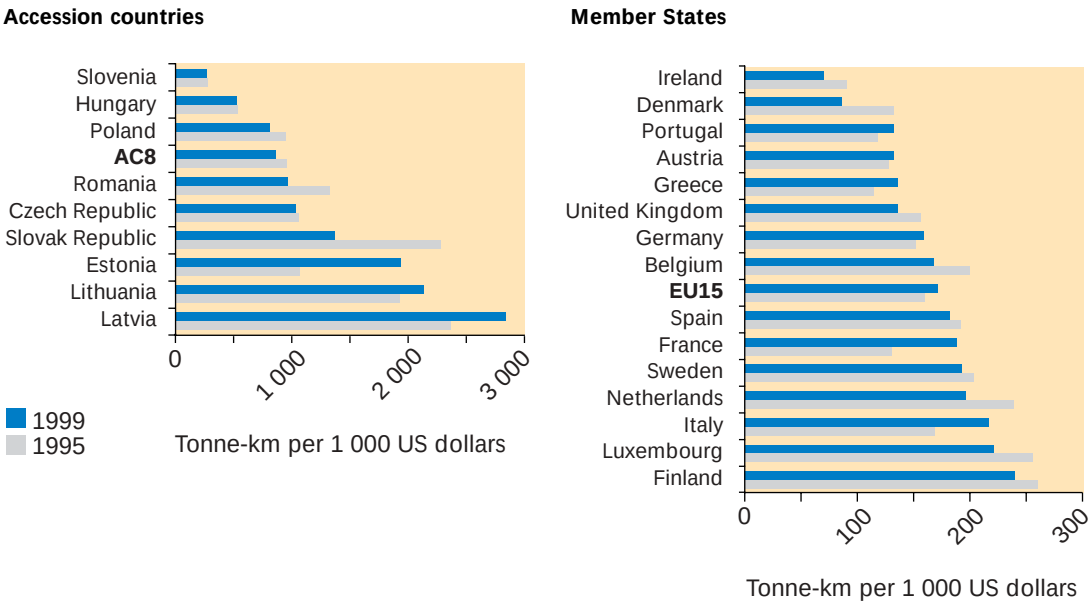
The opening of the borders between the ACs and the EU has to a great extent shifted transport flows from and to the former Soviet Union towards the EU and initiated a strong export traffic from the EU to the ACs. In 1998, EU imports from the ACs were already twice as high as in 1990, and exports to the ACs were four times the 1990 level.

Freight intensity (tonne-km transported per unit of economic activity) is still on average five times higher in the ACs than in the EU. This can be explained by their different economic structure, generally focused on the earlier stages of the production cycle (processing of raw materials, heavy industry, production of intermediary products). Freight intensity is, however, decreasing in most ACs following structural changes in the economy (particularly over the first half of the past decade), such as the transition to a market economy and the shift towards more service-intensive economies and away from (transport-intensive) industry, and a further collapse of rail freight transport in the second part of the decade. Notable exceptions are the Baltic states, where freight intensity has risen, probably due to the excellent geographical position of these states as transit countries for freight transport to the Russian hinterland.

Quality of data
AC: ★★
EU: ★★

Fact sheet(s)
Freight transport

Inland freight intensity (tonne-kilometres per unit of GDP), 1995 and 1999 Figure 15



Notes:
Freight intensities defined as tonne-km per 1 000 USD in 1995 prices. Short sea-shipping not included as country breakdown is not available. Note that the scale of the right chart is one tenth that of the left chart.

Sources:
UNECE, 2001a; Eurostat, 2002a; World Bank, 2002.

Freight transport in the ACs is shifting to road, but the share of rail is still much larger than in the EU

Quality of data
AC: ★★
EU: ★★

Fact sheet(s)
Freight transport

The common transport policy aims at stabilising modal shares at 1998 levels by 2010, and at shifting traffic from road to rail and inland waterways from then onwards. For the EU this would require maintaining a 15 % rail share in road, rail and inland waterway freight transport.

In 1993, rail, with its 57 % share, was the most important inland freight transport mode in eight ACs[7]. By 1999, this share had dropped to 43 % (ranging from 28 % in Hungary to 75 % in Latvia). This is, however, still a much better performance than in the EU, where rail's share in inland freight transport (excluding short sea-shipping and oil pipelines) reached only 15 % in the same year, ranging from 2 % in Greece to 44 % in Austria.

There are several reasons for the shift of freight transport towards road in the ACs. Formerly eastern-oriented trade relations have shifted towards the west. These new trade relations demand new trade routes. Road is more flexible and efficient in providing for these new trade patterns.

Road freight transport has already been liberalised to a great extent, while the market liberalisation process is lagging behind for the railway sector. Small, privately owned hauliers can react more flexibly to the change in trade relations than state-owned railway undertakings. Moreover, much of the rail (freight) infrastructure was (and sometimes still is) unsuitable for these new freight routes.

Short sea-shipping has been quite successful in the EU, at least up to 1996 (the last year that EU-wide statistics are available for this mode). Statistics on maritime shipping are lacking for the ACs, but trends in maritime port activity suggest growth in this mode since 1992, especially in Estonia and Latvia.

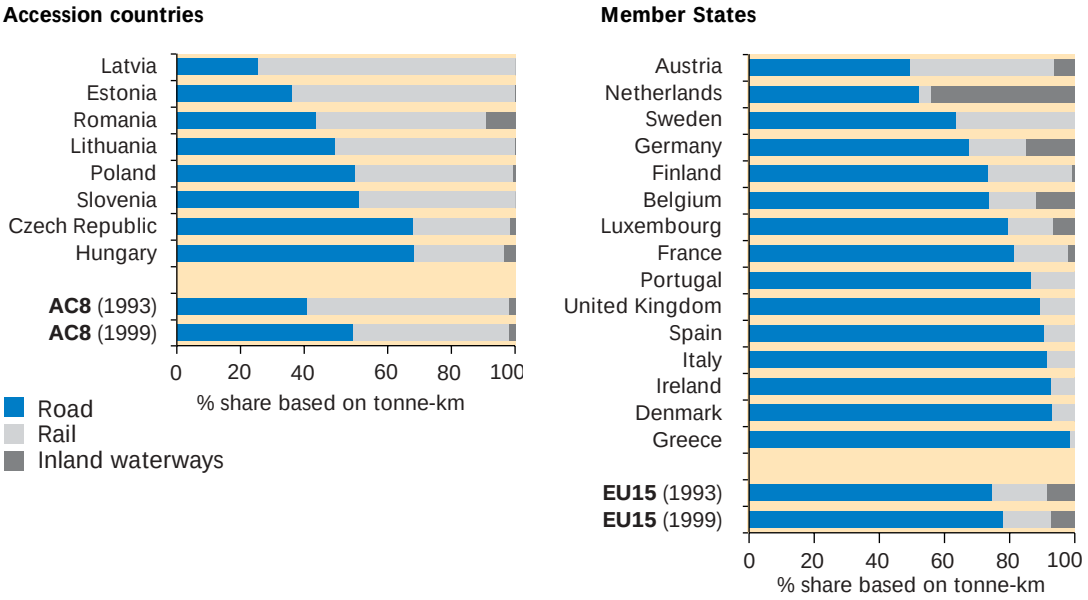
When including short sea-shipping, rail's share in the EU dropped from 10.4 % in 1991 to 8 % in 1999. Road haulage and short sea-shipping remain the main freight transport modes, with shares, respectively, of 43 % and 42 % of total tonne-km.

[7] Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania and Slovenia.

Figure 16 **Modal split in inland freight transport, 1999**

Note: Excluding short-sea shipping from the charts has a significant effect on modal split for coastal countries.

Sources : UNECE, 2001a; Eurostat, 2002a.



Passenger transport is growing in the ACs, but data are insufficient to quantify this

The common transport policy recognises that growth in passenger transport, as well as in freight transport, needs to be restrained to alleviate congestion problems and environmental pressures. Trends in passenger transport in the EU, as well as the ACs, seem to run counter to this objective.

Statistics on individual mobility by car are lacking for the ACs. However, rapidly growing car ownership levels, the decline in rail and public transport and the increase in transport energy consumption indicate dramatically growing car transport. For example, average car ownership in the ACs (excluding Turkey) increased from 146 per 1 000 inhabitants in 1990 to 223 in 1998[8]. Growth in car transport is highest in the ACs bordering on or near the EU, which are also those with the highest GDP per capita.

National and international air transport in the AC-10 has risen by 17 % since 1993 (no sufficient statistics available before 1993). Only Bulgaria and Romania show a decrease in the number of passenger-km by air.

In the EU, passenger transport increased by around 18 % between 1991 and 1999, remaining closely linked to economic growth. Rail transport grew by 8 % and bus/coach transport by 3 % over the same period. Aviation (national and international) is the fastest growing transport mode with a growth of 60 % since 1993.

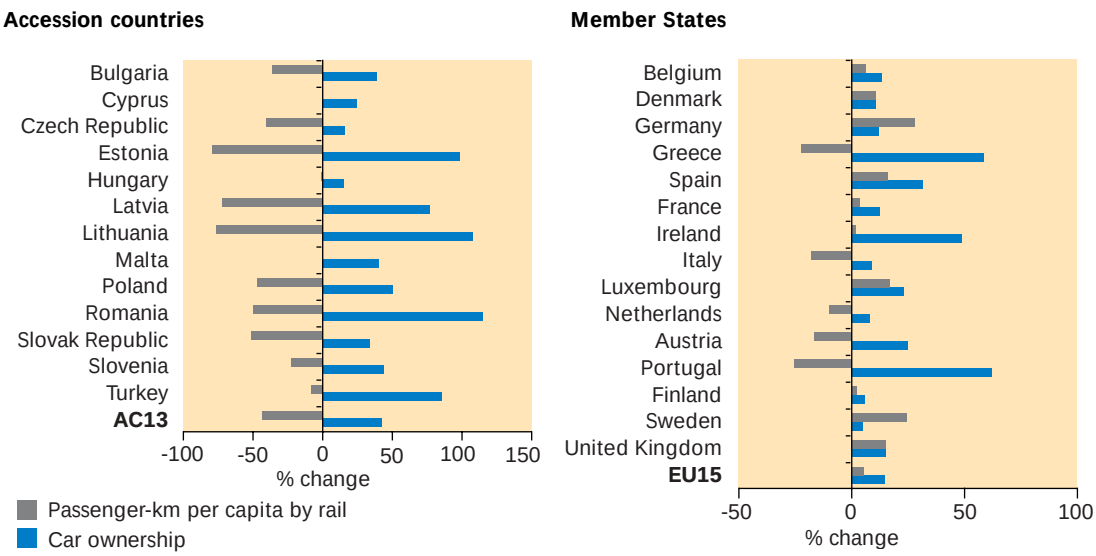
Data on non-motorised mobility (walking and cycling) are extremely scarce for the EU as well as the ACs and need to be improved.

Quality of data
Passenger transport
AC: ★
EU: ★★
Size of the vehicle fleet
AC: ★★★
EU: ★★★

Fact sheet(s)
Passenger transport demand
Size of the vehicle fleet

[8] If Turkey is included, the number of passenger cars per 1 000 inhabitants grew from 106 in 1990 to 161 in 1998. Turkey has a large population and low number of private cars.

Change in rail use (passenger-km per capita) and car ownership in ACs and EU between 1991 and 1999 — Figure 17



Notes:
Note that the scales used in the graphs are not equal. Passenger transport per capita by rail for AC-13, Estonia and Turkey refers to 1998. Car ownership for AC-13, Bulgaria and Turkey refers to 1998 data.

Sources:
European Commission, 2001i; UNECE, 2001a; Eurostat, 2002a.

Box 7: Car ownership, technology penetration and future expectations

Figure 18 illustrates the empirical relationship between car ownership per capita and GDP per capita. This is typically an 'S-curve', with three different phases (the last two of which can be recognised in the graph below).

Phase 1: Low income allows hardly any households to buy or own a car. The number of cars is low and increasing slowly. New technologies penetrate slowly.

Phase 2: Increasing personal income allows households to buy and run cars. The number of cars is low to average, but rising rapidly. New technologies penetrate rapidly as the composition of the vehicle fleet is changing rapidly (provided that the bought cars do not include too many second-hand vehicles).

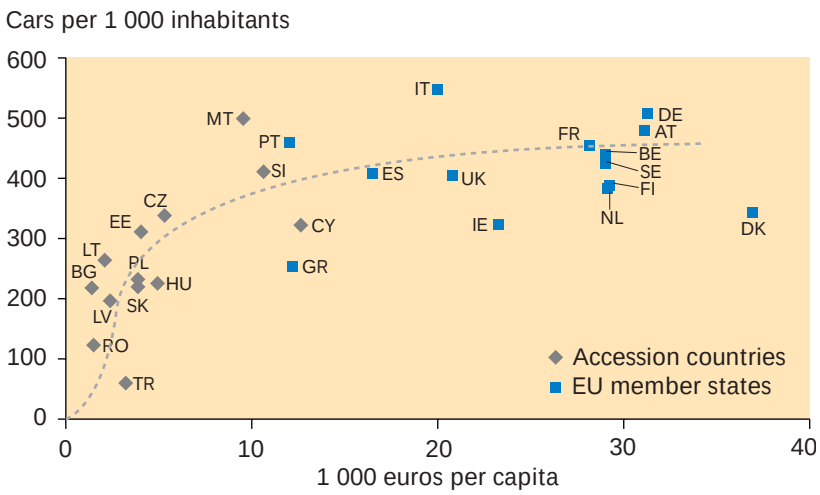
Phase 3: Most households now have cars and usually need no more than one or two cars. The number of cars is high, but slowly increasing. New technologies penetrate slowly.

In 1998 most ACs were at the end of phase one or in the early stage of phase two. If car ownership develops according to this theoretical S-curve, a virtual explosion in the number of cars can be expected with rising welfare. This could lead to rapid improvements in the environmental performance of the vehicle fleet if new cars penetrate the fleet and old cars are scrapped in an environmentally friendly way.

Figure 18 **Motorisation and GDP per capita in Europe, 1998**

Note: Country codes used refer to ISO 3166-1-alpha-2 code elements.

Sources: UNECE, 2001a; Eurostat, 2002a; World Bank 2002.



Passenger transport is shifting to road and air, but the share of rail in ACs is still well above the EU average

In the EU, the share of car use in passenger transport has remained more or less stable since 1990 (80.8 % in 1999). Passenger transport is shifting to air; domestic and intra-European aviation increased its share from 2 % to 3.1 %. The shares of public transport and rail dropped from 17.5 % to 16 %. These trends conflict with the common transport policy's stabilisation target.

Rail and public transport dominated the transport system in the ACs in the early 1990s. Data on passenger transport by car are available only for the Czech Republic and Hungary. In 1999, the share of car transport in total transport in the Czech Republic was 79 % and in Hungary 64 % (see Figure 19). Since these two countries are at the higher end of the scale of GDP per capita in the region, it can be assumed that the share of car transport is lower in other ACs.

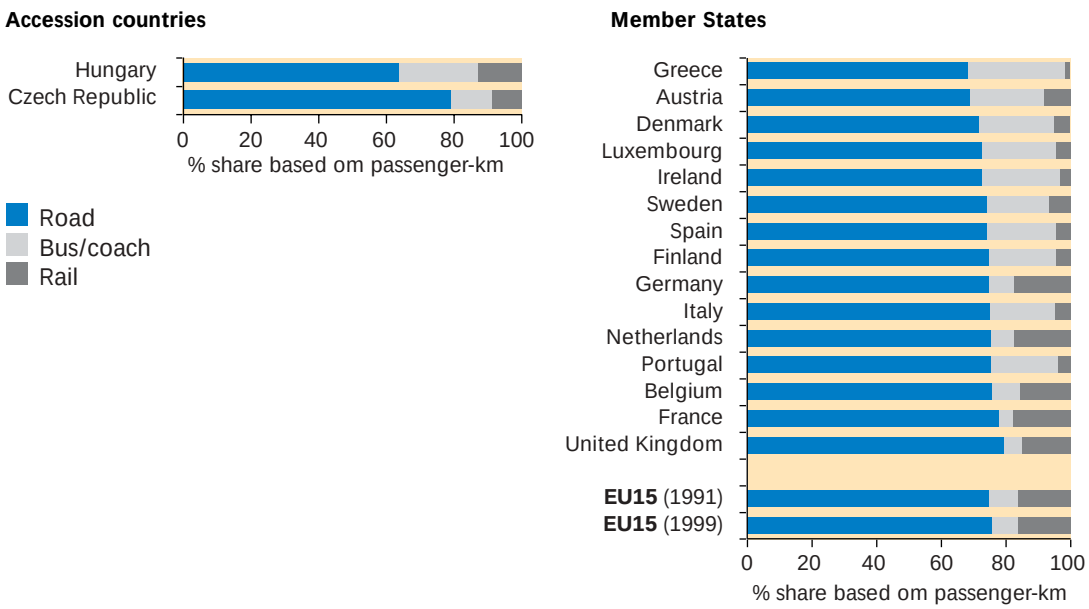
Another indication of increased car use is the dramatic growth in car ownership in the ACs. The link between car ownership and car usage seems to be stronger in the EU; the average annual mileage of passenger cars in the EU is around 21 000 to 22 000 km. In the Czech Republic, Hungary and Turkey (the only three countries for which data are available) this figure lies somewhere between 15 000 and 21 000. Differences in vehicle running costs, as opposed to the cost of vehicle ownership, and differences in road infrastructure capacity and quality between the EU and the ACs might explain these differences.

The under-financing of public transport and rail in the ACs, and the prioritisation of investments for road infrastructure upgrading or building, are an explanation of the shift towards car use. Deteriorating rolling stock and rail infrastructure has led to a decrease in the quality (in terms of frequency, comfort and availability) of public transport and rail. Combined with increases in fares, this makes these modes less attractive.

Quality of data
Passenger transport
AC: ★
EU: ★★

Fact sheet(s)
Passenger transport demand

Modal split in inland passenger transport in two ACs and EU, 1999 Figure 19



Sources:
UNECE, 2001a;
Eurostat, 2002a.

Are we optimising the use of existing transport infrastructure capacity and moving towards a better-balanced intermodal transport system?

A good quality multi-modal transport infrastructure network is an essential backbone for the economy and society. Clear EU policy objectives or targets, e.g. in terms of modal balance of infrastructure investments, are lacking however. The common transport policy considers the optimisation of the use of existing infrastructure capacity as a necessity for coping with future growth in traffic volume. The sustainable development strategy advocates 'giving priority, where appropriate, to infrastructure investment for public transport and for railways, inland waterways, short sea-shipping, intermodal operations and effective interconnection'. The sixth environmental action programme aims at promoting 'greener' land-use planning practices, in part through the implementation of strategic environmental assessment.

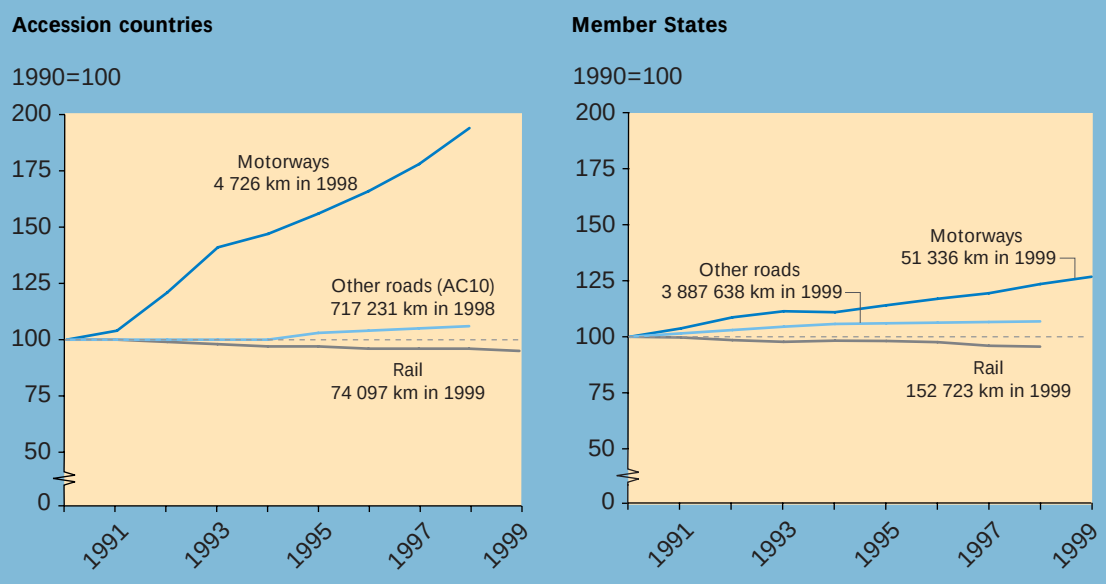
Statistics on infrastructure capacity and investments are poor. Trends in infrastructure lengths indicate that infrastructure investments are shifting road density in the ACs towards that in the EU. While the motorway length in ACs is still less than one tenth of the EU's, it almost doubled between 1990 and 1999. In both regions the length of railways is decreasing. ECMT statistics for the period 1993–95 show that 47 % of invest-ments in the ACs were devoted to road and 42 % to rail, and 62 % and 29 % in the EU, respectively. More recent figures on funding by international banks also indicate a bias towards road in both regions.

The multi-modal trans-European transport network (TEN-T) is a major pillar of the common transport policy. By 2015, the network's extension to the east — the 'TINA' network — is planned to cover 20 924 km of railways and 18 638 km of motorways. An overall assessment of the transport, economic, social, environmental impacts and benefits of the TEN or the TINA has not yet been made.

Figure 20 **Trends in transport infrastructure length in the ACs and EU, 1990–99**

Notes: Road, excluding motorways, is based on AC-10 (excluding Czech Republic, Estonia and Turkey). Oil pipelines and inland waterways remained more or less stable and are therefore left out of the chart.

Source: UNECE, 2001a (and Eurostat, 2002a for gap-filling).



Motorway lengths have almost doubled in 10 years, but AC road density is still lower than in the EU

The EU road network (in terms of length of roads per unit of surface area) is about 39 % denser than that in the ACs. The motorway length in ACs is less than one tenth of the EU motorway length. Current infrastructure building strategies in the ACs seem geared towards closing this gap. Total motorway length in the ACs almost doubled between1990 and 1999 (2 300 km built), while EU motorway lengths increased by almost a third (12 000 km built) (Figure 20).

Railway density is around 7 % higher in the ACs than in the EU when expressed as length per capita, but around 18 % lower when expressed per unit of surface area. The length of operational railways decreased in the ACs (by 5 %) and in the EU (by around 4 %) between 1990 and 1999.

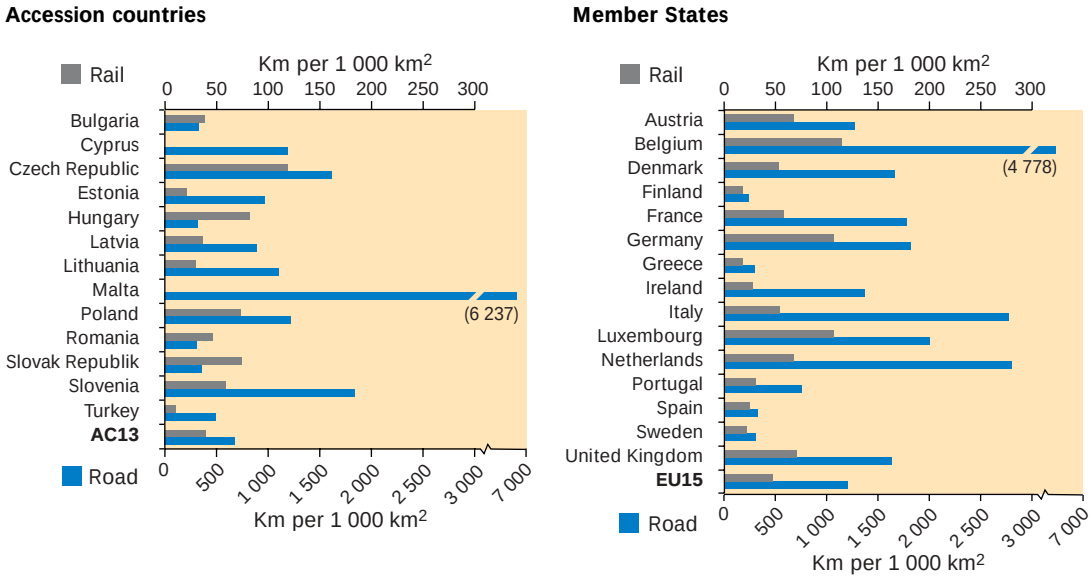
The development of the multi-modal trans-European transport network (TEN-T) is one of the major pillars of the common transport policy. The recently revised TEN-T guidelines include measures to improve rail capacity, encourage short sea and inland waterway shipping and promote integration between air and rail (European Commission, 2001e). The building of the TEN road network is however running ahead of the railway network development. In 2001, only 2 800 km of high-speed railway lines were in service, and it is expected that the completion of the 12 600 km network will take until 2020.

The extension to the east of the TEN-T builds on the end report of the TINA process (transport infrastructure needs assessment) (TINA Senior Officials Group, 1999). The outline maps that have been developed on the basis of this report will be integrated in the TEN-T guidelines upon the countries' accession. By 2015, the TINA rail network is planned to extend to 20 924 km and the road network to 18 638 km (European Commission, 2001f).

Quality of data
AC: ★★
EU: ★★

Fact sheet(s)
Capacity of infrastruckture networks

Length of roads and railways per surface area, 1998, EU and ACs Figure 21



Notes:
Length of roads in Estonia and Turkey based on 1997 figures. Road length in Greece based on 1994 figures, and in Italy, the Netherlands and Portugal on 1997 figures. Railway density is for AC-11 only as no railway lines exist in Malta and Cyprus.

Source:
UNECE, 2001a.

The limited data on investments indicate a prioritisation of road investments

Quality of data
AC: ★★
EU: ★★

Fact sheet(s)
Infrastructure investments

Transport investment policies in the EU have traditionally focused on extending infrastructure, particularly roads, as a response to increasing traffic demand. Better road networks, in turn, have further boosted road transport.

The few statistics available on transport infrastructure investments show that between 1993 and 1995 47 % of infrastructure[9] spending in the ACs went to roads and 42 % to railways. In the EU, road received 62 % of total investment, and rail 29 %, i.e. a larger share than its share in transport volume. This has, however, not been sufficient to make rail flexible enough to meet new transport demands. Maintenance budgets are allocated mainly to railways in the ACs (54 %) and to roads in the EU (72 %).

Figures on infrastructure funding by the European Investment Bank and the European Bank for Reconstruction and Development (Box 8) provide an indication of more recent investment trends in the ACs, which are more in favour of road.

Between 1998 and 2000, the Phare programme contributed funding to 52 transport infrastructure projects in the ACs (for a total of EUR 120 million a year), 60 % of which were road projects (IEEP, 2001).

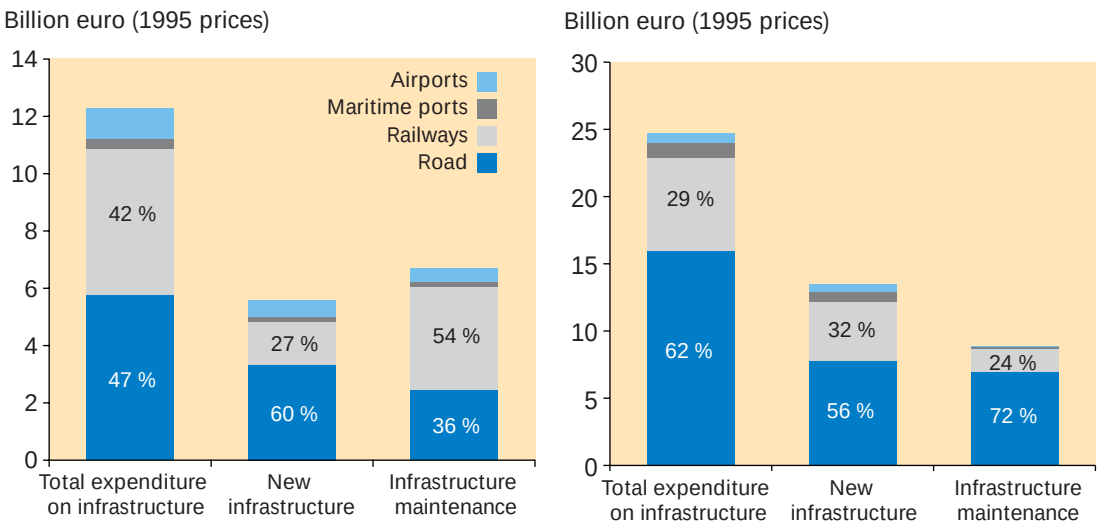
The ISPA (instrument for structural policies for pre-accession) is the European Community's financial instrument designed to assist 10 ACs to meet EU requirements in the fields of environment and transport. ISPA funding in the transport sector focuses on the extension and improvement of the TINA network. An initial estimate of the costs of construction and restoration of this network up to 2015 was EUR 91.5 billion, 48 % for the road network and 40.5 % for rail. In 2000 and 2001, the Commission approved EUR 6 billion ISPA funding, with 61 % going to transport projects, equally shared between rail and road (European Commission, 2001f).

[9] Including on roads, railways, maritime ports and airports.

Figure 22 **Modal distribution of cumulative investments between 1993 and 1995 in transport infrastructure, ACs and EU**

Notes:
'New infrastructure' refers to new construction, extension, reconstruction, renewal and major repairs; 'Infrastructure maintenance' refers to smaller repairs and standard maintenance.
The graph showing accession countries refers to eight countries only (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania and Slovak Republic).
The three Member States included are Belgium, the Netherlands and Sweden.

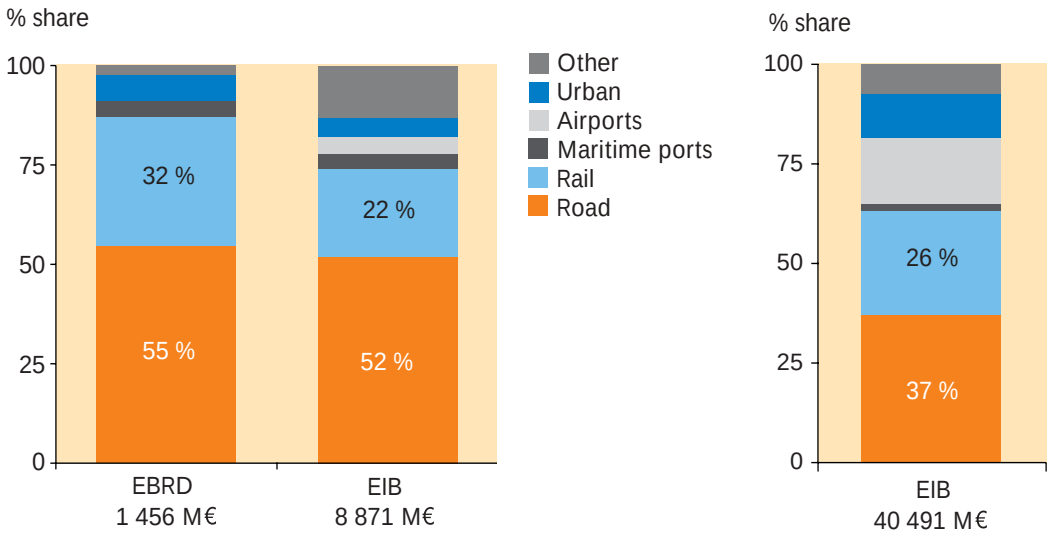
Source:
ECMT, 1999.



Box 8: Funding by the EIB and EBRD

An indication of more recent investment trends can tentatively be derived by looking at loans by the European Investment Bank (EIB) and investments made by the European Bank for Reconstruction and Development (EBRD). Even though these account for only a part of the total financing for transport infrastructure, funding by international banks is often a catalyst to attract funding from the private sector and other international financial institutions. Both the loans signed and the investments made by the EIB and EBRD incline towards road, in the ACs as well as in the EU. Despite the EIB being an important contributor to almost all major railway investment projects in the ACs (EIB, 2001b), rail investments cover 24 % of all loans signed by the bank, compared with 59 % for road. The imbalance between road and rail investments has worsened in the ACs since 1995, when road transport volumes recovered rapidly and rail traffic continued to decline. Under these circumstances, funding for road improvements was probably easier to obtain than for rail.

Modal distribution of transport infrastructure funding by EIB and EBRD, ACs and EU — Figure 23



Notes:
EIB data for the ACs refers to 1990 to June 2002, for the EU to 1995–2001. 'Other' for ACs refers to repairs of different infrastructure after floods (Czech Republic, Hungary and Poland), oil pipelines (Czech Republic and Slovak Republic), multi-modal (road-rail) transport (Czech Republic) and improvement of navigation on the Sulina Canal in the Danube delta (Romania).

Sources:
EBRD, 2002; EIB, 2001a; EIB, 2002.

Are we moving towards a fairer and more efficient pricing system, which ensures that external costs are internalised?

Transport impacts such as accidents, air pollution, climate change and noise impose considerable costs on society. Internalisation of these costs through a restructuring — and where necessary an increase — of transport-related taxes and charges is one of the keys of the common transport policy's 'fair and efficient pricing' strategy.

In the EU, differentiation of taxes and charges currently concentrates on air pollution in the road sector and noise in the aviation sector. Few measures have yet been taken to internalise the costs of CO_2 emissions and of rail and road noise. An EU pricing framework is under development.

Not many instruments can be found in ACs that aim directly at internalising the external costs caused by transport users through their individual trips. Examples have been found only in Cyprus, the Czech Republic and Slovenia.

In the EU, tax differentiation between leaded and unleaded petrol has proved an effective instrument to help phase out leaded petrol. Five ACs are also giving such tax incentives, while three have (almost) taken leaded petrol from their markets. In Turkey, leaded petrol is, however, cheaper than unleaded. As in the EU, diesel is generally cheaper than petrol.

An increase in fuel prices and taxes could promote more energy-efficient driving. However, despite increases in the share of fuel taxes in the price of fuel, a reduction in pre-tax prices has led to cheaper fuel in real terms across the EU. In ACs the reverse is true: pre-tax fuel prices have increased, and taxes have decreased.

Data and information on transport costs and on internalisation of externalities are very scarce for the ACs. Significant efforts are needed to enable the TERM indicators in this area to be fully developed.

Table 2 **Total number of (non-fuel-related) internalisation measures introduced in the ACs and EU**

Accession countries		Member States	
Bulgaria	–	Austria	3
Cyprus	1	Belgium	3
Czech Republic	1	Denmark	3
Estonia	–	Finland	3
Hungary	–	France	1
Latvia	–	Germany	5
Lithuania	–	Greece	–
Malta	–	Ireland	–
Poland	–	Italy	1
Romania	–	Luxembourg	1
Slovak Republic	–	Netherlands	5
Slovenia	–	Portugal	1
Turkey	–	Spain	3
		Sweden	5
		United Kingdom	4

External costs of transport are not yet quantified for the ACs

Transport imposes significant costs on societies, as the impact of factors such as accidents, air pollution, climate change and noise nuisance result in increased expenditure on health care and economic losses (e.g. in terms of labour force, material damage, loss of nature resources). In the EU plus Norway and Switzerland (EU+2) external costs from transport were estimated at 8 % of GDP in 1995 (Infras/IWW, 2000). Car use causes the largest share of externalities (58 %), followed by heavy-duty vehicles (21 %). Road transport as a whole accounts for 92 % of external costs while the share of rail and water transport is very small.

The marginal external costs (see Box 9) — which form the best basis for the establishment of internalisation instruments — vary considerably between and within transport modes. They also depend heavily on the type of vehicle, the fuel used, and on the specific traffic situation. Hence, flexible pricing instruments are needed to internalise such costs in an effective way. Passenger cars, trucks and aviation have the highest external costs per transported unit. The shift of transport from rail and public transport towards road and aviation, long established in the EU and now also emerging in the ACs (see page 30 and 33), therefore also means that external costs per passenger- or tonne-km are increasing.

Data on external costs in the ACs are currently lacking. As freight transport intensity in the ACs is four to five times higher than in the EU, it is expected that external costs, relative to GDP, are also fairly high in ACs, and increasing. The OECD — in cooperation with the Central European Initiative (CEI) — has commissioned a study to estimate the external costs for the CEI member countries[10], using a similar estimation methodology as for the EU+2. This will in future allow a more in-depth comparison between externalities in the EU and the ACs.

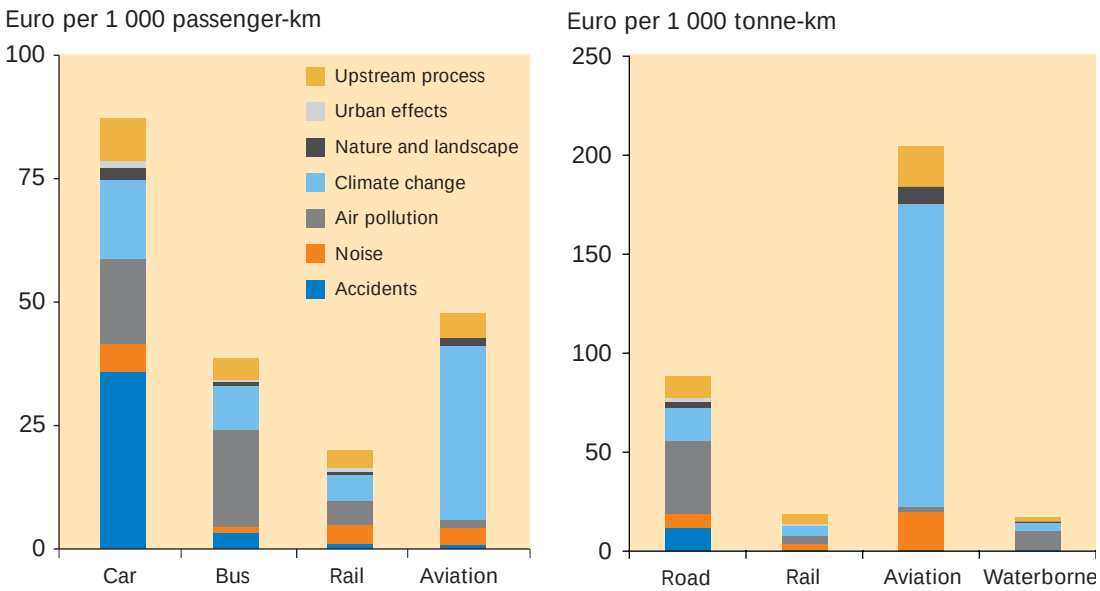
Quality of data
AC: not available
EU: ★

Fact sheet(s)
External costs of transport

[10] Albania, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Former Yugoslav Republic of Macedonia, Hungary, Moldova, Poland, Romania, Slovak Republic, Slovenia, Ukraine.

Average external costs of transport by transport mode and cost category (excluding congestion and uncovered parking costs), EU, Norway and Switzerland, 1995

Figure 24



Source:
Infras/IWW, 2000

Few internalisation instruments are in force in the ACs

Quality of data
AC: ★
EU: ★

Fact sheet(s)
Internalisation of external costs

In the ACs, few market-based instruments are as yet being applied to internalise externalities (see Table 3). Slovenia applies a CO_2 tax on motor fuels (diesel and petrol); Prague (Czech Republic) and Cyprus airports apply differentiated landing fees. Cyprus applies a 20 % increase in landing fee for evening and night flights. Road tolls are found in the Czech Republic, Hungary and the Slovak Republic, but these cannot be considered as measures to internalise environmental external costs.

Vehicle registration taxes and annual road taxes are commonly used in the ACs, but are less suitable as internalisation instruments, as they vary only according to the sale price, weight or engine capacity of the vehicle. Estonia, Hungary and Poland also have differentiated import duties for imported cars on the basis of the car's age and the presence or not of a catalytic converter (IEEP, 2001).

In the EU (Table 4), several countries have introduced certain internalisation instruments, though implementation still faces many barriers. Most instruments concentrate on air pollution in the road sector and noise in the aviation sector. Excise duties on fuel for road transport already internalise CO_2 emissions. Few other measures have yet been taken to internalise the costs of CO_2 emissions and of rail and road noise. Germany and the UK (London) are taking initiatives to restructure transport taxes and charges to better internalise external costs. The European Commission is developing a framework directive on infrastructure charging (see Box 9).

Differentiation of taxes on leaded and unleaded petrol is a good example of the effective use of market-based instruments to reduce the environmental impact of transport. In the EU this has helped phase out leaded petrol. Five ACs (Bulgaria, Latvia, Poland, Romania and Slovenia) levy higher taxes on leaded than on unleaded petrol. In Hungary, Lithuania and the Slovak Republic leaded petrol is no longer sold. In Turkey, leaded petrol is taxed less than unleaded. Both in the EU and the ACs tax incentives are emerging to promote the use of low or ultra-low sulphur fuels (Poland, Turkey and seven Member States).

Introduction of internalisation instruments in the ACs Table 3

	Non fuel-related tax and charges									Fuel-related tax and charges		
	Air pollution					CO_2		Noise		Lower fuel tax for unleaded petrol	Lower fuel tax for low-sulphur fuel	Carbon tax on diesel and petrol
	Road passenger	Road freight	Rail	Water	Air	Road passenger	Rail	Road freight	Aviation			
Bulgaria										✓		
Cyprus									✓			
Czech Republic									✓			
Estonia												✓
Hungary										(*)		
Latvia										✓		
Lithuania										(*)		
Malta												
Poland										✓	✓	
Romania										✓		
Slovak Republic										(*)		
Slovenia										✓		
Turkey											✓	

Note: (*) leaded petrol no longer sold

Box 9: Principles of internalisation

The main principles for internalisation are:

- the price of transport services should equal the marginal social (short-run) costs incurred;
- governments or public authorities should introduce policy instruments and measures to fully reflect these costs in the prices of transport services.

Implementation of these principles can be achieved through a combination of direct regulatory instruments (e.g. vehicle standards) and market-based instruments such as taxes and charges, subsidies and tradable polluting permits. Such measures should encourage shifts to cleaner and safer vehicles and fuels, shift demand away from peak periods, promote safer driving and increase vehicle occupancy rates.

Market instruments are most effective when there is a direct link between the level of the levy and the actual (short-run) marginal external costs incurred by each individual trip. Fuel excise duties are a good example, because of their direct link with fuel consumption and CO_2 emissions. They are, however, less suitable for addressing external effects (such as air pollution, noise, accidents and congestion) that depend on trip characteristics such as when and where. A kilometre charge — differentiated according to vehicle and trip characteristics — is generally considered to be the most appropriate internalisation instrument (CE, 1999).

The Commission is currently studying appropriate methodologies and is developing a framework directive on infrastructure charging (European Commission, 2001a). This will, as a first step, focus on road freight transport. In addition, the Commission (European Commission, 2002f) recommends that Community legislation could be submitted that would provide for:

- the gradual reduction of registration taxes to a low level, preferably with a view to their total abolition;

- the restructuring of annual circulation taxes and registration tax bases, in order to make these taxes more CO_2-efficient and more consistent with the internal market.

Table 4 **Introduction of internalisation instruments in the EU**

	Non fuel-related tax and charges									Fuel-related tax and charges		
	Air pollution					CO_2		Noise		Lower fuel tax for unleaded petrol	Lower fuel tax for low-sulphur fuel	Carbon tax on diesel and petrol
	Road passenger	Road freight	Rail	Water	Air	Road passenger	Rail	Road freight	Aviation			
Austria		✓				✓		✓		(*)		
Belgium	✓	✓							✓	(*)	✓	
Denmark	✓	✓				✓				(*)	✓	
Finland			✓	✓			✓			(*)	✓	✓
France									✓	(*)		
Germany	✓	✓					✓	✓	✓	(*)	✓	
Greece										✓		
Ireland										(*)		
Italy									✓	(*)		✓
Luxembourg		✓								(*)		
Netherlands	✓	✓		✓		✓			✓	(*)	✓	
Portugal				✓						(*)		
Spain	✓	✓			✓						(*)	
Sweden	✓	✓		✓	✓				✓	(*)	✓	
UK		✓		✓		✓			✓	(*)	✓	

Note: (*) leaded petrol no longer sold

Trends in fuel prices are not encouraging the use of more fuel-efficient transport modes

Fuel prices are a mix of market price and taxes (excise + VAT), and fuel taxes are the simplest method for governments to influence prices. However, there is a relationship between the price set by the fuel producer and the excise duty imposed. The UK, for instance, has the highest excise duty for unleaded and the lowest cost price of EU Member States. Portugal has the lowest excise duty (with Greece) but the highest cost price. Thus tax policies to influence fuel choice can be offset by producers adjusting their selling price accordingly.

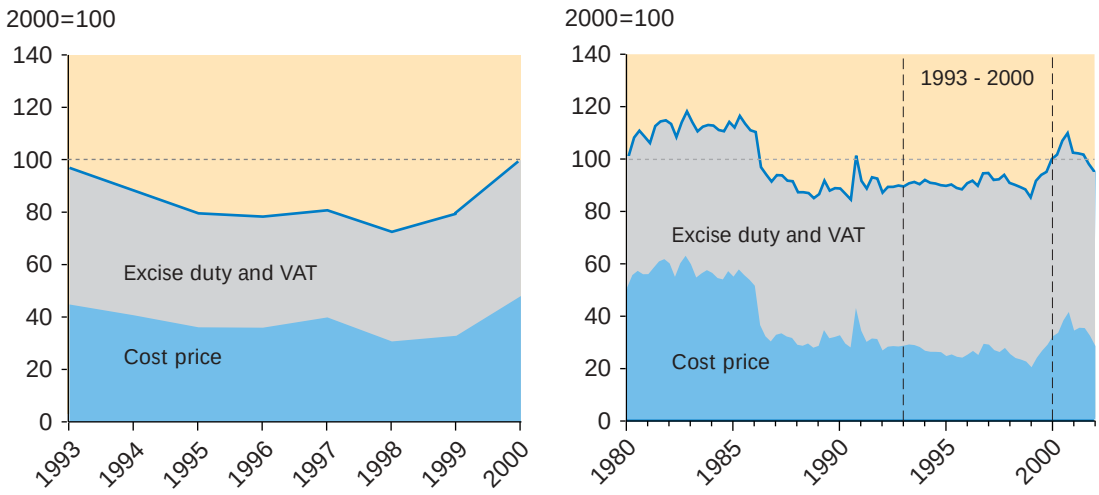
The inflation-corrected EU average price of road fuel in January 2002 was about 5–10 % lower than in the first half of the 1980s. However, some incentives have been given to reduce total fuel consumption and CO_2 emissions, because the share of taxes in the fuel price has increased. The price differential between petrol and diesel has become smaller. Petrol has become about 15-20 % cheaper, diesel about 10 % more expensive, primarily due to higher diesel taxes. In rail transport, fuel taxes are much lower. Inland and maritime shipping and aviation pay no fuel tax at all.

Data for the ACs are scarce, which hinders any analysis. Data for the Czech Republic, Hungary, Poland and Turkey show that in these countries average fuel prices dropped between 1993 and 1998 (only diesel is shown in the graph below). During this period, the average disposable income in the four countries began to rise. Hence, the development of fuel prices did not give a stimulus for transport modes other than road. Since 1998, fuel prices (inflation-corrected averages) have increased sharply, and now slightly exceed (by 2–3 %) the high level in 1992–93. Diesel is about 15 % cheaper than unleaded petrol and has a 7 % lower tax rate.

Quality of data
AC: ★
EU: ★★★

Fact sheet(s)
Fuel prices and taxes

Weighted average fuel (EU) and diesel (ACs) cost price, VAT and excise duties Figure 25



Note:
Chart for EU refers to the weighted average price of unleaded petrol and diesel, based on sales figures. As sales figures are not available for the ACs (Czech Republic, Hungary, Poland and Turkey), only diesel is shown. Note also the difference in time period between the two charts.

Sources:
IEA, 2001b;
Eurostat, 2002b.

How rapidly are cleaner technologies being introduced and how efficiently are vehicles being used?

In the EU, environmental regulations and voluntary agreements with the car manufacturing associations have resulted in significant decreases in emissions per tonne- or passenger-km for road vehicles. No recent EU-wide data exist on the performance of other modes. The integration of EU standards on fuels and vehicles into the ACs' national legislation is likely to lead to a similar improvement in the environmental performance of new vehicles. Data on specific emissions — which are necessary to support such an assessment — are lacking, however.

The dramatic growth of the car fleet in the ACs must also have significantly influenced its composition (e.g. average age). Again, detailed statistics are not available. The effect of this changing composition on the environmental performance of the entire passenger car fleet is unknown, but probably positive. Obsolete vehicles are being scrapped and replaced by newer models complying with higher environmental standards, which resulted in stable emissions from road transport in the second half of the 1990s despite the explosive growth in the numbers and usage of cars.

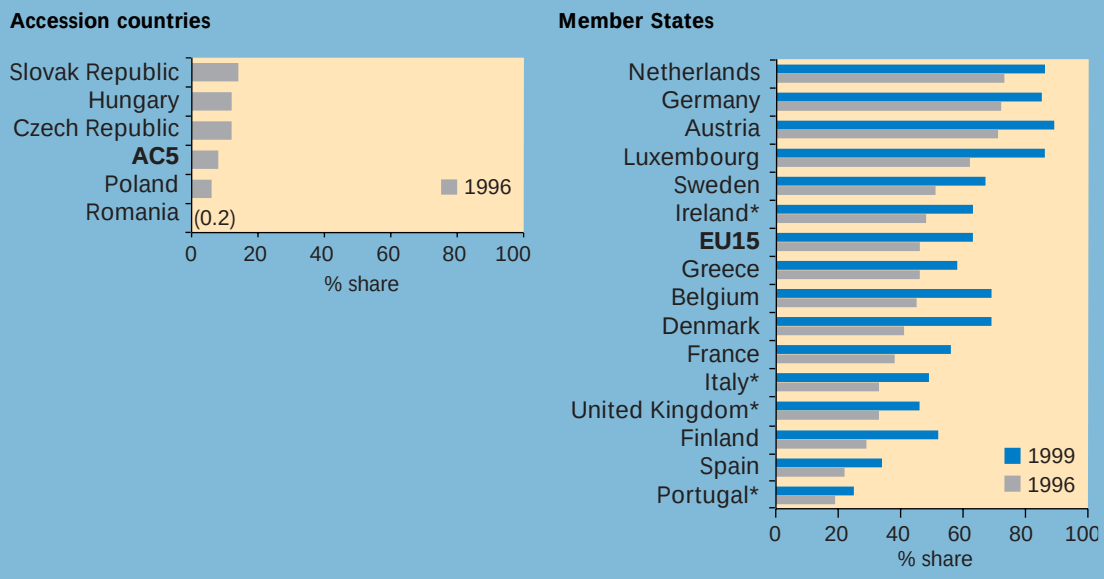
In 1996, the Member States were on average probably five to six years ahead of ACs in respect of technology penetration in the passenger car fleet. Per capita, the emission of NO_x by transport in the ACs was half that in the EU, while transport energy consumption in the ACs was less than a third of that in the EU. This illustrates that the EU — while using more energy per person — is more advanced in the use of cleaner fuels and vehicles. In some cases, however, ACs performed better than Member States.

No data are available for transport energy efficiency in the ACs, but statistics for the EU show that the average energy efficiency of all transport modes, except rail, improved slightly between 1990 and 1999. With gradual fleet renewal, a similar development in energy efficiency is expected for the ACs, provided that old vehicles are disposed of and replaced by newer ones.

Figure 26 **Percentage of petrol cars fitted with catalytic converters in ACs (1996) and the EU (1996 and 1999)**

Sources: Eurostat, 2002a; REC, 1998; UNECE, 2001a.

Note: Data from Ireland, Italy, the United Kingdom and Portugal refers to 1996–98 instead of 1996–99.



No data on energy efficiency are available for ACs; in the EU all modes except rail show some improvement

Quality of data
AC: not available
EU: ★★

Fact sheet(s)
Energy efficiency and specific CO_2 emissions

The Community strategy to reduce CO_2 emissions from passenger cars consists of:

- the voluntary agreement with the European, Japanese and Korean car manufacturers regarding the reduction of average CO_2 emissions of new cars sold in the EU;
- the car-labelling directive (1999/94/EC[11]), which came into force at the beginning of 2001 but has still to be implemented by several countries;
- a recent Commission proposal for a road taxation system based on engine CO_2 emissions (European Commission, 2002f).

Between 1990 and 1999, the energy efficiency of EU car transport improved by 2 %. The car manufacturers are on track to meet their intermediate targets — CO_2 emissions from *new* cars were reduced by 10 % between 1995 and 2001 — but extra efforts are needed to reach the 120 g CO_2/km target set out in the Community strategy by 2010 (European Commission, 2002g). The increased share of diesel cars in sales, which partly explains the specific emission reduction, raises concerns regarding higher emissions of particulates and NO_x.

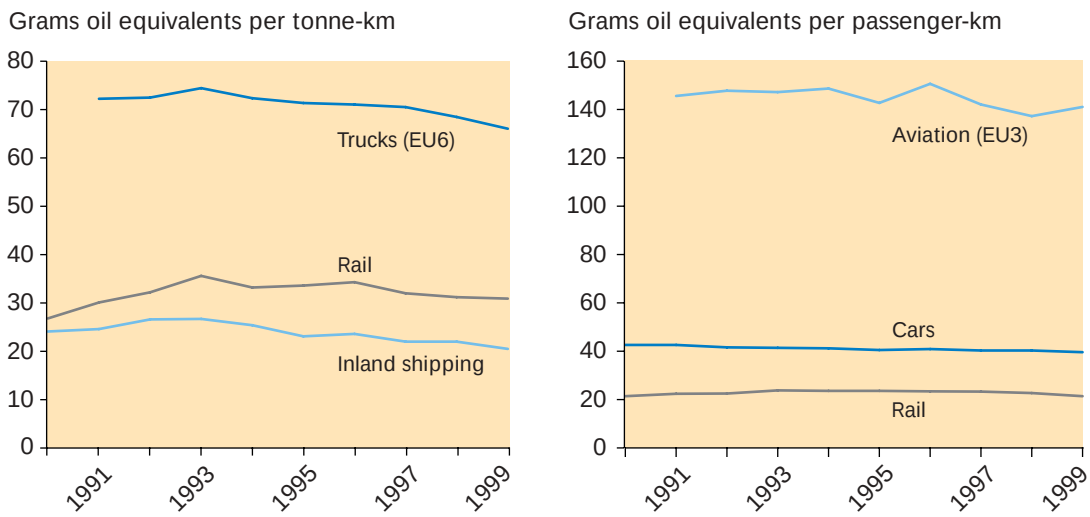
General technical improvements have also led to improvements in the energy efficiency of road freight transport in a number of Member States. Trucks and vans are not yet included in the voluntary agreement. The Commission has submitted a proposal to measure CO_2 emissions and fuel consumption from light commercial vehicles (European Commission, 2001h) and is studying measures to reduce their CO_2 emissions.

EU policies still need to address other transport modes. There have been no improvements in the energy efficiency of rail, but this remains the most energy-efficient mode. Despite improvements during the 1990s, aviation is generally the least energy efficient.

Meanwhile, transport energy consumption continues to grow dramatically (see page 17), indicating that technology improvements are being offset by growth in transport.

[11] OJ L 012, 18/01/2000 pp. 16–23.

Energy efficiency of freight and passenger transport, EU 1990–99 Figure 27



Note:
Trucking and aviation refers to the weighted average of Austria, Denmark, France, Germany, Italy and the UK (trucks), and Denmark, Finland and Germany (aviation).

Source:
ODYSEE, 2002.

No data are available for ACs on specific emissions of vehicles; EU road vehicles show significant improvement

Quality of data
AC: not available
EU: ★★

Fact sheet(s)
Specific emissions

In the EU, the specific emission of pollutants from road vehicles has fallen significantly over the past decade, due to the tightening of emission standards for new vehicles, higher fuel quality and regular inspection and maintenance of vehicles. Up-to-date specific emission data from aircraft, ships and rail transport are still poor and, in the case of rail, vary considerably depending on the method of power generation.

More stringent emission standards have already been agreed for cars and trucks, and are proposed for motorcycles. Projections for the EU show that further reductions for all pollutant emissions can be expected from road transport, as a result of more stringent emission limits, fuel quality standards and improved technologies (EEA, 2002f; OECD, 2002a). The basic assumption underlying these projections is a properly maintained vehicle fleet and sufficient penetration of new technologies.

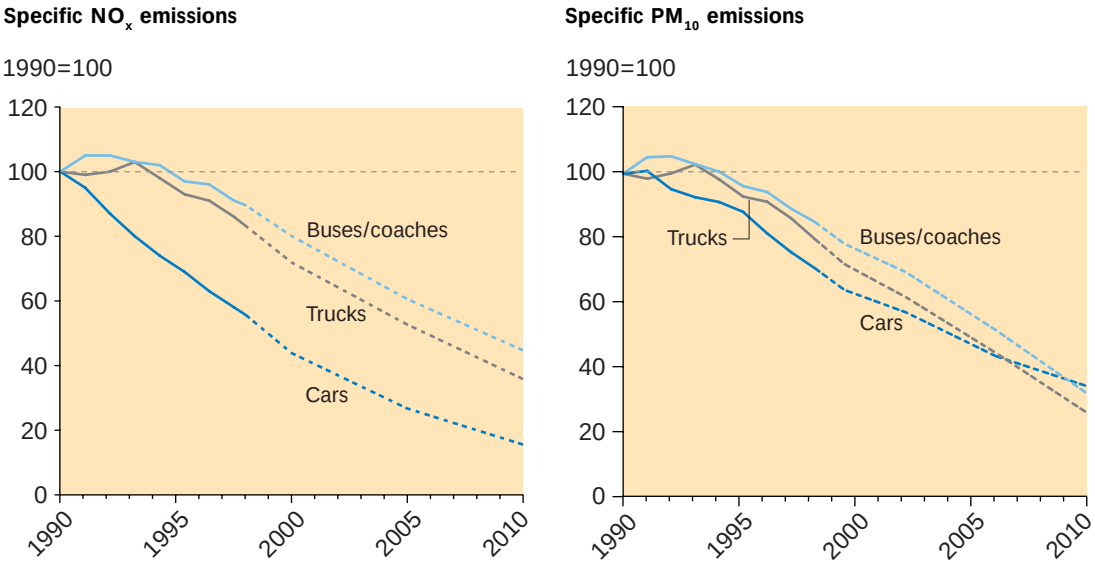
In general, rail, ship and bus/coach transport are estimated to be the least polluting modes of transport, when comparing emissions per passenger-km and tonne-km. Air and road transport are the most-polluting modes. However, no recent pan-European *measured* data exist on the specific performance of trains (including the electricity-generating techniques), ships and aircraft.

No specific emission data were obtained for the ACs. However, with on average an older vehicle fleet (see page 47), using less clean fuels, the average vehicle in the ACs probably has higher emissions per kilometre than the average EU vehicle.

Figure 28 **Modelled specific emissions of NO_x and PM_{10} per passenger-km (cars and buses) and tonne-km (trucks), EU 1990–2010**

Notes:
The indices for cars and buses/coaches are based on grams NO_x or PM_{10} emitted per passenger-km; the index for trucks is based on grams per tonne-km. NO_x and PM emissions stand model for NMVOC and CO emissions.

Source:
EEA, 2002f.



The AC vehicle fleet is on average four to five years older than the EU fleet

The average age of passenger cars in a selection of ACs (covering more than 80 % of the total car fleet) was around 11.5 years in 1996, ranging from 6.5 years in Slovenia to 15 in Bulgaria. In the EU this figure was just over 7 years in 1996. This suggests that it takes longer for new vehicle technologies to penetrate into the car fleet in the ACs than in the EU, and that the vehicle fleet in the ACs probably has a worse environmental performance than that in the EU. The same goes for trucks, with an average age in the ACs of 11.4 years for more than two thirds of the entire truck fleet. No data have been obtained on the average age of trucks in the EU.

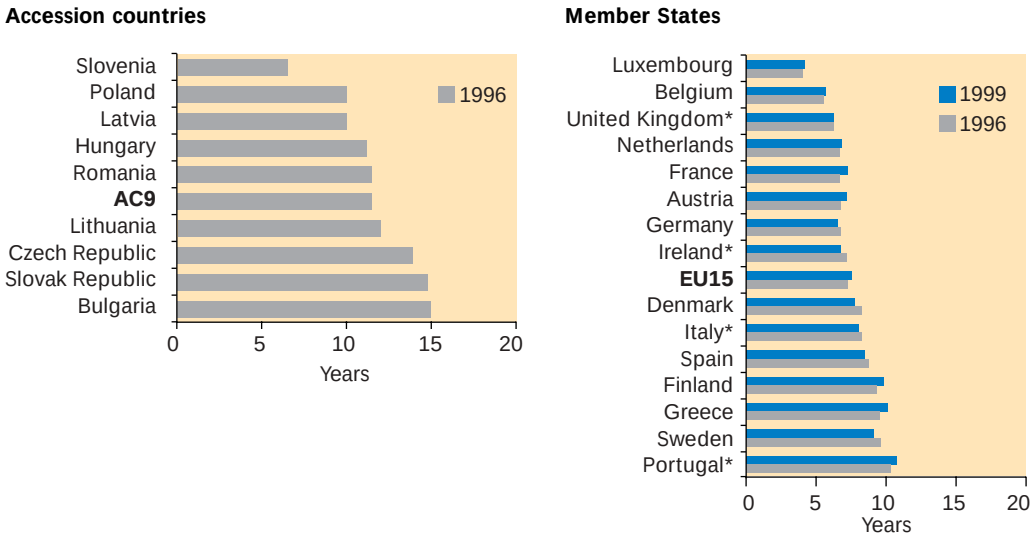
The EU vehicle fleet is getting older, slowing the rate of clean technology penetration — the average age of the car fleet increased between 1990 and 1999 by one year. No time series on average age is available for the ACs, but the strong growth in passenger cars, combined with a steep growth in the number of end-of-life vehicles in the ACs, indicates rapid vehicle replacement, which probably brings down the average age of vehicles. The introduction of scrappage schemes (as in Hungary since 1993) and banning the import of certain second-hand cars (as in Romania and Slovenia) should further enhance this process.

Outdated public transport equipment (European Commission, 1999a), aircraft fleets and ship fleets is another problem, particularly in the ACs. Implementing EU legislation with respect to technology and safety standards will eventually lead to trains, rail and ships complying with such standards, while obsolete aircraft will gradually be banned from European airports, mainly because of noise restriction policy. The rate at which these improvements will penetrate the rail, ship and aircraft vehicle fleet depends, among other factors, on the extent to which obsolete vehicles are replaced by second-hand ones and the environmental performance of such replacements.

Quality of data
AC: ★
EU: ★★

Fact sheet(s)
Average age of the vehicle fleet

Estimated average age of passenger cars in ACs (1996) and the EU (1996 and 1999) Figure 29



Note:
Data from the United Kingdom, Ireland, Italy and Portugal refers to 1996–98 instead of 1996–99

Sources:
Eurostat, 2002a; REC, 1998; UNECE, 2001a.

Uptake of vehicle and fuel standards is improving, but the share of cars with catalytic converters is still low in ACs

Quality of data
Cleaner fuels
AC: ★
EU: ★★★
Emission standards
AC: ★
EU: ★

Fact sheet(s)
Uptake of cleaner and alternative fuels
Proportion of vehicle fleet meeting certain emission standards

The integration of EU legislation on vehicle and fuel standards is an important part of the accession process. In 1996, the share of petrol-engined cars fitted with catalytic converters in the ACs was estimated at 7.7 % (see Figure 26 on page 44). This corresponds to the situation in the EU in 1990, indicating a backlog in technology penetration within the ACs of about six years. There were wide variations between countries, with shares ranging from 0.2 % in Romania to 11 to 14 % in the Slovak Republic, the Czech Republic and Hungary. Much has changed since 1996, but no more recent AC-wide statistics are available in international databases.

The EU has entirely phased out leaded petrol, a goal that was regulated by Directive 98/70/EC[12]. The ACs should reach a complete phase-out from the moment of their accession. The uptake of unleaded petrol varied significantly among ACs in 1996, with a 100 % uptake in the Slovak Republic and a 6 % uptake in Bulgaria. In that year, the uptake of unleaded petrol in some ACs was even greater than that in the Mediterranean EU countries.

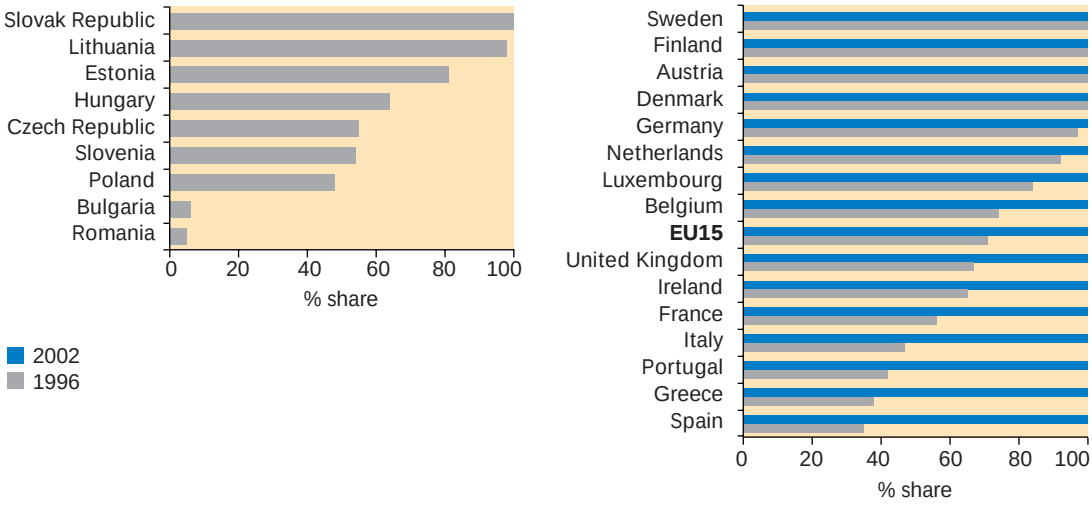
The EU also requires the level of sulphur in petrol and diesel to be reduced to less than 50 ppm (parts per million) from 2005 onwards (Directive 98/70/EC). The Commission recently proposed the use of zero-sulphur petrol (below 10 ppm) to be mandatory from 2011 (European Commission, 2001g). A number of Member States have already introduced tax incentives to promote low-sulphur fuels, or plan to do so (see page 40).

Despite the efforts of the EU to promote alternative and renewable energies for transport, these still have a low penetration. The communication on biofuels sets a target of 6 % penetration by 2010 (European Commission, 2001d). A number of studies, however, have suggested that biofuels are only slightly less greenhouse gas intensive than conventional fuels, and could lead to more intensive monocultures, with adverse effects on biodiversity and groundwater.

[12] OJ L 350, 28/12/1998 pp. 58–68.

Figure 30 **Share of unleaded petrol in total petrol deliveries in ACs (1996) and EU (1996 and 2002)**

Sources: Eurostat, 2002a; REC, 1998; UNECE, 2001a.



Are environmental management and monitoring tools being used effectively to support policy-making?

The administrative efforts of ACs in the area of transport and environment are currently targeted mainly at transposing the Community *acquis* into national legislation, and strengthening the administrative capacity to ensure implementation. Ministries frequently have to cooperate in this process by forming inter-ministerial working groups. Few ACs have constituted formal and long-term cooperative bodies on transport and environment. Only the Slovak Republic has drafted an integrated transport and environment strategy.

In the EU cooperation between ministries is more developed. The Cardiff process is progressing: at least 12 Member States have developed or are developing integrated transport and environment strategies.

As in the EU, several sets of transport and environment statistics are collected in the ACs, but the delivery of such statistics to international organisations needs to be improved. None of the ACs monitors progress on transport and environment in an indicator report, whereas at least six Member States have set up such a system.

Some ACs have legal requirements and experience with strategic environmental assessment (SEA) at local and regional levels, but this tool is less developed at the national level. Practice in the EU also varies widely, but SEA is expected to become a more integral part of decision-making with the implementation of the new SEA directive. Although the Commission has committed itself to applying SEA to its policies and plans, no assessment has yet been made of important transport infrastructure investment programmes such as the TEN and TINA.

Overview of management integration tools in the ACs Table 5

	Integrated T&E strategy	Institutional cooperation	T&E monitoring	Strategic environmental assessment
Bulgaria		✓		✓
Cyprus				
Czech Republic		✓		✓
Estonia		✓		
Hungary				
Latvia		✓*		
Lithuania		✓*	UD	
Malta				
Poland	✓		UD	✓
Romania				
Slovak Republic	✓	✓		✓
Slovenia			UD	
Turkey				

Notes: ✓= Adopted, present, or in place; UD= Under development;
* = Only temporarily working groups established.
Source: EEA, 2001b; REC, 2001.

Integrated transport and environment strategies are lacking in ACs

Quality of data
AC: ★
EU: ★

Fact sheet(s)
Implementation of integrated strategies

The Cardiff Council in 1998 started the process of integrating transport and environment policies in the EU. Seven Member States have adopted such strategies (Austria, Finland, Germany, Ireland, the Netherlands, Sweden and the UK) and they are being developed in Belgium, France, Luxembourg and Spain.

The EU Transport Council invited the ACs 'to follow the integration principle as it is being developed in the Community when formulating national and local strategies during the pre-accession period' (European Council, 1999). An 'enlargement and transport' working group has been established under the Commission's Joint Expert Group (JEG) on Transport and Environment. This working group assists the Commission in developing policies for a sustainable transport system in an enlarged EU, and will also propose actions and measures that should lead to the implementation of the Council strategy on transport and environment in ACs at an early stage.

To date, four ACs have introduced a legal requirement to produce an integrated transport and environment strategy (Estonia, Lithuania, Poland and the Slovak Republic) (IEEP, 2001), but only Poland and the Slovak Republic have developed such strategies. Estonia, Latvia and Slovenia have drafted transport development plans that also include some environmental considerations.

The ACs and Member States are also involved in other international environmental policy developments, which require inter-institutional cooperation and strategy development, and also include transport objectives and actions (Box 10).

Table 6 **Overview of management integration tools in the EU**

	Integrated T&E strategy	Institutional cooperation monitoring	T&E monitoring	Strategic environmental assessment
Austria	✓	✓	✓	
Belgium	UD	✓		
Denmark		✓		✓
Finland	✓	✓	✓	
France	UD	✓	✓	✓
Germany	✓	✓	✓**	
Greece	?			
Ireland	✓	✓		
Italy	?	✓		✓*
Luxembourg	UD			
Netherlands	✓	✓	✓	✓
Portugal	–			
Spain	UD	✓		✓*
Sweden	✓	✓	✓	✓
United Kingdom	✓	✓	UD	

Notes: UD Under development.
*) Italy and Spain: tick mark refers to the requirement for full SEA embedded in regional law.
**) Some Länder.
Sources: EEA, 1999a; EEA, 1999b; ERM, 2000; European Commission, 1999b; SEPA, 2000.

Institutional cooperation on transport and environment is emerging in ACs but is seldom formalised

Quality of data
AC: ★
EU: ★

Fact sheet(s)
Institutional cooperation

Inter-ministerial cooperation takes place in many ACs, as part of the accession process. It also forms part of the development and implementation of NEAPs and NEHAPs (IEEP, 2001) as, aside from the end-product itself (the plan or programme), the process of producing them has proved to be very valuable for building bridges between the formerly isolated areas of transport, environment and health.

However, only the Czech Republic has established a formal and permanent inter-institutional body. This acts as an adviser or management consultant to the government. In the Slovak Republic, a working group, established in 1997, deals with the implementation of the action plan for transport and environment. Several countries have set up inter-ministerial councils for NEHAP implementation (Bulgaria, Estonia, Lithuania and Romania). Temporary inter-ministerial working groups, with the task of drafting various pieces of legislation, are also common (Bulgaria, Estonia, Hungary, Latvia and Poland). Bulgaria has set up a commission for sustainable development.

Both in the EU and in the ACs, the existence of formal or informal inter-ministerial bodies does not necessarily entail factual and efficient cooperation between the parties involved. A questionnaire circulating in advance of a high-level meeting of officials in the fields of transport, environment and health, held in Szentendre (Hungary) in July 2001, made clear that most authorities in the ACs think that cooperation between their departments, while not seamless, is improving (REC, 2001). The questionnaire further pointed out that the development of NEAPs and NEHAPs, and the application of environmental impact assessment (EIA) and strategic environmental assessment (SEA) (see page 53) — all requiring inter-ministerial cooperation — are seen as the most promising tools for achieving sustainable transport.

The Commission's Joint Expert Group on Transport and Environment — consisting of representatives of transport and environment ministries — is already involving the ACs in its meetings.

ACs are not monitoring the environmental integration in transport policies

Quality of data
AC: ★★
EU: ★★

Fact sheet(s)
National monitoring systems

Most ACs regularly collect statistics on several of the TERM indicators, but none reports on these in dedicated indicator reports. There also appear to be shortcomings in the transfer of up-to-date national statistics to international organisations such as UNECE. This situation can also be observed in the EU, though it is less apparent as much of the exchange of statistics has been streamlined over recent decades. Further implementation of EU directives (particularly those concerning the exchange of statistics from national statistical offices to Eurostat) will greatly contribute to the development of multi-country data.

The situation in the EU is more developed, as most countries report on transport and environment indicators. Austria and Finland have set up reporting mechanisms along the lines of TERM.

Box 10: NEAP and NEHAP, Vienna and London, THE PEP

NEAP: At the first Environment for Europe conference held in Dobris in 1991, ministers requested the ACs to develop national environmental action programmes (NEAPs). An international task force, supported by the World Bank and the OECD, developed an environmental action programme (EAP) for central and eastern European countries, adopted at the second Environment for Europe conference in 1993. This EAP, a framework for countries to develop NEAPs, aims at integrating environmental concerns directly into the process of economic transition. NEAPs are drafted by the Ministry of Environment and other relevant government departments, which ensures the plans to have some integrative aspects. The third Environment for Europe ministerial conference (1995, Sofia) adopted the environmental programme for Europe to set long-term environmental priorities at the pan-European level and to make Agenda 21 more operational in the European context, particularly its provision relating to the integration of environmental policy with other policies.

NEHAP: National environment and health action plans (NEHAPs) originate from the World Health Organization (WHO) conference on Environment and Health held in Helsinki in 1994. These plans should in principle include specific transport-related sections, if drafted according to NEHAP guidelines.

Vienna Declaration/POJA: In the Agenda 21 adopted at the United Nations Conference on Environment and Development held in Rio in 1991, the transport sector was identified as a key priority area for action. As a response, the UNECE initiated a process that resulted in the adoption by transport and environment ministers in 1997 of the Vienna Declaration and its Programme of Joint Action (POJA), by which governments in the region committed themselves to achieving commonly agreed objectives for pursuing transport activities and transport sector development within the framework of sustainable development. These joint actions comprise many activities, including the development of national strategies and programmes for sustainable transport.

London Charter: WHO's Regional Office for Europe (WHO-ROE) started a process aimed at bringing together the transport, health and environment sectors to promote a stronger integration of health concerns in the development of transport policies. This process eventually resulted in the negotiation and adoption of the London Charter at the third ministerial conference on Environment and Health in 1999. In the charter, environment, health and transport ministers expressed their commitment to further develop the integration of environment and health requirements and targets in transport and land-use policies and plans, and established a plan of action for moving towards transport sustainable for health and the environment.

THE PEP: The Second High-level Meeting on Transport, Environment and Health (Geneva, 5 July 2002) decided to streamline and consolidate the activities undertaken at the national and international levels under the UNECE POJA and the WHO London Charter under a single new policy framework: the Transport, Health and Environment Pan-European Programme - THE PEP (UNECE/WHO, 2002). THE PEP aims at making progress towards the achievement of transport patterns that are sustainable for health and the environment by focusing work at the pan-European level on those priorities where further work of the international community is most needed and could make the biggest impact: integration of environmental and health aspects into transport policies and decisions, shift of the demand for transport towards more sustainable mobility, and urban transport issues. In addition, special attention will be given to the needs of the newly independent states and south-eastern European countries as well as to areas which are particularly sensitive from an environmental point of view. THE PEP was launched at the World Summit on Sustainable Development as one of the Type II partnerships for health and sustainable development.

A few ACs have legal requirements for strategic environmental assessment, but application in the transport sector is limited to pilot initiatives

Quality of data
AC: ★
EU: ★

Fact sheet(s)
Implementation of SEA

Strategic environmental assessment is seen as particularly useful to help integrate environmental concerns at various policy and planning levels. The recently adopted SEA directive (2001/42/EC[13]) — to be implemented by all Member States as of 2004 — requires an environmental assessment of certain plans and programmes, including transport ones, prior to their adoption. The UNECE is developing a protocol on SEA. This would also require countries to establish mechanisms for SEA at various levels (UNECE, 2002).

Strategic environmental assessment of national transport plans is legally required in Bulgaria, the Czech Republic, Poland and the Slovak Republic. Latvia has an optional requirement for national transport plans and Lithuania plans one. Practical application of SEA of national transport plans has occurred in the Czech Republic, while Hungary, Poland and Slovenia have undertaken pilot projects.

In the EU, SEA legal provisions and application for transport are more advanced. Denmark, Finland, the Netherlands and Sweden have an established history of SEA of transport, supported by legal requirements, while Austria, Belgium, France, Germany, Italy, Spain and the UK are also moving towards systematic application of SEA (ERM, 2000).

Practical implementation also requires sufficient administrative capacity to perform an SEA, which is often lacking. Moreover, to be effective, the findings of SEAs should also be taken into account in decision-making, which is as yet rarely the case — in the EU as well as in the ACs (IEEP, 2001).

Major international infrastructure programmes such as the TEN-T and TINA (see page 35), have not yet been assessed at a strategic level. Following the requirements of the TEN-T 1996 guidelines, the Commission has developed methods and a manual for network and corridor assessments. The Commission has also proposed making SEA obligatory for the planned revisions of the TEN-T guidelines in 2003, but only when it concerns sensitive parts of the network (European Commission, 2001e). A working group has been established under the JEG to give the Commission guidance on how to apply SEA on future TEN-T planning.

The sustainable development strategy requests a sustainability impact assessment (including environmental, social and economic impacts) for all new major policies proposals. This will be implemented in the Commission, gradually from 2003 (European Commission, 2002h). A working group under the JEG is investigating methods for sustainability impact assessment in the transport sector.

Stakeholder involvement (including public participation) in the development of plans and policies, and in SEA procedures, is limited in the ACs (IEEP, 2001). Participation of non-governmental organisations (NGOs) is mostly restricted to local decision-making. The capacity of NGOs — in terms of staff and resources — also varies significantly.

[13] OJ L 197, 21/07/2001, p. 31

Next steps

Data limitations, most obvious for the ACs but also still an issue for the Member States, have imposed severe restrictions on the coverage of this report and the analyses. The filling of data gaps therefore remains one of the main challenges for TERM. Particular efforts have to be made to improve data and information on non-road modes (aviation, shipping, rail, inland waterways) and non-motorised mobility (data on cycling and walking are extremely scarce), and to improve the data on the split between passenger and freight transport.

At the request of the Transport Council, the Commission is currently considering the development of a legal framework for TERM. This should ensure the long-term continuity of the system and provide appropriate resources to Eurostat, EEA and member countries. As part of such a framework, the Commission (Eurostat) is currently investigating options for establishing a development programme to improve TERM-related transport statistics. The ACs are not as yet included in this.

Improvement of environmental data will have to be realised mainly through improvement of existing environmental reporting obligations and the provision of better guidelines by EEA and its European Topic Centres.

This report — which draws its statistics from various international sources — has also brought into the open a number of discrepancies between statistics reported by countries to the various international organisations. This emphasises the need for a more intense cooperation between EEA, Eurostat and other international organisations such as UNECE, ECMT, WHO and IEA. It also requires countries to improve data delivery to these organisations and achieve better verification of delivered statistics. Clearly, improving statistics for 15 + 13 countries is a huge task. Given the current resource limitations this may require the prioritisation of the improvement of a limited number of key indicators and data sets.

TERM will continue to link with and learn from national experience and other international initiatives. The EIONET has meanwhile been extended with primary contact points (PCP) for transport and environment. Cooperation with these partners should in future facilitate the collection and verification of country information and will help to improve the review process of TERM products. It should allow the EEA to better build on national expertise.

As already announced in TERM 2001, the improvement of assessment methods and the gradual inclusion of projections in the indicator analyses should enhance the usefulness of the system for policy-making. A priority issue in such work is the assessment of the impacts of enlargement for the enlarged EU.

In parallel, the TERM indicator list will be evaluated regularly, to ensure that it matches the information needs of emerging integration strategies and targets. An example is the inclusion of more health-related indicators to support the better integration of health considerations into transport policies, as pursued by the Transport, Health and Environment Pan-European Programme, and as recently requested by the European Parliament.

In its original concept, the TERM process also foresaw the development of focus reports, devoted to topical policy issues, and technical reports to improve the indicator definitions and assessment methods. Priorities are the improvement of the indicators relating to transport costs, prices and internalisation and those dealing with spatial planning and accessibility. The indicator fact sheets

provide a detailed overview of future actions needed for each indicator. To date, resources in the EEA have been too limited to elaborate on such ideas.

Finally, one of the methodological difficulties encountered in the assessment is the lack of clear policy targets or objectives against which the indicator trends can be evaluated. Also the transferability of the EU's current policy objectives/ targets to the specific conditions and policy needs of its future new members may sometimes be questionable. The communication on medium and long-term environmental objectives for a sustainable transport system, announced in the White Paper on the common transport policy, may be the forum for addressing these problems. In the meantime EEA will continue to keep track of target development, using its STAR database as a tool (http://star.eea.eu.int).

Glossary

AC	accession country
ACEA	European Automobile Manufacturers Association
CEI	Central European Initiative (www.ceinet.org)
CLRTAP	United Nations Convention on Long Range Transboundary Air Pollution
CO	carbon monoxide
CO_2	carbon dioxide
CTP	common transport policy
DG ECFIN	Directorate-General Economic and Financial Affairs (of the European Commission)
DG ENV	Directorate-General Environment (of the European Commission)
DG TREN	Directorate-General Energy & Transport (of the European Commission)
DPSIR	Driving forces, pressures, state, impact, responses
EAP	environmental action programme (6EAP is the sixth environmental action programme of the European Union)
ECCP	European climate change programme
ECMT	European Conference of Ministers of Transport
EEA	European Environment Agency
EIA	environmental impact assessment
EIB	European Investment Bank
EIONET	European Information and Observation Network
ELV	end-of-life vehicles
ESDP	European spatial development perspective
ETC	European Topic Centre
ETRA	European Tyre Recycling Association
EU	European Union
Euro II	Euro II passenger cars are cars that comply with the emission standards as defined in Directive 94/12/EC
Euro III and IV	vehicles that comply with the vehicle emission limits as defined in Directive 98/69/EC, which will enter into force in 2003 (Euro III) and 2005 (Euro IV)
Eurostat	Statistical Office of the European Union
GDP	gross domestic product
GNP	gross national product
HC	hydrocarbon
HELCOM	Baltic Marine Environment Protection Commission (Helsinki Commission)
HSR	high-speed railway
ICAO	International Civil Aviation Organization
IEA	International Energy Agency
IBA	important bird area
IMO	International Maritime Organization
IPCC	Intergovernmental Panel on Climate Change
ITOPF	International Tanker Owners Pollution Federation
JAMA	Japan Automobile Manufacturers Association
KAMA	Korean Automobile Manufacturers Association
km	kilometres
MARPOL	International Convention for the Prevention of Pollution from Ships

MS	Member State (of EU)
Mt	million tonnes
NGO	non-governmental organisation
NMVOC	non-methane volatile organic compound
N_2O	nitrous oxide
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
OECD	Organisation for Economic Co-operation and Development
PM_{10}	respirable particulate matter with aerodynamic diameter below 10 micron
PPP	purchasing power parities
REC	Regional Environment Centre (www.rec.org)
SDS	sustainability development strategy
SEA	strategic environmental assessment
SO_2	sulphur dioxide
TEN	trans-European transport network
TERM	transport and environment reporting mechanism for the EU
TINA	transport infrastructure needs assessment
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
VOC	volatile organic compound
WHO	World Health Organization
6EAP	European Union's sixth environmental action programme

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