ISBN 92-828-9330-8

2000 EDITION

Transport and environment: Statistics for the Transport and Environment Reporting Mechanism (TERM)

for the European Union

Data 1980-98

8

EUROPEAN COMMISSION

eurostat

THEME 8
Environment and energy

A great deal of additional information on the European Union is available on the Internet.
It can be accessed through the Europa server (http://europa.eu.int).

Cataloguing data can be found at the end of this publication.

Luxembourg: Office for Official Publications of the European Communities, 2000

ISBN 92-828-9330-8

Printed in Luxembourg

PRINTED ON WHITE CHLORINE-FREE PAPER

FOREWORD

Transport plays a fundamental role in the economy in providing a distribution system for raw materials, parts and products, and in providing flexibility and mobility for the workforce. It also provides much personal freedom and opportunities for leisure and tourism. However, these benefits are set against a broad range of environmental concerns, ranging from nuisance such as noise and odour to accidents and health risks as well as the general deterioration of the environment caused by transport emissions and infrastructure. The right balance between the needs of the economy on the one hand and the maintenance of the quality of life and the environment on the other is necessary. In order for policy makers and analysts to be well informed on the trends, regular publication of relevant data is essential. This has been recognised by the recent decision of the EU Member States and Institutions to set up a transport and environment reporting mechanism (TERM).

Over the last ten years, Eurostat has published a number of short reports on different aspects of the relationship between transport and the environment, and has also included sections in its general publications on the environment. This current publication represents the first attempt by Eurostat to bring together this work in one volume. *Transport and environment* is a statistical reference work prepared and published by Eurostat to support the EU's transport and environment reporting mechanism, and to supplement the report published by the EEA (*Are we moving in the right direction?: Indicators on transport and environment integration in the EU).* It is designed as a desktop reference, comprising statistics on the environmental performance of transport and important determinants of the transport system. Its purpose is to present indicators and other relevant data in the form of tables, maps and graphs. As far as possible, each of the major modes of transport (road, rail, inland waterways, aviation, maritime and pipelines) is covered. Potential users include policy makers, the transport industry, and all those with an interest in the fields of transport or environment. This publication provides data and background information on the data. Readers seeking an interpretation of the data are refered to the EEA report.

The structure and content of this publication is largely based on the agreed framework of TERM. It includes the TERM indicators which Eurostat is able to supply and regularly update. Given the aims of this publication, it also contains data series not included in the TERM indicator set, but which provide useful background information.

ACKNOWLEDGEMENTS

We would like to express our gratitude to the individuals who assisted in the preparation of this document: Jelle Bosch of Artemis Information Management and Catherine Kesy of 2SDA. In the annex, the section on emission inventories was largely written by Andre Jol of the European Environment Agency, and the section on MEET was provided by Remi Mayet of the Commission's Directorate-General for Transport. Both these contributions have been edited by Eurostat. The document has also benefited from critical review by experts within the Member States. In particular we would like to thank Jan Gustafsson and Lennart Thörn of the SIKA Institute in Sweden, and Uwe Reim of the German Federal Statistical Office, who provided helpful remarks concerning data relevant to their countries. Dorothy Salathiel and Bruce Oelman of the United Kingdom Department of the Environment, Transport and Regions also provided comments on a number of indicators, drawing from their experience in developing the UK's sustainable development indicators. We would also like to acknowledge the close cooperation with Ann Dom and Andre Jol of the European Environment Agency, and Daniel Puig and Anne Ohm of COWI Consulting Engineers and Planners AS. The final responsibility, however, lies with Eurostat.

Readers are encouraged to report any errors or inaccuracies to Eurostat. Comments and suggestions for improvement are also welcome. Any comments should be addressed to:

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BACKGROUND TO TERM

It has been recognised for many years that transport is one of the main causes of impacts on the environment. Since the early 1990s, Eurostat and international organizations such as OECD have regularly published indicators which link trends in transport to environmental pressures, as well as measuring policy responses to these pressures. Such indicators are an essential part of the EU's policy of integrating environmental concerns into other policy areas, as described in the Fifth Environmental Action Programme (1993).

Following the Treaty of Amsterdam, "integration" has been given a higher political priority. At the beginnning of 1998 the Commission set up a Steering Group, comprising participants from the Directorates-Generals for Transport, Environment, and Statistics (Eurostat), as well as the EEA, to look at the possibility of establishing an indicator-based system to monitor transport and environment trends.

At the outset, the Steering Group decided that three key questions are particularly relevant for policy makers and need to be addressed by such a system of indicators:

- What is the progress in the use of technical measures (e.g. cleaner vehicles and fuels) which reduce the impacts on the environment and human health?
- Are we getting better at using transport, both within modes (e.g. improved occupancy, better driving practice), and between modes (e.g. by switching to less damaging forms of transport)?
- How are factors such as land use planning, economic activity and access to basic services, driving the growth in overall transport and in its different modes?

The “best” indicators will be those which help to answer these three policy questions and at the same time help to monitor the effectiveness of policy intervention through certain key policy leverage points such as:

Land use planning

Land use patterns have a strong impact on the distances travelled by people for different purposes. Policies could help to minimise the need to travel and hence help reduce transport demand and ensure access to more environmentally friendly forms of transport.

Transport planning and demand management

Increased investment in and availability of public transport, traffic management and restrictions on the movements of other vehicles are examples of how policy measures can shift the modal balance towards less damaging forms of transport.

Transport prices and economic instruments

Prices, charges, subsidies and taxes can be used to shift the balance between modes towards an increased use of less damaging forms of transport and to influence transport demand and efficiency in general by ensuring users pay the full cost of transport, including transport externalities.

Economic integration and transport

Transport supports economic development and the operation of the Single Market, providing access to the best and cheapest components and raw materials, enabling efficient production and distribution to take place. These factors help contribute to increased freight transport intensity, which is the amount of transport required to deliver a unit of economic activity.

Technological improvements

Improving the efficiency in the use of resources can help to minimise the environmental impacts of transport. Smaller engine sizes, improved fuel efficiency, the use of cleaner fuels and developments such as catalytic converters are examples where technology can contribute to producing less damaging forms of transport.

The key questions and the leverage points mentioned above formed the basis for a proposed list of indicators. This list was discussed in detail at an expert workshop hosted by EEA in March 1998, and attended by Commission and EEA staff as well as national experts. The workshop proposed 31 indicators arranged in groups, each group having at least one "priority" indicator which was felt to be particularly representative.

The Council gave a fresh mandate to the Commission in June 1998 to develop a comprehensive set of indicators of the sustainability of transport. This set of indicators will form the basis for a Transport and Environment Reporting Mechanism (TERM), which will be used to measure progress in the integration of environmental concerns in national and EU transport policies. The Council requested that the Commission

should work on TERM in conjunction with the European Environment Agency (EEA) and that this work should take account of previous work in international organizations and in Member States, some of which already have well-developed systems of transport–environment indicators.

Since that time the list has been reviewed, and comments from the Commission Services have been taken into account. In particular, it was felt that 31 indicators were too many, and attempts have been made to reduce this number. A new list of 27 indicators is given in the table opposite. It should be noted that this list is still a proposal and although many of the indicators will be retained, there may be some further changes made over time. Since work started on this publication a further indicator group has been proposed which deals with the development and implementation of national and regional integrated strategies and monitoring systems, and the use of strategic environmental assessment and management systems as tools for promoting environmental integration. It has not been possible to include data for this group within this first edition of the publication.

In addition to the present publication, an annual transport and environment indicator report will be produced by EEA. The “zero version” was prepared in autumn 1999, and served as an input to the Helsinki Summit. It will be published in early 2000.

Preliminary list of TERM indicators

GROUP	INDICATORS
ENVIRONMENTAL PERFORMANCE OF TRANSPORT	
ENVIRONMENTAL CONSEQUENCES OF TRANSPORT	Transport final energy consumption and primary energy consumption, and share in total (fossil, nuclear, renewable) by mode
	Transport emissions and share in total emissions for CO_2, NO_X, NMVOCs, PM_{10}, SO_X by mode
	Excedances of air quality values
	Exposure of population to traffic noise
	Infrastructure influence on ecosystems and habitats ('fragmentation') and proximity of transport infrastructure to designated sites
	Land take for transport by mode
	Number of transport accidents, fatalities, injured, polluting accidents (land, air and maritime)
DETERMINANTS OF THE TRANSPORT SYSTEM	
LAND USE AND ACCESS TO BASIC SERVICES	Average passenger journey time and length per mode, purpose (commuting, shopping, leisure) and territory (urban/rural)
	Access to transport services, e.g: • Number of motor vehicles per household • % of persons in a territory having in e.g. 500m distance access to a public transport station
TRANSPORT DEMAND AND INTENSITY	**Passenger transport (by mode and purpose):** • Total passengers • Total pkm • Pkm per capita • Pkm per GDP
	Freight transport (by mode and group of goods): • Total tonnes • Total tkm • Tkm per capita • Tkm per GDP
TRANSPORT SUPPLY	Length of transport infrastructure by mode and by type of infrastructure (e.g. motorway, national road, municipal road, etc.)
	Investments in transport infrastructure/capita and by mode
PRICE SIGNALS	**Real passenger and freight transport price by mode**
	Fuel prices
	Taxes
	Subsidies
	Expenditure for personal mobility per person by income group
	Proportion of infrastructure and environmental costs (including congestion costs) covered by price
EFFICIENT USE OF TRANSPORT	Overall energy efficiency for passenger and freight transport per km travelled (per vehicle type)
	Emissions per pkm and emissions per tkm for CO_2, NO_X, NMVOCs, PM_{10}, SO_X by mode
	Vehicle occupancy
	Uptake of cleaner fuels (unleaded petrol, electric, alternative fuels) and numbers of alternative fuelled vehicles
	Load factors for road freight transport (LDV, HDV)
	Average age of the vehicle fleet
	Proportion of vehicle fleet meeting certain air and noise emission standards (by mode)
	Public awareness
NB: Indicators marked in **bold** are considered a 'priority'.	

SYMBOLS AND ABBREVIATIONS USED IN THIS PUBLICATION

Symbols:

:	not available
•	not relevant
0 or 0.0	less than half the minimum value shown
–	nil (zero)
*	estimate (see notes at the end of each chapter)
| or —	break in series

Units of measurement:

ecu	European currency unit
g	gramme
h	hour
kg	kilogramme
km	kilometre
kt	kilotonne
ktoe	kilotonne of oil equivalent
mio	million
MJ	megajoule
nm	Nautical mile
pkm	passenger-kilometre
t	tonne
tkm	tonne-kilometre
toe	tonne of oil equivalent

Countries:

A	Austria
B	Belgium
D	Germany
DDR	Former German Democratic Republic
DK	Denmark
E	Spain
EL	Greece
F	France
FIN	Finland
I	Italy
IRL	Ireland
L	Luxembourg
NL	Netherlands
P	Portugal
S	Sweden
UK	United Kingdom
EU-15	The 15 Member States of the European Union as constituted at 1.1.1995 (B, DK, D, EL, E, F, IRL, I, L, NL, A, P, FIN, S, UK)
EU-10	The 10 Member States of the European Union as constituted at 1.1.1981 (B, DK, D, EL, F, IRL, I, L, NL, UK)
EUR	Euro-zone (B, D, E, F, IRL, I, L, NL, A, P, FIN)

Chemical symbols and abbreviations:

CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
HC	hydrocarbons
H_2O	water
H_2S	hydrogen sulphide
NH_3	ammonia
NMVOC	non-methane volatile organic compounds
NO_x	nitrogen oxides
NO_2	nitrogen dioxide
N_2O	nitrous oxide
PAH	polyaromatic hydrocarbons
Pb	lead
PM	particulate matter
POP	persistent organic pollutant
S	sulphur
SO_x	oxides of sulphur
SO_2	sulphur dioxide
VOC	volatile organic compounds

Organizations:

AEA	Association of European Airlines
DIW	Deutsches Institut für Wirtschaftsforschung
EC	European Communities
ECF	European Cyclists' Federation
EEA	European Environment Agency
ECMT	European Conference of Ministers of Transport
ETC-AE	The EEA Topic Centre for Air Emissions
EU	European Union
Eurocontrol	European Organisation for the Safety of Air Navigation
Eurostat	European Commission Directorate-General responsible for statistics
IACA	International Air Carrier Association
IEA	International Energy Agency
NEA	NEA Transport research and training, the Netherlands
OECD	Organisation for Economic Co-operation and Development
UNECE	United Nations Economic Commission for Europe
UIC	International Union of Railways
UITP	International Association of Public Transport
WHO	World Health Organisation

(continued overleaf)

Other miscellaneous abbreviations and acronyms:

2W	Powered two-wheeler (motorbikes and mopeds)
ANCAT/EC	Abatement of Nuisance Caused By Air Transport
Aeronox	EC project on the impact of NOx emissions from aircraft upon the atmosphere at flight altitude 8-15 km
Atemis	Air Traffic Emission Simulation
Auto/Oil	Collaborative programme between the European Commission and the European oil and automobile industries
CLRTAP	Convention on Long-Range Transboundary Air Pollution
CNG	Compressed natural gas
Copert	Computer Programme to Calculate Emissions from Road Transport
Corinair	Air emissions inventory in the EU Corine project
COST	European Cooperation in the fields of Scientific and Technical research
COST 319	COST project to ccordinate work on the estimation of pollutant emissions from transport
DWT	Deadweight tonnage
EC	Energy consumption
EPEFE	European Programme on Emissions, Fuels and Engine Technologies
ESA	European system of integrated economic accounts
GDP	Gross domestic product
GT	Gross tonnage
HDV	Heavy duty vehicle
HFO	Heavy fuel oil
HGV	Heavy goods vehicle
HICP	Harmonised index of consumer prices
IFR	Instrument flight rules
IPCC	Intergovernmental Panel on Climate Change
LDV	Light duty vehicle
LPG	Liquefied petroleum gas
LRTAP	Long-range transboundary air pollution
MEET	Methodologies for estimating air pollutant emissions for transport
New Cronos	General statistical database at Eurostat
NUTS	Nomenclature of territorial units in the EU
PC	Passenger car
RME	Rapeseed methyl ester
TFEI	Task Force on Emission Inventories
TRENDS	Transport and environment database system (Eurostat / DG Transport)
UNFCCC	United Nations Framework Convention on Climate Change
VFR	Visual flight rules

CHAPTER 1: ENVIRONMENTAL CONSEQUENCES OF TRANSPORT

- **ENVIRONMENTAL CONSEQUENCES OF TRANSPORT**

Transport, like all other human activities, has consequences for the environment. These occur from the construction, use, and disposal of infrastructure and vehicles or vessels. At present, this chapter is devoted only to "operational" consequences.

Final energy consumption

Transport is almost totally dependent on petroleum products, and is by far the largest final consumer of these products (69% of final consumption of petroleum products in 1997). Total final energy consumption rose steadily over the period 1985 to 1995 at an average rate of 0.9% per year. 1986 saw a rather larger rise of 4.3%, which was however followed by a fall of 0.4% in 1997. The final energy consumption of transport has been rising at the higher average rate of about 3% per year over the entire period. As a consequence, the transport share of final energy consumption has risen from 27.2% in 1985 to 33.9% in 1997. The shares of road transport, aviation and marine bunkers are the main areas of increase.

Emissions

According to national estimates, carbon dioxide emissions as a whole have varied little between 1990 and 1996. However, transport carbon dioxide emissions have increased by an average 4.1% per year, mostly due to a 1.7% average annual increase in road transport emissions. On the other hand, there has been a 2.5% annual decrease in nitrogen oxide emissions, with transport emissions contributing to this decline since 1993 due to the impact of the introduction of catalytic converters. Emissions of non-methane volatile organic compounds, which have been decreasing at a similar rate to nitrogen oxides, have seen particularly strong reductions from road transport. The share of transport, and especially road transport, in emissions of carbon dioxide and nitrogen oxides was higher in 1996 than 1990, although both have fallen since 1993. The share of non-methane volatile organic compounds has fallen steadily since 1990.

A similar picture to that presented above for carbon dioxide emissions is provided by the Eurostat estimates. Nevertheless, 1997 saw an upturn in transport emissions, reflecting the continuing rise in road transport and aviation emissions. Marine bunkers also show a continuing rise, although are not included in the totals for transport. The share of transport emissions remained at a steady 26% from 1993 to 1996, but rose to 27.5% in 1997. For the most part, this reflects the situation of road transport, but increasing emissions from aviation also played a role.

Accidents

Deaths caused by road traffic accidents fell slightly during the period 1980 to 1996, despite growing traffic, the unification of Germany, and changes to statistical definitions in some countries. In most countries the greatest numbers of those killed are drivers and passengers of passenger cars, followed by powered two-wheelers (motorbikes and mopeds) and pedestrians. Over this period the greatest gains have been to those travelling in buses and coaches, although significant improvements have also taken place for pedestrians and drivers and passengers of motorbikes and mopeds.

The figures for those killed or injured per 1 000 million passenger-kilometres provide some idea of the relative risk per kilometre travelled by a particular means of road transport. They do not represent the risk per journey, as different means are suitable for journeys of different length. Powered two-wheelers are the most dangerous means, followed by walking. Buses and coaches, and passenger cars are the safest. All means of road transport have become relatively safer since 1980, but pedestrians have experienced the greatest benefit, followed by drivers and passengers of passenger cars and motorbikes and mopeds.

Railway transport is very safe compared to road transport: the deaths are in thousands per year rather than millions. Furthermore, only very small numbers of passengers or railway employees are killed. The majority of deaths caused by railway accidents are other people. No real trend towards increasing safety is apparent in the absolute numbers killed or injured, although in the figures for casualties per 1 000 million passenger-kilometres, there are clear indications that safety is improving.

Total final energy consumption and final energy consumption of transport, including marine bunkers and oil and gas pipelines

Total final energy consumption

(Mio toe)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
1985	850.0	660.4	31.5	14.9	238.1	13.6	50.2	132.1	6.2	99.9	3.0	51.2	19.2	10.0	19.0	31.7	129.4
1986	868.2	673.0	32.9	14.7	242.1	14.0	51.5	133.6	6.6	101.3	2.9	53.4	19.3	10.0	19.5	32.4	134.1
1987	881.6	683.6	33.7	15.0	243.0	14.9	53.0	134.9	6.7	106.2	2.9	53.0	19.3	10.5	20.5	32.6	135.5
1988	884.4	683.8	34.6	14.7	237.8	15.8	56.7	133.4	6.7	108.1	3.0	52.7	19.2	11.1	20.5	32.1	138.1
1989	887.1	685.1	34.6	15.2	231.2	16.4	57.6	136.0	6.9	112.3	3.2	51.6	19.3	11.3	21.1	31.6	138.8
1990	895.7	693.1	34.9	15.5	229.8	17.1	60.3	137.5	7.1	113.1	3.3	53.9	19.9	11.8	21.5	31.1	138.9
1991	915.6	708.2	36.7	15.3	226.4	17.1	63.9	143.9	7.1	115.9	3.6	56.4	21.0	12.3	21.1	31.4	143.6
1992	915.3	706.7	37.4	15.1	223.3	17.6	63.8	144.3	7.1	115.9	3.6	56.1	20.5	12.9	21.8	31.5	144.4
1993	919.2	708.2	36.9	15.9	222.2	18.3	62.6	145.5	7.2	116.0	3.6	58.1	20.6	13.0	22.3	33.1	143.8
1994	913.8	700.2	37.5	16.2	218.4	18.7	65.9	139.8	7.7	114.2	3.6	56.9	20.3	13.5	22.5	34.2	144.5
1995	933.7	719.1	38.1	16.6	223.5	19.4	67.0	144.4	7.9	119.1	3.1	58.7	21.2	14.0	22.3	34.7	143.8
1996	974.0	747.9	40.9	17.1	231.0	20.0	70.6	152.1	8.4	119.6	3.2	62.9	22.0	14.7	22.5	35.2	153.8
1997	970.2	747.8	41.5	16.6	226.0	20.4	73.3	149.5	8.8	123.7	3.2	61.3	21.9	15.4	23.1	34.9	150.6

Final energy consumption of transport

(Mio toe)

1985	230.9	176.1	8.4	4.0	51.6	5.8	17.7	35.9	1.7	31.2	0.6	17.5	4.5	3.1	3.8	7.0	38.0
1986	245.9	187.8	9.5	4.0	55.0	6.4	19.4	37.6	1.8	33.0	0.6	18.8	4.7	3.3	4.1	7.5	40.2
1987	252.5	192.1	10.1	4.6	56.0	6.6	20.7	38.6	1.7	33.0	0.7	18.7	4.7	3.5	4.3	7.9	41.3
1988	266.7	203.0	11.1	4.8	57.4	7.2	23.4	40.9	1.8	34.2	0.7	20.2	5.1	3.8	4.4	8.1	43.5
1989	276.9	209.3	11.5	5.1	58.2	7.5	24.6	42.5	1.9	35.5	0.8	20.3	5.3	4.1	4.7	8.4	46.6
1990	288.1	218.5	11.8	5.5	61.3	8.3	26.1	44.5	2.0	36.1	1.0	21.1	5.4	4.3	4.8	7.9	48.0
1991	291.1	222.4	12.0	5.3	61.3	8.3	28.0	44.2	2.1	36.9	1.2	21.6	6.0	4.6	4.7	7.9	47.2
1992	299.6	229.0	12.4	5.4	63.0	8.8	28.7	45.1	2.1	38.3	1.3	22.3	6.0	4.9	4.8	8.3	48.2
1993	306.4	233.7	12.6	5.7	65.0	9.6	27.9	46.9	2.1	39.1	1.3	23.1	6.1	5.0	4.6	8.2	49.3
1994	306.0	232.3	12.6	6.0	63.9	9.7	28.7	45.6	2.3	39.1	1.3	22.8	6.1	5.2	4.6	8.6	49.3
1995	310.5	236.2	12.4	6.2	64.9	10.0	29.2	46.5	2.3	40.1	1.3	23.6	6.2	5.3	4.4	8.7	49.4
1996	320.3	244.2	13.4	6.2	64.6	9.7	32.3	48.5	2.9	40.3	1.4	24.5	6.3	5.6	4.4	8.7	51.4
1997	328.9	251.4	14.3	6.2	65.8	9.8	33.7	49.8	3.1	41.1	1.5	25.6	6.3	5.7	4.6	9.0	52.4

(% of total final energy consumption)

1985	27.2	26.7	26.8	27.1	21.7	42.4	35.3	27.2	27.5	31.2	20.2	34.1	23.6	31.3	20.1	22.0	29.3
1986	28.3	27.9	28.9	27.4	22.7	45.5	37.7	28.1	27.1	32.6	21.4	35.3	24.2	33.1	20.8	23.3	30.0
1987	28.6	28.1	30.0	30.9	23.1	44.3	39.0	28.6	25.6	31.0	24.5	35.4	24.4	33.6	20.9	24.3	30.5
1988	30.2	29.7	32.0	32.8	24.1	45.8	41.4	30.6	27.2	31.6	24.8	38.4	26.3	34.1	21.4	25.3	31.5
1989	31.2	30.6	33.1	33.8	25.2	45.6	42.6	31.2	27.7	31.6	26.4	39.4	27.4	36.1	22.2	26.4	33.6
1990	32.2	31.5	33.8	35.2	26.7	48.9	43.3	32.3	28.1	31.9	30.3	39.2	27.1	36.7	22.5	25.4	34.6
1991	31.8	31.4	32.8	34.3	27.1	48.4	43.8	30.7	29.0	31.8	33.2	38.3	28.4	37.3	22.1	25.2	32.9
1992	32.7	32.4	33.3	35.3	28.2	50.0	45.0	31.2	28.8	33.1	35.9	39.8	29.3	38.1	21.9	26.4	33.4
1993	33.3	33.0	34.2	36.1	29.2	52.2	44.6	32.2	29.7	33.7	35.7	39.8	29.4	38.2	20.4	24.7	34.3
1994	33.5	33.2	33.5	37.3	29.3	52.1	43.6	32.6	30.5	34.2	37.7	40.1	30.0	38.3	20.3	25.1	34.1
1995	33.3	32.8	32.5	37.5	29.0	51.5	43.6	32.2	29.2	33.7	41.5	40.2	29.4	38.1	19.9	25.1	34.3
1996	32.9	32.7	32.8	36.3	28.0	48.4	45.8	31.9	34.0	33.7	41.9	39.0	28.6	38.2	19.6	24.7	33.4
1997	33.9	33.6	34.3	37.4	29.1	48.3	45.9	33.3	34.9	33.2	45.4	41.7	28.6	37.3	20.1	25.8	34.8

Source: Eurostat (New Cronos).

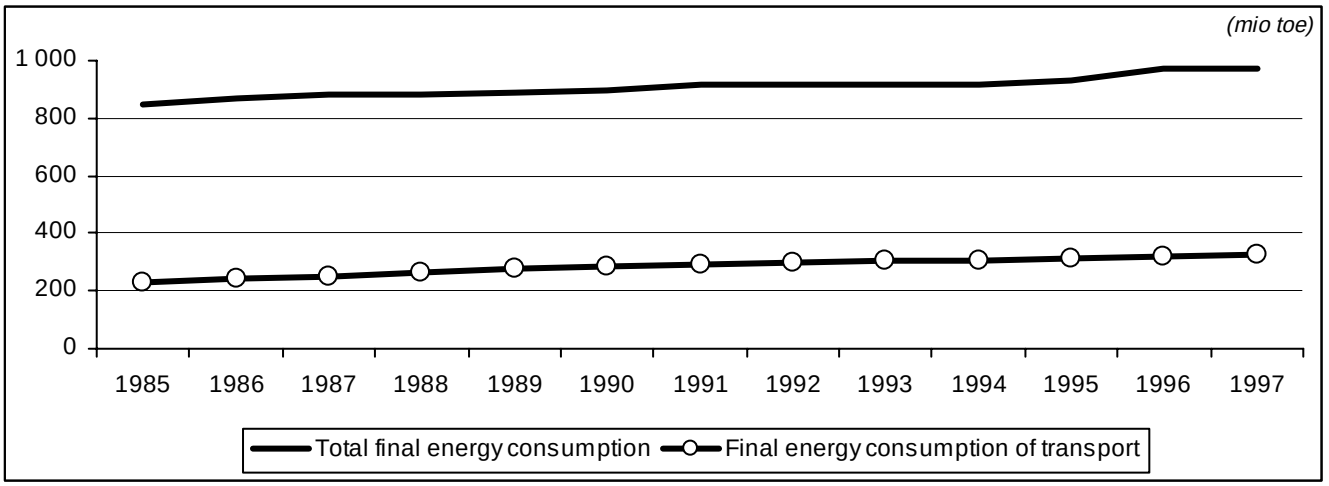


Figure 1.1: Total final energy consumption and final energy consumption of transport - EU-15

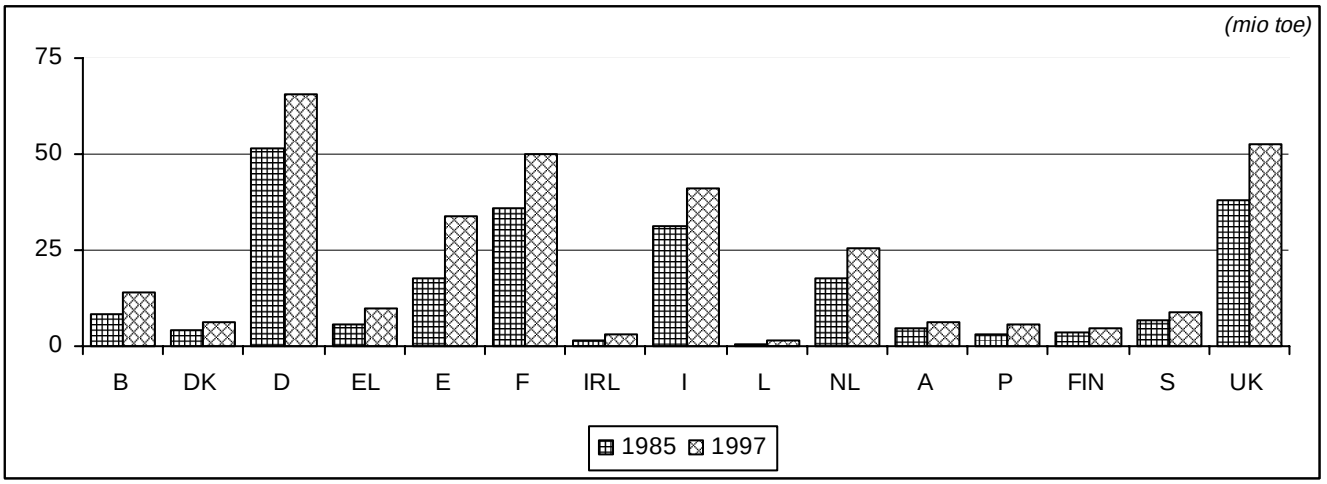


Figure 1.2: Final energy consumption of transport by Member State

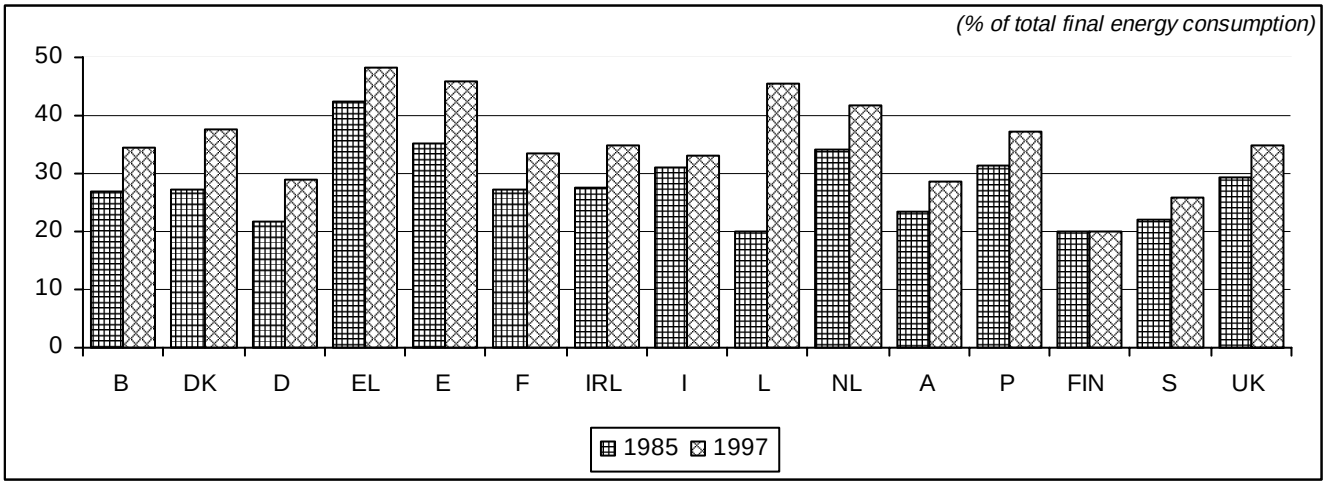


Figure 1.3: Transport share of total final energy consumption by Member State

Final energy consumption of road transport

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(Mio toe)
1985	170.4	130.6	5.1	2.8	40.9	3.1	11.8	29.4	1.4	25.0	0.5	7.5	4.0	2.1	2.9	5.4	28.6
1986	179.0	136.9	5.7	2.7	43.0	3.2	12.3	30.8	1.4	26.7	0.5	7.1	4.2	2.2	3.1	5.7	30.5
1987	185.5	141.6	5.9	2.8	44.9	3.4	12.9	31.8	1.2	27.2	0.6	7.2	4.2	2.4	3.3	5.9	31.9
1988	197.5	151.0	6.4	2.8	46.6	3.6	15.8	33.7	1.4	28.4	0.6	7.5	4.5	2.7	3.4	6.2	33.9
1989	205.4	156.9	6.6	3.0	47.5	3.8	16.8	35.0	1.5	29.8	0.7	7.9	4.6	2.8	3.6	6.4	35.4
1990	212.5	163.0	6.4	3.2	50.4	3.9	17.7	36.2	1.6	30.4	0.9	8.0	4.8	3.0	3.6	6.1	36.3
1991	215.3	165.9	6.5	3.2	51.3	4.2	18.6	35.8	1.6	31.0	1.0	8.1	5.2	3.3	3.5	6.0	36.0
1992	222.3	172.1	6.7	3.3	53.1	4.3	19.7	36.4	1.7	32.5	1.1	8.4	5.3	3.6	3.5	6.3	36.3
1993	226.9	176.1	6.9	3.3	54.4	4.4	19.5	38.2	1.7	33.2	1.1	8.6	5.3	3.8	3.5	6.2	36.9
1994	226.6	175.2	7.1	3.5	53.1	4.4	20.2	37.1	1.8	33.2	1.2	8.7	5.3	3.9	3.6	6.4	37.1
1995	229.0	177.8	7.1	3.5	54.2	4.6	20.5	37.3	1.7	33.9	1.1	8.9	5.4	4.1	3.5	6.4	36.7
1996	234.5	181.6	7.2	3.6	53.8	4.8	21.7	38.9	2.2	34.1	1.1	9.5	5.4	4.4	3.4	6.4	38.1
1997	238.5	185.0	7.3	3.7	54.7	4.9	21.9	39.6	2.4	34.6	1.2	9.7	5.4	4.5	3.6	6.4	38.5
																	(% of total final energy consumption)
1985	20.0	19.8	16.2	18.8	17.2	22.4	23.6	22.2	23.0	25.0	17.2	14.6	21.0	20.6	15.3	16.9	22.1
1986	20.6	20.3	17.2	18.4	17.7	23.1	23.9	23.1	21.5	26.3	18.1	13.2	21.6	22.0	15.9	17.7	22.7
1987	21.0	20.7	17.4	18.5	18.5	22.7	24.4	23.6	17.8	25.6	20.5	13.6	21.7	22.8	16.1	18.0	23.5
1988	22.3	22.1	18.5	19.1	19.6	22.5	27.9	25.3	20.7	26.3	20.8	14.3	23.3	24.0	16.4	19.4	24.6
1989	23.2	22.9	19.0	19.5	20.5	23.0	29.3	25.7	21.5	26.5	22.8	15.4	24.0	25.1	17.0	20.3	25.5
1990	23.7	23.5	18.4	20.7	21.9	22.9	29.3	26.3	22.0	26.9	26.2	14.9	23.9	25.6	16.9	19.5	26.1
1991	23.5	23.4	17.7	20.9	22.6	24.4	29.1	24.8	22.8	26.7	29.0	14.3	25.0	26.5	16.7	19.2	25.1
1992	24.3	24.4	18.1	21.6	23.8	24.3	30.9	25.2	24.1	28.1	31.9	15.0	25.6	27.7	16.2	19.9	25.2
1993	24.7	24.9	18.7	21.0	24.5	23.9	31.1	26.2	24.2	28.6	31.7	14.8	25.8	28.8	15.5	18.6	25.7
1994	24.8	25.0	18.8	21.6	24.3	23.8	30.7	26.5	23.6	29.1	32.8	15.3	26.2	29.2	15.8	18.7	25.7
1995	24.5	24.7	18.6	21.3	24.3	23.7	30.6	25.8	22.0	28.5	35.2	15.3	25.5	29.3	15.7	18.5	25.5
1996	24.1	24.3	17.7	20.9	23.3	24.0	30.8	25.5	25.9	28.5	35.2	15.1	24.5	29.7	15.2	18.1	24.7
1997	24.6	24.7	17.5	22.0	24.2	24.1	29.9	26.5	26.9	28.0	37.3	15.8	24.6	29.3	15.6	18.4	25.6

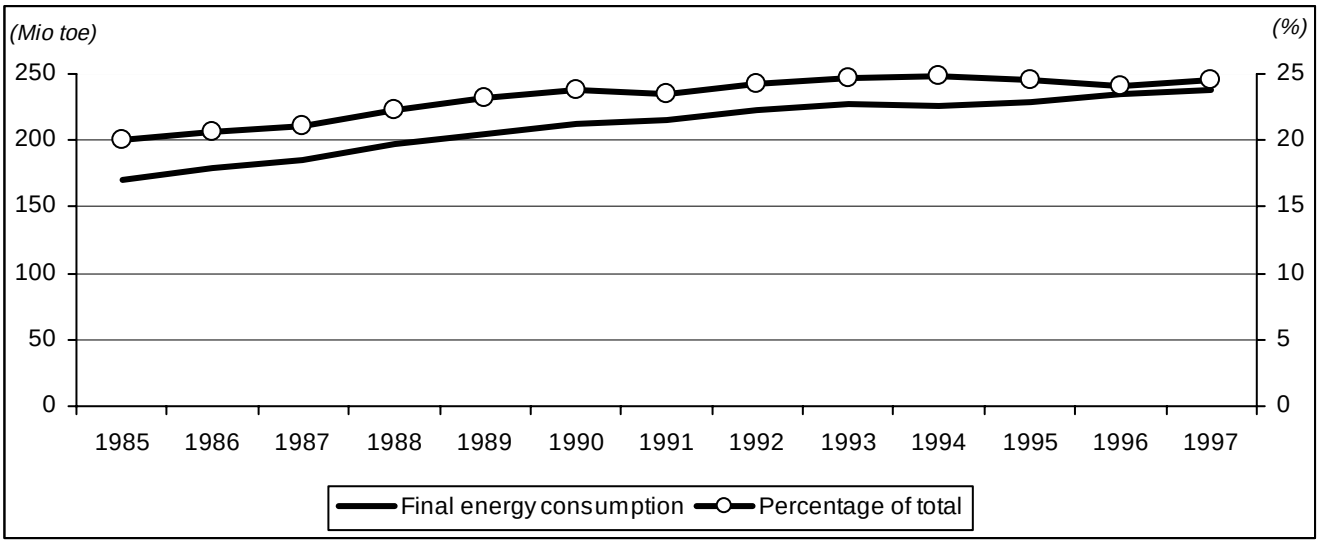


Figure 1.4: Final energy consumption of road transport and share of total: EU-15

Source: Eurostat (New Cronos).

Final energy consumption of railways

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(1 000 toe)
1985	6 966	5 467	215	128	2 444	57	433	1 147	45	610	13	95	281	81	103	308	1 006
1986	6 954	5 459	222	131	2 389	58	433	1 161	38	647	13	98	285	81	93	295	1 011
1987	6 983	5 560	186	116	2 323	53	463	1 165	185	648	14	101	287	83	104	282	973
1988	6 813	5 357	178	124	2 232	60	480	1 169	44	663	11	100	290	85	105	278	994
1989	6 740	5 364	177	116	2 215	68	492	1 167	45	671	4	103	301	86	102	268	923
1990	6 888	5 369	177	116	2 116	75	528	1 150	49	738	5	109	316	82	99	252	1 076
1991	7 083	5 579	215	113	2 155	56	545	1 221	37	762	13	117	332	86	95	244	1 091
1992	7 133	5 583	193	119	2 104	60	586	1 241	36	766	12	119	342	87	96	249	1 122
1993	7 318	5 639	199	124	2 117	59	583	1 258	57	761	10	119	351	81	103	237	1 260
1994	7 295	5 661	198	114	2 094	64	682	1 156	60	775	7	124	364	91	109	250	1 206
1995	7 438	5 745	202	118	2 130	57	626	1 220	50	819	9	127	377	80	105	273	1 246
1996	7 568	5 864	183	118	2 157	60	652	1 257	78	832	11	135	388	77	94	303	1 224
1997	7 604	5 987	168	119	2 132	57	706	1 352	89	858	12	135	356	83	97	285	1 155
																	(% of total final energy consumption)
1985	0.8	0.8	0.7	0.9	1.0	0.4	0.9	0.9	0.7	0.6	0.4	0.2	1.5	0.8	0.5	1.0	0.8
1986	0.8	0.8	0.7	0.9	1.0	0.4	0.8	0.9	0.6	0.6	0.5	0.2	1.5	0.8	0.5	0.9	0.8
1987	0.8	0.8	0.6	0.8	1.0	0.4	0.9	0.9	2.8	0.6	0.5	0.2	1.5	0.8	0.5	0.9	0.7
1988	0.8	0.8	0.5	0.8	0.9	0.4	0.8	0.9	0.7	0.6	0.4	0.2	1.5	0.8	0.5	0.9	0.7
1989	0.8	0.8	0.5	0.8	1.0	0.4	0.9	0.9	0.6	0.6	0.1	0.2	1.6	0.8	0.5	0.8	0.7
1990	0.8	0.8	0.5	0.7	0.9	0.4	0.9	0.8	0.7	0.7	0.1	0.2	1.6	0.7	0.5	0.8	0.8
1991	0.8	0.8	0.6	0.7	1.0	0.3	0.9	0.8	0.5	0.7	0.4	0.2	1.6	0.7	0.5	0.8	0.8
1992	0.8	0.8	0.5	0.8	0.9	0.3	0.9	0.9	0.5	0.7	0.4	0.2	1.7	0.7	0.4	0.8	0.8
1993	0.8	0.8	0.5	0.8	1.0	0.3	0.9	0.9	0.8	0.7	0.3	0.2	1.7	0.6	0.5	0.7	0.9
1994	0.8	0.8	0.5	0.7	1.0	0.3	1.0	0.8	0.8	0.7	0.2	0.2	1.8	0.7	0.5	0.7	0.8
1995	0.8	0.8	0.5	0.7	1.0	0.3	0.9	0.8	0.6	0.7	0.3	0.2	1.8	0.6	0.5	0.8	0.9
1996	0.8	0.8	0.4	0.7	0.9	0.3	0.9	0.8	0.9	0.7	0.3	0.2	1.8	0.5	0.4	0.9	0.8
1997	0.8	0.8	0.4	0.7	0.9	0.3	1.0	0.9	1.0	0.7	0.4	0.2	1.6	0.5	0.4	0.8	0.8

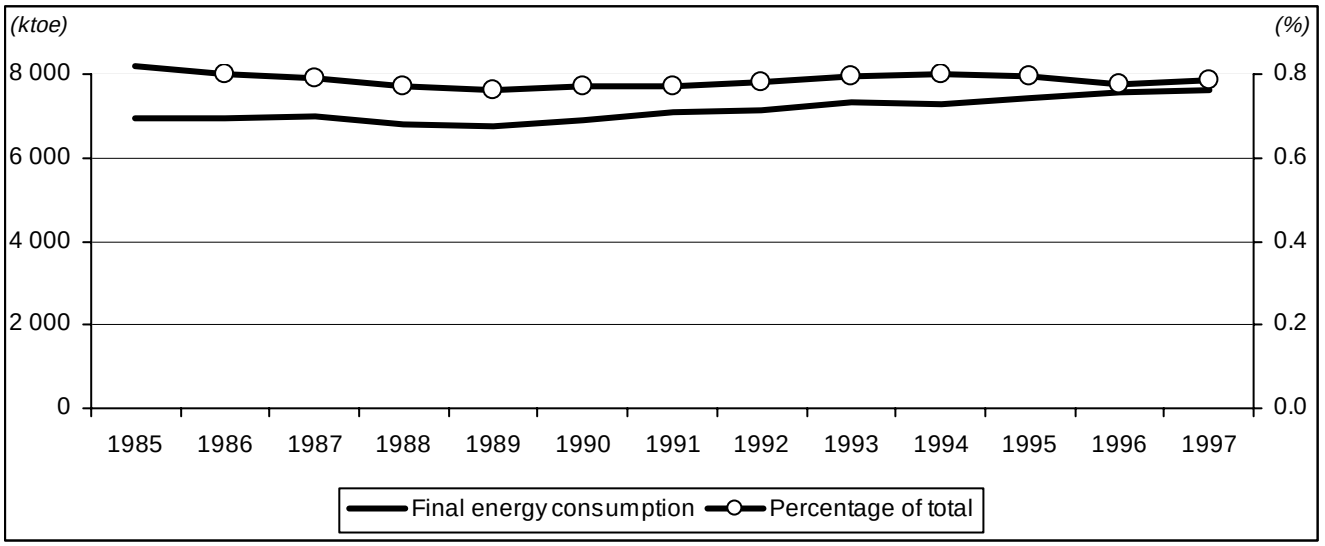


Figure 1.5: Final energy consumption of railways and share of total: EU-15

Source: Eurostat (New Cronos).

Final energy consumption of inland navigation

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(1 000 toe)
1985	4 328	2 626	242	131	724	374	850	279	5	381	0	0	0	53	91	198	998
1986	5 503	3 935	204	152	706	309	1 504	274	0	367	0	738	0	51	91	201	907
1987	5 030	3 740	177	362	632	308	1 595	277	5	364	0	546	0	48	96	211	409
1988	5 005	3 591	139	318	597	454	1 517	267	5	369	0	556	0	53	87	216	427
1989	6 076	3 737	103	413	614	508	1 681	297	5	404	0	505	0	46	82	157	1 261
1990	6 683	4 225	129	481	656	566	1 655	718	7	389	0	556	0	43	71	143	1 269
1991	6 843	4 531	194	439	662	581	1 746	772	17	406	0	624	0	42	68	102	1 190
1992	7 140	4 761	428	422	706	595	1 797	641	19	396	0	667	0	40	67	97	1 265
1993	6 901	4 829	331	201	717	546	1 844	711	29	405	0	672	0	47	72	69	1 256
1994	6 969	4 981	313	190	701	573	1 943	737	32	423	0	687	0	51	95	64	1 162
1995	6 686	4 708	245	214	554	544	1 871	733	28	448	0	697	0	46	85	103	1 117
1996	6 862	4 929	426	185	509	465	1 999	735	32	444	0	657	0	46	81	78	1 204
1997	6 515	4 527	393	161	402	563	1 701	739	34	448	0	687	0	44	78	99	1 164
																	(% of total final energy consumption)
1985	0.5	0.4	0.8	0.9	0.3	2.7	1.7	0.2	0.1	0.4	0.0	0.0	0.0	0.5	0.5	0.6	0.8
1986	0.6	0.6	0.6	1.0	0.3	2.2	2.9	0.2	0.0	0.4	0.0	1.4	0.0	0.5	0.5	0.6	0.7
1987	0.6	0.5	0.5	2.4	0.3	2.1	3.0	0.2	0.1	0.3	0.0	1.0	0.0	0.5	0.5	0.6	0.3
1988	0.6	0.5	0.4	2.2	0.3	2.9	2.7	0.2	0.1	0.3	0.0	1.1	0.0	0.5	0.4	0.7	0.3
1989	0.7	0.5	0.3	2.7	0.3	3.1	2.9	0.2	0.1	0.4	0.0	1.0	0.0	0.4	0.4	0.5	0.9
1990	0.7	0.6	0.4	3.1	0.3	3.3	2.7	0.5	0.1	0.3	0.0	1.0	0.0	0.4	0.3	0.5	0.9
1991	0.7	0.6	0.5	2.9	0.3	3.4	2.7	0.5	0.2	0.4	0.0	1.1	0.0	0.3	0.3	0.3	0.8
1992	0.8	0.7	1.1	2.8	0.3	3.4	2.8	0.4	0.3	0.3	0.0	1.2	0.0	0.3	0.3	0.3	0.9
1993	0.8	0.7	0.9	1.3	0.3	3.0	2.9	0.5	0.4	0.3	0.0	1.2	0.0	0.4	0.3	0.2	0.9
1994	0.8	0.7	0.8	1.2	0.3	3.1	2.9	0.5	0.4	0.4	0.0	1.2	0.0	0.4	0.4	0.2	0.8
1995	0.7	0.7	0.6	1.3	0.2	2.8	2.8	0.5	0.4	0.4	0.0	1.2	0.0	0.3	0.4	0.3	0.8
1996	0.7	0.7	1.0	1.1	0.2	2.3	2.8	0.5	0.4	0.4	0.0	1.0	0.0	0.3	0.4	0.2	0.8
1997	0.7	0.6	0.9	1.0	0.2	2.8	2.3	0.5	0.4	0.4	0.0	1.1	0.0	0.3	0.3	0.3	0.8

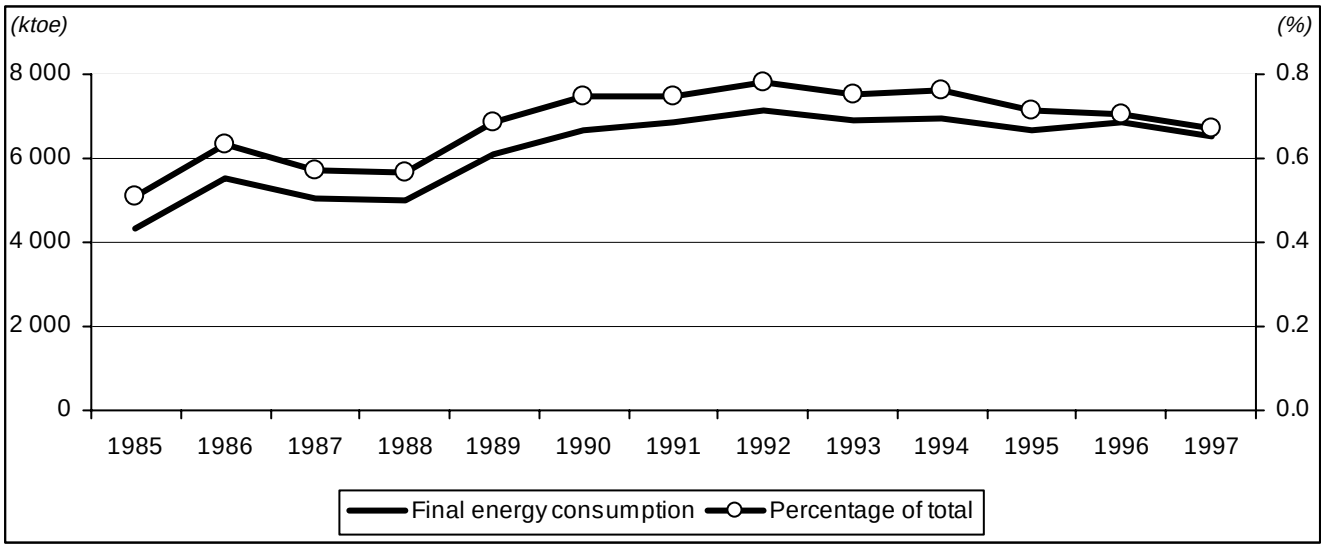


Figure 1.6: Final energy consumption of inland navigation and share of total: EU-15

Source: Eurostat (New Cronos).

Final energy consumption of aviation

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(Mio toe)
1985	21.1	13.6	0.6	0.6	4.2	1.2	2.0	2.7	0.2	1.8	0.1	1.2	0.2	0.5	0.3	0.6	5.2
1986	22.1	14.1	0.6	0.6	4.5	1.1	1.8	2.9	0.3	1.7	0.1	1.3	0.2	0.5	0.3	0.7	5.7
1987	23.2	14.8	0.6	0.7	4.7	1.1	2.1	3.1	0.3	1.5	0.1	1.4	0.2	0.5	0.3	0.7	6.0
1988	25.4	16.5	0.7	0.7	5.1	1.1	2.4	3.5	0.4	1.6	0.1	1.5	0.3	0.5	0.4	0.8	6.4
1989	26.8	17.4	0.7	0.8	5.5	1.0	2.4	3.7	0.4	1.8	0.1	1.6	0.4	0.5	0.4	0.9	6.8
1990	27.8	18.3	1.0	0.7	5.6	1.3	2.5	3.9	0.4	1.9	0.1	1.6	0.3	0.6	0.5	0.8	6.8
1991	27.9	18.9	0.9	0.7	5.1	1.2	3.2	3.8	0.4	2.2	0.1	1.7	0.4	0.6	0.4	0.8	6.4
1992	28.8	19.2	0.9	0.6	5.3	1.2	2.8	4.3	0.3	2.2	0.1	2.0	0.4	0.6	0.4	0.8	6.9
1993	30.0	19.7	0.9	0.7	5.6	1.5	2.7	4.4	0.3	2.2	0.1	2.2	0.4	0.6	0.4	0.8	7.3
1994	31.3	20.8	0.9	0.8	6.0	1.4	2.9	4.6	0.4	2.3	0.2	2.3	0.4	0.6	0.4	0.8	7.5
1995	32.5	21.8	0.9	0.8	6.0	1.2	3.1	4.7	0.4	2.4	0.2	2.6	0.5	0.6	0.4	0.9	7.8
1996	34.4	23.2	1.1	0.8	6.1	1.2	3.4	5.0	0.4	2.6	0.2	2.8	0.5	0.6	0.4	0.9	8.2
1997	36.0	24.6	1.3	0.8	6.4	1.2	3.6	5.2	0.4	2.7	0.3	3.0	0.5	0.6	0.5	0.9	8.6
																	(% of total final energy consumption)
1985	2.5	2.1	1.8	3.9	1.7	8.7	3.9	2.0	3.3	1.8	2.5	2.4	1.1	4.7	1.3	1.7	4.0
1986	2.5	2.1	1.7	4.0	1.8	7.6	3.5	2.2	4.7	1.7	2.8	2.5	1.1	4.8	1.3	2.0	4.2
1987	2.6	2.2	1.7	4.7	1.9	7.2	3.9	2.3	4.6	1.4	3.5	2.7	1.2	4.8	1.4	2.1	4.4
1988	2.9	2.4	2.0	4.8	2.1	7.0	4.3	2.6	5.4	1.5	3.6	2.9	1.5	4.8	1.8	2.4	4.6
1989	3.0	2.5	2.2	4.9	2.4	6.3	4.1	2.7	5.3	1.6	3.4	3.0	1.8	4.9	1.9	2.7	4.9
1990	3.1	2.6	2.7	4.5	2.4	7.5	4.1	2.8	5.0	1.7	4.0	3.0	1.6	4.9	2.2	2.5	4.9
1991	3.0	2.7	2.5	4.3	2.3	6.8	5.1	2.6	5.0	1.9	3.8	3.0	1.8	4.8	2.1	2.5	4.4
1992	3.1	2.7	2.4	4.2	2.4	6.9	4.3	3.0	3.8	1.9	3.7	3.5	2.0	4.8	1.8	2.6	4.8
1993	3.3	2.8	2.5	4.6	2.5	8.0	4.3	3.0	3.5	1.9	3.6	3.7	1.9	4.5	1.7	2.5	5.1
1994	3.4	3.0	2.4	4.8	2.7	7.3	4.3	3.3	5.2	2.0	4.7	4.0	2.1	4.4	1.8	2.5	5.2
1995	3.5	3.0	2.5	4.6	2.7	6.4	4.6	3.3	4.8	2.0	6.0	4.4	2.2	4.5	1.8	2.5	5.5
1996	3.5	3.1	2.6	5.0	2.6	6.2	4.8	3.3	5.0	2.2	6.3	4.4	2.3	4.3	2.0	2.4	5.4
1997	3.7	3.3	3.2	4.9	2.8	5.8	5.0	3.4	4.9	2.2	7.8	4.9	2.3	3.9	2.0	2.5	5.7

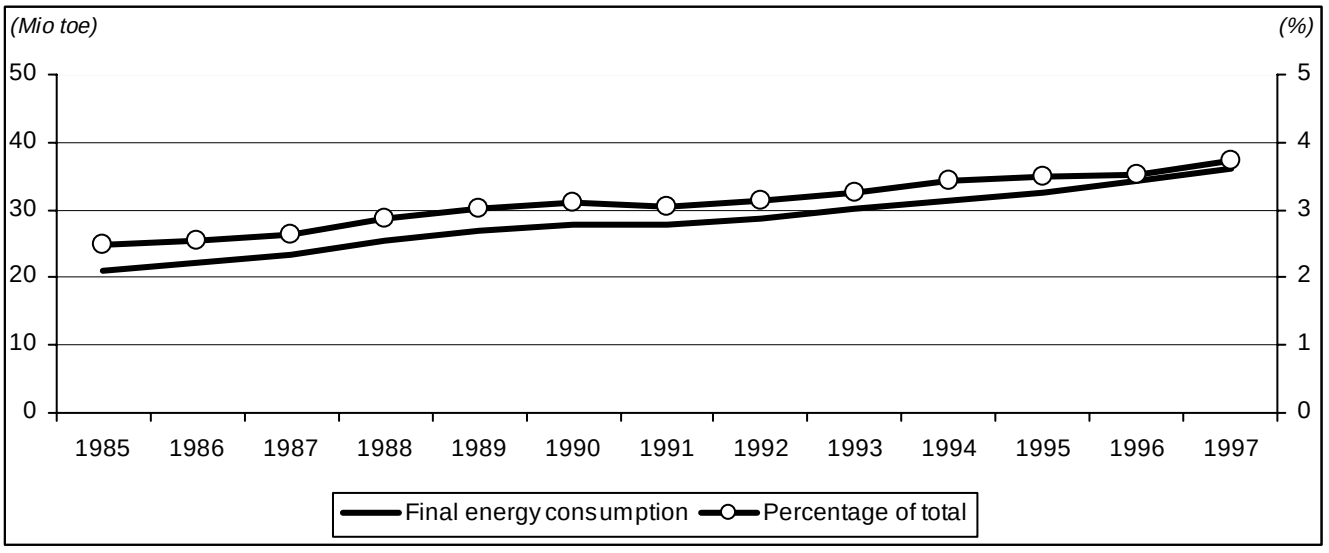


Figure 1.7: Final energy consumption of aviation and share of total: EU-15

Source: Eurostat (New Cronos).

Energy supplied from marine bunkers

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(Mio toe)
1985	28.0	23.8	2.3	0.4	3.4	1.1	2.6	2.4	0.0	3.4	–	8.7	–	0.5	0.5	0.6	2.1
1986	32.2	27.3	2.8	0.4	4.4	1.7	3.4	2.4	0.0	3.6	–	9.6	–	0.5	0.5	0.6	2.1
1987	31.6	26.3	3.3	0.7	3.5	1.8	3.7	2.2	0.0	3.3	–	9.4	–	0.5	0.5	0.8	2.0
1988	31.9	26.5	3.7	0.9	2.9	2.0	3.2	2.2	0.0	3.1	–	10.5	–	0.5	0.5	0.7	1.8
1989	31.8	25.9	3.9	0.9	2.5	2.1	3.2	2.3	0.0	2.8	–	10.2	–	0.6	0.5	0.7	2.3
1990	34.2	27.5	4.1	1.0	2.5	2.5	3.8	2.5	0.0	2.7	–	10.8	–	0.6	0.6	0.7	2.5
1991	33.9	27.5	4.2	0.8	2.1	2.3	3.8	2.6	0.0	2.5	–	11.1	–	0.6	0.5	0.8	2.4
1992	34.2	27.2	4.2	0.9	1.8	2.7	3.9	2.5	0.0	2.4	–	11.2	–	0.6	0.7	0.9	2.5
1993	35.1	27.3	4.3	1.3	2.2	3.1	3.4	2.4	0.1	2.4	–	11.6	–	0.5	0.5	0.9	2.4
1994	33.7	25.7	4.1	1.5	2.0	3.3	3.1	2.1	0.0	2.3	–	11.1	–	0.5	0.4	1.1	2.3
1995	34.7	26.1	3.9	1.6	2.0	3.5	3.1	2.5	0.1	2.4	–	11.2	–	0.5	0.3	1.0	2.4
1996	36.8	28.5	4.5	1.5	2.0	3.1	4.6	2.7	0.2	2.3	–	11.4	–	0.5	0.4	1.1	2.6
1997	40.1	31.3	5.1	1.5	2.1	3.1	5.7	2.9	0.1	2.4	–	12.1	–	0.5	0.4	1.3	2.9
																	(% of total final energy consumption)
1985	3.3	3.6	7.3	2.7	1.4	8.1	5.2	1.8	0.5	3.4	–	16.9	–	4.7	2.4	1.7	1.6
1986	3.7	4.1	8.7	3.1	1.8	12.2	6.5	1.8	0.3	3.6	–	18.0	–	5.0	2.6	2.0	1.6
1987	3.6	3.9	9.8	4.5	1.4	12.0	6.9	1.7	0.4	3.1	–	17.8	–	4.8	2.4	2.6	1.5
1988	3.6	3.9	10.6	5.9	1.2	13.0	5.6	1.7	0.3	2.8	–	20.0	–	4.2	2.4	2.0	1.3
1989	3.6	3.8	11.2	5.8	1.1	12.7	5.5	1.7	0.3	2.5	–	19.8	–	5.0	2.5	2.1	1.6
1990	3.8	4.0	11.7	6.2	1.1	14.8	6.3	1.8	0.3	2.3	–	20.1	–	5.1	2.6	2.1	1.8
1991	3.7	3.9	11.4	5.5	0.9	13.5	6.0	1.8	0.5	2.2	–	19.7	–	5.0	2.5	2.5	1.7
1992	3.7	3.9	11.1	5.9	0.8	15.1	6.1	1.8	0.2	2.1	–	19.9	–	4.7	3.1	2.8	1.7
1993	3.8	3.9	11.6	8.4	1.0	17.0	5.4	1.6	0.7	2.1	–	19.9	–	3.9	2.4	2.7	1.7
1994	3.7	3.7	10.9	9.1	0.9	17.6	4.6	1.5	0.5	2.1	–	19.5	–	3.6	1.8	3.1	1.6
1995	3.7	3.6	10.2	9.6	0.9	18.3	4.7	1.7	1.5	2.0	–	19.1	–	3.4	1.5	3.0	1.7
1996	3.8	3.8	11.0	8.7	0.9	15.6	6.5	1.8	1.9	1.9	–	18.1	–	3.4	1.6	3.1	1.7
1997	4.1	4.2	12.2	8.9	0.9	15.3	7.7	2.0	1.7	1.9	–	19.7	–	3.2	1.7	3.7	1.9

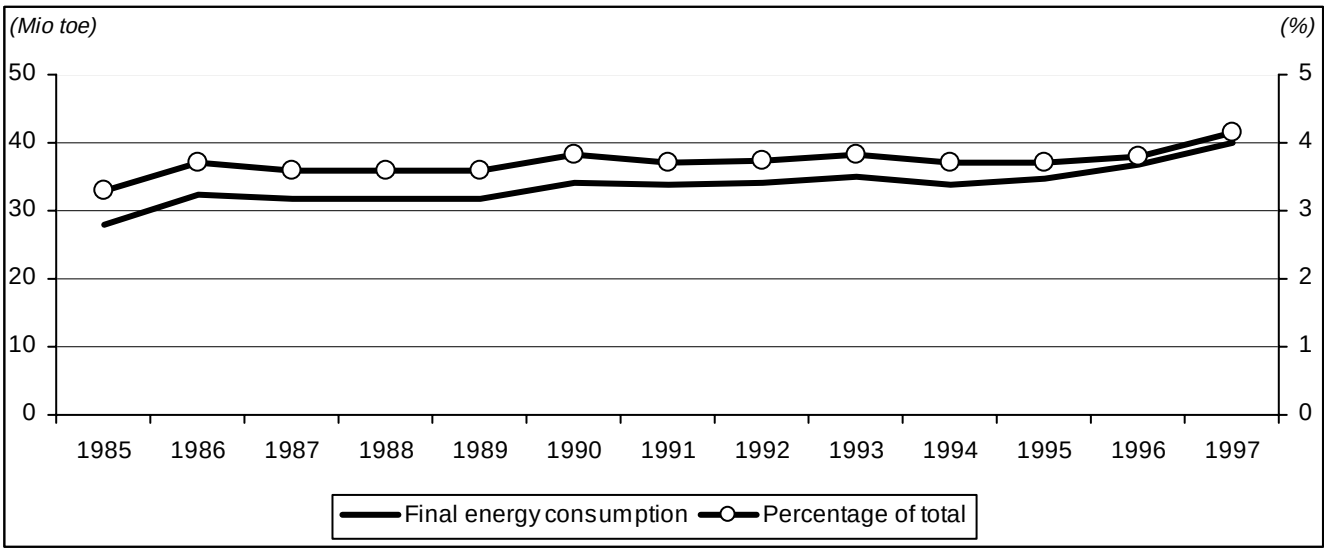


Figure 1.8: Energy supplied from marine bunkers and share of total: EU-15

Source: Eurostat (New Cronos).

Energy consumption of oil and gas pipelines

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(1 000 toe)
1985	101	64	0	0	0	–	0	29	–	35	–	0	0	–	–	–	36
1986	87	55	0	0	0	–	0	22	–	32	–	0	0	–	–	–	33
1987	88	58	0	0	0	–	0	25	–	33	–	0	0	–	–	–	30
1988	81	57	0	0	0	–	0	24	–	32	–	0	0	–	–	–	24
1989	82	59	0	0	0	–	0	26	–	34	–	0	0	–	–	–	23
1990	133	63	0	0	0	–	0	26	–	37	–	0	0	–	–	–	70
1991	117	43	0	0	0	–	0	0	–	43	–	0	0	–	–	–	73
1992	142	47	0	0	0	–	0	0	–	47	–	0	0	–	–	–	95
1993	134	45	0	0	0	–	0	0	–	45	–	0	0	–	–	–	89
1994	134	48	1	0	0	–	0	0	–	48	–	0	0	–	–	–	85
1995	122	42	1	0	0	–	0	0	–	41	–	0	0	–	–	–	80
1996	133	41	1	0	0	–	0	0	–	40	–	0	0	–	–	–	92
1997	112	35	1	0	0	–	0	0	–	34	–	0	0	–	–	–	78
																	(% of total final energy consumption)
1985	0.012	0.010	–	–	–	–	–	0.022	–	0.035	–	–	–	–	–	–	0.028
1986	0.010	0.008	–	–	–	–	–	0.017	–	0.032	–	–	–	–	–	–	0.024
1987	0.010	0.009	–	–	–	–	–	0.019	–	0.031	–	–	–	–	–	–	0.022
1988	0.009	0.008	–	–	–	–	–	0.018	–	0.030	–	–	–	–	–	–	0.018
1989	0.009	0.009	–	–	–	–	–	0.019	–	0.030	–	–	–	–	–	–	0.017
1990	0.015	0.009	–	–	–	–	–	0.019	–	0.033	–	–	–	–	–	–	0.050
1991	0.013	0.006	–	–	–	–	–	–	–	0.037	–	–	–	–	–	–	0.051
1992	0.015	0.007	–	–	–	–	–	–	–	0.041	–	–	–	–	–	–	0.066
1993	0.015	0.006	–	–	–	–	–	–	–	0.039	–	–	–	–	–	–	0.062
1994	0.015	0.007	0.002	–	–	–	–	–	–	0.042	–	–	–	–	–	–	0.059
1995	0.013	0.006	0.002	–	–	–	–	–	–	0.035	–	–	–	–	–	–	0.055
1996	0.014	0.006	0.002	–	–	–	–	–	–	0.034	–	–	–	–	–	–	0.060
1997	0.012	0.005	0.002	–	–	–	–	–	–	0.027	–	–	–	–	–	–	0.052

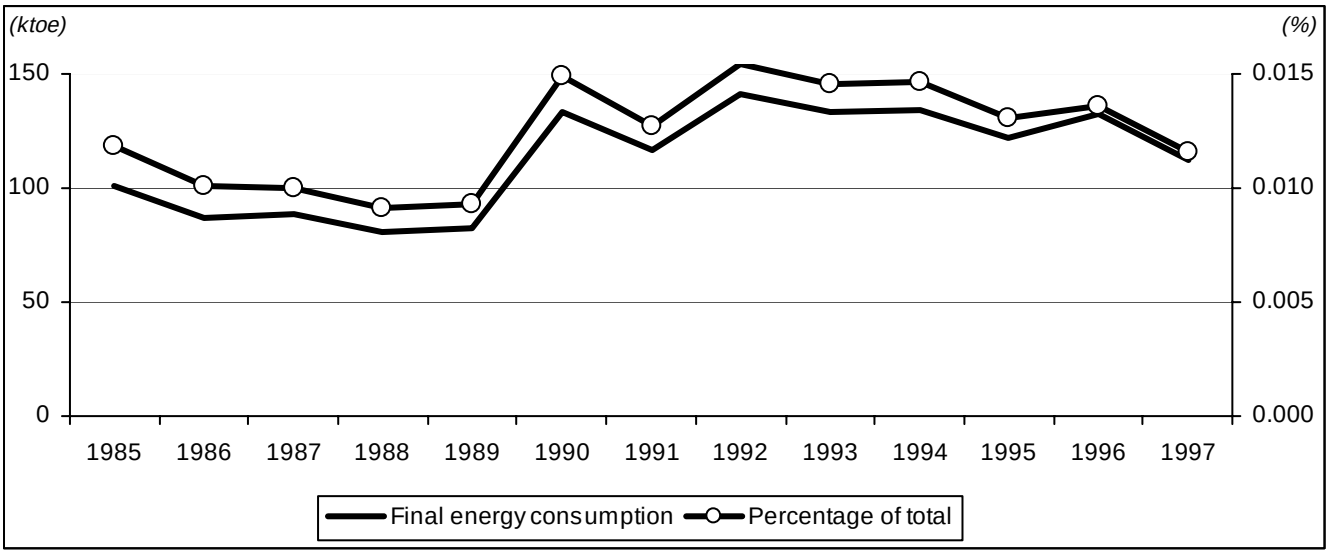


Figure 1.9: Final energy consumption of oil and gas pipelines and share of total: EU-15

Source: Eurostat (New Cronos).

Final energy consumption by mode and energy source (EU-15)

(1 000 toe)

	Crude oil and petroleum products	Gas	Electricity	Solid fuels	Others	All products
Total final energy consumption						
1985	401 534	161 388	136 414	101 417	49 261	850 013
1986	420 785	163 577	139 824	94 575	49 394	868 154
1987	420 437	173 147	145 157	92 969	49 904	881 613
1988	426 602	169 644	149 067	89 177	49 931	884 420
1989	422 334	175 559	153 844	85 408	49 977	887 122
1990	430 971	178 233	156 105	80 089	50 271	895 670
1991	442 214	193 559	158 927	68 902	52 003	915 605
1992	446 996	193 108	163 881	61 270	50 025	915 280
1993	452 378	198 393	161 187	54 982	52 283	919 224
1994	450 094	195 423	163 765	51 912	52 611	913 805
1995	454 304	205 745	169 490	49 073	55 042	933 653
1996	468 344	227 713	173 982	46 691	57 264	973 995
1997	470 179	215 868	176 771	45 901	61 523	970 242
Final energy consumption of transport						
1985	226 957	241	3 489	175	–	230 862
1997	323 549	303	4 987	14	–	328 854
Road transport						
1985	170 178	241	–	–	–	170 419
1997	238 168	303	–	–	–	238 471
Railways						
1985	3 402	–	3 388	175	–	6 966
1997	2 715	–	4 875	14	–	7 604
Inland navigation						
1985	4 328	–	–	–	–	4 328
1997	6 515	–	–	–	–	6 515
Aviation						
1985	21 093	–	–	–	–	21 093
1997	36 044	–	–	–	–	36 044
Marine bunkers						
1985	27 957	–	–	–	–	27 957
1997	40 108	–	–	–	–	40 108
Oil and gas pipelines						
1985	–	–	101	–	–	101
1997	–	–	112	–	–	112

Source: Eurostat (New Cronos).

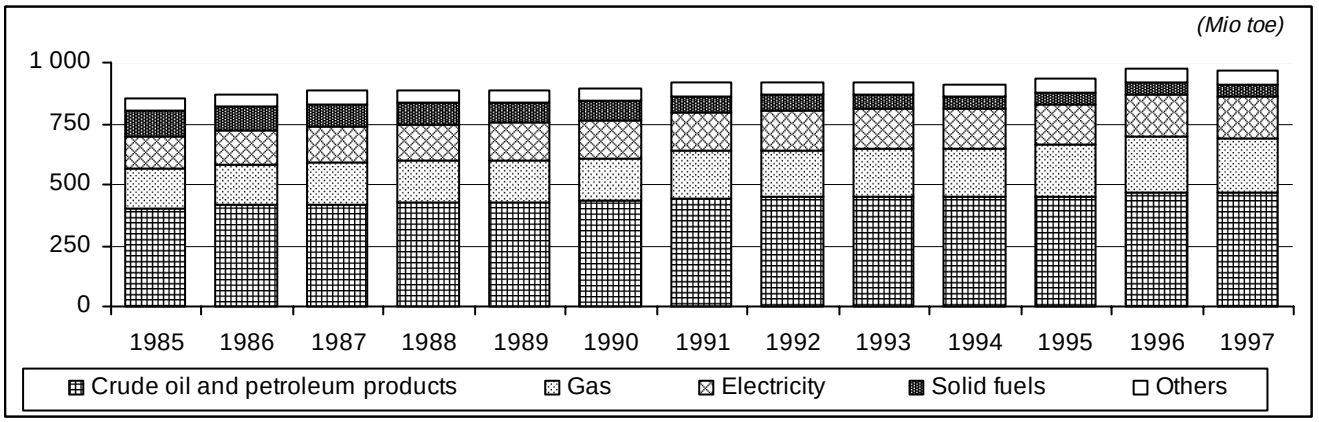


Figure 1.10: Total final energy consumption by energy source - EU-15

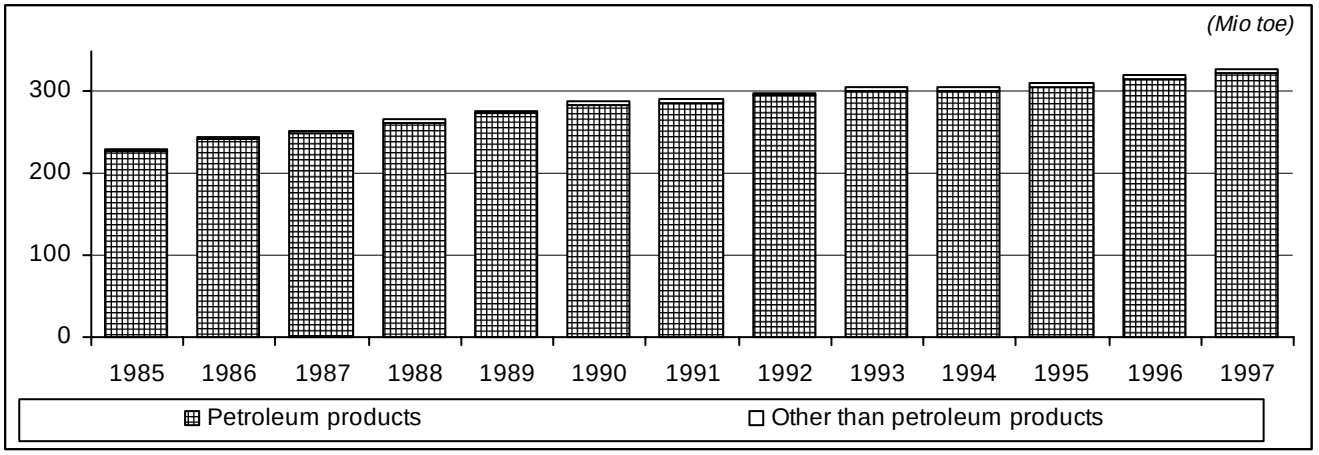


Figure 1.11: Final energy consumption of transport by energy source - EU-15

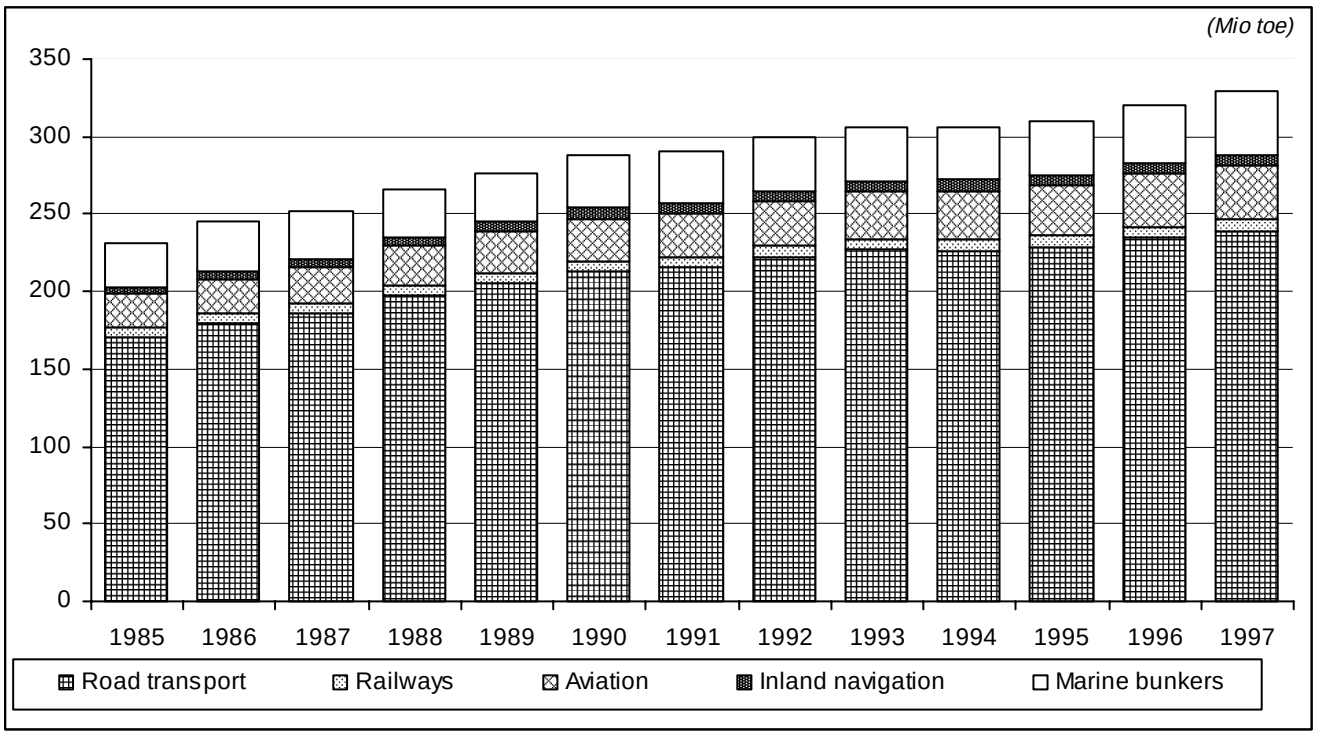


Figure 1.12: Final energy consumption of transport by mode - EU-15

Carbon dioxide emissions (national estimates)

(Mio t)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total CO_2 emissions																	
1990	3 463	2 654	115	52	1 015	85	226	482	31	442	13	161	62	47	59	55	616
1991	3 445	2 622	121	63	977	85	228	513	32	404	13	167	66	49	53	55	620
1992	3 380	2 574	122	58	927	87	235	499	32	415	12	165	61	53	52	56	605
1993	3 308	2 516	120	59	917	87	226	476	32	403	11	168	60	50	53	56	590
1994	3 343	2 549	124	63	904	89	237	475	33	423	12	168	61	51	59	58	584
1995	3 402	2 619	126	60	904	90	248	484	34	448	7	177	62	67	61	58	575
1996	3 472	2 650	130	73	919	92	229	498	35	448	7	186	64	67	66	63	594
Transport emissions																	
1990	707	535	21	10	162	15	58	123	5	96	3	29	14	14	12	19	128
1991	726	553	21	11	166	16	59	125	5	106	1	29	15	15	12	19	127
1992	747	573	22	11	172	16	61	128	6	111	1	30	15	16	12	19	128
1993	756	580	23	11	176	17	61	129	6	113	1	30	15	16	11	18	129
1994	753	577	22	11	173	17	62	132	6	104	4	31	16	17	11	19	129
1995	761	586	23	11	175	17	64	134	6	110	1	32	15	14	11	19	127
1996	770	590	23	12	174	17	65	136	7	110	1	34	15	14	11	20	132
Road transport emissions																	
1990	594	451	17	8	142	10	46	99	4	82	3	25	12	11	10	17	109
1991	613	469	18	8	147	11	47	101	5	91	1	24	13	12	10	17	108
1992	634	488	19	8	154	11	48	104	5	96	1	26	13	13	10	17	110
1993	643	496	19	8	158	11	48	105	5	98	1	26	14	14	10	16	111
1994	639	491	18	8	153	12	49	108	5	90	4	26	14	14	10	17	112
1995	648	500	19	8	154	12	52	109	6	96	1	28	13	12	10	17	111
1996	656	506	19	8	156	12	52	109	6	100	1	28	14	12	9	16	115
Other transport emissions																	
1990	113	84	3	3	21	5	12	24	0	13	0	4	2	3	2	2	19
1991	113	84	3	3	19	5	13	24	0	14	0	4	2	3	2	2	18
1992	113	85	4	3	17	5	13	24	1	15	0	4	2	3	2	2	18
1993	112	84	4	3	18	5	13	24	0	15	0	4	2	3	1	2	18
1994	113	86	4	3	20	5	13	24	1	14	0	4	2	3	2	2	17
1995	113	87	4	3	21	5	13	25	1	14	0	4	2	2	2	2	16
1996	114	84	4	4	18	5	14	27	1	10	0	6	1	2	2	4	17

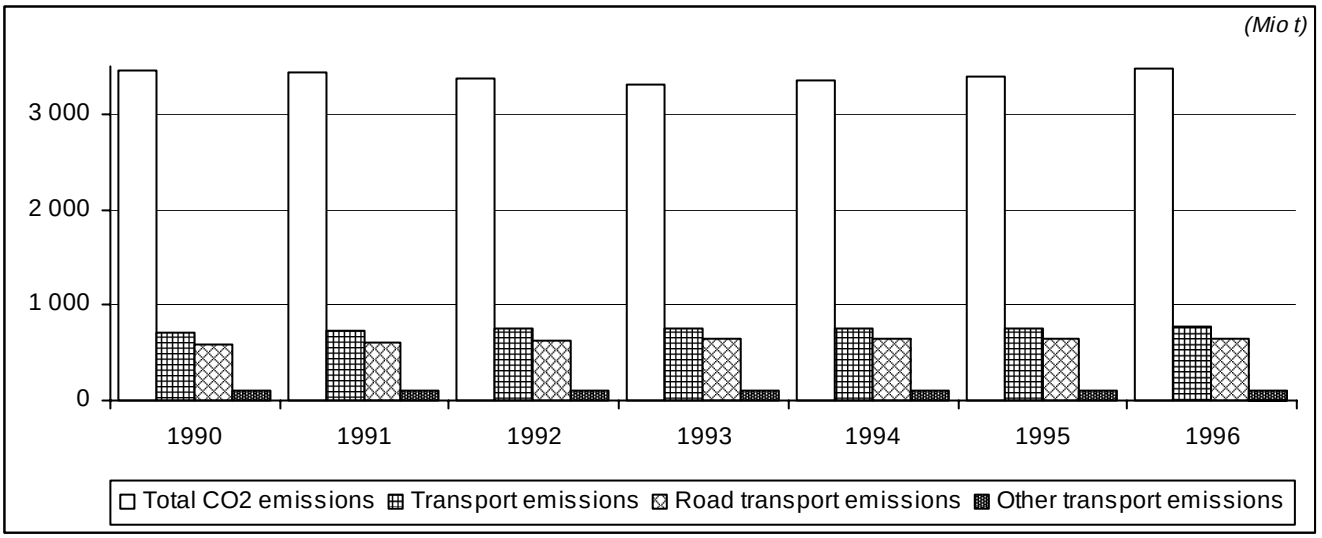


Figure 1.13: Carbon dioxide emissions - EU-15

Source: ETC-AE.

Transport share of carbon dioxide emissions (national estimates)

(% of total national emissions)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Transport emissions																	
1990	20.4	20.2	17.9	20.0	16.0	17.8	25.7	25.4	15.9	21.6	21.8	17.7	21.9	29.8	20.1	33.6	20.8
1991	21.1	21.1	17.4	17.4	17.0	18.8	26.0	24.4	16.2	26.2	7.2	17.1	22.7	30.6	22.2	33.7	20.4
1992	22.1	22.3	18.5	19.2	18.5	18.9	25.8	25.7	17.2	26.7	7.6	18.1	24.9	30.3	22.1	34.0	21.1
1993	22.8	23.1	18.8	19.0	19.2	19.0	26.8	27.0	17.4	28.0	9.1	18.2	25.4	32.5	20.7	32.6	21.9
1994	22.5	22.7	17.9	17.9	19.1	18.9	26.0	27.8	17.4	24.5	30.7	18.3	26.4	33.1	19.3	32.0	22.0
1995	22.4	22.4	17.9	19.1	19.3	18.7	25.9	27.7	18.2	24.5	16.7	18.1	24.7	21.5	18.2	33.3	22.1
1996	22.2	22.3	17.6	16.0	18.9	18.8	28.6	27.2	18.8	24.5	17.5	18.0	24.0	21.5	16.6	30.9	22.1
Road transport emissions																	
1990	17.2	17.0	15.2	14.6	14.0	11.6	20.5	20.5	14.5	18.6	19.4	15.2	19.0	23.8	17.2	29.9	17.7
1991	17.8	17.9	14.7	12.7	15.0	12.5	20.4	19.8	14.7	22.6	6.4	14.7	19.9	24.7	19.0	30.0	17.5
1992	18.8	19.0	15.2	14.0	16.6	12.7	20.3	20.8	15.6	23.1	6.8	15.5	21.8	25.0	19.2	30.4	18.1
1993	19.4	19.7	15.8	13.9	17.2	13.0	21.2	22.0	16.1	24.3	8.2	15.6	22.7	27.2	18.1	29.0	18.8
1994	19.1	19.3	14.8	13.0	17.0	13.0	20.6	22.7	15.9	21.3	29.9	15.7	22.5	28.0	16.3	28.4	19.1
1995	19.0	19.1	14.7	13.9	17.0	13.3	20.8	22.5	16.5	21.4	15.4	16.0	21.6	18.4	15.7	29.8	19.2
1996	18.9	19.1	14.4	10.3	17.0	13.2	22.6	21.9	15.9	22.3	16.1	15.0	21.7	18.4	14.1	25.0	19.3
Other transport emissions																	
1990	3.3	3.2	2.7	5.5	2.0	6.2	5.2	5.0	1.4	3.0	2.4	2.5	2.8	6.0	2.9	3.7	3.1
1991	3.3	3.2	2.7	4.7	2.0	6.3	5.6	4.6	1.5	3.6	0.8	2.4	2.8	5.9	3.1	3.7	2.9
1992	3.3	3.3	3.3	5.2	1.9	6.2	5.5	4.9	1.6	3.6	0.8	2.6	3.1	5.3	2.9	3.6	3.0
1993	3.4	3.3	3.1	5.2	2.0	6.0	5.6	5.1	1.3	3.7	0.9	2.6	2.6	5.3	2.6	3.6	3.0
1994	3.4	3.4	3.1	4.9	2.2	5.9	5.4	5.1	1.6	3.2	0.8	2.6	3.9	5.2	2.9	3.6	2.9
1995	3.3	3.3	3.2	5.2	2.3	5.4	5.1	5.2	1.7	3.1	1.3	2.1	3.1	3.1	2.6	3.5	2.8
1996	3.3	3.2	3.2	5.8	2.0	5.6	6.0	5.3	2.8	2.1	1.3	3.1	2.3	3.1	2.5	5.9	2.8

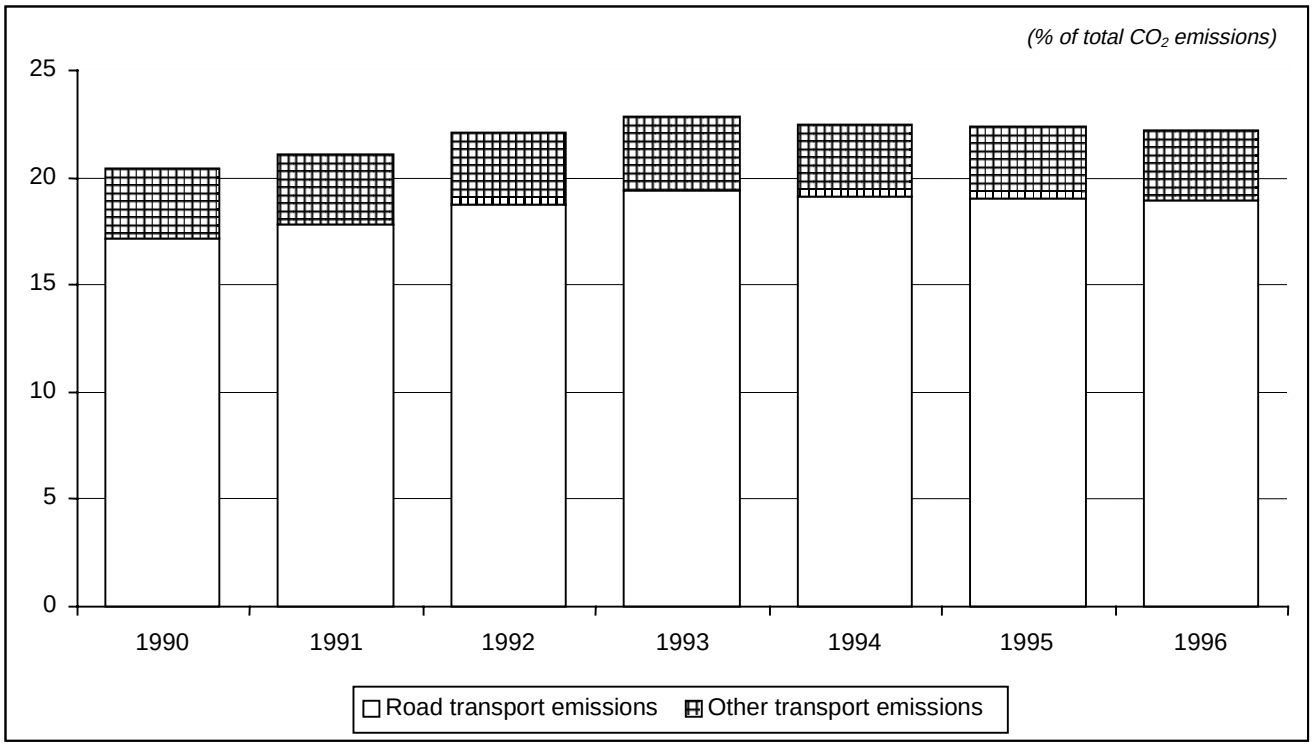


Figure 1.14: Transport share of total carbon dioxide emissions

Source: ETC-AE.

Emissions of nitrogen oxides (national estimates)

(1 000 t)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total NO_x emissions																	
1990	13 257	9 650	321	280	2 709	318	1 188	1 951	115	1 945	23	563	194	346	295	336	2 673
1991	13 178	9 625	332	320	2 501	325	1 240	2 025	120	1 984	23	551	198	362	290	337	2 571
1992	12 849	9 425	343	274	2 311	324	1 256	1 962	128	2 010	23	539	188	383	283	328	2 497
1993	12 344	9 093	338	274	2 198	321	1 228	1 853	116	1 990	23	519	175	371	282	323	2 333
1994	11 921	8 748	340	272	2 042	330	1 269	1 826	116	1 795	22	493	183	379	282	330	2 242
1995	11 702	8 718	339	253	2 007	328	1 249	1 804	113	1 853	20	497	170	407	259	309	2 093
1996	11 392	8 436	330	291	1 887	346	1 203	1 784	121	1 768	22	486	161	407	267	301	2 018
Transport emissions																	
1990	7 080	5 094	161	125	1 423	140	566	1 128	45	968	11	337	99	197	160	261	1 459
1991	7 246	5 268	171	121	1 367	145	583	1 137	49	1 160	12	336	105	207	139	261	1 451
1992	7 260	5 337	180	119	1 323	145	603	1 143	50	1 228	12	326	100	220	153	261	1 398
1993	7 038	5 185	181	117	1 281	141	586	1 112	45	1 191	12	312	96	220	149	253	1 341
1994	6 660	4 871	182	103	1 200	144	593	1 086	48	974	10	304	102	226	146	260	1 282
1995	6 517	4 830	175	100	1 186	143	598	1 035	49	995	10	315	89	238	139	241	1 203
1996	6 255	4 675	163	98	1 061	145	603	977	67	995	10	302	86	238	172	172	1 166
Road transport emissions																	
1990	5 549	4 009	158	77	1 172	69	401	784	41	802	10	265	81	145	150	161	1 233
1991	5 705	4 170	168	74	1 141	72	408	792	42	973	11	263	87	155	131	162	1 227
1992	5 727	4 247	176	73	1 107	72	423	803	43	1 035	11	254	82	169	144	159	1 176
1993	5 525	4 107	177	72	1 054	71	410	786	40	991	11	244	81	173	140	151	1 124
1994	5 131	3 772	177	65	937	72	412	762	39	799	10	240	79	180	137	146	1 076
1995	5 007	3 731	170	57	931	74	421	703	41	809	9	248	72	194	133	140	1 005
1996	4 791	3 577	158	54	839	74	425	642	52	809	10	211	74	194	164	128	958
Other transport emissions																	
1990	1 530	1 085	3	48	250	71	165	344	5	166	1	72	17	52	10	100	226
1991	1 541	1 098	3	47	226	73	175	346	7	187	1	73	18	52	8	99	225
1992	1 533	1 091	4	46	216	73	180	340	7	193	1	72	18	51	9	102	222
1993	1 512	1 078	4	45	227	70	175	326	6	200	1	68	15	47	9	102	217
1994	1 529	1 098	5	38	263	72	181	323	8	174	0	65	23	46	9	115	205
1995	1 510	1 099	5	43	255	69	177	332	8	186	1	67	18	44	6	101	198
1996	1 464	1 097	5	44	222	71	178	335	15	186	1	91	13	44	8	44	207

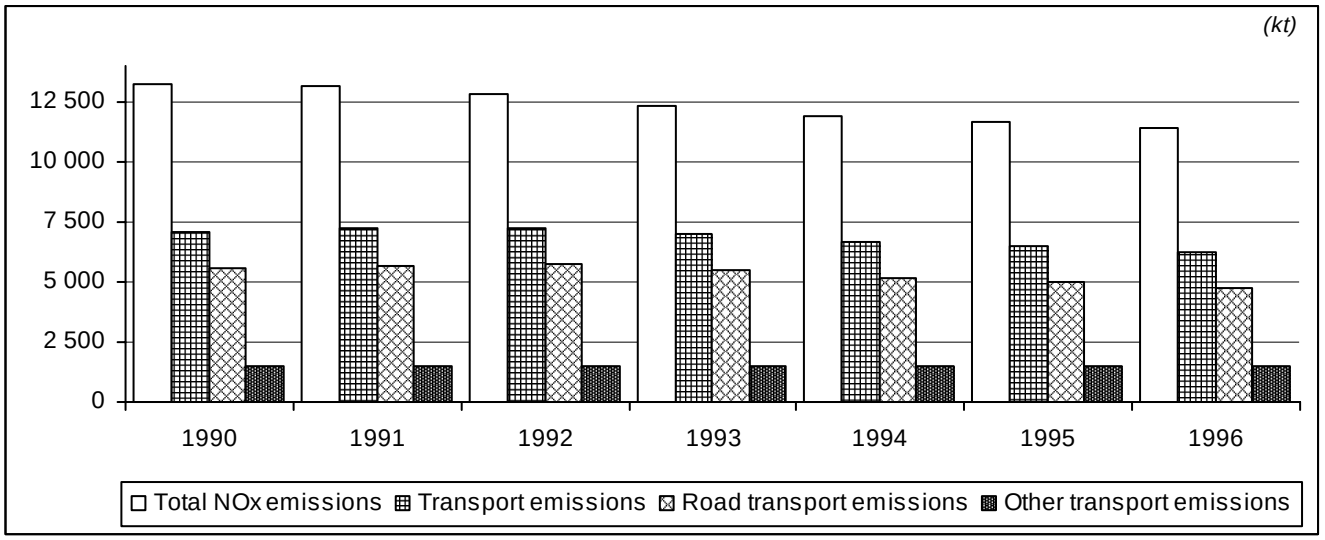


Figure 1.15: NO_x emissions - EU-15

Source: ETC-AE.

Transport share of emissions of nitrogen oxides (national estimates)

(% of total national emissions)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Transport emissions																	
1990	53.4	52.8	50.2	44.6	52.5	44.0	47.6	57.8	39.5	49.8	47.8	59.8	50.8	56.9	54.2	77.7	54.6
1991	55.0	54.7	51.5	37.8	54.7	44.6	47.0	56.2	40.9	58.5	53.0	61.0	53.1	57.3	48.0	77.6	56.4
1992	56.5	56.6	52.5	43.4	57.2	44.8	48.0	58.3	39.0	61.1	53.0	60.4	53.0	57.4	54.1	79.5	56.0
1993	57.0	57.0	53.6	42.7	58.3	43.9	47.7	60.0	39.1	59.8	53.0	60.1	54.9	59.3	52.8	78.4	57.5
1994	55.9	55.7	53.5	37.9	58.8	43.6	46.7	59.5	41.3	54.2	46.5	61.7	55.5	59.7	51.8	79.0	57.2
1995	55.7	55.4	51.6	39.5	59.1	43.6	47.9	57.4	43.5	53.7	51.2	63.3	52.6	58.4	53.7	78.0	57.5
1996	54.9	55.4	49.4	33.5	56.2	41.9	50.2	54.8	55.7	56.3	47.7	62.1	53.5	58.4	64.3	57.1	57.8
Road transport emissions																	
1990	41.9	41.5	49.1	27.4	43.3	21.6	33.8	40.2	35.5	41.2	42.4	47.1	42.0	41.8	51.0	48.0	46.1
1991	43.3	43.3	50.5	23.2	45.6	22.2	32.9	39.1	35.1	49.0	47.8	47.7	44.0	42.9	45.1	48.1	47.7
1992	44.6	45.1	51.4	26.7	47.9	22.2	33.7	40.9	33.7	51.5	47.8	47.1	43.4	44.2	50.8	48.4	47.1
1993	44.8	45.2	52.4	26.3	47.9	22.1	33.4	42.4	34.1	49.8	47.8	47.0	46.4	46.5	49.6	46.8	48.2
1994	43.0	43.1	52.0	24.0	45.9	21.7	32.5	41.7	34.0	44.5	44.2	48.6	43.0	47.5	48.6	44.2	48.0
1995	42.8	42.8	50.1	22.4	46.4	22.5	33.7	39.0	36.4	43.7	46.4	49.8	42.3	47.6	51.2	45.4	48.0
1996	42.1	42.4	47.9	18.5	44.5	21.3	35.3	36.0	43.3	45.8	43.3	43.4	45.7	47.6	61.3	42.5	47.5
Other transport emissions																	
1990	11.5	11.2	1.0	17.2	9.2	22.4	13.9	17.6	4.0	8.5	5.5	12.8	8.8	15.0	3.3	29.6	8.5
1991	11.7	11.4	1.0	14.6	9.0	22.4	14.2	17.1	5.8	9.4	5.2	13.3	9.2	14.4	2.9	29.4	8.7
1992	11.9	11.6	1.1	16.7	9.3	22.5	14.4	17.3	5.3	9.6	5.2	13.3	9.6	13.2	3.3	31.1	8.9
1993	12.3	11.9	1.2	16.4	10.3	21.8	14.3	17.6	5.0	10.0	5.2	13.1	8.5	12.7	3.2	31.6	9.3
1994	12.8	12.6	1.5	13.9	12.9	21.9	14.3	17.7	7.3	9.7	2.2	13.1	12.4	12.2	3.1	34.8	9.2
1995	12.9	12.6	1.5	17.1	12.7	21.1	14.2	18.4	7.1	10.0	4.8	13.5	10.4	10.8	2.5	32.6	9.5
1996	12.8	13.0	1.5	15.0	11.8	20.6	14.8	18.8	12.4	10.5	4.4	18.6	7.8	10.8	3.0	14.6	10.3

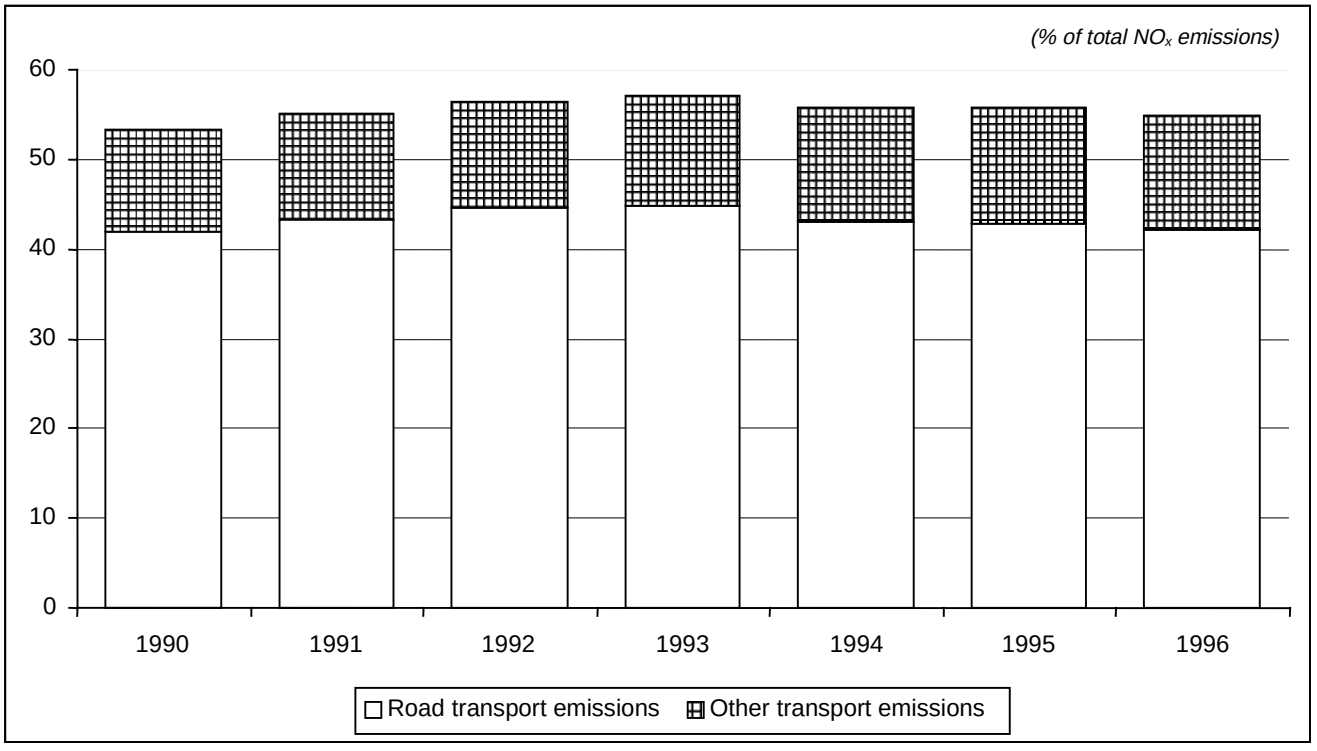


Figure 1.16: Transport share of total NO_x emissions

Source: ETC-AE.

Emissions of non-methane volatile organic compounds (national estimates)

(1 000 t)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total NMVOC emissions																	
1990	15 950	12 194	291	179	3 225	328	1 909	3 003	180	2 221	19	500	350	282	213	516	2 733
1991	15 540	11 836	295	176	2 798	333	1 973	3 005	178	2 293	20	460	323	288	204	517	2 678
1992	15 063	11 496	294	170	2 540	336	1 980	2 934	179	2 338	20	436	296	301	177	485	2 576
1993	14 528	11 070	293	161	2 327	343	1 970	2 800	171	2 344	19	403	284	304	155	483	2 471
1994	14 304	10 895	301	166	2 158	352	1 991	2 753	174	2 354	18	388	273	319	165	478	2 413
1995	14 232	10 961	293	162	1 981	357	1 937	2 675	175	2 371	17	370	269	691	182	457	2 295
1996	13 807	10 618	286	139	1 877	371	1 911	2 573	103	2 368	17	359	260	691	173	458	2 221
Transport emissions																	
1990	6 287	4 750	107	101	1 490	150	328	1 248	63	1 049	11	200	96	67	91	216	1 069
1991	6 081	4 556	113	97	1 174	155	345	1 232	64	1 195	8	180	97	72	74	216	1 057
1992	5 874	4 410	118	93	1 007	161	358	1 214	65	1 245	8	172	85	80	57	199	1 012
1993	5 591	4 194	117	85	859	173	364	1 159	57	1 253	8	162	75	84	56	191	948
1994	5 207	3 874	114	77	714	178	343	1 086	59	1 184	9	156	68	87	53	188	890
1995	5 047	3 794	107	71	634	182	324	1 007	59	1 218	9	154	61	140	81	179	822
1996	4 785	3 605	98	67	568	191	303	922	62	1 218	9	145	53	140	87	160	762
Road transport emissions																	
1990	5 726	4 298	105	88	1 413	135	302	1 107	61	877	10	190	91	63	79	186	1 019
1991	5 504	4 092	111	84	1 108	140	317	1 090	63	1 002	7	170	92	68	63	181	1 006
1992	5 319	3 967	116	81	950	146	330	1 077	64	1 057	7	162	80	76	48	166	960
1993	5 054	3 768	115	73	802	158	337	1 029	55	1 071	7	153	71	80	47	158	898
1994	4 670	3 450	108	66	643	162	316	959	57	1 020	9	148	63	83	45	152	840
1995	4 517	3 376	104	55	575	167	299	877	57	1 053	8	146	56	133	69	145	774
1996	4 267	3 190	95	55	518	175	280	791	60	1 053	8	133	50	133	68	134	713
Other transport emissions																	
1990	561	452	2	13	77	15	26	141	1	172	1	10	6	4	12	30	50
1991	577	464	2	13	66	15	28	142	1	193	1	10	5	4	11	35	51
1992	556	443	2	12	57	15	28	137	1	188	1	10	5	4	9	33	52
1993	537	426	2	12	57	15	27	130	1	181	1	9	4	4	9	33	51
1994	536	424	6	11	71	16	27	127	2	164	1	8	6	4	8	36	50
1995	530	417	3	16	59	15	25	130	2	166	1	8	5	6	12	34	48
1996	518	415	3	12	50	16	24	131	2	166	1	12	3	6	19	26	49

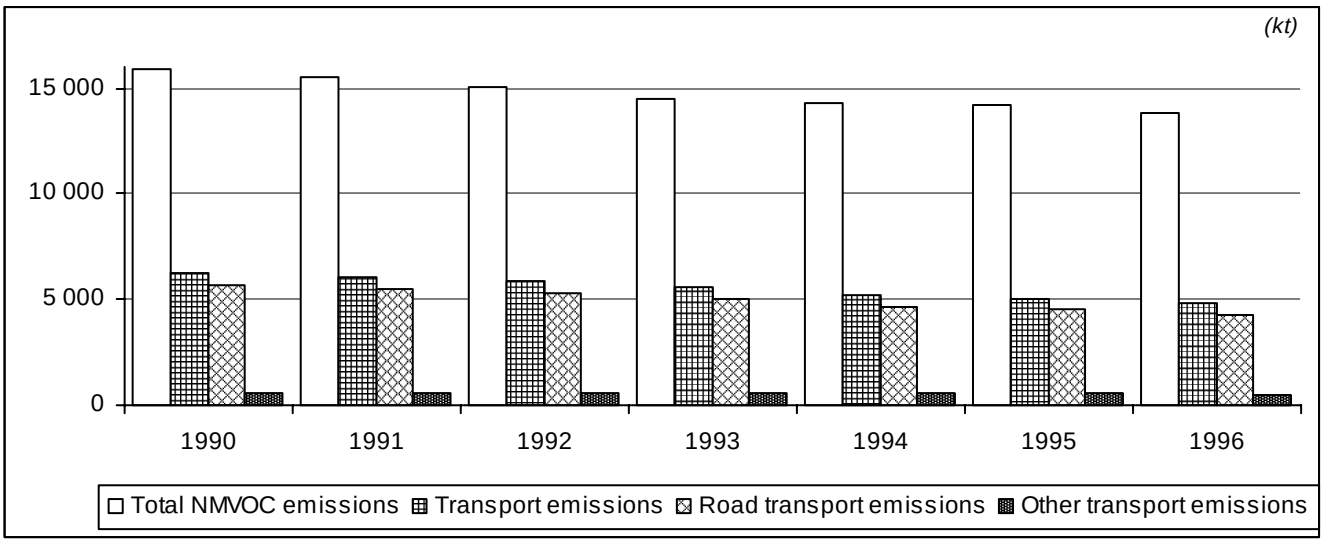


Figure 1.17: NMVOC emissions - EU-15

Source: ETC-AE.

Transport share of emissions of non-methane volatile organic compounds (national estimates)

(% of total national emissions)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Transport emissions																	
1990	39.4	39.0	36.8	56.4	46.2	45.7	17.2	41.6	34.8	47.2	57.9	40.1	27.5	23.6	42.7	41.9	39.1
1991	39.1	38.5	38.3	55.1	42.0	46.5	17.5	41.0	36.1	52.1	39.0	39.2	30.2	25.2	36.5	41.9	39.5
1992	39.0	38.4	40.1	54.7	39.6	47.9	18.1	41.4	36.5	53.2	39.0	39.5	28.7	26.5	32.2	41.0	39.3
1993	38.5	37.9	39.9	52.8	36.9	50.4	18.5	41.4	33.1	53.4	40.5	40.2	26.5	27.6	36.1	39.6	38.4
1994	36.4	35.6	37.9	46.4	33.1	50.6	17.2	39.4	33.7	50.3	49.4	40.4	25.0	27.3	32.1	39.3	36.9
1995	35.5	34.6	36.5	43.8	32.0	51.0	16.7	37.7	33.9	51.4	49.2	41.7	22.5	20.2	44.5	39.1	35.8
1996	34.7	34.0	34.3	47.9	30.3	51.5	15.9	35.8	60.1	51.4	49.8	40.5	20.5	20.2	50.0	34.9	34.3
Road transport emissions																	
1990	35.9	35.2	36.2	49.0	43.8	41.2	15.8	36.9	34.1	39.5	52.7	38.0	25.8	22.2	37.0	36.0	37.3
1991	35.4	34.6	37.7	47.8	39.6	42.1	16.1	36.3	35.3	43.7	34.0	36.9	28.5	23.7	30.9	35.1	37.6
1992	35.3	34.5	39.4	47.5	37.4	43.3	16.7	36.7	35.8	45.2	34.0	37.2	26.9	25.1	27.2	34.2	37.3
1993	34.8	34.0	39.1	45.5	34.5	46.0	17.1	36.8	32.4	45.7	35.3	38.1	25.0	26.3	30.4	32.7	36.3
1994	32.7	31.7	35.9	39.9	29.8	46.1	15.9	34.8	32.6	43.3	46.3	38.3	22.9	26.0	27.0	31.7	34.8
1995	31.7	30.8	35.6	34.1	29.0	46.6	15.4	32.8	32.9	44.4	44.2	39.5	20.8	19.3	37.8	31.7	33.7
1996	30.9	30.0	33.4	39.7	27.6	47.1	14.6	30.8	58.1	44.4	44.9	37.2	19.3	19.3	39.3	29.3	32.1
Other transport emissions																	
1990	3.5	3.7	0.6	7.5	2.4	4.5	1.4	4.7	0.7	7.7	5.2	2.1	1.6	1.4	5.7	5.8	1.8
1991	3.7	3.9	0.6	7.3	2.4	4.5	1.4	4.7	0.8	8.4	5.0	2.2	1.7	1.4	5.6	6.8	1.9
1992	3.7	3.9	0.8	7.2	2.3	4.6	1.4	4.7	0.7	8.0	5.0	2.3	1.7	1.4	5.0	6.8	2.0
1993	3.7	3.8	0.8	7.3	2.5	4.5	1.4	4.6	0.7	7.7	5.2	2.1	1.5	1.3	5.7	6.8	2.1
1994	3.7	3.9	2.0	6.5	3.3	4.5	1.4	4.6	1.0	7.0	3.1	2.1	2.1	1.3	5.1	7.5	2.1
1995	3.7	3.8	1.0	9.7	3.0	4.3	1.3	4.9	1.0	7.0	5.0	2.2	1.7	0.9	6.7	7.5	2.1
1996	3.8	3.9	0.9	8.3	2.6	4.4	1.2	5.1	2.0	7.0	4.9	3.4	1.3	0.9	10.7	5.7	2.2

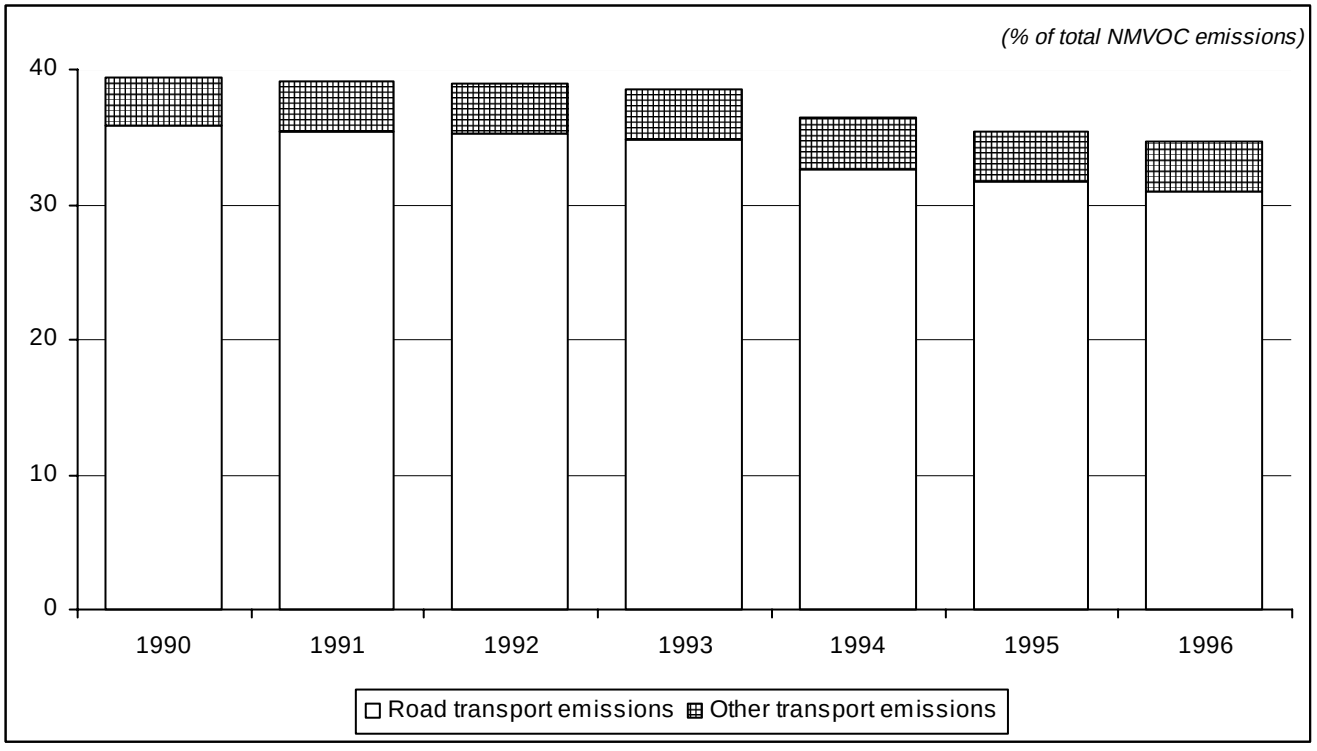


Figure 1.18: Transport share of total NMVOC emissions

Source: ETC-AE.

Carbon dioxide emissions (Eurostat estimates)

(Mio t)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total inland emissions of CO_2 (not including marine bunkers)																	
1985	2 988	2 267	99	61	991	57	178	360	26	339	10	141	51	25	47	58	545
1986	3 015	2 278	99	60	999	57	177	351	28	343	10	146	52	28	47	59	561
1987	3 047	2 304	100	60	992	62	178	348	29	366	9	149	53	29	51	58	563
1988	3 030	2 289	102	56	977	66	183	340	29	369	10	149	51	30	50	55	564
1989	3 059	2 326	104	51	956	70	198	356	29	386	10	148	51	38	50	53	559
1990	3 078	2 336	105	53	943	71	204	354	30	391	11	153	55	39	52	51	568
1991	3 113	2 352	110	62	919	71	216	369	30	390	11	157	59	41	51	50	577
1992	3 065	2 315	110	57	877	73	225	363	31	389	11	158	54	45	52	51	569
1993	3 014	2 284	107	59	870	73	211	350	31	386	11	164	54	44	55	51	547
1994	3 000	2 270	111	63	857	76	223	336	32	382	11	161	54	44	59	54	538
1995	3 049	2 325	111	60	864	78	228	347	33	405	9	167	57	48	56	54	532
1996	3 135	2 368	117	74	872	82	227	365	35	401	9	178	60	46	60	58	552
1997	3 058	2 330	116	64	831	83	243	359	36	402	8	169	59	48	59	52	530
Transport emissions (not including marine bunkers)																	
1985	588	441	18	11	139	14	44	97	5	81	2	25	13	8	10	18	104
1986	620	465	19	11	146	14	47	102	5	86	2	27	13	8	10	20	111
1987	641	480	20	12	152	14	50	105	5	86	2	27	13	9	11	20	114
1988	682	512	22	12	157	15	59	112	5	91	2	28	14	10	12	21	122
1989	713	533	22	13	161	16	63	117	6	95	2	29	15	10	12	22	130
1990	739	555	23	13	170	17	66	122	6	97	3	30	15	11	13	21	132
1991	748	567	23	13	171	18	71	121	6	100	4	31	17	12	12	20	130
1992	772	587	24	13	177	18	73	124	6	104	4	33	17	13	12	21	133
1993	789	601	25	13	182	19	72	130	6	106	4	34	17	13	12	21	136
1994	793	602	25	14	179	19	75	127	7	106	4	34	17	14	12	22	137
1995	803	612	25	14	182	19	77	129	6	109	4	36	18	14	12	22	137
1996	825	628	26	14	181	19	82	134	8	110	4	38	18	15	12	22	142
1997	842	642	27	14	184	20	83	137	9	112	4	39	18	16	12	22	144
Emissions due to marine bunker fuels																	
1985	89	75	7	1	11	4	8	8	0	11	–	27	–	1	1	2	7
1986	102	87	9	1	14	5	11	8	0	11	–	31	–	2	2	2	7
1987	100	84	10	2	11	6	12	7	0	10	–	30	–	2	2	3	6
1988	101	84	12	3	9	7	10	7	0	10	–	33	–	1	2	2	6
1989	101	82	12	3	8	7	10	7	0	9	–	33	–	2	2	2	7
1990	108	87	13	3	8	8	12	8	0	8	–	34	–	2	2	2	8
1991	108	87	13	3	7	7	12	8	0	8	–	35	–	2	2	2	8
1992	108	86	13	3	6	8	12	8	0	8	–	36	–	2	2	3	8
1993	111	87	14	4	7	10	11	8	0	8	–	37	–	2	2	3	8
1994	107	82	13	5	6	10	10	7	0	7	–	35	–	2	1	3	7
1995	110	83	12	5	6	11	10	8	0	8	–	36	–	2	1	3	8
1996	117	91	14	5	6	10	15	9	0	7	–	36	–	2	1	3	8
1997	127	99	16	5	7	10	18	9	0	8	–	38	–	2	1	4	9

Source: Eurostat (New Cronos).

Carbon dioxide emissions (Eurostat estimates) (continued)

(Mio t)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Road transport emissions																	
1985	501	384	15	8	120	9	35	86	4	74	2	22	12	6	9	16	84
1986	527	403	17	8	126	10	36	91	4	79	2	20	12	7	9	17	89
1987	546	417	17	8	132	10	38	94	3	80	2	21	12	7	10	17	93
1988	582	446	19	8	137	10	47	100	4	84	2	22	13	8	10	18	99
1989	606	463	20	9	140	11	50	104	4	88	2	23	14	8	11	19	104
1990	627	482	19	9	148	11	53	107	5	90	3	24	14	9	11	18	106
1991	635	490	19	9	151	12	55	106	5	91	3	24	16	10	10	18	106
1992	656	509	20	10	157	13	59	108	5	96	3	25	16	11	10	18	107
1993	670	521	21	10	160	13	58	114	5	98	3	25	16	11	10	18	108
1994	670	519	21	10	157	13	60	111	5	98	3	26	16	12	11	19	109
1995	678	527	21	10	160	13	61	112	5	100	3	26	16	12	10	19	108
1996	694	538	22	11	159	14	65	116	6	100	3	28	16	13	10	19	112
1997	706	549	22	11	162	14	65	119	7	102	4	28	16	13	11	19	114
Railways emissions																	
1985	11.1	8.1	0.3	0.4	4.2	0.2	0.6	1.5	0.1	0.6	0.0	0.0	0.3	0.2	0.2	0.3	2.3
1986	10.8	7.7	0.4	0.4	3.9	0.2	0.6	1.4	0.1	0.7	0.0	0.0	0.3	0.2	0.2	0.2	2.3
1987	10.6	7.8	0.2	0.3	3.7	0.2	0.6	1.4	0.6	0.6	0.0	0.0	0.3	0.2	0.2	0.2	2.2
1988	9.8	7.0	0.2	0.3	3.3	0.2	0.6	1.3	0.1	0.6	0.0	0.0	0.3	0.2	0.2	0.2	2.2
1989	9.4	6.7	0.2	0.3	3.2	0.2	0.6	1.3	0.1	0.6	0.0	0.0	0.3	0.2	0.2	0.2	2.0
1990	8.9	6.4	0.2	0.3	2.9	0.2	0.7	1.2	0.1	0.6	0.0	0.0	0.3	0.2	0.2	0.1	1.9
1991	8.8	6.3	0.3	0.3	2.6	0.1	0.7	1.3	0.1	0.6	0.0	0.0	0.3	0.2	0.2	0.1	2.0
1992	8.8	6.2	0.2	0.3	2.5	0.2	0.7	1.3	0.1	0.6	0.0	0.0	0.3	0.2	0.2	0.1	2.0
1993	8.8	6.3	0.3	0.3	2.5	0.1	0.7	1.4	0.2	0.6	0.0	0.0	0.3	0.2	0.2	0.1	1.9
1994	8.3	5.8	0.2	0.3	2.4	0.2	0.8	1.0	0.2	0.6	0.0	0.0	0.3	0.2	0.2	0.1	1.9
1995	8.4	6.0	0.2	0.3	2.3	0.1	0.9	1.2	0.1	0.6	0.0	0.0	0.3	0.2	0.2	0.1	1.9
1996	8.4	6.1	0.2	0.3	2.3	0.1	1.1	1.0	0.2	0.5	0.0	0.0	0.4	0.2	0.2	0.1	1.8
1997	8.4	6.4	0.2	0.3	2.1	0.1	1.2	1.3	0.3	0.6	0.0	0.0	0.3	0.2	0.2	0.1	1.5
Inland navigation emissions																	
1985	13.3	8.0	0.7	0.4	2.2	1.2	2.7	0.8	0.0	1.1	–	0.0	–	0.2	0.3	0.6	3.1
1986	16.9	12.1	0.6	0.5	2.2	1.0	4.7	0.8	0.0	1.1	–	2.3	–	0.2	0.3	0.6	2.8
1987	15.5	11.5	0.5	1.1	1.9	1.0	4.9	0.8	0.0	1.1	–	1.7	–	0.1	0.3	0.7	1.3
1988	15.4	11.0	0.4	1.0	1.8	1.4	4.7	0.8	0.0	1.1	–	1.7	–	0.2	0.3	0.7	1.3
1989	18.7	11.5	0.3	1.3	1.9	1.6	5.2	0.9	0.0	1.2	–	1.6	–	0.1	0.3	0.5	3.9
1990	20.6	12.9	0.4	1.5	2.0	1.8	5.1	2.2	0.0	1.2	–	1.7	–	0.1	0.2	0.4	3.9
1991	21.1	13.9	0.6	1.4	2.0	1.8	5.4	2.3	0.1	1.2	–	1.9	–	0.1	0.2	0.3	3.7
1992	22.0	14.6	1.4	1.3	2.2	1.9	5.6	1.9	0.1	1.2	–	2.0	–	0.1	0.2	0.3	3.9
1993	21.3	14.8	1.0	0.6	2.2	1.7	5.7	2.1	0.1	1.2	–	2.1	–	0.1	0.2	0.2	3.9
1994	21.5	15.3	1.0	0.6	2.2	1.8	6.0	2.2	0.1	1.3	–	2.1	–	0.2	0.3	0.2	3.6
1995	20.6	14.4	0.8	0.7	1.7	1.7	5.8	2.2	0.1	1.3	–	2.1	–	0.1	0.3	0.3	3.5
1996	21.1	15.1	1.3	0.6	1.6	1.5	6.2	2.2	0.1	1.3	–	2.0	–	0.1	0.3	0.2	3.7
1997	20.1	13.9	1.2	0.5	1.2	1.8	5.3	2.2	0.1	1.3	–	2.1	–	0.1	0.2	0.3	3.6
Aviation emissions																	
1985	62.5	40.3	1.6	1.7	12.3	3.5	5.8	8.0	0.6	5.2	0.2	3.7	0.7	1.4	0.8	1.6	15.3
1986	65.4	41.8	1.7	1.8	13.2	3.1	5.3	8.5	0.9	5.1	0.2	3.9	0.6	1.4	0.8	2.0	16.8
1987	68.9	43.8	1.7	2.1	13.9	3.2	6.1	9.1	0.9	4.4	0.3	4.3	0.7	1.5	0.9	2.1	17.8
1988	75.4	48.8	2.0	2.1	15.0	3.3	7.2	10.3	1.1	4.9	0.3	4.5	0.9	1.6	1.1	2.3	19.0
1989	79.5	51.5	2.2	2.2	16.2	3.1	7.1	11.0	1.1	5.3	0.3	4.6	1.0	1.6	1.2	2.5	20.1
1990	82.4	54.2	2.8	2.1	16.7	3.8	7.3	11.5	1.1	5.6	0.4	4.8	1.0	1.7	1.4	2.3	20.1
1991	82.6	56.0	2.7	2.0	15.3	3.4	9.6	11.3	1.0	6.4	0.4	5.1	1.1	1.8	1.3	2.3	18.9
1992	85.4	57.0	2.7	1.9	15.8	3.6	8.2	12.7	0.8	6.4	0.4	5.9	1.2	1.8	1.2	2.4	20.4
1993	89.1	58.4	2.7	2.1	16.5	4.3	8.0	13.0	0.7	6.6	0.4	6.4	1.2	1.7	1.1	2.5	21.7
1994	92.8	61.7	2.7	2.3	17.7	4.0	8.5	13.5	1.2	6.8	0.5	6.7	1.2	1.8	1.2	2.5	22.3
1995	96.5	64.7	2.8	2.3	17.7	3.7	9.2	14.0	1.1	7.2	0.6	7.7	1.4	1.8	1.2	2.5	23.2
1996	101.9	68.7	3.2	2.5	18.1	3.6	10.0	14.9	1.2	7.8	0.6	8.2	1.5	1.9	1.3	2.5	24.4
1997	106.8	72.8	4.0	2.4	19.0	3.5	10.8	15.3	1.3	8.1	0.7	8.9	1.5	1.8	1.4	2.6	25.5

Source: Eurostat (New Cronos).

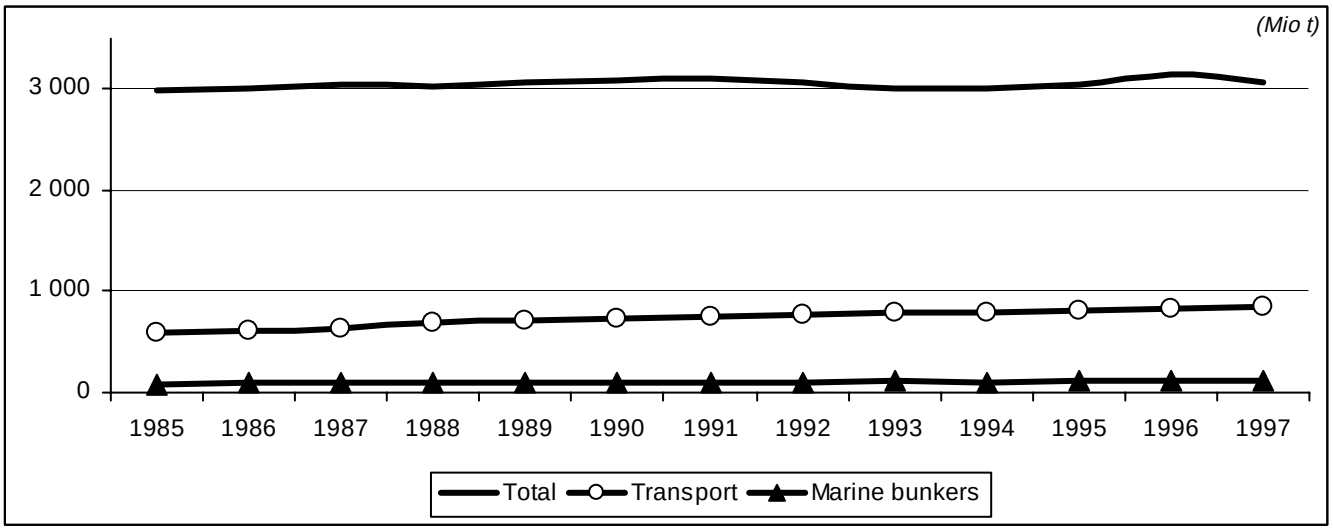


Figure 1.19: Carbon dioxide emissions - EU-15

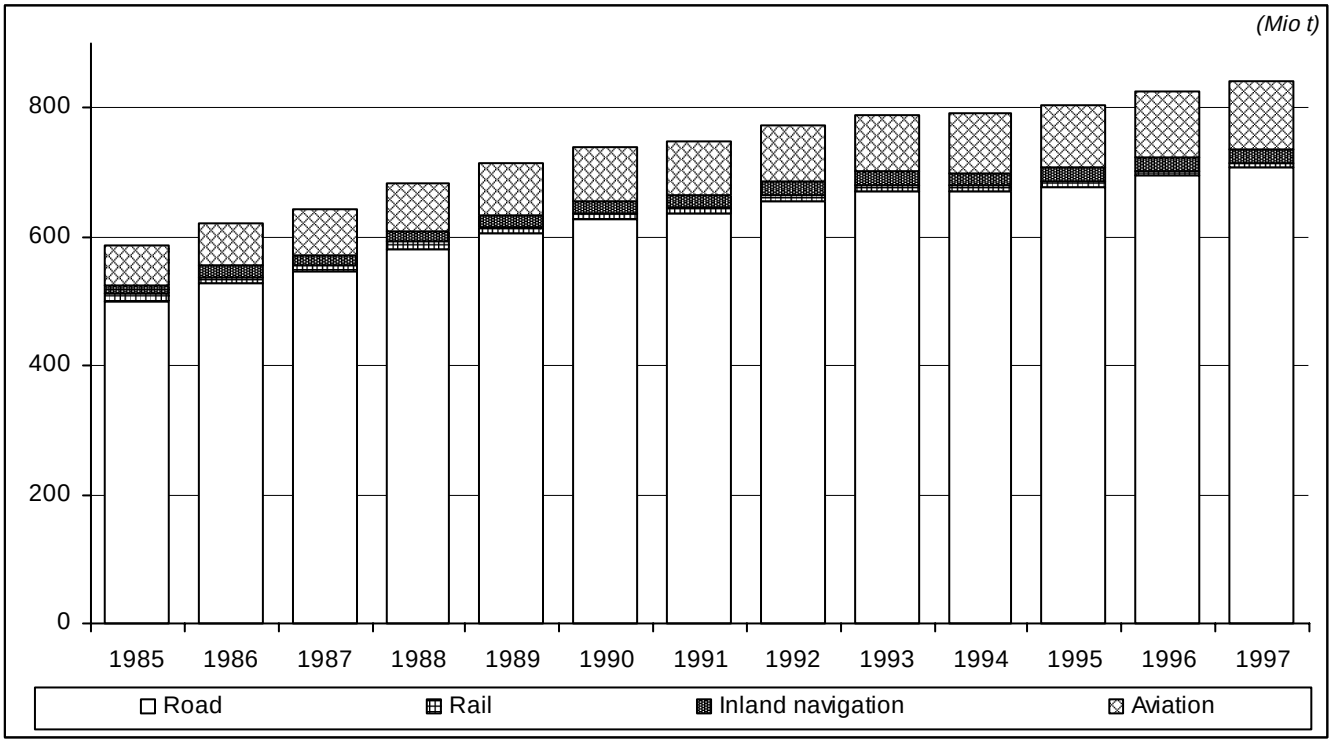


Figure 1.20: Carbon dioxide emissions by mode of transport - EU-15

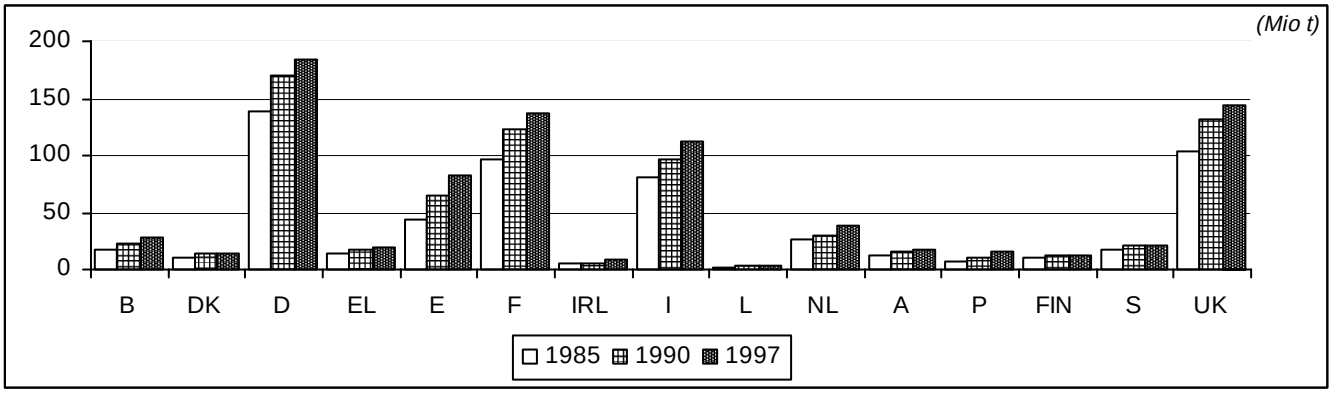


Figure 1.21: Transport emissions of carbon dioxide by Member State

Transport share of carbon dioxide emissions (Eurostat estimates)

(% of total inland emissions)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Transport emissions																	
1985	19.7	19.4	18.1	17.6	14.0	24.5	24.8	26.9	19.1	23.8	17.5	18.1	25.0	31.3	21.0	31.4	19.1
1986	20.6	20.4	19.7	17.5	14.6	24.3	26.6	29.0	18.8	25.0	18.8	18.3	25.5	30.0	22.2	33.0	19.8
1987	21.0	20.8	19.8	19.7	15.3	23.1	28.0	30.2	17.1	23.6	22.4	18.1	25.1	31.1	22.1	34.7	20.3
1988	22.5	22.4	21.1	20.8	16.1	23.3	32.5	32.9	18.3	24.6	22.6	18.9	28.3	32.8	23.0	38.5	21.6
1989	23.3	22.9	21.5	24.6	16.8	22.7	31.9	32.8	19.1	24.7	24.1	19.9	29.3	27.1	24.4	41.7	23.2
1990	24.0	23.8	21.6	25.3	18.0	24.2	32.2	34.5	19.6	24.9	28.0	19.6	27.9	28.2	24.3	40.7	23.3
1991	24.0	24.1	20.9	21.0	18.6	24.9	33.0	32.9	19.8	25.5	31.1	19.4	28.9	28.9	23.6	40.4	22.6
1992	25.2	25.4	22.1	23.2	20.2	25.1	32.5	34.3	19.5	26.7	34.1	20.6	31.6	28.5	23.2	41.4	23.3
1993	26.2	26.3	23.0	22.1	20.9	26.0	34.1	37.2	20.0	27.5	33.9	20.5	31.7	30.3	21.4	40.8	24.8
1994	26.4	26.5	22.5	21.6	20.9	25.2	33.8	38.0	21.2	27.8	37.0	21.4	31.9	31.2	20.7	39.8	25.4
1995	26.3	26.3	22.4	22.9	21.1	24.3	33.7	37.1	19.5	26.9	44.3	21.6	31.3	30.0	21.4	40.7	25.7
1996	26.3	26.5	22.5	18.8	20.7	23.6	36.2	36.8	23.0	27.4	45.1	21.5	30.0	33.1	19.7	37.0	25.7
1997	27.5	27.5	23.4	21.9	22.2	24.0	34.1	38.3	24.0	27.8	51.4	23.3	30.1	32.5	21.2	42.4	27.2
Road transport emissions																	
1985	16.8	17.0	15.3	13.6	12.1	15.9	19.7	24.0	16.2	21.7	15.0	15.5	23.2	24.5	18.3	27.1	15.3
1986	17.5	17.7	17.0	13.2	12.6	16.8	20.7	25.9	15.0	23.0	16.0	14.1	23.7	23.7	19.5	28.3	15.9
1987	17.9	18.1	17.3	13.8	13.3	16.1	21.4	27.0	12.0	21.9	18.9	14.1	23.3	24.7	19.4	29.7	16.6
1988	19.2	19.5	18.5	14.8	14.0	15.9	25.7	29.3	14.1	22.8	19.1	14.8	26.0	26.4	19.9	32.9	17.6
1989	19.8	19.9	18.9	17.2	14.6	15.8	25.3	29.1	14.9	22.8	20.9	15.7	26.7	22.0	21.1	35.6	18.5
1990	20.4	20.6	18.3	18.0	15.7	16.1	25.8	30.3	15.5	23.0	24.3	15.4	25.6	23.1	20.8	35.1	18.7
1991	20.4	20.9	17.6	15.2	16.4	17.3	25.7	28.8	15.8	23.4	27.3	15.0	26.5	23.8	20.3	35.0	18.3
1992	21.4	22.0	18.2	17.0	17.9	17.4	26.0	29.9	16.4	24.6	30.4	15.6	28.9	23.7	20.1	35.8	18.7
1993	22.2	22.8	19.3	16.8	18.4	17.6	27.3	32.5	16.7	25.4	30.3	15.3	29.0	25.6	18.6	35.3	19.8
1994	22.3	22.9	19.0	16.5	18.3	17.3	27.0	33.0	16.6	25.6	32.3	15.9	29.1	26.4	17.8	34.6	20.3
1995	22.2	22.7	19.0	17.5	18.5	17.2	26.7	32.1	15.4	24.6	37.8	15.7	28.3	25.5	18.4	35.2	20.3
1996	22.1	22.7	18.4	14.2	18.2	17.2	28.6	31.8	18.5	25.0	38.2	15.7	26.9	28.4	16.8	32.1	20.3
1997	23.1	23.5	18.8	16.9	19.5	17.4	27.0	33.0	19.4	25.3	42.4	16.8	27.0	28.1	18.2	36.6	21.4
Railways emissions																	
1985	0.4	0.4	0.4	0.6	0.4	0.3	0.3	0.4	0.5	0.2	0.3	0.0	0.6	0.7	0.5	0.4	0.4
1986	0.4	0.3	0.4	0.6	0.4	0.3	0.3	0.4	0.4	0.2	0.3	0.0	0.6	0.7	0.4	0.4	0.4
1987	0.3	0.3	0.2	0.5	0.4	0.3	0.4	0.4	1.9	0.2	0.3	0.0	0.6	0.6	0.4	0.3	0.4
1988	0.3	0.3	0.2	0.6	0.3	0.3	0.3	0.4	0.4	0.2	0.2	0.0	0.6	0.6	0.4	0.3	0.4
1989	0.3	0.3	0.2	0.6	0.3	0.2	0.3	0.4	0.5	0.2	0.0	0.0	0.6	0.5	0.4	0.3	0.4
1990	0.3	0.3	0.2	0.6	0.3	0.3	0.3	0.3	0.5	0.2	0.0	0.0	0.5	0.4	0.4	0.2	0.3
1991	0.3	0.3	0.3	0.5	0.3	0.2	0.3	0.4	0.4	0.2	0.2	0.0	0.4	0.4	0.3	0.2	0.3
1992	0.3	0.3	0.2	0.6	0.3	0.2	0.3	0.4	0.3	0.2	0.2	0.0	0.5	0.4	0.3	0.2	0.4
1993	0.3	0.3	0.2	0.6	0.3	0.2	0.3	0.4	0.6	0.2	0.1	0.0	0.5	0.4	0.4	0.2	0.3
1994	0.3	0.3	0.2	0.5	0.3	0.2	0.3	0.3	0.6	0.2	0.0	0.0	0.6	0.4	0.4	0.2	0.3
1995	0.3	0.3	0.2	0.5	0.3	0.2	0.4	0.3	0.4	0.1	0.1	0.0	0.6	0.3	0.3	0.2	0.4
1996	0.3	0.3	0.2	0.4	0.3	0.2	0.5	0.3	0.7	0.1	0.1	0.0	0.6	0.3	0.3	0.2	0.3
1997	0.3	0.3	0.2	0.5	0.3	0.2	0.5	0.4	0.7	0.1	0.2	0.0	0.6	0.3	0.3	0.2	0.3

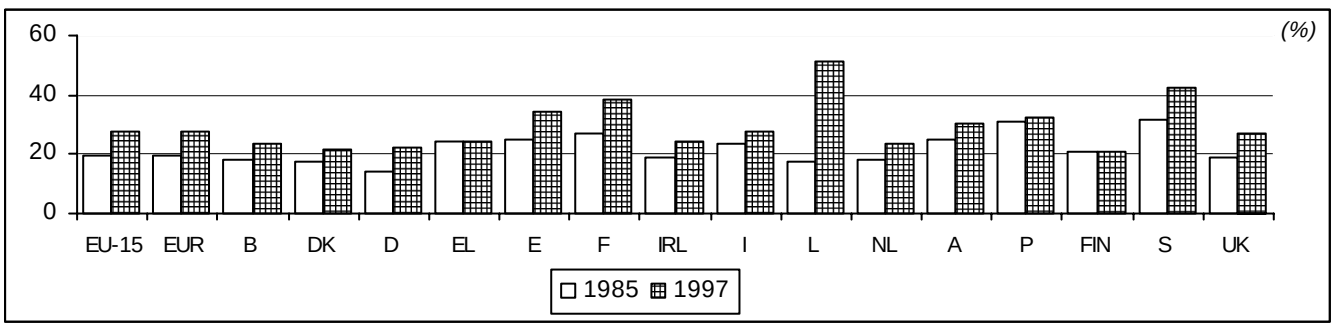


Figure 1.22: Share of transport emissions in carbon dioxide emissions by Member State

Source: Eurostat (New Cronos).

Transport share of carbon dioxide emissions (Eurostat estimates) (continued)

(% of total national emissions)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Inland navigation emissions																	
1985	0.4	0.4	0.8	0.7	0.2	2.1	1.5	0.2	0.1	0.3	–	0.0	–	0.6	0.6	1.1	0.6
1986	0.6	0.5	0.6	0.8	0.2	1.7	2.6	0.2	–	0.3	–	1.6	–	0.6	0.6	1.1	0.5
1987	0.5	0.5	0.5	1.9	0.2	1.6	2.8	0.2	0.1	0.3	–	1.1	–	0.5	0.6	1.1	0.2
1988	0.5	0.5	0.4	1.7	0.2	2.2	2.6	0.2	0.1	0.3	–	1.1	–	0.5	0.5	1.2	0.2
1989	0.6	0.5	0.3	2.5	0.2	2.3	2.6	0.2	0.1	0.3	–	1.0	–	0.4	0.5	0.9	0.7
1990	0.7	0.6	0.4	2.8	0.2	2.5	2.5	0.6	0.1	0.3	–	1.1	–	0.3	0.4	0.9	0.7
1991	0.7	0.6	0.6	2.2	0.2	2.6	2.5	0.6	0.2	0.3	–	1.2	–	0.3	0.4	0.6	0.6
1992	0.7	0.6	1.2	2.3	0.2	2.6	2.5	0.5	0.2	0.3	–	1.3	–	0.3	0.4	0.6	0.7
1993	0.7	0.6	1.0	1.1	0.3	2.3	2.7	0.6	0.3	0.3	–	1.3	–	0.3	0.4	0.4	0.7
1994	0.7	0.7	0.9	0.9	0.3	2.4	2.7	0.7	0.3	0.3	–	1.3	–	0.3	0.5	0.4	0.7
1995	0.7	0.6	0.7	1.1	0.2	2.2	2.5	0.6	0.3	0.3	–	1.3	–	0.3	0.5	0.6	0.6
1996	0.7	0.6	1.1	0.8	0.2	1.8	2.7	0.6	0.3	0.3	–	1.1	–	0.3	0.4	0.4	0.7
1997	0.7	0.6	1.1	0.8	0.1	2.1	2.2	0.6	0.3	0.3	–	1.2	–	0.3	0.4	0.6	0.7
Aviation emissions																	
1985	2.1	1.8	1.7	2.8	1.2	6.2	3.3	2.2	2.4	1.5	2.2	2.6	1.3	5.5	1.6	2.8	2.8
1986	2.2	1.8	1.7	2.9	1.3	5.5	3.0	2.4	3.4	1.5	2.5	2.7	1.3	5.2	1.7	3.3	3.0
1987	2.3	1.9	1.7	3.5	1.4	5.2	3.4	2.6	3.1	1.2	3.3	2.9	1.3	5.2	1.7	3.6	3.2
1988	2.5	2.1	2.0	3.7	1.5	5.0	3.9	3.0	3.7	1.3	3.3	3.0	1.7	5.2	2.1	4.1	3.4
1989	2.6	2.2	2.1	4.3	1.7	4.4	3.6	3.1	3.7	1.4	3.1	3.1	2.0	4.3	2.4	4.8	3.6
1990	2.7	2.3	2.7	3.9	1.8	5.3	3.6	3.2	3.5	1.4	3.7	3.1	1.8	4.4	2.7	4.5	3.5
1991	2.7	2.4	2.5	3.2	1.7	4.8	4.5	3.1	3.5	1.6	3.6	3.2	1.9	4.3	2.6	4.6	3.3
1992	2.8	2.5	2.5	3.3	1.8	5.0	3.6	3.5	2.6	1.6	3.5	3.7	2.2	4.1	2.3	4.8	3.6
1993	3.0	2.6	2.5	3.7	1.9	5.9	3.8	3.7	2.4	1.7	3.5	3.9	2.2	4.0	2.1	4.8	4.0
1994	3.1	2.7	2.4	3.7	2.1	5.3	3.8	4.0	3.7	1.8	4.6	4.2	2.3	4.0	2.0	4.6	4.1
1995	3.2	2.8	2.5	3.8	2.1	4.7	4.0	4.0	3.4	1.8	6.4	4.6	2.4	3.8	2.2	4.7	4.4
1996	3.2	2.9	2.7	3.4	2.1	4.4	4.4	4.1	3.5	1.9	6.9	4.6	2.5	4.1	2.2	4.3	4.4
1997	3.5	3.1	3.4	3.8	2.3	4.2	4.5	4.3	3.6	2.0	8.8	5.3	2.5	3.7	2.3	5.0	4.8

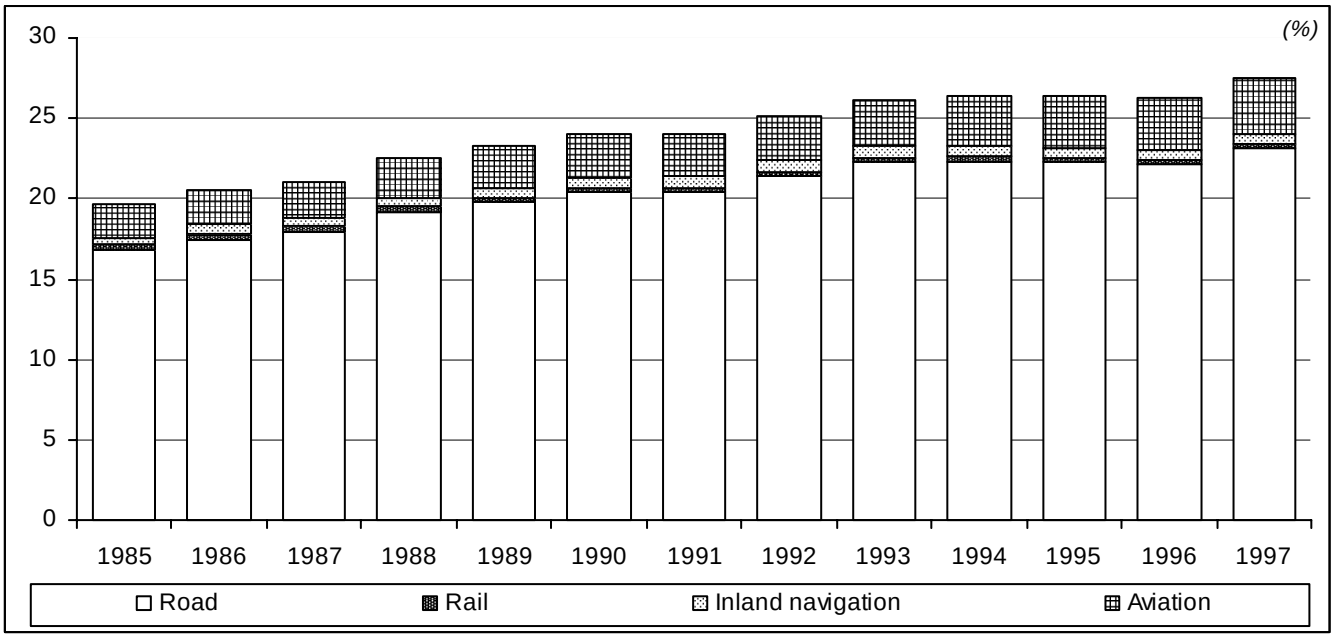


Figure 1.23: Share of transport emissions in carbon dioxide emissions by mode of transport - EU-15

Source: Eurostat (New Cronos).

People killed and injured in road accidents

(1 000 persons)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total killed or injured																	
1980	1 872	1 475	84.7	15.8	513.5	26.7	112.7	346.0	9.1	231.4	2.38	58.6	64.4	43.4	9.0	20.1	334.0
1985	1 710	1 316	76.3	14.6	430.5	32.2	131.7	281.2	8.2	223.2	2.08	49.9	61.3	41.4	10.1	21.5	326.2
1986	:	:	81.8	14.1	452.2	29.0	142.6	270.0	8.7	220.2	2.06	51.6	:	46.7	:	:	330.9
1987	:	:	83.9	12.7	432.6	28.0	159.2	247.5	8.9	224.3	1.75	50.7	:	56.8	:	:	321.4
1988	:	:	86.8	12.5	456.4	30.9	171.3	254.6	8.9	235.1	1.95	49.3	:	62.1	:	:	333.3
1989	:	:	88.7	12.3	457.4	30.6	176.6	246.5	9.3	222.7	1.92	51.8	:	63.9	12.8	24.4	353.2
1990	1 793	1 377	88.2	11.3	456.1	29.1	162.4	236.1	9.9	227.6	1.85	53.4	62.0	65.7	13.4	23.3	352.9
1991	:	1 425	82.5	10.9	516.8	30.7	155.2	215.6	10.3	248.2	1.73	48.7	61.7	72.0	12.2	21.8	:
1992	1 789	1 403	78.8	11.1	527.4	32.1	136.0	207.2	10.6	248.5	1.73	49.6	58.9	73.4	10.5	21.5	321.9
1993	1 674	1 295	77.7	10.5	515.5	31.7	123.6	198.1	10.3	222.7	1.72	12.8	55.3	68.8	8.3	20.4	317.1
1994	1 698	1 307	75.0	10.3	526.2	32.2	119.3	189.4	10.6	245.8	1.62	13.0	55.2	62.0	8.6	21.7	327.2
1995	1 723	1 335	71.8	10.6	521.6	33.2	127.2	189.8	13.1	266.1	1.73	13.0	52.0	67.9	10.6	21.7	322.2
1996	1 704	1 306	68.3	10.3	501.9	33.7	129.6	178.2	13.4	270.4	1.61	13.1	50.7	68.7	9.7	21.3	332.9
1997	:	:	:	10.1	509.6	:	:	177.6	:	:	:	:	52.7	68.5	9.4	21.8	340.3
Killed																	
1980	58	49	2.40	0.69	13.04	1.23	5.02	12.38	0.56	8.54	0.10	2.00	1.74	2.26	0.55	0.85	6.18
1985	47	38	1.80	0.77	8.40	1.70	4.90	10.45	0.41	7.13	0.08	1.44	1.36	1.88	0.54	0.81	5.34
1986	:	:	1.95	0.72	8.95	1.45	5.42	10.96	0.39	7.08	0.08	1.53	:	2.01	:	:	5.62
1987	:	:	1.92	0.70	7.97	1.50	5.86	9.86	0.46	6.78	0.07	1.49	:	2.30	:	:	5.34
1988	:	:	1.97	0.71	8.21	1.51	6.35	10.55	0.46	6.94	0.08	1.37	1.45	2.53	:	:	5.23
1989	49	41	1.99	0.67	8.00	1.70	7.19	10.53	0.46	6.41	0.07	1.46	1.40	2.38	0.73	0.90	5.55
1990	49	40	1.98	0.63	7.91	1.74	6.95	10.29	0.48	6.62	0.07	1.38	1.39	2.32	0.65	0.77	5.40
1991	:	43	1.87	0.61	11.30	1.79	6.80	9.62	0.45	7.50	0.08	1.28	1.39	2.48	0.63	0.75	:
1992	49	41	1.67	0.58	10.63	1.83	6.01	9.08	0.42	7.43	0.07	1.29	1.40	2.37	0.60	0.76	4.38
1993	45	38	1.66	0.56	9.95	1.83	5.51	9.05	0.43	6.65	0.08	1.25	1.28	2.08	0.48	0.63	3.96
1994	45	38	1.69	0.55	9.81	1.91	5.62	8.53	0.40	6.58	0.07	1.30	1.34	1.91	0.48	0.59	3.80
1995	44	37	1.45	0.58	9.45	2.04	5.75	8.41	0.44	6.51	0.07	1.33	1.21	2.09	0.44	0.57	3.77
1996	42	35	1.36	0.51	8.76	2.07	5.48	8.08	0.45	6.19	0.07	1.18	1.03	2.10	0.40	0.54	3.74
1997	:	:	:	0.49	8.55	:	:	7.99	:	:	:	:	1.11	1.94	0.44	0.54	3.74
Injured																	
1980	1 814	1 426	82.30	15.06	500.5	25.44	107.7	333.6	8.50	222.9	2.28	56.62	62.63	41.10	8.44	19.25	327.8
1985	1 663	1 278	74.51	13.86	422.1	30.47	126.8	270.7	7.82	216.1	2.00	48.45	59.98	39.56	9.56	20.67	320.8
1986	:	:	79.86	13.40	443.2	27.50	137.1	259.0	8.33	213.2	1.98	50.08	:	44.72	:	:	325.3
1987	:	:	81.93	12.02	424.6	26.48	153.4	237.6	8.41	217.5	1.68	49.19	:	54.52	:	:	316.1
1988	:	:	84.85	11.79	448.2	29.37	164.9	244.0	8.44	228.2	1.86	47.98	57.84	59.53	:	:	328.0
1989	1 765	1 353	86.68	11.65	449.4	28.91	169.4	236.0	8.80	216.3	1.85	50.30	60.62	61.52	12.04	23.53	347.6
1990	1 745	1 337	86.18	10.65	448.2	27.39	155.5	225.9	9.43	221.0	1.78	52.03	60.65	63.33	12.76	22.50	347.5
1991	:	1 382	80.66	10.27	505.5	28.95	148.5	206.0	9.87	240.7	1.64	47.39	60.36	69.54	11.55	21.06	:
1992	1 741	1 362	77.11	10.51	516.8	30.28	129.9	198.1	10.19	241.1	1.66	48.33	57.47	70.99	9.90	20.73	317.4
1993	1 629	1 256	76.02	9.93	505.6	29.91	118.1	189.0	9.83	216.1	1.64	11.56	53.99	66.71	7.81	19.74	313.1
1994	1 653	1 269	73.34	9.76	516.4	30.30	113.7	180.8	10.23	239.2	1.55	11.74	53.82	60.05	8.08	21.08	323.3
1995	1 678	1 298	70.31	9.99	512.1	31.18	121.4	181.4	12.67	259.6	1.66	11.69	50.76	65.83	10.19	21.17	318.5
1996	1 672	1 281	66.90	9.81	493.2	31.66	134.2	170.1	12.96	264.2	1.54	11.97	49.67	66.63	9.30	20.81	329.1
1997	:	:	:	9.62	501.1	:	:	169.6	:	:	:	:	51.59	66.52	8.96	21.28	336.5

Source: Eurostat (New Cronos).

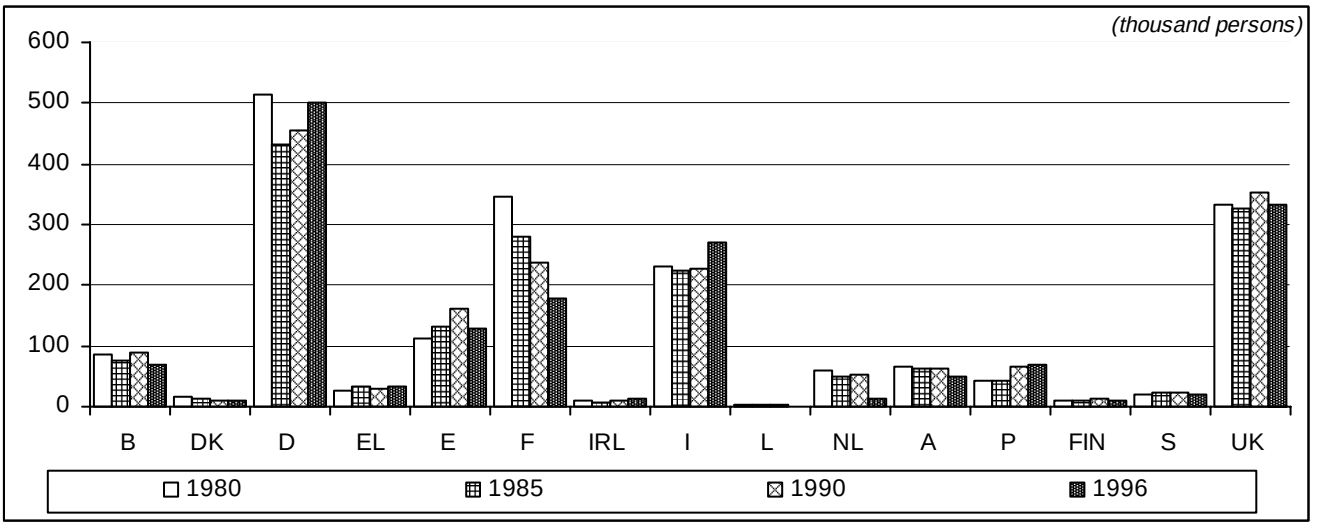


Figure 1.24: People killed and injured in road accidents

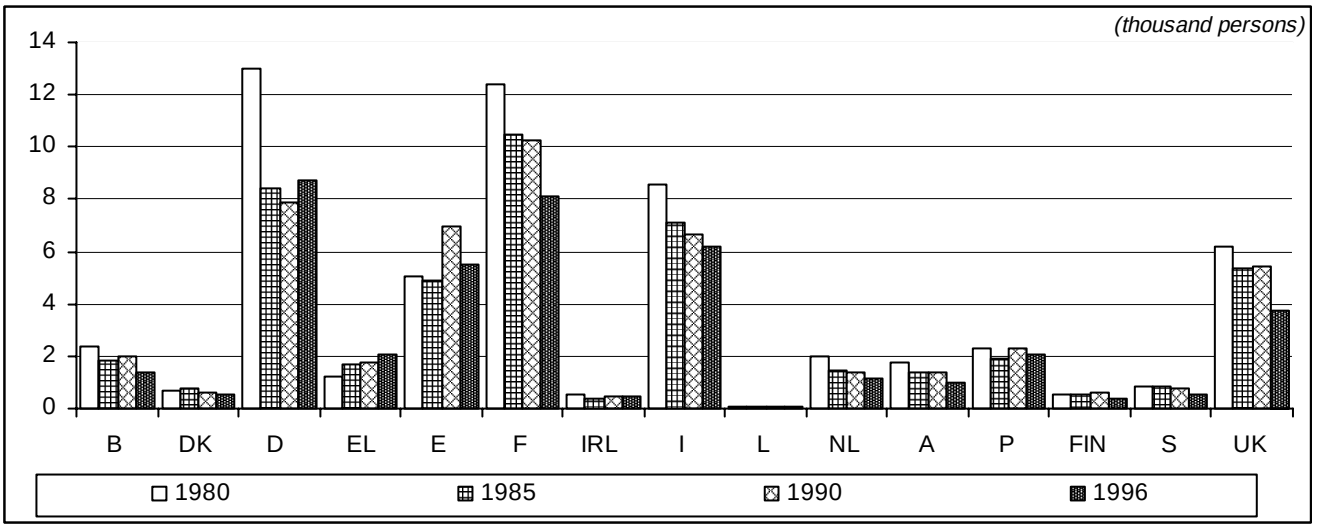


Figure 1.25: People killed in road accidents

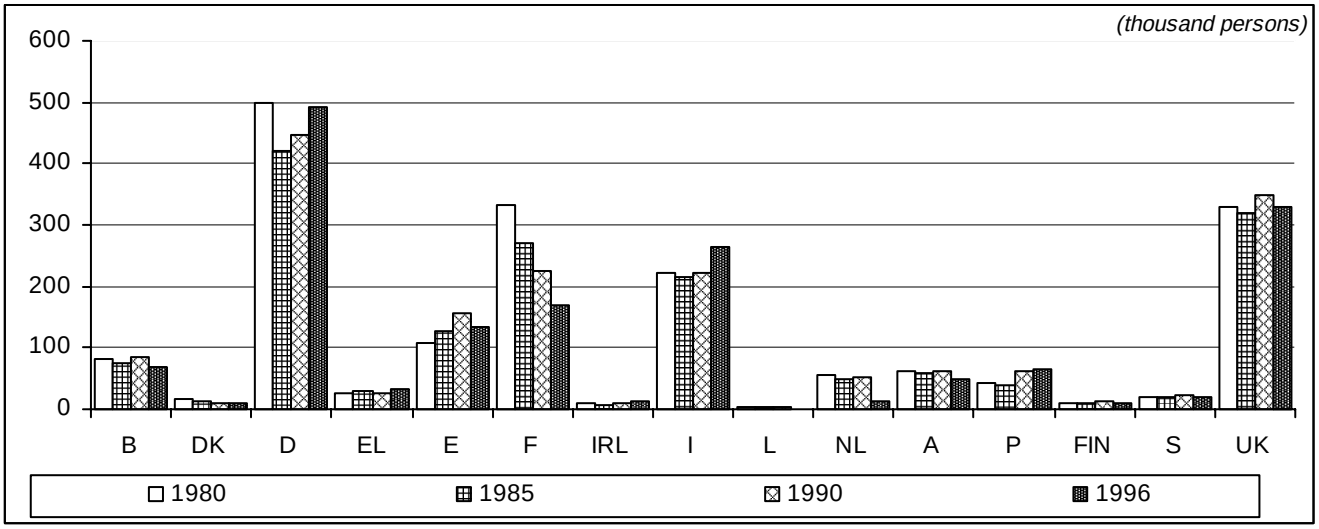


Figure 1.26: People injured in road accidents

People killed and injured in road accidents - Powered two-wheelers

(1 000 persons)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total killed or injured															
1980	15.01	3.63	98.37	5.25	15.82	92.71	1.02	60.11	0.19	17.22	14.20	:	1.00	2.49	71.59
1985	12.06	2.48	80.20	9.06	23.58	53.27	0.88	62.45	0.15	13.12	:	:	:	:	57.27
1986	12.50	2.20	69.88	7.77	25.65	49.81	0.90	54.04	0.12	14.34	:	:	:	:	52.86
1987	12.22	1.85	55.73	7.63	30.47	:	0.95	48.69	0.12	14.06	:	19.26	:	:	46.38
1988	13.03	1.88	51.73	8.15	35.11	50.63	0.83	51.05	0.11	14.07	:	20.73	:	:	43.35
1989	13.47	1.92	47.65	8.28	38.75	50.10	0.79	52.41	0.15	14.63	:	19.39	1.38	2.04	43.19
1990	13.50	1.80	45.76	8.37	38.40	48.16	0.81	52.65	0.15	14.75	10.41	22.31	1.43	1.97	39.53
1991	11.90	1.66	56.32	9.32	38.84	44.29	1.04	55.46	0.15	12.62	9.73	23.86	1.35	1.81	31.13
1992	11.04	1.71	53.59	10.55	33.88	42.42	1.04	54.32	0.13	13.16	9.17	:	1.05	1.85	27.22
1993	10.62	1.42	50.28	10.62	:	38.95	:	49.99	0.11	2.98	7.70	23.79	0.81	1.60	25.35
1994	10.46	1.52	54.67	10.87	27.69	38.40	1.00	57.32	0.13	3.11	8.01	22.68	0.79	1.60	24.58
1995	10.37	1.40	53.95	10.99	29.91	39.99	1.29	60.11	0.13	3.22	6.80	22.62	0.94	1.70	23.75
1996	9.90	1.36	52.36	:	30.72	37.73	1.25	59.20	0.09	3.39	6.55	20.80	0.90	1.56	23.28
1997	:	1.33	60.17	:	:	39.89	:	:	:	:	7.29	20.16	0.88	1.66	24.72
Killed															
1980	0.35	0.13	2.00	0.27	0.58	2.30	0.05	1.67	0.01	0.32	0.28	:	0.06	0.08	1.19
1985	0.23	0.11	1.40	0.37	0.61	1.61	0.05	1.52	0.00	0.18	:	:	:	:	0.81
1986	0.22	0.09	1.23	0.30	0.63	1.50	0.05	1.36	0.01	0.20	:	:	:	:	0.77
1987	0.23	0.08	1.09	0.30	0.71	:	0.07	1.17	0.01	0.19	:	0.68	:	:	0.74
1988	0.21	0.08	1.01	0.27	0.86	1.58	0.05	1.20	0.00	0.18	:	0.71	:	:	0.68
1989	0.25	0.09	0.96	0.33	1.07	1.62	0.05	1.30	0.01	0.20	:	0.65	:	:	0.70
1990	0.22	0.08	0.94	0.40	1.13	1.60	0.04	1.23	0.01	0.17	:	:	:	:	0.67
1991	0.22	0.07	1.24	0.43	1.17	1.48	0.06	1.34	:	0.20	0.18	0.69	0.06	0.05	0.57
1992	0.19	0.08	1.15	0.43	:	1.45	0.06	1.33	:	0.20	0.16	:	0.04	0.05	0.48
1993	0.23	0.06	1.11	0.46	:	1.35	0.05	1.23	:	:	0.17	:	0.03	0.06	0.44
1994	0.23	0.08	1.16	0.49	0.86	1.29	0.06	1.23	:	0.21	0.16	0.58	0.03	0.03	0.45
1995	0.19	0.06	1.10	0.54	0.87	1.25	0.06	1.10	:	0.21	0.15	0.61	0.03	0.04	0.45
1996	0.17	0.05	1.00	:	0.85	1.22	0.06	1.11	:	0.20	0.13	0.56	0.03	0.05	0.45
1997	:	0.05	0.85	:	:	1.30	:	:	:	:	0.17	0.52	0.02	0.05	0.53
Injured															
1980	14.66	3.50	96.37	4.98	15.25	90.41	0.97	58.44	0.18	16.90	13.93	:	0.94	2.41	70.40
1985	11.83	2.37	78.80	8.69	22.97	51.66	0.83	60.92	0.14	12.93	:	:	:	:	56.46
1986	12.27	2.11	68.65	7.46	25.02	48.76	0.85	52.68	0.11	14.14	:	:	:	:	52.09
1987	11.99	1.77	54.64	7.56	29.76	:	0.88	47.52	0.11	14.29	:	18.58	:	:	45.64
1988	12.82	1.79	50.72	7.88	34.25	49.05	0.77	49.85	0.11	13.89	:	20.02	:	:	42.67
1989	13.22	1.84	46.70	7.94	37.68	48.49	0.75	51.11	0.14	14.43	:	18.74	:	:	42.48
1990	13.28	1.71	44.82	7.98	37.26	46.56	0.77	51.41	0.14	14.58	:	:	:	:	38.86
1991	11.68	1.59	55.08	8.90	37.66	42.80	0.98	54.12	:	12.42	9.55	23.18	1.29	1.76	30.56
1992	10.85	1.62	52.43	10.12	33.88	40.97	0.98	52.99	:	12.96	9.01	:	1.01	1.80	26.74
1993	10.39	1.36	49.17	10.16	:	37.60	0.88	48.76	:	:	7.53	:	0.79	1.54	24.90
1994	10.22	1.45	53.52	10.38	26.83	37.12	0.95	56.09	:	2.90	7.85	22.10	0.75	1.57	24.12
1995	10.18	1.33	52.86	10.45	29.05	38.74	1.23	59.01	:	3.02	6.65	22.01	0.91	1.66	23.30
1996	9.72	1.32	51.36	:	29.87	36.51	1.19	58.10	:	3.19	6.42	20.24	0.87	1.51	22.84
1997	:	1.29	59.02	:	:	38.59	:	:	:	:	7.12	19.64	0.86	1.61	24.20

Source: Eurostat (New Cronos).

People killed and injured in road accidents - Passenger cars

(1 000 persons)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total killed or injured															
1980	50.48	6.58	286.1	9.92	69.20	183.0	5.32	121.6	1.82	20.99	34.73	:	4.63	12.09	147.5
1985	46.27	6.71	230.1	12.44	78.33	174.0	4.64	119.5	1.68	18.50	:	:	:	:	154.7
1986	50.87	6.67	257.7	11.58	85.76	168.0	4.86	126.8	1.70	19.05	:	:	:	:	165.3
1987	53.60	5.94	261.1	11.23	95.46	150.2	4.90	138.4	1.42	19.08	:	19.96	:	:	166.2
1988	55.42	5.78	283.4	12.74	101.55	153.7	5.18	145.9	1.59	17.85	:	23.37	:	:	178.1
1989	56.20	5.45	285.1	13.28	103.70	147.5	5.56	133.0	1.50	17.88	:	25.51	6.91	16.15	193.0
1990	56.57	4.84	287.9	12.15	92.19	141.5	6.04	138.1	1.46	19.22	36.71	25.20	7.42	15.01	199.0
1991	53.61	4.67	320.4	12.57	85.96	129.2	5.93	155.7	1.47	18.23	36.88	29.48	6.56	14.20	187.0
1992	52.07	4.69	326.5	13.07	73.08	124.4	6.20	158.6	1.63	18.54	34.72	29.92	5.88	14.01	185.6
1993	49.44	4.62	327.1	12.86	:	120.1	6.22	139.3	1.65	5.21	33.88	27.58	4.58	13.23	195.7
1994	46.90	4.51	329.9	13.22	64.75	112.2	6.44	151.1	1.56	5.17	33.35	24.64	4.84	14.01	204.2
1995	46.20	4.93	328.5	:	69.88	111.7	8.06	167.6	1.56	5.44	32.67	27.60	6.20	14.19	202.8
1996	43.82	4.98	319.5	:	71.58	105.5	:	172.5	1.43	5.41	32.09	29.47	5.66	14.08	214.7
1997	:	4.83	313.4	:	:	103.3	:	:	:	:	32.53	31.40	5.48	14.28	221.0
Killed															
1980	1.23	0.30	6.44	0.39	2.69	6.66	0.25	3.81	0.06	0.91	0.93	:	0.20	0.47	2.38
1985	0.98	0.40	4.18	0.58	2.70	6.42	0.17	3.31	0.06	0.71	:	:	:	:	2.14
1986	1.11	0.36	4.60	0.47	3.08	6.87	0.15	3.57	0.06	0.74	:	:	:	:	2.35
1987	1.10	0.34	4.25	0.54	3.40	:	0.18	3.60	0.05	0.77	:	0.66	:	:	2.31
1988	1.19	0.36	4.51	0.55	3.67	6.44	0.18	3.75	0.08	0.65	:	0.83	:	:	2.24
1989	1.16	0.30	4.36	0.67	4.12	6.51	0.21	3.32	0.05	0.68	:	0.77	:	:	2.52
1990	1.18	0.28	4.56	0.60	3.88	6.30	0.21	3.52	0.05	0.70	:	:	:	:	2.46
1991	1.14	0.28	6.80	0.63	3.84	5.99	0.20	4.15	:	0.63	0.82	0.88	0.33	0.46	2.16
1992	1.00	0.26	6.43	0.73	3.40	5.73	0.17	4.14	:	0.63	0.85	:	0.32	0.47	2.05
1993	1.04	0.25	6.13	0.68	:	5.84	0.19	3.64	:	:	0.75	:	0.27	0.39	1.84
1994	1.06	0.27	5.97	0.73	3.04	5.42	0.18	3.58	:	0.61	0.81	0.66	0.26	0.39	1.86
1995	0.93	0.29	5.93	:	3.21	5.39	0.19	3.73	:	0.66	0.71	0.73	0.23	0.37	1.83
1996	0.85	0.27	5.62	:	3.01	5.24	:	3.39	:	0.58	0.62	0.79	0.23	0.33	1.88
1997	:	0.26	5.25	:	:	5.07	:	:	:	:	0.67	0.77	0.25	0.35	1.87
Injured															
1980	49.26	6.28	279.6	9.52	66.50	176.3	5.08	117.8	1.77	20.08	33.80	:	4.43	11.62	145.1
1985	45.30	6.31	226.0	11.87	75.63	167.6	4.48	116.1	1.62	17.79	:	:	:	:	152.6
1986	49.76	6.31	253.1	11.11	82.69	161.2	4.71	123.2	1.64	18.31	:	:	:	:	163.0
1987	52.50	5.60	256.9	10.69	92.06	:	4.72	134.8	1.37	18.31	:	19.30	:	:	163.9
1988	54.24	5.42	278.9	12.20	97.88	147.3	5.00	142.1	1.51	17.20	:	22.54	:	:	175.9
1989	55.04	5.15	280.8	12.62	99.58	141.0	5.35	129.6	1.45	17.20	:	24.74	:	:	190.5
1990	55.40	4.56	283.3	11.55	88.31	135.2	5.83	134.5	1.41	18.52	:	:	:	:	196.6
1991	52.48	4.38	313.6	11.94	82.12	123.2	5.74	151.6	:	17.60	36.06	28.61	6.27	13.74	184.8
1992	49.25	4.43	320.1	12.34	69.68	118.6	6.03	154.5	:	17.91	33.86	:	5.56	13.54	191.8
1993	48.44	4.37	320.9	12.18	:	114.2	6.03	135.7	:	:	33.13	:	4.30	12.84	194.2
1994	45.88	4.24	323.9	12.49	61.70	106.7	6.27	147.5	:	4.56	32.54	23.98	4.58	13.62	202.4
1995	45.27	4.64	322.6	:	66.67	106.3	7.87	163.9	:	4.78	31.96	28.87	5.97	13.82	201.0
1996	42.97	4.72	313.8	:	68.58	100.3	:	169.1	:	4.84	31.47	28.68	5.43	13.75	212.8
1997	:	4.57	308.2	:	:	98.3	:	:	:	:	31.86	30.63	5.23	13.93	219.1

Source: Eurostat (New Cronos).

People killed and injured in road accidents - Buses and coaches

(persons)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total killed or injured															
1980	1 037	123	4 658	937	1 875	1 774	107	3 262	:	254	1 041	220	160	220	10 587
1985	782	165	4 206	783	1 505	1 531	70	3 193	:	153	:	:	:	:	10 500
1986	947	140	4 122	583	1 475	1 257	57	2 630	:	176	:	:	:	:	9 737
1987	766	124	4 320	556	1 726	1 332	:	2 361	:	161	:	526	:	:	9 282
1988	780	77	4 324	651	1 669	1 375	49	2 371	:	163	:	469	:	:	9 688
1989	1 002	79	4 264	469	1 565	1 403	47	2 071	:	199	:	548	136	193	10 382
1990	422	45	4 705	503	1 550	1 434	111	2 233	:	238	770	471	166	304	10 155
1991	832	95	5 661	561	1 378	1 250	109	1 955	20	163	719	433	203	197	9 098
1992	336	61	5 351	423	1 680	1 155	97	1 808	34	207	597	412	121	182	9 416
1993	285	111	5 458	399	:	1 214	:	1 607	20	30	675	365	154	253	9 543
1994	311	63	5 640	387	1 279	1 229	132	1 762	20	15	503	444	59	203	10 402
1995	381	79	5 389	506	1 315	1 392	46	1 886	34	15	645	377	153	268	9 520
1996	302	72	5 404	:	1 443	1 205	79	1 615	23	26	640	332	111	219	9 744
1997	:	97	5 523	:	:	1 016	:	:	:	:	656	434	101	228	9 796
Killed															
1980	8	1	43	21	45	34	4	22	:	2	8	:	3	4	29
1985	12	1	45	16	23	15	1	63	:	1	:	:	:	:	32
1986	17	–	15	11	34	14	1	23	:	1	:	:	:	:	24
1987	8	4	12	24	75	:	:	5	:	1	:	8	:	:	15
1988	4	4	23	6	70	19	1	15	:	3	:	23	:	:	18
1989	14	2	6	7	40	15	1	16	:	1	:	18	:	:	20
1990	4	1	13	10	40	32	–	36	:	2	:	:	:	:	19
1991	6	1	28	19	31	29	2	:	:	–	25	3	2	1	25
1992	4	–	60	8	105	6	–	:	:	7	9	:	2	2	26
1993	4	5	20	3	:	23	–	33	:	:	2	2	1	4	35
1994	1	1	41	10	25	18	2	20	:	–	7	10	30	3	21
1995	1	2	20	12	35	41	–	35	:	1	24	4	–	5	35
1996	1	3	26	:	57	8	–	8	:	1	3	4	–	6	11
1997	:	1	16	:	:	34	:	:	:	:	3	3	2	–	14
Injured															
1980	1 029	122	4 616	916	1 830	1 740	103	3 240	:	252	1 033	:	157	216	10 558
1985	770	164	4 670	767	1 482	1 516	69	3 130	:	152	:	:	:	:	10 477
1986	930	140	4 107	572	1 441	1 243	56	2 607	:	175	:	:	:	:	9 713
1987	758	120	4 308	532	1 651	:	:	2 356	:	160	:	518	:	:	9 267
1988	776	73	4 301	645	1 599	1 356	48	2 356	:	160	:	446	:	:	9 670
1989	988	77	4 258	462	1 525	1 388	46	2 055	:	198	:	530	:	:	10 362
1990	418	44	4 692	493	1 510	1 402	111	2 197	:	236	:	:	:	:	10 136
1991	826	94	5 633	542	1 347	1 221	107	1 943	:	163	694	430	201	196	9 073
1992	332	61	5 291	415	1 575	1 149	97	1 791	:	200	588	:	119	180	9 390
1993	281	106	5 438	396	:	1 191	:	1 574	:	:	673	363	153	249	9 511
1994	310	62	5 599	377	1 254	1 211	130	1 742	:	15	496	434	59	200	10 381
1995	380	77	5 369	494	1 280	1 351	46	1 851	:	14	621	373	153	263	9 485
1996	301	69	5 378	:	1 386	1 197	79	1 607	:	25	637	328	111	213	9 733
1997	:	96	5 507	:	:	982	:	:	:	:	653	431	99	228	9 782

Source: Eurostat (New Cronos).

People killed and injured in road accidents - Goods vehicles

(1 000 persons)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total killed or injured															
1980	2.26	0.89	10.06	2.63	7.41	11.07	0.40	8.03	:	1.10	1.46	:	0.40	0.64	13.02
1985	2.35	0.97	7.66	3.27	7.49	6.91	0.41	6.72	:	1.12	:	:	:	:	12.11
1986	2.46	1.00	7.96	2.96	8.29	7.04	0.52	6.62	:	1.32	:	:	:	:	12.69
1987	2.66	0.89	7.93	2.89	9.30	6.80	0.51	6.80	:	1.45	:	3.59	:	:	12.81
1988	2.75	0.86	8.23	3.33	10.11	7.34	0.65	7.22	:	1.46	:	4.07	:	:	13.89
1989	2.96	0.88	8.07	3.23	10.64	7.28	:	7.29	:	1.49	:	5.12	0.57	0.90	14.73
1990	2.77	0.62	8.71	2.98	10.19	7.20	0.73	7.47	:	1.78	1.41	4.44	0.69	1.07	14.10
1991	2.68	0.67	11.96	3.00	9.85	6.72	0.77	7.70	:	1.54	1.48	4.87	0.65	0.96	12.77
1992	2.18	0.69	12.15	2.74	8.53	6.48	0.74	7.89	:	1.71	1.35	:	0.56	0.86	12.00
1993	2.29	0.66	12.25	2.57	:	5.55	:	6.98	:	0.50	1.37	4.54	0.41	0.83	11.37
1994	2.16	0.62	13.50	2.47	8.00	5.34	0.68	7.75	:	0.56	1.44	4.11	0.41	0.85	11.61
1995	2.50	0.58	13.97	2.65	8.75	5.04	0.51	8.30	:	0.48	1.33	5.01	0.52	0.93	11.14
1996	2.50	0.67	13.41	:	8.79	4.57	0.87	8.75	:	0.50	1.29	5.53	0.43	0.83	11.18
1997	:	0.64	13.52	:	:	4.70	:	:	:	:	1.40	4.51	0.47	0.95	11.51
Killed															
1980	0.05	0.04	0.21	0.12	0.42	0.52	0.01	0.49	:	0.03	0.03	:	0.02	0.03	0.22
1985	0.05	0.04	0.13	0.19	0.37	0.31	0.01	0.37	:	0.03	:	:	:	:	0.19
1986	0.06	0.05	0.13	0.15	0.33	0.38	0.02	0.37	:	0.05	:	:	:	:	0.25
1987	0.07	0.05	0.11	0.17	0.43	:	0.02	0.35	:	0.04	:	0.15	:	:	0.20
1988	0.07	0.04	0.14	0.19	0.44	0.41	0.02	0.33	:	0.05	:	0.18	:	:	0.22
1989	0.07	0.06	0.14	0.20	0.51	0.40	0.02	0.38	:	0.05	:	0.21	:	:	0.23
1990	0.05	0.03	0.15	0.19	0.54	0.43	0.03	0.32	:	0.05	:	:	:	:	0.20
1991	0.06	0.04	0.28	0.19	0.54	0.34	0.02	0.38	:	0.06	0.02	0.19	0.03	0.03	0.19
1992	0.04	0.04	0.22	0.16	0.46	0.31	0.03	0.42	:	0.05	0.03	:	0.02	0.02	0.19
1993	0.03	0.03	0.22	0.16	:	0.30	0.00	0.35	:	:	0.04	0.16	0.02	0.02	0.15
1994	0.04	0.03	0.27	0.15	0.46	0.28	0.02	0.33	:	0.08	0.04	0.16	0.03	0.02	0.11
1995	0.15	0.03	0.25	0.21	0.47	0.25	0.02	0.36	:	0.06	0.02	0.19	0.02	0.02	0.13
1996	0.16	0.04	0.25	:	0.45	0.25	0.03	0.33	:	0.06	0.02	0.18	0.02	0.02	0.13
1997	:	0.03	0.25	:	:	0.23	:	:	:	:	0.04	0.15	0.03	0.02	0.12
Injured															
1980	2.21	0.85	9.85	2.51	7.00	10.55	0.39	7.54	:	1.06	1.44	:	0.38	0.62	12.80
1985	2.30	0.93	7.53	3.08	7.12	6.60	0.40	6.35	:	1.09	:	:	:	:	11.91
1986	2.40	0.95	7.83	2.81	7.96	6.67	0.49	6.25	:	1.26	:	:	:	:	12.44
1987	2.59	0.84	7.83	2.72	8.87	:	0.49	6.45	:	1.41	:	3.44	:	:	12.62
1988	2.68	0.81	8.10	3.14	9.67	6.93	0.63	6.89	:	1.41	:	3.89	:	:	13.67
1989	2.89	0.82	7.94	3.03	10.13	6.88	0.64	6.91	:	1.44	:	4.91	:	:	14.50
1990	2.72	0.59	8.56	2.80	9.65	6.77	0.69	7.15	:	1.72	:	:	:	:	13.90
1991	2.62	0.63	11.67	2.81	9.31	6.38	0.75	7.32	:	1.48	1.46	4.68	0.62	0.93	12.58
1992	2.13	0.66	11.93	2.58	8.07	6.17	0.71	7.47	:	1.66	1.32	:	0.54	0.85	11.81
1993	2.26	0.63	12.03	2.41	:	5.25	:	6.63	:	:	1.33	4.38	0.39	0.82	11.21
1994	2.12	0.60	13.23	2.32	7.54	5.07	0.66	7.42	:	0.49	1.40	4.06	0.39	0.84	11.50
1995	2.46	0.55	13.71	2.45	8.27	4.79	0.49	7.94	:	0.42	1.31	4.82	0.50	0.91	11.01
1996	2.46	0.63	13.16	:	8.34	4.32	0.85	8.42	:	0.44	1.26	5.35	0.41	0.81	11.05
1997	:	0.61	13.27	:	:	4.47	:	:	:	:	1.36	4.37	0.44	0.93	11.40

Source: Eurostat (New Cronos).

People killed and injured in road accidents - Cyclists

(1 000 persons)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total killed or injured															
1980	8.45	2.63	51.58	0.51	1.19	14.08	0.45	9.04	0.06	13.17	:	:	:	:	25.08
1985	8.35	2.70	60.03	0.43	2.33	10.45	0.68	7.95	0.05	12.65	:	:	:	:	27.38
1986	8.29	2.54	62.74	0.45	2.19	9.72	0.80	7.46	0.05	12.39	:	:	:	:	26.46
1987	8.08	2.37	56.62	0.39	2.26	8.97	0.80	7.50	0.03	11.61	:	1.64	:	:	26.58
1988	8.15	2.47	61.56	0.40	2.28	8.97	0.68	7.73	0.04	11.55	:	1.61	:	:	26.25
1989	8.62	2.68	67.09	0.39	2.44	9.17	0.66	7.86	0.06	13.28	:	1.49	1.93	2.84	28.89
1990	8.25	2.66	64.86	0.41	2.21	8.66	0.70	8.05	0.04	13.16	6.05	1.52	1.93	2.90	26.82
1991	7.89	2.42	:	0.41	2.02	7.70	0.78	8.75	0.06	12.33	6.43	1.51	1.74	2.82	25.15
1992	7.42	2.67	78.39	0.49	2.45	7.49	0.78	8.26	0.05	12.34	6.63	1.57	1.51	2.81	24.76
1993	7.45	2.46	72.05	0.43	:	7.44	0.72	8.29	0.04	2.85	6.05	1.47	1.22	2.85	24.36
1994	7.52	2.42	74.37	0.44	3.00	7.75	0.69	8.98	0.05	2.95	6.27	1.43	1.28	3.29	25.13
1995	7.51	2.40	72.35	0.47	2.95	8.06	0.89	9.15	0.04	2.77	5.26	1.60	1.59	3.06	25.30
1996	7.03	2.24	65.99	:	2.65	7.07	0.82	9.45	0.04	2.73	5.12	1.58	1.44	2.99	24.90
1997	:	2.15	72.67	:	:	7.52	:	:	:	:	5.68	1.61	1.34	3.18	24.93
Killed															
1980	0.24	0.08	1.14	0.03	0.09	0.66	0.04	0.64	0.00	0.43	0.08	:	0.11	0.11	0.32
1985	0.19	0.10	0.77	0.02	0.11	0.43	0.04	0.48	0.00	0.32	:	:	:	:	0.30
1986	0.21	0.08	0.82	0.02	0.12	0.44	0.03	0.44	0.00	0.31	:	:	:	:	0.28
1987	0.19	0.09	0.73	0.02	0.10	:	0.04	0.47	0.00	0.31	:	0.11	:	:	0.29
1988	0.20	0.08	0.73	0.02	0.11	0.40	0.06	0.44	0.00	0.28	:	0.11	:	:	0.23
1989	0.20	0.09	0.81	0.02	0.14	0.41	0.04	0.40	0.00	0.33	:	0.09	:	:	0.30
1990	0.20	0.11	0.71	0.02	0.12	0.40	0.05	0.44	0.00	0.30	:	:	:	:	0.27
1991	0.17	0.07	0.93	0.02	0.12	0.36	0.04	0.43	:	0.24	0.08	0.08	0.07	0.07	0.25
1992	0.15	0.08	0.91	0.02	0.13	0.35	0.04	0.43	:	0.25	0.09	:	0.09	0.08	0.21
1993	0.14	0.07	0.82	0.03	:	0.33	0.02	0.41	:	:	0.10	0.08	0.07	0.07	0.19
1994	0.15	0.08	0.83	0.02	0.15	0.32	0.03	0.41	:	0.27	0.08	0.05	0.06	0.05	0.18
1995	0.13	0.08	0.75	0.03	0.12	0.37	0.03	0.36	:	0.27	0.08	0.07	0.07	0.06	0.22
1996	0.12	0.09	0.59	:	0.10	0.30	0.02	0.38	:	0.23	0.07	0.06	0.05	0.05	0.21
1997	:	0.07	0.68	:	:	0.33	:	:	:	:	0.07	0.06	0.06	0.04	0.19
Injured															
1980	8.21	2.54	50.44	0.48	1.10	13.42	0.41	8.40	0.06	12.74	4.84	:	1.25	2.28	24.77
1985	8.16	2.59	59.26	0.41	2.22	10.03	0.64	7.47	0.04	12.33	:	:	:	:	27.08
1986	8.08	2.46	61.92	0.42	2.06	9.28	0.77	7.03	0.04	12.08	:	:	:	:	16.18
1987	7.89	2.28	55.98	0.37	2.16	:	0.77	7.03	0.03	11.30	:	1.53	:	:	26.29
1988	7.96	2.39	60.83	0.38	2.17	8.57	0.62	7.29	0.04	11.27	:	1.50	:	:	26.02
1989	8.42	2.58	66.28	0.37	2.30	8.76	0.62	7.46	0.06	12.94	:	1.40	:	:	28.59
1990	8.06	2.51	64.15	0.39	2.09	8.26	0.65	7.60	0.04	12.85	:	:	:	:	26.56
1991	7.72	2.35	70.01	0.39	1.90	7.33	0.74	8.32	:	12.09	6.35	1.43	1.67	2.75	24.90
1992	7.27	2.58	77.48	0.47	2.32	7.15	0.75	7.83	:	12.09	6.54	:	1.42	2.74	24.93
1993	7.32	2.39	71.23	0.40	:	7.11	0.69	7.88	:	:	5.94	1.39	1.15	2.78	24.17
1994	7.37	2.35	73.55	0.42	2.85	7.43	0.67	8.58	:	2.68	6.20	1.38	1.22	3.24	29.95
1995	7.38	2.33	71.60	0.44	2.83	7.68	0.87	8.79	:	2.50	5.18	1.53	1.52	3.00	25.08
1996	6.91	2.15	65.39	:	2.55	6.77	0.80	9.07	:	2.49	5.04	1.53	1.39	2.94	24.69
1997	:	2.09	71.99	:	:	7.19	:	:	:	:	5.61	1.56	1.28	3.14	24.74

Source: Eurostat (New Cronos).

People killed and injured in road accidents - Pedestrians

(1 000 persons)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total killed or injured															
1980	7.10	1.89	59.55	6.00	16.79	44.21	1.72	28.58	0.30	5.70	7.48	:	1.34	2.03	64.89
1985	6.13	1.61	45.59	5.50	17.55	33.73	1.48	21.38	0.21	4.23	:	:	:	:	62.99
1986	6.45	1.55	46.41	5.02	18.31	32.41	1.54	20.11	0.20	4.22	:	:	:	:	62.50
1987	6.21	1.53	43.38	4.81	19.22	30.74	1.44	19.87	0.18	4.20	:	10.81	:	:	58.98
1988	6.33	1.43	43.79	5.11	19.72	31.35	1.39	20.23	0.20	4.13	:	10.16	:	:	60.43
1989	6.09	1.30	41.45	4.53	18.99	29.81	1.37	19.23	0.21	4.18	:	10.83	1.76	2.12	61.57
1990	5.85	1.31	40.63	4.28	17.99	28.07	1.39	18.35	0.20	4.16	6.10	10.90	1.64	1.86	61.77
1991	5.37	1.30	48.23	4.45	16.75	25.37	1.50	17.36	0.17	3.66	5.92	11.14	1.59	1.71	55.23
1992	4.78	1.23	48.21	4.45	:	24.27	1.56	16.43	0.18	:	5.80	11.37	1.31	1.65	52.93
1993	4.59	1.18	45.37	4.48	:	23.12	1.45	15.23	0.17	1.22	5.21	10.66	1.02	1.47	49.38
1994	4.34	1.10	44.84	4.47	13.98	22.94	1.49	17.01	0.15	1.17	5.01	10.11	1.09	1.57	49.92
1995	4.21	1.15	43.79	4.27	13.93	22.22	1.78	16.71	0.15	1.06	4.69	10.21	1.10	1.47	48.26
1996	4.09	0.96	41.84	:	13.95	20.78	1.82	16.31	0.17	1.07	4.61	10.15	1.06	1.54	47.64
1997	:	1.01	40.89	:	:	20.08	:	:	:	:	4.70	9.61	1.02	1.38	46.73
Killed															
1980	0.51	0.14	3.10	0.38	1.16	2.20	0.21	1.81	0.03	0.30	0.40	:	0.14	0.13	2.04
1985	0.33	0.13	1.81	0.41	1.02	1.56	0.14	1.25	0.01	0.19	:	:	:	:	1.85
1986	0.32	0.13	2.05	0.41	1.17	1.64	0.13	1.18	0.01	0.22	:	:	:	:	1.93
1987	0.33	0.14	1.69	0.37	1.08	1.48	0.14	1.12	0.01	0.17	:	0.65	:	:	1.78
1988	0.29	0.14	1.73	0.39	1.12	1.59	0.14	1.13	0.01	0.20	:	0.64	:	:	1.81
1989	0.28	0.13	1.65	0.40	1.25	1.47	0.14	0.92	0.01	0.19	:	0.60	:	:	1.76
1990	0.30	0.12	1.46	0.44	1.19	1.41	0.15	0.99	0.01	0.14	:	0.59	:	:	1.75
1991	0.28	0.14	1.92	0.40	1.06	1.33	0.11	1.15	0.02	0.15	0.23	0.61	0.13	0.13	1.54
1992	0.23	0.11	1.77	0.39	0.93	1.17	0.12	1.06	0.01	0.15	0.24	:	0.12	0.14	1.39
1993	0.20	0.13	1.58	0.42	:	1.13	0.14	0.92	0.02	:	0.20	0.54	0.09	0.09	1.28
1994	0.19	0.09	1.47	0.41	1.01	1.13	0.12	0.95	0.01	0.12	0.23	0.43	0.09	0.09	1.17
1995	0.15	0.12	1.34	0.41	1.00	1.03	0.11	0.88	0.01	0.14	0.20	0.46	0.07	0.07	1.09
1996	0.16	0.07	1.18	:	0.96	0.99	0.12	0.91	0.01	0.11	0.16	0.48	0.07	0.07	1.04
1997	:	0.09	1.15	:	:	0.93	:	:	:	:	0.16	0.42	0.07	0.07	1.01
Injured															
1980	6.59	1.75	56.45	5.62	15.63	42.01	1.51	26.77	0.27	5.40	7.08	:	1.21	1.89	62.85
1985	5.81	1.48	43.77	5.09	16.52	32.17	1.35	20.14	0.20	4.04	:	:	:	:	61.14
1986	6.13	1.42	44.37	4.61	17.14	30.78	1.41	18.93	0.19	4.00	:	:	:	:	60.56
1987	5.88	1.38	41.70	4.44	18.14	:	1.30	18.75	0.17	4.03	:	10.16	:	:	57.20
1988	6.04	1.29	42.06	4.72	18.60	29.76	1.25	19.09	0.19	3.93	:	10.16	:	:	58.62
1989	5.80	1.17	39.80	4.14	17.74	28.34	1.23	18.31	0.20	3.99	:	10.26	:	:	69.81
1990	5.55	1.19	39.17	3.84	16.25	26.67	1.24	17.36	0.19	4.02	:	:	:	:	60.01
1991	5.09	1.16	46.31	4.05	15.69	24.05	1.38	16.21	0.16	3.52	5.68	10.53	1.46	1.58	53.69
1992	4.43	1.12	46.44	4.06	13.87	23.11	1.45	15.37	0.16	3.43	5.56	:	1.20	1.51	51.54
1993	4.40	1.05	43.79	4.05	:	21.99	1.31	14.31	0.15	:	5.01	10.12	0.93	1.37	48.09
1994	4.15	1.01	43.37	4.06	12.97	21.81	1.37	16.06	0.14	1.05	4.79	9.67	1.00	1.48	48.76
1995	4.06	1.03	42.45	3.86	12.93	21.20	1.66	15.84	0.15	0.92	4.49	9.75	1.03	1.40	47.17
1996	3.94	0.89	40.66	:	12.99	19.79	1.71	15.40	0.16	0.96	4.46	9.67	0.99	1.46	46.60
1997	:	0.92	39.74	:	:	19.15	:	:	:	:	4.54	9.19	0.95	1.31	45.72

Source: Eurostat (New Cronos).

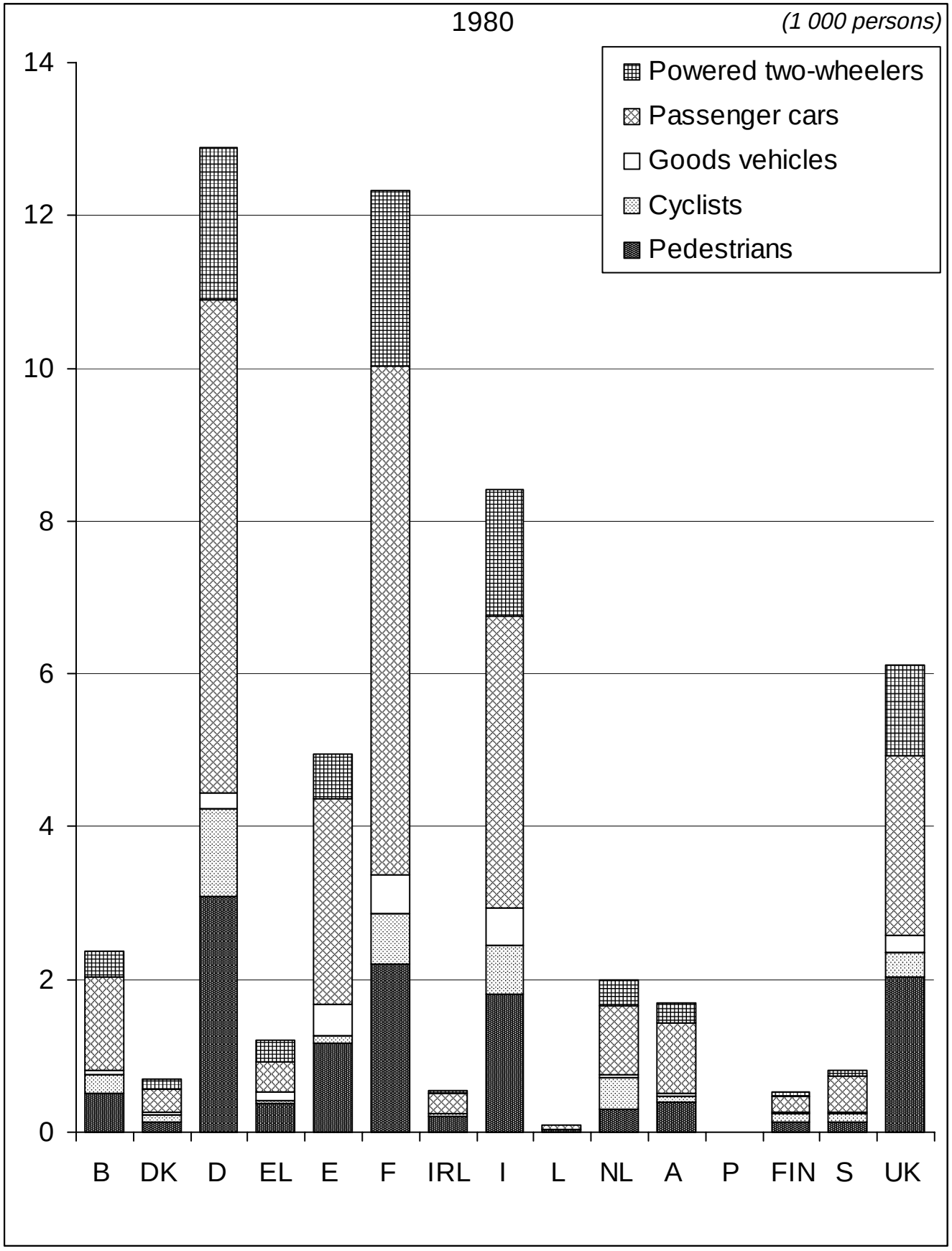


Figure 1.45: People killed in road accidents by means of transport (1980)

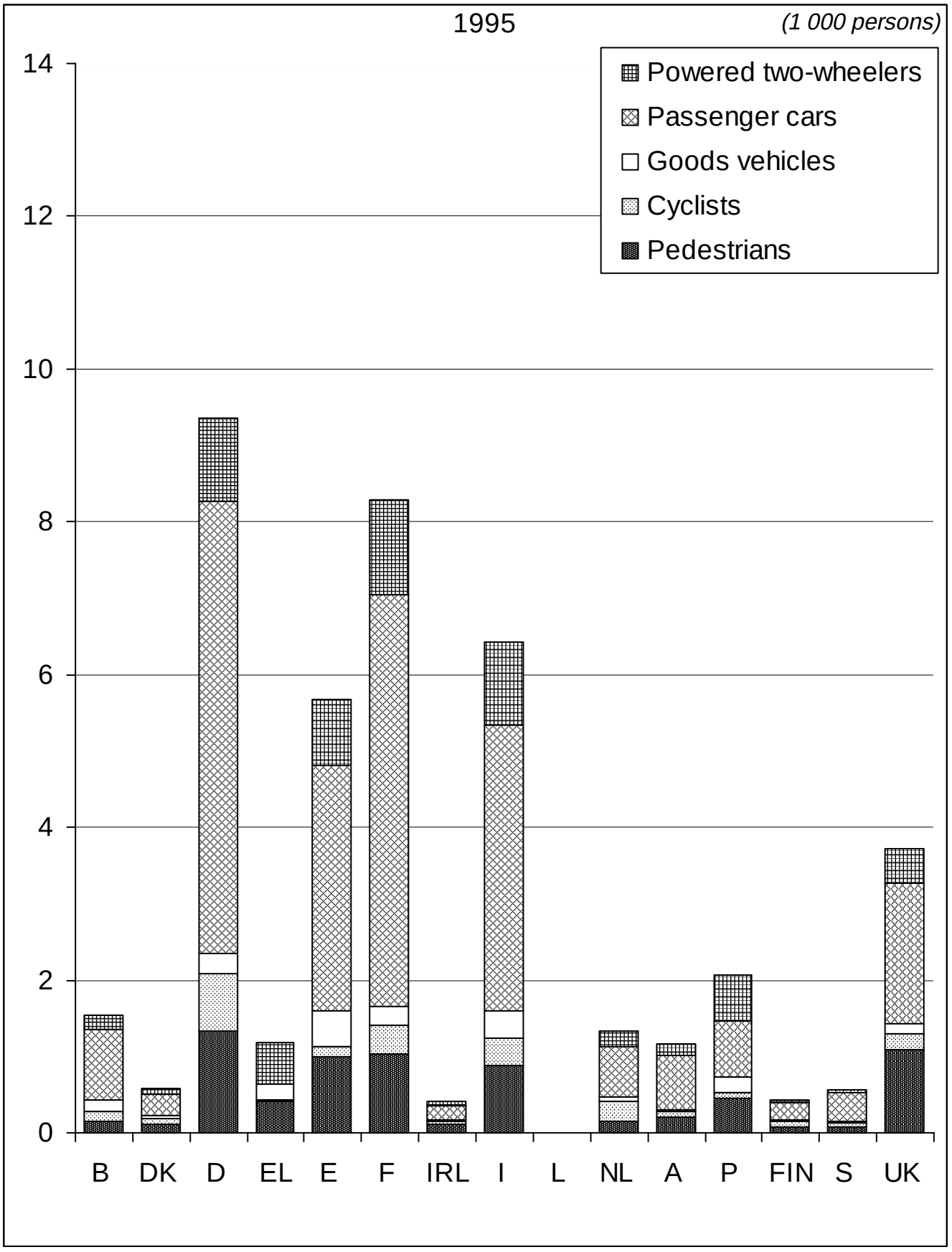


Figure 1.46: People killed in road accidents by means of transport (1995)

People killed and injured in road accidents per 1 000 million passenger-kilometres

(persons killed or injured per 1 000 mio pkm)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Powered two-wheelers															
1980	11 915	3 740	5 014	2 464	1 370	4 503	4 413	1 507	6 400	4 640	9 467	:	1 592	4 696	8 882
1985	9 650	2 783	4 526	2 849	1 949	2 833	3 667	1 455	4 867	4 086	:	:	:	:	7 536
1990	11 155	2 163	2 987	1 727	3 099	2 841	3 236	1 192	4 833	5 364	8 330	4 716	1 567	3 393	6 758
1995	7 682	2 216	4 215	1 278	2 191	2 396	4 965	1 131	3 350	1 159	5 150	5 727	991	2 390	5 386
Passenger cars															
1980	772	173	557	359	366	404	191	375	676	196	727	:	137	181	372
1985	687	155	416	309	334	352	152	320	508	157	:	:	:	:	351
1990	701	90	421	249	327	241	166	264	364	141	588	388	145	167	332
1995	507	81	450	:	213	168	190	273	333	37	480	277	124	163	333
1996	474	78	437	:	211	156	:	279	305	37	488	281	112	152	345
1997	:	74	423	:	:	151	:	:	:	:	486	288	106	153	349
Buses and coaches															
1980	105	17	52	57	59	41	24	53	:	17	98	26	19	24	188
1985	80	19	56	45	43	33	17	44	:	11	:	:	:	:	190
1990	36	5	64	27	41	28	29	25	:	17	78	43	19	28	193
1995	29	7	79	24	30	28	9	21	85	1	54	28	18	26	186
1996	25	6	79	:	34	24	15	17	58	2	46	24	13	20	192
1997	:	9	81	:	:	20	:	:	:	:	47	32	12	21	196
Cyclists															
1980	2 284	584	2 313	1 710	1 704	2 815	558	1 063	3 500	1 330	:	:	:	:	4 918
1985	2 351	657	2 501	1 427	2 911	2 178	638	914	2 706	1 072	:	:	:	:	4 488
1990	2 427	542	2 725	1 377	2 765	1 924	929	894	2 750	1 012	4 318	5 077	1 289	1 316	5 061
1995	2 275	511	3 079	1 550	3 689	1 831	1 333	1 017	2 438	208	4 575	5 333	1 224	1 274	5 622
Pedestrians															
1980	1 540	734	1 588	1 504	1 042	1 734	1 151	1 076	1 776	871	1 928	:	555	511	2 516
1985	1 495	667	1 380	1 475	1 170	1 419	1 083	876	1 387	707	:	:	:	:	2 722
1990	1 433	546	1 266	1 186	1 229	1 184	1 046	735	1 340	692	1 707	2 759	743	522	2 709
1995	934	443	1 237	1 055	856	873	1 191	621	856	155	1 179	2 327	469	379	1 983
1996	908	370	1 182	:	858	816	1 222	606	950	156	1 159	2 311	449	395	1 957
1997	:	388	1 155	:	:	789	:	:	:	:	1 180	2 189	434	356	1 920

Source: Eurostat (New Cronos).

People killed in road accidents per 1 000 million passenger-kilometres

(persons killed per 1 000 mio pkm)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Powered two-wheelers															
1980	277	135	102	125	50	112	209	42	300	87	183	:	102	145	147
1985	187	121	79	115	50	85	208	35	133	57	:	:	:	:	107
1990	179	100	61	81	92	95	164	28	267	62	:	:	:	:	115
1995	139	100	86	62	63	75	219	21	:	75	115	154	35	58	103
Passenger cars															
1980	18.8	7.9	12.5	14.2	14.3	14.7	8.9	11.7	20.7	8.5	19.4	:	6.0	7.0	6.0
1985	14.5	9.2	7.6	14.3	11.5	13.0	5.4	8.9	17.9	6.1	:	:	:	:	4.9
1990	14.6	5.3	6.7	12.4	13.8	10.7	5.7	6.7	12.5	5.2	:	:	:	:	4.1
1995	10.2	4.8	8.1	:	9.8	8.1	4.6	6.1	:	4.5	10.4	7.4	4.6	4.3	3.0
1996	9.2	4.2	7.7	:	8.9	7.8	:	5.5	:	3.9	9.5	7.5	4.5	3.6	3.0
1997	:	4.0	7.1	:	:	7.4	:	:	:	:	9.9	7.0	4.8	3.7	3.0
Buses and coaches															
1980	0.81	0.14	0.48	1.29	1.41	0.78	0.89	0.36	:	0.14	0.75	:	0.35	0.43	0.52
1985	1.23	0.11	0.60	0.92	0.65	0.32	0.24	0.87	:	0.07	:	:	:	:	0.58
1990	0.35	0.11	0.18	0.54	1.06	0.62	0.00	0.41	:	0.14	:	:	:	:	0.36
1995	0.08	0.19	0.29	0.57	0.79	0.82	0.00	0.38	:	0.06	2.00	0.29	0.00	0.49	0.68
1996	0.08	0.26	0.38	:	1.35	0.16	0.00	0.09	:	0.06	0.21	0.29	0.00	0.56	0.22
1997	:	0.09	0.24	:	:	0.66	:	:	:	:	0.21	0.22	0.24	0.00	0.28
Cyclists															
1980	65.1	18.7	51.2	110.0	134.3	131.8	45.0	74.9	111.1	43.0	46.9	:	48.6	70.0	62.0
1985	53.5	24.6	32.0	73.3	140.0	88.8	36.4	55.5	235.3	26.7	:	:	:	:	48.5
1990	57.6	22.4	29.9	73.3	153.8	89.1	61.3	49.1	125.0	23.4	:	:	:	:	50.4
1995	38.8	16.4	32.0	96.7	153.8	85.0	41.8	40.3	:	20.1	67.0	246.7	56.9	23.8	48.2
Pedestrians															
1980	110.0	53.7	82.5	95.7	72.3	86.1	139.6	68.2	182.4	45.1	102.8	:	57.4	33.6	78.9
1985	79.3	52.3	54.8	109.7	68.3	65.5	100.7	51.0	80.0	31.4	:	:	:	:	79.9
1990	73.8	49.4	45.5	123.0	81.0	59.3	112.8	39.7	80.0	24.0	:	149.1	:	:	76.9
1995	33.0	45.4	37.7	100.7	61.5	40.3	75.8	32.6	44.4	20.8	50.3	104.8	30.6	18.3	44.6
1996	34.4	26.2	33.3	:	59.0	38.8	77.2	33.9	50.0	16.0	39.4	109.3	29.8	19.0	42.7
1997	:	33.5	32.4	:	:	36.5	:	:	:	:	39.2	96.1	29.4	18.5	41.5

Source: Eurostat (New Cronos).

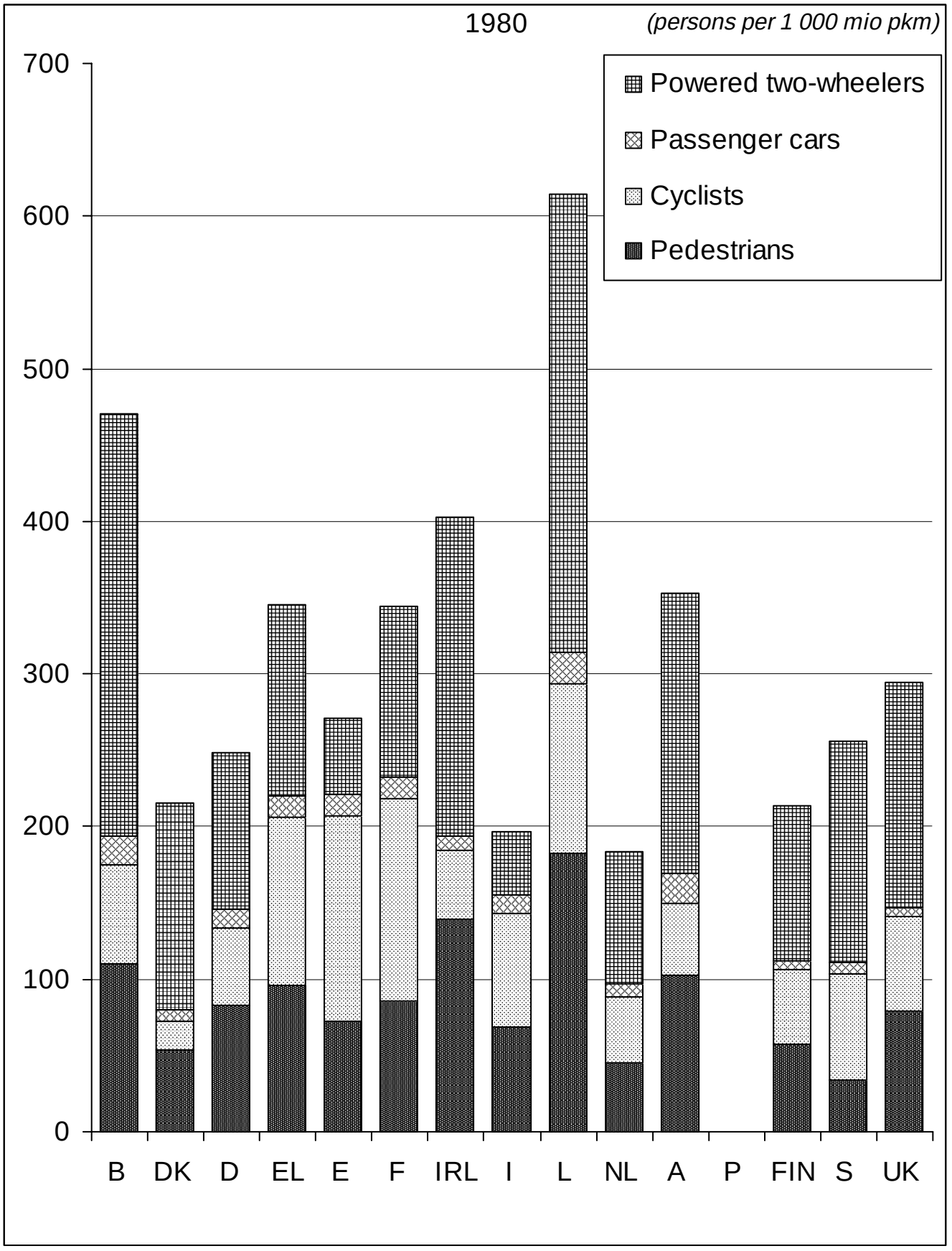


Figure 1.63: People killed in road accidents per 1 000 mio pkm by means of transport (1980)

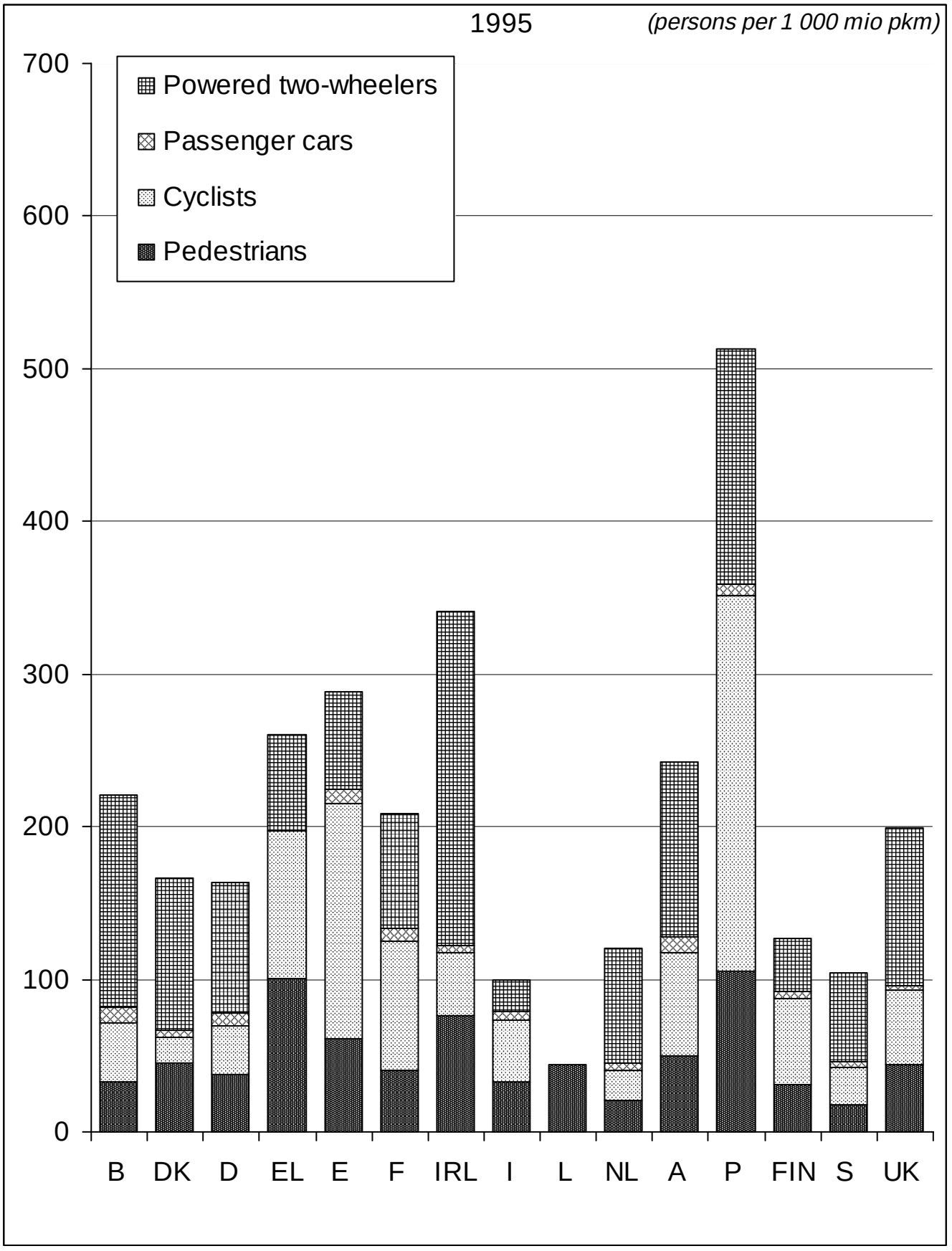


Figure 1.64: People killed in road accidents per 1 000 mio pkm by means of transport (1995)

People injured in road accidents per 1 000 million passenger-kilometres

(persons injured per 1 000 mio pkm)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Powered two-wheelers															
1980	11 638	3 605	4 912	2 339	1 320	4 391	4 204	1 465	6 100	4 554	9 284	:	1 490	4 551	8 734
1985	9 462	2 662	4 447	2 734	1 899	2 748	3 458	1 419	4 733	4 029	:	:	:	:	7 429
1990	10 976	2 063	2 926	1 645	3 007	2 747	3 072	1 164	4 567	5 302	:	:	:	:	6 643
1995	7 544	2 116	4 129	1 215	2 128	2 321	4 746	1 111	:	1 085	5 035	5 572	956	2 332	5 283
Passenger cars															
1980	753	165	544	344	352	390	182	364	655	188	707	:	131	174	366
1985	672	146	408	294	323	339	147	311	490	151	:	:	:	:	346
1990	686	85	415	237	313	231	161	257	352	136	:	:	:	:	327
1995	497	76	442	:	203	160	186	267	:	33	469	290	119	159	330
1996	465	74	429	:	202	149	:	274	:	33	479	273	108	148	342
1997	:	70	416	:	:	143	:	:	:	:	476	281	102	149	346
Buses and coaches															
1980	105	17	51	56	57	40	23	53	:	17	97	:	18	23	188
1985	79	19	62	44	42	33	16	43	:	11	:	:	:	:	189
1990	36	5	64	27	40	27	29	25	:	17	:	:	:	:	193
1995	29	7	78	24	29	27	9	20	:	1	52	27	18	26	186
1996	25	6	79	:	33	23	15	17	:	2	45	23	13	20	191
1997	:	8	81	:	:	19	:	:	:	:	46	32	12	21	196
Cyclists															
1980	2 219	565	2 262	1 600	1 570	2 683	513	988	3 389	1 287	3 024	:	570	1 427	4 856
1985	2 297	633	2 469	1 353	2 771	2 089	602	859	2 471	1 045	:	:	:	:	4 439
1990	2 369	511	2 695	1 303	2 611	1 835	868	845	2 688	989	:	:	:	:	5 010
1995	2 236	495	3 047	1 453	3 535	1 746	1 291	976	:	188	4 508	5 087	1 167	1 250	5 574
Pedestrians															
1980	1 430	681	1 505	1 409	970	1 648	1 011	1 008	1 594	826	1 825	:	498	478	2 437
1985	1 416	615	1 325	1 365	1 102	1 353	982	825	1 307	675	:	:	:	:	2 642
1990	1 359	497	1 221	1 063	1 110	1 124	933	696	1 260	668	:	:	:	:	2 632
1995	901	397	1 199	954	795	833	1 115	588	844	135	1 128	2 222	439	361	1 938
1996	873	344	1 148	:	799	777	1 145	572	900	140	1 119	2 202	420	376	1 914
1997	:	355	1 122	:	:	752	:	:	:	:	1 141	2 093	405	337	1 879

Source: Eurostat (New Cronos).

People killed and injured in railway accidents

(persons)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total killed or injured															
1980	145	118	940	133	125	435	72	375	4	226	:	437	:	:	454
1985	136	:	661	266	41	608	12	:	14	158	:	429	:	:	386
1990	106	57	986	:	61	328	22	:	3	125	317	381	58	67	:
1991	76	57	1 849	:	:	430	14	:	7	:	339	370	56	69	:
1992	54	62	2 152	:	:	324	22	:	3	:	301	358	46	51	149
1993	50	63	1 937	:	:	303	35	:	:	:	303	346	40	37	228
1994	56	67	1 531	:	:	291	18	:	:	:	90	377	41	43	254
1995	:	:	1 785	:	:	:	:	:	:	:	:	254	32	30	154
1996	:	:	1 534	:	:	:	:	:	:	:	:	322	21	28	245
1997	:	:	1 357	:	:	:	:	:	:	:	545	278	37	39	239
Killed															
1980	38	49	297	38	74	203	20	151	1	126	75	171	24	49	7
1985	34	:	211	45	27	305	7	:	3	102	:	171	:	:	6
1990	20	6	182	34	30	188	14	204	2	43	69	139	36	18	78
1991	18	13	319	:	:	222	11	:	4	:	85	150	34	26	11
1992	20	16	340	:	:	203	11	:	1	:	80	133	31	31	5
1993	23	8	292	:	:	171	3	:	:	:	98	132	20	19	5
1994	30	9	286	:	:	150	11	:	:	:	5	149	30	19	12
1995	:	:	291	:	:	:	:	:	:	:	:	95	17	19	7
1996	:	:	284	:	:	:	:	:	:	:	:	122	12	16	1
1997	:	:	275	:	:	:	:	:	:	:	49	119	21	11	10
Injured															
1980	107	69	643	95	51	232	52	224	3	100	:	266	:	:	447
1985	102	:	450	221	14	303	3	:	11	56	:	258	:	:	380
1990	86	51	804	:	31	140	8	:	1	82	248	242	22	49	:
1991	58	44	1 530	:	:	208	3	:	3	:	254	220	22	43	:
1992	34	46	1 812	:	:	121	11	:	2	:	221	225	15	20	144
1993	27	55	1 645	:	:	132	32	:	:	:	205	214	20	18	223
1994	26	58	1 245	:	:	141	7	:	:	:	85	228	11	25	242
1995	:	:	1 494	:	:	:	:	:	:	:	:	159	15	11	147
1996	:	:	1 250	:	:	:	:	:	:	:	:	200	9	12	244
1997	:	:	1 082	:	:	:	:	:	:	:	496	159	16	28	229

Source: Eurostat (New Cronos).

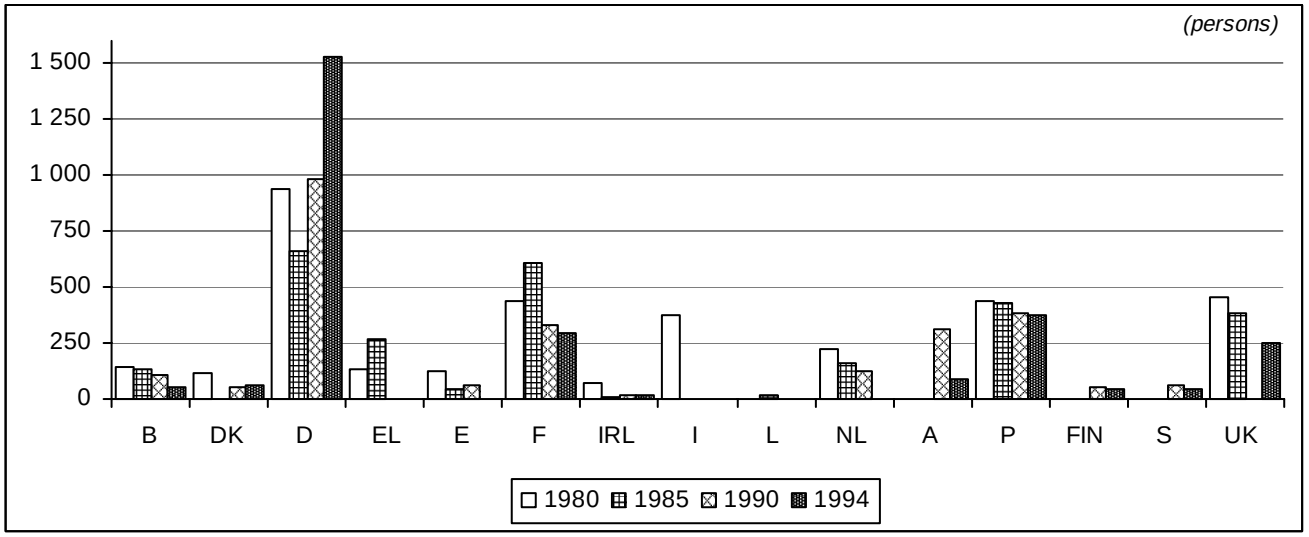


Figure 1.65: People killed and injured in railway accidents

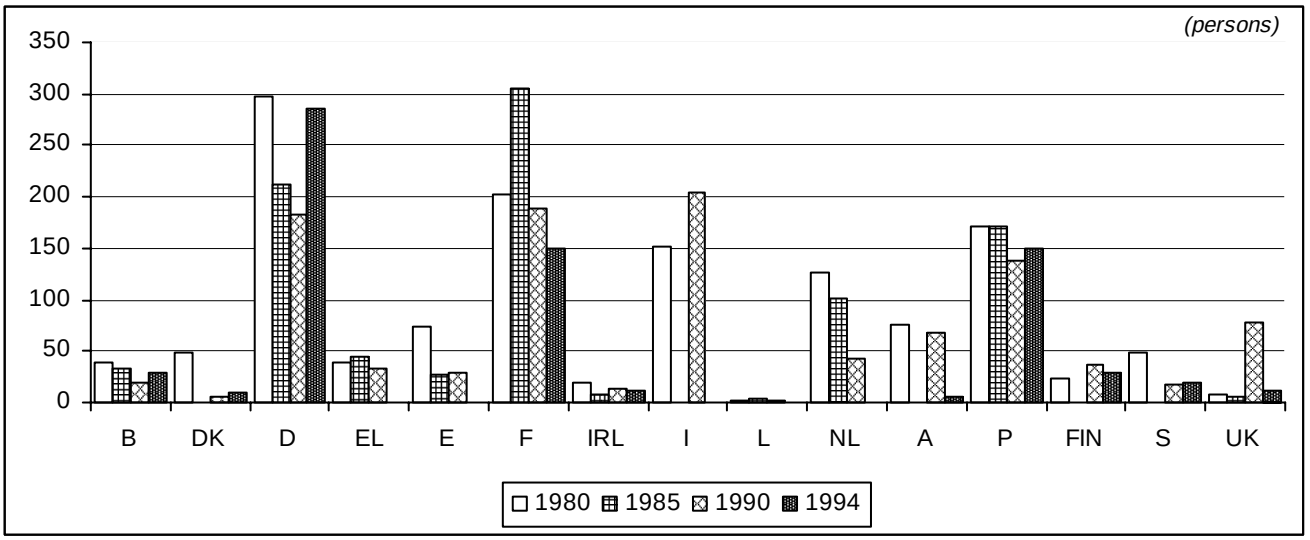


Figure 1.66: People killed in railway accidents

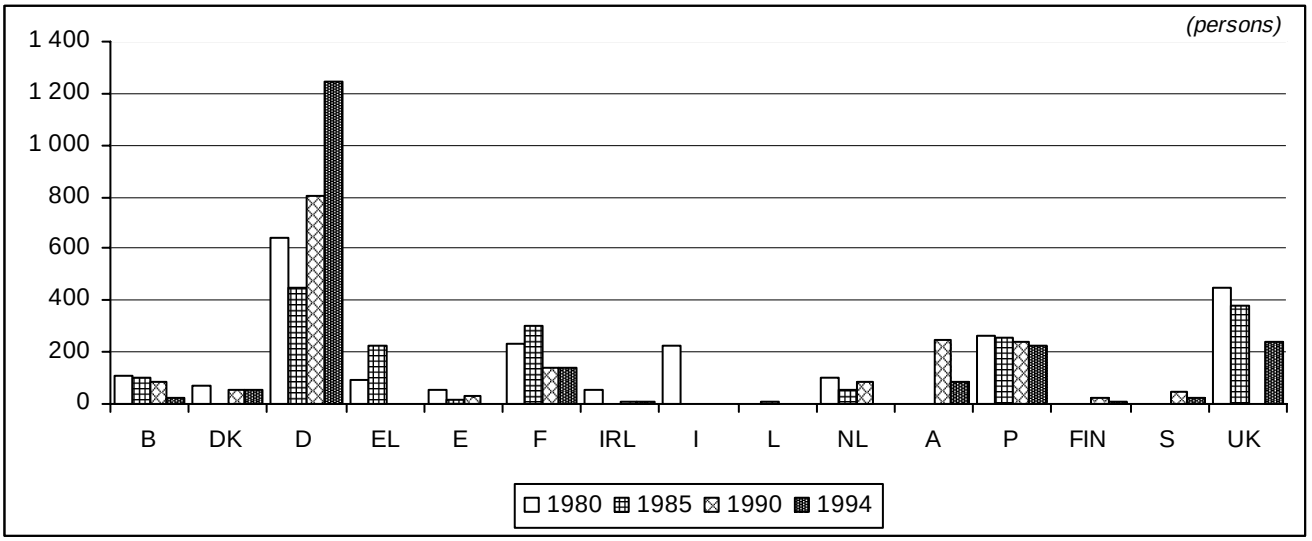


Figure 1.67: People injured in railway accidents

People killed and injured in railway accidents - Passengers

(persons)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total killed or injured															
1980	52	18	280	18	:	127	64	216	1	27	:	186	:	:	387
1985	61	:	166	57	:	308	:	:	2	10	:	193	:	:	261
1990	54	10	323	:	:	93	1	:	–	17	68	116	5	45	:
1991	26	24	718	:	:	138	1	:	-	:	72	112	15	4	:
1992	13	24	911	:	:	83	4	:	2	:	85	105	4	-	53
1993	6	30	829	:	:	78	28	:	:	:	76	101	5	3	130
1994	6	41	528	:	:	72	2	:	:	:	12	103	4	5	149
1995	:	:	743	:	:	:	:	:	:	:	:	57	4	3	58
1996	:	:	542	:	:	:	:	:	:	:	:	84	6	2	177
1997	:	:	563	:	:	:	:	:	:	:	206	56	3	5	183
Killed															
1980	4	3	69	1	17	33	18	48	1	8	9	29	4	25	–
1985	2	:	51	1	:	115	:	:	–	–	:	47	:	:	–
1990	–	1	29	–	4	30	1	9	–	2	7	15	–	3	37
1991	2	4	46	:	:	47	:	:	–	:	9	15	9	1	2
1992	–	4	55	:	:	38	–	:	–	:	17	21	1	–	–
1993	1	1	39	:	:	34	–	:	:	:	11	19	–	–	–
1994	3	2	30	:	:	20	1	:	:	:	–	18	3	1	3
1995	:	:	36	:	:	:	:	:	:	:	:	12	1	2	1
1996	:	:	31	:	:	:	:	:	:	:	:	10	3	–	1
1997	:	:	49	:	:	:	:	:	:	:	4	14	1	2	7
Injured															
1980	48	15	211	17	:	94	46	168	–	19	:	157	:	:	387
1985	59	:	115	56	:	193	:	:	2	10	:	146	:	:	261
1990	54	9	294	:	:	63	–	:	–	15	61	101	5	42	:
1991	24	20	672	:	:	91	-	:	:	:	63	97	6	3	:
1992	13	20	856	:	:	45	4	:	2	:	68	84	3	-	53
1993	5	29	790	:	:	44	28	:	:	:	65	82	5	3	130
1994	3	39	498	:	:	52	1	:	:	:	12	85	1	4	146
1995	:	:	707	:	:	:	:	:	:	:	:	45	3	1	57
1996	:	:	511	:	:	:	:	:	:	:	:	74	3	2	176
1997	:	:	514	:	:	:	:	:	:	:	202	42	2	3	176

Source: Eurostat (New Cronos).

People killed and injured in railway accidents - Railway employees

(persons)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total killed or injured															
1980	30	46	328	19	:	50	6	33	6	46	:	26	:	:	49
1985	24	:	251	58	:	39	1	:	5	18	:	24	:	:	88
1990	13	12	341	:	:	24	9	:	1	16	86	72	7	8	:
1991	15	15	464	:	:	21	1	:	1	:	91	39	2	6	:
1992	11	21	486	:	:	9	2	:	–	:	55	55	4	2	77
1993	12	19	408	:	:	9	2	:	:	:	58	38	5	9	82
1994	13	11	354	:	:	13	1	:	:	:	40	48	7	10	83
1995	:	:	329	:	:	:	:	:	:	:	:	44	1	2	73
1996	:	:	271	:	:	:	:	:	:	:	:	57	1	6	56
1997	:	:	270	:	:	:	:	:	:	:	167	57	6	8	48
Killed															
1980	4	2	43	–	10	17	2	5	3	5	:	4	:	:	4
1985	3	:	34	4	1	15	–	:	1	–	:	9	:	:	–
1990	2	2	21	:	:	14	2	:	–	1	2	2	2	2	:
1991	3	1	25	:	:	11	–	:	1	:	9	2	1	–	2
1992	1	1	31	:	:	5	–	:	–	:	1	–	3	1	1
1993	–	1	27	:	:	7	–	:	:	:	11	3	–	3	–
1994	–	–	19	:	:	6	–	:	:	:	–	2	3	1	5
1995	:	:	10	:	:	:	:	:	:	:	:	2	1	–	1
1996	:	:	15	:	:	:	:	:	:	:	:	1	1	–	–
1997	:	:	25	:	:	:	:	:	:	:	2	3	1	2	–
Injured															
1980	26	44	285	19	:	33	4	28	3	41	:	22	:	:	45
1985	21	:	217	54	:	24	1	:	4	18	:	15	:	:	88
1990	11	10	320	:	:	10	7	:	1	15	84	70	5	6	:
1991	12	14	439	:	:	10	1	:	–	:	82	37	1	6	:
1992	10	20	455	:	:	4	2	:	–	:	54	55	1	1	76
1993	12	18	381	:	:	2	2	:	:	:	47	35	5	6	82
1994	13	11	335	:	:	7	1	:	:	:	40	46	4	9	78
1995	:	:	319	:	:	:	:	:	:	:	:	42	–	2	72
1996	:	:	256	:	:	:	:	:	:	:	:	56	–	6	56
1997	:	:	245	:	:	:	:	:	:	:	165	54	5	6	48

Source: Eurostat (New Cronos).

People killed and injured in railway accidents - Other people

(persons)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total killed or injured															
1980	63	54	332	96	:	258	2	126	:	153	:	225	:	:	18
1985	51	:	244	151	:	261	9	:	7	130	:	212	:	:	37
1990	39	35	322	:	:	211	12	:	2	92	163	193	46	14	:
1991	35	18	667	:	:	271	12	:	6	:	176	219	39	59	:
1992	30	17	755	:	:	232	16	:	1	:	161	198	38	49	19
1993	32	14	700	:	:	216	5	:	:	:	169	207	30	25	16
1994	37	15	649	:	:	206	15	:	:	:	38	226	30	28	22
1995	:	:	713	:	:	:	:	:	:	:	:	153	27	25	23
1996	:	:	721	:	:	:	:	:	:	:	:	181	14	20	12
1997	:	:	524	:	:	:	:	:	:	:	172	165	28	26	8
Killed															
1980	30	44	185	37	47	153	–	98	:	113	:	138	:	:	3
1985	29	:	126	40	26	175	6	:	2	102	:	115	:	:	6
1990	18	3	132	:	31	144	11	:	2	40	60	122	34	13	:
1991	13	8	248	:	:	164	10	:	3	:	67	133	24	25	7
1992	19	11	254	:	:	160	11	:	1	:	62	112	27	30	4
1993	22	6	226	:	:	130	3	:	:	:	76	110	20	16	5
1994	27	7	237	:	:	124	10	:	:	:	5	129	24	17	4
1995	:	:	245	:	:	:	:	:	:	:	:	81	15	17	5
1996	:	:	238	:	:	:	:	:	:	:	:	111	8	16	–
1997	:	:	201	:	:	:	:	:	:	:	43	102	19	7	3
Injured															
1980	33	10	147	59	:	105	2	28	:	40	:	87	:	:	15
1985	22	:	118	111	:	86	3	:	5	28	:	97	:	:	31
1990	21	32	190	:	:	67	1	:	–	52	103	71	12	1	:
1991	22	10	419	:	:	107	2	:	3	:	109	86	15	34	:
1992	11	6	501	:	:	72	5	:	–	:	99	86	11	19	15
1993	10	8	474	:	:	86	2	:	:	:	93	97	10	9	11
1994	10	8	412	:	:	82	5	:	:	:	33	97	6	12	18
1995	:	:	468	:	:	:	:	:	:	:	:	72	12	8	18
1996	:	:	483	:	:	:	:	:	:	:	:	70	6	4	12
1997	:	:	323	:	:	:	:	:	:	:	129	63	9	19	5

Source: Eurostat (New Cronos).

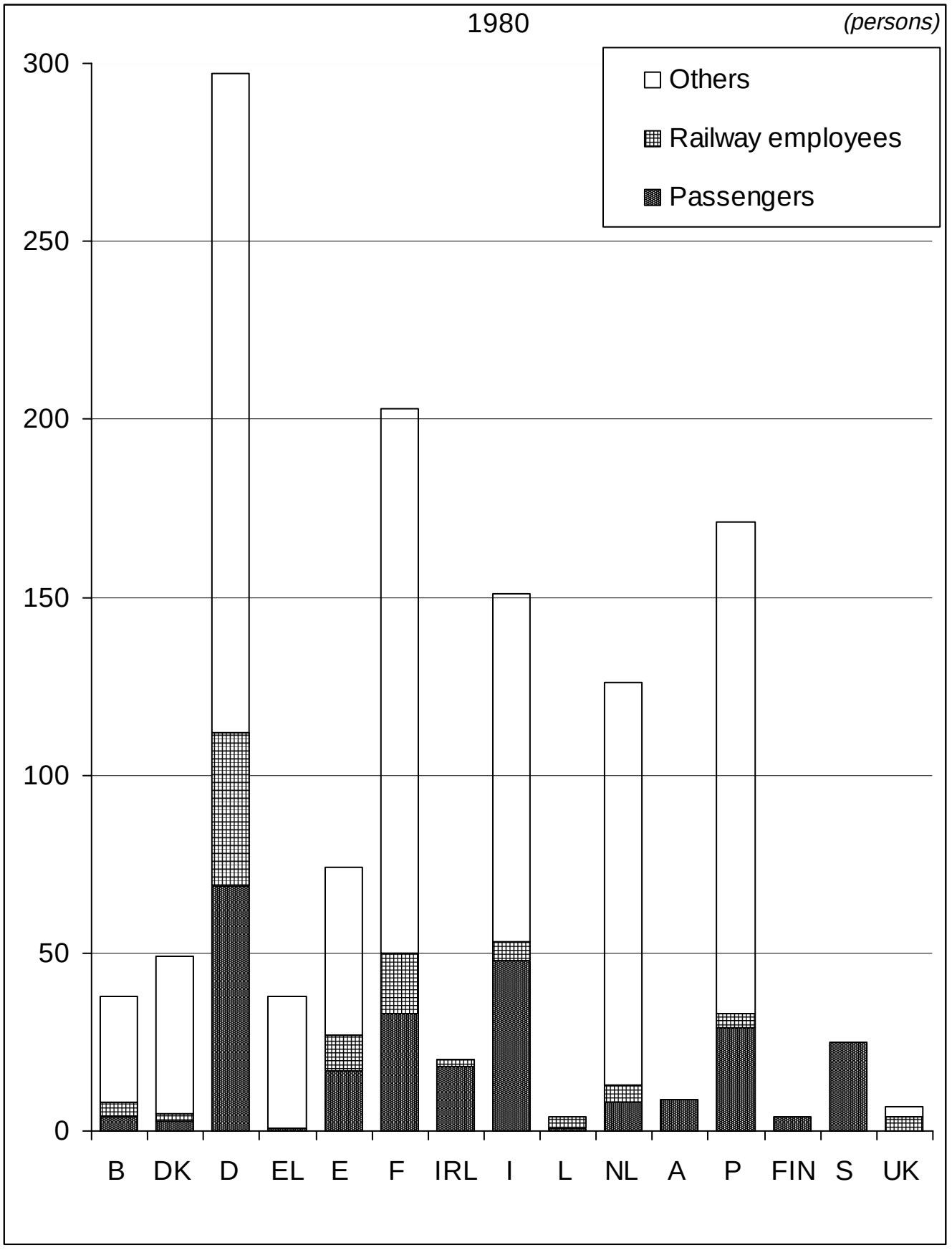


Figure 1.77: People killed in railway accidents - 1980

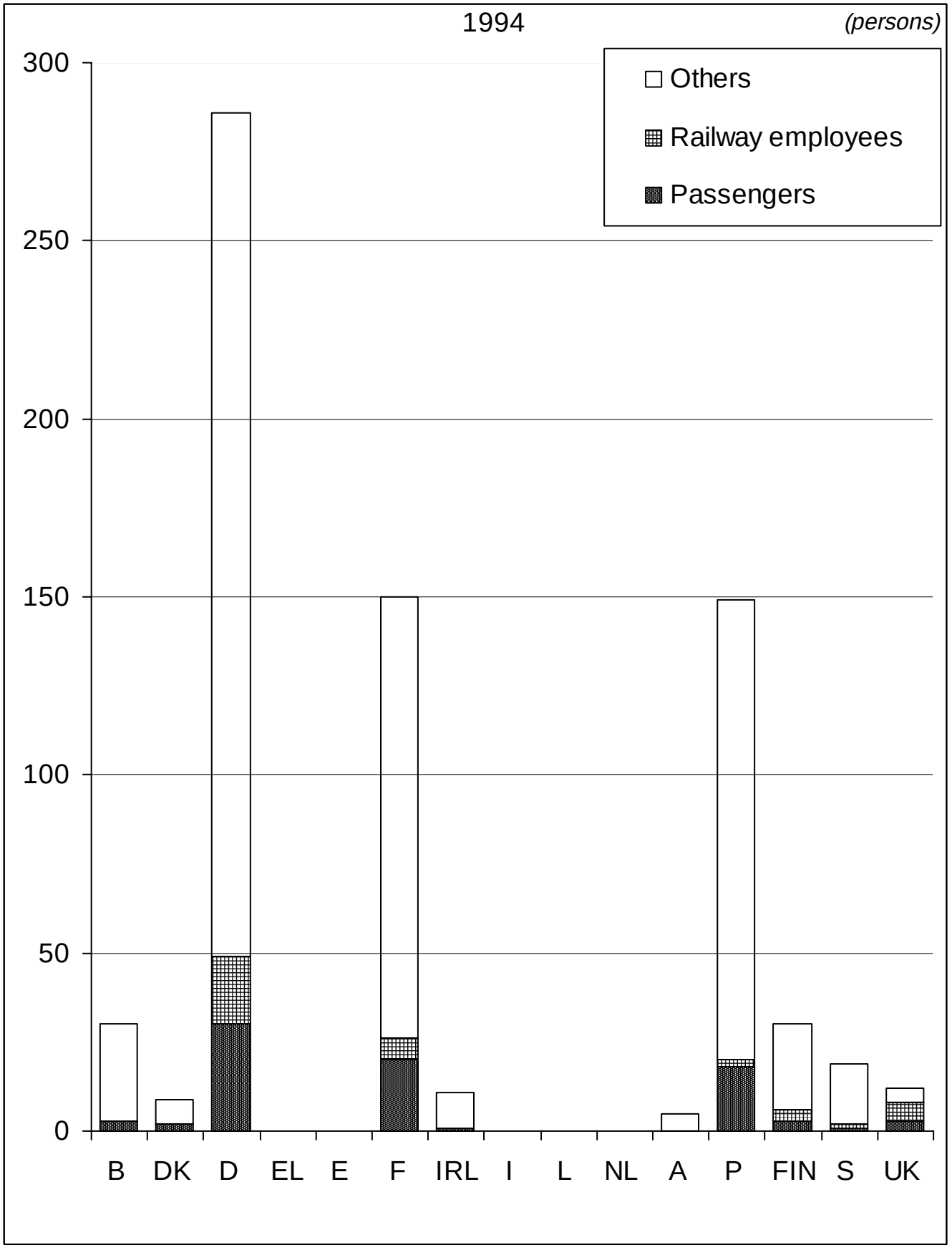


Figure 1.78: People killed in railway accidents - 1994

People killed and injured in railway accidents per 1 000 million passenger-kilometres - Total

(persons per 1 000 mio pkm)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total killed or injured															
1980	20.8	26.1	14.9	90.8	8.4	8.0	69.8	8.7	16.3	25.4	:	71.9	:	:	14.9
1985	20.7	:	10.0	153.6	2.4	9.8	11.7	:	61.1	17.5	:	74.9	:	:	12.9
1990	16.2	11.3	15.9	:	3.6	5.1	17.9	:	14.4	11.3	36.3	67.3	17.4	10.8	:
1994	8.4	13.2	24.5	:	:	5.0	14.3	:	:	:	9.6	73.8	13.5	7.3	8.8
1995	:	:	28.1	:	:	:	:	:	:	:	:	52.8	10.1	4.8	5.1
1996	:	:	23.7	:	:	:	:	:	:	:	:	71.5	6.5	4.4	7.6
1997	:	:	21.2	:	:	:	:	:	:	:	65.5	61.0	11.0	6.0	6.9
Killed															
1980	5.5	10.9	4.7	26.0	5.0	3.7	19.4	3.5	4.1	14.2	9.9	28.1	7.5	6.8	0.2
1985	5.2	:	3.2	26.0	1.6	4.9	6.8	:	13.1	11.3	:	29.9	:	:	0.2
1990	3.1	1.2	2.9	17.2	1.8	2.9	11.4	4.2	9.6	3.9	7.9	24.5	10.8	2.9	2.3
1994	4.5	1.8	4.6	:	:	2.6	8.7	:	:	:	0.5	29.2	9.9	3.2	0.4
1995	:	:	4.6	:	:	:	:	:	:	:	:	19.8	5.3	3.1	0.2
1996	:	:	4.4	:	:	:	:	:	:	:	:	27.1	3.7	2.5	0.0
1997	:	:	4.3	:	:	:	:	:	:	:	5.9	26.1	6.2	1.7	0.3
Injured															
1980	15.4	15.3	10.2	64.9	3.4	4.2	50.4	5.2	12.2	11.2	:	43.8	:	:	14.7
1985	15.5	:	6.8	127.6	0.8	4.9	2.9	:	48.0	6.2	:	45.1	:	:	12.7
1990	13.2	10.1	13.0	:	1.9	2.2	6.5	:	4.8	7.4	28.4	42.7	6.6	7.9	:
1994	3.9	11.4	20.0	:	:	2.4	5.6	:	:	:	9.1	44.6	3.6	4.2	8.3
1995	:	:	23.5	:	:	:	:	:	:	:	:	33.1	4.7	1.8	4.9
1996	:	:	19.3	:	:	:	:	:	:	:	:	44.4	2.8	1.9	7.6
1997	:	:	16.9	:	:	:	:	:	:	:	59.6	34.9	4.7	4.3	6.7

People killed and injured in railway accidents per 1 000 million passenger-kilometres - Passengers

(persons per 1 000 mio pkm)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total killed or injured															
1980	7.5	4.0	4.4	12.3	:	2.3	62.0	5.0	4.1	3.0	:	30.6	:	:	12.7
1985	9.3	:	2.5	32.9	:	5.0	:	:	8.7	1.1	:	33.7	:	:	8.7
1990	8.3	2.0	5.2	:	:	1.5	0.8	:	–	1.5	7.8	20.5	1.5	7.3	:
1994	0.9	8.1	8.5	:	:	1.2	1.6	:	:	:	1.3	20.2	1.3	0.8	5.1
1995	:	:	11.7	:	:	:	:	:	:	:	:	11.9	1.3	0.5	1.9
1996	:	:	8.4	:	:	:	:	:	:	:	:	18.7	1.8	0.3	5.5
1997	:	:	8.8	:	:	:	:	:	:	:	24.8	12.3	0.9	0.8	5.3
Killed															
1980	0.6	0.7	1.1	0.7	1.1	0.6	17.4	1.1	4.1	0.9	1.2	4.8	1.2	3.5	–
1985	0.3	:	0.8	0.6	:	1.9	:	:	–	–	:	8.2	:	:	–
1990	–	0.2	0.5	–	0.2	0.5	0.8	0.2	–	0.2	0.8	2.6	–	0.5	1.1
1994	0.5	0.4	0.5	:	:	0.3	0.8	:	:	:	–	3.5	1.0	0.2	0.1
1995	:	:	0.6	:	:	:	:	:	:	:	:	2.5	0.3	0.3	0.0
1996	:	:	0.5	:	:	:	:	:	:	:	:	2.2	0.9	–	0.0
1997	:	:	0.8	:	:	:	:	:	:	:	0.5	3.1	0.3	0.3	0.2
Injured															
1980	6.9	3.3	3.3	11.6	:	1.7	44.6	3.9	–	2.1	:	25.8	:	:	12.7
1985	9.0	:	1.7	32.3	:	3.1	:	:	8.7	1.1	:	25.5	:	:	8.7
1990	8.3	1.8	4.7	:	:	1.0	–	:	–	1.4	7.0	17.8	1.5	6.8	:
1994	0.5	7.7	8.0	:	:	0.9	0.8	:	:	:	1.3	16.6	0.3	0.7	5.0
1995	:	:	11.1	:	:	:	:	:	:	:	:	9.4	0.9	0.2	1.9
1996	:	:	7.9	:	:	:	:	:	:	:	:	16.4	0.9	0.3	5.4
1997	:	:	8.0	:	:	:	:	:	:	:	24.3	9.2	0.6	0.5	5.1

Source: Eurostat (New Cronos).

People killed and injured in railway accidents per 1 000 million passenger-kilometres - Railway employees

(persons per 1 000 mio pkm)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total killed or injured															
1980	4.3	10.2	5.2	13.0	:	0.9	5.8	0.8	24.4	5.2	:	4.3	:	:	1.6
1985	3.7	:	3.8	33.5	:	0.6	1.0	:	21.8	2.0	:	4.2	:	:	2.9
1990	2.0	2.4	5.5	:	:	0.4	7.3	:	4.8	1.4	9.8	12.7	2.1	1.3	:
1994	2.0	2.2	5.7	:	:	0.2	0.8	:	:	:	4.3	9.4	2.3	1.7	2.9
1995	:	:	5.2	:	:	:	:	:	:	:	:	9.1	0.3	0.3	2.4
1996	:	:	4.2	:	:	:	:	:	:	:	:	12.7	0.3	0.9	1.7
1997	:	:	4.2	:	:	:	:	:	:	:	20.1	12.5	1.8	1.2	1.4
Killed															
1980	0.6	0.4	0.7	–	0.7	0.3	1.9	0.1	12.2	0.6	:	0.7	:	:	0.1
1985	0.5	:	0.5	2.3	0.1	0.2	–	:	4.4	–	:	1.6	:	:	–
1990	0.3	0.4	0.3	:	:	0.2	1.6	:	–	0.1	0.2	0.4	0.6	0.3	:
1994	–	–	0.3	:	:	0.1	–	:	:	:	–	0.4	1.0	0.2	0.2
1995	:	:	0.2	:	:	:	:	:	:	:	:	0.4	0.3	–	0.0
1996	:	:	0.2	:	:	:	:	:	:	:	:	0.2	0.3	–	–
1997	:	:	0.4	:	:	:	:	:	:	:	0.2	0.7	0.3	0.3	–
Injured															
1980	3.7	9.7	4.5	13.0	:	0.6	3.9	0.7	12.2	4.6	:	3.6	:	:	1.5
1985	3.2	:	3.3	31.2	:	0.4	1.0	:	17.5	2.0	:	2.6	:	:	2.9
1990	1.7	2.0	5.2	:	:	0.2	5.7	:	4.8	1.4	9.6	12.4	1.5	1.0	:
1994	2.0	2.2	5.4	:	:	0.1	0.8	:	:	:	4.3	9.0	1.3	1.5	2.7
1995	:	:	5.0	:	:	:	:	:	:	:	:	8.7	–	0.3	2.4
1996	:	:	4.0	:	:	:	:	:	:	:	:	12.4	–	0.9	1.7
1997	:	:	3.8	:	:	:	:	:	:	:	19.8	11.8	1.5	0.9	1.4

People killed and injured in railway accidents per 1 000 million passenger-kilometres - Others

(persons per 1 000 mio pkm)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total killed or injured															
1980	9.0	12.0	5.3	65.6	:	4.7	1.9	2.9	:	17.2	:	37.0	:	:	0.6
1985	7.8	:	3.7	87.2	:	4.2	8.8	:	30.6	14.4	:	37.0	:	:	1.2
1990	6.0	6.9	5.2	:	:	3.3	9.8	:	9.6	8.3	18.7	34.1	13.8	2.3	:
1994	5.6	3.0	10.4	:	:	3.5	11.9	:	:	:	4.0	44.2	9.9	4.7	0.8
1995	:	:	11.2	:	:	:	:	:	:	:	:	31.8	8.5	4.0	0.8
1996	:	:	11.1	:	:	:	:	:	:	:	:	40.2	4.3	3.1	0.4
1997	:	:	8.2	:	:	:	:	:	:	:	20.7	36.2	8.3	4.0	0.2
Killed															
1980	4.3	9.7	2.9	25.3	3.2	2.8	–	2.3	:	12.7	:	22.7	:	:	0.1
1985	4.4	:	1.9	23.1	1.5	2.8	5.9	:	8.7	11.3	:	20.1	:	:	0.2
1990	2.8	0.6	2.1	:	1.9	2.3	9.0	:	9.6	3.6	6.9	21.5	10.2	2.1	:
1994	4.1	1.4	3.8	:	:	2.1	7.9	:	:	:	0.5	25.2	7.9	2.9	0.1
1995	:	:	3.9	:	:	:	:	:	:	:	:	16.8	4.7	2.7	0.2
1996	:	:	3.7	:	:	:	:	:	:	:	:	24.7	2.5	2.5	–
1997	:	:	3.1	:	:	:	:	:	:	:	5.2	22.4	5.6	1.1	0.1
Injured															
1980	4.7	2.2	2.3	40.3	:	1.9	1.9	0.7	:	4.5	:	14.3	:	:	0.5
1985	3.3	:	1.8	64.1	:	1.4	2.9	:	21.8	3.1	:	16.9	:	:	1.0
1990	3.2	6.3	3.1	:	:	1.1	0.8	:	–	4.7	11.8	12.5	3.6	0.2	:
1994	1.5	1.6	6.6	:	:	1.4	4.0	:	:	:	3.5	19.0	2.0	2.0	0.6
1995	:	:	7.4	:	:	:	:	:	:	:	:	15.0	3.8	1.3	0.6
1996	:	:	7.5	:	:	:	:	:	:	:	:	15.5	1.8	0.6	0.4
1997	:	:	5.0	:	:	:	:	:	:	:	15.5	13.8	2.7	2.9	0.1

Source: Eurostat (New Cronos).

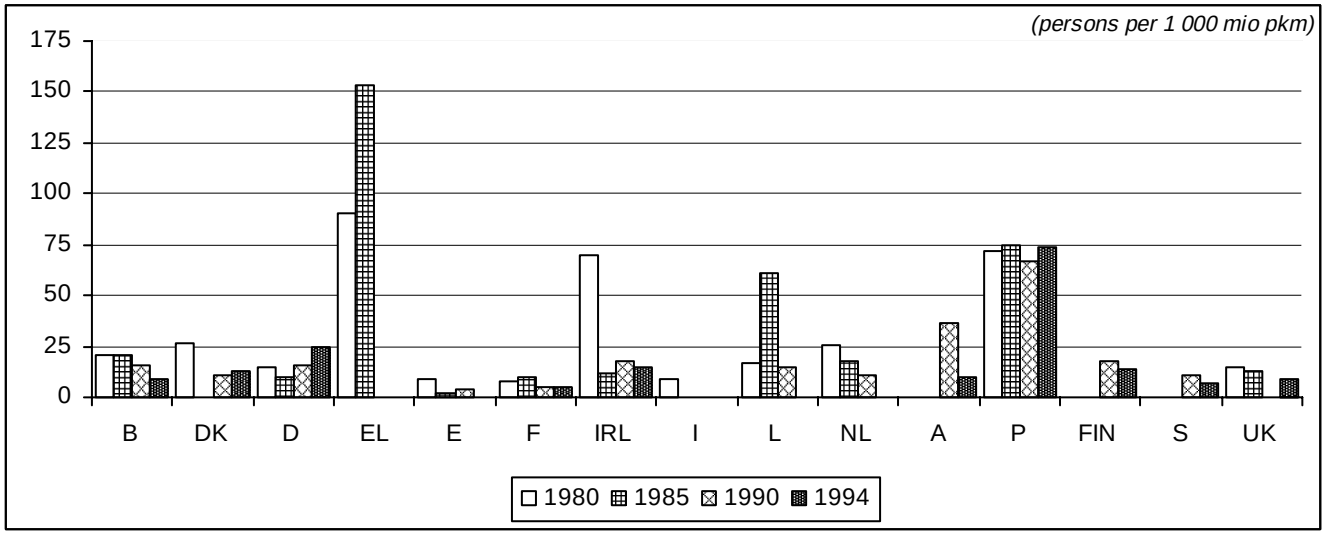


Figure 1.79: People killed and injured in railway accidents per 1 000 mio pkm - Total

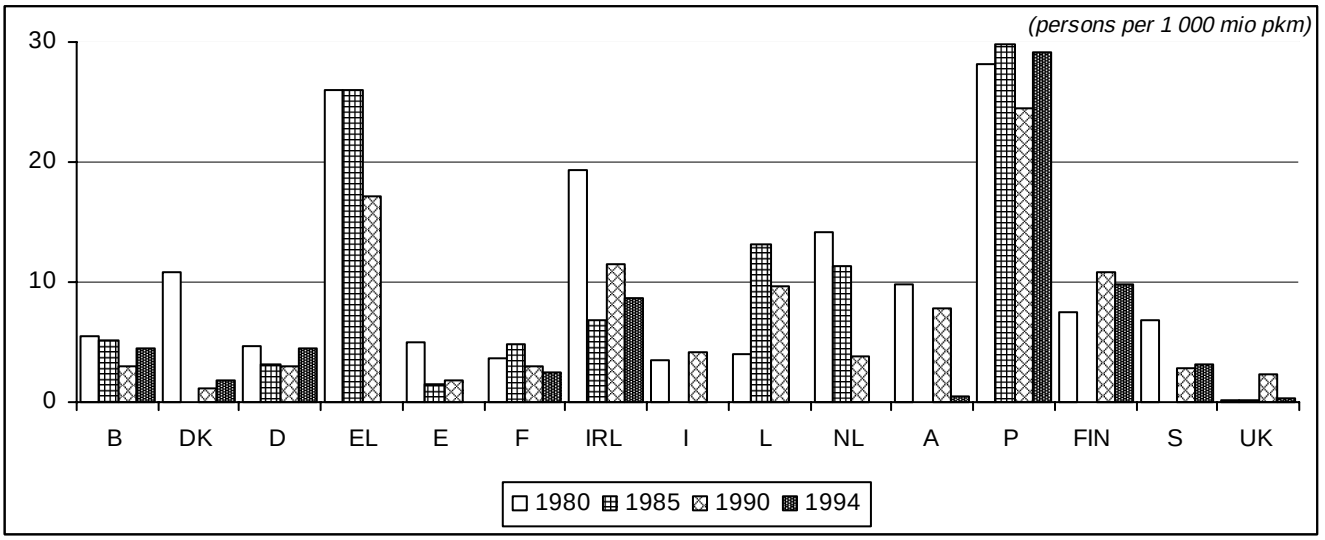


Figure 1.80: People killed in railway accidents per 1 000 mio pkm - Total

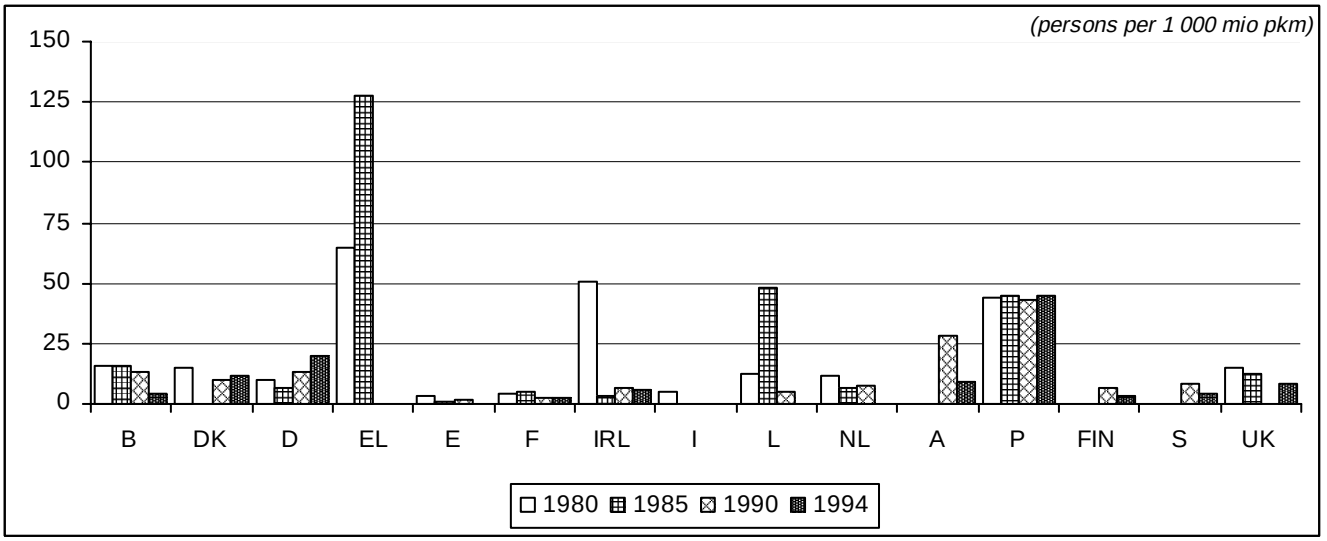


Figure 1.81: People injured in railway accidents per 1 000 mio pkm - Total

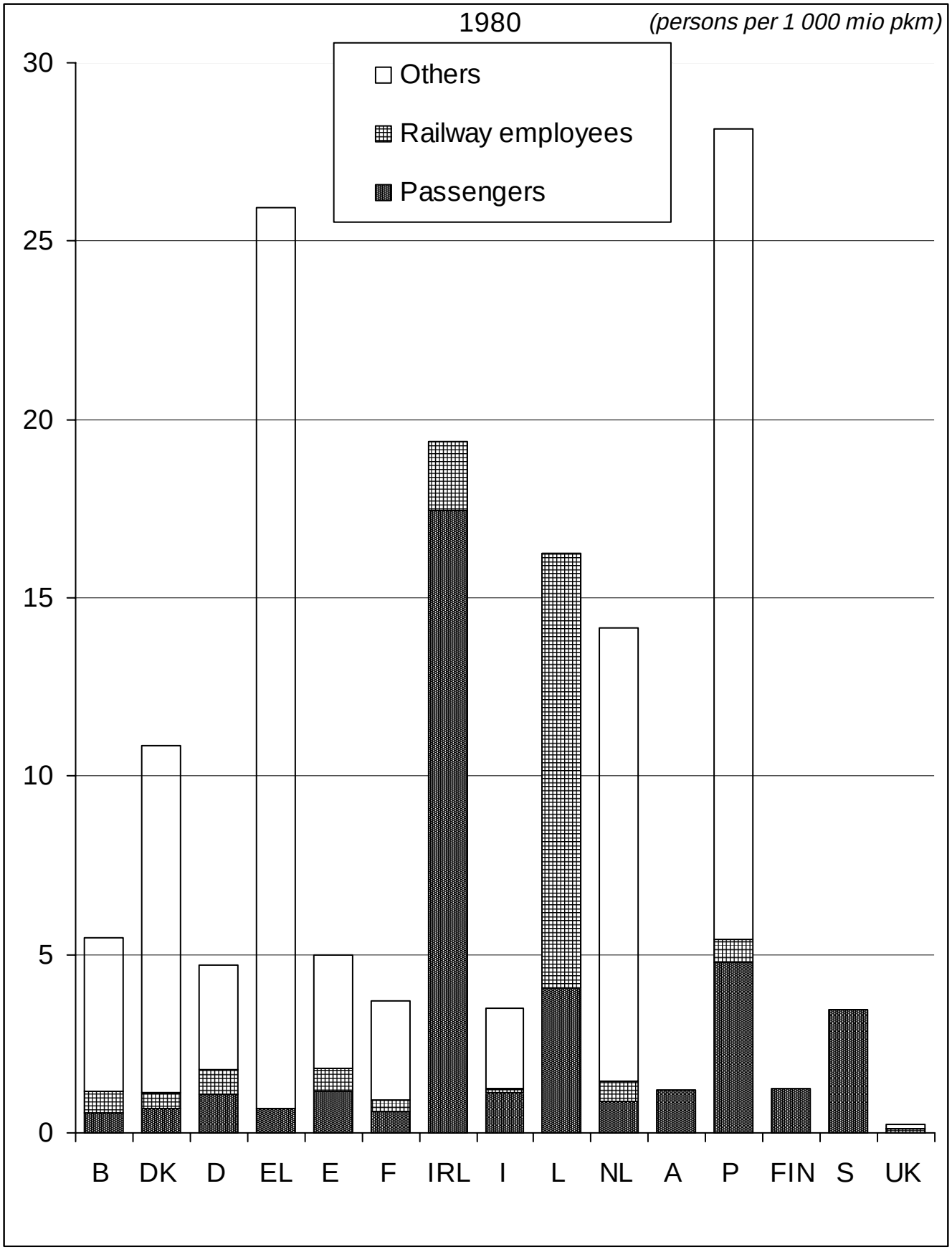


Figure 1.91: People killed in railway accidents per 1 000 million passenger-kilometres - 1980

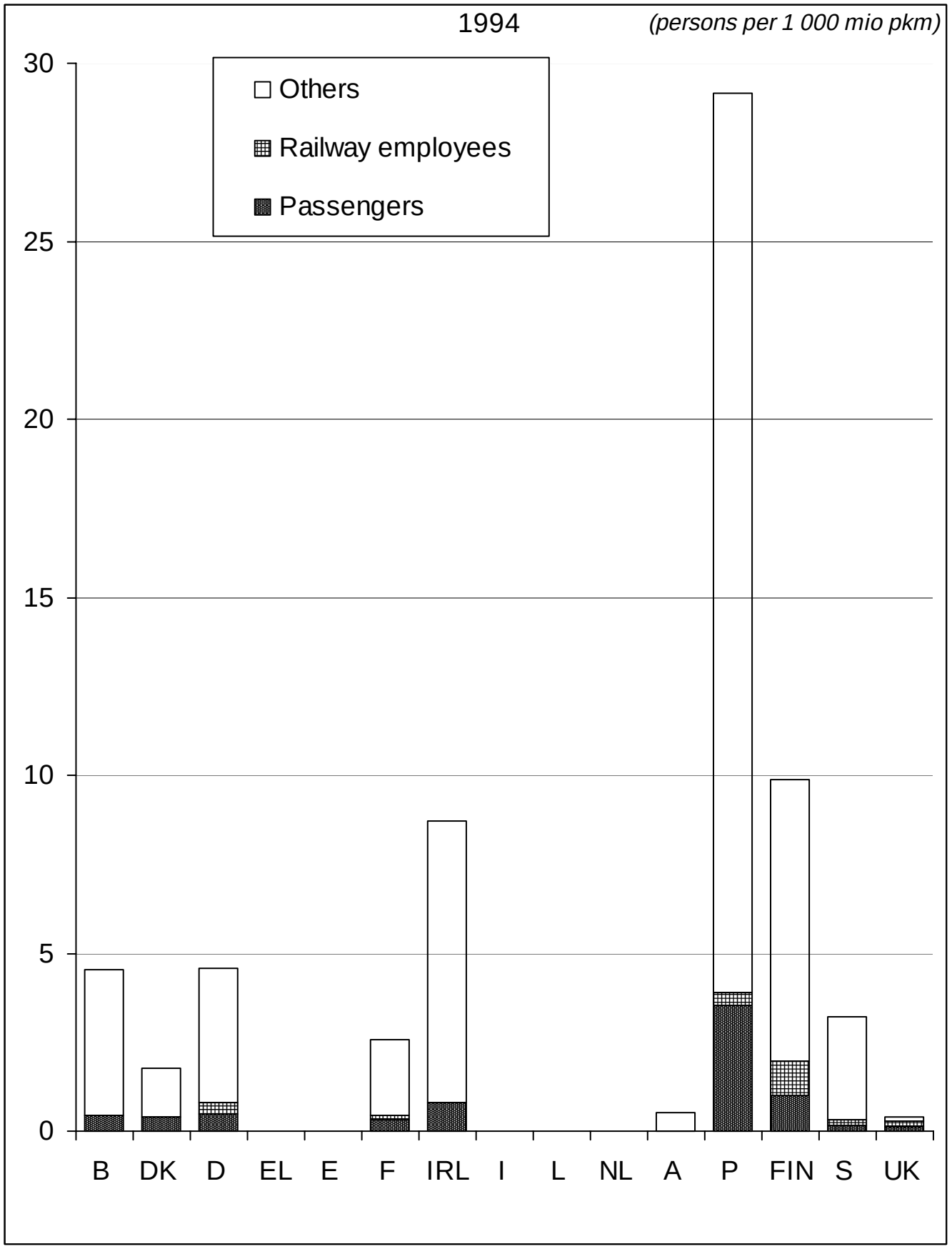


Figure 1.92: People killed in railway accidents per 1 000 mio passenger-kilometres - 1994

Notes to Chapter 1

Final energy consumption

The statistics presented here are derived from Eurostat's energy balance sheets. These sheets are based on energy supplied within the national territory and include all flows (production, foreign trade, stocks, transformation inputs and outputs, consumption, etc.). Within these sheets "final energy consumption" represents the energy delivered to the final user.

However, the balance sheet concept of final energy consumption is not ideally suited to the purposes of TERM because maritime and pipeline transport are not included. In the case of maritime transport, **marine bunkers** are considered as exports in the balance sheets. The argument for this is that refuelling of ocean-going ships is not directly related to the economic activity of the reporting country. In the case of **oil and gas pipelines**, the energy consumed by compression and pumping stations is considered under consumption of the energy sector rather than as final consumption.

Final energy consumption, as defined in this publication, includes both the energy supplied from marine bunkers and the energy consumed by pipeline transport. It thus differs from the definition used in the balance sheets.

Data for the territory of the former German Democratic Republic are included under Germany from the beginning of the time-series (1985).

Final energy consumption of transport

This includes all types of transport, including by households, public administrations, etc. Marine bunkers and pipelines are included.

Final energy consumption of railways

This includes consumption by railways and electrified urban transport systems. Inputs into electrical power stations managed by railway companies are not included.

Final energy consumption of road transport

This includes energy supplied for the propulsion of all road motor vehicles, whether for own use or for the provision of services, including road motor vehicles owned or operated by railway or aviation companies.

Final energy consumption of aviation

This includes energy supplied from aviation bunkers for both national and international air traffic.

Final energy consumption of inland navigation

This includes coastal and inland waterways shipping, as well as pleasure craft.

National emission estimates

Source: ETC-AE database (version 2.0 3 September 1999). Some data have been estimated by ETC-AE.

Eurostat estimates of carbon dioxide emissions

These estimates are included in order to provide the modes of transport not covered by national estimates. They also have the advantage that they are based on a single methodology for all countries (harmonisation), an important consideration in comparing emissions from different countries.

Eurostat estimates of carbon dioxide emissions are based on the Eurostat energy balance sheets. The method involves multiplying the consumption of each fuel consumed by fuel-specific emission factors. This is carried out for each energy-consuming sector. The emission factors are derived from the internationally agreed IPCC guidelines. They are based on a combination of the average carbon content of each fuel and the fraction oxidised during combustion. Further details are provided in the Eurostat publication *Carbon dioxide emissions from fossil fuels.*

Total inland emissions of carbon dioxide include emissions from conventional thermal power stations, district heating, the energy branch, and final energy consumption. They do not include marine bunkers.

Total transport emissions of carbon dioxide include emissions from road transport, railways, inland navigation and aviation (marine bunkers are excluded from the totals).

Road accidents

Additional data have been added from UNECE and national publications.

There are large variations in definitions of "death" and "injury" between States.

The internationally agreed definition for a person killed in a road traffic accident is any person killed outright or who died within 30 days as a result of the accident. In practice this varies from death at the scene or immediately following transport from the scene (Portugal), within 24 hours (Spain until 1993), within 3 days (Greece, Austria until 1991), within 6 days (France), within 7 days (Italy). These differences make international comparisons difficult. Although conversion factors exist which attempt to take different definitions of road death into account, they have not been applied here due to doubts on their reliability.

Netherlands: change in definition of 'injured' from 1993 onwards.

Buses and coaches: passenger-kilometre data used for the calculation of the ratios refer to performance of buses and coaches, trams and metros, except for Germany where trams and metros are not included.

Railway accidents

Additional data have been added from UNECE and national publications.

These data refer to persons killed or injured as a result of collisions, derailments and other causes related to the running of rail vehicles.

"Others" includes incidents at level crossings.

CHAPTER 2: SPATIAL PLANNING AND ACCESSIBILITY

- **SPATIAL PLANNING AND ACCESSIBILITY**

Good land-use planning and high accessibility to transport services are closely interrelated and essential components of an efficient and sustainable transport system. Poor planning results in low accessibility and high reliance on the car affecting air quality, accident rates, and noise levels.

Access to transport services

The data provided here are the numbers of road vehicles (cars, buses and motorbikes) per 1 000 inhabitants, often referred to as the rate of motorisation in the case of cars, or more generally as vehicle density. For rail transport the kilometres of line per 1 000 square kilometres are presented. These data are provided at regional level in order to emphasise that accessibility varies considerably within countries. An indication of the urban/rural nature of the regions is also given. These data sets are not ideal as indicators of access to transport services and should be regarded as provisional indicators. Neverthelss, if high-quality, convenient and low-price public transport is available, the need to own one or more cars is not great, and the car density will be low.

As a generalisation, purely rural and urban regions show a pattern of low car ownership and high bus density; the contrary being the case for the intermediate types of region. Nevertheless, bus services are generally declining in all but the rural regions, with some notable exceptions. Motorbike ownership is at it's lowest in urban regions. The density of the rail network is very much related to population density: urban areas having the highest density and rural areas the lowest. However, the length of lines is increasing in the intermediate types of region, constant in urban regions, and declining in rural regions. This will put increasing pressure on rural households to purchase their own vehicles.

Regional maps of vehicle and railway density are also included. Car ownership is highest in many regions of central Europe (Germany and Austria), as well as Sweden and the northern half of Italy. It is lowest in Greece. Bus density is highest in Sweden and the UK. The density of motorbikes is highest in Germany and northern and western Italy.

Other relevant data sets such as passenger journey time and length, are unavailable for this edition, but it is hoped will be included in future editions.

Passenger cars per 1 000 inhabitants

Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Belgium	**321**	**339**	**388**	**422**	**428**	**1.4**	
Rég. Bruxelles-Cap./Brussels Hfdst.Gew.	357	373	428	452	465	2.8	Urban
Antwerpen	325	343	398	431	436	1.3	Predominantly urban
Limburg (B)	324	337	391	429	435	1.4	Predominantly urban
Oost-Vlaanderen	298	321	373	411	416	1.2	Predominantly urban
Vlaams Brabant	:	:	:	476	485	2.1	Predominantly urban
West-Vlaanderen	308	331	380	412	417	1.1	Predominantly urban
Brabant Wallon	:	:	:	444	448	1.0	Predominantly urban
Hainaut	297	312	352	382	386	1.0	Predominantly urban
Liège	327	341	375	401	405	1.1	Predominantly urban
Luxembourg (B)	315	339	377	414	419	1.0	Intermediate
Namur	314	326	363	396	402	1.4	Intermediate
Denmark	**271**	**294**	**310**	**321**	**330**	**2.9**	**Intermediate**
Germany	**377**	**423**	**566**	**496**	**501**	**1.0**	
Stuttgart	397	449	518	535	539	0.8	Predominantly urban
Karlsruhe	397	440	504	518	523	1.1	Predominantly urban
Freiburg	379	431	506	513	519	1.3	Intermediate
Tübingen	390	436	513	526	530	0.8	Intermediate
Oberbayern	382	434	516	532	539	1.3	Intermediate
Niederbayern	369	425	500	534	538	0.7	Intermediate
Oberpfalz	376	427	505	531	534	0.6	Intermediate
Oberfranken	361	415	499	531	536	0.9	Intermediate
Mittelfranken	378	426	492	513	517	0.8	Predominantly urban
Unterfranken	368	427	500	524	530	1.1	Intermediate
Schwaben	375	430	503	522	525	0.5	Intermediate
Berlin	301	345	517	353	350	-0.8	Urban
Brandenburg	:	:	:	474	487	2.7	Intermediate
Bremen	345	373	416	428	428	0.0	Urban
Hamburg	343	373	418	419	418	-0.2	Urban
Darmstadt	:	464	533	546	550	0.9	Predominantly urban
Giessen	:	431	512	526	529	0.7	Intermediate
Kassel	:	429	509	520	523	0.5	Intermediate
Mecklenburg-Vorpommern	:	:	:	434	448	3.4	Intermediate
Braunschweig	370	408	486	510	516	1.2	Intermediate
Hannover	370	407	479	505	510	1.0	Intermediate
Lüneburg	396	434	518	542	546	0.8	Predominantly rural
Weser-Ems	373	408	478	504	505	0.2	Intermediate
Düsseldorf	371	415	469	486	490	0.7	Predominantly urban
Köln	374	418	486	502	503	0.2	Predominantly urban
Münster	362	398	467	483	486	0.7	Predominantly urban
Detmold	393	441	510	532	533	0.2	Predominantly urban
Arnsberg	367	409	459	481	485	0.8	Predominantly urban
Koblenz	399	446	516	537	542	0.8	Intermediate
Trier	376	421	494	523	528	1.1	Intermediate
Rheinhessen-Pfalz	394	451	517	531	536	0.8	Predominantly urban
Saarland	388	437	510	533	539	1.2	Predominantly urban
Sachsen	:	:	298	456	468	2.5	Predominantly urban
Dessau	:	:	:	445	457	2.8	Intermediate
Halle	:	:	:	426	439	2.9	Intermediate
Magdeburg	:	:	:	445	455	2.4	Intermediate
Schleswig-Holstein	372	408	486	515	519	0.9	Intermediate
Thüringen	:	:	:	463	473	2.2	Intermediate

Source: Eurostat (New Cronos).

Passenger cars per 1 000 inhabitants (continued)

Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Greece	**90**	**127**	**171**	**211**	**224**	**5.9**	
Anatoliki Makedonia, Thraki	:	:	123	156	164	4.9	Rural
Kentriki Makedonia	84	126	156	189	200	5.8	Predominantly rural
Dytiki Makedonia	:	:	125	146	156	6.9	Rural
Thessalia	54	85	114	140	148	5.9	Predominantly rural
Ipeiros	:	:	94	110	117	6.1	Rural
Ionia Nisia	:	:	131	162	177	8.8	Rural
Dytiki Ellada	:	:	93	110	115	4.5	Rural
Sterea Ellada	:	:	89	98	100	1.6	Rural
Peloponnisos	:	:	87	95	98	3.8	Rural
Attiki	:	:	269	341	366	7.3	Predominantly urban
Voreio Aigaio	:	:	109	155	163	4.9	Rural
Notio Aigaio	:	:	110	167	168	0.9	Rural
Kriti	:	:	124	174	186	7.2	Rural
Spain	**202**	**241**	**308**	**363**	**376**	**3.6**	
Galicia	154	214	282	350	363	3.8	Predominantly rural
Asturias	198	236	285	330	338	2.5	Predominantly rural
Cantabria	195	231	281	325	334	2.9	Predominantly rural
Pais Vasco	205	238	286	334	345	3.5	Predominantly rural
Navarra	225	266	326	375	388	3.3	Rural
Rioja	190	230	280	318	334	5.0	Rural
Aragon	182	230	278	329	339	3.0	Rural
Madrid	283	285	372	446	465	4.2	Predominantly urban
Castilla-Leon	174	211	263	323	334	3.3	Rural
Castilla-La Mancha	127	185	242	304	314	3.5	Rural
Extremadura	116	165	222	291	302	3.6	Rural
Cataluna	272	289	358	397	409	3.0	Predominantly rural
Comunidad Valenciana	207	272	338	382	398	4.0	Predominantly rural
Baleares	338	431	531	585	605	3.4	Predominantly rural
Andalucia	129	184	250	299	310	3.8	Predominantly rural
Murcia	149	240	30	353	367	4.1	Predominantly rural
Ceuta Y Melilla	299	255	337	420	431	2.5	Urban
Canarias	194	242	339	406	425	4.8	
France	**357**	**387**	**413**	**423**	**429**	**1.5**	
Ile De France	:	358	364	369	374	1.3	Predominantly urban
Champagne-Ardenne	:	392	423	435	444	2.0	Predominantly rural
Picardie	:	355	382	392	397	1.5	Predominantly rural
Haute-Normandie	:	383	399	406	413	1.7	Predominantly rural
Centre	:	417	451	460	466	1.3	Predominantly rural
Basse-Normandie	:	393	428	440	447	1.7	Predominantly rural
Bourgogne	:	420	450	462	470	1.6	Predominantly rural
Nord-Pas-De-Calais	:	323	343	354	359	1.5	Predominantly urban
Lorraine	:	362	386	400	407	1.7	Predominantly rural
Alsace	:	383	415	424	429	1.2	Intermediate
Franche-Comté	:	397	417	432	442	2.2	Predominantly rural
Pays De La Loire	:	382	423	438	446	1.8	Predominantly rural
Bretagne	:	392	434	449	456	1.7	Predominantly rural
Poitou-Charentes	:	440	479	493	500	1.4	Predominantly rural
Aquitaine	:	424	459	473	481	1.8	Predominantly rural
Midi-Pyrénées	:	431	470	483	491	1.7	Predominantly rural
Limousin	:	426	472	485	492	1.4	Predominantly rural
Rhône-Alpes	:	404	432	439	445	1.5	Predominantly rural
Auvergne	:	419	456	474	481	1.6	Predominantly rural

Source: Eurostat (New Cronos).

Passenger cars per 1 000 inhabitants (continued)

Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Languedoc-Roussillon	:	396	430	437	444	1.4	Predominantly rural
Provence-Alpes-Côte d'Azur	:	395	422	428	436	1.7	Predominantly rural
Corse	:	410	477	491	489	-0.4	Rural
Guadeloupe	:	:	:	:	:	:	
Martinique	:	:	:	:	:	:	
Guyane	:	:	:	:	:	:	
Réunion	:	:	:	:	:	:	
Ireland	**218**	**202**	**227**	**276**	**292**	**6.1**	**Predominantly rural**
Italy	**314**	**397**	**484**	**526**	**:**	**:**	
Piemonte	394	474	570	595	:	:	Predominantly rural
Valle D'Aosta	454	560	681	743	:	:	Rural
Liguria	339	407	483	501	:	:	Predominantly rural
Lombardia	358	449	547	573	:	:	Predominantly urban
Trentino-Alto Adige	327	398	485	521	:	:	Predominantly rural
Veneto	329	413	508	557	:	:	Intermediate
Friuli-Venezia Giulia	359	433	529	594	:	:	Intermediate
Emilia-Romagna	398	483	576	605	:	:	Predominantly rural
Toscana	389	477	564	581	:	:	Predominantly rural
Umbria	363	454	546	605	:	:	Predominantly rural
Marche	365	447	531	575	:	:	Predominantly rural
Lazio	345	445	549	580	:	:	Predominantly rural
Abruzzo	285	371	455	506	:	:	Predominantly rural
Molise	225	307	372	424	:	:	Predominantly rural
Campania	198	279	350	431	:	:	Predominantly urban
Puglia	212	284	348	408	:	:	Predominantly rural
Basilicata	197	283	353	406	:	:	Rural
Calabria	191	271	341	401	:	:	Predominantly rural
Sicilia	253	339	413	471	:	:	Predominantly rural
Sardegna	243	321	409	460	:	:	Predominantly rural
Luxembourg (Grand-Duché)	**354**	**414**	**485**	**563**	**561**	**-0.3**	**Intermediate**
Netherlands	**323**	**339**	**370**	**365**	**370**	**1.4**	
Groningen	318	321	348	342	346	1.0	Intermediate
Friesland	308	316	350	344	350	1.5	Predominantly rural
Drenthe	342	361	390	387	394	1.7	Predominantly rural
Overijssel	:	:	363	362	367	1.5	Intermediate
Gelderland	:	:	374	373	379	1.7	Predominantly urban
Flevoland	:	:	351	335	337	0.5	Predominantly rural
Utrecht	325	341	367	372	380	2.1	Predominantly urban
Noord-Holland	321	337	359	350	354	1.2	Predominantly urban
Zuid-Holland	313	333	356	347	352	1.5	Predominantly urban
Zeeland	336	356	388	383	384	0.3	Predominantly rural
Noord-Brabant	342	361	405	400	407	1.8	Predominantly urban
Limburg (NL)	314	338	380	380	384	1.1	Predominantly urban
Austria	**:**	**334**	**389**	**446**	**458**	**2.6**	
Burgenland	:	330	393	486	499	2.6	Predominantly rural
Niederösterreich	:	355	423	496	510	2.8	Predominantly rural
Wien	:	331	361	372	369	-1.0	Urban
Kärnten	:	326	384	463	482	4.2	Predominantly rural
Steiermark	:	324	386	471	488	3.8	Predominantly rural
Oberösterreich	:	345	403	464	478	2.9	Predominantly rural
Salzburg	:	345	392	431	441	2.1	Predominantly rural
Tirol	:	295	355	420	436	3.9	Predominantly rural
Vorarlberg	:	322	388	429	436	1.7	Predominantly rural

Source: Eurostat (New Cronos).

Passenger cars per 1 000 inhabitants (continued)

Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Portugal	**:**	**168**	**261**	**378**	**:**	**:**	
Norte	:	:	:	:	:	:	Predominantly rural
Centro (P)	:	:	:	:	:	:	Predominantly rural
Lisboa E Vale Do Tejo	:	:	:	:	:	:	Intermediate
Alentejo	:	:	:	:	:	:	Rural
Algarve	:	:	:	:	:	:	Predominantly rural
Acores	:	:	:	:	:	:	
Madeira	:	:	:	:	:	:	
Finland	**:**	**:**	**390**	**373**	**380**	**1.9**	
Uusimaa	:	:	:	350	360	2.8	Predominantly rural
Etelae-Suomi	:	:	:	385	395	2.5	Rural
Itae-Suomi	:	:	377	366	370	1.2	Rural
Vaeli-Suomi	:	:	406	396	404	2.0	Rural
Pohjois-Suomi	:	:	383	359	366	1.8	Rural
Ahvenanmaa/Aaland	:	:	517	508	516	1.6	Rural
Sweden	**:**	**458**	**502**	**475**	**482**	**1.4**	
Stockholm	:	390	427	393	397	1.2	Intermediate
Oestra Mellansverige	:	454	504	474	483	1.7	Predominantly rural
Smaaland Med Oearna	:	:	:	509	516	1.4	Rural
Sydsverige	:	445	496	469	475	1.2	Predominantly rural
Vaestsverige	:	:	:	474	483	1.8	Predominantly rural
Norra Mellansverige	:	512	562	548	557	1.7	Rural
Mellersta Norrland	:	509	553	555	566	2.0	Rural
Oevre Norrland	:	497	548	536	542	1.1	Rural
United Kingdom	**279**	**313**	**352**	**375**	**380**	**1.2**	
Cleveland, Durham	:	:	:	314	316	0.6	Predominantly urban
Cumbria	:	:	:	380	402	5.6	Predominantly rural
Northumberland,Tyne And Wear	:	:	:	277	289	4.4	Predominantly urban
Humberside	:	:	:	316	339	7.4	Intermediate
North Yorkshire	:	:	:	372	404	8.6	Predominantly rural
South Yorkshire	:	:	:	335	318	-5.1	Predominantly urban
West Yorkshire	:	:	:	326	331	1.7	Predominantly urban
Derbyshire, Nottinghamshire	:	:	:	333	372	11.7	Predominantly urban
Leics., Northamptonshire	:	:	:	372	403	8.3	Predominantly urban
Lincolnshire	:	:	:	391	417	6.7	Intermediate
East Anglia	317	359	410	416	423	1.8	Intermediate
Bedfordshire, Hertfordshire	:	:	:	481	467	-2.9	Predominantly urban
Berks.,Bucks., Oxfordshire	:	:	:	454	473	4.3	Predominantly urban
Surrey, East-West Sussex	:	:	:	418	452	8.2	Predominantly urban
Essex	:	:	:	402	422	4.8	Predominantly urban
Greater London	:	:	:	333	340	2.3	Urban
Hampshire, Isle Of Wight	:	:	:	403	426	5.8	Predominantly urban
Kent	:	:	:	393	400	1.7	Predominantly urban
Avon, Gloucs., Wiltshire	:	:	:	438	462	5.5	Intermediate
Cornwall, Devon	:	:	:	382	401	4.9	Predominantly rural
Dorset, Somerset	:	:	:	417	440	5.6	Predominantly rural
Hereford-Worcs., Warwicks.	:	:	:	429	486	13.3	Intermediate
Shropshire, Staffordshire	:	:	:	374	402	7.6	Intermediate
West Midlands (County)	:	:	:	411	383	-6.7	Urban
Cheshire	:	:	:	390	420	7.6	Predominantly urban
Greater Manchester	:	:	:	350	373	6.5	Urban
Lancashire	:	:	:	384	358	-6.8	Predominantly urban
Merseyside	:	:	:	286	301	5.2	Urban

Source: Eurostat (New Cronos).

Passenger cars per 1 000 inhabitants (continued)

Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Clwyd, Dyfed, Gwynedd, Powys	:	:	:	369	:	:	Predominantly rural
Gwent, Mid-S-W Glamorgan	:	:	:	318	:	:	Predominantly urban
Bord.-Centr.-Fife-Loth.-Tay.	:	:	:	340	:	:	Predominantly rural
Dumfr.-Galloway, Strathclyde	:	:	:	284	:	:	Predominantly rural
Highlands, Islands	:	:	:	331	:	:	Rural
Grampian	:	:	:	365	:	:	Predominantly rural
Northern Ireland	237	265	282	318	:	:	Predominantly rural

Source: Eurostat (New Cronos).

Buses per 1 000 inhabitants

Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Belgium	**2.03**	**1.72**	**1.61**	**1.45**	**1.48**	**1.9**	
Rég. Bruxelles-Cap./Brussels Hfdst.Gew.	5.95	6.12	5.18	3.05	2.11	-30.8	Urban
Antwerpen	1.27	1.26	1.25	1.60	1.84	15.2	Predominantly urban
Limburg (B)	2.81	1.37	1.34	1.56	1.29	-17.1	Predominantly urban
Oost-Vlaanderen	1.50	1.50	1.50	1.04	0.74	-28.7	Predominantly urban
Vlaams Brabant	:	:	:	1.21	1.00	-17.0	Predominantly urban
West-Vlaanderen	1.85	0.92	0.91	1.07	0.89	-16.8	Predominantly urban
Brabant Wallon	:	:	:	0.89	:	:	Predominantly urban
Hainaut	0.76	0.78	0.78	1.01	0.78	-23.0	Predominantly urban
Liège	1.99	1.01	1.00	1.28	0.99	-23.0	Predominantly urban
Luxembourg (B)	:	:	:	1.25	:	:	Intermediate
Namur	:	:	:	1.84	2.30	24.6	Intermediate
Denmark	**1.37**	**1.57**	**1.58**	**2.61**	**2.67**	**2.2**	**Intermediate**
Germany	**1.14**	**1.13**	**2.27**	**1.06**	**1.03**	**-2.9**	
Stuttgart	0.87	0.87	0.83	0.89	0.78	-12.3	Predominantly urban
Karlsruhe	0.84	0.83	0.81	0.79	0.76	-4.8	Predominantly urban
Freiburg	1.08	1.07	1.03	1.01	0.96	-5.5	Intermediate
Tübingen	0.67	0.66	1.26	1.11	0.58	-47.7	Intermediate
Oberbayern	1.10	1.08	1.07	1.01	0.75	-25.4	Intermediate
Niederbayern	2.01	1.98	1.89	1.77	0.87	-50.5	Intermediate
Oberpfalz	1.04	1.04	1.01	1.43	0.95	-33.8	Intermediate
Oberfranken	0.95	0.96	0.95	1.27	0.90	-29.0	Intermediate
Mittelfranken	0.66	0.66	1.28	0.90	0.60	-33.7	Predominantly urban
Unterfranken	1.68	1.67	1.62	1.30	0.76	-41.6	Intermediate
Schwaben	0.66	0.65	1.25	1.05	0.58	-44.8	Intermediate
Berlin	1.05	1.08	3.75	0.78	0.58	-26.0	Urban
Brandenburg	:	:	:	0.91	0.79	-13.3	Intermediate
Bremen	1.44	1.50	1.48	1.03	:	:	Urban
Hamburg	1.21	1.26	1.23	0.88	0.59	-33.5	Urban
Darmstadt	:	0.88	0.86	0.93	0.81	-12.2	Predominantly urban
Giessen	:	1.04	1.02	1.24	0.95	-23.6	Intermediate
Kassel	:	1.70	1.68	1.11	0.79	-29.1	Intermediate
Mecklenburg-Vorpommern	:	:	:	1.09	0.55	-49.8	Intermediate
Braunschweig	1.22	1.25	1.24	1.13	0.60	-47.4	Intermediate
Hannover	0.97	0.99	0.98	0.94	0.47	-50.2	Intermediate
Lüneburg	1.38	1.36	1.36	1.08	0.62	-42.0	Predominantly rural
Weser-Ems	1.43	0.94	1.38	1.20	0.85	-29.7	Intermediate
Düsseldorf	0.96	0.99	0.97	0.83	0.76	-9.2	Predominantly urban
Köln	1.02	1.03	1.01	1.03	0.95	-7.6	Predominantly urban
Münster	0.83	0.83	1.23	1.06	0.78	-26.4	Predominantly urban
Detmold	1.10	1.12	1.08	1.16	0.99	-14.0	Predominantly urban
Arnsberg	1.08	1.12	1.09	0.92	0.78	-14.6	Predominantly urban
Koblenz	1.47	1.48	1.45	1.42	1.34	-5.6	Intermediate
Trier	2.12	2.13	2.09	1.79	:	:	Intermediate
Rheinhessen-Pfalz	1.11	1.11	1.08	1.12	1.01	-9.6	Predominantly urban
Saarland	0.94	0.95	1.88	1.38	0.92	-33.4	Predominantly urban
Sachsen	:	:	4.49	0.98	0.88	-10.8	Predominantly urban
Dessau	:	:	:	1.04	:	:	Intermediate
Halle	:	:	:	0.98	:	:	Intermediate
Magdeburg	:	:	:	1.03	0.80	-22.6	Intermediate
Schleswig-Holstein	1.15	1.15	1.16	1.11	0.73	-33.8	Intermediate
Thüringen	:	:	:	1.19	0.80	-33.0	Intermediate

Source: Eurostat (New Cronos).

Buses per 1 000 inhabitants (continued)

Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Greece	**1.88**	**1.83**	**2.10**	**2.36**	**2.39**	**1.4**	
Anatoliki Makedonia, Thraki	:	:	1.62	1.78	1.78	0.4	Rural
Kentriki Makedonia	1.91	1.66	1.72	1.99	2.03	2.4	Predominantly rural
Dytiki Makedonia	:	:	1.73	1.99	1.99	0.1	Rural
Thessalia	1.45	1.25	1.37	1.48	1.48	0.1	Predominantly rural
Ipeiros	:	:	1.82	1.66	1.64	-1.3	Rural
Ionia Nisia	:	:	2.14	2.54	3.03	19.3	Rural
Dytiki Ellada	:	:	1.29	1.37	1.37	-0.5	Rural
Sterea Ellada	:	:	1.79	1.71	1.66	-3.0	Rural
Peloponnisos	:	:	1.53	1.53	1.49	-2.5	Rural
Attiki	:	:	2.92	3.39	3.51	3.6	Predominantly urban
Voreio Aigaio	:	:	1.04	1.60	1.63	1.4	Rural
Notio Aigaio	:	:	3.21	3.80	3.74	-1.3	Rural
Kriti	:	:	1.69	1.99	1.97	-1.1	Rural
Spain	**1.14**	**1.07**	**1.18**	**1.20**	**1.22**	**2.0**	
Galicia	1.23	1.16	1.43	1.47	1.47	0.1	Predominantly rural
Asturias	1.42	1.23	1.77	0.93	0.93	0.5	Predominantly rural
Cantabria	0.80	0.96	1.90	1.90	1.90	0.0	Predominantly rural
Pais Vasco	1.08	0.96	0.94	0.96	0.96	0.3	Predominantly rural
Navarra	1.62	1.36	1.92	1.91	1.90	-0.2	Rural
Rioja	0.82	0.39	:	:	:	:	Rural
Aragon	1.12	1.08	0.82	0.85	0.85	0.2	Rural
Madrid	1.64	1.64	1.64	1.60	1.60	-0.2	Predominantly urban
Castilla-Leon	0.98	0.96	1.14	1.19	1.19	0.2	Rural
Castilla-La Mancha	0.76	0.66	0.58	0.59	1.18	99.1	Rural
Extremadura	0.70	0.65	0.89	0.93	0.93	-0.3	Rural
Cataluna	0.97	0.85	1.00	0.99	0.99	0.0	Predominantly rural
Comunidad Valenciana	0.72	0.81	0.79	1.03	1.02	-0.3	Predominantly rural
Baleares	2.80	2.25	2.93	2.76	2.75	-0.5	Predominantly rural
Andalucia	0.94	0.86	0.87	0.99	0.98	-0.5	Predominantly rural
Murcia	0.99	1.01	0.98	0.93	0.93	-0.6	Predominantly rural
Ceuta Y Melilla	1.83	0.81	:	:	:	:	Urban
Canarias	2.22	2.12	2.70	2.59	2.57	-0.9	
France	**1.25**	**1.55**	**1.21**	**0.76**	**0.70**	**-8.5**	
Ile De France	:	1.81	1.36	0.83	0.73	-11.4	Predominantly urban
Champagne-Ardenne	:	1.40	1.11	0.74	0.67	-10.0	Predominantly rural
Picardie	:	1.47	1.11	0.70	0.64	-8.1	Predominantly rural
Haute-Normandie	:	1.54	1.27	0.84	0.73	-13.6	Predominantly rural
Centre	:	1.56	1.22	0.74	0.70	-5.9	Predominantly rural
Basse-Normandie	:	1.38	1.08	0.71	0.64	-10.2	Predominantly rural
Bourgogne	:	1.50	1.18	0.80	0.68	-15.4	Predominantly rural
Nord-Pas-De-Calais	:	1.32	1.08	0.68	0.62	-7.6	Predominantly urban
Lorraine	:	1.51	1.26	0.82	0.78	-5.3	Predominantly rural
Alsace	:	1.51	1.23	0.83	0.76	-7.8	Intermediate
Franche-Comté	:	1.92	1.46	0.99	0.90	-9.3	Predominantly rural
Pays De La Loire	:	1.27	0.98	0.61	0.60	-0.5	Predominantly rural
Bretagne	:	1.17	0.93	0.67	0.66	-0.5	Predominantly rural
Poitou-Charentes	:	1.27	1.07	0.68	0.62	-9.3	Predominantly rural
Aquitaine	:	1.48	1.18	0.77	0.70	-9.4	Predominantly rural
Midi-Pyrénées	:	1.43	1.11	0.72	0.68	-6.0	Predominantly rural
Limousin	:	1.36	1.11	0.83	0.84	0.2	Predominantly rural
Rhône-Alpes	:	1.93	1.44	0.81	0.71	-11.7	Predominantly rural
Auvergne	:	1.35	1.06	0.76	0.68	-10.0	Predominantly rural

Source: Eurostat (New Cronos).

Buses per 1 000 inhabitants (continued)

Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Languedoc-Roussillon	:	1.40	1.04	0.68	0.62	-7.6	Predominantly rural
Provence-Alpes-Côte d'Azur	:	1.68	1.27	0.77	0.67	-12.2	Predominantly rural
Corse	:	2.46	2.00	0.77	0.77	-0.4	Rural
Guadeloupe	:	:	:	:	:	:	
Martinique	:	:	:	:	:	:	
Guyane	:	:	:	:	:	:	
Réunion	:	:	:	:	:	:	
Ireland	**0.88**	**0.93**	**1.14**	**1.47**	**1.69**	**14.4**	**Predominantly rural**
Italy	**1.03**	**1.34**	**1.37**	**1.31**	**:**	**:**	
Piemonte	0.80	1.36	1.36	1.23	:	:	Predominantly rural
Valle D'Aosta	1.78	2.67	2.62	2.53	:	:	Rural
Liguria	1.32	1.70	1.53	1.44	:	:	Predominantly rural
Lombardia	0.94	1.13	1.10	1.04	:	:	Predominantly urban
Trentino-Alto Adige	1.26	1.14	1.58	1.54	:	:	Predominantly rural
Veneto	1.11	1.38	1.44	1.36	:	:	Intermediate
Friuli-Venezia Giulia	1.05	1.64	1.33	1.18	:	:	Intermediate
Emilia-Romagna	1.11	1.27	1.38	1.30	:	:	Predominantly rural
Toscana	1.26	1.40	1.44	1.33	:	:	Predominantly rural
Umbria	1.37	2.47	1.85	1.70	:	:	Predominantly rural
Marche	1.14	1.41	1.76	1.53	:	:	Predominantly rural
Lazio	1.61	1.98	1.90	1.73	:	:	Predominantly rural
Abruzzo	1.24	1.63	2.17	1.97	:	:	Predominantly rural
Molise	1.22	3.04	2.42	2.11	:	:	Predominantly rural
Campania	0.87	1.08	1.16	1.20	:	:	Predominantly urban
Puglia	0.81	1.01	1.15	1.03	:	:	Predominantly rural
Basilicata	1.31	1.64	2.13	1.96	:	:	Rural
Calabria	0.73	0.96	1.25	1.40	:	:	Predominantly rural
Sicilia	0.67	1.01	1.03	1.08	:	:	Predominantly rural
Sardegna	1.01	1.86	1.34	1.51	:	:	Predominantly rural
Luxembourg (Grand-Duché)	**1.65**	**1.91**	**1.85**	**1.97**	**2.18**	**10.8**	**Intermediate**
Netherlands	**0.78**	**0.83**	**0.81**	**0.78**	**0.71**	**-8.7**	
Groningen	1.81	1.78	0.90	:	1.79	:	Intermediate
Friesland	1.71	1.67	0.83	1.64	:	:	Predominantly rural
Drenthe	:	0.00	0.91	:	2.19	:	Predominantly rural
Overijssel	:	:	0.69	0.95	1.90	99.3	Intermediate
Gelderland	:	:	0.78	0.54	0.53	-0.6	Predominantly urban
Flevoland	:	:	0.47	:	3.67	:	Predominantly rural
Utrecht	1.12	1.07	1.08	0.94	0.93	-0.7	Predominantly urban
Noord-Holland	0.87	0.87	0.84	0.81	0.81	-0.2	Predominantly urban
Zuid-Holland	0.97	0.63	0.75	0.60	0.30	-50.1	Predominantly urban
Zeeland	:	2.81	1.69	2.73	2.72	-0.4	Predominantly rural
Noord-Brabant	0.49	0.47	0.64	0.44	0.44	-0.6	Predominantly urban
Limburg (NL)	0.94	0.92	1.00	0.88	0.88	-0.3	Predominantly urban
Austria	**:**	**1.23**	**1.22**	**1.12**	**1.12**	**-0.2**	
Burgenland	:	1.48	1.48	:	:	:	Predominantly rural
Niederösterreich	:	0.70	0.69	0.66	0.66	-0.4	Predominantly rural
Wien	:	2.53	2.51	1.88	1.88	0.0	Urban
Kärnten	:	0.74	0.74	:	:	:	Predominantly rural
Steiermark	:	0.93	0.93	0.83	0.83	-0.2	Predominantly rural
Oberösterreich	:	0.86	0.84	0.72	0.72	0.3	Predominantly rural
Salzburg	:	1.10	1.06	1.98	1.97	-0.6	Predominantly rural
Tirol	:	1.33	1.29	1.52	1.52	-0.5	Predominantly rural
Vorarlberg	:	0.65	0.92	:	:	:	Predominantly rural

Source: Eurostat (New Cronos).

Buses per 1 000 inhabitants (continued)

Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Portugal	**0.86**	**1.03**	**1.23**	**:**	**:**	**:**	
Norte	:	:	:	:	:	:	Predominantly rural
Centro (P)	:	:	:	:	:	:	Predominantly rural
Lisboa E Vale Do Tejo	:	:	:	:	:	:	Intermediate
Alentejo	:	:	:	:	:	:	Rural
Algarve	:	:	:	:	:	:	Predominantly rural
Acores	:	:	:	:	:	:	
Madeira	:	:	:	:	:	:	
Finland	**:**	**:**	**1.87**	**1.59**	**1.62**	**2.1**	
Uusimaa	:	:	:	1.76	1.76	0.0	Predominantly rural
Etelae-Suomi	:	:	:	1.45	1.67	15.4	Rural
Itae-Suomi	:	:	1.98	1.84	1.42	-22.8	Rural
Vaeli-Suomi	:	:	1.58	1.41	1.42	0.2	Rural
Pohjois-Suomi	:	:	2.04	1.62	1.79	10.7	Rural
Ahvenanmaa/Aaland	:	:	0.00	:	:	:	Rural
Sweden	**:**	**2.03**	**2.10**	**2.01**	**2.00**	**-0.2**	
Stockholm	:	1.98	2.03	1.93	1.85	-4.0	Intermediate
Oestra Mellansverige	:	2.18	2.01	2.00	2.00	0.0	Predominantly rural
Smaaland Med Oearna	:	:	:	2.26	2.26	0.0	Rural
Sydsverige	:	1.87	1.82	1.75	1.74	-0.4	Predominantly rural
Vaestsverige	:	:	:	1.82	1.87	3.1	Predominantly rural
Norra Mellansverige	:	2.22	2.33	2.08	2.09	0.5	Rural
Mellersta Norrland	:	1.76	1.77	2.52	2.54	0.7	Rural
Oevre Norrland	:	2.75	3.12	2.65	2.66	0.2	Rural
United Kingdom	**1.39**	**1.32**	**1.37**	**2.70**	**2.67**	**-1.1**	
Cleveland, Durham	:	:	:	2.57	2.57	0.1	Predominantly urban
Cumbria	:	:	:	2.45	2.04	-16.7	Predominantly rural
Northumberland,Tyne And Wear	:	:	:	2.36	2.09	-11.5	Predominantly urban
Humberside	:	:	:	2.14	2.25	5.4	Intermediate
North Yorkshire	:	:	:	2.75	2.73	-0.6	Predominantly rural
South Yorkshire	:	:	:	2.99	2.30	-23.1	Predominantly urban
West Yorkshire	:	:	:	2.28	2.37	4.0	Predominantly urban
Derbyshire, Nottinghamshire	:	:	:	2.52	2.51	-0.2	Predominantly urban
Leics., Northamptonshire	:	:	:	2.37	1.96	-17.2	Predominantly urban
Lincolnshire	:	:	:	2.96	3.26	10.2	Intermediate
East Anglia	1.06	1.02	1.22	2.79	2.34	-16.0	Intermediate
Bedfordshire, Hertfordshire	:	:	:	2.58	1.92	-25.4	Predominantly urban
Berks.,Bucks., Oxfordshire	:	:	:	2.61	2.43	-6.8	Predominantly urban
Surrey, East-West Sussex	:	:	:	2.76	2.79	0.9	Predominantly urban
Essex	:	:	:	2.67	2.53	-5.2	Predominantly urban
Greater London	:	:	:	2.69	2.72	1.1	Urban
Hampshire, Isle Of Wight	:	:	:	2.36	2.29	-3.1	Predominantly urban
Kent	:	:	:	2.71	2.57	-5.1	Predominantly urban
Avon, Gloucs., Wiltshire	:	:	:	2.83	2.82	-0.5	Intermediate
Cornwall, Devon	:	:	:	2.73	2.60	-4.8	Predominantly rural
Dorset, Somerset	:	:	:	2.68	2.58	-3.8	Predominantly rural
Hereford-Worcs., Warwicks.	:	:	:	2.43	2.51	3.4	Intermediate
Shropshire, Staffordshire	:	:	:	2.71	2.71	-0.2	Intermediate
West Midlands (County)	:	:	:	2.89	2.65	-8.1	Urban
Cheshire	:	:	:	2.05	1.02	-50.1	Predominantly urban
Greater Manchester	:	:	:	1.98	2.33	17.7	Urban
Lancashire	:	:	:	3.09	2.10	-31.8	Predominantly urban
Merseyside	:	:	:	2.59	2.11	-18.5	Urban

Source: Eurostat (New Cronos).

Buses per 1 000 inhabitants (continued)

Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Clwyd, Dyfed, Gwynedd, Powys	:	:	:	3.00	:	:	Predominantly rural
Gwent, Mid-S-W Glamorgan	:	:	:	2.64	:	:	Predominantly urban
Bord.-Centr.-Fife-Loth.-Tay.	:	:	:	2.92	:	:	Predominantly rural
Dumfr.-Galloway, Strathclyde	:	:	:	2.83	:	:	Predominantly rural
Highlands, Islands	:	:	:	4.30	:	:	Rural
Grampian	:	:	:	3.58	:	:	Predominantly rural
Northern Ireland	1.28	1.28	1.07	2.86	:	:	Predominantly rural

Source: Eurostat (New Cronos).

Motorbikes per 1 000 inhabitants

Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Belgium	**11.5**	**13.2**	**14.0**	**19.8**	**20.9**	**5.8**	
Rég. Bruxelles-Cap./Brussels Hfdst.Gew.	10.9	12.2	12.4	14.6	14.8	1.1	Urban
Antwerpen	7.6	9.5	10.6	18.8	20.2	7.3	Predominantly urban
Limburg (B)	9.8	11.0	13.4	22.7	24.5	8.1	Predominantly urban
Oost-Vlaanderen	7.5	9.8	11.3	19.9	21.5	8.0	Predominantly urban
Vlaams Brabant	:	:	:	20.6	22.0	6.9	Predominantly urban
West-Vlaanderen	6.5	8.3	10.0	18.2	19.6	7.7	Predominantly urban
Brabant Wallon	:	:	:	23.2	23.6	1.8	Predominantly urban
Hainaut	15.3	16.4	15.6	17.8	18.7	5.0	Predominantly urban
Liège	18.9	20.2	20.0	22.5	23.7	5.4	Predominantly urban
Luxembourg (B)	22.5	22.3	21.7	27.5	29.0	5.6	Intermediate
Namur	22.2	21.9	21.4	23.7	25.2	6.5	Intermediate
Denmark	**6.6**	**8.0**	**8.6**	**10.0**	**10.7**	**7.0**	**Intermediate**
Germany	**9.3**	**22.4**	**40.6**	**27.8**	**30.2**	**8.5**	
Stuttgart	10.4	24.9	23.5	35.2	37.3	5.9	Predominantly urban
Karlsruhe	11.8	25.0	22.1	32.5	11.7	-63.9	Predominantly urban
Freiburg	12.4	28.3	26.4	38.1	40.2	5.7	Intermediate
Tübingen	11.4	28.3	26.4	41.2	43.5	5.5	Intermediate
Oberbayern	11.0	26.3	25.3	38.1	40.5	6.3	Intermediate
Niederbayern	10.1	27.7	22.7	40.4	43.7	8.2	Intermediate
Oberpfalz	10.4	29.1	25.2	42.5	45.5	7.1	Intermediate
Oberfranken	10.4	26.9	21.8	35.1	37.8	7.9	Intermediate
Mittelfranken	9.9	25.7	22.3	36.3	39.0	7.3	Predominantly urban
Unterfranken	10.1	25.0	22.7	36.9	39.5	7.0	Intermediate
Schwaben	11.2	27.9	26.4	40.8	43.6	6.7	Intermediate
Berlin	8.9	20.0	39.9	18.1	19.0	5.0	Urban
Brandenburg	:	:	:	13.0	14.9	14.9	Intermediate
Bremen	5.8	15.0	13.4	20.3	20.6	1.4	Urban
Hamburg	6.7	14.4	11.1	17.5	18.7	6.8	Urban
Darmstadt	:	23.6	20.0	30.0	31.8	5.9	Predominantly urban
Giessen	:	23.9	20.4	31.8	34.1	7.4	Intermediate
Kassel	:	25.5	21.9	33.0	35.4	7.4	Intermediate
Mecklenburg-Vorpommern	:	:	:	10.5	12.1	14.5	Intermediate
Braunschweig	8.6	20.6	19.2	29.3	31.6	7.6	Intermediate
Hannover	7.8	18.8	16.7	26.9	29.0	7.9	Intermediate
Lüneburg	8.3	22.5	19.1	32.0	34.3	7.4	Predominantly rural
Weser-Ems	7.1	17.9	16.1	29.0	31.8	9.6	Intermediate
Düsseldorf	7.9	18.4	15.9	27.3	29.9	9.6	Predominantly urban
Köln	9.2	20.1	17.4	29.3	31.5	7.7	Predominantly urban
Münster	7.9	17.1	14.8	28.4	31.5	11.0	Predominantly urban
Detmold	8.3	19.6	16.8	27.3	29.3	7.4	Predominantly urban
Arnsberg	8.1	19.8	16.3	27.7	30.6	10.5	Predominantly urban
Koblenz	9.6	26.6	21.1	33.6	36.2	7.9	Intermediate
Trier	8.5	23.4	18.8	33.9	35.6	5.2	Intermediate
Rheinhessen-Pfalz	10.5	25.0	21.1	32.1	34.8	8.5	Predominantly urban
Saarland	9.4	21.9	19.7	31.9	35.0	9.7	Predominantly urban
Sachsen	:	:	84.9	13.3	14.7	10.2	Predominantly urban
Dessau	:	:	:	13.3	14.0	4.6	Intermediate
Halle	:	:	:	12.3	19.8	60.6	Intermediate
Magdeburg	:	:	:	10.6	11.9	12.6	Intermediate
Schleswig-Holstein	7.7	19.9	17.7	28.7	31.2	8.8	Intermediate
Thüringen	:	:	:	15.0	15.2	1.3	Intermediate

Source: Eurostat (New Cronos).

Motorbikes per 1 000 inhabitants (continued)

Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Greece	**12.4**	**16.9**	**25.4**	**45.6**	**49.5**	**8.6**	
Anatoliki Makedonia, Thraki	:	:	18.3	32.4	35.3	9.2	Rural
Kentriki Makedonia	9.5	11.3	23.0	34.0	36.9	8.5	Predominantly rural
Dytiki Makedonia	:	:	18.4	12.3	13.3	8.2	Rural
Thessalia	8.7	12.0	16.9	27.6	30.1	8.9	Predominantly rural
Ipeiros	:	:	14.0	19.1	21.5	13.0	Rural
Ionia Nisia	:	:	19.2	71.0	76.7	8.0	Rural
Dytiki Ellada	:	:	13.6	33.8	36.6	8.4	Rural
Sterea Ellada	:	:	13.3	21.5	22.6	5.4	Rural
Peloponnisos	:	:	12.8	26.4	28.0	6.0	Rural
Attiki	:	:	39.8	64.7	71.2	10.0	Predominantly urban
Voreio Aigaio	:	:	16.2	78.6	86.7	10.3	Rural
Notio Aigaio	:	:	16.4	78.2	83.9	7.3	Rural
Kriti	:	:	18.4	65.4	70.4	7.7	Rural
Spain	**33.1**	**19.2**	**27.6**	**33.2**	**33.3**	**0.4**	
Galicia	20.0	11.0	15.0	18.7	19.1	2.1	Predominantly rural
Asturias	22.2	11.0	14.2	16.7	16.8	0.5	Predominantly rural
Cantabria	34.8	14.2	20.9	26.6	26.6	0.0	Predominantly rural
Pais Vasco	23.9	10.5	16.0	20.2	20.7	2.7	Predominantly rural
Navarra	37.8	13.6	19.2	24.8	24.7	-0.2	Rural
Rioja	28.5	14.8	19.2	23.0	23.0	0.2	Rural
Aragon	30.7	13.0	18.1	22.8	22.9	0.2	Rural
Madrid	26.5	14.2	22.8	28.2	28.1	-0.2	Predominantly urban
Castilla-Leon	24.3	8.9	12.2	15.5	15.9	2.8	Rural
Castilla-La Mancha	28.6	13.0	16.9	20.8	20.7	-0.4	Rural
Extremadura	19.9	10.2	12.4	15.9	16.8	5.6	Rural
Cataluna	45.5	34.1	50.0	60.5	60.8	0.6	Predominantly rural
Comunidad Valenciana	44.0	27.7	37.0	41.3	41.4	0.4	Predominantly rural
Baleares	90.9	53.5	70.4	77.4	78.3	1.2	Predominantly rural
Andalucia	33.3	18.2	27.2	32.2	32.1	-0.5	Predominantly rural
Murcia	53.5	27.2	33.2	37.2	37.0	-0.6	Predominantly rural
Ceuta Y Melilla	26.6	26.8	40.1	45.8	52.9	15.3	Urban
Canarias	12.5	13.1	21.6	25.3	25.7	1.6	
France	**13.3**	**12.6**	**12.3**	**12.3**	**12.7**	**3.1**	
Ile De France	:	15.1	15.8	16.4	16.8	2.6	Predominantly urban
Champagne-Ardenne	:	10.7	10.0	10.2	10.7	4.4	Predominantly rural
Picardie	:	9.4	8.6	8.8	9.3	5.6	Predominantly rural
Haute-Normandie	:	10.1	8.9	9.3	9.8	5.8	Predominantly rural
Centre	:	10.0	8.9	9.0	9.4	4.6	Predominantly rural
Basse-Normandie	:	8.6	7.9	8.4	9.1	8.1	Predominantly rural
Bourgogne	:	11.3	10.5	10.3	10.7	3.0	Predominantly rural
Nord-Pas-De-Calais	:	7.2	6.0	6.4	6.8	6.4	Predominantly urban
Lorraine	:	10.1	9.8	10.6	11.2	6.1	Predominantly rural
Alsace	:	12.0	12.4	12.8	13.3	3.9	Intermediate
Franche-Comté	:	12.3	12.4	11.9	12.2	2.0	Predominantly rural
Pays De La Loire	:	8.2	7.4	7.6	8.1	6.6	Predominantly rural
Bretagne	:	7.1	6.3	7.0	7.5	7.6	Predominantly rural
Poitou-Charentes	:	10.2	9.5	9.9	10.5	6.6	Predominantly rural
Aquitaine	:	11.1	11.1	11.0	11.2	2.5	Predominantly rural
Midi-Pyrénées	:	13.4	12.7	12.5	12.9	2.7	Predominantly rural
Limousin	:	9.2	9.4	9.7	10.3	5.9	Predominantly rural
Rhône-Alpes	:	14.3	13.4	12.5	12.8	2.0	Predominantly rural
Auvergne	:	12.7	11.3	11.5	11.9	4.0	Predominantly rural

Source: Eurostat (New Cronos).

Motorbikes per 1 000 inhabitants (continued)

Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Languedoc-Roussillon	:	16.9	16.7	15.7	15.8	0.7	Predominantly rural
Provence-Alpes-Côte d'Azur	:	23.9	24.0	21.7	21.7	-0.3	Predominantly rural
Corse	:	18.8	20.8	18.9	18.0	-4.4	Rural
Guadeloupe	:	:	:	:	:	:	
Martinique	:	:	:	:	:	:	
Guyane	:	:	:	:	:	:	
Réunion	:	:	:	:	:	:	
Ireland	**3.5**	**3.6**	**3.6**	**6.5**	**6.6**	**0.7**	**Predominantly rural**
Italy	**14.7**	**35.3**	**44.3**	**44.0**	**:**	**:**	
Piemonte	17.6	39.6	52.1	51.0	:	:	Predominantly rural
Valle D'Aosta	53.4	71.1	92.7	85.2	:	:	Rural
Liguria	31.5	66.9	86.3	92.2	:	:	Predominantly rural
Lombardia	18.9	44.1	57.1	54.7	:	:	Predominantly urban
Trentino-Alto Adige	19.0	45.7	54.1	52.9	:	:	Predominantly rural
Veneto	20.8	42.8	50.3	45.4	:	:	Intermediate
Friuli-Venezia Giulia	22.4	42.7	50.3	49.1	:	:	Intermediate
Emilia-Romagna	20.4	50.4	60.4	55.5	:	:	Predominantly rural
Toscana	27.2	66.0	77.6	66.4	:	:	Predominantly rural
Umbria	19.8	45.8	51.1	49.1	:	:	Predominantly rural
Marche	24.8	52.2	56.3	51.8	:	:	Predominantly rural
Lazio	9.5	26.1	33.5	35.9	:	:	Predominantly rural
Abruzzo	9.0	23.6	27.5	29.3	:	:	Predominantly rural
Molise	4.6	15.2	17.5	20.5	:	:	Predominantly rural
Campania	3.9	16.3	24.2	30.7	:	:	Predominantly urban
Puglia	5.0	15.2	20.8	23.1	:	:	Predominantly rural
Basilicata	3.6	11.5	15.1	17.2	:	:	Rural
Calabria	3.5	13.0	16.8	20.4	:	:	Predominantly rural
Sicilia	7.0	22.3	30.8	36.1	:	:	Predominantly rural
Sardegna	7.0	17.3	21.9	24.0	:	:	Predominantly rural
Luxembourg (Grand-Duché)	**4.9**	**7.1**	**8.7**	**20.7**	**20.3**	**-1.5**	**Intermediate**
Netherlands	**7.7**	**8.9**	**10.9**	**20.0**	**21.6**	**8.3**	
Groningen	7.2	8.9	10.5	19.7	21.5	9.1	Intermediate
Friesland	6.8	8.4	11.5	21.3	24.5	14.9	Predominantly rural
Drenthe	7.2	9.3	13.6	26.4	28.4	7.8	Predominantly rural
Overijssel	:	:	11.9	22.8	24.7	8.0	Intermediate
Gelderland	:	:	12.2	23.1	24.5	6.3	Predominantly urban
Flevoland	:	:	8.5	19.1	18.3	-3.8	Predominantly rural
Utrecht	8.9	8.5	10.6	19.7	20.5	4.1	Predominantly urban
Noord-Holland	8.7	9.5	10.7	17.9	19.4	8.9	Predominantly urban
Zuid-Holland	7.5	8.2	8.8	15.3	16.5	7.6	Predominantly urban
Zeeland	8.6	8.4	12.4	24.6	27.2	10.6	Predominantly rural
Noord-Brabant	7.3	9.5	12.4	22.8	24.9	8.9	Predominantly urban
Limburg (NL)	6.5	7.4	10.8	21.2	22.9	8.0	Predominantly urban
Austria	**:**	**11.2**	**13.7**	**21.6**	**24.0**	**10.7**	
Burgenland	:	6.7	10.0	18.3	21.8	19.6	Predominantly rural
Niederösterreich	:	12.8	14.9	24.4	27.6	13.0	Predominantly rural
Wien	:	10.1	11.4	16.3	17.0	3.9	Urban
Kärnten	:	10.2	12.1	19.6	21.3	8.7	Predominantly rural
Steiermark	:	10.4	12.6	20.7	23.2	11.7	Predominantly rural
Oberösterreich	:	12.2	15.3	23.8	26.7	12.4	Predominantly rural
Salzburg	:	11.9	14.8	19.8	23.6	19.3	Predominantly rural
Tirol	:	10.2	13.2	21.3	22.7	6.6	Predominantly rural
Vorarlberg	:	13.9	21.0	29.2	32.0	9.6	Predominantly rural

Source: Eurostat (New Cronos).

Motorbikes per 1 000 inhabitants (continued)

Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Portugal	**9.5**	**10.2**	**13.6**	**22.1**	**:**	**:**	
Norte	:	:	6.8	11.9	:	:	Predominantly rural
Centro (P)	:	:	10.9	12.8	:	:	Predominantly rural
Lisboa E Vale Do Tejo	:	:	27.2	45.9	:	:	Intermediate
Alentejo	:	:	:	0.9	:	:	Rural
Algarve	:	:	:	1.5	:	:	Predominantly rural
Acores	:	:	6.7	8.3	:	:	
Madeira	:	:	1.6	3.9	:	:	
Finland	**:**	**:**	**12.1**	**12.8**	**12.9**	**1.0**	
Uusimaa	:	:	:	12.8	13.0	1.8	Predominantly rural
Etelae-Suomi	:	:	:	13.6	13.9	2.5	Rural
Itae-Suomi	:	:	10.6	11.0	11.3	2.9	Rural
Vaeli-Suomi	:	:	11.8	13.4	14.2	5.4	Rural
Pohjois-Suomi	:	:	10.0	11.0	10.8	-2.0	Rural
Ahvenanmaa/Aaland	:	:	16.5	19.8	39.7	100.0	Rural
Sweden	**:**	**23.0**	**23.1**	**24.2**	**24.8**	**2.6**	
Stockholm	:	17.6	16.5	16.4	17.1	4.3	Intermediate
Oestra Mellansverige	:	23.6	24.4	25.4	26.0	2.3	Predominantly rural
Smaaland Med Oearna	:	:	:	29.3	30.0	2.6	Rural
Sydsverige	:	22.5	23.1	24.4	24.8	1.8	Predominantly rural
Vaestsverige	:	:	:	27.0	27.6	2.3	Predominantly rural
Norra Mellansverige	:	24.3	25.5	28.0	29.1	3.8	Rural
Mellersta Norrland	:	22.3	22.3	23.7	24.4	2.8	Rural
Oevre Norrland	:	22.2	21.8	22.4	22.8	1.9	Rural
United Kingdom	**16.9**	**16.3**	**10.4**	**10.6**	**10.6**	**-0.2**	
Cleveland, Durham	:	:	:	7.6	6.9	-10.0	Predominantly urban
Cumbria	:	:	:	13.1	12.2	-6.3	Predominantly rural
Northumberland,Tyne And Wear	:	:	:	5.4	4.9	-10.0	Predominantly urban
Humberside	:	:	:	13.3	12.4	-6.6	Intermediate
North Yorkshire	:	:	:	13.6	13.6	0.4	Predominantly rural
South Yorkshire	:	:	:	9.0	6.9	-23.1	Predominantly urban
West Yorkshire	:	:	:	8.0	7.6	-5.4	Predominantly urban
Derbyshire, Nottinghamshire	:	:	:	11.3	11.5	2.0	Predominantly urban
Leics., Northamptonshire	:	:	:	11.5	11.8	2.8	Predominantly urban
Lincolnshire	:	:	:	14.6	14.7	0.3	Intermediate
East Anglia	21.8	23.9	15.4	15.4	15.0	-2.4	Intermediate
Bedfordshire, Hertfordshire	:	:	:	12.0	10.9	-9.6	Predominantly urban
Berks.,Bucks., Oxfordshire	:	:	:	12.6	12.6	0.4	Predominantly urban
Surrey, East-West Sussex	:	:	:	12.0	12.7	6.0	Predominantly urban
Essex	:	:	:	12.4	12.6	2.0	Predominantly urban
Greater London	:	:	:	9.3	9.7	4.9	Urban
Hampshire, Isle Of Wight	:	:	:	14.6	14.9	1.7	Predominantly urban
Kent	:	:	:	13.9	12.9	-7.3	Predominantly urban
Avon, Gloucs., Wiltshire	:	:	:	15.7	15.5	-1.4	Intermediate
Cornwall, Devon	:	:	:	16.4	15.6	-4.8	Predominantly rural
Dorset, Somerset	:	:	:	15.6	15.5	-0.6	Predominantly rural
Hereford-Worcs., Warwicks.	:	:	:	13.2	14.2	7.5	Intermediate
Shropshire, Staffordshire	:	:	:	12.2	12.2	-0.2	Intermediate
West Midlands (County)	:	:	:	8.4	6.8	-19.1	Urban
Cheshire	:	:	:	11.7	12.3	5.0	Predominantly urban
Greater Manchester	:	:	:	6.3	6.2	-1.2	Urban
Lancashire	:	:	:	10.7	9.8	-7.9	Predominantly urban
Merseyside	:	:	:	6.1	5.6	-7.6	Urban

Source: Eurostat (New Cronos).

Motorbikes per 1 000 inhabitants (continued)

Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Clwyd, Dyfed, Gwynedd, Powys	:	:	:	10.0	:	:	Predominantly rural
Gwent, Mid-S-W Glamorgan	:	:	:	6.5	:	:	Predominantly urban
Bord.-Centr.-Fife-Loth.-Tay.	:	:	:	6.0	:	:	Predominantly rural
Dumfr.-Galloway, Strathclyde	:	:	:	3.4	:	:	Predominantly rural
Highlands, Islands	:	:	:	9.0	:	:	Rural
Grampian	:	:	:	8.1	:	:	Predominantly rural
Northern Ireland	7.7	6.4	5.0	6.5	:	:	Predominantly rural

Source: Eurostat (New Cronos).

Kilometres of railway line per 1 000 square kilometres

Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Belgium	**130**	**122**	**114**	**110**	**111**	**0.4**	
Rég. Bruxelles-Cap./Brussels Hfdst.Gew.	826	842	863	:	:	:	Urban
Antwerpen	130	131	138	:	:	:	Predominantly urban
Limburg (B)	109	106	97	:	:	:	Predominantly urban
Oost-Vlaanderen	169	164	159	:	:	:	Predominantly urban
Vlaams Brabant	:	:	:	:	:	:	Predominantly urban
West-Vlaanderen	99	96	96	:	:	:	Predominantly urban
Brabant Wallon	:	:	:	:	:	:	Predominantly urban
Hainaut	193	162	140	:	:	:	Predominantly urban
Liège	133	112	106	:	:	:	Predominantly urban
Luxembourg (B)	76	75	71	:	:	:	Intermediate
Namur	100	89	76	:	:	:	Intermediate
Denmark	**57**	**57**	**55**	**54**	**55**	**1.9**	**Intermediate**
Germany	**80**	**77**	**75**	**121**	**121**	**0.0**	
Stuttgart	:	:	:	:	:	:	Predominantly urban
Karlsruhe	:	:	:	:	:	:	Predominantly urban
Freiburg	:	:	:	:	:	:	Intermediate
Tübingen	:	:	:	:	:	:	Intermediate
Oberbayern	:	:	:	:	:	:	Intermediate
Niederbayern	:	:	:	:	:	:	Intermediate
Oberpfalz	:	:	:	:	:	:	Intermediate
Oberfranken	:	:	:	:	:	:	Intermediate
Mittelfranken	:	:	:	:	:	:	Predominantly urban
Unterfranken	:	:	:	:	:	:	Intermediate
Schwaben	:	:	:	:	:	:	Intermediate
Berlin	:	:	:	:	:	:	Urban
Brandenburg	:	:	:	:	:	:	Intermediate
Bremen	332	329	351	:	:	:	Urban
Hamburg	253	311	311	:	:	:	Urban
Darmstadt	:	:	:	:	:	:	Predominantly urban
Giessen	:	:	:	:	:	:	Intermediate
Kassel	:	:	:	:	:	:	Intermediate
Mecklenburg-Vorpommern	:	:	:	:	:	:	Intermediate
Braunschweig	:	:	:	:	:	:	Intermediate
Hannover	:	:	:	:	:	:	Intermediate
Lüneburg	:	:	:	:	:	:	Predominantly rural
Weser-Ems	:	:	:	:	:	:	Intermediate
Düsseldorf	:	:	:	:	:	:	Predominantly urban
Köln	:	:	:	:	:	:	Predominantly urban
Münster	:	:	:	:	:	:	Predominantly urban
Detmold	:	:	:	:	:	:	Predominantly urban
Arnsberg	:	:	:	:	:	:	Predominantly urban
Koblenz	:	:	:	:	:	:	Intermediate
Trier	:	:	:	:	:	:	Intermediate
Rheinhessen-Pfalz	:	:	:	:	:	:	Predominantly urban
Saarland	191	186	148	:	:	:	Predominantly urban
Sachsen	:	:	:	:	:	:	Predominantly urban
Dessau	:	:	:	:	:	:	Intermediate
Halle	:	:	:	:	:	:	Intermediate
Magdeburg	:	:	:	:	:	:	Intermediate
Schleswig-Holstein	89	86	83	:	:	:	Intermediate
Thüringen	:	:	:	:	:	:	Intermediate

Source: Eurostat (New Cronos).

Kilometres of railway line per 1 000 square kilometres (continued)

Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Greece	**19**	**19**	**19**	**19**	**19**	**0.0**	
Anatoliki Makedonia, Thraki	:	:	28	29	29	0.0	Rural
Kentriki Makedonia	29	28	28	28	28	0.0	Predominantly rural
Dytiki Makedonia	:	:	14	13	13	0.0	Rural
Thessalia	24	24	23	23	23	0.0	Predominantly rural
Ipeiros	46	46	:	:	:	:	Rural
Ionia Nisia	:	:	:	:	:	:	Rural
Dytiki Ellada	58	58	31	25	25	0.0	Rural
Sterea Ellada	:	:	15	18	18	0.0	Rural
Peloponnisos	:	:	24	26	26	0.0	Rural
Attiki	:	:	40	34	34	0.0	Predominantly urban
Voreio Aigaio	:	:	:	:	:	:	Rural
Notio Aigaio	:	:	:	:	:	:	Rural
Kriti	:	:	:	:	:	:	Rural
Spain	**:**	**25**	**28**	**24**	**24**	**0.0**	
Galicia	:	26	31	32	:	:	Predominantly rural
Asturias	:	19	65	21	:	:	Predominantly rural
Cantabria	:	22	53	22	:	:	Predominantly rural
Pais Vasco	:	34	73	41	:	:	Predominantly rural
Navarra	:	23	23	21	:	:	Rural
Rioja	:	25	25	31	:	:	Rural
Aragon	:	20	20	21	:	:	Rural
Madrid	:	68	68	79	:	:	Predominantly urban
Castilla-Leon	:	29	32	22	:	:	Rural
Castilla-La Mancha	:	18	16	16	:	:	Rural
Extremadura	:	20	21	19	:	:	Rural
Cataluna	:	42	48	41	:	:	Predominantly rural
Comunidad Valenciana	:	33	42	31	:	:	Predominantly rural
Baleares	:	:	6	:	:	:	Predominantly rural
Andalucia	:	24	23	25	:	:	Predominantly rural
Murcia	:	35	37	31	:	:	Predominantly rural
Ceuta Y Melilla	:	:	:	:	:	:	Urban
Canarias	:	:	:	:	:	:	
France	**63**	**64**	**63**	**59**	**59**	**-0.3**	
Ile De France	134	140	143	151	154	1.9	Predominantly urban
Champagne-Ardenne	70	67	67	63	63	-0.1	Predominantly rural
Picardie	84	86	85	82	81	-1.3	Predominantly rural
Haute-Normandie	93	93	91	83	82	-0.4	Predominantly rural
Centre	62	62	65	62	62	-0.7	Predominantly rural
Basse-Normandie	64	65	63	50	50	0.1	Predominantly rural
Bourgogne	62	72	70	66	65	-1.1	Predominantly rural
Nord-Pas-De-Calais	111	112	107	117	117	-0.3	Predominantly urban
Lorraine	98	93	90	79	79	0.1	Predominantly rural
Alsace	103	103	101	96	96	0.1	Intermediate
Franche-Comté	68	68	67	59	57	-2.9	Predominantly rural
Pays De La Loire	61	62	60	53	53	-0.3	Predominantly rural
Bretagne	54	52	50	43	43	0.0	Predominantly rural
Poitou-Charentes	59	59	57	49	49	-0.1	Predominantly rural
Aquitaine	47	45	44	41	41	-0.2	Predominantly rural
Midi-Pyrénées	43	43	42	39	38	-1.1	Predominantly rural
Limousin	60	59	57	55	55	0.0	Predominantly rural
Rhône-Alpes	61	62	61	62	62	0.1	Predominantly rural
Auvergne	62	62	59	57	57	0.1	Predominantly rural

Source: Eurostat (New Cronos).

Kilometres of railway line per 1 000 square kilometres (continued)

Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Languedoc-Roussillon	56	57	57	51	51	-0.3	Predominantly rural
Provence-Alpes-Côte d'Azur	44	44	44	41	41	0.3	Predominantly rural
Corse	:	:	:	27	27	0.0	Rural
Guadeloupe	:	:	:	:	:	:	
Martinique	:	:	:	:	:	:	
Guyane	:	:	:	:	:	:	
Réunion	:	:	:	:	:	:	
Ireland	**29**	**28**	**28**	**28**	**28**	**-0.1**	**Predominantly rural**
Italy	**54**	**54**	**65**	**53**	**53**	**0.1**	
Piemonte	75	75	79	:	:	:	Predominantly rural
Valle D'Aosta	25	25	25	:	:	:	Rural
Liguria	90	90	94	:	:	:	Predominantly rural
Lombardia	64	64	78	:	:	:	Predominantly urban
Trentino-Alto Adige	30	31	35	:	:	:	Predominantly rural
Veneto	63	61	63	:	:	:	Intermediate
Friuli-Venezia Giulia	65	66	64	:	:	:	Intermediate
Emilia-Romagna	47	47	63	:	:	:	Predominantly rural
Toscana	55	57	64	:	:	:	Predominantly rural
Umbria	43	46	64	:	:	:	Predominantly rural
Marche	45	45	40	:	:	:	Predominantly rural
Lazio	63	64	74	:	:	:	Predominantly rural
Abruzzo	49	49	64	:	:	:	Predominantly rural
Molise	58	58	58	:	:	:	Predominantly rural
Campania	73	74	93	:	:	:	Predominantly urban
Puglia	45	44	79	:	:	:	Predominantly rural
Basilicata	36	36	49	:	:	:	Rural
Calabria	57	57	72	:	:	:	Predominantly rural
Sicilia	60	60	61	:	:	:	Predominantly rural
Sardegna	18	18	43	:	:	:	Predominantly rural
Luxembourg (Grand-Duché)	**104**	**104**	**105**	**106**	**106**	**-0.4**	**Intermediate**
Netherlands	**70**	**69**	**68**	**67**	**68**	**2.0**	
Groningen	70	64	:	:	:	:	Intermediate
Friesland	30	28	:	:	:	:	Predominantly rural
Drenthe	46	40	:	:	:	:	Predominantly rural
Overijssel	:	89	:	:	:	:	Intermediate
Gelderland	:	95	:	:	:	:	Predominantly urban
Flevoland	:	:	:	:	:	:	Predominantly rural
Utrecht	123	146	:	:	:	:	Predominantly urban
Noord-Holland	78	73	:	:	:	:	Predominantly urban
Zuid-Holland	92	104	:	:	:	:	Predominantly urban
Zeeland	28	28	:	:	:	:	Predominantly rural
Noord-Brabant	76	67	:	:	:	:	Predominantly urban
Limburg (NL)	128	126	:	:	:	:	Predominantly urban
Austria	**70**	**69**	**67**	**67**	**67**	**0.1**	
Burgenland	52	52	44	44	44	0.0	Predominantly rural
Niederösterreich	116	115	111	110	110	0.0	Predominantly rural
Wien	434	410	427	434	434	0.0	Urban
Kärnten	60	61	62	62	62	0.0	Predominantly rural
Steiermark	50	51	49	48	48	0.0	Predominantly rural
Oberösterreich	78	74	74	76	76	0.0	Predominantly rural
Salzburg	42	42	43	43	43	0.0	Predominantly rural
Tirol	32	32	32	35	35	0.0	Predominantly rural
Vorarlberg	55	42	42	42	42	0.0	Predominantly rural

Source: Eurostat (New Cronos).

Kilometres of railway line per 1 000 square kilometres (continued)

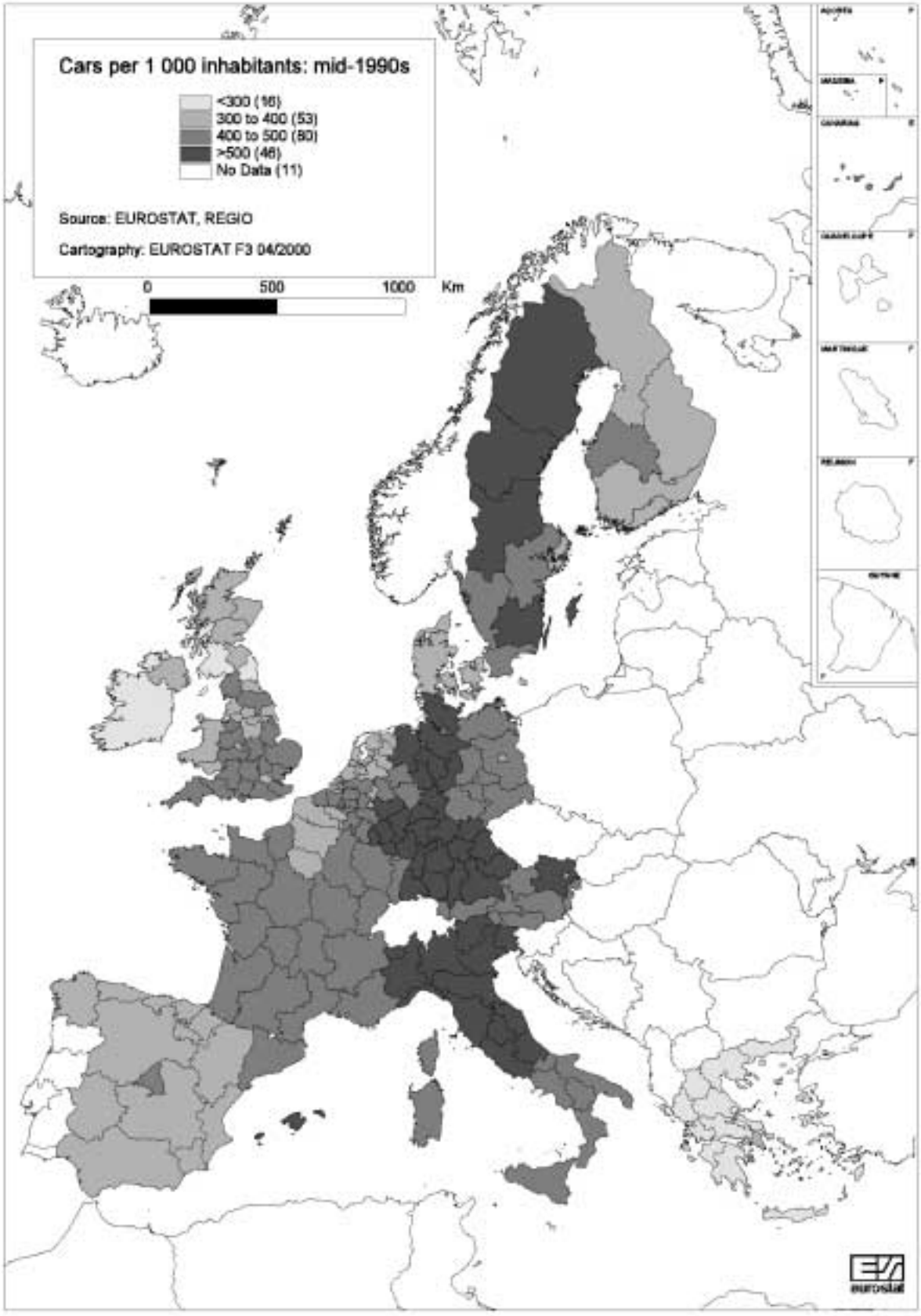
Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Portugal	**:**	**39**	**34**	**31**	**31**	**0.0**	
Norte	:	:	33	28	:	:	Predominantly rural
Centro (P)	:	:	34	32	:	:	Predominantly rural
Lisboa E Vale Do Tejo	:	:	47	53	:	:	Intermediate
Alentejo	:	:	32	26	:	:	Rural
Algarve	:	:	36	33	:	:	Predominantly rural
Acores	:	:	:	:	:	:	
Madeira	:	:	:	:	:	:	
Finland	**:**	**:**	**17**	**17**	**17**	**0.0**	
Uusimaa	:	:	:	:	41	:	Predominantly rural
Etelae-Suomi	:	:	:	:	27	:	Rural
Itae-Suomi	:	:	:	:	21	:	Rural
Vaeli-Suomi	:	:	:	:	21	:	Rural
Pohjois-Suomi	:	:	:	:	8	:	Rural
Ahvenanmaa/Aaland	:	:	:	:	:	:	Rural
Sweden	**:**	**:**	**:**	**26**	**27**	**0.8**	
Stockholm	:	:	:	48	61	27.1	Intermediate
Oestra Mellansverige	:	:	:	46	46	0.0	Predominantly rural
Smaaland Med Oearna	:	:	:	36	36	0.0	Rural
Sydsverige	:	:	:	64	64	0.0	Predominantly rural
Vaestsverige	:	:	:	52	52	0.0	Predominantly rural
Norra Mellansverige	:	:	:	28	28	0.0	Rural
Mellersta Norrland	:	:	:	20	20	0.0	Rural
Oevre Norrland	:	:	:	13	13	0.0	Rural
United Kingdom	**75**	**71**	**70**	**70**	**71**	**0.6**	
Cleveland, Durham	:	:	:	:	:	:	Predominantly urban
Cumbria	:	:	:	:	:	:	Predominantly rural
Northumberland,Tyne And Wear	:	:	:	:	:	:	Predominantly urban
Humberside	:	:	:	:	:	:	Intermediate
North Yorkshire	:	:	:	:	:	:	Predominantly rural
South Yorkshire	:	:	:	:	:	:	Predominantly urban
West Yorkshire	:	:	:	:	:	:	Predominantly urban
Derbyshire, Nottinghamshire	:	:	:	:	:	:	Predominantly urban
Leics., Northamptonshire	:	:	:	:	:	:	Predominantly urban
Lincolnshire	:	:	:	:	:	:	Intermediate
East Anglia	:	:	:	:	:	:	Intermediate
Bedfordshire, Hertfordshire	:	:	:	:	:	:	Predominantly urban
Berks.,Bucks., Oxfordshire	:	:	:	:	:	:	Predominantly urban
Surrey, East-West Sussex	:	:	:	:	:	:	Predominantly urban
Essex	:	:	:	:	:	:	Predominantly urban
Greater London	:	:	:	:	:	:	Urban
Hampshire, Isle Of Wight	:	:	:	:	:	:	Predominantly urban
Kent	:	:	:	:	:	:	Predominantly urban
Avon, Gloucs., Wiltshire	:	:	:	:	:	:	Intermediate
Cornwall, Devon	:	:	:	:	:	:	Predominantly rural
Dorset, Somerset	:	:	:	:	:	:	Predominantly rural
Hereford-Worcs., Warwicks.	:	:	:	:	:	:	Intermediate
Shropshire, Staffordshire	:	:	:	:	:	:	Intermediate
West Midlands (County)	:	:	:	:	:	:	Urban
Cheshire	:	:	:	:	:	:	Predominantly urban
Greater Manchester	:	:	:	:	:	:	Urban
Lancashire	:	:	:	:	:	:	Predominantly urban
Merseyside	:	:	:	:	:	:	Urban

Source: Eurostat (New Cronos).

Kilometres of railway line per 1 000 square kilometres (continued)

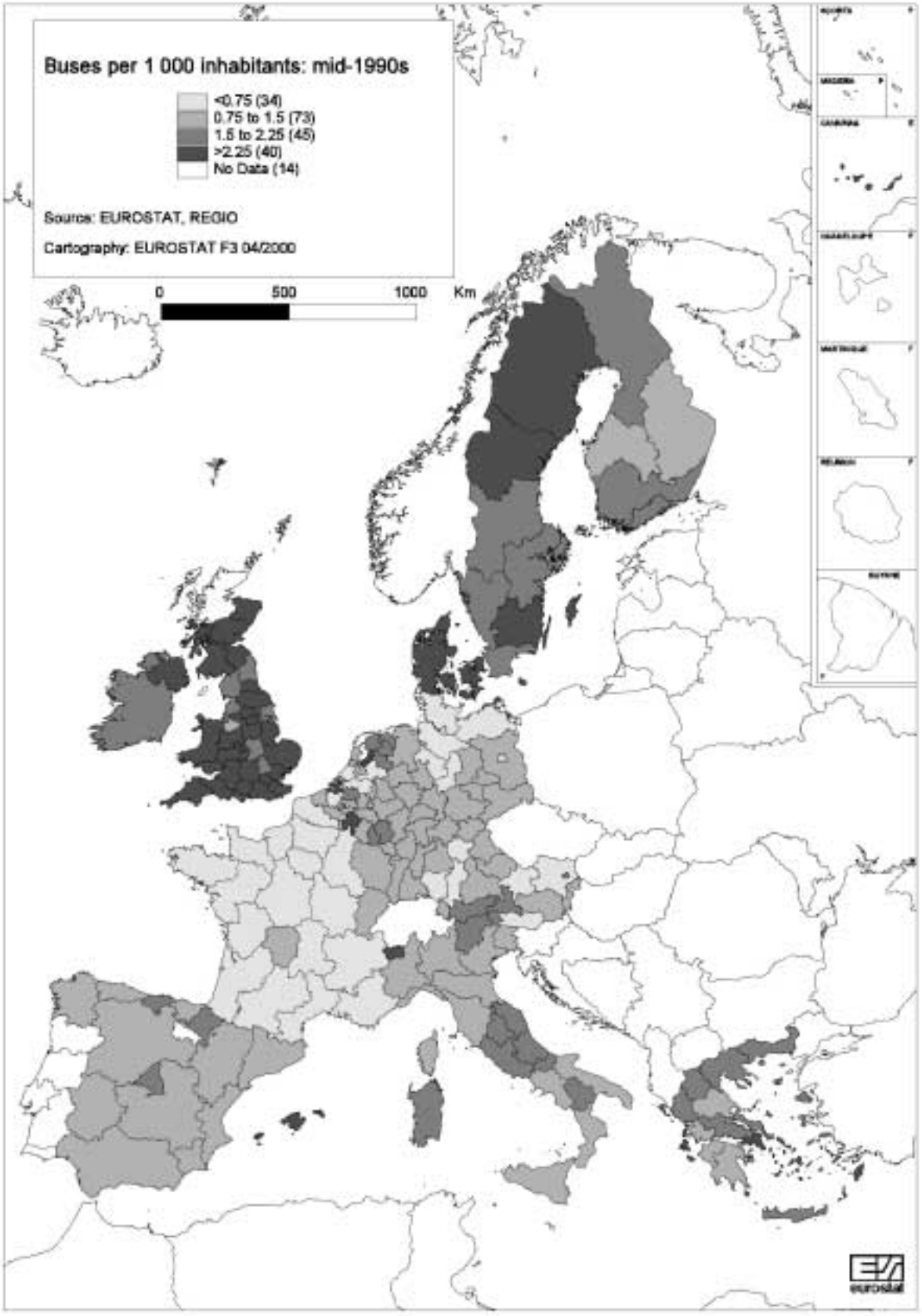
Region	1980	1985	1990	1995	1996	Percentage growth rate 1995/96	Nature of region
Clwyd, Dyfed, Gwynedd, Powys	:	:	:	:	:	:	Predominantly rural
Gwent, Mid-S-W Glamorgan	:	:	:	:	:	:	Predominantly urban
Bord.-Centr.-Fife-Loth.-Tay.	:	:	:	:	:	:	Predominantly rural
Dumfr.-Galloway, Strathclyde	:	:	:	:	:	:	Predominantly rural
Highlands, Islands	:	:	:	:	:	:	Rural
Grampian	:	:	:	:	:	:	Predominantly rural
Northern Ireland	25	25	25	:	:	:	Predominantly rural

Source: Eurostat (New Cronos).



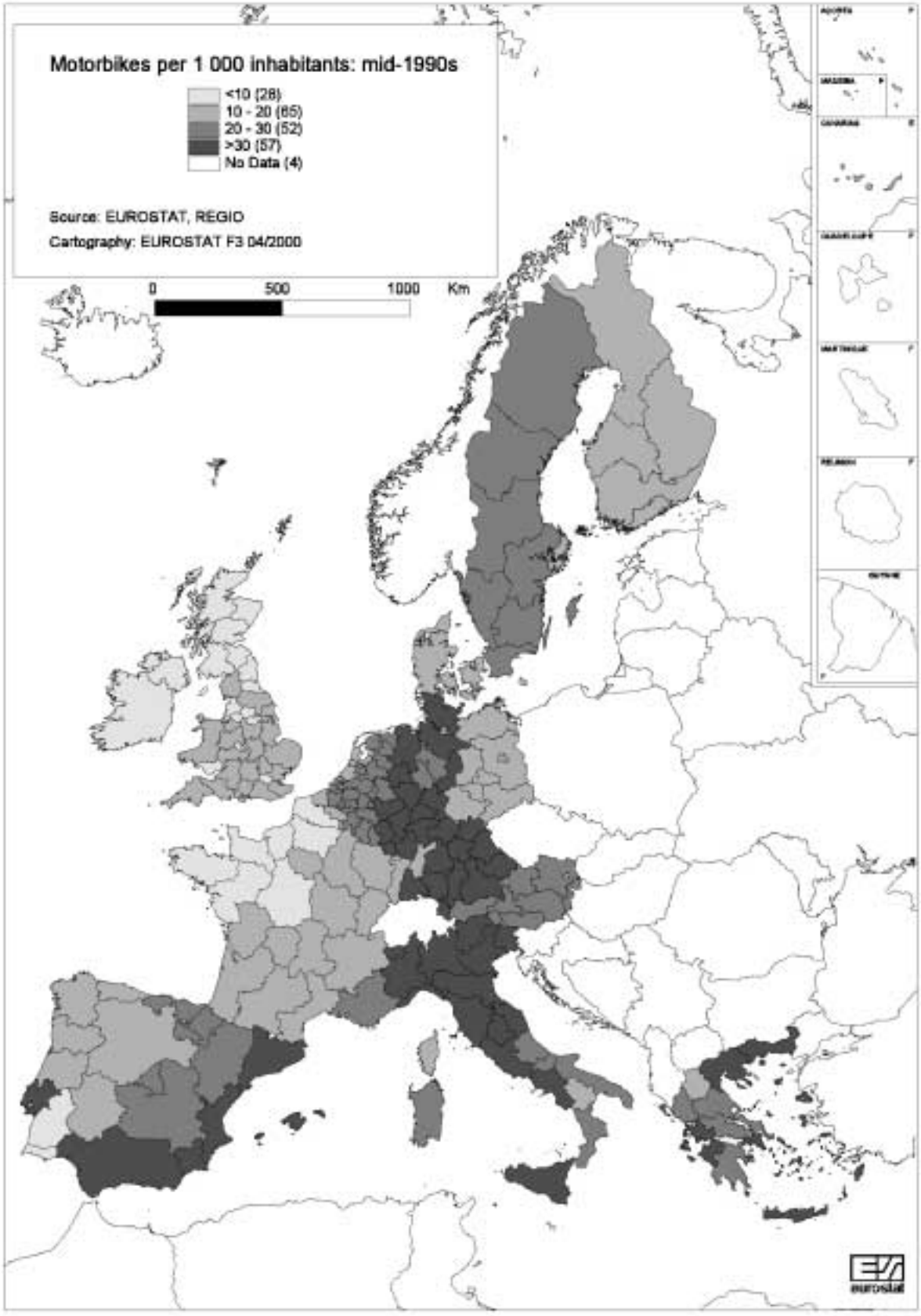
Map 1: Regional distribution of passenger car density

Source: Eurostat (New Cronos)



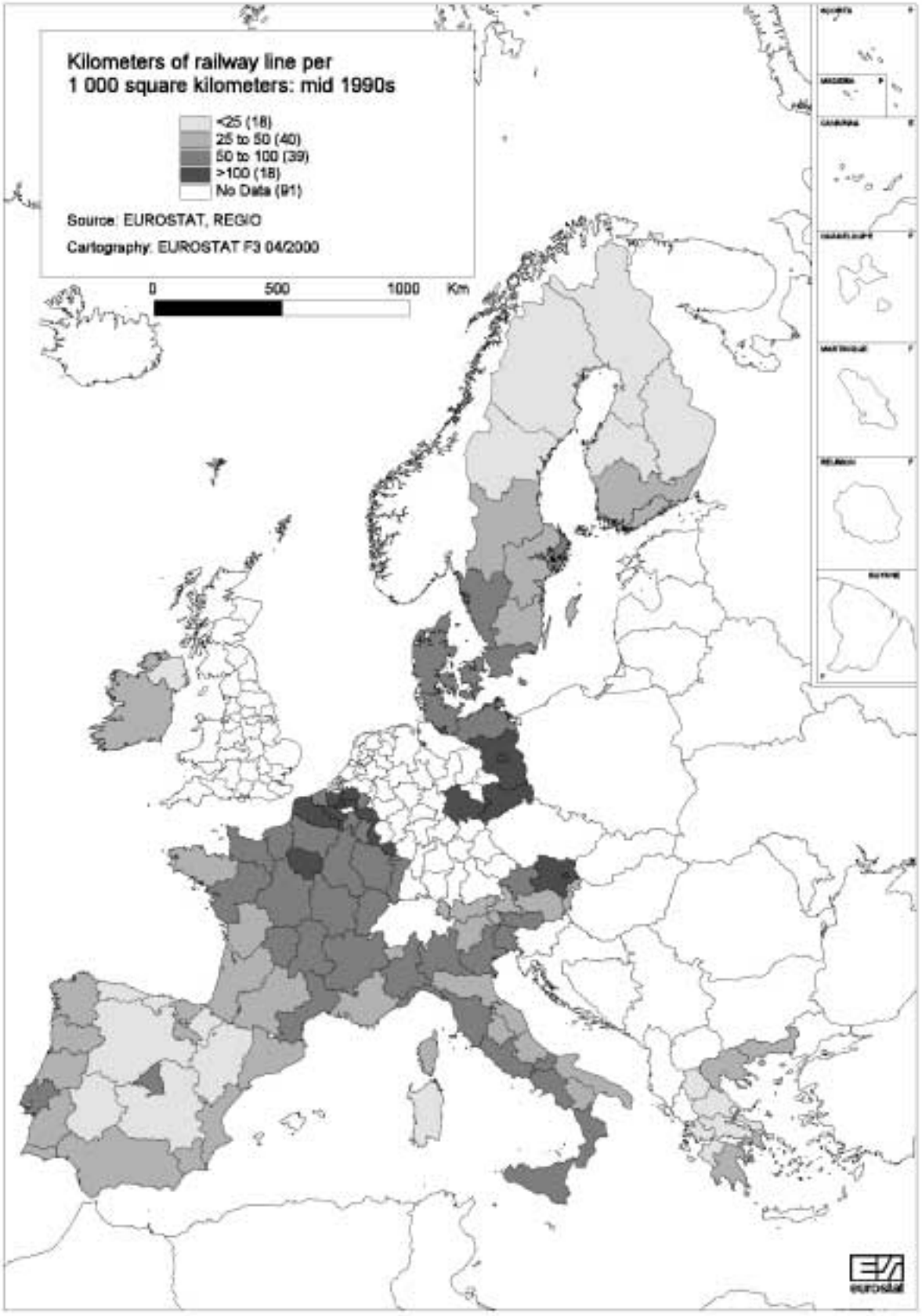
Map 2: Regional distribution of bus density

Source: Eurostat (New Cronos)



Map 3: Regional distribution of motorbike density

Source: Eurostat (New Cronos)



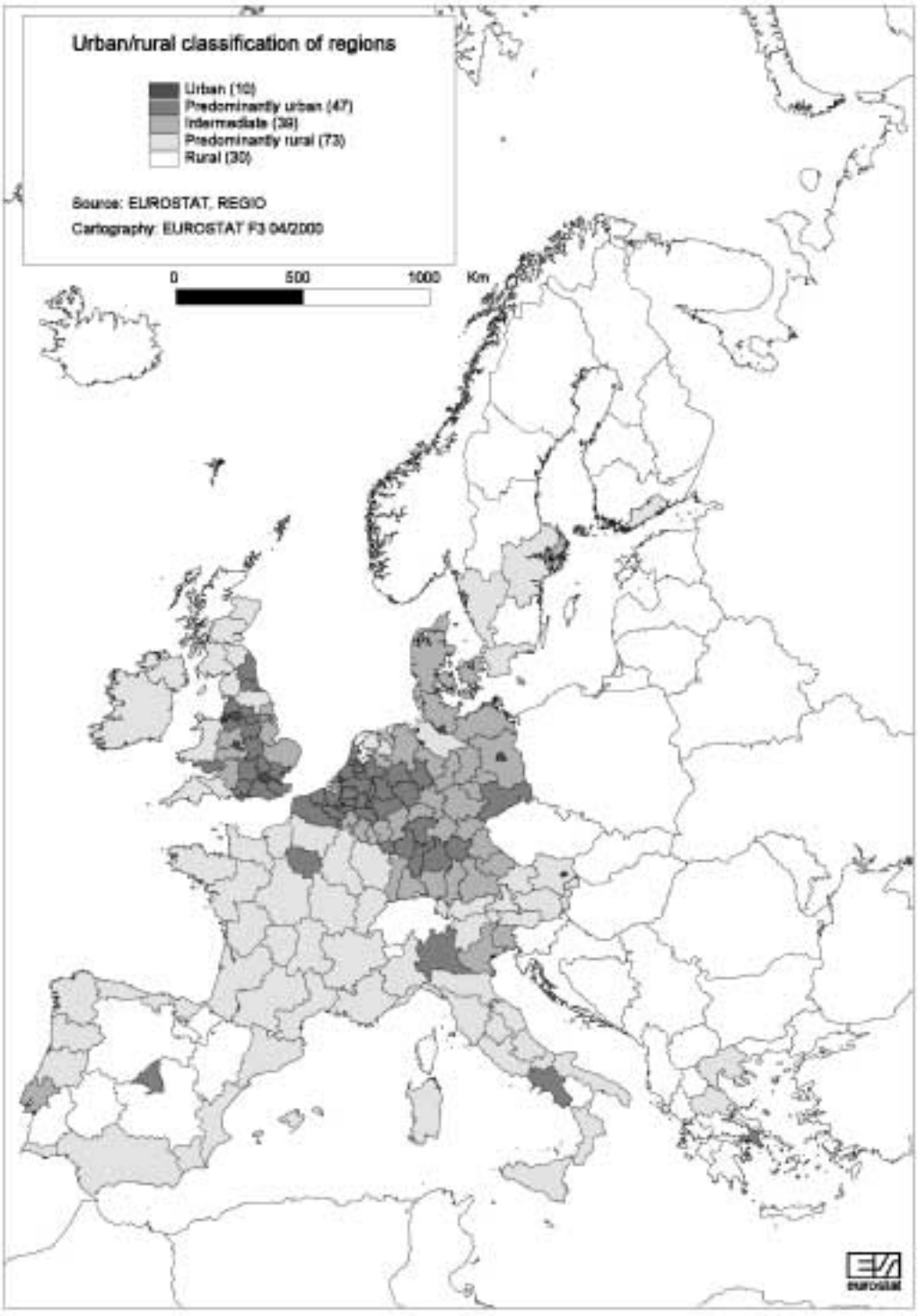
Map 4: Regional distribution of railway network density

Source: Eurostat (New Cronos)

Notes to Chapter 2

Vehicles per 1 000 inhabitants

The regions given here are those of the March 1995 version of NUTS (Nomenclature of Territorial Units for Statistics: ISO-3166) at level 2. The classification of regions into urban/rural groups is based on the combination of population density and the percentage of built-up area in each region. This classification indicates the general nature of the region. The large variation in size of these regions means that regions classified here as "urban" may contain rural areas and vice versa.



CHAPTER 3: TRANSPORT VOLUME AND INTENSITY

- **TRANSPORT VOLUME AND INTENSITY**

The volumes of passenger and freight transport and their respective modal split are major factors in the generation of pressures on the environment. The normal units of measurement for transport are the passenger-kilometre (pkm) and tonne-kilometre (tkm), which represent the movement of one passenger or one tonne over a distance of one kilometre. It should, however, be borne in mind that pkm and tkm have a bias towards longer-distance modes and means of transport. This section includes tables of pkm and tkm by mode and means of transport, as well as per unit of GDP and per person.

Passenger transport
Over the 25-year period between 1970 and 1995, passenger-kilometres have more than doubled (102%), representing an average increase of 2.9% per year. This is slightly higher than the rate of increase in GDP. The average distance travelled per person has increased at an average rate of 2.5% per year. Travel by all means of transport increased over this period in terms of passenger-kilometres, and for all means except trams and metro in terms of the average distance per person. However, car and air transport have far outstripped the growth of other means, and are the only two means which have increased their market share.

Freight transport
Tonne-kilometres of freight increased by 97% over the period 1970 to 1995 at the average rate of 2.7% per year, which is slightly higher than GDP. The average tonne-kilometres per person increased at the average rate of 2.4% per year. During this period there was a major decline in freight transport by rail, as well as large increases in road and short sea shipping, which have both increased their modal share. The share of all other modes has declined.

Passenger transport (EU-15)

	All means	Motorbike	Car	Bus	Tram / metro	Rail	Water	Air	Walking	Cycling
										(1 000 mio pkm)
1970	2 477	97	1 583	270	38	217	13	43	155	60
1975	2 993	109	1 954	315	39	241	16	96	161	62
1980	3 436	115	2 333	347	40	253	20	96	165	67
1985	3 884	115	2 614	350	45	262	22	254	151	71
1990	4 556	112	3 302	369	48	274	26	204	149	71
1994	4 859	118	3 584	334	41	270	27	254	161	70
1995	5 005	121	3 656	384	41	270	27	274	163	70
1996	:	:	3 710	386	41	279	:	290	:	:
1997	:	:	3 787	393	41	282	:	322	:	:
										(pkm per 1 000 ecu GDP)
1970	809	32	517	88	12	71	4	14	51	20
1975	846	31	552	89	11	68	5	27	45	18
1980	834	28	567	84	10	61	5	23	40	16
1985	876	26	590	79	10	59	5	57	34	16
1990	876	22	635	71	9	53	5	39	29	14
1994	875	21	646	60	7	49	5	46	29	13
1995	881	21	643	67	7	48	5	48	29	12
1996	:	:	642	67	7	48	:	50	:	:
1997	:	:	639	66	7	48	:	54	:	:
										(1 000 pkm per capita)
1970	7 280	286	4 654	793	112	671	38	126	479	177
1975	8 569	312	5 595	902	111	725	46	275	483	178
1980	9 671	323	6 568	977	112	747	55	270	489	187
1985	10 826	320	7 287	974	126	767	60	708	440	199
1990	12 501	307	9 061	1 014	131	787	72	560	428	195
1994	13 099	319	9 660	900	111	729	73	685	434	188
1995	13 453	326	9 827	1 031	109	726	73	736	437	187
1996	:	:	9 942	1 036	110	747	:	778	:	:
1997	:	:	10 128	1 050	111	755	:	860	:	:

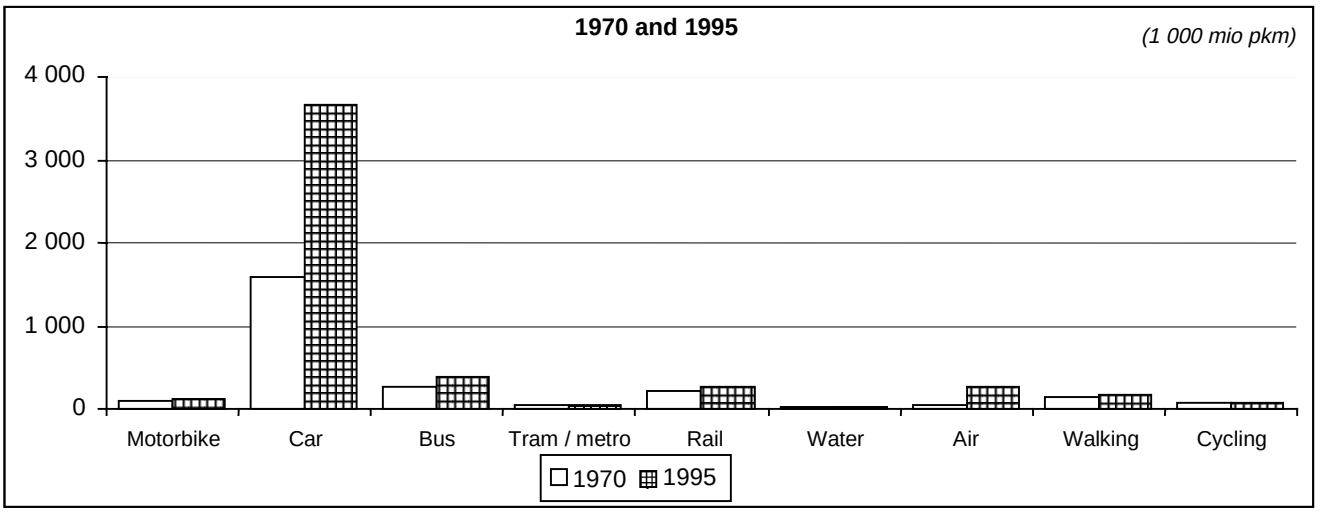


Figure 3.1: Passenger transport by means of transport in EU-15

Source: DG Energy and Transport.

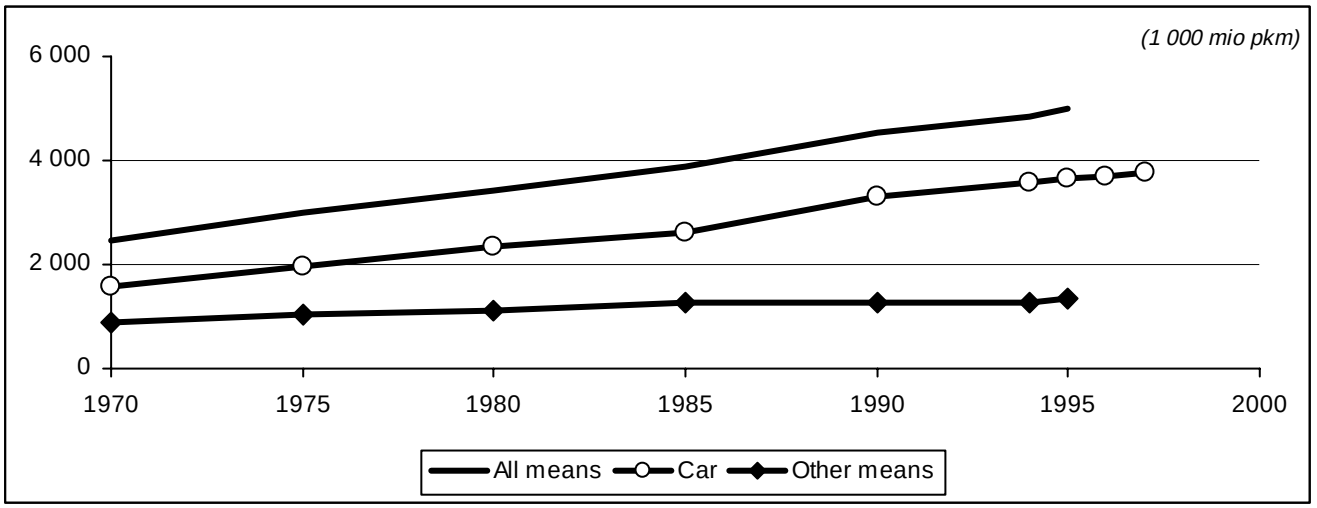


Figure 3.2: Evolution of passenger transport in EU-15 (passenger-kilometres)

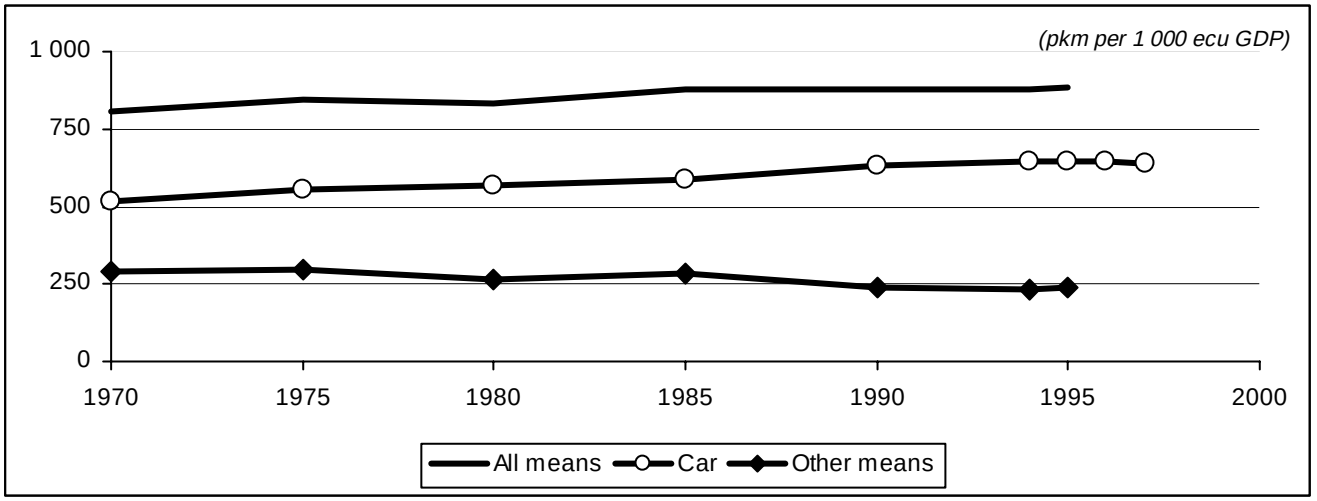


Figure 3.3: Evolution of passenger transport in EU-15 (passenger-kilometres per unit GDP)

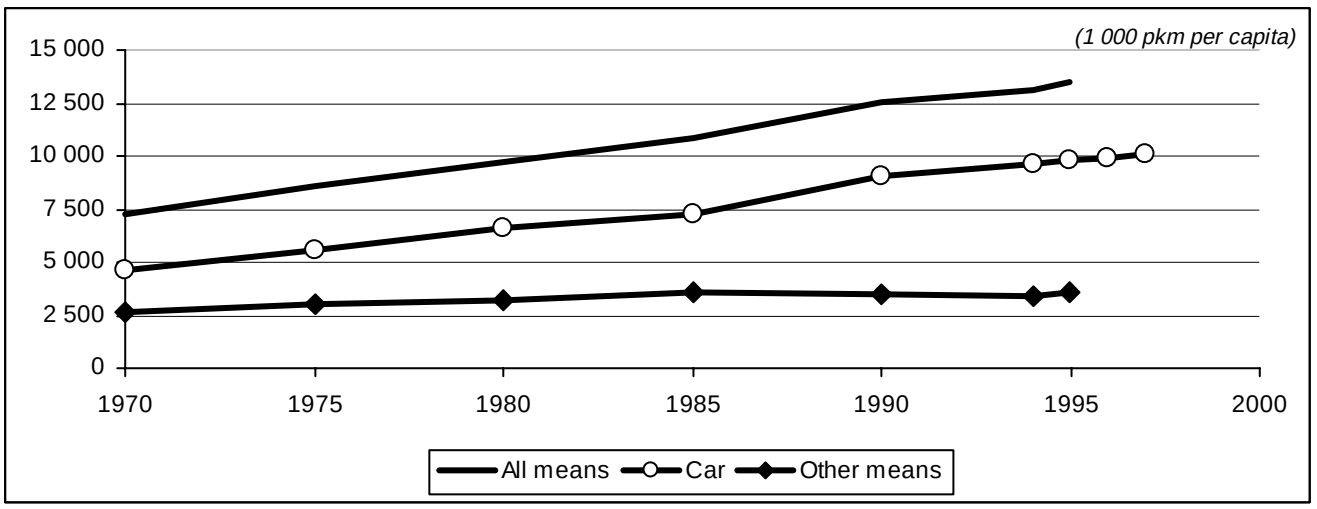


Figure 3.4: Evolution of passenger transport in EU-15 (passenger-kilometres per capita)

Passenger transport by motorbike

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(1 000 mio pkm)
1970	97.4	91.1	1.1	1.1	19.8	1.0	9.3	21.4	0.2	29.4	0.0	4.1	1.5	4.1	0.4	0.4	3.7
1975	109.0	100.6	1.2	1.1	20.0	1.4	10.9	22.0	0.2	35.8	0.0	4.1	1.5	4.4	0.6	0.5	5.3
1980	114.9	103.2	1.3	1.0	19.6	2.1	11.6	20.6	0.2	39.9	0.0	3.7	1.5	4.2	0.6	0.5	8.1
1985	114.9	102.6	1.3	0.9	17.7	3.2	12.1	18.8	0.2	42.9	0.0	3.2	1.4	4.2	0.8	0.6	7.6
1990	112.1	99.9	1.2	0.8	15.3	4.9	12.4	17.0	0.3	44.2	0.0	2.8	1.3	4.7	0.9	0.6	5.9
1994	118.3	104.7	1.3	0.6	12.0	7.9	13.7	16.5	0.3	52.0	0.0	2.7	1.3	3.9	1.0	0.7	4.4
1995	121.3	106.9	1.4	0.6	12.8	8.6	13.7	16.7	0.3	53.1	0.0	2.8	1.3	4.0	1.0	0.7	4.4
																	(pkm per 1 000 ecu GDP)
1970	31.8	38.7	11.7	17.7	27.3	29.3	45.5	38.6	12.5	60.6	4.3	32.8	21.1	162.2	7.7	3.1	7.6
1975	30.8	36.7	11.1	15.9	24.8	31.6	41.2	33.6	11.4	64.4	5.6	27.7	18.3	142.5	8.2	3.4	9.8
1980	27.9	31.8	9.8	12.1	20.7	38.3	39.8	27.2	9.5	57.8	5.0	20.6	15.0	105.6	8.1	3.6	13.6
1985	25.9	29.6	9.4	9.7	17.7	53.5	38.6	23.2	8.8	57.7	4.3	16.7	12.9	101.8	8.3	3.5	11.7
1990	21.5	24.4	7.8	8.2	13.0	74.3	31.1	18.0	7.0	51.3	3.5	12.4	10.0	87.1	8.6	3.2	7.7
1994	21.3	23.8	8.3	5.8	8.6	115.7	33.0	17.1	6.0	58.8	4.0	11.3	9.7	68.4	9.7	3.9	5.5
1995	21.3	23.8	8.2	5.5	9.1	123.9	32.1	16.9	5.4	58.3	3.9	11.3	9.5	66.9	9.2	3.8	5.4
																	(pkm per capita)
1970	286	347	112	231	255	117	274	421	64	546	59	315	196	468	93	47	66
1975	312	372	125	223	254	157	306	417	69	645	84	297	203	486	119	57	94
1980	323	374	128	189	251	221	309	382	68	707	82	262	199	430	132	64	143
1985	320	368	127	174	228	320	315	340	68	758	82	222	184	423	153	67	134
1990	307	353	121	161	193	478	318	299	71	778	79	184	162	479	183	68	102
1994	319	363	133	123	147	755	349	285	73	909	99	177	164	398	187	80	74
1995	326	370	133	121	157	823	348	287	73	927	98	180	164	398	186	80	75

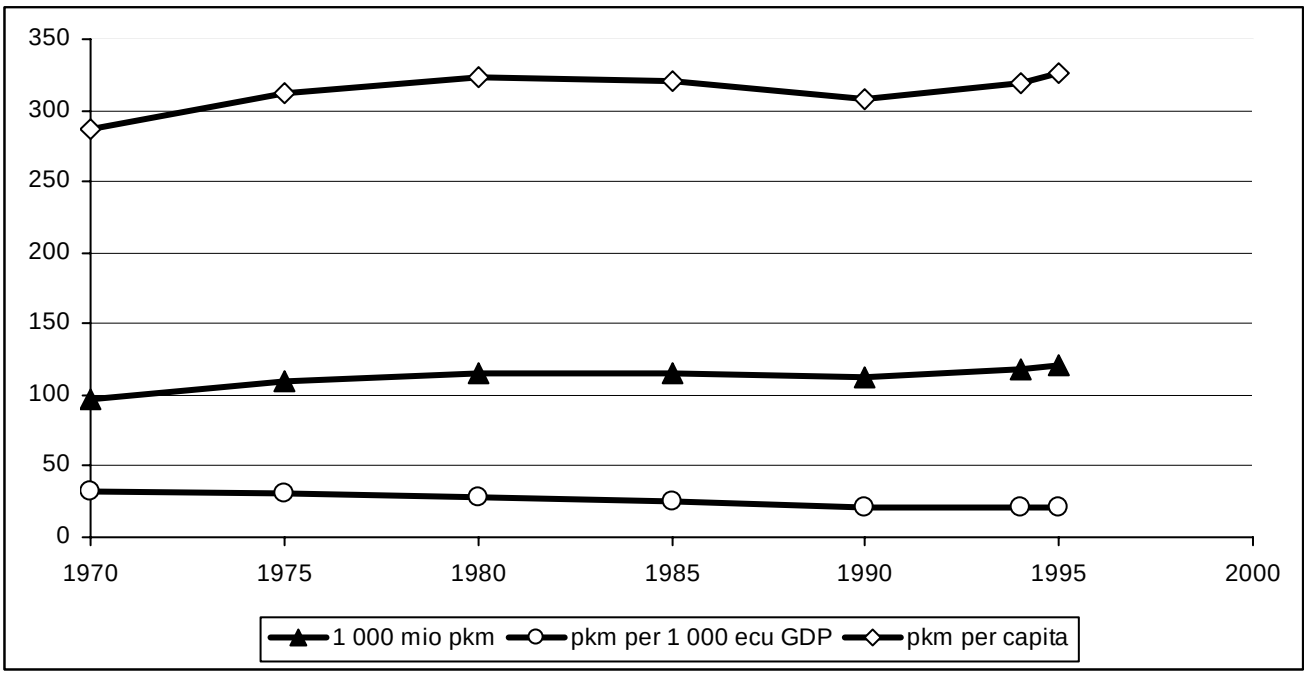


Figure 3.5: Passenger transport by motorbike in EU-15

Source: DG Energy and Transport.

Passenger transport by passenger car

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(1 000 mio pkm)
1970	1 583	1 183	49	33	395	9	64	305	15	212	2	66	33	17	24	55	304
1975	1 954	1 501	57	38	465	20	110	375	19	279	2	89	44	29	31	64	331
1980	2 333	1 805	65	38	514	28	189	453	28	324	3	107	48	41	34	67	396
1985	2 614	2 017	67	43	554	40	234	494	31	374	3	118	50	53	40	73	441
1990	3 302	2 510	81	54	683	49	282	586	36	523	4	136	62	65	51	90	600
1994	3 584	2 781	89	59	721	56	319	651	41	600	5	147	68	90	50	84	604
1995	3 656	2 840	91	61	731	59	328	664	42	615	5	147	68	100	50	87	609
1996	3 710	2 870	92	64	731	62	339	674	44	618	5	146	66	105	50	93	622
1997	3 787	2 931	94	66	741	64	350	685	45	633	5	151	67	109	52	94	633
																	(pkm per 1 000 ecu GDP)
1970	517	502	533	516	545	245	316	551	1 006	437	455	529	475	698	426	454	625
1975	552	547	525	532	577	446	417	574	957	503	441	607	520	948	459	463	613
1980	567	557	509	474	543	497	650	597	1 154	469	453	594	478	1 031	434	450	670
1985	590	582	506	471	553	678	748	610	1 113	502	472	615	464	1 275	440	449	678
1990	635	614	523	529	578	748	708	623	1 012	607	473	612	497	1 197	482	498	787
1994	646	632	556	531	519	823	769	673	954	679	464	608	503	1 562	504	472	762
1995	643	631	553	531	520	847	771	673	878	675	459	594	492	1 685	485	470	748
1996	642	628	554	536	513	867	779	674	839	674	448	573	467	1 726	471	494	748
1997	639	626	547	535	509	878	778	670	779	681	439	573	464	1 728	454	491	735
																	(pkm per capita)
1970	4 654	4 500	5 110	6 756	5 078	977	1 905	6 001	5 187	3 938	6 195	5 085	4 406	2 013	5 145	6 888	5 455
1975	5 595	5 545	5 865	7 470	5 914	2 214	3 097	7 112	5 823	5 037	6 546	6 520	5 766	3 232	6 623	7 836	5 887
1980	6 568	6 543	6 639	7 437	6 560	2 867	5 053	8 398	8 195	5 742	7 418	7 569	6 332	4 198	7 092	8 026	7 030
1985	7 287	7 239	6 833	8 447	7 128	4 060	6 100	8 943	8 616	6 602	8 992	8 142	6 589	5 294	8 058	8 683	7 780
1990	9 061	8 862	8 102	10 445	8 607	4 811	7 238	10 329	10 359	9 211	10 471	9 109	8 085	6 581	10 269	10 515	10 454
1994	9 660	9 650	8 859	11 354	8 852	5 369	8 138	11 247	11 536	10 494	11 386	9 550	8 493	9 089	9 748	9 566	10 338
1995	9 827	9 829	8 993	11 720	8 946	5 624	8 373	11 425	11 829	10 724	11 463	9 496	8 463	10 033	9 800	9 856	10 394
1996	9 942	9 903	9 101	12 065	8 921	5 886	8 640	11 551	12 066	10 762	11 325	9 396	8 150	10 574	9 834	10 485	10 583
1997	10 128	10 096	9 259	12 445	9 030	6 146	8 913	11 691	12 162	11 012	11 566	9 692	8 312	10 977	10 049	10 587	10 720

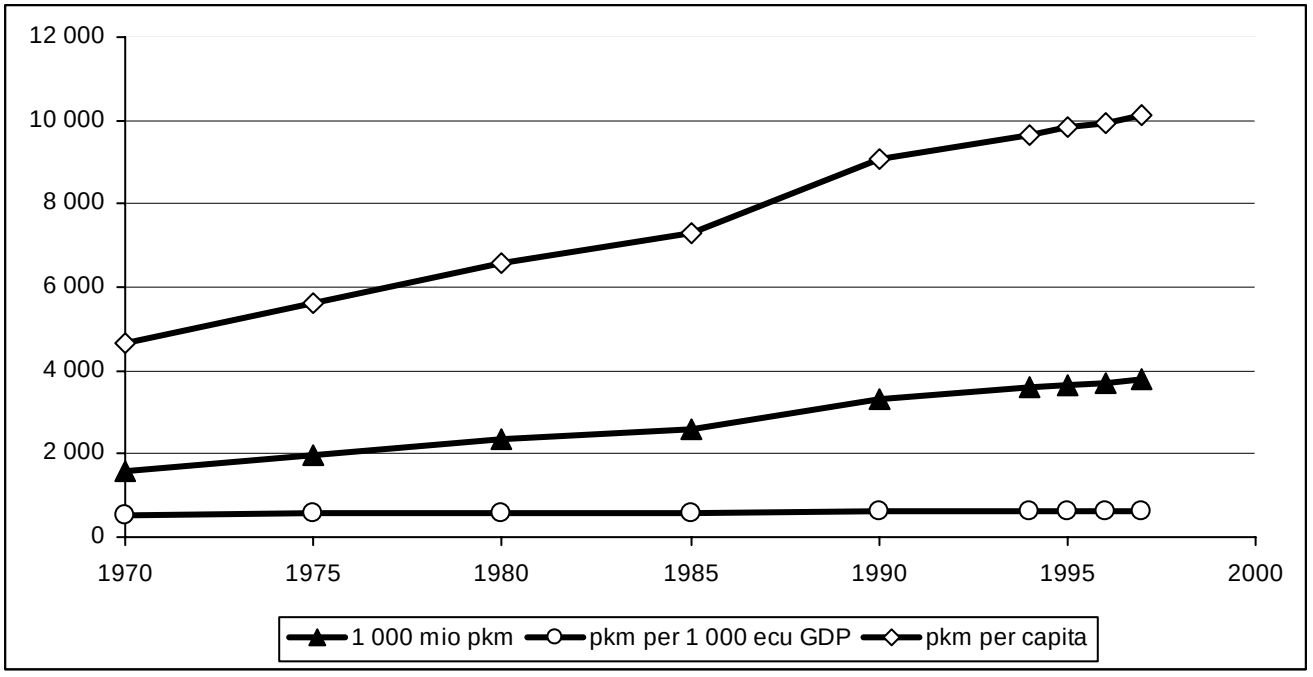


Figure 3.6: Passenger transport by passenger car in EU-15

Source: DG Energy and Transport.

Passenger transport by bus and coach

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(1 000 mio pkm)
1970	270	190	9.3	4.6	67.7	9.4	20.9	25.2	3.3	32.0	0.3	11.1	9.1	4.4	7.0	5.5	60.0
1975	315	228	9.6	5.7	82.0	12.5*	26.9	28.9	3.9*	42.3	0.3	11.8	9.5*	5.2	8.0	6.4	62.0
1980	347	265	9.1	7.3	90.0	15.6	28.1	36.0	4.5	57.8	0.3	13.2	9.8	7.6	8.5	7.3	52.0
1985	350	266	9.0	8.8	75.3	16.7*	31.8	37.0	4.2*	68.1	0.4	13.0	9.3*	9.5	8.6	9.0	49.0
1990	369	287	10.9	9.3	73.1	17.7	33.4	41.3	3.9	84.0	0.4	13.0	8.7	10.3	8.5	9.0	46.0
1994	334	291	12.0	9.5	68.6	19.6	38.1	42.6	5.0	79.3	0.4	13.9	10.8	12.6	8.0	9.2	4.3
1995	384	300	12.5	10.6	68.5	20.2	40.2	41.0	5.2	85.9	0.4	14.5	10.5	13.1	8.0	8.8	44.3
1996	386	301	11.4	11.4	68.2	20.4	37.7	41.6	5.3	88.1	0.4	14.4	12.5	13.5	8.0	9.3	44.2
1997	393	308	11.9	11.4	68.0	20.7	44.0	42.0	5.5	88.1	0.4	14.5	12.5	13.1	8.0	9.4	43.2
																	(pkm per 1 000 ecu GDP)
1970	88.1	80.9	100.8	71.3	93.5	268.3	102.8	45.5	217.0	66.0	65.0	88.5	131.4	174.1	125.7	45.0	123.5
1975	89.1	83.3	87.9	80.2	101.7	279.1*	102.0	44.2	201.9*	76.2	65.7*	80.4	112.5*	166.1	117.6	46.1	114.8
1980	84.3	81.7	70.7	90.7	95.1	280.7	96.7	47.5	186.3	83.8	50.4*	73.2	98.0	191.1	108.8	49.3	88.0
1985	78.9	76.7	67.4	96.0	75.2	280.3*	101.5	45.6	153.4*	91.5	55.2*	67.7	86.2*	228.5	95.7	55.7	75.3
1990	71.0	70.3	70.2	91.6	61.8	271.5	83.8	43.9	107.7	97.5	47.3*	58.4	69.3	189.6	80.1	49.8	60.3
1994	60.1	66.2	74.5	85.4	49.4	287.9	92.0	44.0	115.8	89.6	40.3*	57.6	79.6	217.8	81.4	51.7	5.4
1995	67.5	66.6	75.9	92.3	48.7	291.3	94.3	41.5	106.7	94.3	39.1*	58.7	75.8	221.0	77.4	47.5	54.4
1996	66.9	65.9	68.3	96.2	47.9	287.7	86.7	41.6	101.5	96.1	38.1*	56.5	88.8	221.9	74.8	49.6	53.1
1997	66.2	65.8	69.2	93.1	46.7	282.2	97.7	41.1	95.2	94.7	36.6*	54.9	86.7	207.7	70.5	49.3	50.2
																	(pkm per capita)
1970	793	724	967	933	871	1 072	619	496	1 119	595	885	851	1 219	502	1 520	684	1 079
1975	902	844	982	1 126	1 042	1 386*	757	548	1 229*	763	0 974*	863	1 247*	567	1 698	781	1 103
1980	977	960	922	1 425	1 149	1 620	752	668	1 323	1 025	0 824*	933	1 298	778	1 778	878	923
1985	974	955	909	1 721	969	1 678*	828	669	1 187*	1 203	1 053*	897	1 224*	949	1 754	1 078	864
1990	1 014	1 015	1 089	1 809	921	1 747	856	728	1 102	1 481	1 047*	869	1 127	1 043	1 705	1 052	801
1994	900	1 011	1 188	1 825	843	1 878	974	736	1 400	1 386	0 990*	904	1 345	1 267	1 572	1 048	74
1995	1 031	1 037	1 233	2 037	839	1 934	1 024	705	1 438	1 499	0 976*	938	1 305	1 316	1 566	997	756
1996	1 036	1 039	1 123	2 166	832	1 952	961	713	1 460	1 534	0 964*	927	1 551	1 360	1 561	1 052	752
1997	1 050	1 061	1 172	2 166	829	1 976	1 120	717	1 486	1 532	0 964*	929	1 551	1 319	1 561	1 063	732

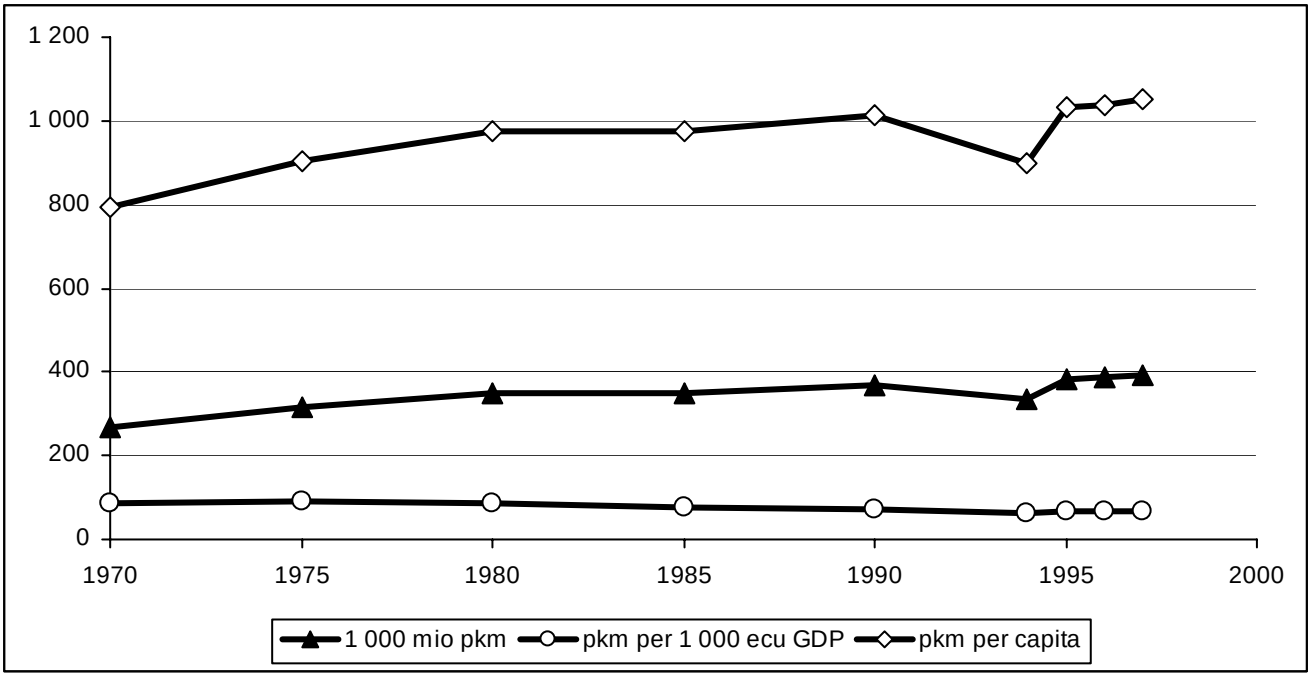


Figure 3.7: Passenger transport by bus and coach in EU-15

Source: DG Energy and Transport.

Passenger transport by tram and metro

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(1 000 mio pkm)
1970	38.2	30.9	0.9	–	14.6	0.6	3.7	6.5	–	2.2	–	1.2	0.8	0.9	0.1	1.4	5.2
1975	38.7	31.5	0.8	–	14.1	0.7	3.8	6.9	–	3.1	–	1.2	0.8	0.8	0.1	1.7	4.8
1980	39.8	32.9	0.8	–	13.8	0.7	3.9	7.7	–	3.7	–	1.4	0.8	0.7	0.1	2.0	4.3
1985	45.3	36.4	0.8	–	15.4	0.8	3.5	9.2	–	4.1	–	1.4	1.0	0.6	0.3	1.9	6.3
1990	47.6	38.4	0.7	–	15.1	0.8	4.4	10.2	–	4.6	–	1.3	1.1	0.7	0.4	1.9	6.5
1994	41.4	32.6	0.8	–	8.9	0.7	4.2	10.0	–	5.1	–	1.4	1.3	0.6	0.4	1.5	6.5
1995	40.6	31.6	0.8	–	8.5	0.7	4.3	9.0	–	5.2	–	1.4	1.5	0.5	0.4	1.4	6.8
1996	41.0	32.2	0.8	–	8.4	0.7	4.5	9.5	–	5.2	–	1.4	1.6	0.5	0.4	1.4	6.7
1997	41.5	32.5	0.8	–	8.3	0.8	4.6	9.8	–	5.2	–	1.4	1.6	0.5	0.4	1.4	6.8
																	(pkm per 1 000 ecu GDP)
1970	12.5	13.1	9.3	–	20.2	17.9	18.0	11.7	–	4.6	–	9.9	10.8	37.2	1.8	11.8	10.7
1975	10.9	11.5	6.9	–	17.4	15.8	14.5	10.6	–	5.5	–	8.3	9.5	24.2	1.5	12.3	8.9
1980	9.7	10.1	6.0	–	14.6	12.2	13.4	10.2	–	5.3	–	7.5	8.2	18.6	1.5	13.3	7.3
1985	10.2	10.5	5.9	–	15.3	12.8	11.1	11.3	–	5.6	–	7.2	9.7	15.4	3.8	11.5	9.7
1990	9.1	9.4	4.8	–	12.8	12.7	11.0	10.9	–	5.3	–	5.7	8.8	12.3	3.3	10.3	8.5
1994	7.4	7.4	4.9	–	6.4	10.6	10.0	10.3	–	5.8	–	5.8	9.9	10.1	3.8	8.5	8.2
1995	7.1	7.0	4.9	–	6.0	10.7	10.0	9.1	–	5.7	–	5.6	11.1	9.0	3.8	7.7	8.4
1996	7.1	7.1	4.8	–	5.9	10.4	10.3	9.5	–	5.7	–	5.5	11.1	8.2	3.7	7.5	8.0
1997	7.0	6.9	4.7	–	5.7	10.2	10.2	9.6	–	5.6	–	5.3	10.8	7.9	3.7	7.3	7.9
																	(pkm per capita)
1970	112	118	89	–	188	72	109	128	–	41	–	95	100	107	22	179	93
1975	111	116	78	–	179	78	108	131	–	55	–	89	106	82	21	207	85
1980	112	119	78	–	177	71	104	143	–	65	–	95	109	76	25	237	76
1985	126	131	79	–	198	77	90	166	–	73	–	96	138	64	69	223	111
1990	131	136	74	–	190	82	112	180	–	81	–	84	144	68	70	217	113
1994	111	113	78	–	109	69	106	173	–	89	–	90	167	59	73	172	111
1995	109	109	79	–	104	71	108	155	–	91	–	89	190	53	76	161	116
1996	110	111	79	–	103	71	114	163	–	91	–	90	194	50	78	158	113
1997	111	112	79	–	101	72	116	167	–	90	–	90	194	50	81	158	115

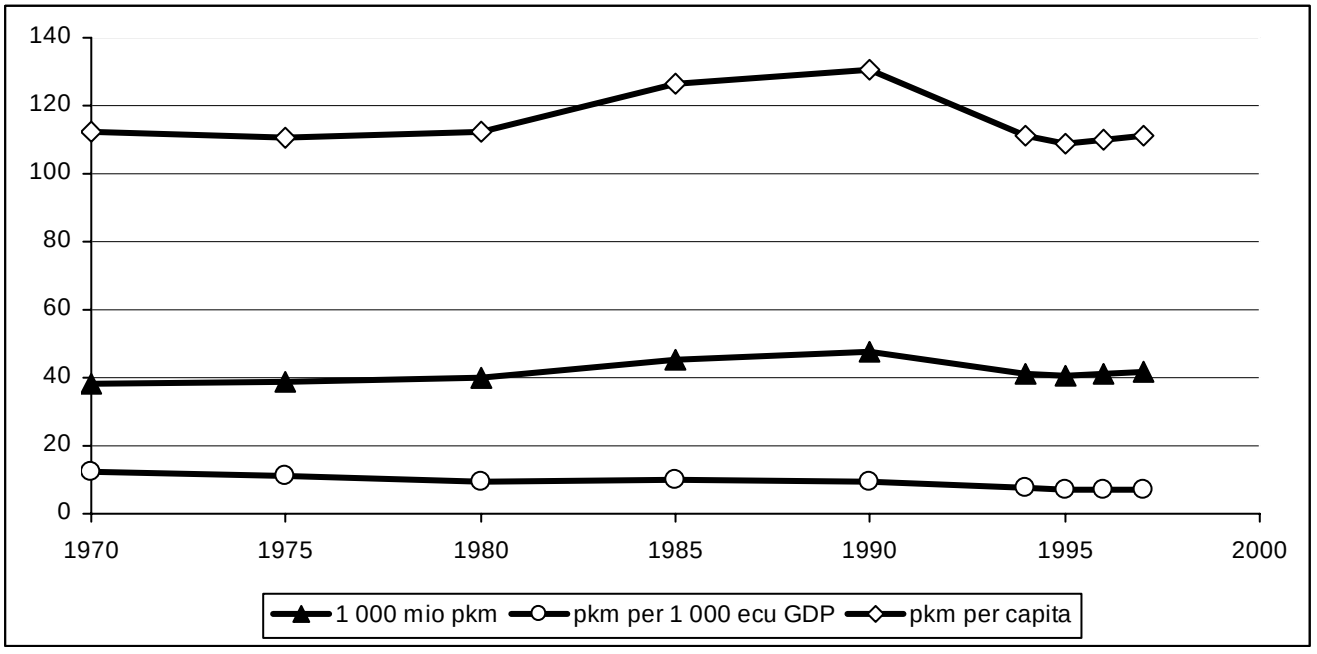


Figure 3.8: Passenger transport by tram and metro in EU-15

Source: DG Energy and Transport.

Passenger transport by rail

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(1 000 mio pkm)
1970	216.8	176.4	7.6	3.6	56.9	1.5	15.0	41.0	0.8	34.9	0.2	8.0	6.4	3.5	2.2	4.8	30.6
1975	241.1	200.0	7.7	3.4	60.5	1.6	17.6	50.7	0.9	39.2	0.2	8.5	6.7	4.9	3.1	5.8	30.4
1980	253.0	209.4	7.0	4.5	63.0	1.5	14.8	54.7	1.0	42.9	0.2	8.9	7.6	6.1	3.2	7.2	30.4
1985	262.4	218.8	6.6	4.9	66.0	1.7	17.2	62.1	1.0	40.3	0.2	9.0	7.5	5.7	3.2	7.0	29.9
1990	274.2	227.6	6.5	5.1	62.1	2.0	16.7	63.8	1.2	48.3	0.2	11.1	8.7	5.7	3.3	6.2	33.4
1994	270.5	229.1	6.6	5.1	62.4	1.4	16.1	58.7	1.3	51.7	0.3	14.4	9.4	5.1	3.0	5.9	29.0
1995	270.3	227.3	6.8	5.0	63.5	1.6	16.0	55.3	1.3	52.4	0.3	14.0	9.8	4.8	3.2	6.2	30.2
1996	278.8	233.4	6.8	4.9	64.7	1.8	16.3	59.5	1.3	52.8	0.3	14.1	9.9	4.5	3.3	6.4	32.3
1997	282.3	234.4	7.0	5.2	64.0	1.9	17.3	61.6	1.4	52.1	0.3	14.4	8.3	4.6	3.4	6.5	34.4
																	(pkm per 1 000 ecu GDP)
1970	70.8	74.9	81.8	55.1	78.5	43.6	73.7	74.0	49.6	71.9	44.4	63.9	93.0	141.7	38.7	39.0	62.9
1975	68.2	72.9	69.9	47.4	75.0	34.6	67.0	77.6	46.5	70.5	43.9	57.9	79.6	156.6	46.1	41.9	56.3
1980	61.5	64.6	54.2	56.1	66.6	26.3	51.0	72.1	42.7	62.2	41.3	49.3	75.9	152.8	41.2	48.6	51.5
1985	59.2	63.1	49.4	53.5	65.8	29.1	55.0	76.5	37.3	54.2	32.7	46.9	69.9	137.7	35.9	43.5	45.9
1990	52.7	55.7	42.3	49.8	52.5	30.3	42.0	67.8	34.2	56.1	24.6	49.7	69.5	104.3	31.4	34.2	43.8
1994	48.7	52.0	41.2	45.7	44.9	20.6	39.0	60.7	29.2	58.4	29.1	59.8	69.2	88.7	30.9	33.1	36.6
1995	47.6	50.5	41.0	43.4	45.2	22.6	37.6	56.0	26.7	57.5	28.0	56.6	70.8	81.4	30.8	33.5	37.1
1996	48.2	51.1	40.7	41.5	45.5	24.6	37.4	59.5	24.8	57.6	27.0	55.3	70.1	74.0	30.4	34.1	38.8
1997	47.6	50.0	40.6	42.5	44.0	25.7	38.5	60.2	24.2	56.0	27.0	54.7	57.7	72.3	29.8	33.8	40.0
																	(pkm per capita)
1970	671	718	785	721	937	174	444	807	256	648	605	614	862	409	468	592	550
1975	725	788	781	666	978	172	497	962	283	706	652	622	883	534	665	710	541
1980	747	808	707	881	1023	152	397	1014	303	761	676	628	1005	622	673	866	540
1985	767	835	667	960	1081	174	449	1123	289	712	624	622	992	572	658	841	527
1990	787	852	656	984	981	195	430	1124	350	851	545	740	1131	573	668	723	582
1994	729	795	657	976	766	134	412	1014	353	904	715	939	1169	516	597	672	497
1995	726	787	667	957	778	150	408	951	360	914	700	904	1218	485	623	702	515
1996	747	805	668	935	790	167	415	1020	357	920	684	907	1224	453	635	723	549
1997	755	807	688	988	780	180	441	1051	378	906	711	925	1032	459	659	730	583

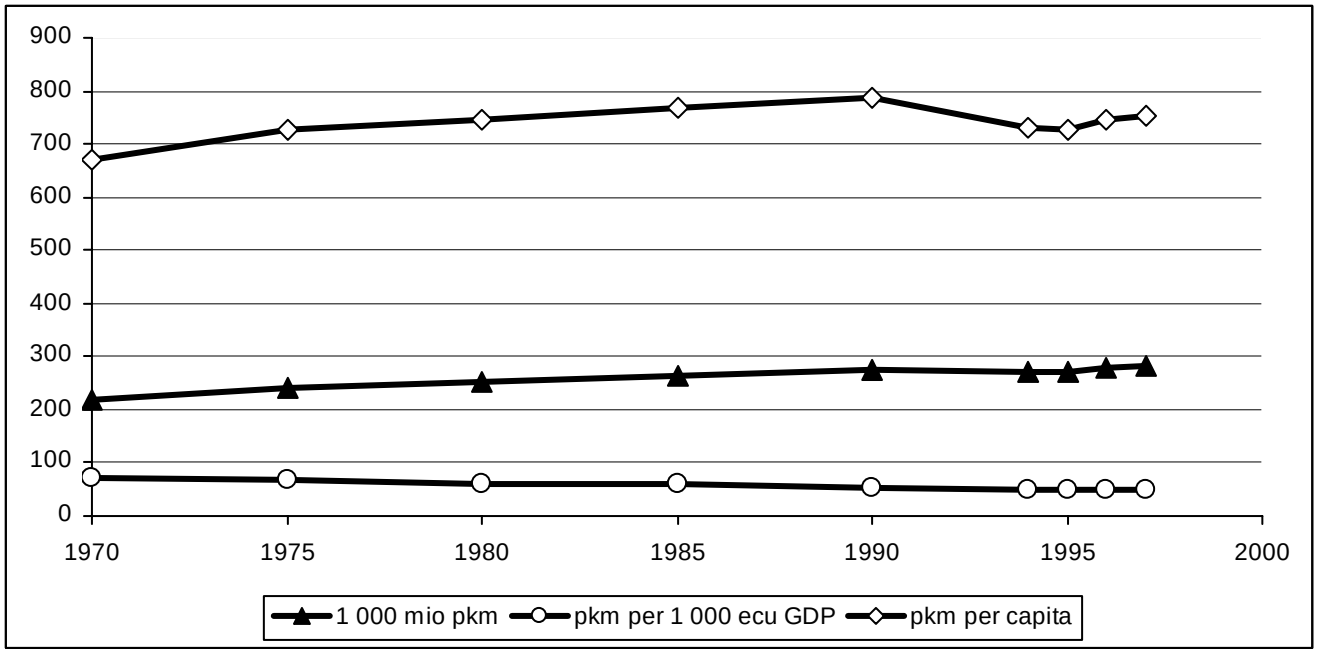


Figure 3.9: Passenger transport by rail in EU-15

Source: DG Energy and Transport.

Waterborne passenger transport

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(1 000 mio pkm)
1970	13.0	4.3	0.9	1.8	0.3	1.6	0.1	0.3	0.4	1.1	–	0.2	0.0	0.1	0.9	3.6	1.8
1975	16.1	5.8	0.8	1.8	0.6	1.9	0.1	0.6	0.5	1.4	–	0.3	0.0	0.1	1.5	4.4	2.1
1980	19.5	7.5	0.7	1.8	0.7	2.7	0.2	1.1	0.7	2.0	–	0.4	0.0	0.1	1.7	4.5	3.0
1985	21.6	9.0	0.6	1.8	0.6	3.0	0.2	1.3	0.9	2.6	–	0.5	0.0	0.1	2.1	4.3	3.6
1990	26.2	11.3	0.5	1.8	0.9	4.1	0.2	1.8	0.9	3.3	–	0.6	0.0	0.1	3.0	5.0	4.1
1994	27.2	11.6	0.4	1.8	1.1	4.7	0.2	2.1	1.1	3.2	–	0.5	0.0	0.1	2.9	4.4	4.8
1995	27.3	11.7	0.4	1.8	1.1	4.8	0.2	2.0	1.1	3.5	–	0.4	0.0	0.1	2.9	4.5	4.5
																	(pkm per 1 000 ecu GDP)
1970	4.3	1.8	10.1	28.1	0.5	45.3	0.5	0.6	25.6	2.2	–	1.4	0.3	2.4	15.6	29.4	3.6
1975	4.5	2.1	7.5	25.3	0.7	42.3	0.5	0.9	23.3	2.4	–	2.3	0.2	1.9	22.3	31.7	3.9
1980	4.7	2.3	5.4	22.4	0.7	47.8	0.6	1.4	29.0	2.9	–	2.4	0.3	1.8	21.6	30.2	5.1
1985	4.9	2.6	4.5	19.5	0.6	49.8	0.6	1.6	31.0	3.5	–	2.8	0.3	1.9	23.8	26.6	5.6
1990	5.0	2.8	3.2	17.5	0.7	62.2	0.5	1.9	25.7	3.8	–	2.9	0.2	1.8	28.0	27.9	5.3
1994	4.9	2.6	2.4	16.1	0.8	69.0	0.5	2.2	25.0	3.7	–	1.9	0.2	1.7	29.8	24.6	6.0
1995	4.8	2.6	2.2	15.5	0.7	68.4	0.5	2.0	23.2	3.9	–	1.8	0.2	1.7	28.1	24.5	5.5
																	(pkm per capita)
1970	38	16	96	367	4	181	3	6	132	20	–	14	3	7	189	446	31
1975	46	22	84	356	7	210	4	11	142	25	–	25	3	7	323	537	38
1980	55	27	70	351	9	276	4	19	206	36	–	31	4	7	354	539	54
1985	60	32	61	350	8	298	5	24	240	46	–	37	4	8	437	514	64
1990	72	40	49	346	11	400	5	31	263	58	–	43	4	10	596	589	71
1994	73	40	38	344	13	450	5	37	302	56	–	30	4	10	576	499	81
1995	73	41	36	342	13	454	5	34	313	62	–	28	4	10	568	514	76

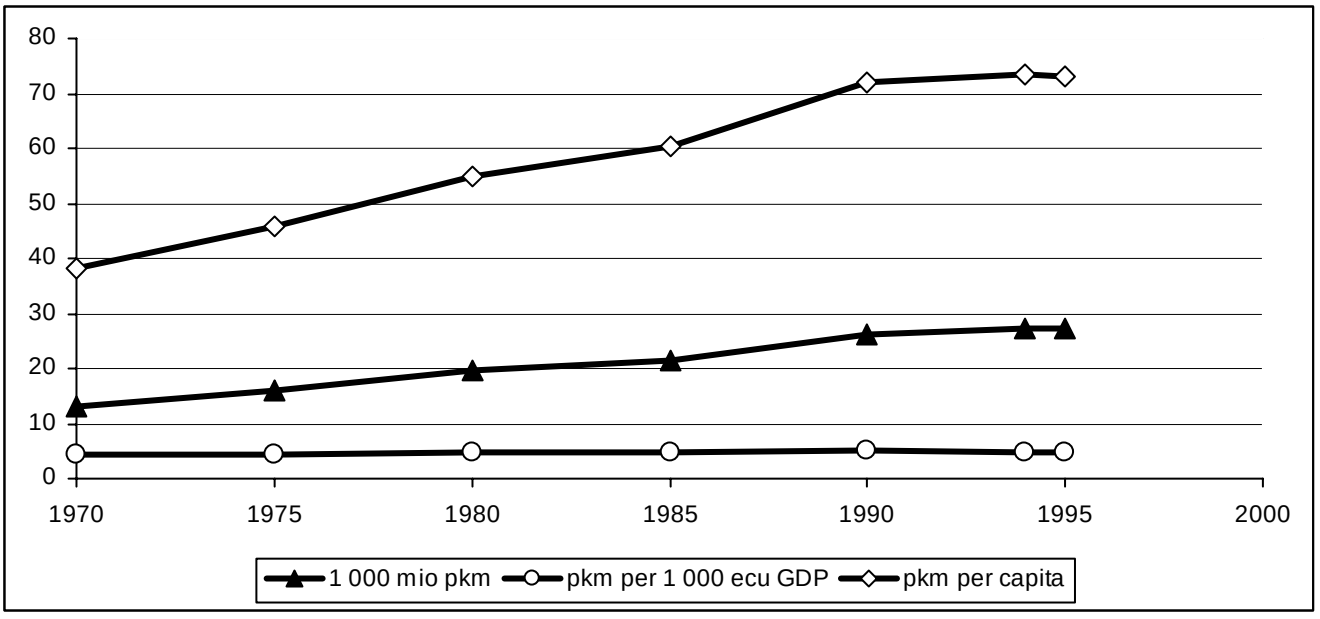


Figure 3.10: Waterborne passenger transport in EU-15

Source: DG Energy and Transport.

Passenger transport by air

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(1 000 mio pkm)
1988	271.6	169.2	6.5	4.0	34.1	7.5	22.3	47.8	3.3	19.2	0.1	24.1	2.0	5.7	4.0	7.8	83.1
1989	296.2	183.1	6.8	4.3	36.3	8.0	22.8	51.5	4.3	21.5	0.1	25.9	3.0	6.3	4.6	8.5	92.3
1990	324.1	199.2	7.6	4.7	42.4	6.2	23.2	52.9	4.6	23.6	0.3	29.0	3.8	6.9	4.9	9.1	105.0
1991	313.3	193.0	6.2	4.4	43.3	7.8	24.2	48.7	4.2	22.7	0.3	28.2	3.6	7.1	4.7	8.2	99.9
1992	:	221.4	6.2	4.6	49.1	7.3	27.4	54.3	4.4	29.7	0.3	32.8	4.9	7.8	4.6	:	113.8
																	(pkm per 1 000 ecu GDP)
1988	55.6	44.5	45.1	39.5	31.6	119.9	60.7	54.0	104.5	23.4	17.4	118.2	17.6	114.8	40.2	44.9	111.7
1989	58.6	46.4	45.1	42.9	32.5	122.9	59.5	56.0	130.1	25.5	16.6	121.1	25.1	120.5	43.6	47.6	121.4
1990	62.3	48.7	49.5	45.8	35.9	94.9	58.3	56.3	127.2	27.4	29.9	130.5	30.5	126.7	45.8	50.4	137.6
1991	58.3	45.1	39.6	43.1	32.3	115.4	59.3	51.5	113.2	26.0	29.2	123.9	27.8	127.2	47.8	45.7	133.5
1992	:	51.1	38.9	44.1	35.9	107.2	66.8	56.8	114.5	33.9	28.3	141.4	37.0	136.2	48.6	:	153.0
																	(pkm per capita)
1988	751	603	659	771	436	750	575	852	925	338	372	1 636	267	570	816	928	1 453
1989	816	650	680	840	462	794	589	912	1 225	379	366	1 744	394	631	932	1 000	1 609
1990	889	704	767	906	534	610	597	933	1 301	416	663	1 942	495	695	974	1 065	1 824
1991	855	679	622	861	541	758	621	854	1 181	399	666	1 871	461	717	941	947	1 727
1992	:	774	618	890	609	704	702	946	1 241	522	662	2 163	615	787	918	:	1 962

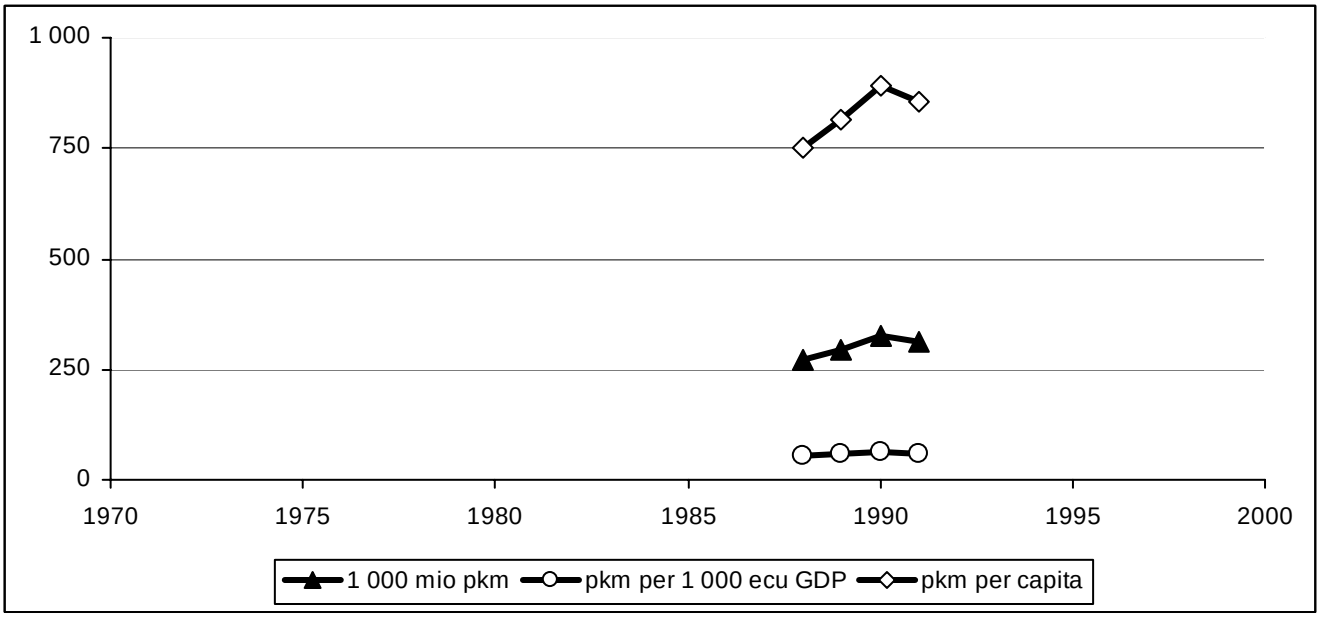


Figure 3.11: Passenger transport by air in EU-15

Source: DG Energy and Transport.

Walking

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(1 000 mio pkm)
1970	154.9	119.2	4.6	2.3	36.5	3.6	14.4	22.9	1.2	24.0	0.2	6.0	3.6	3.6	2.2	3.7	26.1
1975	160.6	124.5	4.6	2.4	37.0	3.7	15.5	24.3	1.3	25.2	0.2	6.3	3.7	4.0	2.4	3.8	26.2
1980	165.5	129.2	4.6	2.6	37.5	4.0	16.1	25.5	1.5	26.6	0.2	6.5	3.9	4.4	2.4	4.0	25.8
1985	150.5	117.6	4.1	2.4	33.0	3.7	15.0	23.8	1.4	24.4	0.2	6.0	3.6	4.1	2.2	3.6	23.1
1990	149.1	116.7	4.1	2.4	32.1	3.6	14.6	23.7	1.3	25.0	0.2	6.0	3.6	4.0	2.2	3.6	22.8
1994	160.9	126.5	4.4	2.6	35.0	4.0	16.0	25.4	1.5	26.7	0.2	6.8	3.9	4.3	2.3	3.8	24.1
1995	162.7	127.8	4.5	2.6	35.4	4.1	16.3	25.5	1.5	26.9	0.2	6.8	4.0	4.4	2.4	3.9	24.3
																	(pkm per 1 000 ecu GDP)
1970	50.6	50.6	49.4	36.1	50.5	103.6	71.0	41.4	80.9	49.4	34.7	47.5	51.3	143.4	40.0	29.9	53.7
1975	45.4	45.4	42.2	34.0	45.9	82.8	58.7	37.2	69.3	45.4	31.9	42.8	44.2	127.4	34.7	27.4	48.5
1980	40.2	39.8	35.9	31.9	39.6	71.7	55.5	33.6	61.7	38.5	28.5	36.3	38.8	110.1	31.0	26.7	43.7
1985	34.0	33.9	30.8	26.3	33.0	62.7	47.9	29.3	50.0	32.8	21.4	31.2	33.2	98.2	24.1	22.5	35.6
1990	28.7	28.5	26.4	23.5	27.1	55.3	36.8	25.2	37.1	29.0	17.7	27.0	28.4	72.7	20.8	19.7	29.9
1994	29.0	28.7	27.6	23.0	25.2	58.7	38.5	26.3	34.1	30.1	18.1	27.9	28.9	75.0	23.6	21.5	30.4
1995	28.6	28.4	27.4	22.6	25.2	58.3	38.2	25.8	30.9	29.6	17.6	27.7	28.7	74.3	22.8	21.0	29.9
																	(pkm per capita)
1970	479	485	474	473	602	414	427	452	417	445	472	457	475	414	484	454	469
1975	483	490	472	478	599	411	436	461	422	455	474	460	490	434	501	464	466
1980	489	498	468	502	609	414	431	473	438	471	467	462	514	448	506	477	458
1985	440	449	416	471	541	375	390	430	387	431	409	413	471	408	443	435	408
1990	428	437	409	465	507	356	376	418	380	440	393	402	463	400	443	416	397
1994	434	439	440	492	430	383	408	439	412	466	446	439	488	436	456	436	412
1995	437	442	445	500	434	387	415	438	416	470	439	442	495	443	460	441	415

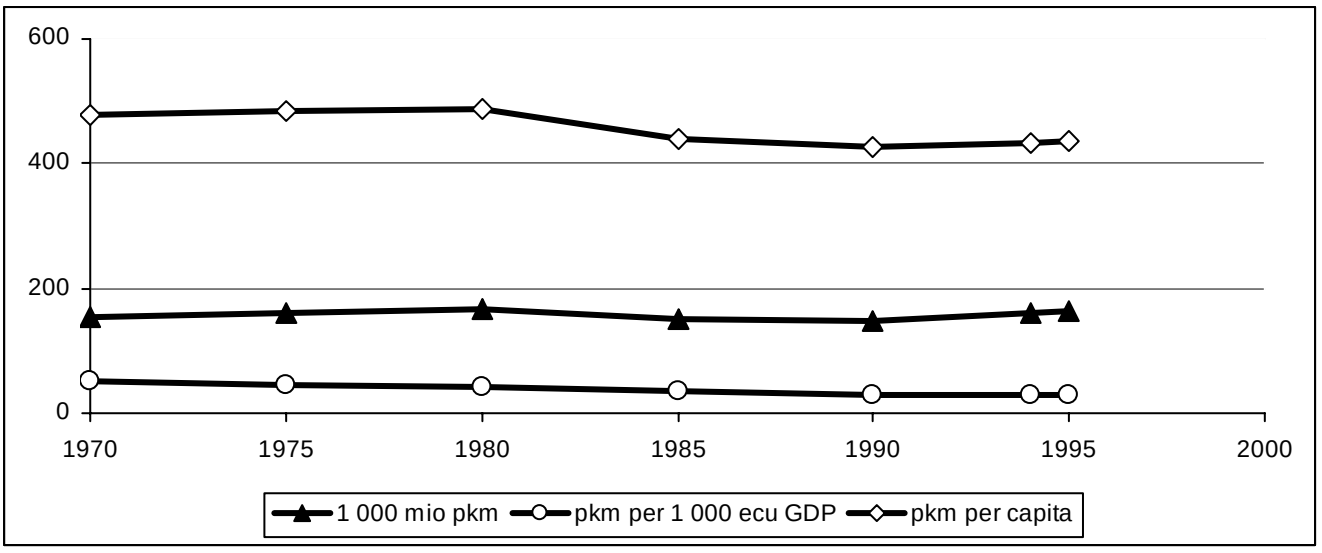


Figure 3.12: Walking in EU-15

Source: DG Energy and Transport.

Cycling

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(1 000 mio pkm)
1970	60.3	49.5	4.0	4.5	17.0	0.3	0.7	4.5	0.7	8.0	0.0	11.0	1.6	0.3	1.7	1.6	4.4
1975	62.2	51.6	3.9	4.5	18.2	0.3	0.7	4.5	0.7	8.2	0.0	11.6	1.6	0.3	1.9	1.4	4.4
1980	66.5	55.0	3.7	4.5	22.3	0.3	0.7	5.0	0.8	8.5	0.0	9.9	1.6	0.3	2.2	1.6	5.1
1985	71.2	58.5	3.6	4.1	24.0	0.3	0.8	4.8	1.1	8.7	0.0	11.8	1.6	0.3	1.9	2.2	6.1
1990	71.2	58.5	3.4	4.9	23.8	0.3	0.8	4.5	0.8	9.0	0.0	13.0	1.4	0.3	1.5	2.2	5.3
1994	69.6	57.8	3.3	4.6	23.6	0.3	0.8	4.4	0.7	9.0	0.0	13.2	1.2	0.3	1.3	2.4	4.5
1995	69.6	57.7	3.3	4.7	23.5	0.3	0.8	4.4	0.7	9.0	0.0	13.3	1.2	0.3	1.3	2.4	4.5
																	(pkm per 1 000 EUR of GDP)
1970	19.7	21.0	43.3	69.8	23.5	8.5	3.4	8.1	42.7	16.5	4.3	87.7	23.1	12.0	30.5	13.1	9.1
1975	17.6	18.8	35.2	63.3	22.6	6.7	2.7	6.9	36.2	14.8	3.6	79.0	19.0	9.7	27.9	10.1	8.1
1980	16.2	17.0	28.8	55.9	23.6	5.4	2.4	6.6	33.1	12.3	3.0	54.9	16.0	7.5	28.2	10.8	8.6
1985	16.1	16.9	26.7	44.7	24.0	5.0	2.6	5.9	39.1	11.7	2.4	61.5	14.9	7.2	21.1	13.6	9.4
1990	13.7	14.3	22.0	48.2	20.1	4.6	2.0	4.8	20.9	10.5	1.9	58.4	11.1	5.5	14.1	12.2	6.9
1994	12.5	13.1	20.5	41.4	17.0	4.4	1.9	4.5	15.5	10.2	1.6	54.7	8.8	5.2	13.2	13.5	5.7
1995	12.3	12.8	20.0	40.9	16.7	4.3	1.9	4.5	13.9	9.9	1.6	53.9	8.3	5.1	12.6	13.0	5.5
																	(pkm per capita)
1970	177	188	415	913	219	34	21	89	220	149	59	844	214	35	369	199	79
1975	178	190	393	889	231	33	20	85	220	148	53	849	211	33	403	171	78
1980	187	199	376	878	285	31	19	93	235	151	49	700	212	31	460	193	91
1985	199	210	360	802	309	30	21	87	302	154	46	814	212	30	388	263	108
1990	195	206	341	953	300	30	21	79	214	159	42	869	181	30	301	257	92
1994	188	201	327	884	290	29	20	76	188	157	40	858	149	30	256	273	77
1995	187	200	326	903	288	29	20	76	187	157	39	860	143	30	255	272	77

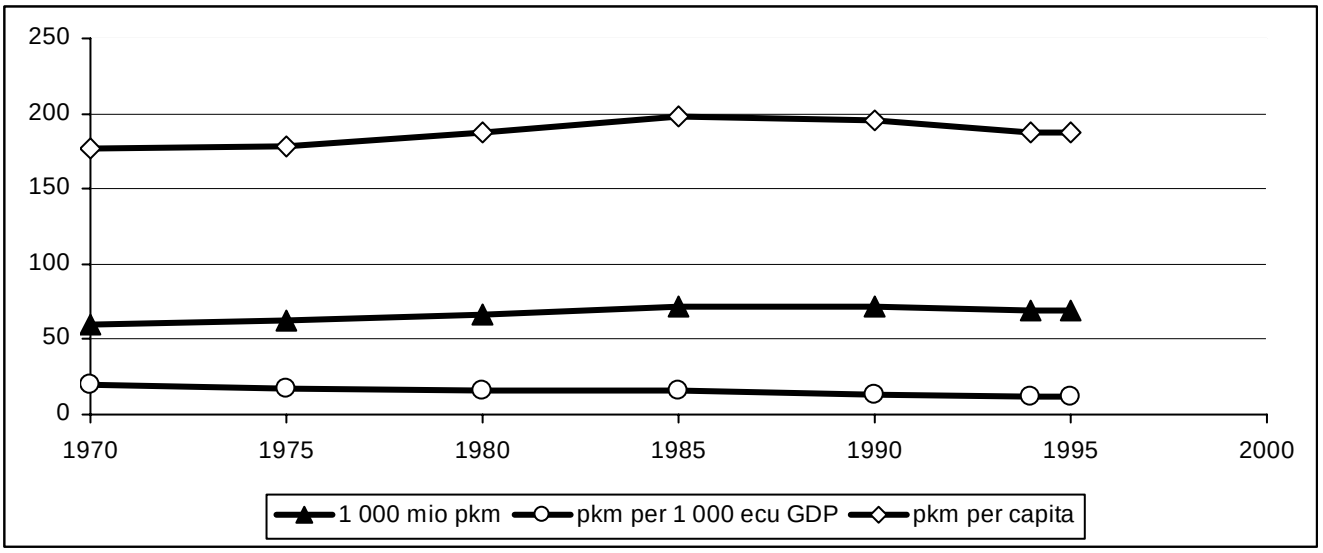


Figure 3.13: Cycling in EU-15

Source: DG Energy and Transport.

Freight transport (EU-15)

	All modes	Road	Rail	Inland waterways	Short sea shipping	Oil pipelines
						(1 000 mio tkm)
1970	1 341	416	283	104	473	66
1975	1 467	494	259	99	536	79
1980	1 893	628	287	107	779	92
1985	1 867	683	275	100	736	72
1990	2 289	929	255	109	919	77
1994	2 524	1 094	219	112	1 012	86
1995	2 635	1 145	221	114	1 070	85
1996	2 636	1 151	220	111	1 070	84
1997	2 764	1 202	237	115	1 124*	86
						(tkm per 1 000 ecu GDP)
1970	438	136	92	34	154	22
1975	415	140	73	28	151	22
1980	460	153	70	26	189	22
1985	421	154	62	23	166	16
1990	440	179	49	21	177	15
1994	455	197	39	20	182	16
1995	464	201	39	20	188	15
1996	456	199	38	19	185	15
1997	466	203	40	19	190*	14
						(tkm per capita)
1970	3 941	1 222	831	304	1 389	195
1975	4 201	1 413	743	284	1 534	227
1980	5 327	1 768	808	301	2 192	258
1985	5 203	1 904	768	280	2 051	200
1990	6 278	2 549	701	298	2 520	210
1994	6 804	2 950	590	302	2 730	233
1995	7 082	3 077	593	307	2 877	228
1996	7 067	3 084	589	299	2 869	226
1997	7 390	3 214	634	309	3 005*	229

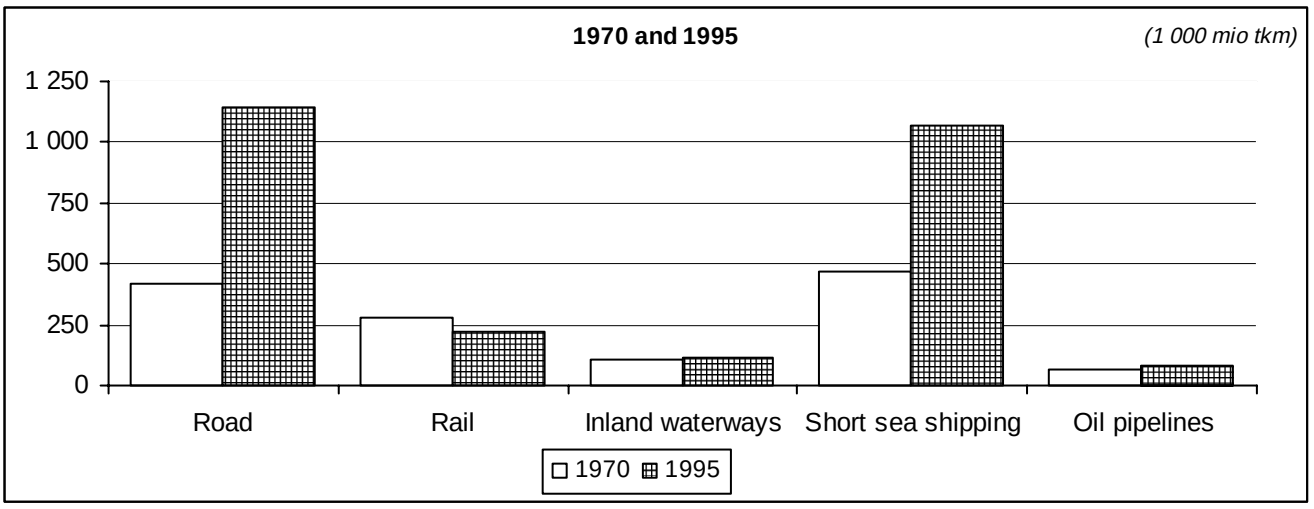


Figure 3.14: Modal split of freight transport in EU-15

Source: DG Energy and Transport.

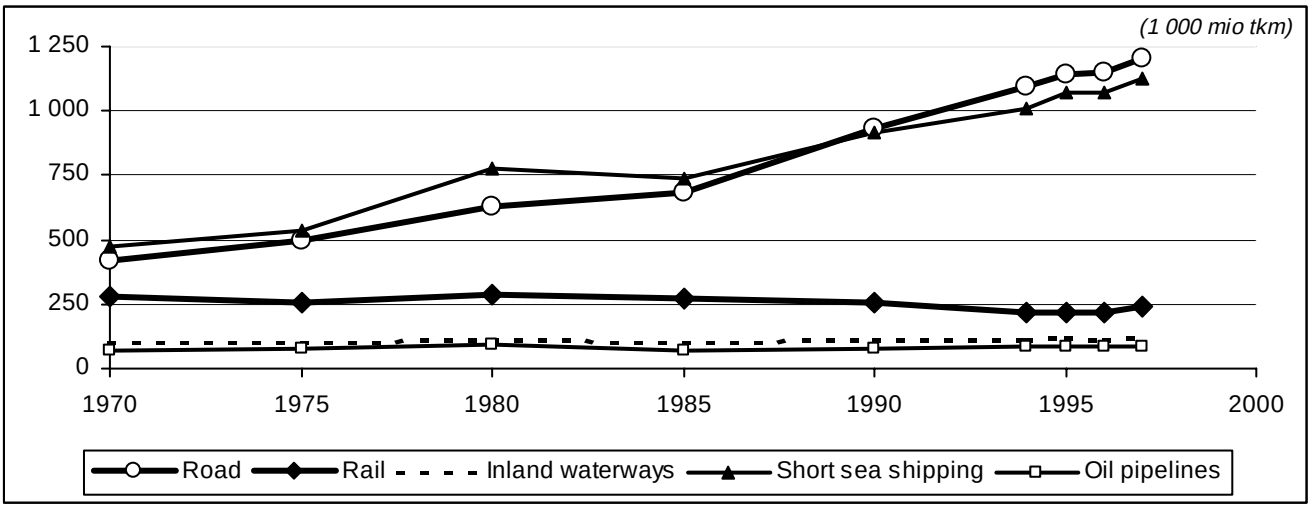


Figure 3.15: Evolution of freight transport in EU-15 (tonne-kilometres)

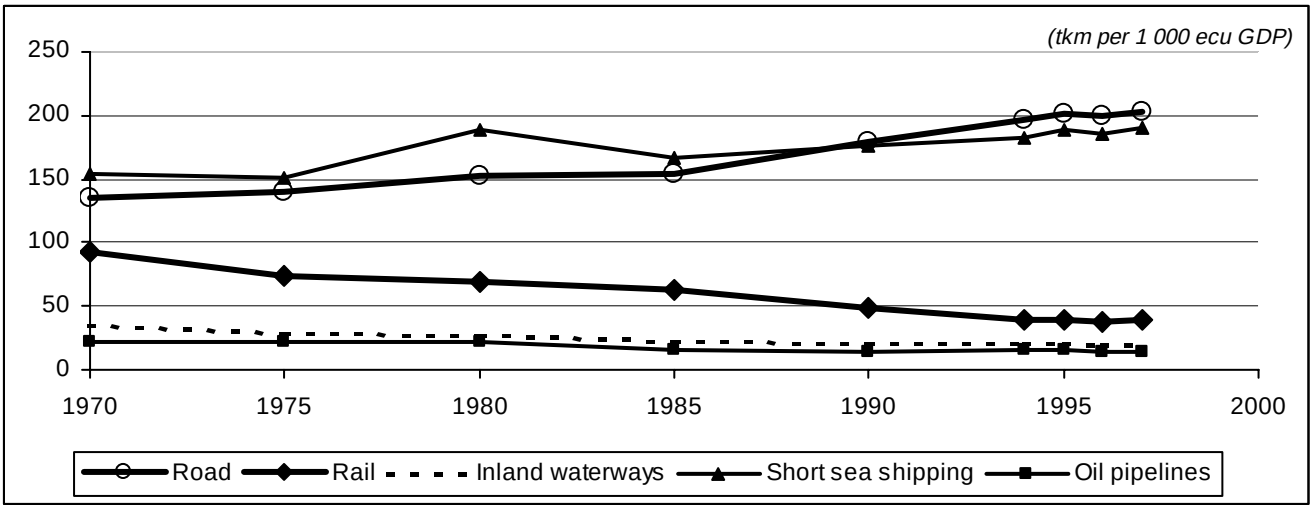


Figure 3.16: Evolution of freight transport in EU-15 (tonne-kilometres per unit GDP)

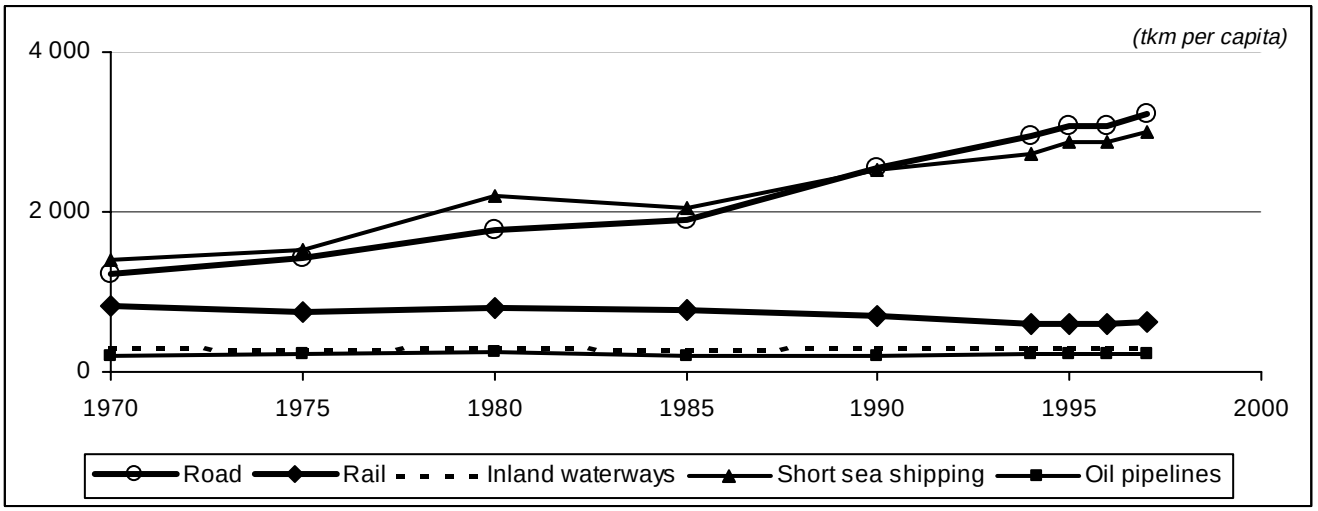


Figure 3.17: Evolution of freight transport in EU-15 (tonne-kilometres per capita)

Freight transport by road

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(1 000 mio tkm)
1970	416	301	13.5	7.0	90.2	4.9	27.9	63.6	4.0	58.7	0.3	16.3	6.8	7.2	12.4	17.8	85.0
1975	494	366	15.1	9.3	112.7	6.1	40.9	79.7	4.5	62.8	0.4	20.2	5.9	8.5	15.5	20.2	91.7
1980	628	495	16.5	11.3	145.4	7.3	48.2	98.1	5.0	119.6	0.6	23.2	10.0	10.0	18.4	21.4	93.0
1985	683	541	17.8	12.0	147.3	9.5	57.9	104.0	4.5	144.1	0.5	24.3	11.9	8.7	20.1	21.2	99.1
1990	929	745	25.0	13.7	182.8	10.9	78.9	190.5	5.1	177.9	1.3	31.8	13.3	12.2	26.3	26.5	133.0
1994	1 094	899	35.3	14.5	272.5	12.8	92.2	210.7	5.3	187.2	1.7	40.7	14.7	13.0	25.7	27.0	140.7
1995	1 145	939	36.6	14.7	279.7	14.8	94.6	232.8	5.4	194.8	1.9	42.2	14.9	13.0	23.2	29.3	146.7
1996	1 151	939	34.9	14.5	280.7	15.9	92.5	229.2	5.5	197.6	1.9	43.9	15.5	13.2	24.1	31.2	150.2
1997	1 202	985	36.0	14.7	301.8	16.5	96.2	237.2	5.5	207.2	1.9	45.0	15.7	13.5	25.4	33.1	152.5
																	(tkm per 1 000 ecu GDP)
1970	136	128	146	109	125	140	137	115	263	121	59	130	98	287	223	146	175
1975	140	134	138	131	140	137	155	122	233	113	77	137	70	274	228	146	170
1980	153	153	128	141	154	132	166	129	207	173	96	129	100	252	236	144	157
1985	154	156	134	131	147	159	185	128	165	194	77	127	111	209	224	131	152
1990	179	182	162	135	155	167	198	203	143	207	151	143	106	224	248	147	174
1994	197	204	219	131	196	189	223	218	122	212	173	168	108	225	261	152	178
1995	201	209	222	128	199	213	222	236	112	214	183	171	108	220	225	158	180
1996	199	205	209	122	197	224	212	229	105	216	180	172	110	217	225	166	181
1997	203	210	209	120	207	225	214	232	95	223	174	170	109	214	224	174	177
																	(tkm per capita)
1970	1 222	1 145	1 401	1 421	1 161	558	826	1 253	1 356	1 091	802	1 250	911	827	2 692	2 213	1 528
1975	1 413	1 352	1 538	1 844	1 432	679	1 152	1 512	1 416	1 133	1 142	1 477	776	936	3 290	2 464	1 631
1980	1 768	1 794	1 671	2 215	1 857	759	1 288	1 821	1 473	2 119	1 571	1 642	1 330	1 025	3 850	2 570	1 651
1985	1 904	1 942	1 810	2 355	1 896	953	1 508	1 881	1 277	2 547	1 464	1 678	1 575	869	4 100	2 536	1 748
1990	2 549	2 632	2 506	2 660	2 303	1 071	2 031	3 358	1 463	3 137	3 344	2 124	1 723	1 229	5 274	3 098	2 311
1994	2 950	3 119	3 490	2 793	3 347	1 230	2 355	3 639	1 466	3 273	4 255	2 644	1 831	1 308	5 051	3 075	2 414
1995	3 077	3 249	3 613	2 814	3 425	1 416	2 412	4 004	1 499	3 400	4 572	2 729	1 852	1 310	4 542	3 322	2 508
1996	3 084	3 240	3 439	2 747	3 428	1 518	2 355	3 926	1 517	3 442	4 546	2 824	1 923	1 329	4 703	3 527	2 559
1997	3 214	3 392	3 536	2 782	3 678	1 572	2 446	4 047	1 502	3 603	4 513	2 883	1 941	1 357	4 942	3 742	2 589

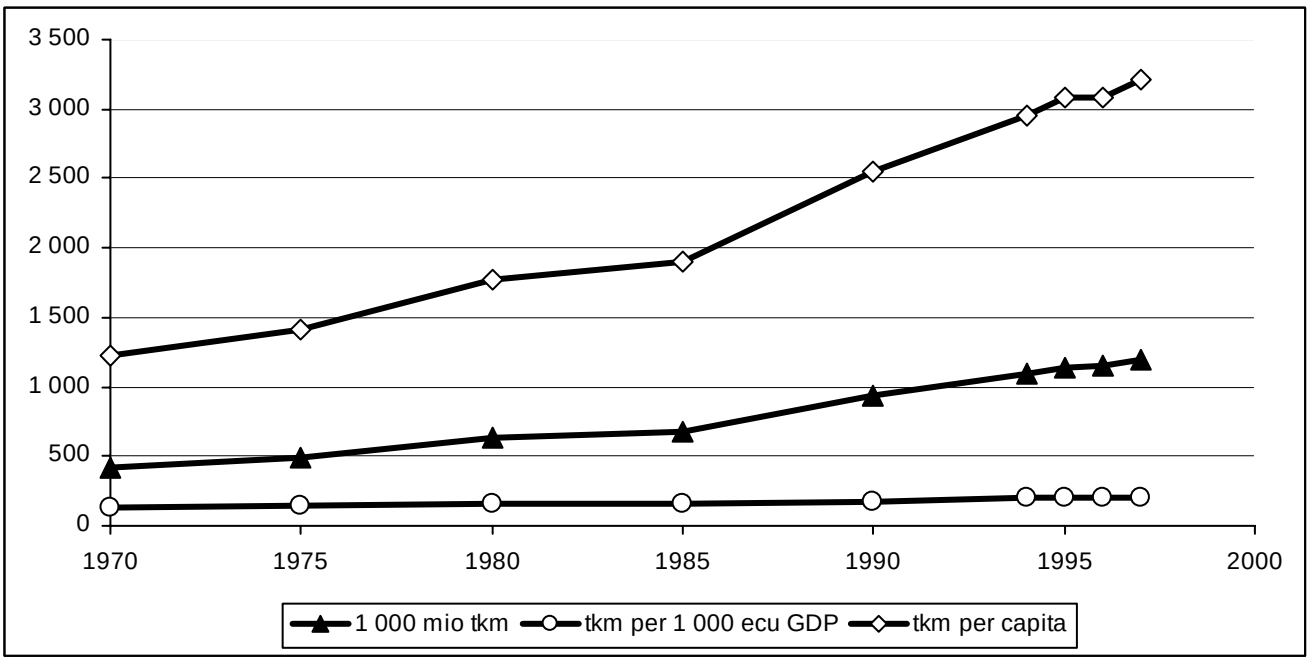


Figure 3.18: Freight transport by road in EU-15

Source: DG Energy and Transport.

Freight transport by rail

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(1 000 mio tkm)
1970	283	238	7.9	1.9	113.0	0.7	9.7	67.6	0.5	18.1	0.8	3.7	10.0	0.8	6.3	17.3	24.5
1975	259	220	6.8	1.9	105.0	0.9	11.1	61.3	0.6	14.9	0.7	2.7	9.5	0.8	6.4	16.1	20.9
1980	287	250	8.0	1.6	121.3	0.8	10.9	66.4	0.6	18.4	0.7	3.4	11.2	1.0	8.3	16.6	17.6
1985	275	240	8.3	1.8	121.5	0.7	11.8	55.1	0.6	16.9	0.6	3.3	12.1	1.3	8.1	17.3	16.0
1990	255	218	8.4	1.7	101.7	0.6	11.6	50.7	0.6	19.5	0.6	3.1	12.3	1.5	8.4	19.1	15.8
1994	219	184	8.1	2.0	69.9	0.3	9.0	48.8	0.6	20.5	0.6	2.8	12.6	1.6	9.9	19.0	13.0
1995	221	186	7.6	2.0	68.8	0.3	10.4	48.1	0.6	21.7	0.5	3.1	13.2	2.0	9.6	19.4	13.3
1996	220	184	7.2	1.8	67.7	0.3	10.0	49.5	0.6	21.1	0.5	3.1	13.3	1.9	8.8	18.8	15.1
1997	237	199	7.4	1.6	72.7	0.3	11.5	53.9	0.5	23.0	0.6	3.4	14.2	2.2	9.9	19.1	16.9
																	(tkm per 1 000 ecu GDP)
1970	92.4	101.3	85.2	28.9	156.1	19.6	47.9	122.1	35.8	37.4	165.4	29.6	144.6	31.0	112.6	141.8	50.4
1975	73.4	80.1	62.2	26.1	130.2	20.7	42.1	93.8	29.1	26.9	123.9	18.6	113.2	24.3	94.6	115.7	38.8
1980	69.7	77.2	62.6	20.3	128.1	14.6	37.6	87.5	25.8	26.7	111.6	18.8	111.5	25.2	106.7	112.3	29.9
1985	62.2	69.1	62.2	19.2	121.3	12.3	37.7	68.0	21.9	22.7	85.6	17.0	112.4	31.4	89.8	107.3	24.7
1990	49.1	53.4	54.1	17.1	86.0	9.3	29.2	53.9	16.4	22.6	72.7	13.8	97.9	26.9	78.7	105.6	20.7
1994	39.4	41.9	50.3	18.0	50.3	4.8	21.8	50.5	13.2	23.2	60.5	11.7	92.9	27.8	101.2	106.7	16.4
1995	38.8	41.2	46.1	17.4	49.0	4.7	24.4	48.7	11.8	23.8	48.8	12.6	95.3	33.9	92.9	104.8	16.3
1996	38.0	40.2	43.4	14.9	47.6	4.7	23.0	49.5	10.9	23.0	50.5	12.3	94.5	30.5	82.3	100.3	18.2
1997	40.0	42.5	43.2	13.3	50.0	4.3	25.5	52.7	9.0	24.7	51.8	12.9	98.4	35.6	86.9	100.1	19.6
																	(tkm per capita)
1970	831	907	817	378	1 454	78	288	1 331	185	337	2 250	285	1 341	89	1 361	2 152	440
1975	743	812	695	367	1 334	103	312	1 162	177	269	1 839	200	1 254	83	1 366	1 960	372
1980	808	907	816	319	1 549	84	292	1 232	183	327	1 826	240	1 477	102	1 744	2 003	313
1985	768	860	840	344	1 565	74	308	997	170	299	1 633	226	1 592	130	1 646	2 075	283
1990	701	771	838	339	1 282	60	299	893	168	343	1 611	205	1 591	147	1 676	2 232	274
1994	590	640	801	384	858	31	231	843	159	358	1 486	184	1 569	162	1 955	2 164	223
1995	593	642	750	383	843	31	265	827	158	379	1 220	201	1 640	202	1 879	2 198	227
1996	589	634	714	336	827	32	255	848	157	367	1 275	201	1 650	187	1 718	2 126	257
1997	634	686	730	308	886	30	292	919	143	399	1 344	218	1 759	226	1 918	2 159	287

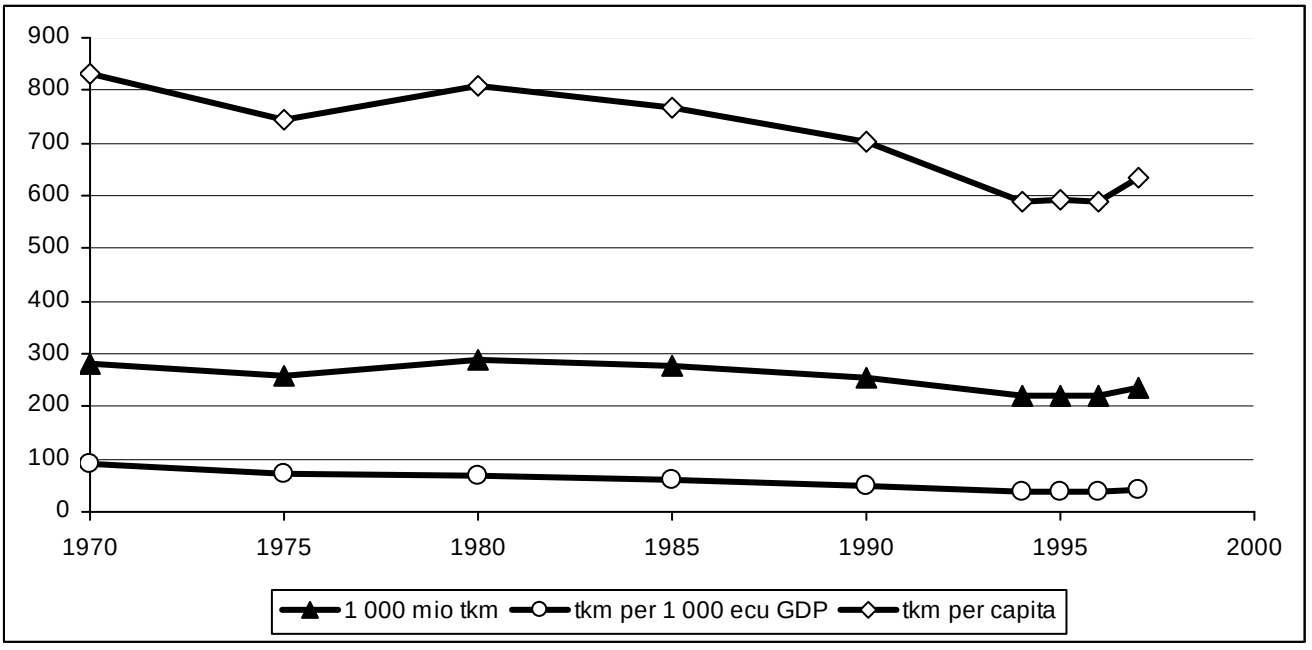


Figure 3.19: Freight transport by rail in EU-15

Source: DG Energy and Transport.

Freight transport by inland waterways

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(1 000 mio tkm)
1970	104	103	6.7	–	51.2	–	–	12.2	–	0.4	0.3	30.7	1.3	–	0.5	–	0.3
1975	99	99	5.1	–	50.0	–	–	11.6	–	0.2	0.3	29.6	1.4	–	0.5	–	0.4
1980	107	107	5.9	–	53.6	–	–	10.9	–	0.2	0.3	33.5	1.6	–	0.7	–	0.4
1985	100	100	5.1	–	50.6	–	–	9.1	–	0.2	0.3	32.8	1.5	–	0.5	–	0.4
1990	109	108	5.4	–	56.7	–	–	7.2	–	0.1	0.3	36.5	1.7	–	0.4	–	0.2
1994	112	112	5.6	–	61.8	–	–	5.6	–	0.1	0.3	36.0	1.8	–	0.5	–	0.2
1995	114	114	5.8	–	64.0	–	–	5.9	–	0.1	0.3	35.5	2.0	–	0.4	–	0.2
1996	111	111	5.8	–	61.3	–	–	5.7	–	0.1	0.3	35.3	2.1	–	0.5	–	0.2
1997	115	115	6.1	–	62.2	–	–	6.0	–	0.2	0.3	37.9	2.1	–	0.5	–	0.2
																	(tkm per 1 000 ecu GDP)
1970	33.8	43.9	72.8	–	70.8	–	–	22.0	–	0.7	65.0	245.2	18.7	–	8.2	–	0.6
1975	28.0	36.0	46.8	–	62.0	–	–	17.7	–	0.4	55.8	201.6	16.8	–	7.5	–	0.7
1980	26.0	32.9	45.6	–	56.7	–	–	14.4	–	0.3	55.4	185.7	15.6	–	8.5	–	0.7
1985	22.7	28.9	38.1	–	50.5	–	–	11.2	–	0.3	43.5	170.8	14.4	–	5.9	–	0.6
1990	20.9	26.5	35.3	–	48.0	–	–	7.7	–	0.1	39.7	164.0	13.2	–	4.2	–	0.3
1994	20.2	25.4	34.8	–	44.5	–	–	5.8	–	0.1	31.3	149.1	13.4	–	5.0	–	0.3
1995	20.1	25.4	35.2	–	45.5	–	–	5.9	–	0.2	32.2	143.7	14.8	–	4.2	–	0.2
1996	19.3	24.4	34.8	–	43.1	–	–	5.7	–	0.1	30.5	138.7	14.9	–	4.7	–	0.2
1997	19.5	24.6	35.5	–	42.8	–	–	5.9	–	0.2	27.4	143.7	14.5	–	4.4	–	0.2
																	(tkm per capita)
1970	304	393	699	–	659	–	–	240	–	7	885	2358	173	–	100	–	5
1975	284	365	523	–	635	–	–	219	–	4	827	2166	186	–	109	–	7
1980	301	386	594	–	685	–	–	202	–	4	906	2366	206	–	138	–	7
1985	280	359	514	–	651	–	–	164	–	4	829	2262	204	–	109	–	7
1990	298	383	547	–	714	–	–	127	–	2	880	2441	215	–	89	–	3
1994	302	388	554	–	759	–	–	97	–	2	768	2340	227	–	97	–	4
1995	307	395	572	–	783	–	–	101	–	2	805	2296	254	–	84	–	3
1996	299	384	571	–	749	–	–	98	–	2	770	2274	261	–	97	–	3
1997	309	397	599	–	758	–	–	102	–	3	713	2429	259	–	97	–	3

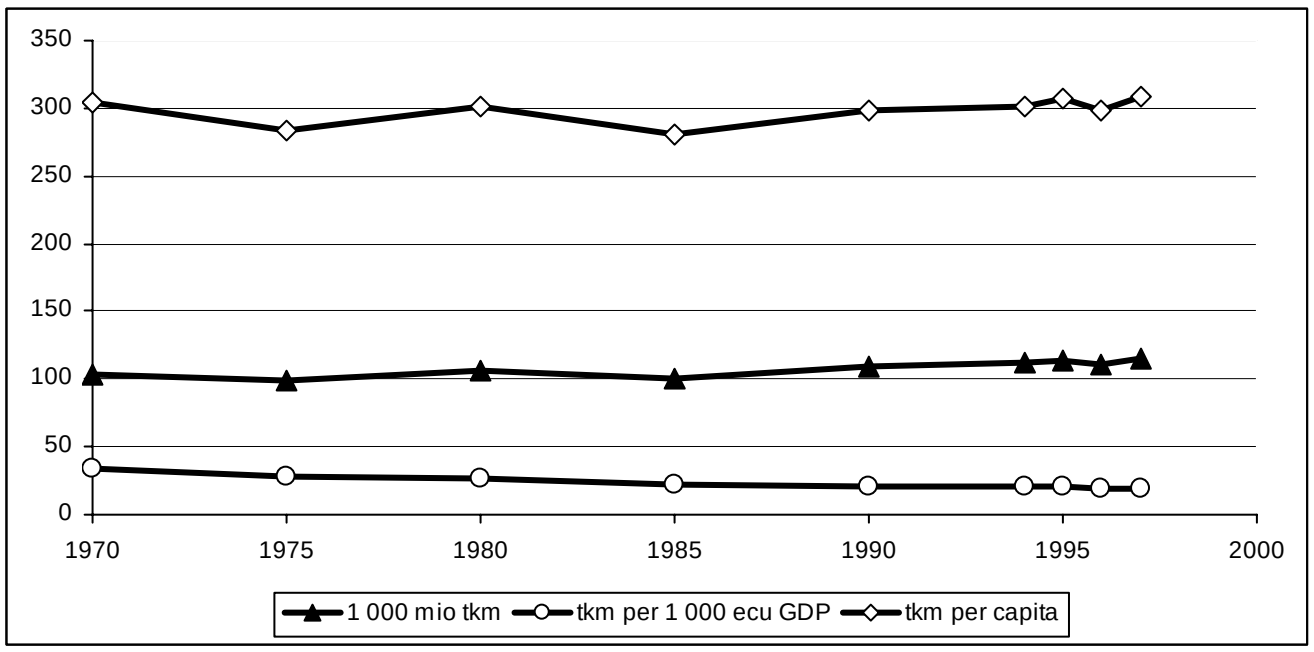


Figure 3.20: Freight transport by inland waterways in EU-15

Source: DG Energy and Transport.

Freight transport by short sea shipping

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(1 000 mio tkm)
1970	473	340	21.6	13.4	45.1	12.1	39.5	41.4	11.0	83.5	–	33.9	–	5.6	58.4	12.6	94.4
1975	536	385	20.9	13.6	45.3	27.9	48.7	55.9	10.4	91.2	–	48.0	–	7.1	57.9	12.8	96.0
1980	779	546	37.0	14.3	61.9	48.8	71.8	83.1	6.3	128.3	–	67.5	–	18.1	72.4	21.3	148.0
1985	736	505	38.4	13.6	56.3	39.4	73.2	68.0	6.6	114.6	–	59.6	–	16.8	71.6	20.5	157.3
1990	919	643	54.4	15.5	62.8	56.5	92.0	86.3	8.9	151.7	–	80.4	–	23.3	83.5	23.8	179.5
1994	1 012	705	56.5	19.3	80.5	55.5	99.6	91.7	11.0	161.4	–	84.1	–	26.6	94.0	29.0	203.5
1995	1 070	747	57.7	20.3	84.6	63.1	113.8	92.4	11.6	167.8	–	89.1	–	28.5	101.2	29.6	210.6
1996	1 070	744	54.8	21.3	85.6	62.6	110.2	91.5	11.8	170.8	–	89.1	–	25.9	104.1	30.2	212.6
1997	1 124*	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
																	(tkm per 1 000 ecu GDP)
1970	154	144	234	208	62	345	194	75	725	172	–	270	–	225	1049	103	194
1975	151	141	191	191	56	622	185	86	536	164	–	327	–	230	852	92	178
1980	189	169	289	178	65	876	247	110	262	186	–	374	–	455	927	144	251
1985	166	146	288	148	56	663	234	84	239	154	–	310	–	404	796	127	242
1990	177	157	352	153	53	866	231	92	248	176	–	361	–	429	787	132	235
1994	182	160	351	173	58	815	240	95	254	182	–	348	–	461	956	163	257
1995	188	166	350	177	60	909	267	94	241	184	–	361	–	482	980	160	259
1996	185	163	328	180	60	881	253	91	225	186	–	350	–	426	974	161	256
1997	190*	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
																	(tkm per capita)
1970	1 389	1 294	2 244	2 723	580	1 379	1 169	815	3 735	1 551	–	2 597	–	650	12 680	1 566	1 696
1975	1 534	1 424	2 134	2 684	576	3 089	1 370	1 061	3 264	1 645	–	3 509	–	786	12 299	1 559	1 708
1980	2 192	1 981	3 762	2 794	791	5 056	1 920	1 542	1 860	2 273	–	4 769	–	1 854	15 155	2 567	2 628
1985	2 051	1 812	3 893	2 661	725	3 969	1 906	1 230	1 853	2 025	–	4 111	–	1 677	14 598	2 458	2 775
1990	2 520	2 272	5 456	3 015	792	5 562	2 367	1 521	2 537	2 675	–	5 376	–	2 355	16 751	2 785	3 118
1994	2 730	2 447	5 589	3 703	988	5 319	2 543	1 584	3 057	2 821	–	5 468	–	2 682	18 475	3 298	3 491
1995	2 877	2 583	5 690	3 891	1 036	6 035	2 902	1 589	3 230	2 928	–	5 763	–	2 872	19 818	3 353	3 600
1996	2 869	2 566	5 394	4 048	1 045	5 979	2 806	1 567	3 245	2 976	–	5 734	–	2 608	20 323	3 417	3 622
1997	3 005*	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

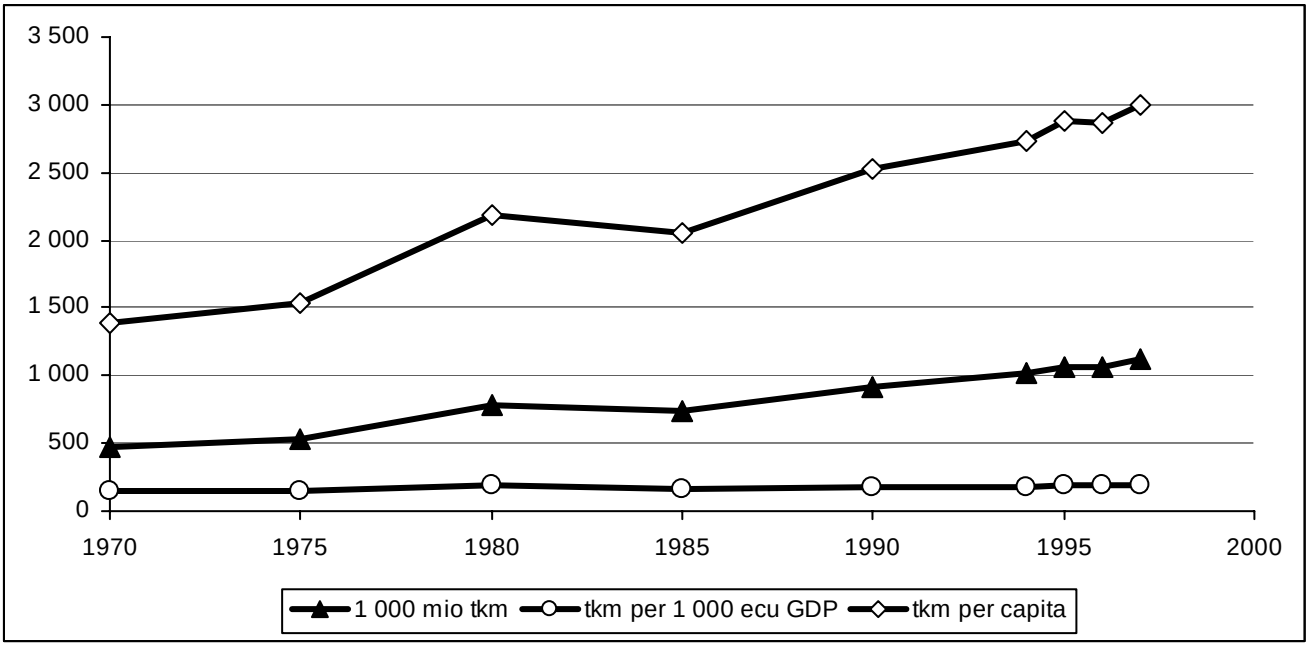


Figure 3.21: Freight transport by short sea shipping in EU-15

Source: DG Energy and Transport.

Freight transport by oil pipeline

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
																	(1 000 mio tkm)
1970	66.2	63.6	0.3	–	17.3	–	1.0	28.2	–	9.1	–	4.1	3.6	–	–	–	2.7
1975	79.3	73.9	1.5	–	17.4	–	2.1	31.1	–	11.5	–	4.5	5.8	–	–	–	5.4
1980	91.7	81.6	1.8	–	18.1	–	3.0	34.7	–	11.9	–	5.0	7.1	–	–	–	10.1
1985	71.8	59.6	0.8	1.0	13.2	–	3.2	24.1	–	9.0	–	4.3	5.0	–	–	–	11.2
1990	76.7	64.0	1.0	1.7	16.6	–	4.2	20.5	–	11.5	–	4.9	5.3	–	–	–	11.0
1994	86.4	71.6	1.4	2.9	16.8	–	5.5	22.8	–	12.5	–	5.6	7.0	–	–	–	12.0
1995	84.9	70.9	1.4	2.9	16.6	–	5.9	22.2	–	12.8	–	5.3	6.8	–	–	–	11.1
1996	84.2	69.1	1.5	3.5	14.5	–	6.1	21.9	–	12.6	–	5.4	7.1	–	–	–	11.6
1997	85.6	70.6	1.5	3.8	13.2	–	6.5	22.1	–	13.2	–	6.0	8.0	–	–	–	11.2
																	(tkm per 1 000 ecu GDP)
1970	21.6	27.0	2.9	–	23.9	–	5.0	50.9	–	18.7	–	32.5	52.3	–	–	–	5.5
1975	22.4	26.9	14.0	–	21.6	–	8.0	47.6	–	20.7	–	30.3	68.8	–	–	–	10.0
1980	22.3	25.2	14.0	–	19.1	–	10.3	45.7	–	17.3	–	28.0	70.6	–	–	–	17.1
1985	16.2	17.2	6.1	10.9	13.2	–	10.1	29.8	–	12.1	–	22.3	46.6	–	–	–	17.3
1990	14.8	15.7	6.6	16.8	14.0	–	10.6	21.8	–	13.4	–	21.9	42.2	–	–	–	14.4
1994	15.6	16.3	8.5	25.9	12.1	–	13.2	23.6	–	14.1	–	23.3	51.5	–	–	–	15.1
1995	14.9	15.8	8.3	25.2	11.8	–	13.8	22.5	–	14.1	–	21.4	48.9	–	–	–	13.6
1996	14.6	15.1	9.0	29.5	10.2	–	14.1	21.9	–	13.7	–	21.0	50.2	–	–	–	13.9
1997	14.4	15.1	8.7	31.0	9.1	–	14.5	21.6	–	14.2	–	22.9	55.6	–	–	–	13.0
																	(tkm per capita)
1970	195	242	28	–	223	–	30	555	–	169	–	313	485	–	–	–	48
1975	227	273	157	–	221	–	60	590	–	207	–	326	763	–	–	–	96
1980	258	296	183	–	231	–	80	644	–	212	–	356	935	–	–	–	179
1985	200	214	82	196	170	–	82	437	–	159	–	296	660	–	–	–	198
1990	210	226	103	332	209	–	108	361	–	203	–	326	686	–	–	–	191
1994	233	248	135	553	206	–	140	394	–	219	–	365	871	–	–	–	206
1995	228	245	135	553	203	–	150	382	–	223	–	342	841	–	–	–	190
1996	226	238	148	665	177	–	156	375	–	220	–	345	877	–	–	–	198
1997	229	243	147	719	161	–	166	377	–	230	–	387	994	–	–	–	190

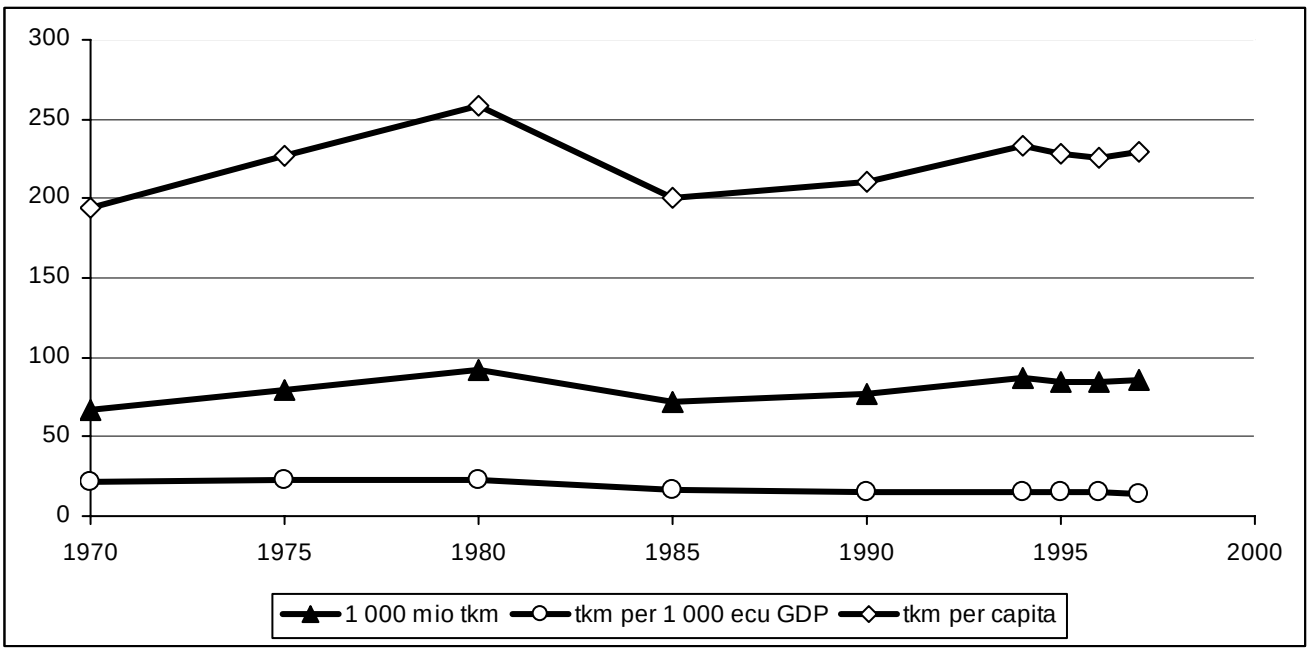


Figure 3.22: Freight transport by oil pipeline in EU-15

Source: DG Energy and Transport.

Notes to Chapter 3

General note

The direct source for all the data in this chapter is *EU transport in figures. Statistical pocketbook, 1999,* produced by the European Commission's Directorate-General for Energy and Transport, in cooperation with Eurostat. The latest version of this source is available on the internet at:

http://europa.eu.int/en/comm/dg07/tif

The data represent a compilation of statistics from a variety of sources, including national statistical offices (directly, and indirectly through Eurostat, UNECE and ECMT), transport organisations (AEA, ECF, UITP, UIC, etc.), and estimations and studies by consultancy firms employed by the Commission. For a variety of reasons, including definitions, they may not always agree with official national statistics. They are presented here for their comprehensive coverage of all means and modes. For road and rail transport, the figures are based on both national and international traffic within the national territory.

German data

Some of the data sets for Germany include data for the former German Democratic Republic (DDR). Population data are available for both Germanies and have been used in the estimation of per-capita pkm and tkm. However, GDP data for the former German Democratic Republic are not available, and therefore a small error exists in the pkm and tkm per unit of GDP for Germany, EU-15 and EUR prior to German unification. The contribution of the new German länder to the GDP of Germany, EU-15 and EUR over the period 1991 to 1994 represented about 8%, 2% and 2.5% respectively.

Passenger transport:

Motorbikes
Source: UITP. Germany 1994-95: DIW. D includes former DDR. Greece: results of a DG Energy and Transport study.

Passenger cars
Source: ECMT, national statistics, DG Energy and Transport estimates and studies. D includes former DDR. Greece: results from a DG Energy and Transport study. Spain: 1980-96 estimates based on vehicle stock and vehicle-km data. Ireland: estimates based on results of DG Energy and Transport studies. Austria: Austrian Ministry for Environment.

Buses and coaches
Source: ECMT, national statistics. D includes former DDR. Greece: results from a DG Energy and Transport study. Spain: from 1995, old series was extrapolated to avoid break. UK: data for Great Britain only until 1992.

Tram and metro
Source: 1970-95: UITP, 1996-97: national statistics, DG Energy and Transport estimates. D includes former DDR.

Railways
Source: ECMT, UIC and national statistics. D includes former DDR.
Non-UIC railways are included (about 2% of market).

Waterborne transport
Source: UITP. D does not include former DDR, but this traffic was negligible.

Air
Sources:
Overview table: AEA, IACA and DG Energy and Transport estimates. D does not include former DDR, but this traffic was small. 1988-92 table: DG Energy and Transport. D includes former DDR.
Data in the overview table relate to traffic of EU-based airlines in geographic Europe and are slightly higher than the intra-EU air traffic presented in the 1988-92 table.

Cycling
Source: results from DG Energy and Transport studies. D includes former DDR.

Walking
Source: UITP.

Freight transport

Road
Source: ECMT , national statistics. For B, DK, EL, E, L, NL and P calculations by NEA based on Eurostat statistics, estimates. D includes former DDR. UK: vehicles with a payload over 3 tonnes.
National and international road haulage on national territory.

Rail
Source: UIC, ECMT, national statistics. D includes former DDR.
Non-UIC railways are included (approximately 1% of market).

Inland waterways
Source: ECMT, Eurostat, national statistics. Finnish data, published in national statistics, include domestic sea traffic which have been removed from this table. D includes former DDR.

Short sea shipping
Source: results of a DG Energy and Transport study. D includes former DDR.

Oil pipelines
Source: ECMT, Eurostat. D includes former DDR.

CHAPTER 4: TRANSPORT SUPPLY

- **TRANSPORT SUPPLY**

The supply of transport infrastructure is both dependent on transport demand and influences transport demand. Investment is a means of extending and upgrading existing infrastructure to better meet demand and to influence the modal split. However, it can also create new demand.

Length of infrastructure

The length of new roads in the European Union over the period 1980 to 1995 has far outstripped that of new railway lines. Although only a small part of this road building has been motorways, their length has increased by 52%, or nearly 15 000 km in absolute terms. The length of railway lines has only increased by about 3%, an extra 4 800 km, although there has been a major shift in the extent of electrification (from 35% to 47%). It is the nature of inland waterways that the length regularly in use has hardly changed over these 15 years.

Investments in transport infrastructure

Public investment in transport infrastructure in the European Union has increased 45% between the period 1985 and 1994, although the picture varies considerably between Member States. From 1985 to 1992 the share of expenditure spent on rail has decreased from 24% to 19%, and the share spent on roads has increased correspondingly. The share of investment in the inland waterways network has remained at a constant 2% of the total.

Length of road network by category

(1 000 km)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Total																	
1980	:	:	123.3	68.4	477.9	:	:	797.0	92.3	288.6	5.1	:	:	:	:	:	360.3
1985	:	:	133.0	69.6	482.9	:	147.4	796.3	92.3	293.8	5.2	:	:	:	:	:	369.1
1990	:	:	138.6	70.2	492.0	:	156.2	801.3	92.3	297.7	5.1	102.5	:	:	:	132.6	378.9
1991	:	:	139.2	70.3	:	:	156.9	881.4	92.3	297.2	5.1	:	:	:	:	134.9	381.0
1992	:	:	140.0	70.3	628.8	:	151.1	908.2	91.5	808.0	5.1	103.7	:	:	:	134.0	383.3
1993	:	:	140.9	70.4	:	:	152.5	908.2	91.5	809.7	5.1	:	104.7	67.4	380.0	133.9	385.2
1994	:	:	141.7	70.5	:	:	155.8	955.3	91.4	:	5.1	118.5	104.7	71.6	380.0	133.9	385.8
State roads																	
1980	:	:	11.7	4.1	32.6	8.8	80.2	29.0	5.3	44.8	0.9	2.8	:	:	75.4	:	12.9
1985	:	:	12.6	4.0	31.4	9.1	18.1	28.3	5.3	45.8	0.9	2.4	:	:	76.4	:	12.8
1990	283.9	242.7	13.1	4.0	30.9	9.1	20.7	28.3	5.3	44.7	0.9	2.0	10.4	9.2	77.2	13.2	14.9
1991	:	:	12.8	3.9	:	9.2	20.7	28.4	5.3	45.1	0.9	:	10.5	9.2	77.5	13.6	14.6
1992	287.1	248.0	12.7	3.8	42.2	9.2	15.9	28.2	4.4	44.9	1.0	1.9	10.2	9.1	77.6	13.6	12.4
1993	:	:	12.7	3.8	42.0	:	15.9	28.2	4.4	44.8	1.0	:	10.2	9.1	77.5	13.5	12.4
1994	:	:	12.8	3.8	41.8	9.2	17.2	26.7	4.4	:	1.0	2.1	10.2	9.1	77.9	13.5	12.3
Provincial roads																	
1980	:	:	1.4	6.9	132.3	28.6	:	347.0	10.7	102.1	2.0	8.7	23.2	18.6	:	:	35.9
1985	:	:	1.4	7.0	133.5	31.3	74.7	347.0	10.6	106.3	2.0	:	23.4	18.6	:	84.4	36.3
1990	:	:	1.4	7.0	134.2	31.2	71.1	352.0	10.6	111.3	1.8	7.1	23.5	:	:	83.8	35.1
1991	:	:	1.4	7.1	173.2	31.2	71.5	353.0	10.7	110.5	1.8	:	19.7	:	:	83.2	35.6
1992	:	:	1.4	7.1	173.6	31.2	70.4	354.0	10.7	112.9	1.8	7.0	19.8	:	:	83.3	37.7
1993	:	:	1.4	7.0	174.1	:	70.6	354.0	10.7	113.4	1.8	:	23.5	:	:	83.2	37.8
1994	:	:	1.3	7.1	175.7	:	71.5	365.6	10.7	:	1.8	8.5	23.5	:	:	83.3	37.9
Communal roads																	
1980	:	:	110.3	57.4	313.0	:	68.3	421.0	76.3	141.7	2.2	:	70.0	:	:	:	311.5
1985	:	:	119.0	58.5	318.0	:	54.5	421.0	76.5	141.7	2.3	:	:	:	:	:	320.1
1990	:	:	124.1	59.2	327.0	:	64.5	421.0	76.4	141.7	2.3	93.5	:	:	:	35.7	328.9
1991	:	:	125.0	59.3	410.0	:	64.7	500.0	76.3	141.7	2.3	:	:	50.2	:	38.1	330.8
1992	:	:	125.9	59.4	413.0	:	64.8	526.0	76.3	650.2	2.3	94.8	:	56.5	:	37.1	333.1
1993	:	:	126.8	59.5	:	:	66.0	526.0	76.3	651.6	2.3	:	71.0	58.3	22.0	37.1	335.1
1994	:	:	127.6	59.6	:	:	67.1	563.0	76.3	:	2.3	107.9	71.0	62.5	22.0	37.1	335.6

Length of motorway network

(1 000 km)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
1980	29.1	24.95	1.3	0.5	7.5	0.1	1.9	5.3	–	5.9	0.0	1.8	0.9	0.1	0.2	0.9	2.7
1985	31.9	27.36	1.5	0.6	8.4	0.1	2.1	5.9	0.0	6.0	0.1	1.9	1.1	0.2	0.2	0.9	3.0
1990	37.4	32.5	1.7	0.6	9.0	0.2	4.7	6.8	0.0	6.2	0.1	2.1	1.4	0.3	0.2	0.9	3.2
1991	40.7	35.62	1.7	0.7	11.0	0.2	5.2	7.1	0.0	6.3	0.1	2.1	1.5	0.5	0.2	1.0	3.2
1992	42.7	37.5	1.7	0.7	11.0	0.3	6.5	7.4	0.0	6.3	0.1	2.1	1.6	0.5	0.3	1.0	3.2
1993	43.5	38.11	1.7	0.7	11.1	0.3	6.6	7.6	0.1	6.4	0.1	2.2	1.6	0.6	0.3	1.1	3.3
1994	44.1	38.55	1.7	0.8	11.1	0.4	6.5	8.0	0.1	6.4	0.1	2.2	1.6	0.6	0.4	1.1	3.3
1995	45.5	39.66	1.7	0.8	11.2	0.4	7.0	8.3	0.1	6.4	0.1	2.3	1.6	0.7	0.4	1.2	3.3
1996	46.3	40.31	1.7	0.9	11.3	0.5	7.3	8.3	0.1	6.4	0.1	2.4	1.6	0.7	0.4	1.3	3.3

Source: Eurostat (New Cronos).

Length of railway network

Total

(1 000 km)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
1980	151.4	117.1	4.0	2.5	28.5	2.5	13.5	34.4	2.0	16.1	0.3	2.8	5.8	3.6	6.1	11.4	18.0
1985	:	114.7	3.6	2.5	27.4	2.5	12.7	34.6	1.9	16.0	0.3	2.8	5.8	3.6	5.9	:	17.0
1986	:	114.9	3.7	2.5	27.5	2.5	12.7	34.7	1.9	16.0	0.3	2.8	5.7	3.6	5.9	:	17.0
1987	147.8	114.6	3.6	2.5	27.4	2.5	12.7	34.6	1.9	16.0	0.3	2.8	5.7	3.6	5.9	11.2	17.0
1988	147.1	114.2	3.6	2.5	27.3	2.5	12.6	34.6	1.9	16.0	0.3	2.8	5.6	3.6	5.9	11.1	17.0
1989	146.1	113.3	3.5	2.3	27.0	2.5	12.6	34.5	1.9	16.0	0.3	2.8	5.6	3.1	5.9	11.0	16.9
1990	145.5	112.9	3.5	2.3	27.0	2.5	12.6	34.3	1.9	16.1	0.3	2.8	5.6	3.1	5.9	10.8	16.9
1991	159.5	126.8	3.5	2.3	41.1	2.5	12.6	34.0	1.9	16.1	0.3	2.8	5.6	3.1	5.9	11.0	16.9
1992	157.9	126.5	3.4	2.3	40.8	2.5	13.0	33.6	1.9	16.1	0.3	2.8	5.6	3.1	5.9	9.8	16.8
1993	155.9	124.5	3.4	2.3	40.4	2.5	12.6	32.6	1.9	15.9	0.3	2.8	5.6	3.1	5.9	9.7	16.9
1994	156.9	125.3	3.4	2.3	41.4	2.5	12.6	32.3	1.9	16.0	0.3	2.8	5.6	3.1	5.9	9.7	17.1
1995	156.2	124.7	3.4	2.3	41.7	2.5	12.3	32.0	1.9	16.0	0.3	2.7	5.7	2.9	5.9	9.7	17.0
1996	156.6	123.7	3.4	2.3	40.8	2.5	12.3	31.9	1.9	16.0	0.3	2.7	5.7	2.9	5.9	10.9	17.1

Electrified lines

(1 000 km)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
1980	53.7	42.8	1.4	0.1	11.0	–	5.5	10.0	–	8.7	0.1	1.8	3.0	0.4	0.9	7.1	3.7
1985	:	47.2	1.9	0.2	11.4	–	6.2	11.5	0.0	9.1	0.2	1.8	3.1	0.5	1.4	:	4.0
1986	:	47.1	2.0	0.2	11.4	–	6.2	11.5	0.0	8.9	0.2	1.8	3.1	0.5	1.4	:	3.8
1987	59.1	47.7	2.0	0.2	11.5	–	6.3	11.7	0.0	9.1	0.2	1.9	3.1	0.5	1.4	7.0	4.2
1988	59.9	48.4	2.1	0.2	11.7	–	6.3	11.9	0.0	9.0	0.2	2.0	3.2	0.5	1.6	7.0	4.3
1989	61.1	49.4	2.3	0.2	11.6	–	6.4	12.2	0.0	9.4	0.2	2.0	3.2	0.5	1.6	7.0	4.5
1990	61.9	50.0	2.3	0.2	11.7	–	6.4	12.5	0.0	9.5	0.2	2.0	3.2	0.5	1.7	7.0	4.7
1991	67.6	55.1	2.3	0.3	16.3	–	6.4	12.7	0.0	9.8	0.2	1.9	3.2	0.5	1.7	7.3	4.9
1992	68.4	56.0	2.3	0.4	16.3	–	6.9	12.9	0.0	9.9	0.2	2.0	3.2	0.5	1.7	7.2	4.9
1993	:	:	2.4	0.4	16.8	–	6.9	13.6	0.0	:	0.3	2.0	3.3	0.5	1.7	7.2	5.1
1994	71.4	59.0	2.4	0.4	17.7	–	7.0	13.7	0.0	10.1	0.3	2.0	3.3	0.5	2.0	7.2	4.9
1995	72.4	59.7	2.4	0.4	18.2	–	6.9	13.8	0.0	10.2	0.3	2.0	3.4	0.5	2.1	7.3	5.0
1996	73.7	60.7	2.5	0.4	18.5	–	6.9	14.2	0.0	10.3	0.3	2.0	3.4	0.6	2.1	7.4	5.2

Percentage electrified

(%)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
1980	35.4	36.5	34.6	5.5	38.7	–	40.4	29.1	–	53.8	53.0	63.8	50.5	12.0	15.2	62.1	20.6
1985	:	41.2	52.9	6.2	41.7	–	48.9	33.3	1.9	56.8	60.0	65.5	54.0	12.7	24.5	:	23.7
1986	:	41.0	54.3	6.2	41.5	–	48.7	33.1	1.9	55.7	60.0	65.4	54.3	12.7	24.5	:	22.1
1987	40.0	41.7	55.7	8.1	41.9	–	49.7	33.6	1.9	57.0	60.0	68.8	54.4	12.8	24.6	62.5	24.6
1988	40.7	42.4	58.4	9.3	42.8	–	50.3	34.4	1.9	56.3	59.6	69.6	56.6	12.8	27.8	63.2	25.3
1989	41.8	43.6	64.5	9.8	42.9	–	51.1	35.3	1.9	58.9	72.4	69.6	57.4	14.7	27.8	63.5	26.4
1990	42.6	44.3	65.9	9.8	43.4	–	51.1	36.5	1.9	59.1	72.7	70.4	57.7	14.7	28.3	64.8	27.9
1991	42.4	43.5	66.1	14.5	39.6	–	51.1	37.3	1.9	61.3	81.2	69.7	57.7	14.8	28.3	66.1	29.0
1992	43.3	44.3	66.8	15.6	40.0	–	52.9	38.4	1.9	61.7	80.0	72.2	57.9	15.1	28.3	73.6	29.2
1993	:	:	69.3	15.8	41.6	–	54.7	41.7	1.9	:	95.3	72.2	58.4	15.1	29.1	73.7	30.2
1994	45.5	47.1	69.6	15.8	42.9	–	55.3	42.6	1.9	63.3	95.3	72.2	58.7	15.0	33.2	74.3	28.6
1995	46.3	47.9	70.4	18.5	43.5	–	55.8	43.2	1.9	63.8	95.3	72.7	60.3	18.3	34.9	75.7	29.2
1996	47.0	49.0	72.8	16.5	45.2	–	55.8	44.5	1.9	64.4	95.3	72.7	60.3	21.9	35.0	68.1	30.2

Source: Eurostat (New Cronos).

Length of railway network by number of tracks

(1 000 km)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Single track																	
1980	93.9	74.4	1.4	1.7	16.2	2.3	11.3	18.8	1.5	10.8	0.1	1.1	4.3	3.2	5.6	10.2	5.3
1985	:	:	1.1	1.7	15.4	2.3	10.2	19.2	1.4	10.7	0.1	1.1	:	3.2	:	:	5.1
1986	:	:	1.1	1.6	15.3	2.3	10.1	19.2	1.4	10.5	0.1	1.1	:	3.2	:	:	5.1
1987	:	:	1.0	1.6	15.2	2.2	10.1	19.1	1.4	10.4	0.1	1.0	:	3.2	5.4	10.0	5.2
1988	:	:	1.0	1.6	14.9	2.2	9.9	19.1	1.4	10.4	0.1	1.0	:	3.2	5.4	9.9	5.1
1989	88.1	69.4	0.9	1.4	14.7	2.2	9.9	18.9	1.4	10.3	0.1	1.0	4.0	2.7	5.4	9.8	5.1
1990	:	:	0.9	1.4	14.6	2.2	9.9	18.5	1.4	:	0.1	1.0	4.0	2.7	5.4	9.6	5.1
1991	:	78.0	0.9	1.4	24.2	2.2	9.9	18.2	1.4	10.3	0.1	1.0	3.9	2.7	5.4	9.7	:
1992	:	:	0.9	1.5	23.9	2.2	9.9	16.2	1.4	:	0.1	1.0	3.9	2.6	5.4	8.5	:
1993	:	:	0.8	1.5	23.2	2.2	9.3	16.5	1.5	:	0.1	1.0	3.9	2.6	5.4	8.4	:
1994	:	75.0	0.8	1.5	24.2	2.2	9.4	16.2	1.5	10.0	0.1	1.0	3.9	2.6	5.4	8.3	:
1995	:	74.1	0.8	1.4	24.1	2.2	9.0	16.0	1.5	10.0	0.1	0.9	3.9	2.4	5.4	8.3	:
Double track or more																	
1980	57.1	42.3	2.6	0.8	12.3	0.2	2.3	15.1	0.5	5.3	0.2	1.6	1.5	0.4	0.5	1.2	12.8
1985	:	:	2.6	0.8	12.2	0.2	2.5	15.5	0.5	5.5	0.2	1.7	:	0.4	:	:	12.0
1986	:	:	2.6	0.9	12.2	0.2	2.6	15.5	0.5	5.5	0.2	1.7	:	0.4	:	:	11.9
1987	:	:	2.6	0.9	12.2	0.2	2.6	15.5	0.5	5.6	0.2	1.8	:	0.4	0.5	1.2	11.8
1988	:	:	2.6	0.9	12.4	0.2	2.6	15.5	0.5	5.6	0.2	1.8	:	0.4	0.5	1.2	11.8
1989	58.0	43.9	2.6	0.9	12.4	0.2	2.6	15.5	0.5	5.7	0.2	1.8	1.6	0.4	0.5	1.2	11.8
1990	:	:	2.6	0.9	12.4	0.2	2.7	16.0	0.5	:	0.1	1.8	1.7	0.4	0.5	1.2	11.8
1991	:	49.1	2.6	0.9	16.9	0.2	2.7	16.1	0.5	5.8	0.1	1.8	1.7	0.4	0.5	1.3	:
1992	:	:	2.6	0.9	16.9	0.2	3.2	15.7	0.5	:	0.1	1.8	1.7	0.4	0.5	1.2	:
1993	:	:	2.6	0.9	17.2	0.2	3.3	16.0	0.5	:	0.1	1.8	1.7	0.5	0.5	1.3	:
1994	:	50.3	2.6	0.9	17.2	0.3	3.3	16.1	0.5	6.0	0.1	1.8	1.7	0.5	0.5	1.3	:
1995	:	50.6	2.6	1.0	17.6	0.3	3.3	16.0	0.4	6.0	0.1	1.8	1.8	0.5	0.5	1.4	:

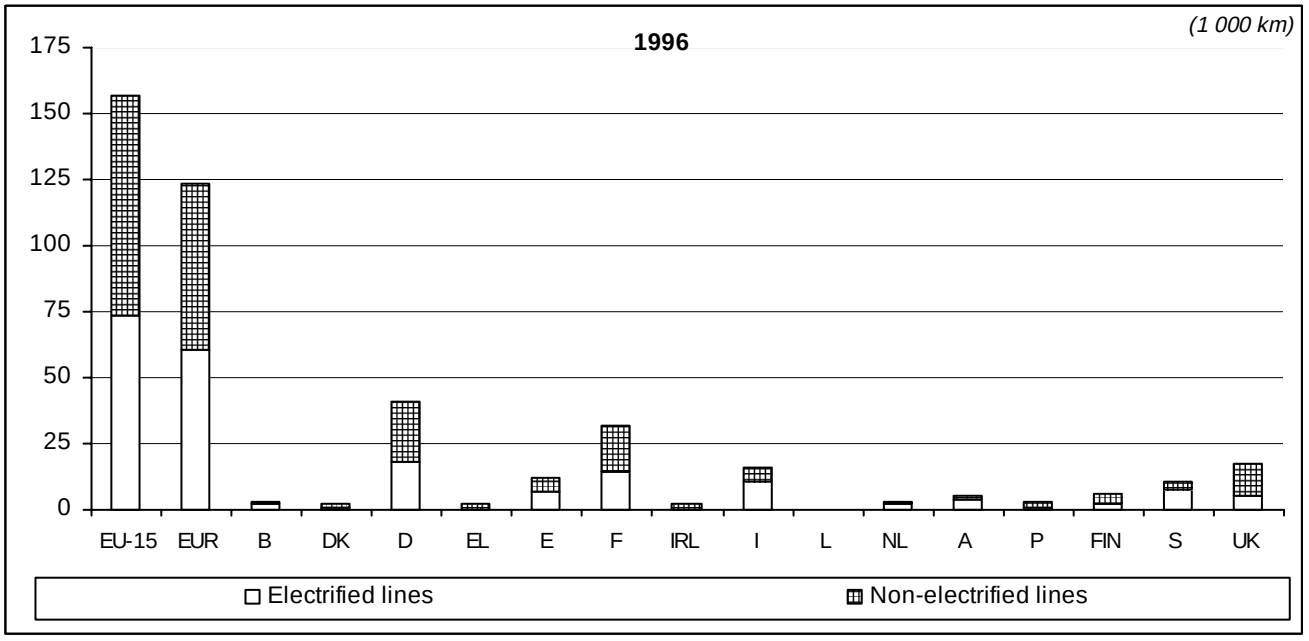


Figure 4.1: Length of electrified and non-electrified railway lines

Source: Eurostat (New Cronos).

Length of regularly used navigable inland waterways network

(1 000 km)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
								Total									
1980	:	:	1.5	–	4.5	–	–	:	–	:	0.0	4.8	0.4	–	6.1	–	:
1985	:	25.0	1.5	–	4.5	–	–	6.3	–	1.4	0.0	4.8	0.4	–	6.1	–	:
1990	26.9	25.2	1.5	–	4.5	–	–	6.2	–	1.4	0.0	5.0	0.4	–	6.2	–	1.6
1991	29.1	27.9	1.5	–	7.4	–	–	6.0	–	1.4	0.0	5.0	0.4	–	6.2	–	1.2
1992	29.0	27.8	1.5	–	7.4	–	–	5.9	–	1.5	0.0	5.0	0.4	–	6.2	–	1.2
1993	29.1	27.9	1.5	–	7.5	–	–	5.8	–	1.5	0.0	5.0	0.4	–	6.2	–	1.2
1994	:	:	:	–	7.5	–	–	5.7	–	:	0.0	5.0	0.4	–	6.2	–	:
1995	:	:	1.5	–	:	–	–	6.0	–	:	0.0	5.0	0.4	–	6.2	–	:
1996	:	:	1.5	–	:	–	–	5.7	–	:	0.0	5.0	0.4	–	6.2	–	:
								Canals									
1980	:	:	0.9	–	1.4	–	–	:	–	:	–	3.5	0.0	–	0.1	–	:
1985	:	10.1	0.9	–	1.4	–	–	3.8	–	0.4	–	3.5	0.0	–	0.1	–	:
1990	10.6	10.2	0.9	–	1.4	–	–	3.7	–	0.3	–	3.7	0.0	–	0.1	–	0.4
1991	11.1	10.8	0.9	–	1.8	–	–	3.9	–	0.3	–	3.7	0.0	–	0.1	–	0.3
1992	10.6	10.4	0.9	–	1.8	–	–	3.8	–	0.1	–	3.7	0.0	–	0.1	–	0.2
1993	10.7	10.5	0.9	–	1.8	–	–	3.8	–	0.1	–	3.7	0.0	–	0.1	–	0.2
1994	:	:	:	–	1.8	–	–	3.7	–	:	–	3.7	0.0	–	0.1	–	0.3
1995	:	:	0.9	–	:	–	–	4.0	–	:	–	3.7	0.0	–	0.1	–	:
1996	:	:	0.9	–	:	–	–	3.7	–	:	–	3.7	0.0	–	0.1	–	:
								Rivers and lakes									
1980	:	:	0.7	–	3.1	–	–	:	–	:	0.0	1.3	0.4	–	6.0	–	:
1985	:	14.9	0.7	–	3.0	–	–	2.5	–	1.0	0.0	1.3	0.4	–	6.0	–	:
1990	16.3	15.0	0.7	–	3.0	–	–	2.5	–	1.0	0.0	1.3	0.4	–	6.2	–	1.3
1991	18.0	17.1	0.7	–	5.5	–	–	2.0	–	1.0	0.0	1.3	0.4	–	6.2	–	0.9
1992	18.4	17.4	0.7	–	5.5	–	–	2.1	–	1.3	0.0	1.3	0.4	–	6.1	–	1.0
1993	18.4	17.5	0.7	–	5.6	–	–	2.0	–	1.3	0.0	1.3	0.4	–	6.1	–	1.0
1994	:	:	:	–	5.6	–	–	2.0	–	:	0.0	1.3	0.4	–	6.1	–	:
1995	:	:	0.7	–	:	–	–	2.0	–	:	0.0	1.3	0.4	–	6.1	–	:
1996	:	:	0.7	–	:	–	–	2.0	–	:	0.0	1.3	0.4	–	6.1	–	:

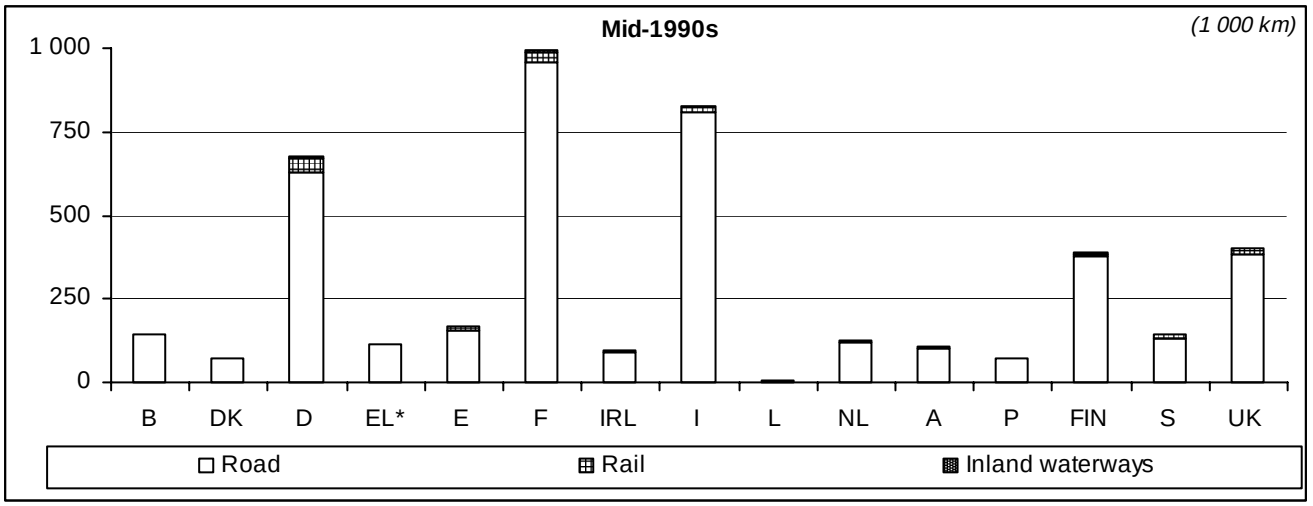


Figure 4.2: Length of road, rail and inland waterways network

Source: Eurostat (New Cronos).

Investments in transport infrastructure in million ecu (1994 prices)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1994 - as % of national GDP
EU-15	**46 337**	**47 076**	**49 312**	**53 113**	**55 429**	**60 879**	**68 344**	**69 622**	**67 878**	**66 967**	**1.1**
Index	100	102	106	115	120	131	147	150	146	145	
B	2 195	2 085	1 718	1 807	1 427	1 369	1 559	1 826	2 063	1 970	1.0
DK	571	534	538	657	790	768	823	1 088	923	800*	0.7*
D	13 772	14 293	14 079	13 755	13 819	14 014	20 397	21 186	20 489	20 958	1.2
EL	:	:	:	:	:	:	:	:	:	:	:
E	2 141	2 091	2 532	3 709	4 517	5 938	6 271	5 631	5 651	5 552	1.4
F	9 519	9 835	9 956	10 903	10 972	12 321	13 490	13 591	13 428	12 812	1.1
IRL	246	240	200	201	249	308	343	368	465	500*	1.1*
I	7 210	7 475	9 115	9 873	9 752	10 087	9 931	10 232	8 938	8 500*	1.0*
L	88	87	108	114	122	113	161	182	177	158	1.3
NL	1 876	1 693	1 849	1 796	1 932	2 150	2 179	2 194	2 309	2 400*	0.9*
A	1 941	1 926	1 588	1 638	1 673	1 977	1 795	1 675	1 766	1 591	1.0
P	304	373	437	538	629	871	1 005	854	975	1 203	1.7
FIN	806	851	923	879	951	1 030	1 044	1 007	880	887	1.1
S	941	889	961	1 068	1 257	1 389	1 160	1 416	1 787	2 125	1.3
UK	4 727	4 704	5 308	6 175	7 339	8 544	8 186	8 372	8 027	7 511	0.9

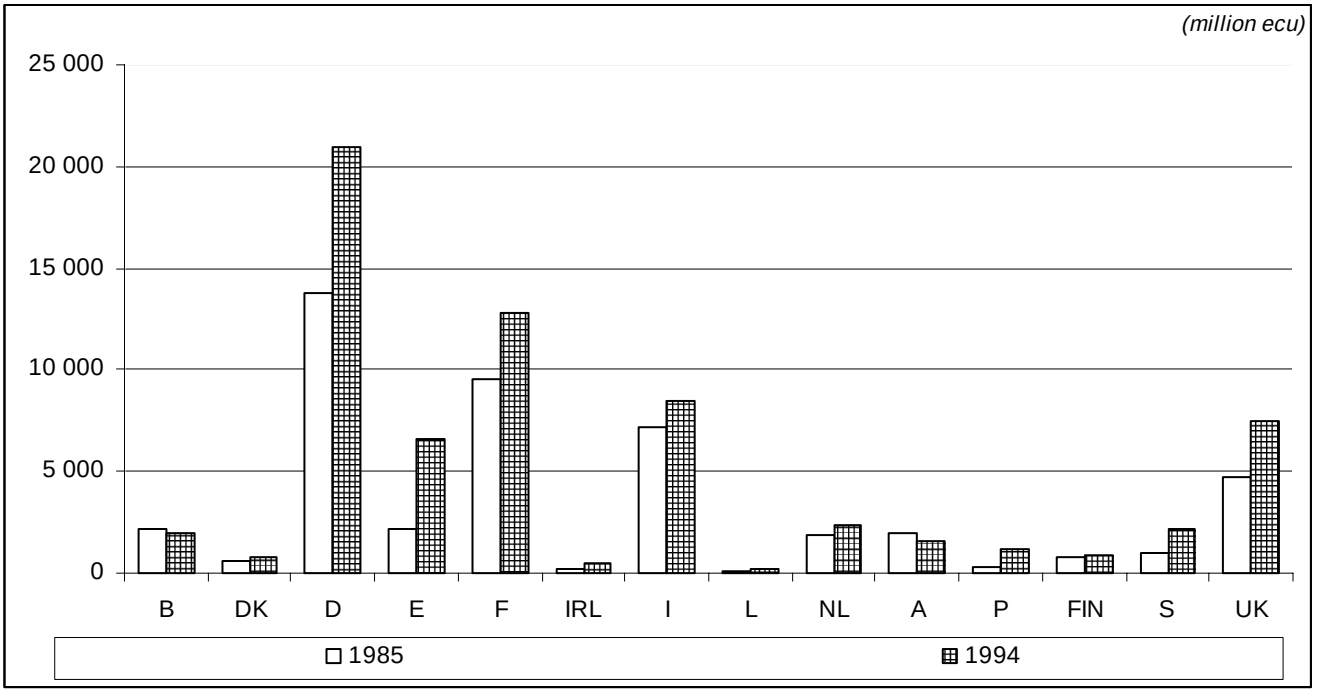


Figure 4.3: Infrastructure investments (1994 prices)

Source: European Centre for Infrastructure Studies - 1996 report.

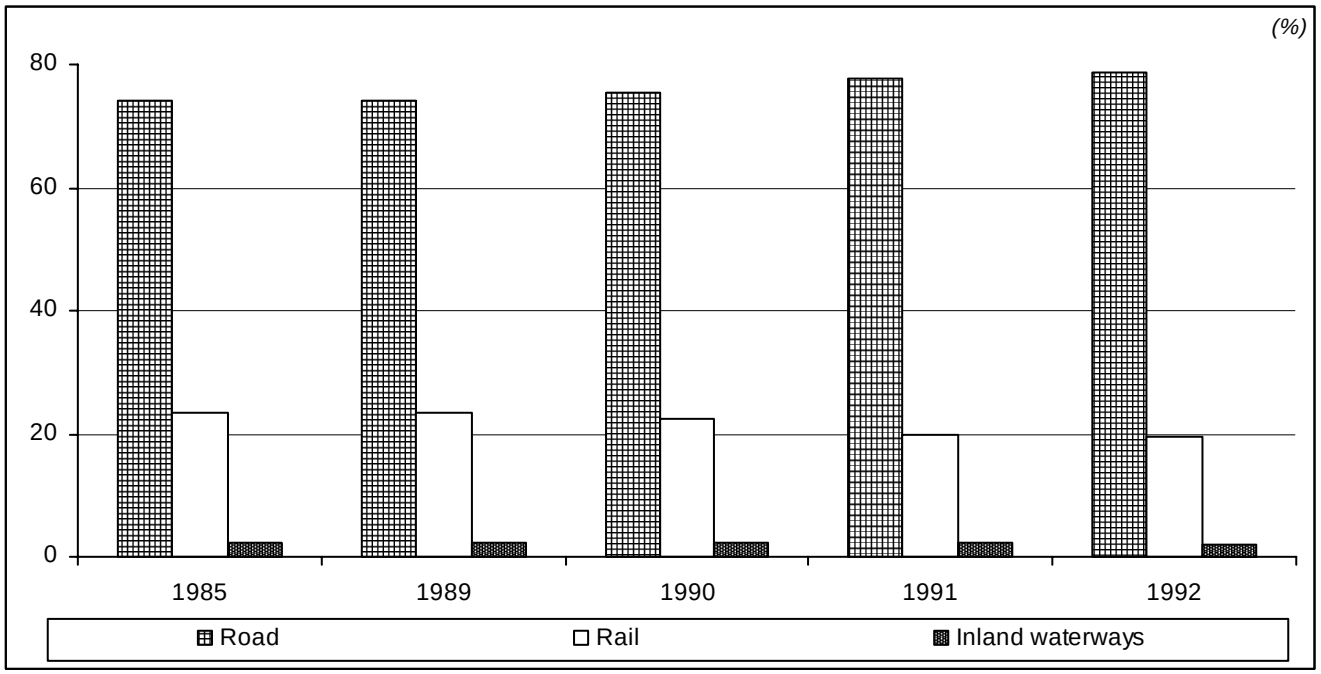


Figure 4.4: Modal split of infrastructure investments in selected EU Member States

Source: ECMT, European Centre for Infrastructure Studies.

Notes to Chapter 4

Length of infrastructure:
Additional data have been added from UNECE and national publications.
D includes former DDR from 1991.
Road: total presented includes state, provincial and communal roads.

Investments in transport infrastructure in million ECU (1994 prices)
The data have been supplemented by estimates from DG Energy and Transport (Greece and Italy, 1996).
No data available for Greece, former DDR and German new "Länder" respectively.
The figure on the modal split of infrastructure investments of selected EU Member States does not include Greece, Ireland, Luxembourg and Austria.

CHAPTER 5: PRICE SIGNALS

- **PRICE SIGNALS**

Prices play an important role as a signal for consumers and are an important determinant of consumer behaviour.

Harmonised consumer price indices

Although dipping below the general "all items" index in late 1988/early 1999, transport prices have risen slightly faster than the general index.

Of the three major sub-categories, the prices of vehicles, and especially motorcycles and bicycles, have remained relatively constant since 1996, with the exception of Greece, where prices rose substantially in 1998. Vehicle prices have even fallen slightly in France, Luxembourg and Sweden. The other two major sub-categories; operating costs and the price of transport services, have risen moderately. Within operating costs, fuel prices have risen rapidly in the first half of 1999, although this is partly due to seasonal fluctuations and the second half of 1999 may see some reductions. Maintenance and repair costs have risen steadily, as have other services, which includes garage hire, parking, tolls, driving lessons and vehicle hire. The UK stands out as having experienced large increases in both fuel and repair prices. In Greece it is the other services which have risen dramatically (34% in 1997), whilst maintenance costs have also risen more steeply than elsewhere, although fuel prices have remained rather constant. The remaining sub-category, transport services, has seen the most dramatic increases, with large seasonal fluctuation in air and, especially, waterborne travel. Again, Greece has experienced especially large increases in waterborne travel and the prices of combined tickets. In Spain and Portugal, the major increases have been in air and waterborne travel. In Sweden rail prices rose sharply in 1998.

Fuel prices and taxes

The prices of road transport fuels have risen sharply in terms of current ecu, but have changed little in real terms or in relation to people's income since 1988. In July 1998, ecu prices varied considerably between Member States and between fuels. Prices were cheapest in Greece, Spain and Luxembourg, and highest in the UK. Leaded petrol is the most expensive fuel in all Member States where it was still available, and moderately more expensive than unleaded petrol. However, a much higher price differential existed between unleaded petrol and diesel: diesel being substantially cheaper in all Member States except the UK.

Prices in constant ecu take economic growth into account and make it possible to compare the real change in price over time. Generally speaking, prices in constant ecu have shown relatively little change in most countries since 1990. However, in the Netherlands and UK real prices have risen steadily for all fuels, and in Greece diesel is more expensive than in 1990, although has fallen from a peak in 1993. Real prices have even fallen in several countries, especially for diesel.

It is interesting to also compare the prices in terms of purchasing power standard. These prices indicate the price relative to other products. In Luxembourg the prices were even lower, whereas in Greece and Spain they were far higher than the ecu prices. Portugal had the highest prices in purchasing power standard, yet rather low ecu prices.

Taxes, as a proportion of sales price, also vary between Member States and between fuels. Diesel is taxed less heavily in all Member States except the UK, where the level of taxation is about the same as for unleaded petrol. Luxembourg and Austria have the lowest tax rates, and France and the UK have the highest.

Household expenditure on transport

The proportion of expenditure on transport reflects changes in income and consequent changes in lifestyle, as well as price increases. Household expenditure on transport has grown steadily since 1980. Nevertheless, in Belgium there has been little change in the proportion of total household income devoted to transport. In Denmark, Germany and the UK, the proportion has risen, but in France, Ireland and the Netherlands it has fallen. Despite missing data for some countries, it is clear that Greece and Portugal have also seen increases in the share of expenditure on transport due to an increasing proportion spent on purchase of vehicles which has not been entirely compensated for by a fall in the proportion spent on purchased transport. It should be borne in mind that the rate of motorisation is increasing fastest in these two countries.

Annual harmonised consumer price indices

(1996 = 100)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
All items																	
1995	97.7*	97.9*	98.3	98.0	98.8	92.7	96.6	98.0	97.9	96.2	98.8	98.6	98.3	97.2	98.9	99.2	*97.6*
1996	100.0*	100.0*	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1997	101.7	101.6	101.5	101.9	101.5	105.4	101.9	101.3	101.2	101.9	101.4	101.9	101.2	101.9	101.2	101.9	101.8
1998	103.0	102.7	102.4	103.3	102.1	110.2	103.7	102.0	103.4	103.9	102.4	103.7	102.0	104.2	102.6	102.9	103.4
Transport																	
1995	96.9*	97.0*	96.6	97.4	97.6	94.8	95.9	:	97.2*	95.9	98.6	99.4	96.1	95.9	97.0	98.4	:
1996	100.0*	100.0*	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1997	102.1	101.5	102.1	102.2	101.6	105.2	102.5	101.1	103.2	101.5	101.1	101.2	101.2	103.6	100.5	101.3	104.9
1998	102.8	101.8	101.4	102.9	101.5	108.2	102.4	101.1	104.1	102.8	100.0	101.4	100.8	107.2	102.1	101.2	107.4

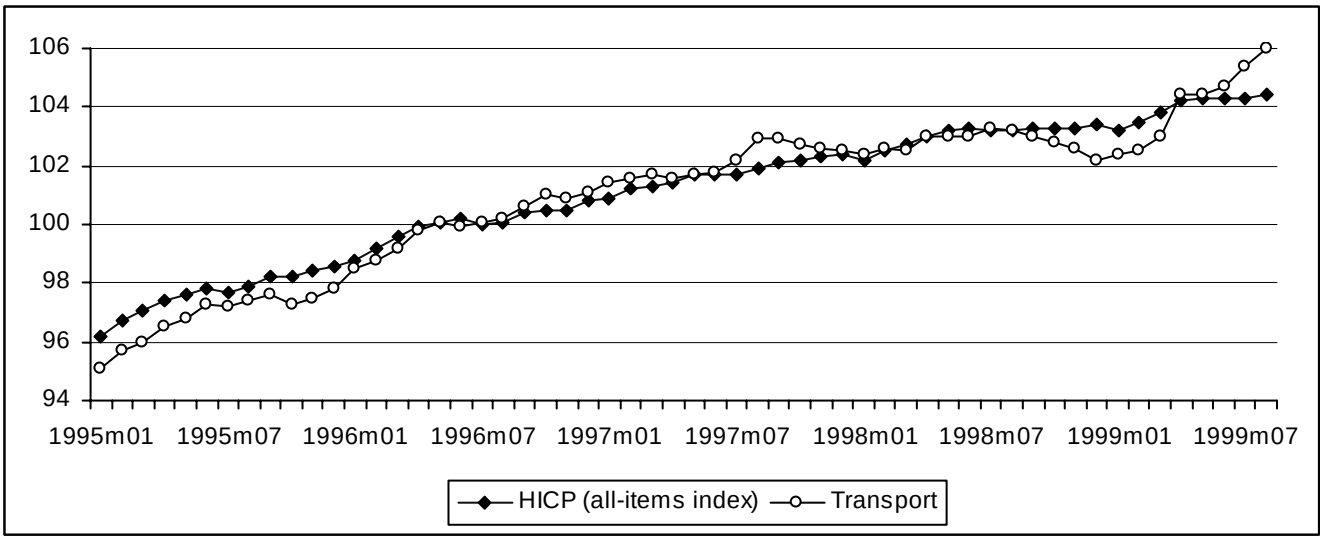


Figure 5.1: Annual harmonised consumer price indices – All items and transport - EU-15

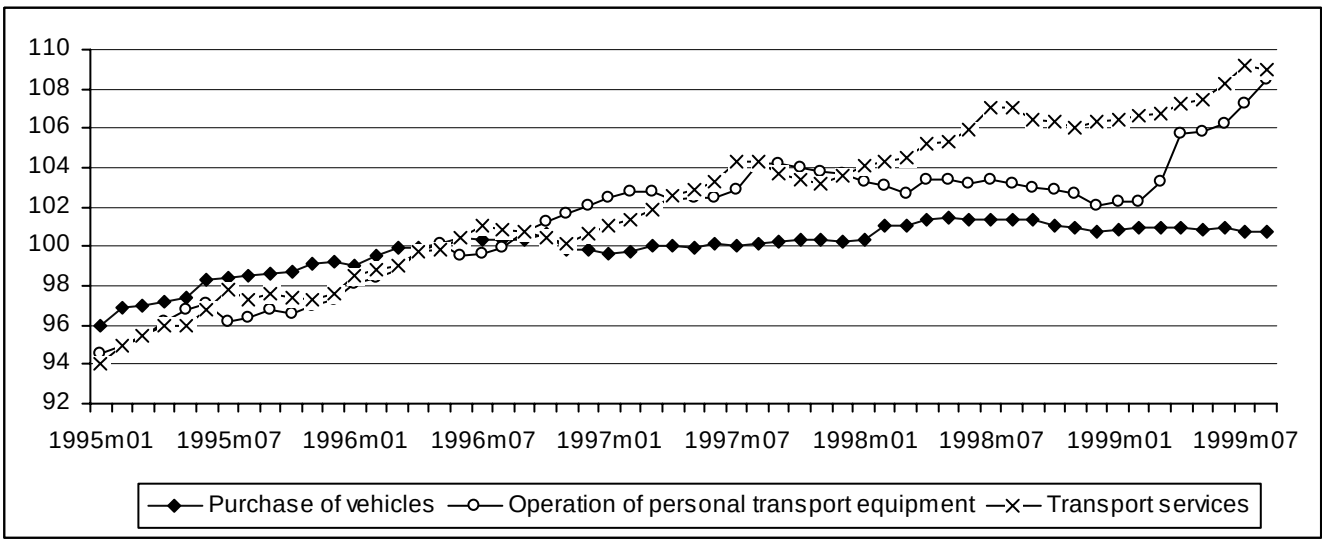


Figure 5.2: Annual harmonised consumer price indices - Transport categories - EU-15

Source: Eurostat (New Cronos).

Annual harmonised consumer price indices – Purchase of vehicles

(1996 = 100)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Purchase of vehicles																	
1995	97.9	98.4	99.6	99.8	99.1	98.7	96.2	:	99.1	95.7	100.5	102.0	100.0	97.8	102.3	101.4	:
1996	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1997	100.0	99.5	99.5	100.4	99.7	102.0	101.8	97.6	100.2	99.3	99.5	99.9	99.6	101.8	99.7	96.9	102.1
1998	101.1	101.0	100.7	102.8	101.1	106.3	102.6	98.5	100.7	102.5	99.3	100.4	99.9	105.0	101.7	95.8	101.3
Purchase of new and second-hand motor cars																	
1995	97.9*	98.3*	99.7	99.9	99.1	98.9	96.1	:	99.0	95.5	100.4	102.3	99.8	97.8	102.5	101.4	:
1996	100.0*	100.0*	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1997	100.0	99.4	99.4	100.4	99.7	101.9	102.0	97.5	100.1	98.9	99.6	99.7	100.1	101.7	99.6	96.6	102.2
1998	101.2	101.0	100.5	102.7	101.1	106.4	102.7	98.4	100.4	102.4	99.3	100.1	100.6	105.0	101.7	95.6	101.9
Purchase of motor cycles and bicycles																	
1995	98.5*	98.8*	98.4	98.3	99.3	95.4	97.1	:	99.5	97.1	100.4	98.7	101.3	98.0	99.0	101.3	:
1996	100.0*	100.0*	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1997	100.4	100.4	100.7	101.0	100.1	103.4	99.9	99.3	101.2	102.6	99.2	101.2	95.6	102.6	100.7	102.3	99.2
1998	100.4	101.0	103.0	103.0	100.7	105.4	100.3	99.2	106.0	103.3	99.4	102.4	94.2	104.4	101.2	103.4	92.5

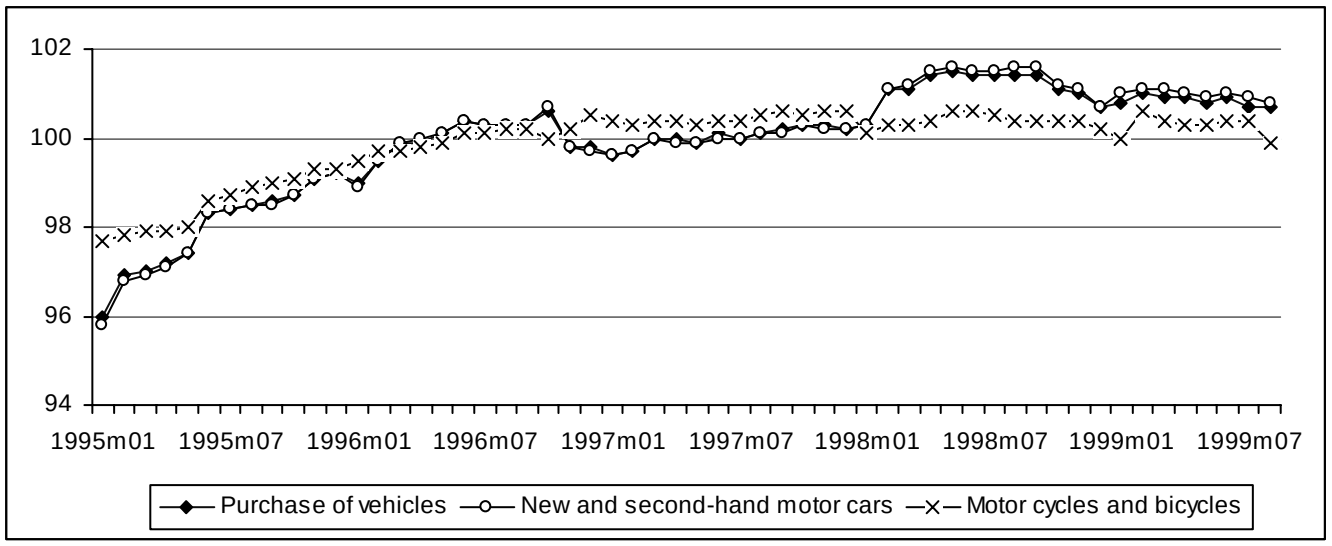


Figure 5.3: Annual harmonised consumer price indices – Purchase of vehicles

Source: Eurostat (New Cronos).

Annual harmonised consumer price indices – Operation of personal transport equipment

(1996 = 100)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Operation of personal transport equipment																	
1995	96.3*	96.2*	93.8	95.0	97.0	92.2	95.8	:	95.0*	96.0	96.8	97.1	93.8	94.1	92.6	97.2	:
1996	100.0*	100.0*	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1997	103.2	102.3	104.2	103.0	102.3	106.8	102.7	102.0	106.3	102.4	102.8	101.9	102.3	105.4	100.5	102.7	107.4
1998	103.0	101.3	101.7	103.8	100.6	107.1	100.9	101.3	105.7	102.4	100.5	101.1	100.6	108.8	100.3	101.9	112.1
Spare parts and accessories																	
1995	98.3*	98.7*	98.6	98.9	99.4	:	99.8	:	99.5	94.9	99.8	98.9	100.6	98.5	102.3	100.2	:
1996	100.0*	100.0*	100.0	100.0	100.0	:	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1997	100.0	99.7	100.2	101.2	99.9	:	97.6	99.7	101.3	100.9	99.1	98.7	99.0	101.5	98.9	95.5	102.5
1998	99.7	98.9	99.5	101.7	100.3	:	96.7	98.7	102.6	101.0	98.9	98.6	98.0	100.1	97.2	93.7	104.1
Fuels and lubricants																	
1995	95.4*	95.1*	90.9	91.8	95.9	92.6	95.4	:	94.0	96.6	95.2	94.9	93.0	96.1	89.4	96.3	:
1996	100.0*	100.0*	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1997	104.3	103.2	106.0	103.0	103.0	104.5	103.4	103.5	107.6	101.3	104.2	106.4	102.6	103.6	100.6	104.4	109.9
1998	102.1	99.5	100.1	99.2	97.8	101.4	100.0	100.5	106.1	98.5	98.6	105.0	97.1	103.3	100.1	102.5	115.4
Maintenance and repairs																	
1995	96.4*	96.6*	97.4	96.6	97.6	94.0	94.9	:	97.5	95.1	97.8	101.3	93.1	92.0	97.7	97.0	:
1996	100.0*	100.0*	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1997	102.9	102.3	102.4	103.6	101.9	107.7	102.7	102.4	103.5	103.5	102.2	97.1	101.1	107.3	101.9	102.3	105.4
1998	105.4	104.4	106.0	108.4	103.6	114.1	104.1	104.6	105.7	105.9	102.7	96.2	102.9	115.6	104.6	104.7	110.3
Other services in respect of personal transport equipment																	
1995	97.6*	98.0*	102.3	96.9	98.5	80.4	98.2	:	94.6	97.7	98.9	96.9	96.2	96.6	100.8	94.4	:
1996	100.0*	100.0*	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1997	102.7	101.8	99.2	103.1	101.6	134.1	101.1	102.0	102.6	103.2	102.2	97.4	108.8	101.6	101.0	111.1	104.8
1998	104.5	103.4	97.8	105.7	102.8	135.7	101.6	104.3	107.8	105.3	102.5	100.2	111.2	106.6	101.7	112.1	108.9

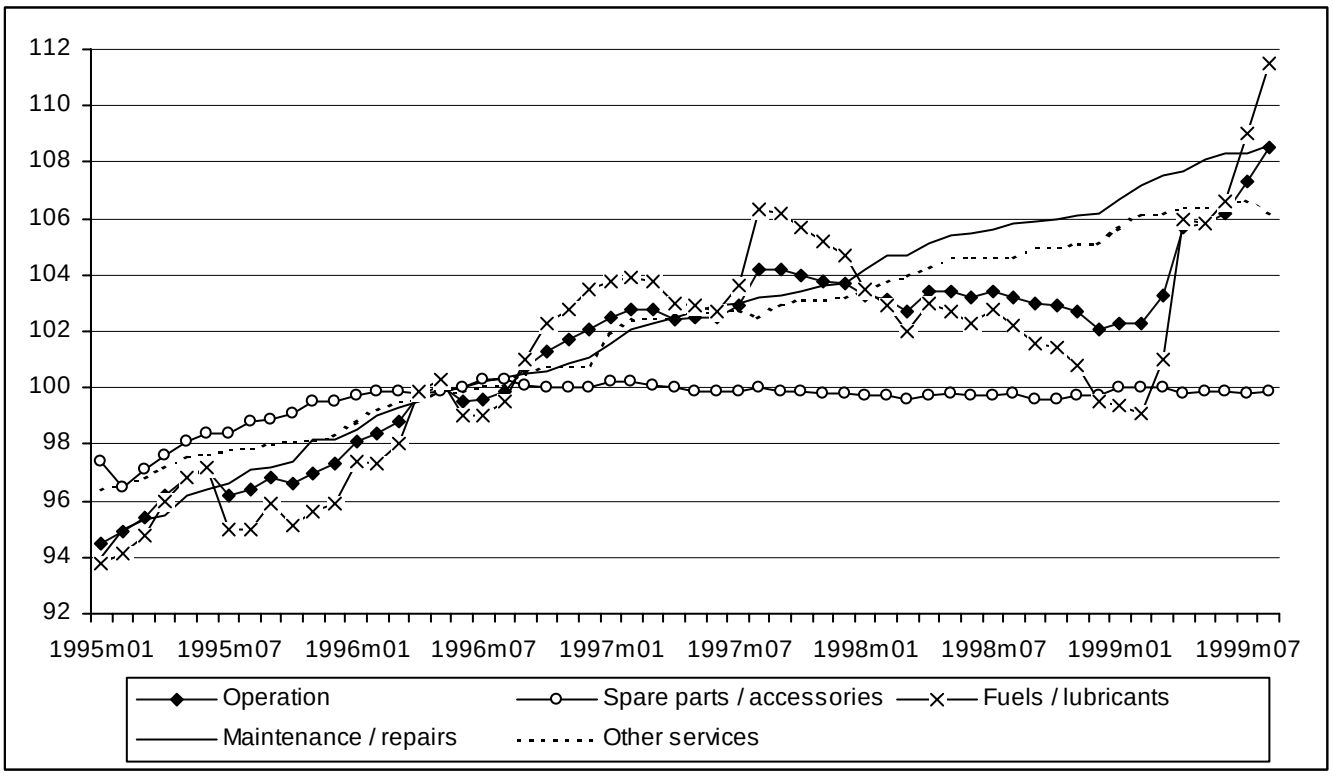


Figure 5.4: Annual harmonised consumer price indices – Operation of personal transport equipment

Source: Eurostat (New Cronos).

Annual harmonised consumer price indices – Transport services

(1996 = 100)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Transport services																	
1995	96.5*	96.5*	98.0	98.6	96.5	96.2	95.8	:	99.4	96.4	95.3	98.7	96.1	97.0	98.3	98.0	:
1996	100.0*	100.0*	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1997	103.0	102.6	102.8	103.6	102.7	106.9	104.1	102.4	100.4	102.8	101.5	102.4	101.0	102.7	102.0	103.5	104.0
1998	105.7	105.2	104.8	100.8	105.5	117.6	108.5	104.2	108.0	104.4	102.7	105.1	105.0	107.2	107.0	106.4	107.5
Passenger transport by railway																	
1995	96.2*	95.9*	98.3	97.1	95.1	94.5	94.3	:	98.7	99.0	95.6	98.5	95.7	96.4	96.3	98.5	:
1996	100.0*	100.0*	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1997	102.1	101.8	103.5	108.1	102.0	101.2	100.1	100.5	101.4	104.9	103.8	102.1	100.6	102.8	103.6	104.9	102.3
1998	104.9	104.2	105.3	112.2	106.3	104.5	100.5	100.4	105.2	105.9	106.2	105.5	105.6	108.8	110.0	114.8	106.7
Passenger transport by road																	
1995	96.4*	96.6*	97.9	97.5	98.6	96.6	95.7	:	99.6	95.1	94.7	98.3	97.4	96.8	98.9	97.5	:
1996	100.0*	100.0*	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1997	103.4	102.8	101.6	101.0	101.8	104.1	104.1	102.3	100.3	103.7	100.0	102.0	100.4	102.6	101.3	102.2	104.8
1998	106.3	105.6	103.3	96.8	103.2	108.6	108.9	104.3	110.9	105.1	100.0	103.2	103.1	107.0	106.0	105.6	108.3
Passenger transport by air																	
1995	98.7	98.8	:	102.1	97.0	97.4	97.8	:	98.3	99.6	100.2	101.5	:	98.7	95.2	98.6	:
1996	100.0	100.0	:	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	:	100.0	100.0	100.0	100.0
1997	102.5	102.1	:	111.3	100.6	105.2	109.2	102.9	103.5	98.3	104.0	103.4	:	105.7	101.0	103.1	103.4
1998	104.4	103.5	:	108.4	100.2	113.6	116.0	106.0	107.9	93.2	107.8	106.6	:	117.9	105.5	105.9	107.3
Passenger transport by sea and inland waterways																	
1995	95.7*	98.3*	:	101.3	100.8	88.4	100.9	:	100.7	95.0	:	91.8	:	96.9	100.7	96.0	:
1996	100.0*	100.0*	:	100.0	100.0	100.0	100.0	100.0	100.0	100.0	:	100.0	:	100.0	100.0	100.0	100.0
1997	104.4	103.9	:	103.2	101.8	111.2	108.1	112.2	88.4	106.4	:	102.0	:	109.9	104.2	99.5	107.4
1998	105.1	104.0	:	101.4	101.5	126.5	113.3	103.0	81.7	108.5	:	96.3	:	112.6	109.4	102.6	106.3
Other purchased transport services																	
1995	97.6*	97.7*	:	96.3	99.9	:	:	:	97.4	96.3	:	97.5	:	98.5	97.7	98.6	:
1996	100.0*	100.0*	:	100.0	100.0	:	:	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	:
1997	101.3	101.2	:	103.6	100.1	:	:	102.3	104.5	101.4	100.8	103.3	112.3	103.1	102.5	101.2	:
1998	104.8	104.4	:	107.0	99.8	:	:	105.0	104.8	107.2	100.8	105.5	112.3	106.4	108.0	103.4	:
Combined tickets																	
1995	96.0*	95.8*	97.6	97.7	96.3	98.0	:	:	99.9	94.9	92.4	:	94.6	96.7	100.7	98.1	:
1996	100.0*	100.0*	100.0	100.0	100.0	100.0	:	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	:
1997	103.5	103.4	102.8	101.2	103.8	112.3	:	103.6	100.4	102.3	100.0	101.9	102.1	102.0	100.7	104.9	:
1998	106.7	106.6	105.8	96.3	107.1	134.5	:	106.8	101.3	105.0	100.0	104.9	107.0	105.3	105.8	105.8	:

Source: Eurostat (New Cronos).

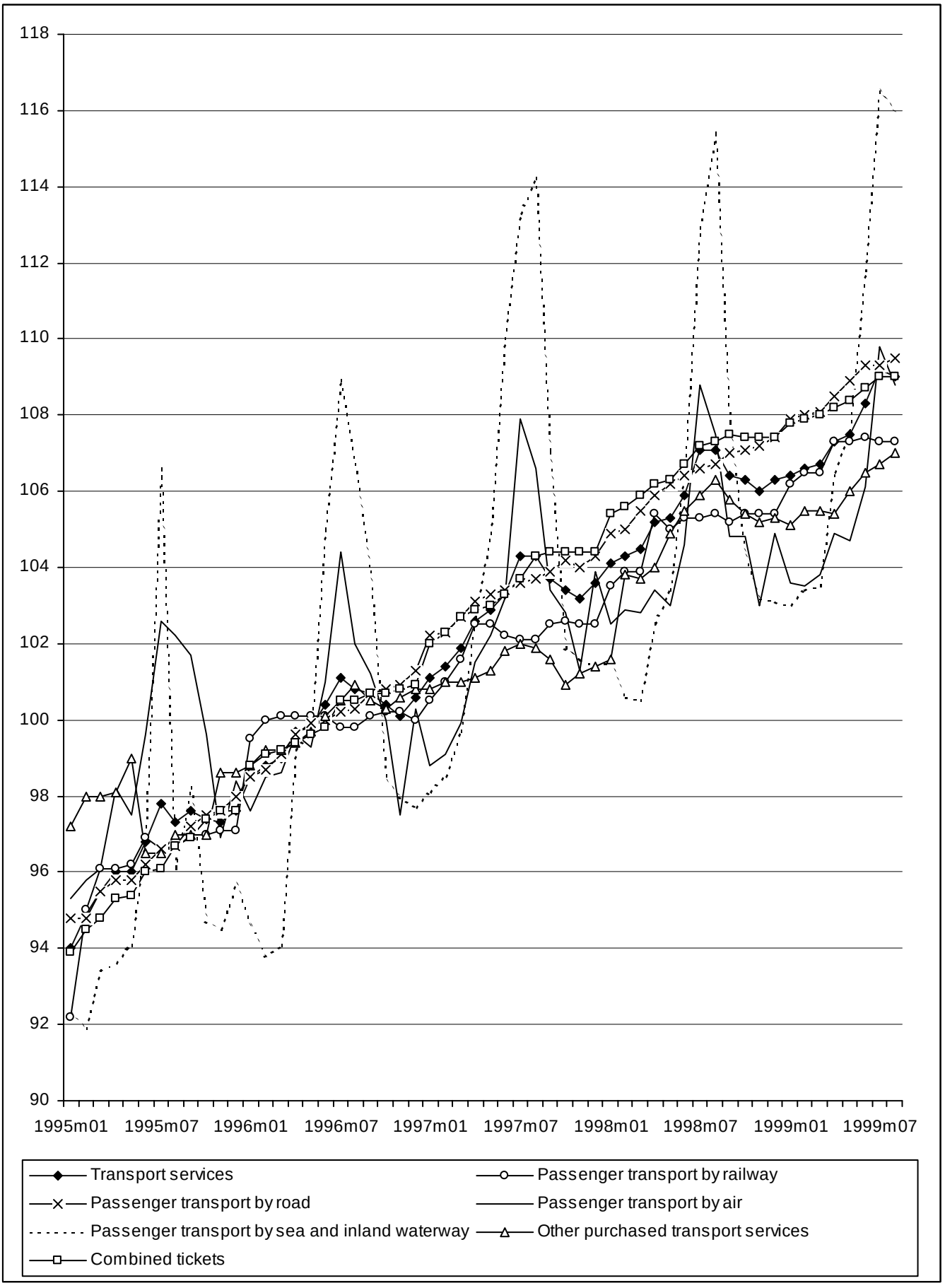


Figure 5.5: Annual harmonised consumer price indices – Transport services

Sales price of major road transport fuels in current ecu

(ecu per 1 000 litres)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Leaded petrol															
1990/1	688	800	608	473	599	736	782	944	509	719	:	725	:	:	562
1990/2	683	737	586	543	631	734	784	944	517	725	:	715	:	:	620
1991/1	727	762	648	645	689	762	809	988	526	736	:	822	:	:	643
1991/2	757	776	784	623	699	782	828	1 001	542	894	:	823	:	:	727
1992/1	719	730	729	574	712	750	773	969	548	845	:	826	:	:	657
1992/2	734	736	747	605	746	769	774	995	578	859	:	844	:	:	709
1993/1	811	750	770	765	711	780	780	857	630	877	:	828	:	:	649
1993/2	822	730	788	749	678	850	744	900	640	898	:	814	:	:	722
1994/1	833	720	860	714	674	847	735	882	642	929	:	791	:	:	744
1994/2	868	731	876	706	692	854	757	887	716	957	:	782	:	:	720
1995/1	865	777	885	683	680	884	744	846	710	952	•	796	:	•	755
1995/2	875	805	907	672	697	891	754	846	726	980	•	804	•	•	721
1996/1	928	•	912	693	721	937	744	909	724	989	•	792	•	•	741
1996/2	945	•	921	722	731	959	801	983	747	1 021	•	828	•	•	728
1997/1	988	•	•	739	732	980	860	995	746	•	•	862	•	•	895
1997/2	969	•	•	739	716	952	900	992	734	•	•	840	•	•	1 032
1998/1	962	•	•	744	722	976	886	968	729	•	•	832	•	•	1 039
1998/2	946	•	•	709	704	951	878	954	710	•	•	832	•	•	1 084
Unleaded petrol															
1990/1	:	:	:	:	:	:	:	:	:	693	:	:	:	:	529
1990/2	644	635	545	:	:	:	759	997	491	691	:	:	:	:	582
1991/1	685	668	575	599	658	774	785	952	474	714	:	767	:	:	600
1991/2	695	682	697	579	676	747	797	962	490	825	:	767	:	:	675
1992/1	657	637	665	531	697	720	761	935	479	775	:	770	:	:	608
1992/2	670	658	683	551	731	730	763	961	506	790	:	786	:	:	649
1993/1	719	668	704	716	696	737	765	814	536	804	:	771	:	:	596
1993/2	730	689	721	702	655	800	710	852	549	816	:	761	:	:	659
1994/1	743	686	794	665	653	792	687	826	560	851	:	740	:	:	681
1994/2	782	709	809	662	673	805	712	827	635	878	:	767	:	:	650
1995/1	779	754	811	636	644	847	688	789	628	873	755	785	:	822	684
1995/2	784	782	832	626	660	861	706	791	640	898	860	794	830	779	650
1996/1	853	824	832	645	681	900	686	862	642	908	831	782	932	887	671
1996/2	869	873	843	673	691	922	741	933	663	933	848	798	956	937	665
1997/1	916	858	856	690	695	939	806	948	667	941	851	836	984	939	835
1997/2	894	848	829	690	691	912	817	945	651	974	847	810	927	963	948
1998/1	888	856	808	689	678	941	761	917	648	966	834	807	960	956	951
1998/2	870	835	821	664	674	910	747	903	629	962	803	802	949	938	989
Diesel															
1990/1	507	587	519	197	447	525	722	614	364	471	:	469	:	:	539
1990/2	452	528	429	247	458	460	642	597	327	410	:	462	:	:	538
1991/1	604	634	534	309	563	548	743	728	384	509	:	564	:	:	617
1991/2	549	577	528	298	529	503	694	728	341	500	:	564	:	:	635
1992/1	543	560	515	378	548	495	665	715	368	476	:	566	:	:	605
1992/2	585	577	519	421	567	504	683	728	399	489	:	578	:	:	629
1993/1	608	638	552	521	557	518	707	646	461	579	:	567	:	:	595
1993/2	608	637	549	495	527	534	662	678	469	573	:	551	:	:	651
1994/1	615	597	593	479	529	596	675	657	493	615	:	536	:	:	693
1994/2	620	583	582	467	514	583	664	640	516	608	:	523	:	:	650
1995/1	615	623	593	473	507	588	657	625	508	613	621	536	:	779	688
1995/2	620	632	602	457	501	581	661	616	521	624	677	534	595	697	651
1996/1	644	644	637	508	548	639	680	696	531	661	667	542	627	759	684
1996/2	645	646	612	498	541	644	708	723	533	657	657	564	642	775	675
1997/1	689	697	666	556	584	703	797	772	577	707	699	590	707	779	848
1997/2	636	653	606	507	548	649	775	737	534	676	669	575	634	786	960
1998/1	626	647	591	515	541	673	735	727	542	670	679	569	668	728	955
1998/2	592	622	588	460	524	630	700	697	501	642	625	554	625	722	1 002

Source: Eurostat (New Cronos).

Sales price of major road transport fuels in constant 1990 ecu

(constant 1990 ecu per 1 000 litres)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Leaded petrol															
1990/1	688	800	608	473	599	736	782	944	509	719	:	725	:	:	562
1990/2	683	737	586	543	631	734	784	944	517	725	:	715	:	:	620
1991/1	702	748	623	602	638	744	796	924	504	715	:	722	:	:	589
1991/2	731	762	754	581	648	764	814	936	519	869	:	723	:	:	666
1992/1	659	692	654	512	637	704	736	901	500	791	:	645	:	:	605
1992/2	673	699	670	540	667	721	736	925	528	805	:	659	:	:	653
1993/1	696	689	636	648	686	693	748	881	533	771	:	654	:	:	613
1993/2	705	670	651	634	654	755	713	925	542	789	:	643	:	:	682
1994/1	684	651	690	583	666	733	691	912	506	796	:	613	:	:	687
1994/2	713	661	704	577	684	739	711	917	565	820	:	607	:	:	666
1995/1	681	670	677	534	657	748	715	926	540	775	•	583	:	•	726
1995/2	689	695	694	526	674	754	725	926	552	798	•	590	•	•	694
1996/1	733	•	704	507	666	778	685	872	547	810	•	561	•	•	677
1996/2	746	•	711	528	675	797	738	943	564	836	•	587	•	•	664
1997/1	794	•	•	512	683	820	730	915	563	•	•	604	•	•	676
1997/2	779	•	•	512	668	797	764	912	554	•	•	589	•	•	780
1998/1	761	•	•	525	664	809	753	873	542	•	•	570	•	•	750
1998/2	749	•	•	500	648	787	747	860	528	•	•	570	•	•	782
Unleaded petrol															
1990/1	:	:	:	:	:	:	:	:	:	693	:	:	:	:	529
1990/2	644	635	545	:	:	:	759	997	491	691	:	:	:	:	582
1991/1	661	656	553	559	609	755	772	891	454	694	:	674	:	:	550
1991/2	671	670	671	540	626	729	784	900	469	802	:	674	:	:	619
1992/1	602	604	596	474	623	675	724	870	437	726	:	601	:	:	560
1992/2	614	624	613	491	653	685	726	894	463	740	:	614	:	:	597
1993/1	617	613	582	606	672	654	733	837	454	707	:	609	:	:	563
1993/2	626	633	596	594	632	710	681	876	464	717	:	601	:	:	622
1994/1	611	620	638	543	645	686	646	854	442	729	:	574	:	:	629
1994/2	643	641	650	540	665	697	669	855	501	752	:	595	:	:	601
1995/1	613	651	620	497	623	716	661	863	478	711	592	576	:	861	658
1995/2	617	675	636	490	638	728	679	865	487	731	674	582	890	816	626
1996/1	674	701	642	472	628	747	632	827	485	744	651	554	1 013	839	612
1996/2	686	742	651	492	638	766	682	895	501	764	664	565	1 039	887	607
1997/1	736	728	675	478	648	786	684	872	503	778	675	586	1 055	892	631
1997/2	718	720	653	478	644	763	693	869	491	806	672	568	994	914	717
1998/1	703	713	632	486	624	779	648	827	482	785	655	553	1 028	926	686
1998/2	689	696	643	468	621	754	635	814	468	782	631	550	1 016	908	713
Diesel															
1990/1	507	587	519	197	447	525	722	614	364	471	:	469	:	:	539
1990/2	452	528	429	247	458	460	642	597	327	410	:	462	:	:	538
1991/1	583	623	514	288	522	535	730	681	368	494	:	496	:	:	565
1991/2	530	566	508	278	490	491	682	681	327	486	:	495	:	:	582
1992/1	497	531	462	337	490	465	633	665	336	446	:	442	:	:	556
1992/2	536	548	465	375	507	473	651	677	365	459	:	451	:	:	579
1993/1	521	586	456	441	538	460	678	664	391	509	:	448	:	:	562
1993/2	522	584	454	419	509	474	635	696	397	504	:	435	:	:	614
1994/1	505	539	476	391	522	516	635	679	389	527	:	416	:	:	640
1994/2	510	527	468	381	508	505	624	661	407	521	:	406	:	:	601
1995/1	484	538	454	370	490	497	631	684	386	499	486	393	:	816	663
1995/2	488	546	461	357	484	492	635	675	396	508	531	392	638	730	626
1996/1	509	547	492	372	506	531	627	667	401	542	523	384	682	718	625
1996/2	510	549	473	364	499	534	652	693	403	538	514	399	697	733	616
1997/1	554	591	525	385	545	589	676	710	436	585	555	413	758	739	641
1997/2	511	554	478	351	511	543	658	678	403	559	531	403	680	746	726
1998/1	495	539	462	363	498	557	625	655	403	545	533	390	715	706	689
1998/2	469	518	460	324	482	522	595	628	373	522	490	380	669	699	723

Source: Eurostat (New Cronos).

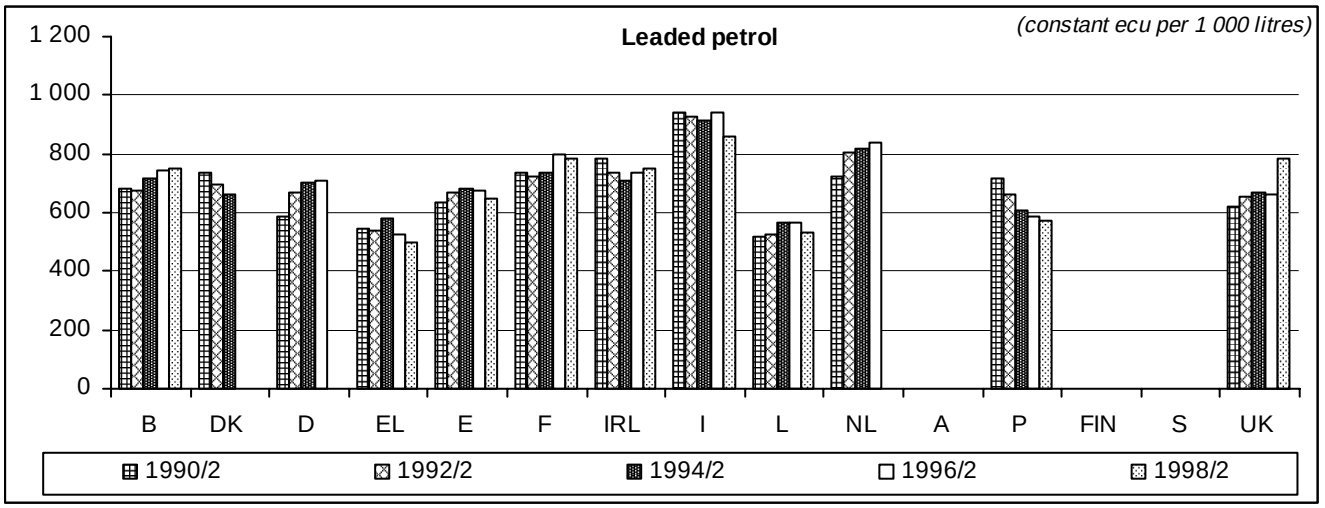


Figure 5.6: Sales price of leaded petrol in constant 1990 ecu

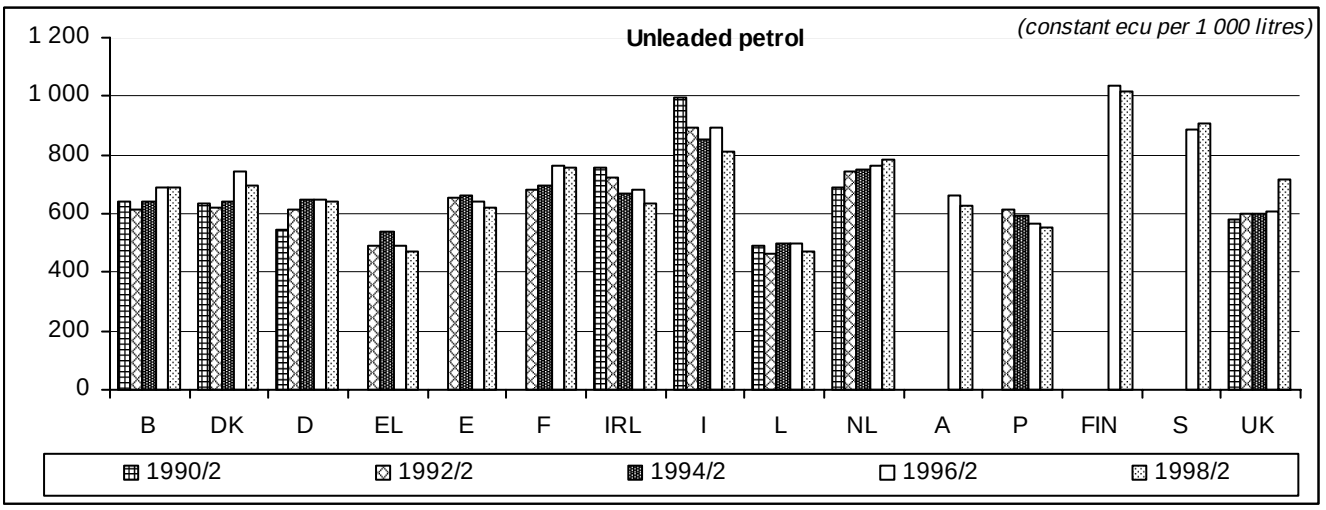


Figure 5.7: Sales price of unleaded petrol in constant 1990 ecu

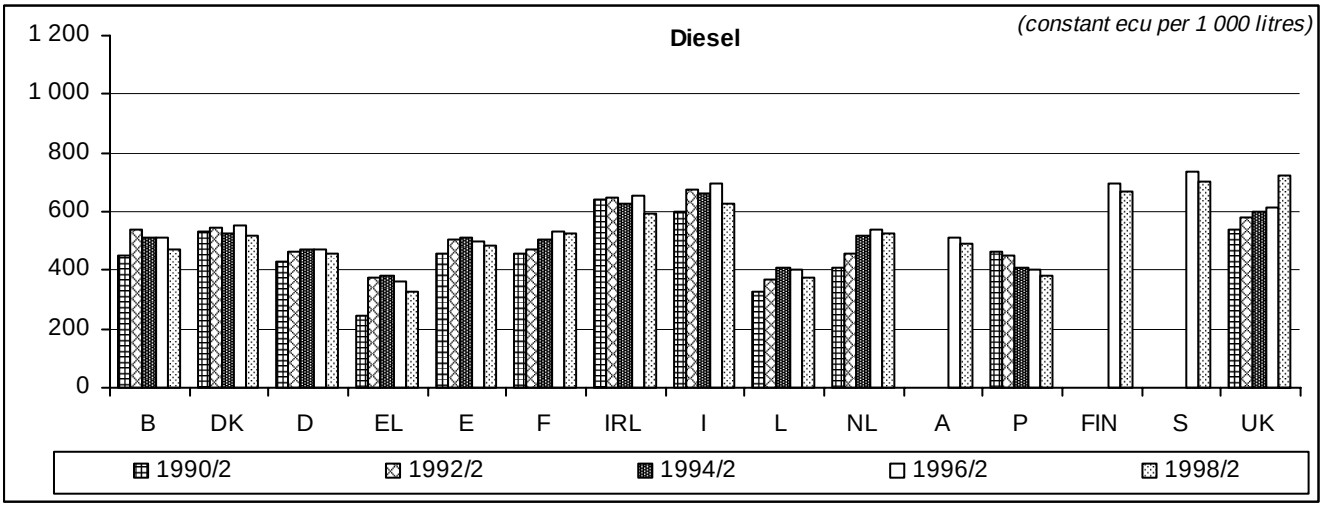


Figure 5.8: Sales price of diesel in constant 1990 ecu

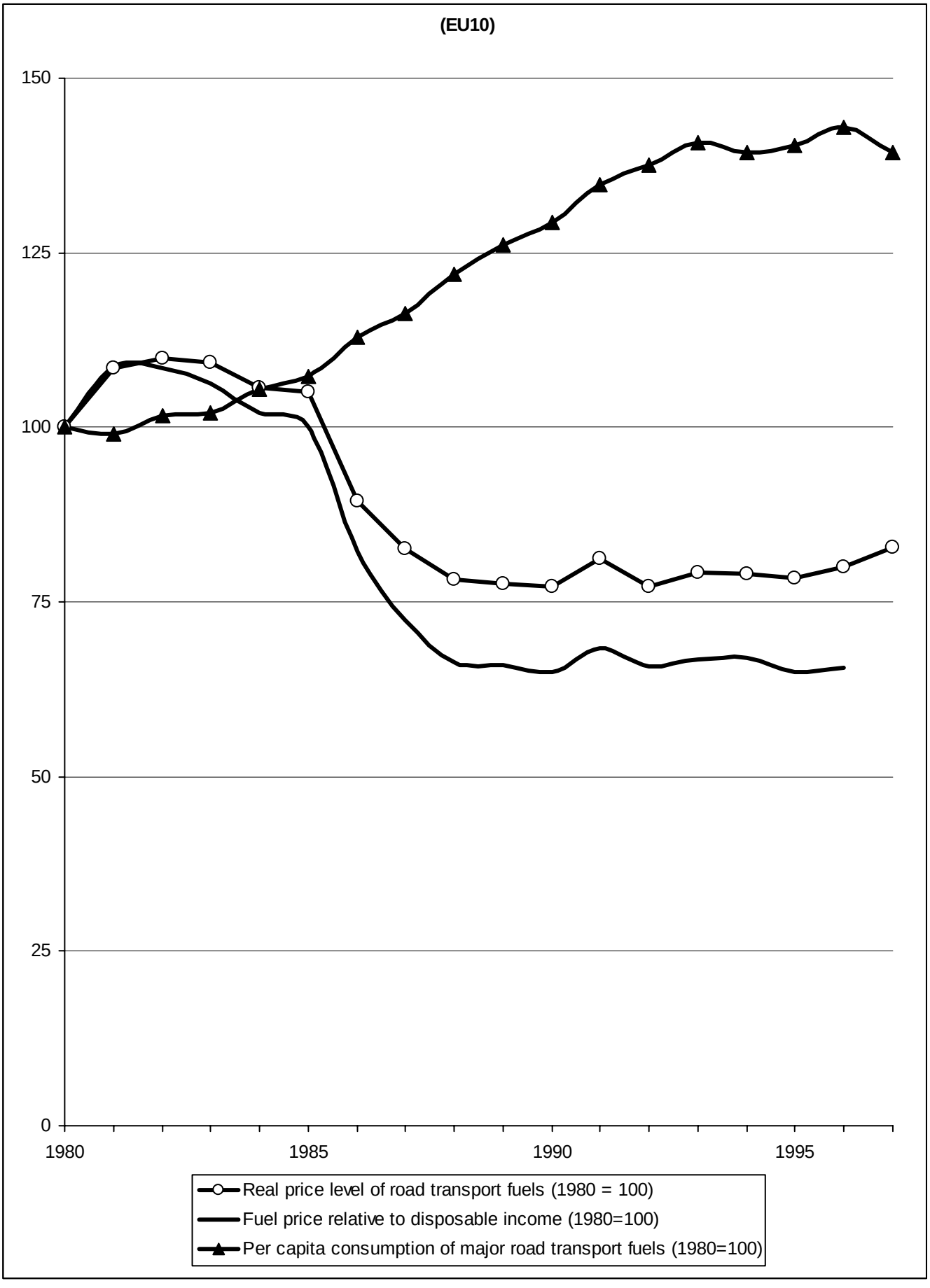


Figure 5.9: Evolution of road fuel price and consumption – EU-10

Sales price of major road transport fuels in purchasing power standard

(purchasing power standard per 1 000 litres)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Leaded petrol															
1990/1	689	623	550	593	670	715	809	930	508	707	:	1 164	:	:	631
1990/2	684	573	538	725	678	714	813	930	515	725	:	1 164	:	:	667
1991/1	738	616	597	818	759	766	877	973	529	733	:	1 284	:	:	669
1991/2	769	632	725	818	768	789	898	986	546	892	:	1 250	:	:	751
1992/1	739	584	665	733	742	752	858	939	547	840	:	1 168	:	:	705
1992/2	756	585	683	823	782	763	859	964	578	857	:	1 168	:	:	761
1993/1	812	598	664	1 008	782	731	819	935	594	838	:	1 156	:	:	746
1993/2	822	582	677	1 005	822	797	850	982	603	855	:	1 228	:	:	799
1994/1	838	580	750	942	824	784	833	1 016	602	884	:	1 220	:	:	799
1994/2	855	588	755	970	839	788	882	1 040	658	902	:	1 212	:	:	820
1995/1	842	620	751	889	831	815	866	998	643	884	•	1 186	:	•	850
1995/2	834	624	756	896	834	812	902	1 085	645	892	•	1 201	•	•	868
1996/1	902	•	781	902	844	860	895	1 076	656	923	•	1 169	•	•	896
1996/2	932	•	799	914	869	881	936	1 096	686	967	•	1 229	•	•	852
1997/1	1 008	•	•	898	875	924	948	1 090	705	•	•	1 255	•	•	937
1997/2	1 005	•	•	911	873	911	983	1 087	705	•	•	1 255	•	•	976
1998/1	995	•	•	886	873	929	1 025	1 082	692	•	•	1 240	•	•	980
1998/2	977	•	•	888	852	904	1 013	1 066	673	•	•	1 240	•	•	1 026
Unleaded petrol															
1990/1	:	:	:	:	:	:	:	:	:	681	:	:	:	:	593
1990/2	644	494	501	:	:	:	787	982	489	690	:	:	:	:	627
1991/1	694	540	529	759	725	778	851	938	477	711	:	1 198	:	:	625
1991/2	706	556	644	759	742	752	864	947	493	823	:	1 164	:	:	698
1992/1	675	510	607	679	725	721	845	907	478	771	:	1 088	:	:	652
1992/2	690	523	624	750	766	725	847	932	507	788	:	1 088	:	:	696
1993/1	720	533	607	942	766	690	803	888	505	769	:	1 077	:	:	685
1993/2	730	550	620	941	794	749	811	929	517	777	:	1 148	:	:	728
1994/1	748	552	693	878	798	734	779	950	525	810	:	1 141	:	:	732
1994/2	771	570	697	909	815	743	830	970	584	827	:	1 188	:	:	741
1995/1	757	602	688	828	787	781	800	930	569	810	671	1 170	:	698	770
1995/2	747	606	694	835	790	785	845	1 014	569	818	751	1 186	702	689	783
1996/1	829	648	712	840	796	826	825	1 020	581	848	741	1 154	800	714	811
1996/2	857	692	731	851	822	847	866	1 041	609	883	766	1 184	833	732	779
1997/1	934	690	749	838	830	886	887	1 039	630	920	792	1 218	870	746	875
1997/2	926	691	751	851	842	872	892	1 036	625	969	800	1 210	829	769	897
1998/1	918	691	731	820	820	895	881	1 025	615	959	787	1 203	874	766	897
1998/2	898	674	742	832	816	865	862	1 009	596	954	757	1 196	866	756	936
Diesel															
1990/1	509	457	469	247	500	510	747	605	363	463	:	752	:	:	604
1990/2	453	411	394	330	492	448	666	588	325	410	:	752	:	:	579
1991/1	613	513	492	391	621	551	805	717	386	506	:	882	:	:	642
1991/2	557	470	488	391	581	507	752	717	343	499	:	856	:	:	656
1992/1	558	448	470	483	571	496	738	693	367	474	:	800	:	:	648
1992/2	602	459	474	572	594	501	759	706	400	488	:	800	:	:	675
1993/1	609	508	476	686	613	485	742	704	435	554	:	792	:	:	684
1993/2	609	507	472	664	639	501	756	739	442	546	:	832	:	:	719
1994/1	619	481	518	632	646	552	765	756	463	585	:	826	:	:	745
1994/2	611	469	502	641	623	538	774	750	474	573	:	811	:	:	740
1995/1	598	497	503	616	620	542	764	738	460	569	551	798	:	662	775
1995/2	591	490	502	609	600	530	791	791	463	568	591	798	503	617	784
1996/1	626	506	545	661	641	587	819	824	481	617	595	799	538	611	828
1996/2	636	512	531	630	643	591	827	806	490	623	593	837	559	605	791
1997/1	703	560	593	675	697	663	877	846	545	691	650	859	626	618	888
1997/2	660	532	534	626	668	621	846	808	512	672	632	859	567	627	908
1998/1	647	523	535	613	655	640	851	812	515	665	641	849	608	584	901
1998/2	611	502	531	576	633	599	807	779	475	637	589	827	571	582	949

Source: Eurostat (New Cronos).

Net price (without taxes) of major road transport fuels in current ecu

(ecu per 1 000 litres)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Leaded petrol															
1990/1	225	230	214	168	192	179	231	215	221	232	:	238	:	:	208
1990/2	221	220	199	183	220	167	244	216	227	234	:	214	:	:	217
1991/1	254	241	241	236	240	185	263	230	235	249	:	239	:	:	239
1991/2	261	255	240	217	248	204	289	253	248	259	:	235	:	:	248
1992/1	212	218	188	165	201	168	247	224	210	215	:	226	:	:	197
1992/2	224	220	205	218	233	179	265	242	230	229	:	215	:	:	215
1993/1	229	238	199	191	218	172	258	218	214	227	:	210	:	:	201
1993/2	237	258	213	190	227	179	259	228	223	243	:	217	:	:	213
1994/1	208	223	192	175	207	159	239	201	202	213	:	204	:	:	189
1994/2	227	225	199	185	220	164	251	215	221	231	:	212	:	:	194
1995/1	220	206	201	173	206	158	239	201	206	221	•	202	:	•	184
1995/2	218	207	210	174	212	157	253	200	212	233	•	210	•	•	185
1996/1	222	•	221	176	214	159	243	219	214	234	•	198	•	•	167
1996/2	244	•	236	202	229	179	269	248	240	270	•	215	•	•	141
1997/1	249	•	•	221	235	196	293	258	248	•	•	232	•	•	192
1997/2	243	•	•	214	229	181	294	255	244	•	•	226	•	•	196
1998/1	235	•	•	214	227	184	268	240	238	•	•	234	•	•	206
1998/2	221	•	•	212	212	163	260	228	222	•	•	211	•	•	185
Unleaded petrol															
1990/1	:	:	:	:	:	:	:	:	:	237	:	:	:	:	216
1990/2	224	234	203	:	:	:	253	230	228	237	:	:	:	:	227
1991/1	254	249	211	272	251	224	276	243	235	252	:	254	:	:	244
1991/2	263	262	212	251	266	225	297	264	250	261	:	251	:	:	253
1992/1	214	225	181	200	226	195	270	235	210	217	:	243	:	:	204
1992/2	223	240	197	237	258	200	289	257	231	229	:	234	:	:	224
1993/1	225	237	193	211	242	190	280	229	209	228	:	229	:	:	211
1993/2	233	254	207	206	240	192	263	238	220	236	:	236	:	:	222
1994/1	202	224	186	187	220	164	232	211	196	209	:	219	:	:	200
1994/2	225	235	192	199	234	173	246	221	219	227	:	235	:	:	195
1995/1	219	216	189	184	206	166	225	207	203	217	278	229	:	225	185
1995/2	214	217	199	185	212	172	245	203	207	229	283	237	203	208	182
1996/1	220	212	204	187	212	170	226	223	212	232	263	225	219	231	165
1996/2	240	254	220	213	228	189	252	252	236	261	282	221	246	257	146
1997/1	248	240	242	232	235	203	282	265	247	272	293	245	267	254	208
1997/2	238	238	226	225	239	189	271	262	238	259	296	235	227	252	198
1998/1	232	237	206	226	222	196	250	243	235	252	285	242	231	252	204
1998/2	216	220	211	222	219	171	237	231	218	249	259	217	223	240	182
Diesel															
1990/1	216	249	236	164	228	215	288	237	224	227	:	227	:	:	231
1990/2	172	199	161	127	190	156	233	172	191	173	:	196	:	:	196
1991/1	280	283	252	256	253	227	313	248	241	255	:	263	:	:	266
1991/2	236	239	198	165	221	189	283	202	202	212	:	220	:	:	226
1992/1	213	225	185	144	196	175	264	195	180	192	:	230	:	:	208
1992/2	221	238	188	198	215	181	274	206	193	204	:	205	:	:	216
1993/1	228	254	202	191	216	183	284	199	195	224	:	213	:	:	217
1993/2	228	252	195	165	215	186	271	198	202	218	:	210	:	:	223
1994/1	220	220	196	160	207	180	271	194	193	213	:	213	:	:	219
1994/2	218	209	184	159	193	169	255	186	196	205	:	204	:	:	203
1995/1	212	209	190	155	184	167	246	187	186	205	257	195	:	362	188
1995/2	210	208	192	147	173	158	254	174	187	207	261	195	197	258	182
1996/1	231	215	225	180	201	176	269	218	199	234	256	201	224	316	176
1996/2	236	220	208	170	199	179	272	219	205	238	251	209	241	263	155
1997/1	278	249	261	221	239	226	326	260	248	283	292	237	293	265	218
1997/2	240	218	214	180	214	186	288	231	214	239	271	231	236	258	207
1998/1	230	213	200	188	203	190	277	224	221	234	279	219	244	216	207
1998/2	202	193	193	153	188	156	247	200	185	210	234	200	210	273	179

Source: Eurostat (New Cronos).

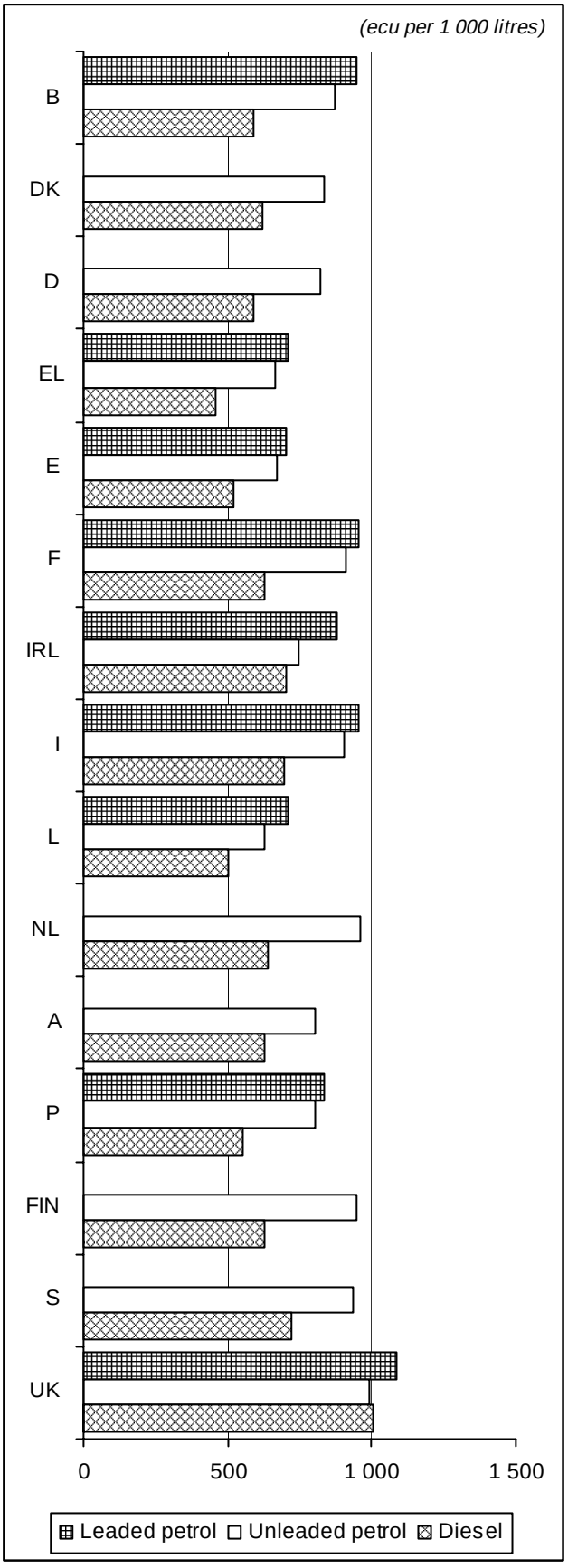


Figure 5.10: Sales price of major road fuels in ecu: July 1998

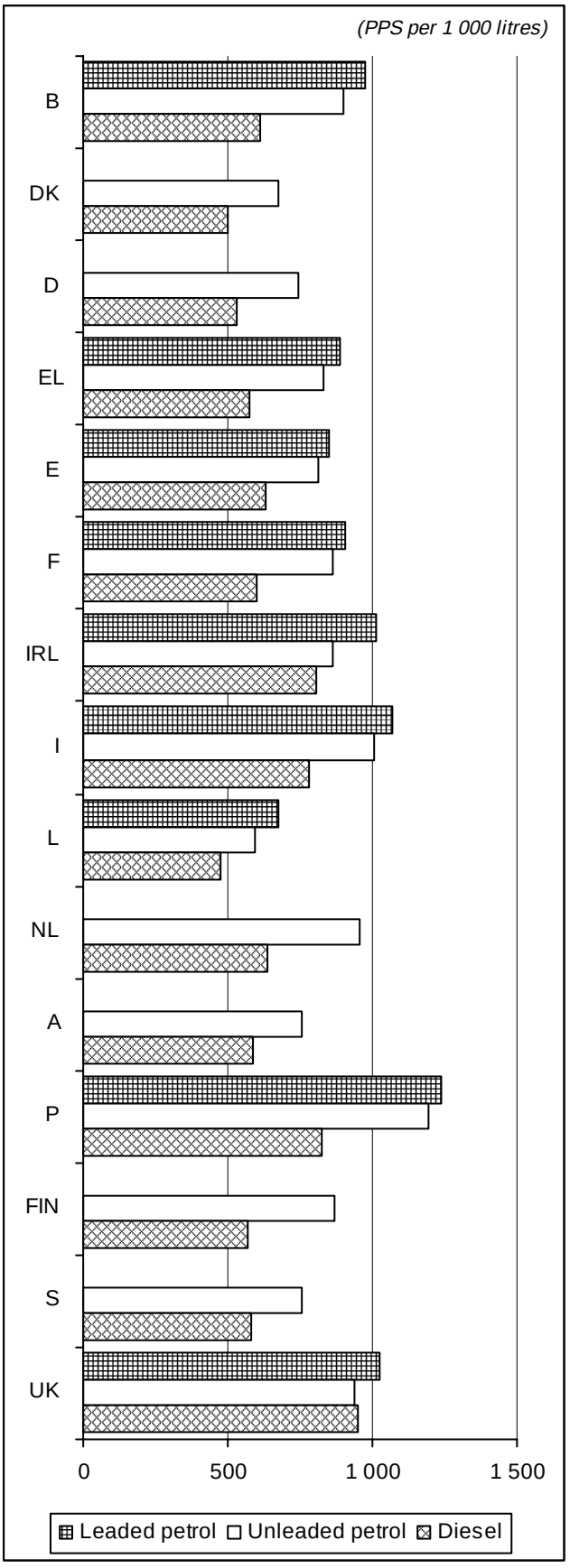


Figure 5.11: Sales price of major road fuels in purchasing power standard: July 1998

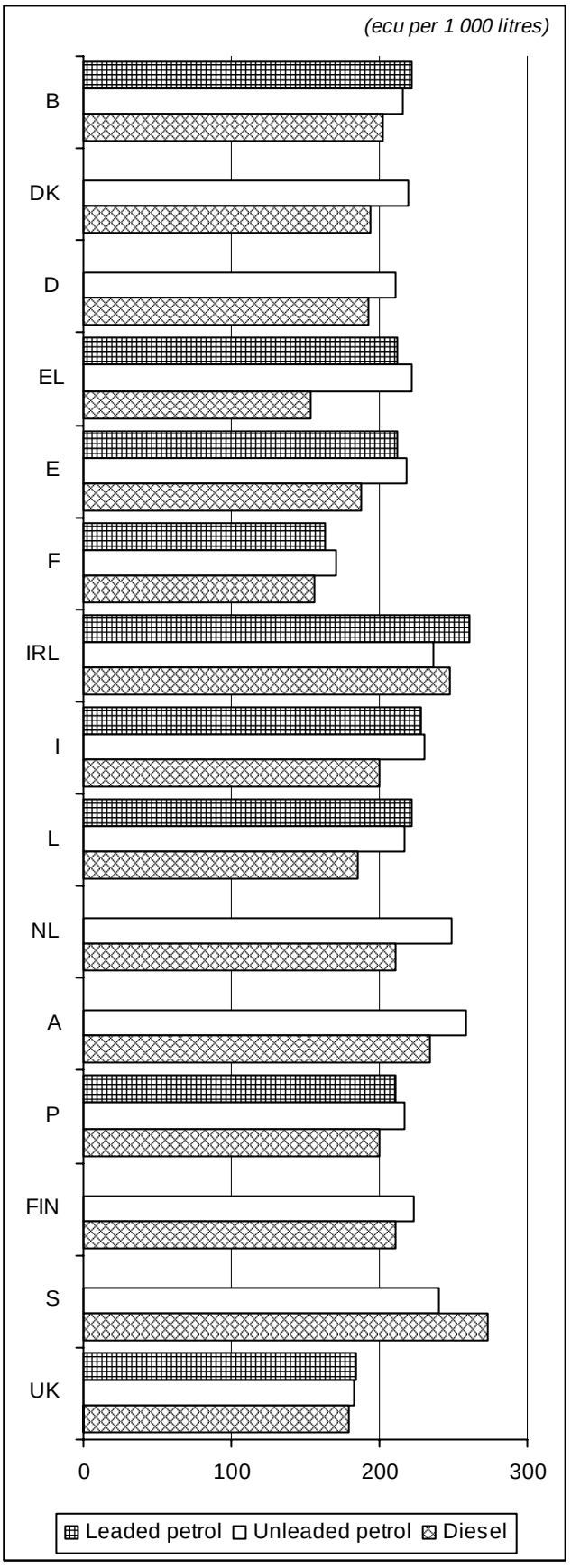


Figure 5.12: Net price of major road fuels in ecu: July 1998

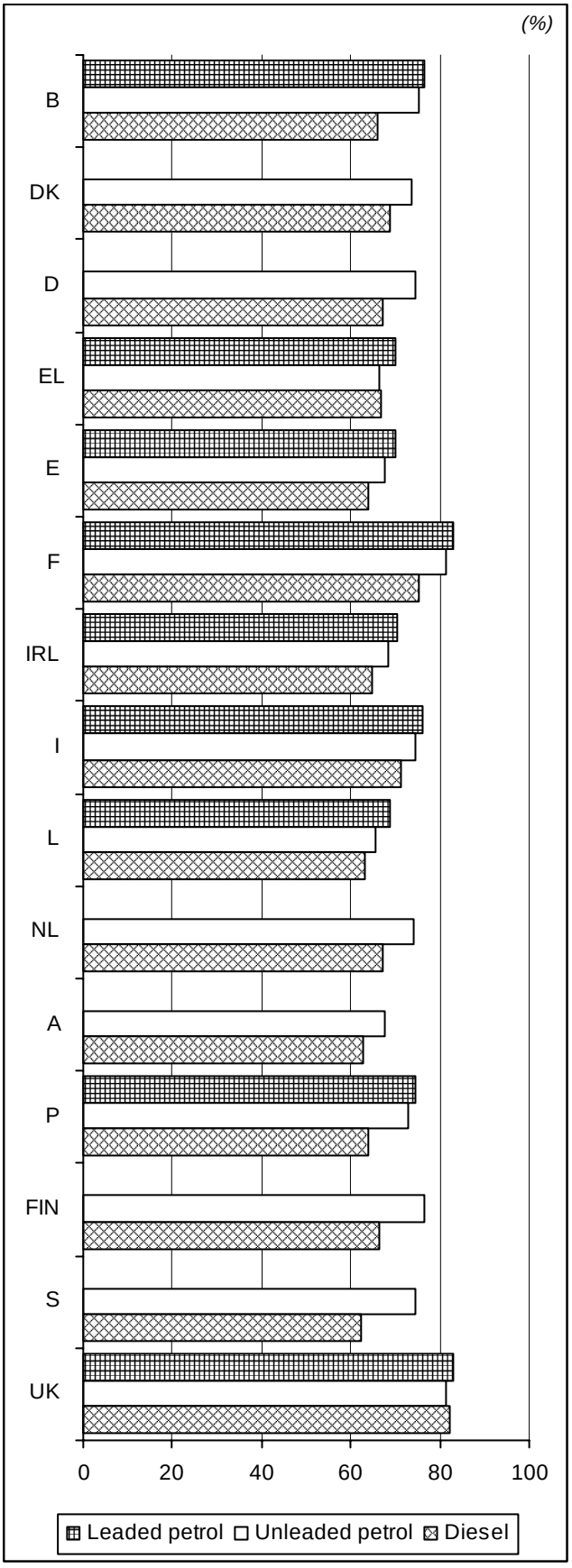


Figure 5.13: Taxes as percentage of sales price of major road fuels: July 1998

Household expenditure on transport

Per capita expenditure

(constant ecu)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
1980	957	1 190	1 114*	:	478*	1 282	626*	770	:	938*	:	:	:	1 304*	847*
1981	928	1 139	1 076*	:	461*	1 296	652*	812	:	893*	:	:	:	1 318*	860*
1982	929	1 172	1 067*	:	467*	1 369	519*	799	:	870*	:	:	:	1 384*	874*
1983	927	1 341	1 124*	:	472*	1 357	465*	781	:	877*	:	:	:	1 331*	956*
1984	946	1 470	1 146*	:	474*	1 313	481*	785	:	862*	:	:	:	1 353*	968
1985	955	1 613	1 179*	:	492*	1 309	489*	827	:	898*	:	:	:	1 401*	1 016
1986	971	1 703	1 279*	:	:	1 356	541*	860	:	957*	:	:	:	1 537*	1 106
1987	1 003	1 575	1 341*	:	:	1 408	540*	901	:	958*	:	:	:	1 708*	1 179
1988	1 062	1 427	1 385*	:	:	1 454	591	963	:	915*	:	:	:	1 788*	1 294
1989	1 105	1 390	1 441*	:	:	1 499	664	1 013	:	926*	:	:	:	1 717*	1 349
1990	1 166	1 378	1 549*	:	:	1 511	701	1 028	:	973*	:	:	:	1 597*	1 316
1991	1 182	1 391	1 539*	:	:	1 461	684	1 024	:	990*	:	:	:	1 557*	1 212
1992	1 210	1 405	1 533*	:	:	1 480	724	1 071	:	1 028*	:	:	:	1 465*	1 196
1993	1 121	1 408	1 394*	:	:	1 409	714	965	:	1 016*	:	:	:	1 373*	1 251
1994	1 153	1 800	1 423*	:	:	1 464	803	979	:	1 053*	:	:	:	1 427*	1 276
1995	1 139	1 745	1 453*	:	:	1 478	846	999	:	1 070*	:	:	:	1 445*	1 276
1996	1 184	1 808	1 510*	:	:	1 530	911	1 025	:	1 100*	:	:	:	1 467*	1 309
1997	1 201	:	1 525*	:	:	1 482	989*	1 140	:	1 134*	:	:	:	:	:

Percentage of total household expenditure

(%)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
1980	11.6	13.2	12.3*	:	9.0*	15.4	13.4*	10.6	:	12.2*	:	:	:	14.4*	13.9*
1981	11.3	12.8	11.9*	:	8.8*	15.5	13.9*	11.1	:	12.0*	:	:	:	14.6*	14.2*
1982	11.1	12.9	12.0*	:	8.9*	15.9	12.0*	10.8	:	11.8*	:	:	:	15.1*	14.3*
1983	11.1	14.4	12.4*	:	9.0*	15.6	10.7*	10.5	:	11.9*	:	:	:	14.8*	14.9*
1984	11.2	15.2	12.3*	:	9.0*	15.0	10.9*	10.3	:	11.5*	:	:	:	14.8*	14.9
1985	11.1	16.0	12.4*	:	9.2*	14.8	10.6*	10.6	:	11.7*	:	:	:	15.0*	15.1
1986	11.1	16.2	13.0*	:	:	14.9	10.7*	10.6	:	12.3*	:	:	:	15.8*	15.5
1987	11.3	15.3	13.3*	:	:	15.1	10.3*	10.7	:	12.1*	:	:	:	16.8*	15.8
1988	11.6	14.0	13.4*	:	:	15.4	10.7	11.0	:	11.5*	:	:	:	17.2*	16.2
1989	11.6	13.7	13.6*	:	:	15.5	11.2	11.2	:	11.3*	:	:	:	16.5*	16.5
1990	12.0	13.6	13.9*	:	:	15.3	11.6	11.2	:	11.4*	:	:	:	15.5*	16.0
1991	11.8	13.5	15.0*	:	:	14.8	11.1	10.9	:	11.4*	:	:	:	15.1*	15.2
1992	11.9	13.4	14.7*	:	:	14.8	11.4	11.3	:	11.6*	:	:	:	14.5*	15.0
1993	11.3	13.3	13.5*	:	:	14.2	10.9	10.4	:	11.4*	:	:	:	13.9*	15.3
1994	11.5	16.0	13.7*	:	:	14.6	11.6	10.5	:	11.7*	:	:	:	14.3*	15.3
1995	11.3	15.3	13.8*	:	:	14.6	11.8	10.5	:	11.7*	:	:	:	14.4*	15.1
1996	11.6	15.6	14.2*	:	:	14.9	12.1	10.7	:	11.7*	:	:	:	14.5*	15.0
1997	11.5	:	14.2*	:	:	14.4	12.5	11.7	:	11.8*	:	:	:	:	:

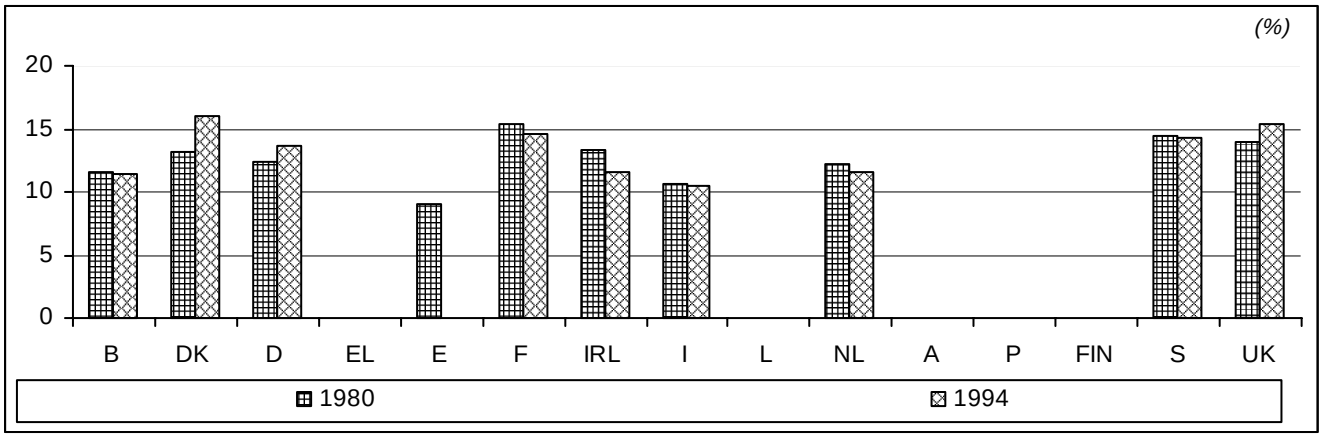


Figure 5.14: Percentage of household expenditure spent on transport

Source: Eurostat (New Cronos).

Household expenditure on purchase of personal transport equipment

Per capita expenditure

(constant ecu)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
1980	371	258	378*	94*	122*	320	246*	237	:	343*	933*	148*	:	303*	273*
1981	327	266	363*	108*	106*	319	269*	250	:	323*	886*	190*	:	304*	278*
1982	332	317	352*	189*	112*	368	177*	247	:	314*	885*	198*	1 022	355*	287*
1983	338	459	400*	162*	115*	366	139*	231	:	342*	986*	187*	1 004	315*	354*
1984	355	561	394*	187*	108*	327	145*	246	:	333*	926*	163*	1 041	305*	334
1985	360	668	403*	287*	119*	323	155*	272	:	359*	951*	191*	1 159	326*	350
1986	372	714	518*	251*	:	354	153*	295	:	388*	951*	202*	1 216	411*	383
1987	386	547	555*	193*	:	384	142*	328	:	368*	946*	233*	1 290	523*	406
1988	418	395	544*	203*	:	402	172	368	:	309*	995*	407	1 432	564*	476
1989	438	360	545*	273*	:	428	219	400	:	314*	1 084*	402	1 510	482*	514
1990	482	366	589*	353*	:	430	245	403	:	338*	1 125*	419	1 389	357*	463
1991	487	392	612*	460*	:	382	198	391	:	332*	1 186*	448	1 172	347*	382
1992	506	387	601*	489*	:	390	208	420	:	342*	1 189*	489	1 035	271*	357
1993	422	381	503*	460*	:	333	198	300	:	321*	1 119*	466	935	228*	389
1994	436	691	521*	392*	:	375	244	302	:	341*	1 067*	476	985	274*	414
1995	403	649	541*	402*	:	366	259	305	:	343*	1 057*	483	1 034	282*	420
1996	448	696	591*	424*	:	407	296	307	:	350*	1 100*	:	1 090	308*	445
1997	452	:	586*	436*	:	340	337*	404	:	355*	1 038*	:	1 147	:	:

Percentage of total household expenditure

(%)

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
1980	4.5	2.9	4.2*	2.4*	2.3*	3.9	5.2*	3.3	:	4.5*	12.3*	6.2*	:	3.3*	4.5*
1981	4.0	3.0	4.0*	2.7*	2.0*	3.8	5.7*	3.4	:	4.4*	11.6*	7.8*	:	3.4*	4.6*
1982	4.0	3.5	4.0*	4.7*	2.1*	4.3	4.1*	3.3	:	4.3*	11.3*	8.0*	12.3	3.9*	4.7*
1983	4.0	4.9	4.4*	4.0*	2.2*	4.2	3.2*	3.1	:	4.6*	12.1*	7.6*	11.8	3.5*	5.5*
1984	4.2	5.8	4.2*	4.6*	2.1*	3.7	3.3*	3.2	:	4.5*	11.5*	6.8*	11.9	3.3*	5.1
1985	4.2	6.6	4.2*	6.8*	2.2*	3.6	3.4*	3.5	:	4.7*	11.6*	7.9*	12.9	3.5*	5.2
1986	4.3	6.8	5.3*	5.8*	:	3.9	3.0*	3.7	:	5.0*	11.5*	7.0*	13.1	4.2*	5.4
1987	4.3	5.3	5.5*	4.4*	:	4.1	2.7*	3.9	:	4.6*	11.2*	7.5*	13.2	5.1*	5.4
1988	4.6	3.9	5.3*	4.5*	:	4.3	3.1	4.2	:	3.9*	11.4*	12.2	14.0	5.4*	6.0
1989	4.6	3.6	5.1*	5.9*	:	4.4	3.7	4.4	:	3.8*	11.9*	11.6	14.3	4.6*	6.3
1990	4.9	3.6	5.3*	7.6*	:	4.4	4.0	4.4	:	4.0*	11.9*	11.4	13.3	3.5*	5.6
1991	4.9	3.8	5.9*	9.9*	:	3.9	3.2	4.1	:	3.8*	12.3*	11.7	11.7	3.4*	4.8
1992	5.0	3.7	5.8*	10.3*	:	3.9	3.3	4.4	:	3.9*	12.3*	12.3	10.8	2.7*	4.5
1993	4.2	3.6	4.9*	9.7*	:	3.4	3.0	3.2	:	3.6*	11.7*	11.8	10.0	2.3*	4.8
1994	4.3	6.1	5.0*	8.1*	:	3.7	3.5	3.2	:	3.8*	11.2*	11.8	10.3	2.8*	5.0
1995	4.0	5.7	5.1*	8.2*	:	3.6	3.6	3.2	:	3.7*	11.0*	11.8	10.5	2.8*	5.0
1996	4.4	6.0	5.5*	8.5*	:	4.0	4.0	3.2	:	3.7*	11.3*	:	10.7	3.1*	5.1
1997	4.3	:	5.5*	8.5*	:	3.3	4.3	4.1	:	3.7*	10.6*	:	10.8	:	:

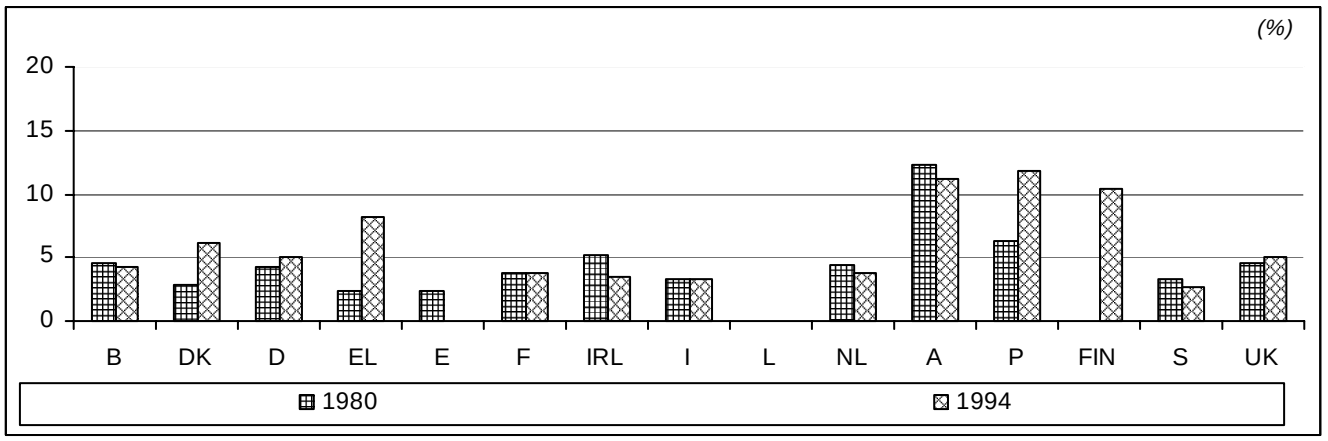


Figure 5.15: Percentage of household expenditure spent on purchase of personal transport equipment

Source: Eurostat (New Cronos).

Household expenditure on operation of personal transport equipment

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Per capita expenditure															
(constant ecu)															
1980	469	646	562*	:	295*	772	279*	413	:	463*	:	:	:	750*	370*
1981	483	599	543*	:	292*	784	283*	430	:	434*	:	:	:	750*	377*
1982	483	589	553*	:	291*	806	246*	421	:	424*	:	:	:	763*	386*
1983	480	610	564*	:	294*	796	236*	428	:	408*	:	:	:	768*	395*
1984	480	632	589*	:	302*	790	236*	414	:	403*	:	:	:	793*	419
1985	485	665	612*	:	308*	785	225*	418	:	407*	:	:	:	813*	442
1986	494	689	603*	:	:	803	275*	426	:	432*	:	:	:	851*	479
1987	508	714	628*	:	:	822	271*	433	:	448*	:	:	:	883*	509
1988	535	709	674*	:	:	843	278	448	:	456*	:	:	:	904*	539
1989	557	712	724*	:	:	856	278	464	:	461*	:	:	:	914*	551
1990	574	710	782*	:	:	864	290	474	:	474*	:	:	:	906*	566
1991	585	698	751*	:	:	869	313	477	:	482*	:	:	:	892*	554
1992	593	719	755*	:	:	878	337	495	:	493*	:	:	:	856*	553
1993	588	730	718*	:	:	872	336	506	:	493*	:	:	:	833*	572
1994	605	799	729*	:	:	883	356	516	:	504*	:	:	:	836*	565
1995	621	787	738*	:	:	913	375	527	:	510*	:	:	:	839*	549
1996	620	796	744*	:	:	912	388	547	:	525*	:	:	:	824*	548
1997	628	:	760*	:	:	926	403*	565	:	542*	:	:	:	:	:
Percentage of total household expenditure															
(%)															
1980	5.7	7.1	6.2*	:	5.6*	9.3	6.0*	5.7	:	6.0*	:	:	:	8.3*	6.1*
1981	5.9	6.7	6.0*	:	5.6*	9.4	6.0*	5.9	:	5.8*	:	:	:	8.3*	6.2*
1982	5.7	6.5	6.2*	:	5.5*	9.3	5.7*	5.7	:	5.7*	:	:	:	8.3*	6.3*
1983	5.7	6.5	6.2*	:	5.6*	9.2	5.5*	5.7	:	5.5*	:	:	:	8.5*	6.2*
1984	5.7	6.5	6.3*	:	5.7*	9.0	5.4*	5.4	:	5.4*	:	:	:	8.7*	6.4
1985	5.7	6.6	6.4*	:	5.8*	8.9	4.9*	5.3	:	5.3*	:	:	:	8.7*	6.6
1986	5.7	6.6	6.1*	:	:	8.8	5.4*	5.3	:	5.5*	:	:	:	8.7*	6.7
1987	5.7	6.9	6.2*	:	:	8.8	5.2*	5.2	:	5.6*	:	:	:	8.7*	6.8
1988	5.8	7.0	6.5*	:	:	8.9	5.0	5.1	:	5.7*	:	:	:	8.7*	6.8
1989	5.9	7.0	6.8*	:	:	8.9	4.7	5.2	:	5.6*	:	:	:	8.8*	6.7
1990	5.9	7.0	7.0*	:	:	8.8	4.8	5.1	:	5.6*	:	:	:	8.8*	6.9
1991	5.9	6.8	7.3*	:	:	8.8	5.1	5.1	:	5.5*	:	:	:	8.7*	6.9
1992	5.9	6.9	7.2*	:	:	8.8	5.3	5.2	:	5.6*	:	:	:	8.5*	7.0
1993	5.9	6.9	7.0*	:	:	8.8	5.1	5.5	:	5.5*	:	:	:	8.4*	7.0
1994	6.0	7.1	7.0*	:	:	8.8	5.2	5.5	:	5.6*	:	:	:	8.4*	6.8
1995	6.2	6.9	7.0*	:	:	9.0	5.2	5.5	:	5.6*	:	:	:	8.4*	6.5
1996	6.1	6.9	7.0*	:	:	8.9	5.2	5.7	:	5.6*	:	:	:	8.2*	6.3
1997	6.0	:	7.1*	:	:	9.0	5.1	5.8	:	5.6*	:	:	:	:	:

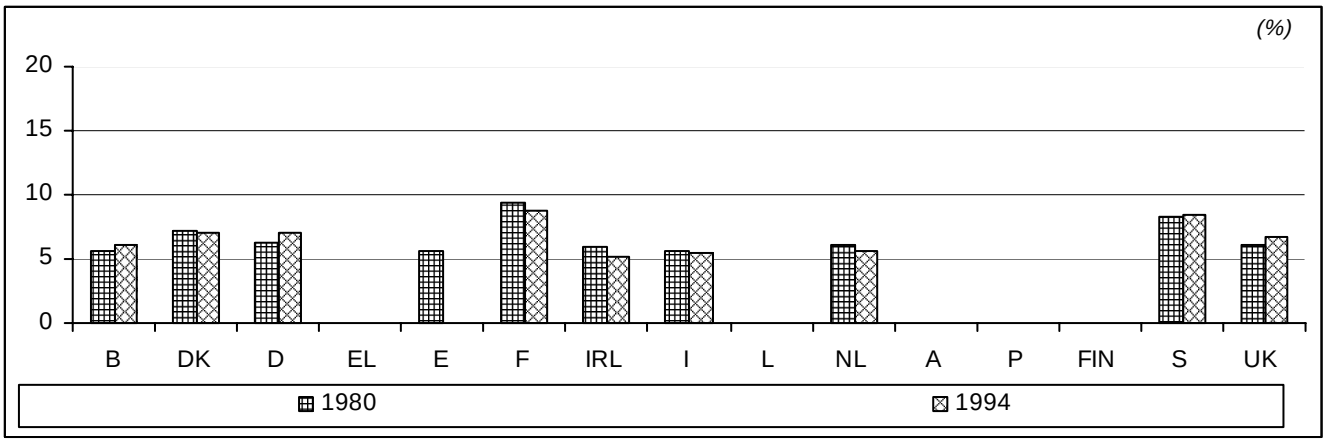


Figure 5.16: Percentage of household expenditure spent on operation of personal transport equipment

Source: Eurostat (New Cronos).

Household expenditure on purchased transport

	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
Per capita expenditure															*(constant ecu)*
1980	118	286	174*	214*	62*	189	101*	121	:	132*	151*	106*	:	252*	204*
1981	118	274	170*	203*	63*	193	101*	132	:	136*	152*	107*	:	264*	206*
1982	114	265	162*	202*	63*	195	96*	131	:	132*	153*	104*	259	266*	201*
1983	109	273	160*	196*	63*	196	90*	122	:	127*	149*	100*	260	247*	206*
1984	110	277	163*	205*	64*	197	100*	126	:	126*	152*	101*	258	255*	216
1985	110	280	164*	215*	65*	201	109*	138	:	133*	156*	100*	266	262*	224
1986	105	300	159*	205*	:	200	113*	138	:	137*	155*	92	251	276*	244
1987	108	314	158*	210*	:	202	127*	139	:	142*	161*	94	250	302*	264
1988	109	323	167*	216*	:	209	141	146	:	150*	158*	97	253	320*	279
1989	110	318	173*	224*	:	215	167	149	:	151*	167*	98	259	320*	284
1990	111	303	178*	223*	:	216	167	151	:	161*	174*	99	256	334*	287
1991	109	301	176*	212*	:	210	173	156	:	176*	177*	98	242	318*	276
1992	111	299	177*	215*	:	212	179	156	:	193*	190*	99	235	338*	287
1993	110	297	173*	215*	:	205	180	158	:	202*	198*	94	242	311*	290
1994	112	310	174*	217*	:	207	202	161	:	208*	207*	96	236	317*	297
1995	114	309	174*	219*	:	199	213	166	:	217*	224*	95	250	324*	307
1996	115	315	175*	222*	:	211	227	171	:	225*	241*	:	258	335*	316
1997	120	:	180*	221*	:	216	249*	171	:	237*	261*	:	265	:	:
Percentage of total household expenditure															*(%)*
1980	1.4	3.2	1.9*	5.5*	1.2*	2.3	2.2*	1.7	:	1.7*	2.0*	4.5*	:	2.8*	3.4*
1981	1.4	3.1	1.9*	5.1*	1.2*	2.3	2.1*	1.8	:	1.8*	2.0*	4.4*	:	2.9*	3.4*
1982	1.4	2.9	1.8*	5.0*	1.2*	2.3	2.2*	1.8	:	1.8*	1.9*	4.2*	3.1	2.9*	3.3*
1983	1.3	2.9	1.8*	4.9*	1.2*	2.3	2.1*	1.6	:	1.7*	1.8*	4.1*	3.0	2.8*	3.2*
1984	1.3	2.9	1.7*	5.0*	1.2*	2.3	2.3*	1.7	:	1.7*	1.9*	4.3*	3.0	2.8*	3.3
1985	1.3	2.8	1.7*	5.1*	1.2*	2.3	2.4*	1.8	:	1.7*	1.9*	4.1*	3.0	2.8*	3.3
1986	1.2	2.9	1.6*	4.8*	:	2.2	2.2*	1.7	:	1.8*	1.9*	3.2	2.7	2.8*	3.4
1987	1.2	3.1	1.6*	4.8*	:	2.2	2.4*	1.7	:	1.8*	1.9*	3.0	2.6	3.0*	3.5
1988	1.2	3.2	1.6*	4.8*	:	2.2	2.6	1.7	:	1.9*	1.8*	2.9	2.5	3.1*	3.5
1989	1.2	3.1	1.6*	4.9*	:	2.2	2.8	1.7	:	1.8*	1.8*	2.8	2.4	3.1*	3.5
1990	1.1	3.0	1.6*	4.8*	:	2.2	2.8	1.6	:	1.9*	1.8*	2.7	2.5	3.2*	3.5
1991	1.1	2.9	1.7*	4.5*	:	2.1	2.8	1.7	:	2.0*	1.8*	2.6	2.4	3.1*	3.5
1992	1.1	2.9	1.7*	4.5*	:	2.1	2.8	1.6	:	2.2*	2.0*	2.5	2.5	3.4*	3.6
1993	1.1	2.8	1.7*	4.6*	:	2.1	2.7	1.7	:	2.3*	2.1*	2.4	2.6	3.2*	3.6
1994	1.1	2.8	1.7*	4.5*	:	2.1	2.9	1.7	:	2.3*	2.2*	2.4	2.5	3.2*	3.6
1995	1.1	2.7	1.7*	4.5*	:	2.0	3.0	1.7	:	2.4*	2.3*	2.3	2.5	3.2*	3.6
1996	1.1	2.7	1.6*	4.4*	:	2.1	3.0	1.8	:	2.4*	2.5*	:	2.5	3.3*	3.6
1997	1.2	:	1.7*	4.3*	:	2.1	3.2	1.8	:	2.5*	2.7*	:	2.5	:	:

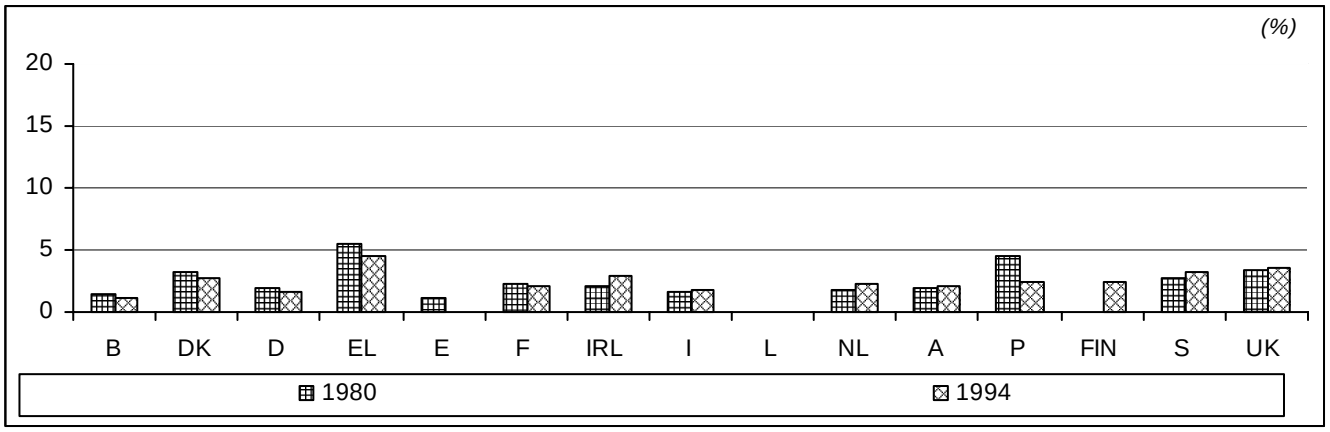


Figure 5.17: Percentage of household expenditure spent on purchased transport

Source: Eurostat (New Cronos).

Notes to Chapter 5

Annual harmonised consumer price indices

Eurostat's harmonised consumer price indices provide information on how prices vary over time. They are available in annual and monthly series, beginning in 1996, and for some countries 1995. The harmonised indices of consumer prices are produced and published monthly by Eurostat. Technical notes are provided in Eurostat News Release 21/97 of 5 March 1997 and Memo 8/98 of 4 May 1998.

Fuel prices

Price information in national currency is supplied to the Commission by the Member States as being the most frequently encountered. It is published regularly in the *Oil bulletin* published by the Directorate-General responsible for energy and transport and in Eurostat's publication *Energy prices.*

The purchasing power standard is a reference unit for which the ratios between the different national currencies are proportional to the purchasing power parities between those currencies. It is an indication of the amount of a national currency required to buy in each country the same basket of goods and services. It therefore provides an indication of the price of fuel relative to other goods in each country.

Household expenditure

Household expenditure data are taken from national accounts (final consumption of households). They represent final consumption of both resident and non-resident households. They are published annually by Eurostat in *National accounts ESA: Detailed tables by branch.*

Purchase of vehicles includes purchases through financial leasing arrangements and the trade margin on the sale of second-hand vehicles. Purchases of recreational vehicles such as camper vans, caravans, trailers, aeroplanes and boats are not covered.

Operation of personal transport equipment covers spare parts and accessories, fuels and lubricants, maintenance and repairs and other services such as hire of garages or parking, tolls, driving lessons and vehicle hire.

Transport services covers passenger transport by rail, road, air, sea and inland waterways, as well as funicular, teleferic and cable-car transport, moving and storage of household goods, services of porters and left-luggage and luggage-forwarding offices, and travel agents' commissions.

CHAPTER 6: EFFICIENT USE OF TRANSPORT

- **EFFICIENT USE OF TRANSPORT**

The environmental consequences of transport are determined by how efficiently transport systems are used. Efficiency is reflected in many factors such as the energy consumption or emissions produced per kilometre travelled, how many people are carried in a particular vehicle, whether a car is fitted with a catalytic converter, what fuel it uses, and how old it is. It is the aim of this section to provide data on some of these aspects.

Energy efficiency and specific emissions
The average energy consumption or emissions of a person or a tonne of freight carried over a distance of one kilometre can provide information as to whether transport is becoming more or less efficient. It is, however, not currently possible to prepare an indicator which shows such variation over time by country or region. For the moment only typical values are given for different types of vehicles or vessels of the mid-1990s. These are presented in graphical format for freight transport, inter-urban passenger transport and urban passenger transport. This information can provide insight into which means of transport produce the least pollution. In each case a range of values has been provided. Eurostat and DG VII are currently working on a project, TRENDS, which is aiming to produce annual figures for each Member State and regional information at the NUTS 2 level.

Uptake of cleaner fuels
The use of different fuels can produce different amounts of pollution. Diesel cars produce more particulates, nitrogen oxides, volatile organic compounds and sulphur oxides than petrol cars, but less carbon dioxide and carbon monoxide. However, in the past petrol cars produced large amounts of lead emissions. Unleaded petrol is an example of a newer fuel, and data are provided here on the uptake of unleaded petrol. Over recent years inland deliveries of petrol have stabilised, whilst the share of unleaded petrol has increased. Figures are also given for two alternative fuels (i.e. alternatives to the conventional petrol and diesel), liquefied petroleum gas and natural gas. Information is also provided on the number of road and rail vehicles using a particular energy source.

Average age of the vehicle fleet
The age profile of the vehicle fleet is also a factor in the production of emissions. Older vehicles were not fitted with catalytic converters. Furthermore, as vehicles get older the efficiency of their emission-reduction systems deteriorate. Several Member States have used scrappage schemes in order to reduce the numbers of older cars on the roads. Estimates of the average age of the passenger car fleet are presented here. The oldest fleet is in Portugal, and the youngest in Luxembourg. The effects of scrappage schemes are apparent in the figures for Ireland and to a lesser extent, Italy.

Proportion of the vehicle fleet meeting certain emission standards
In some countries the fitting of catalytic converters was encouraged by tax incentives as long ago as 1988. However, it only became mandatory for all new passenger cars in the EU to be fitted with catalytic converters in 1993. Estimates of the percentage of petrol-engined passenger cars fitted with a catalytic converter are provided.

Data sets on occupancy rates, freight load factors, and public awareness, which should be included in this chapter, are not yet available for publication.

Energy efficiency

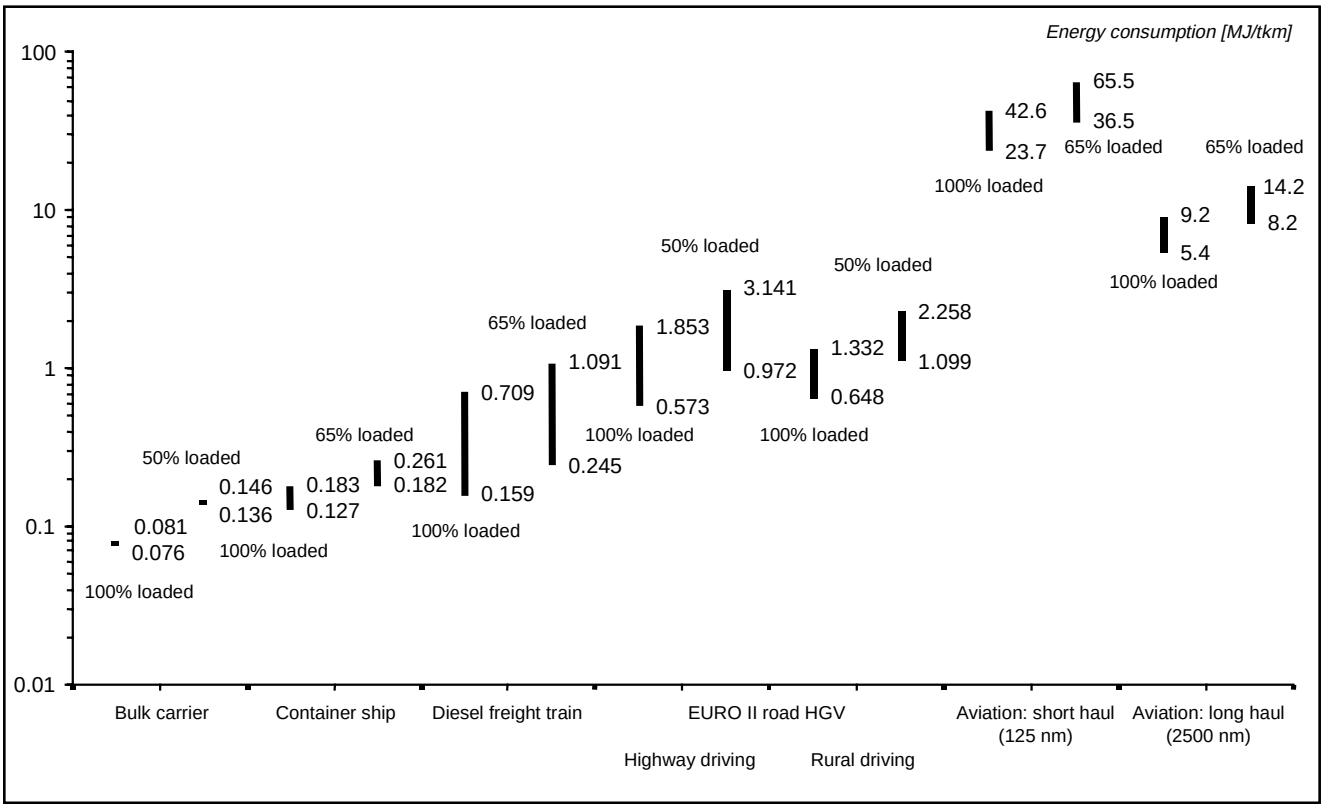


Figure 6.1: Typical energy consumption per freight tonne-kilometre

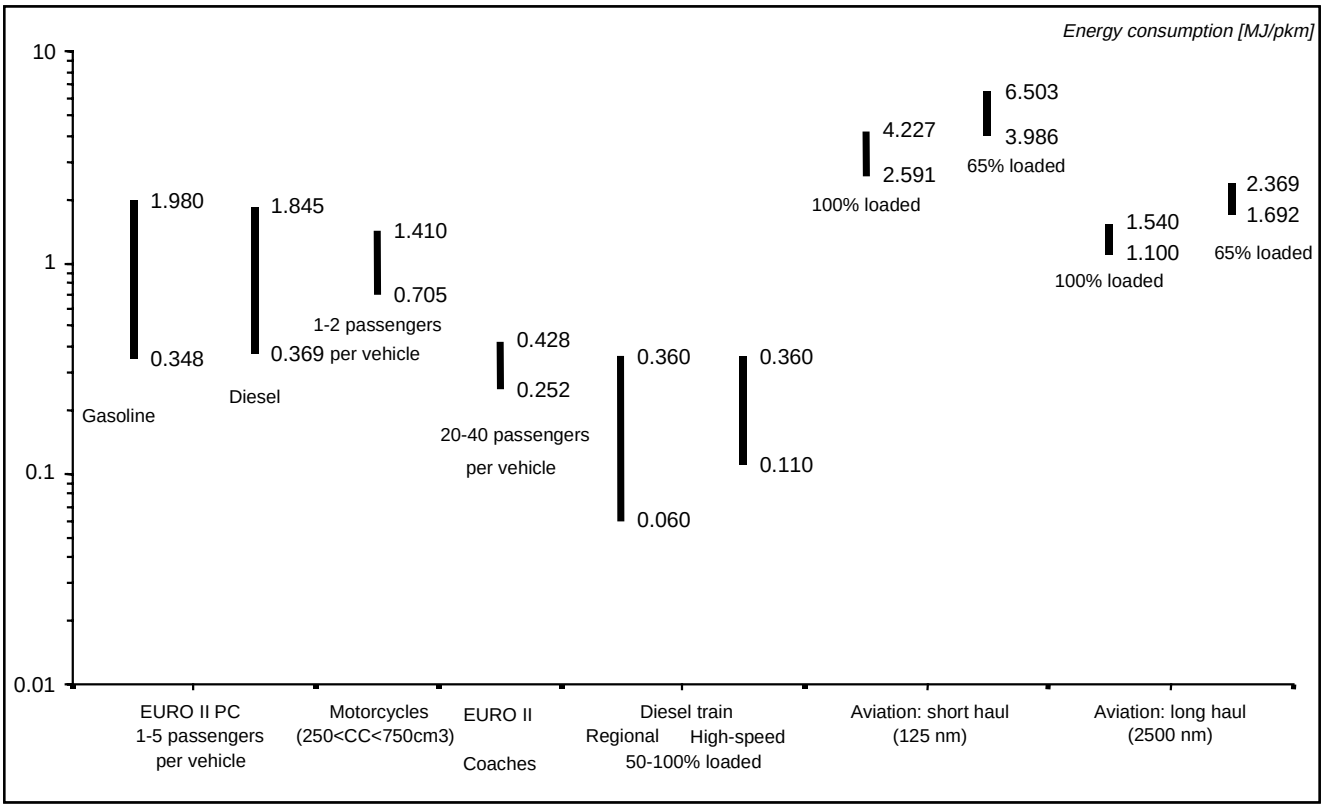


Figure 6.2: Typical energy consumption per inter-urban passenger-kilometre

Source: Eurostat/DG Energy and Transport (TRENDS).

Energy efficiency (continued)

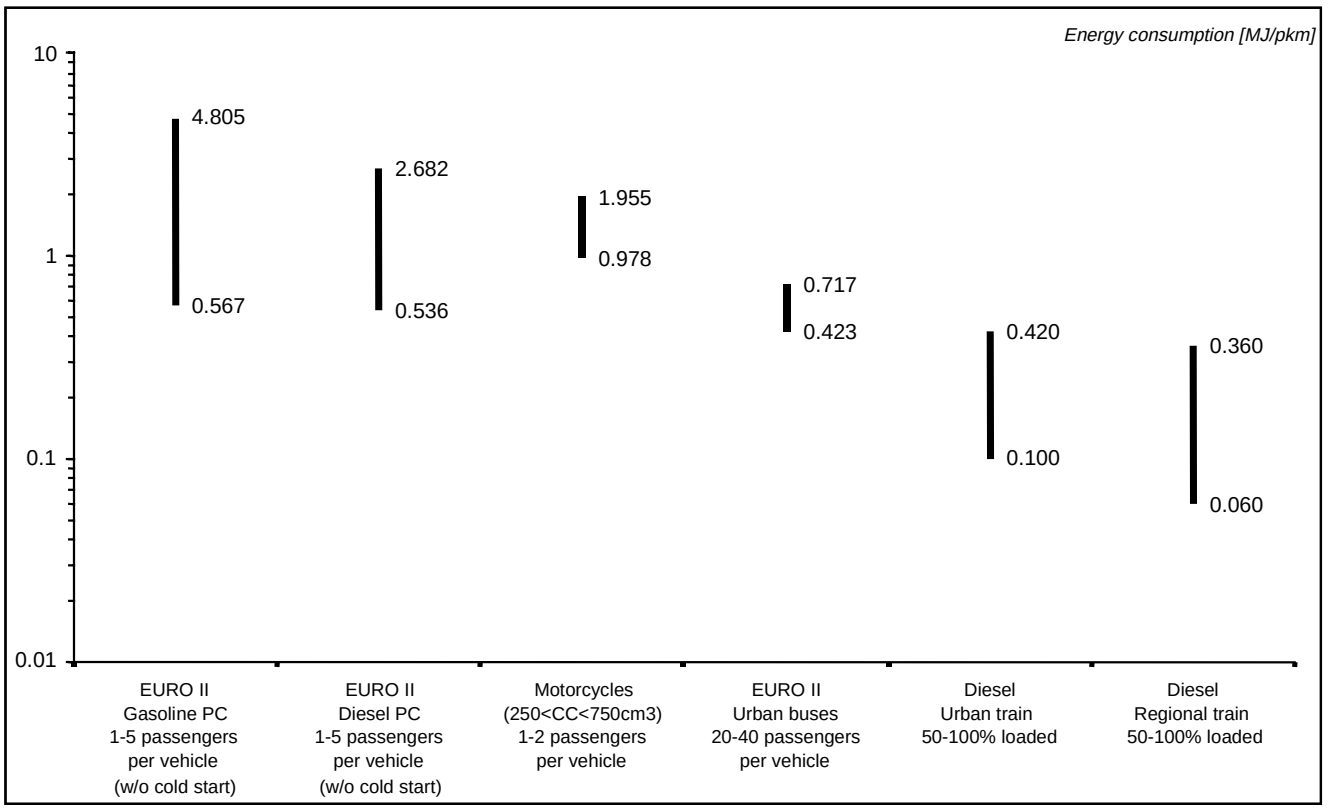


Figure 6.3: Typical energy consumption per urban passenger-kilometre

Source: Eurostat/DG Energy and Transport (TRENDS).

Specific emissions for freight transport

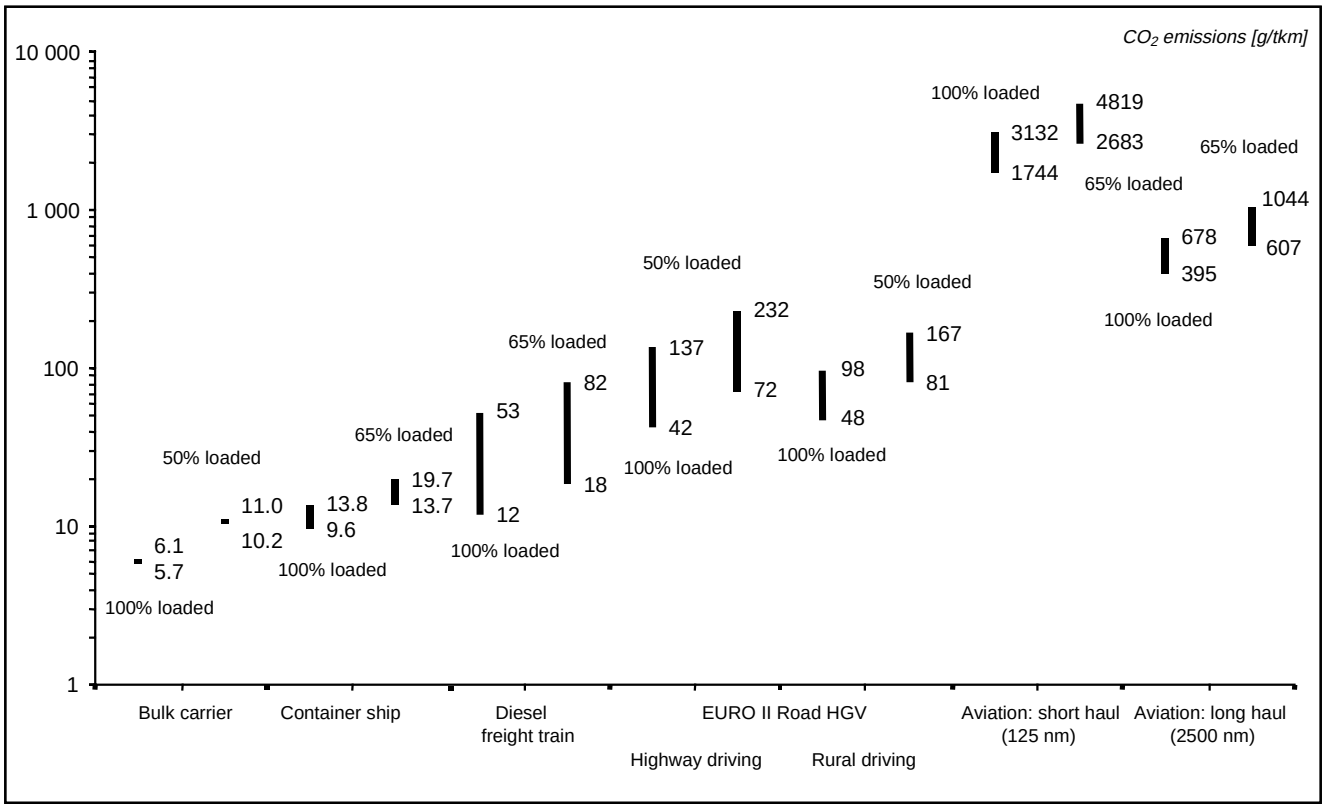


Figure 6.4: Typical carbon dioxide emissions per freight tonne-kilometre

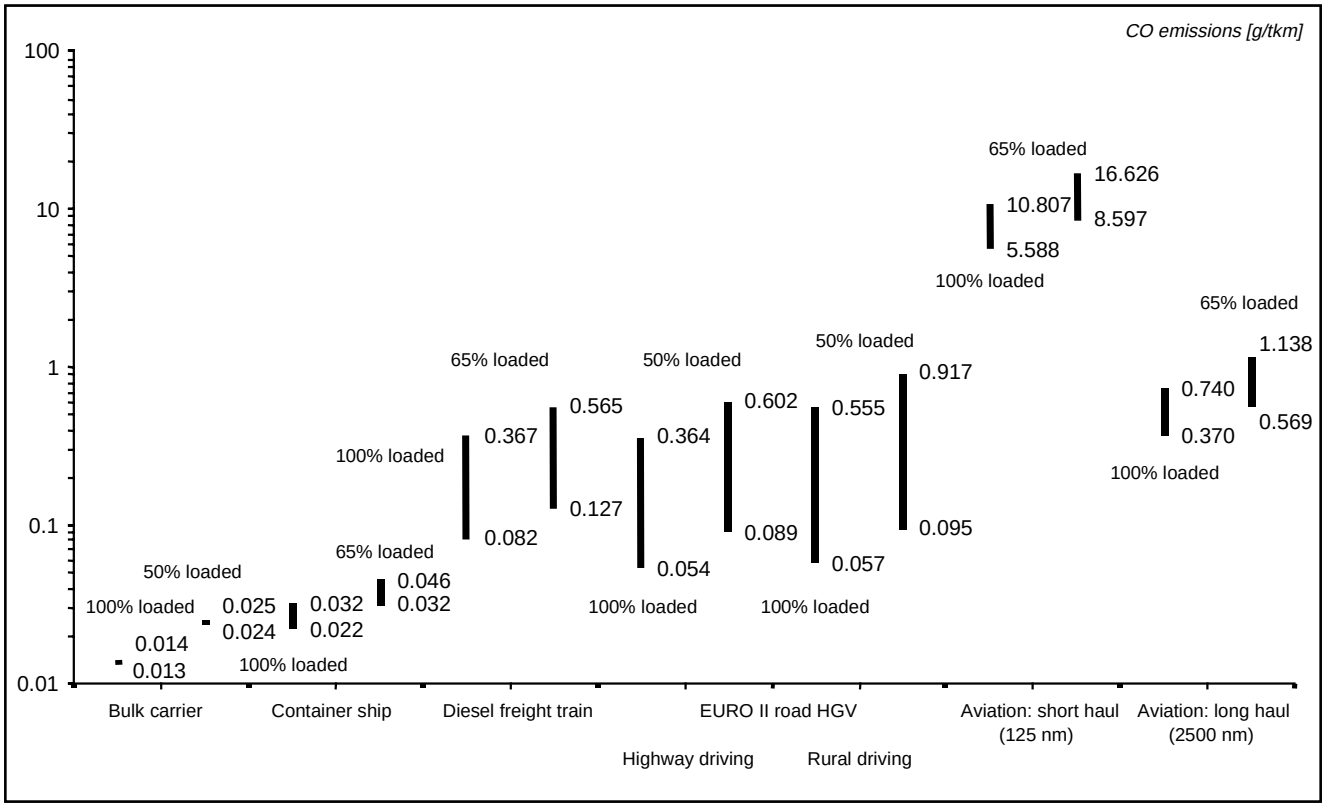


Figure 6.5: Typical carbon monoxide emissions per freight tonne-kilometre

Source: Eurostat/DG Energy and Transport (TRENDS).

Specific emissions for freight transport (continued)

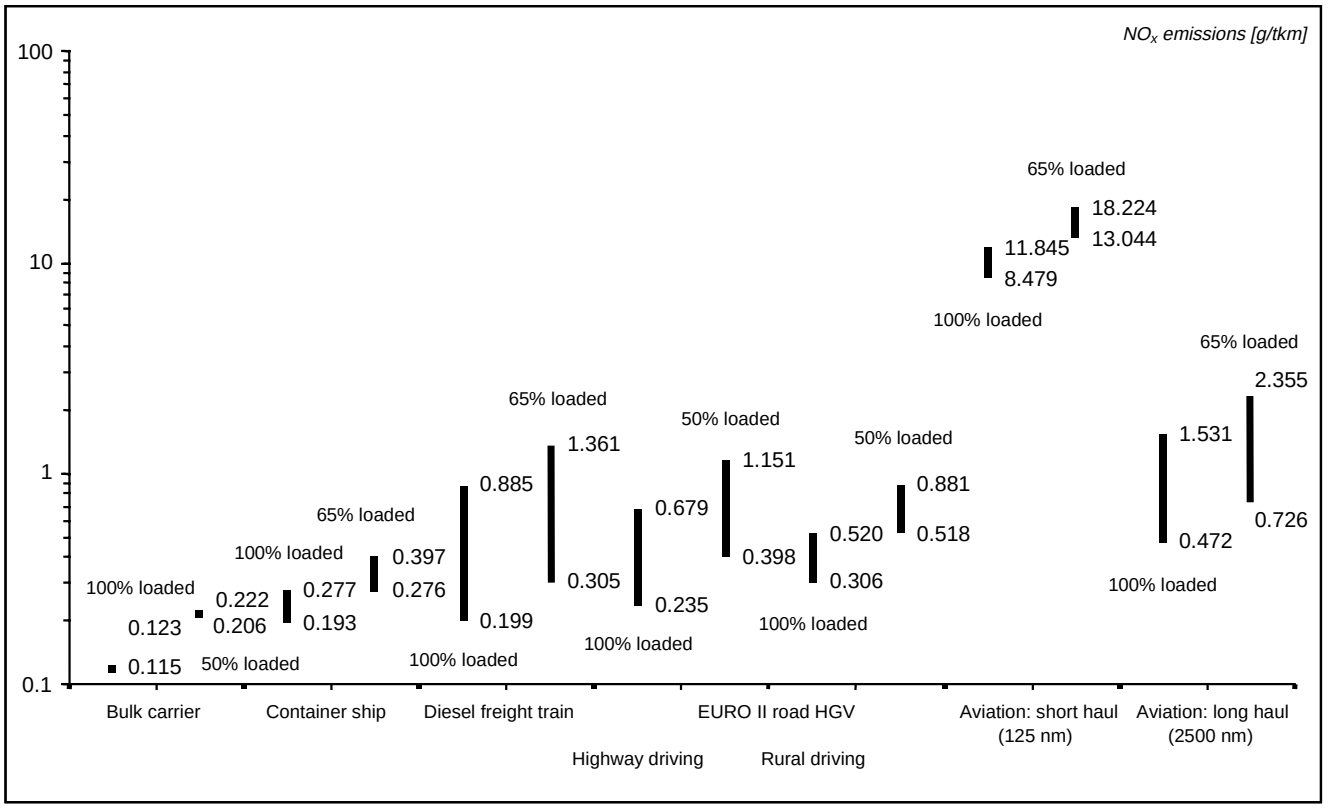


Figure 6.6: Typical nitrogen oxide emissions per freight tonne-kilometre

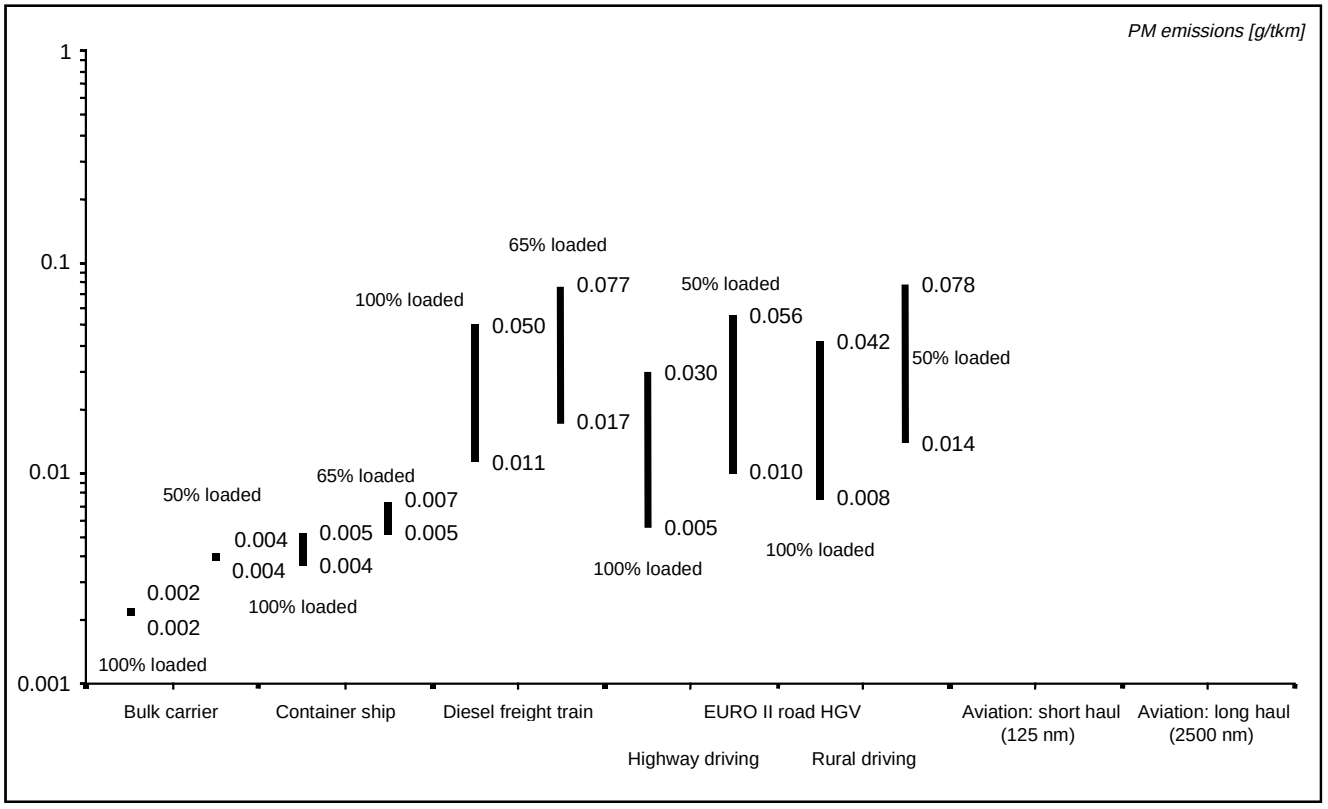


Figure 6.7: Typical particulate emissions per freight tonne-kilometre

Source: Eurostat/DG Energy and Transport (TRENDS).

Specific emissions for freight transport (continued)

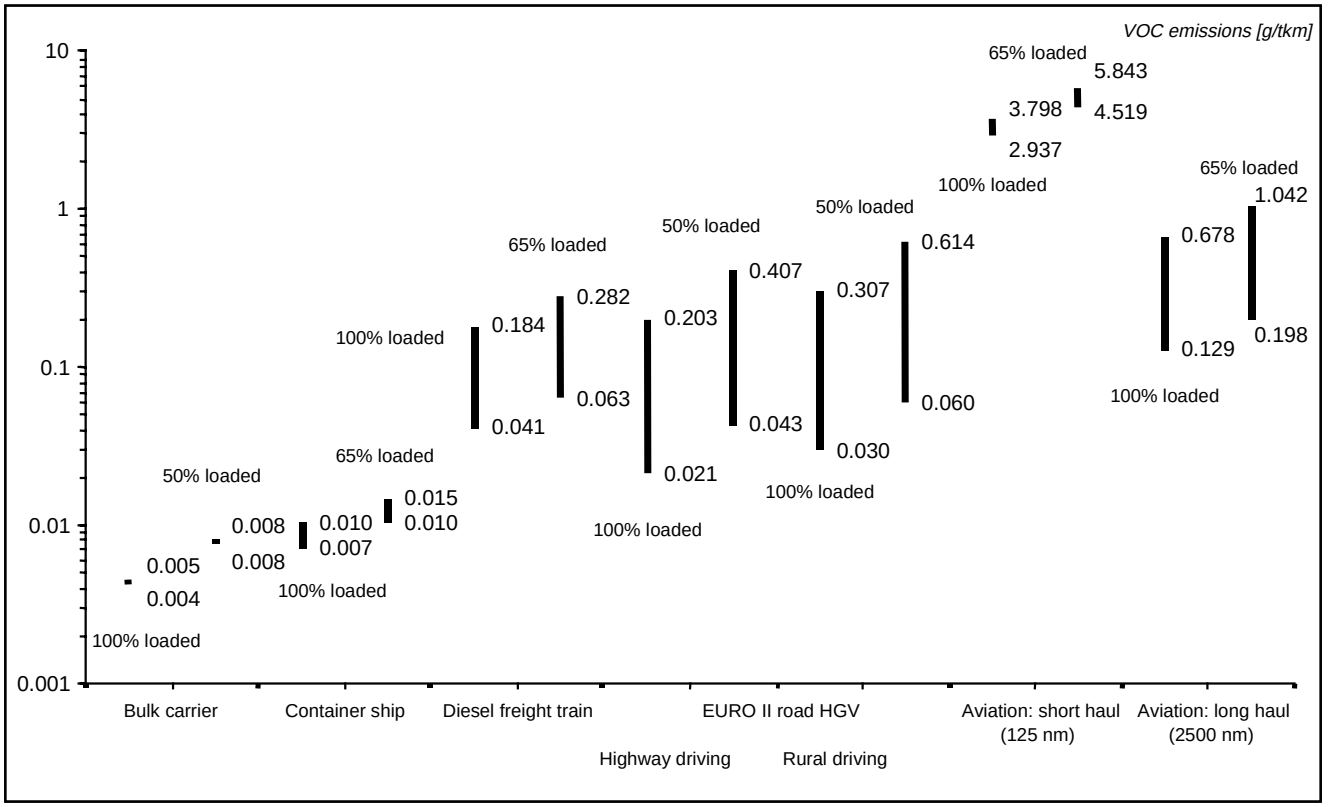


Figure 6.8: Typical volatile organic compound emissions per freight tonne-kilometre

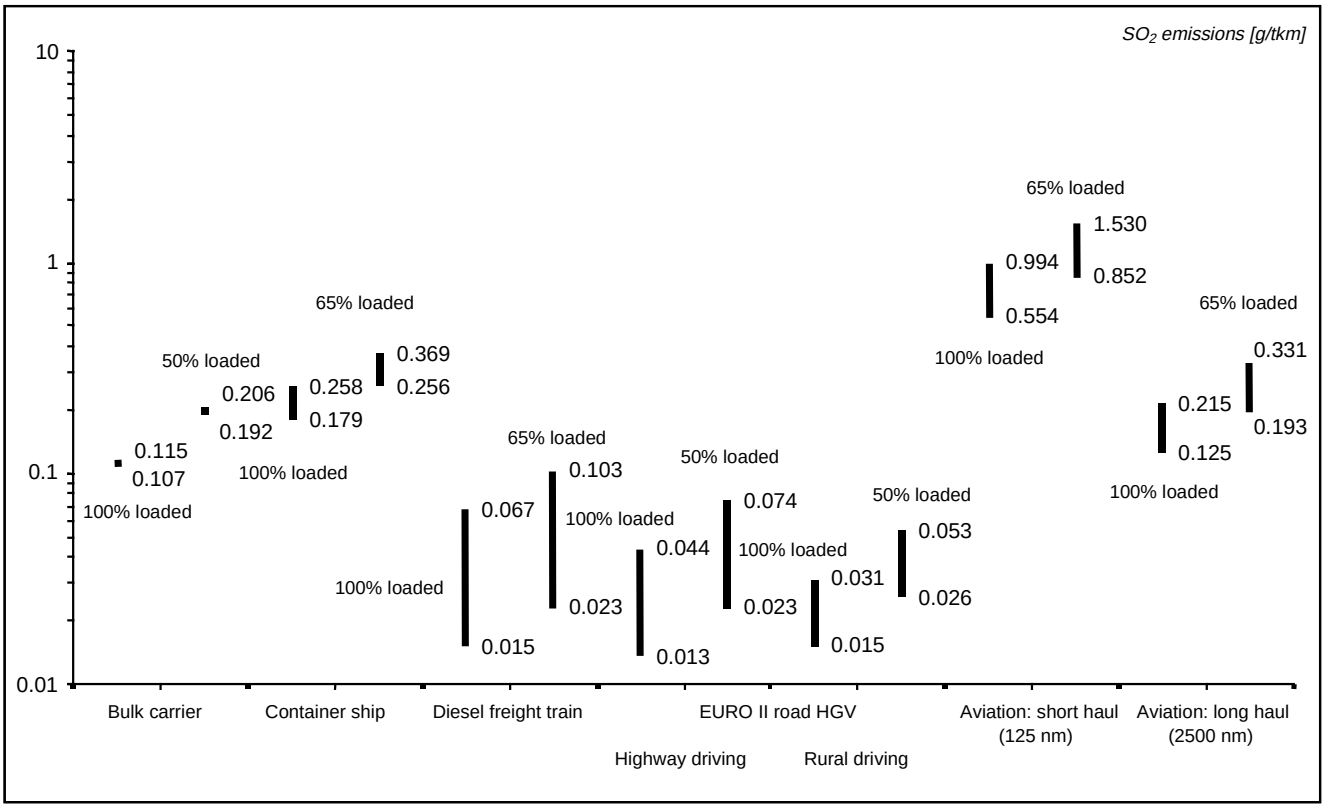


Figure 6.9: Typical sulphur dioxide emissions per freight tonne-kilometre

Source: Eurostat/DG Energy and Transport (TRENDS).

Specific emissions for inter-urban passenger transport

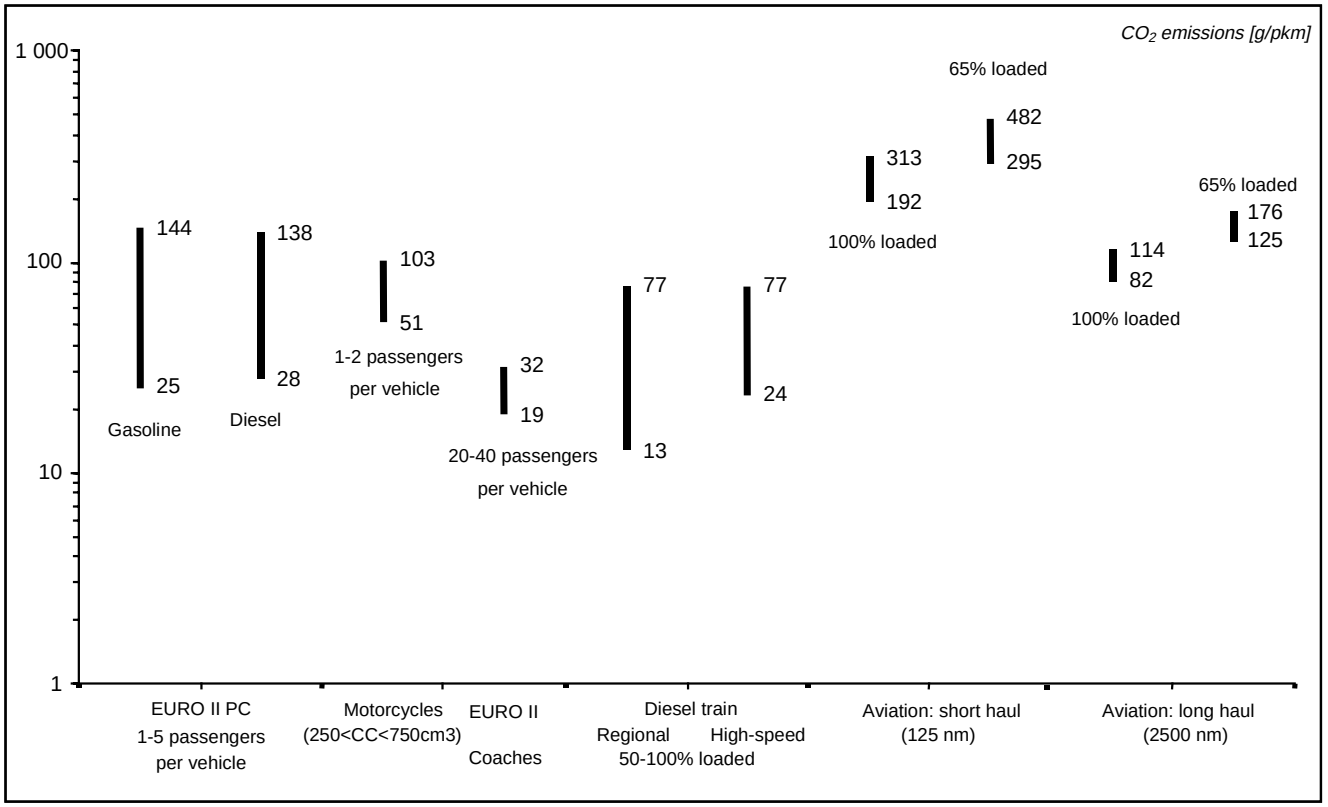


Figure 6.10: Typical carbon dioxide emissions per inter-urban passenger-kilometre

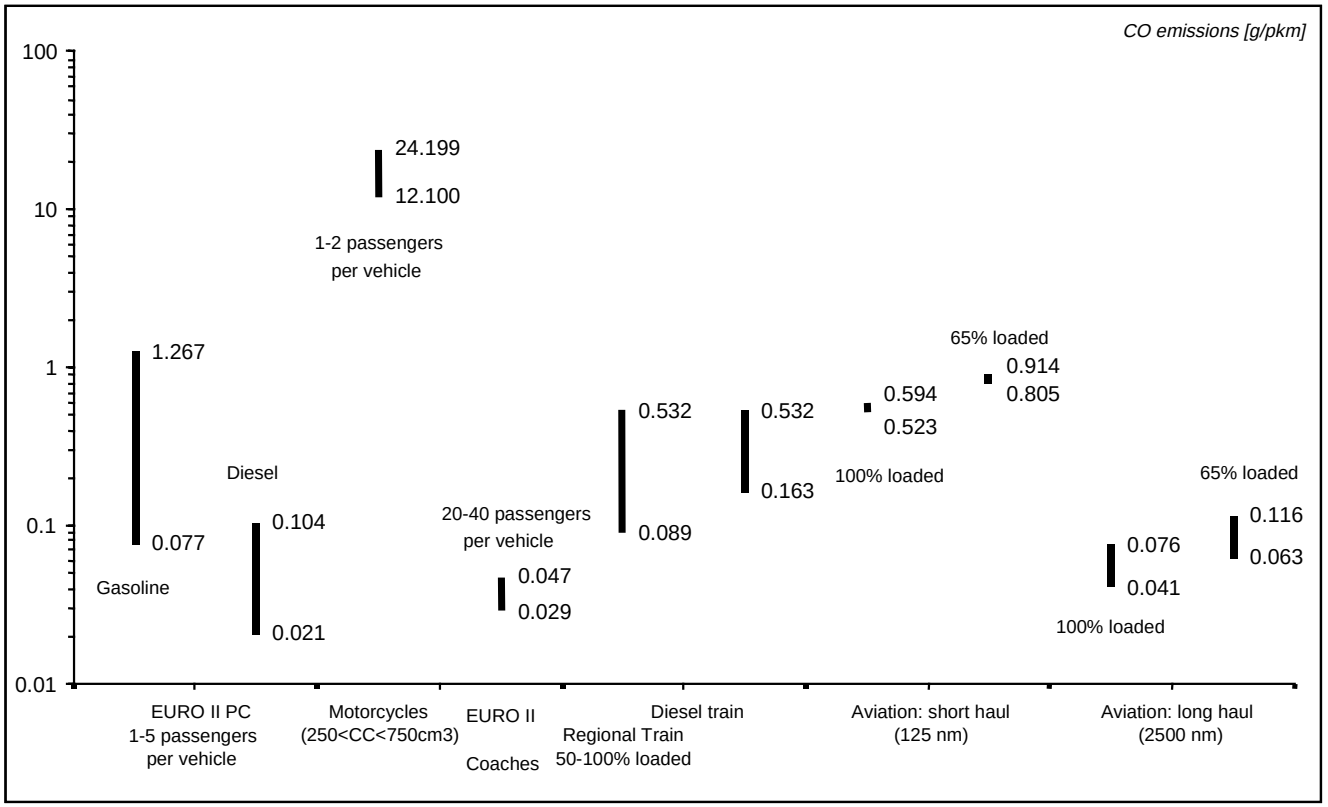


Figure 6.11: Typical carbon monoxide emissions per inter-urban passenger-kilometre

Source: Eurostat/DG Energy and Transport (TRENDS).

Specific emissions for inter-urban passenger transport (continued)

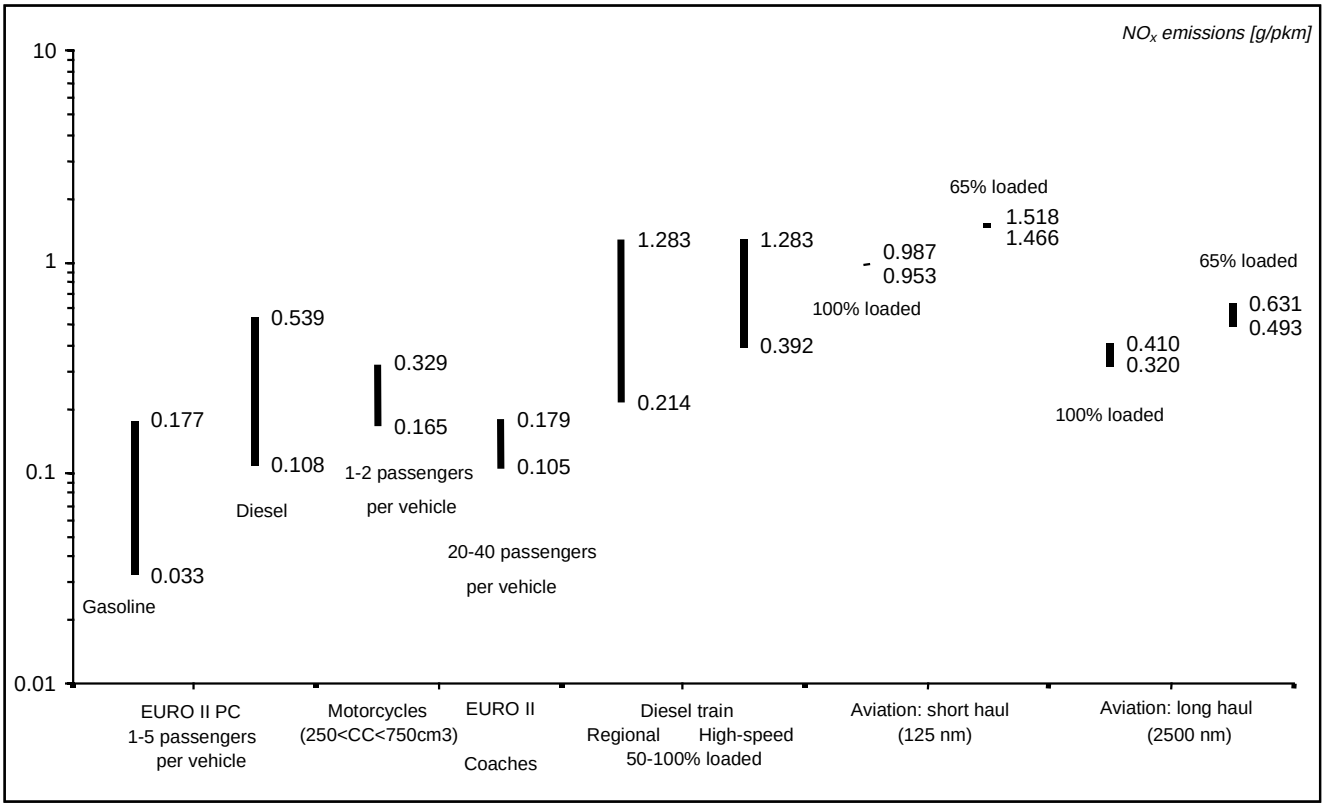


Figure 6.12: Typical nitrogen oxide emissions per inter-urban passenger-kilometre

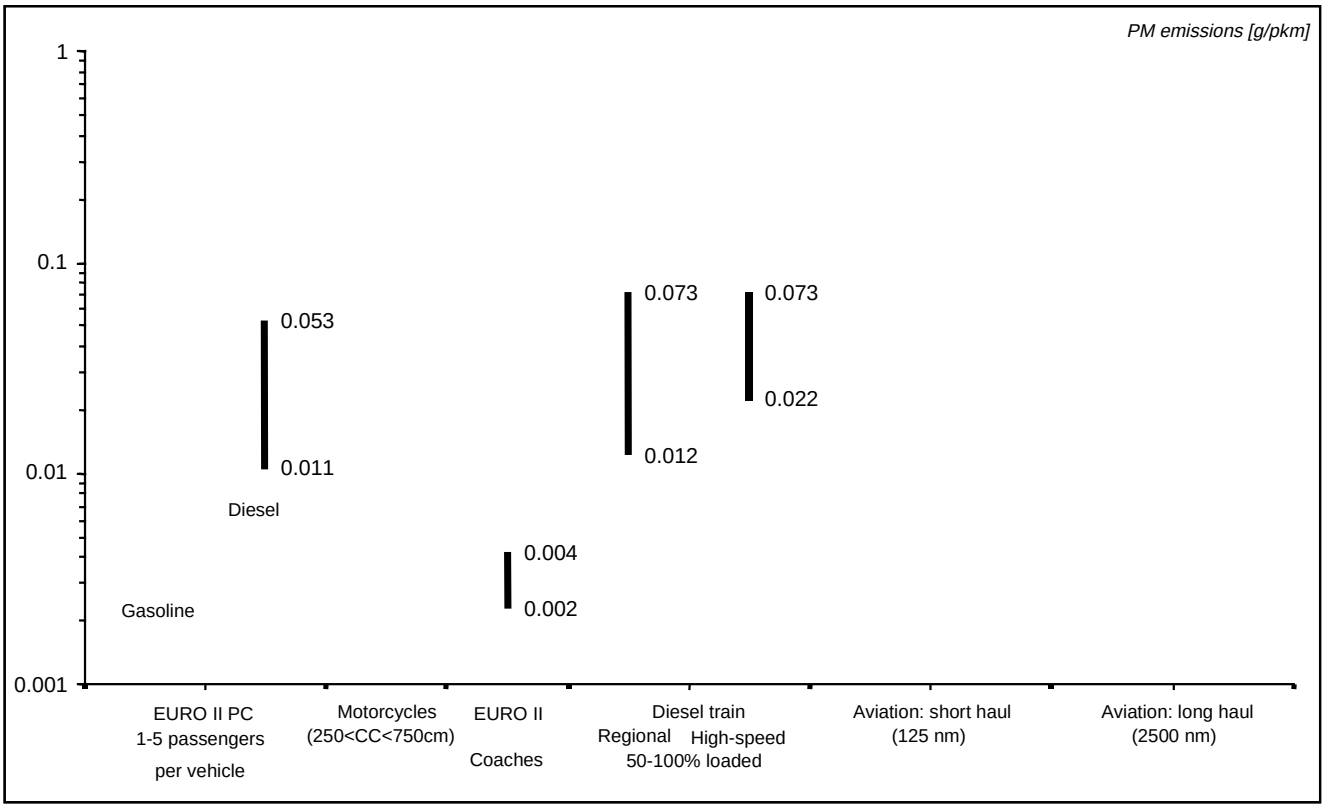


Figure 6.13: Typical particulate emissions per inter-urban passenger-kilometre

Source: Eurostat/DG Energy and Transport (TRENDS).

Specific emissions for inter-urban passenger transport (continued)

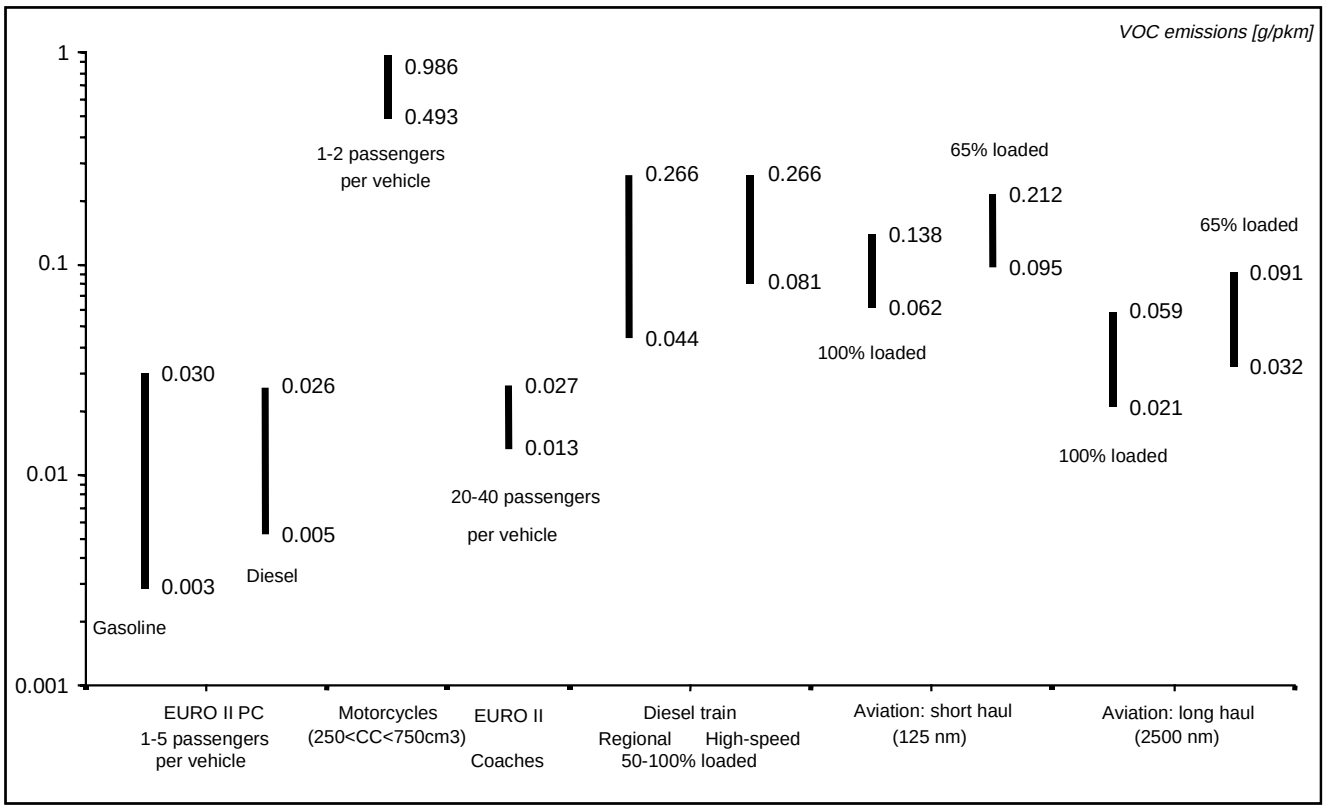


Figure 6.14: Typical volatile organic compound emissions per inter-urban passenger-kilometre

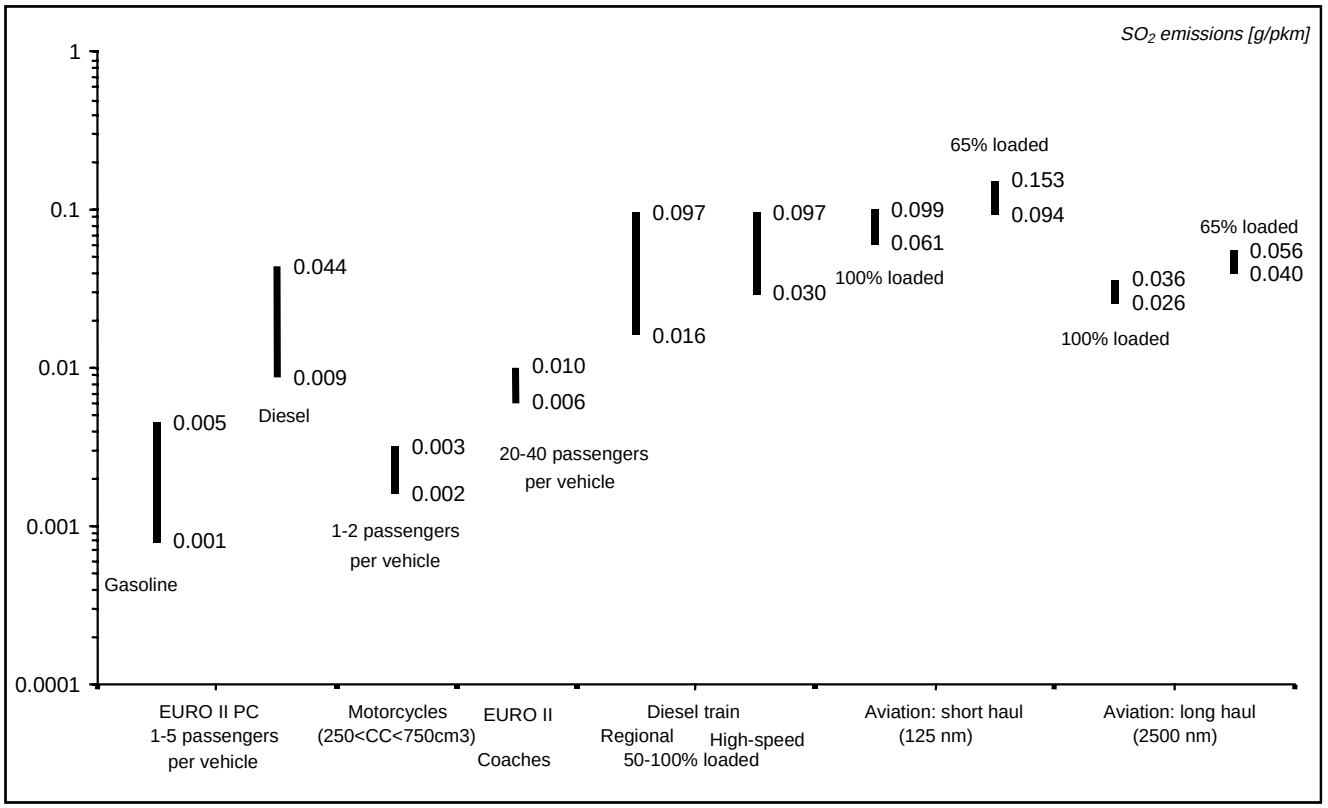


Figure 6.15: Typical sulphur dioxide emissions per inter-urban passenger-kilometre

Source: Eurostat/DG Energy and Transport (TRENDS).

Specific emissions for urban passenger transport

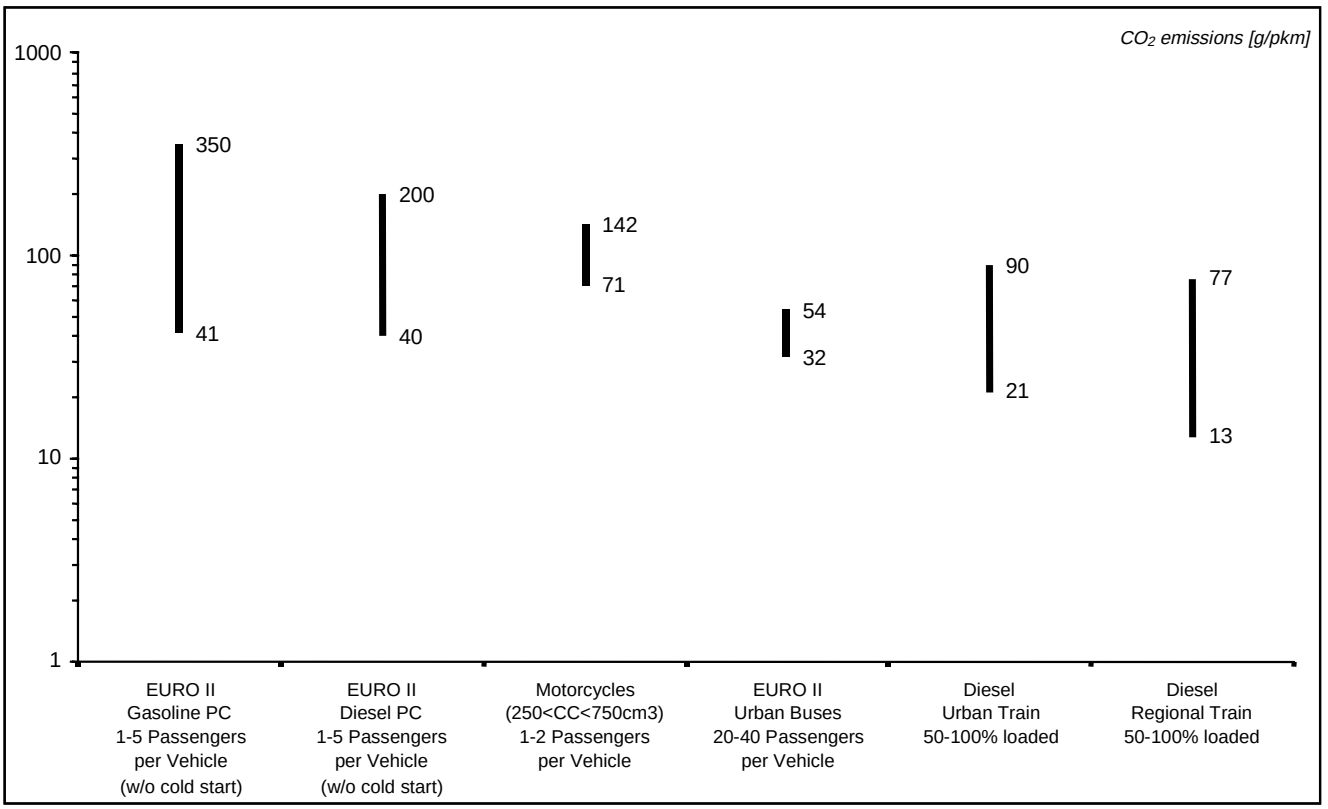


Figure 6.16: Typical carbon dioxide emissions per urban passenger-kilometre

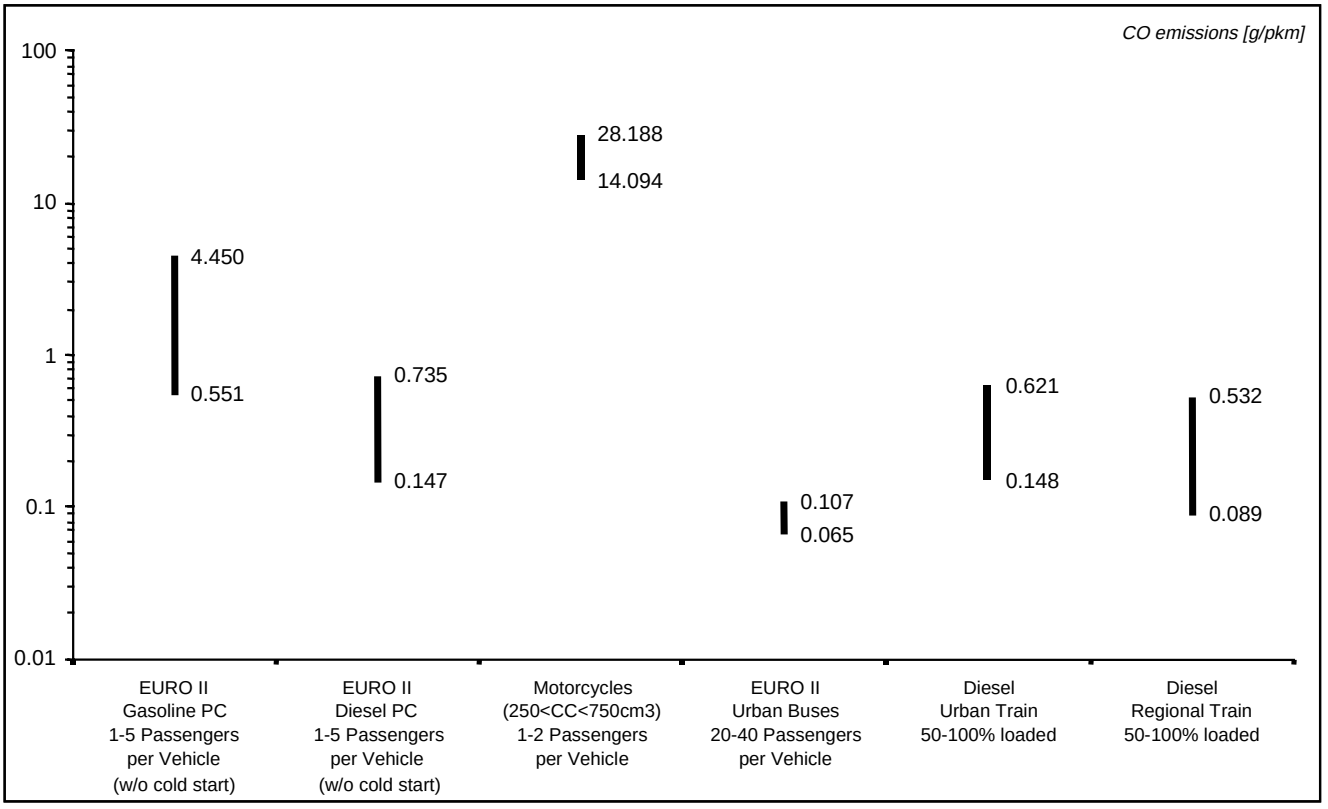


Figure 6.17: Typical carbon monoxide emissions per urban passenger-kilometre

Source: Eurostat/DG Energy and Transport (TRENDS).

Specific emissions for urban passenger transport (continued)

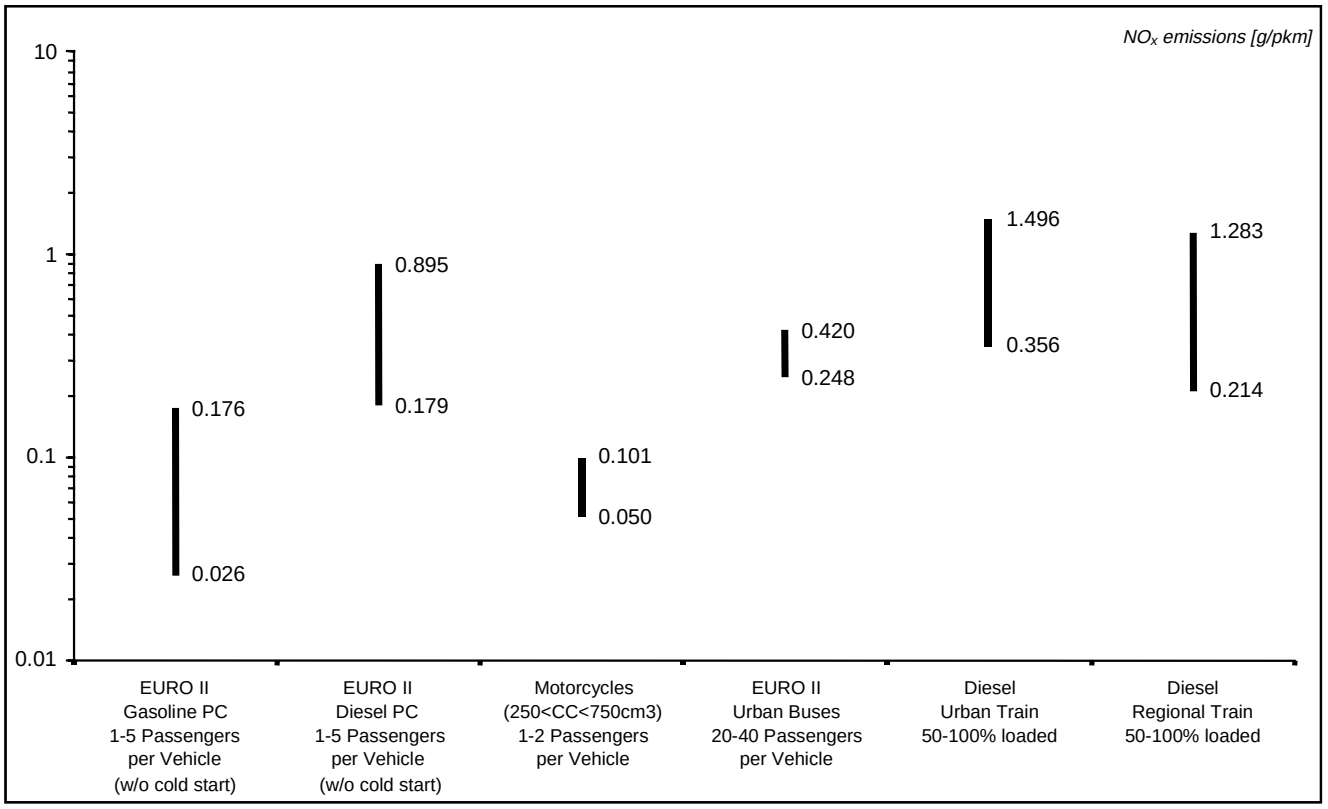


Figure 6.18: Typical nitrogen oxide emissions per urban passenger-kilometre

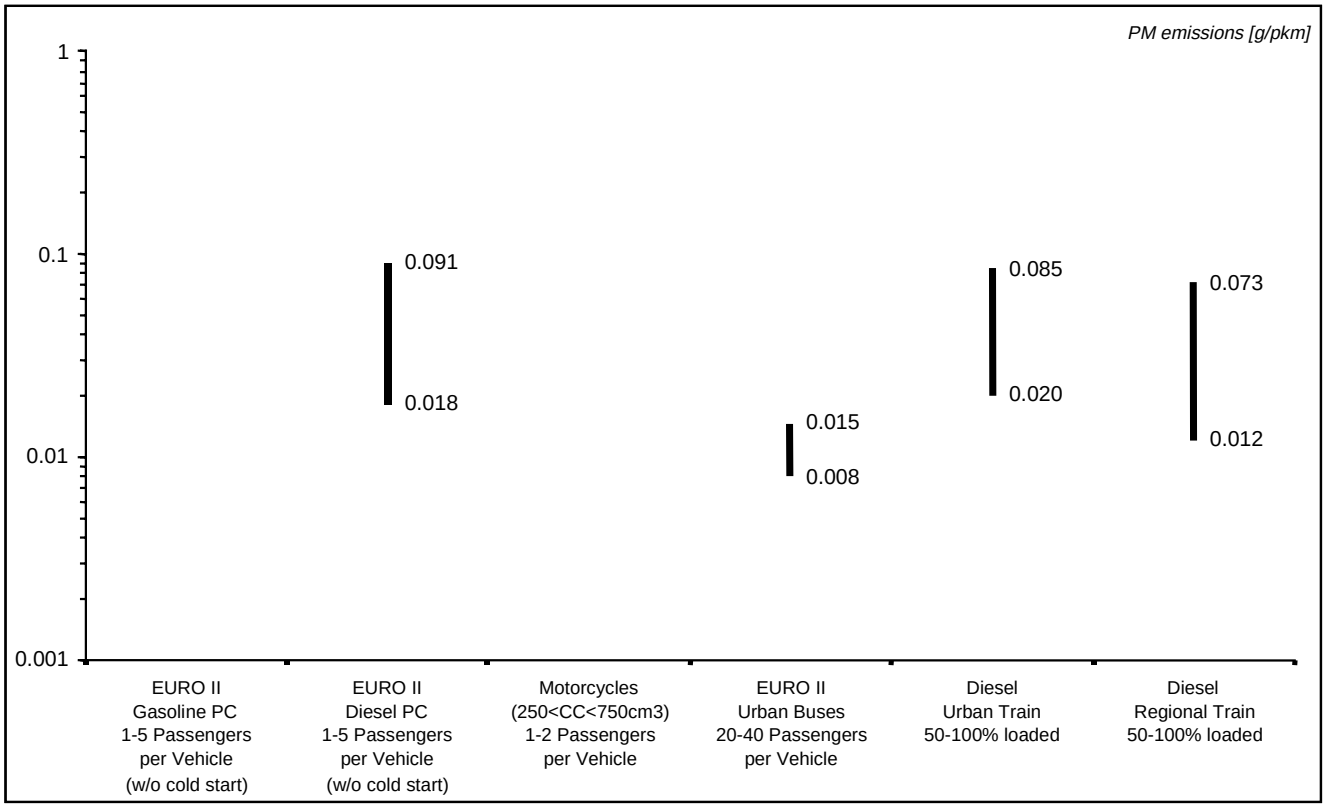


Figure 6.19: Typical particulate emissions per urban passenger-kilometre

Source: Eurostat/DG Energy and Transport (TRENDS).

Specific emissions for urban passenger transport (continued)

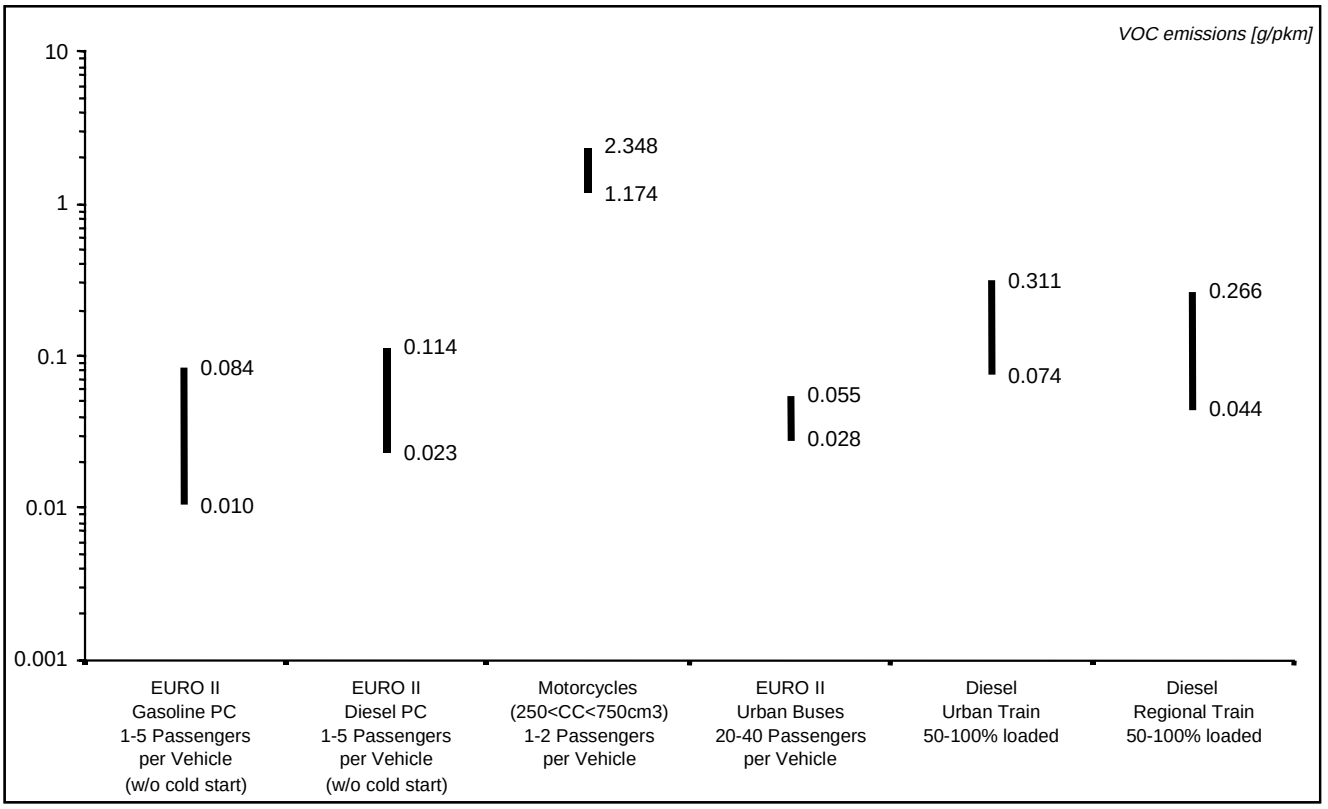


Figure 6.20: Typical volatile organic compound emissions per urban passenger-kilometre

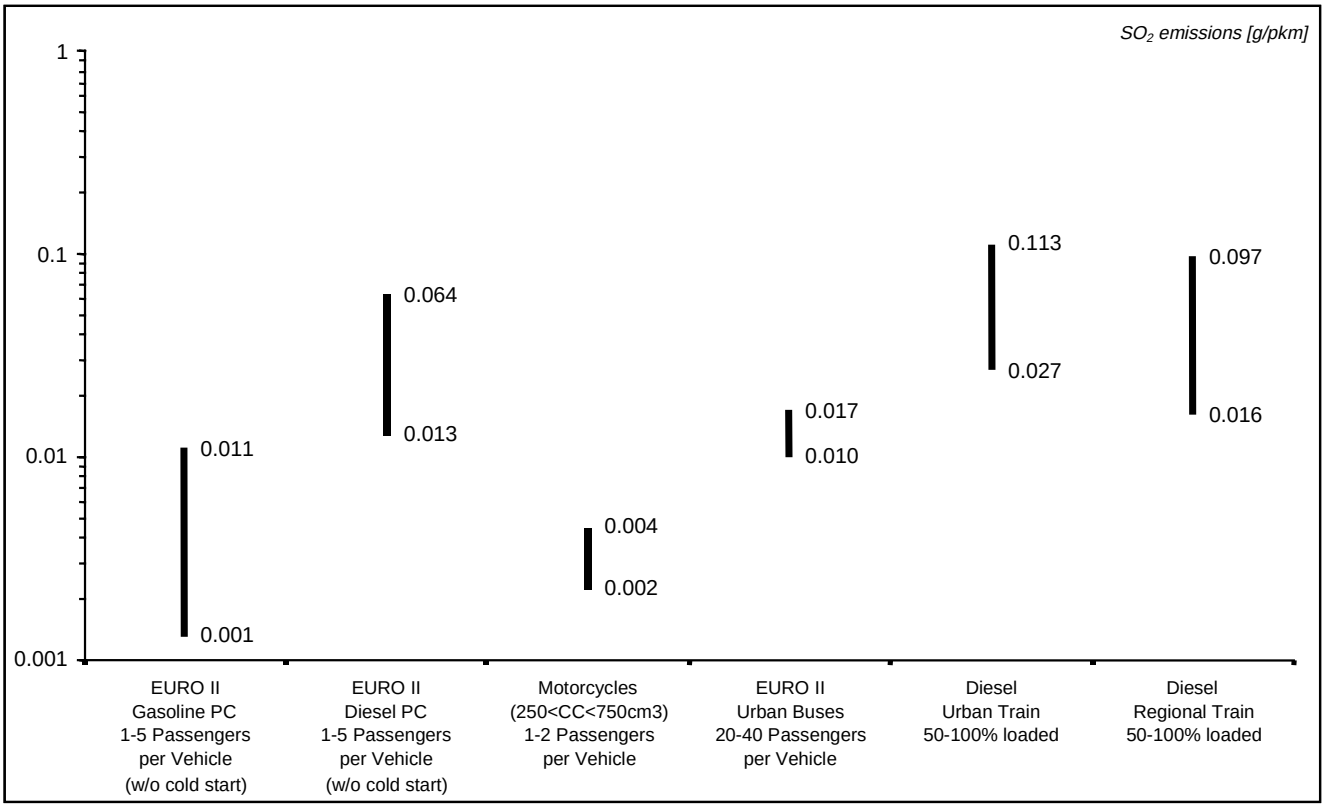


Figure 6.21: Typical sulphur dioxide emissions per urban passenger-kilometre

Source: Eurostat/DG Energy and Transport (TRENDS).

Inland deliveries of petrol

Total inland deliveries of petrol

(1 000 tonnes)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
1985	:	:	2 503	1 530	23 641	1 794	5 917	18 035	840	11 872	309	3 397	:	855	:	:	20 379
1986	:	:	2 724	1 532	24 671	1 866	6 405	18 562	867	11 971	307	3 481	:	938	:	:	21 477
1987	:	:	2 838	1 533	25 525	2 002	6 698	18 566	833	12 235	328	3 407	:	1 059	:	:	22 182
1988	:	:	2 937	1 555	26 480	2 143	7 333	18 855	848	12 437	329	3 357	:	1 161	:	:	23 249
1989	:	:	2 878	1 528	26 430	2 329	7 763	18 525	881	12 896	377	3 419	:	1 261	:	:	23 931
1990	113 182	80 664	2 731	1 609	27 317	2 435	7 994	18 255	885	13 668	411	3 479	2 572	1 367	1 985	4 168	24 306
1991	119 028	86 549	2 742	1 702	31 618	2 502	8 334	17 909	905	14 823	485	3 451	2 815	1 482	1 985	4 253	24 022
1992	121 322	88 654	2 905	1 788	31 718	2 578	8 924	17 642	971	15 950	522	3 648	2 692	1 691	1 991	4 354	23 948
1993	119 358	87 156	2 843	1 831	31 558	2 647	8 855	15 770	953	16 616	525	3 795	2 590	1 775	1 876	4 138	23 586
1994	117 883	86 217	2 843	1 894	30 267	2 699	9 162	15 170	993	16 971	544	3 912	2 488	1 829	2 038	4 174	22 899
1995	116 213	85 397	2 834	1 914	30 145	2 851	8 878	14 161	1 038	17 574	514	4 024	2 391	1 882	1 956	4 262	21 789
1996	115 819	84 592	2 741	1 929	29 996	2 940	9 101	13 680	1 097	17 278	520	4 199	2 217	1 931	1 832	4 203	22 155
1997	115 493	84 064	2 537	1 975	29 902	3 039	8 979	13 609	1 173	17 254	542	4 139	2 136	1 919	1 874	4 127	22 288
1998	117 628	86 538	2 512	2 031	30 427	3 156	9 018	14 577	1 306	18 044	541	4 107	2 129	2 040	1 837	4 019	21 884

Inland deliveries of unleaded petrol

(1 000 tonnes)

1985	:	:	–	–	–	–	–	–	–	–	–	–	:	–	:	:	–
1986	:	:	–	153	704	–	1	–	–	–	–	–	:	–	:	:	–
1987	:	:	–	443	6 393	–	4	–	–	–	0	688	:	–	:	:	14
1988	:	:	14	499	11 570	–	13	48	–	89	33	870	:	–	:	:	259
1989	:	:	442	613	15 197	–	28	442	56	270	77	1 283	:	4	:	:	4 648
1990	38 461	26 960	685	910	18 517	44	70	2 640	166	659	123	1 682	1 313	24	1 080	2 291	8 256
1991	50 022	36 514	1 026	1 079	24 340	182	258	4 480	223	998	217	2 063	1 636	127	1 146	2 436	9 811
1992	58 669	43 206	1 364	1 244	26 634	424	549	6 018	293	2 097	302	2 536	1 791	221	1 401	2 577	11 218
1993	67 615	50 040	1 631	1 384	28 235	606	1 197	6 968	367	3 915	362	2 848	2 516	371	1 630	3 318	12 267
1994	73 957	54 005	1 842	1 856	27 935	745	2 032	7 579	483	5 528	411	3 129	2 483	548	2 035	4 150	13 201
1995	78 046	57 321	1 946	1 913	28 497	893	2 283	7 864	585	7 318	408	3 398	2 391	678	1 953	4 263	13 656
1996	82 717	60 689	2 029	1 929	29 185	1 107	3 154	8 391	712	8 084	436	3 845	2 217	804	1 832	4 203	14 789
1997	86 847	63 469	2 011	1 975	29 859	1 311	3 645	8 898	868	8 646	477	4 136	2 136	919	1 874	4 129	15 963
1998	91 271	66 547	2 085	2 031	30 376	1 516	4 286	8 891	1 105	10 158	486	4 097	2 130	1 096	1 837	4 019	17 158

Share of unleaded petrol in total petrol deliveries

(%)

1985	:	:	–	–	–	–	–	–	–	–	–	–	:	–	:	:	–
1986	:	:	–	10.0	2.9	–	0.0	–	–	–	–	–	:	–	:	:	–
1987	:	:	–	28.9	25.0	–	0.1	–	–	–	0.1	20.2	:	–	:	:	0.1
1988	:	:	0.5	32.1	43.7	–	0.2	0.3	–	0.7	10.1	25.9	:	–	:	:	1.1
1989	:	:	15.4	40.1	57.5	–	0.4	2.4	6.4	2.1	20.4	37.5	:	0.3	:	:	19.4
1990	34.0	33.4	25.1	56.6	67.8	1.8	0.9	14.5	18.8	4.8	30.0	48.3	51.0	1.8	54.4	55.0	34.0
1991	42.0	42.2	37.4	63.4	77.0	7.3	3.1	25.0	24.6	6.7	44.7	59.8	58.1	8.6	57.7	57.3	40.8
1992	48.4	48.7	47.0	69.6	84.0	16.4	6.2	34.1	30.2	13.1	57.9	69.5	66.5	13.1	70.4	59.2	46.8
1993	56.6	57.4	57.4	75.6	89.5	22.9	13.5	44.2	38.5	23.6	69.0	75.0	97.1	20.9	86.9	80.2	52.0
1994	62.7	62.6	64.8	98.0	92.3	27.6	22.2	50.0	48.6	32.6	75.6	80.0	99.8	30.0	99.9	99.4	57.6
1995	67.2	67.1	68.7	99.9	94.5	31.3	25.7	55.5	56.4	41.6	79.4	84.4	100.0	36.0	99.8	100.0	62.7
1996	71.4	71.7	74.0	100.0	97.3	37.7	34.7	61.3	64.9	46.8	83.8	91.6	100.0	41.6	100.0	100.0	66.8
1997	75.2	75.5	79.3	100.0	99.9	43.1	40.6	65.4	74.0	50.1	88.0	99.9	100.0	47.9	100.0	100.0	71.6
1998	77.6	76.9	83.0	100.0	99.8	48.0	47.5	61.0	84.6	56.3	89.8	99.8	100.0	53.7	100.0	100.0	78.4

Source: Eurostat (New Cronos).

Consumption of alternative fuels by road transport

Consumption of LPG by road transport

(1 000 toe)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
1985	2 311	2 220	75	64	14	20	76	69	25	1 055	8	883	15	–	–	7	–
1986	2 341	2 280	76	36	8	21	68	65	27	1 094	7	923	12	–	–	4	–
1987	2 485	2 437	75	24	7	22	57	63	10	1 307	7	900	12	–	–	2	–
1988	2 535	2 483	59	23	18	24	42	60	11	1 340	7	934	12	–	–	4	–
1989	2 704	2 659	62	14	5	29	27	59	16	1 455	5	1 020	9	–	–	2	–
1990	2 686	2 640	62	11	3	33	29	55	7	1 474	4	998	9	–	–	2	–
1991	2 614	2 565	52	7	3	41	44	52	8	1 421	4	969	13	–	–	1	–
1992	2 482	2 429	49	5	5	46	55	44	8	1 304	3	947	13	–	–	1	–
1993	2 559	2 502	44	8	4	49	66	38	7	1 422	3	903	14	–	–	–	–
1994	2 625	2 574	57	7	4	44	71	34	8	1 523	4	858	14	–	–	–	–
1995	2 769	2 719	66	5	66	44	81	29	8	1 624	3	831	12	–	–	–	–
1996	2 810	2 768	70	3	69	40	84	49	7	1 659	2	815	12	–	–	–	–
1997	2 884	2 848	80	5	69	31	88	99	8	1 681	1	810	12	–	–	–	–

Consumption of natural gas by road transport

(1 000 toe)

1985	241	241	–	–	–	–	–	1	–	239	–	–	–	–	–	–	–
1986	243	243	–	–	–	–	–	1	–	242	–	–	–	–	–	–	–
1987	242	242	–	–	–	–	–	0	–	242	–	–	–	–	–	–	–
1988	223	223	–	–	–	–	–	0	–	222	–	–	–	–	–	–	–
1989	212	212	–	–	–	–	–	0	–	212	–	–	–	–	–	–	–
1990	208	208	–	–	–	–	–	0	–	208	–	–	–	–	–	–	–
1991	213	213	–	–	–	–	–	0	–	213	–	–	–	–	–	–	–
1992	236	236	–	–	–	–	–	0	–	214	–	–	21	–	–	–	–
1993	239	239	–	–	–	–	–	1	–	215	–	–	22	–	–	–	–
1994	250	250	–	–	–	–	–	1	–	227	–	–	22	–	–	–	–
1995	267	267	–	–	–	–	–	0	–	243	–	–	24	–	–	–	–
1996	289	289	–	–	–	–	–	0	–	263	–	–	25	–	–	–	–
1997	303	303	–	–	–	–	–	0	–	278	–	–	25	–	–	–	–

Share of LPG and natural gas in energy consumption of road transport

(%)

1985	1.5	1.9	1.5	2.3	0.0	0.6	0.6	0.2	1.8	5.2	1.5	11.8	0.4	–	–	0.1	–
1986	1.4	1.8	1.3	1.3	0.0	0.6	0.6	0.2	1.9	5.0	1.2	13.1	0.3	–	–	0.1	–
1987	1.5	1.9	1.3	0.9	0.0	0.6	0.4	0.2	0.8	5.7	1.1	12.5	0.3	–	–	0.0	–
1988	1.4	1.8	0.9	0.8	0.0	0.7	0.3	0.2	0.8	5.5	1.1	12.4	0.3	–	–	0.1	–
1989	1.4	1.8	0.9	0.5	0.0	0.8	0.2	0.2	1.1	5.6	0.7	12.8	0.2	–	–	0.0	–
1990	1.4	1.7	1.0	0.3	0.0	0.8	0.2	0.2	0.4	5.5	0.5	12.4	0.2	–	–	0.0	–
1991	1.3	1.7	0.8	0.2	0.0	1.0	0.2	0.1	0.5	5.3	0.4	12.0	0.3	–	–	0.0	–
1992	1.2	1.5	0.7	0.2	0.0	1.1	0.3	0.1	0.4	4.7	0.3	11.3	0.7	–	–	0.0	–
1993	1.2	1.6	0.6	0.2	0.0	1.1	0.3	0.1	0.4	4.9	0.3	10.5	0.7	–	–	–	–
1994	1.3	1.6	0.8	0.2	0.0	1.0	0.4	0.1	0.4	5.3	0.4	9.9	0.7	–	–	–	–
1995	1.3	1.7	0.9	0.2	0.1	1.0	0.4	0.1	0.4	5.5	0.3	9.3	0.7	–	–	–	–
1996	1.3	1.7	1.0	0.1	0.1	0.8	0.4	0.1	0.3	5.6	0.2	8.6	0.7	–	–	–	–
1997	1.3	1.7	1.1	0.2	0.1	0.6	0.4	0.3	0.3	5.7	0.1	8.4	0.7	–	–	–	–

Source: Eurostat (New Cronos).

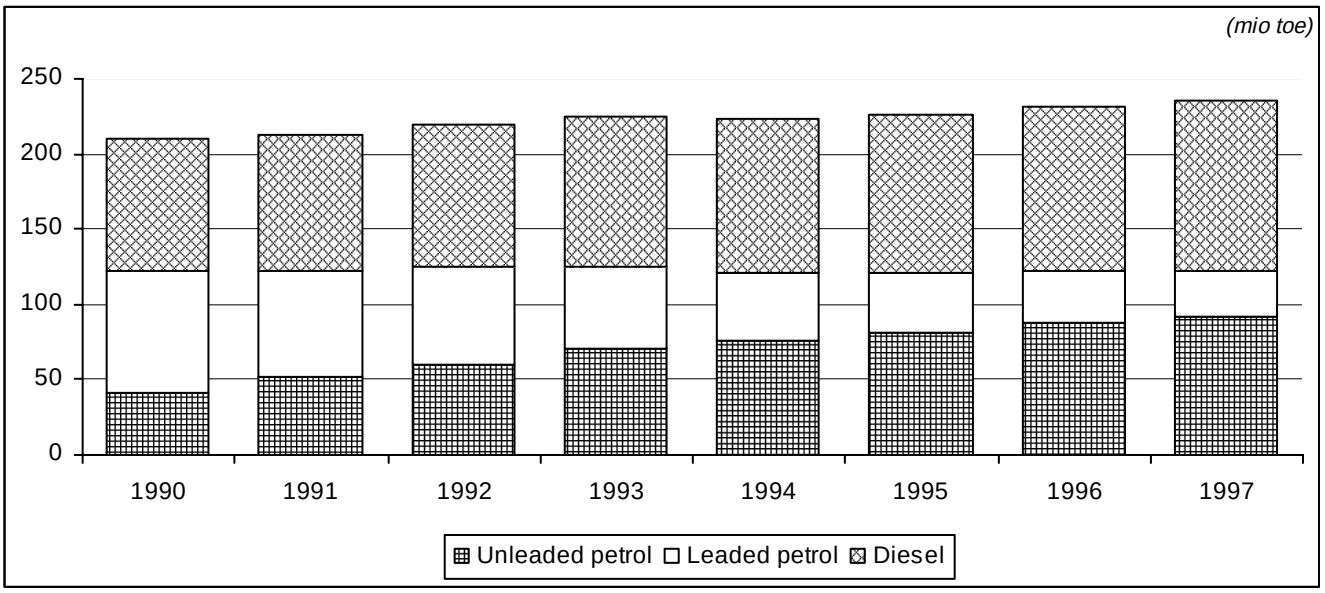


Figure 6.22: Consumption of conventional road transport fuels – EU-15

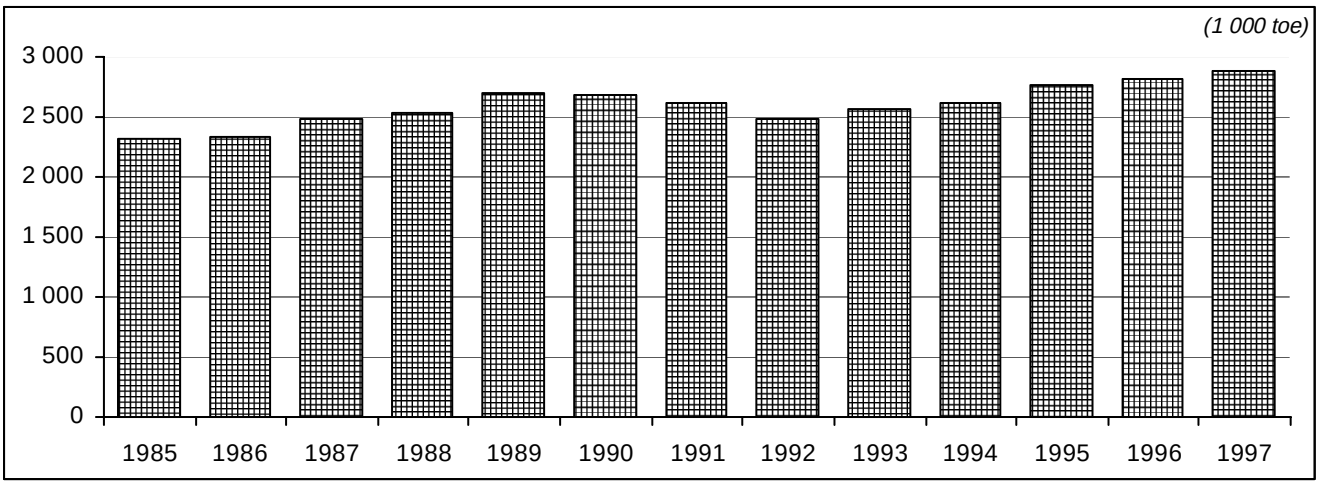


Figure 6.23: LPG consumption of road transport – EU-15

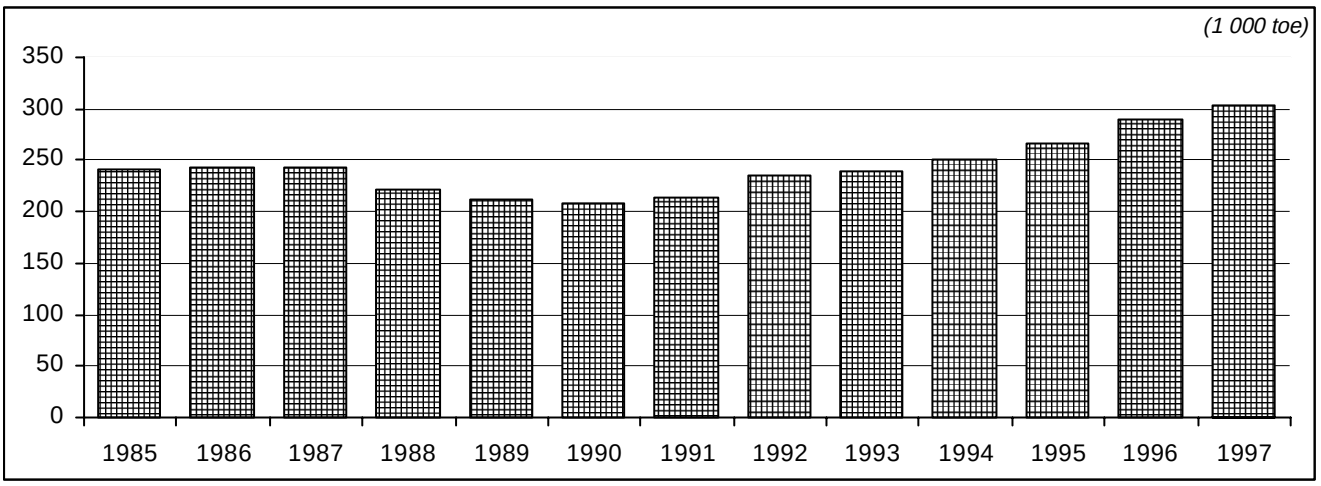


Figure 6.24: Natural gas consumption of road transport – EU-15

Passenger cars by energy source

(1 000 units)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
All energy sources																	
1980	101 636	80 882	3 159	1 389	23 192	863	7 557	19 130	738	17 686	129	4 550	2 247	1 269	1 226	2 883	15 619
1985	117 200	93 547	3 343	1 501	25 845	1 263	9 274	21 090	715	22 495	152	4 852	2 531	1 702	1 548	3 151	17 737
1986	121 314	96 788	3 409	1 558	26 917	1 359	9 643	21 500	717	23 495	156	4 921	2 609	1 813	1 608	3 254	18 355
1987	125 392	100 146	3 498	1 587	27 908	1 433	10 219	21 970	743	24 320	168	5 020	2 685	1 947	1 668	3 367	18 859
1988	130 432	103 908	3 614	1 596	28 878	1 504	10 787	22 520	756	25 290	177	5 173	2 785	2 132	1 796	3 484	19 940
1989	135 346	107 640	3 736	1 598	29 755	1 605	11 468	23 010	780	26 267	183	5 286	2 903	2 343	1 909	3 578	20 925
1990	139 902	111 490	3 864	1 590	30 685	1 736	11 996	23 550	796	27 416	192	5 509	2 991	2 552	1 939	3 601	21 485
1991	143 068	114 563	3 970	1 594	31 322	1 777	12 537	23 810	837	28 519	201	5 569	3 100	2 775	1 923	3 619	21 515
1992	149 565	121 571	4 021	1 605	36 042	1 829	13 102	24 020	859	29 430	209	5 658	3 245	3 050	1 936	3 587	20 973
1993	154 193	125 759	4 110	1 618	38 772	1 959	13 441	24 385	891	29 652	218	5 755	3 367	3 295	1 873	3 566	21 291
1994	157 809	128 790	4 210	1 611	39 765	2 074	13 734	24 900	939	30 245	229	5 884	3 479	3 532	1 873	3 594	21 740
1995	160 060	130 599	4 273	1 674	40 404	2 205	14 212	25 100	990	31 700	232	5 633	3 594	2 560	1 901	3 631	21 951
Petrol																	
1980	:	:	:	1 354	22 043	:	:	18 240	:	:	:	3 798	2 168	:	1 164	2 770	:
1985	:	:	2 659	1 434	23 483	:	:	19 068	:	:	:	3 742	2 391	:	1 419	3 023	:
1990	:	:	2 744	1 510	26 553	:	10 775	19 775	:	:	:	4 030	2 582	:	1 768	3 494	:
1991	:	:	2 783	:	27 057	:	:	:	:	:	:	:	2 641	:	1 755	3 519	:
1992	:	:	2 800	1 527	31 303	:	:	:	757	:	:	:	2 709	:	1 774	3 492	20 021
1993	:	:	2 831	1 541	33 678	:	:	:	778	:	181	:	2 749	:	1 715	3 472	20 032
1994	:	:	2 853	1 534	34 394	:	:	:	813	:	188	4 753	2 762	:	1 717	3 499	20 090
1995	:	:	2 828	1 600	34 857	:	12 153	18 162	:	:	:	4 639	2 767	:	1 743	3 534	19 533
Diesel																	
1980	:	:	:	21	1 138	:	:	890	:	:	:	159	79	:	62	113	:
1985	:	:	546	53	2 341	:	:	1 872	:	:	:	334	140	:	127	128	:
1990	:	:	1 015	77	4 122	:	1 221	3 775	:	:	:	576	409	:	155	105	:
1991	:	:	1 098	:	4 250	:	:	4 275	:	:	:	:	459	:	152	99	:
1992	:	:	1 144	76	4 723	:	:	4 876	100	:	:	:	536	:	147	93	949
1993	:	:	1 202	76	5 080	:	:	5 536	111	:	36	:	618	:	143	93	1 255
1994	:	:	1 306	76	5 358	:	:	6 306	124	:	40	636	717	:	141	95	1 649
1995	:	:	1 393	78	5 545	:	2 059	6 938	:	:	:	614	827	:	143	96	1 891
Electricity																	
1980	:	:	:	–	0.1	:	:	:	:	:	:	–	:	:	–	:	:
1985	:	:	0.0	–	0.2	:	:	:	:	:	:	–	0.0	:	–	:	:
1990	:	:	0.0	–	0.3	:	:	:	:	:	:	–	0.0	:	0.0	:	:
1991	:	:	0.0	:	0.7	:	:	:	:	:	:	–	0.1	:	:	:	:
1992	:	:	0.0	:	1.0	:	:	:	:	:	:	–	0.1	:	:	:	:
1993	:	:	0.0	:	2.0	:	:	:	:	:	–	–	0.1	:	:	:	:
1994	:	:	:	:	2.0	:	:	:	:	:	–	–	0.1	:	:	:	:
1995	:	:	0.0	0.1	2.3	:	:	:	:	:	:	–	0.1	:	0.0	:	:
Other sources of energy																	
1980	:	:	:	15	10	:	:	:	:	:	:	:	:	:	0	:	:
1985	:	:	138	14	:	:	:	:	:	:	:	524	:	:	1	:	:
1990	:	:	105	3	:	:	:	:	:	:	:	590	:	:	0	2	:
1991	:	:	:	:	14	:	:	:	:	:	:	:	:	:	3	1	:
1992	:	:	51	1	14	:	:	:	2	:	:	:	:	:	3	1	3
1993	:	:	49	1	13	:	:	:	2	:	0	:	:	:	2	1	4
1994	:	:	51	1	11	:	:	:	2	:	0	495	:	:	2	1	2
1995	:	:	52	1	3	:	:	:	:	:	:	380	:	:	2	1	3

Source: Eurostat (New Cronos).

Motor coaches, buses and trolley buses by energy source

(1 000 units)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
All energy sources																	
1980	413.3	296.9	19.6	7.4	70.5	18.0	42.6	65.0	2.7	58.1	0.6	11.2	9.0	8.5	9.0	12.8	78.3
1985	507.2	319.3	16.8	8.0	69.4	18.2	41.6	71.0	3.3	76.3	0.7	11.6	9.2	10.4	9.0	13.7	148.0
1986	511.6	322.2	16.4	8.1	69.3	18.5	41.9	72.0	3.4	77.9	0.7	11.5	9.2	10.6	9.2	13.8	149.0
1987	511.2	320.5	16.1	8.1	70.2	18.7	43.0	72.0	3.5	74.1	0.7	11.5	9.3	10.8	9.2	13.8	150.0
1988	521.7	324.4	15.8	8.1	70.2	20.1	44.0	73.0	3.7	75.8	0.7	11.7	9.3	11.0	9.2	14.1	155.0
1989	525.6	326.3	15.8	8.0	70.2	20.7	45.2	72.0	3.8	76.3	0.7	12.0	9.4	11.6	9.3	14.5	156.0
1990	533.4	332.3	15.6	8.1	70.4	21.4	45.8	75.0	4.0	77.7	0.8	12.1	9.4	12.1	9.3	14.6	157.0
1991	535.1	334.4	15.4	10.0	69.6	22.1	46.6	77.0	4.4	77.7	0.8	12.4	9.3	12.3	9.0	14.6	154.0
1992	554.2	347.5	14.9	11.3	82.6	22.7	47.2	75.9	4.6	78.2	0.8	12.3	9.4	13.0	8.7	14.3	158.5
1993	562.3	354.3	14.8	13.0	88.4	23.2	47.0	77.7	4.8	77.0	0.9	12.2	9.5	13.7	8.3	14.1	157.7
1994	567.3	357.2	14.9	13.6	88.5	24.0	47.1	79.3	5.0	77.6	0.8	12.0	9.6	14.4	8.1	14.3	158.4
1995	567.2	356.2	14.7	13.6	86.3	24.6	47.4	81.8	5.3	77.1	0.9	12.0	9.8	13.1	8.0	14.6	158.2
Petrol																	
1980	:	:	:	0.2	2.0	:	:	:	:	:	:	0.1	:	:	0.0	1.1	:
1985	:	:	1.6	0.1	1.2	:	:	:	:	:	:	0.1	:	:	0.0	0.6	:
1990	:	:	0.8	0.1	0.7	:	0.9	2.7	:	:	:	0.0	0.0	:	0.0	0.9	:
1991	:	:	0.6	:	0.6	:	:	2.3	:	:	:	:	0.0	:	0.0	1.0	:
1992	:	:	0.5	0.8	1.2	:	:	1.9	0.2	2.6	0.0	:	0.0	:	0.0	1.0	55.5
1993	:	:	0.4	1.4	1.3	:	:	1.7	0.2	:	0.0	:	0.0	:	0.0	1.0	54.7
1994	:	:	0.4	1.6	1.1	:	:	1.3	0.2	:	0.0	:	0.0	:	0.0	1.0	53.6
1995	:	:	0.3	1.6	0.8	:	44.8	:	:	:	:	0.0	0.0	:	0.0	1.0	:
Diesel																	
1980	:	:	:	7.1	68.3	:	:	:	:	:	:	9.8	:	:	8.9	11.7	:
1985	:	:	15.1	7.9	68.1	:	:	:	:	:	:	10.5	:	:	9.0	13.6	:
1990	:	:	14.8	8.0	69.6	:	0.9	71.0	:	:	:	11.5	9.3	:	9.3	13.6	:
1991	:	:	14.6	:	68.9	:	:	74.0	:	:	:	:	9.1	:	8.9	13.5	:
1992	:	:	14.3	10.5	81.3	:	:	74.0	4.4	75.5	0.8	:	9.2	:	8.6	13.2	103.0
1993	:	:	14.2	11.6	86.9	:	:	76.0	4.6	:	0.8	:	9.3	:	8.2	13.0	103.0
1994	:	:	14.3	11.9	87.2	:	:	77.4	4.8	:	0.8	12.0	9.5	:	8.0	13.1	104.7
1995	:	:	14.1	12.0	85.2	:	46.4	:	:	:	:	11.5	9.6	:	8.0	13.4	:
Electricity																	
1980	:	:	:	–	0.2	:	:	:	:	:	:	–	:	:	:	–	:
1985	:	:	0.0	–	0.2	:	:	:	:	:	:	–	:	:	:	:	:
1990	:	:	–	–	0.1	:	:	0.2	:	:	:	–	0.1	:	–	:	:
1991	:	:	–	:	0.1	:	:	:	:	:	:	:	0.1	:	:	:	:
1992	:	:	–	:	0.1	:	:	:	:	0.0	:	:	0.1	:	:	:	:
1993	:	:	–	:	0.2	:	:	:	:	:	:	:	0.1	:	:	:	:
1994	:	:	–	:	0.2	:	:	:	:	:	:	:	0.1	:	:	:	:
1995	:	:	–	–	0.1	:	:	0.1	:	:	:	–	0.1	:	–	:	:
Other sources of energy																	
1980	:	:	:	0.1	0.0	:	:	:	:	:	:	0.0	:	:	:	–	:
1985	:	:	0.1	0.0	0.0	:	:	:	:	:	:	0.0	:	:	:	:	:
1990	:	:	0.1	0.0	0.0	:	:	:	:	:	:	0.1	:	:	:	0.1	:
1991	:	:	0.1	:	0.0	:	:	:	:	:	:	:	:	:	0.0	0.1	:
1992	:	:	0.1	0.0	0.0	:	:	:	0.0	0.1	:	:	:	:	0.0	0.1	:
1993	:	:	0.1	0.0	0.0	:	:	:	0.0	:	:	:	:	:	0.0	0.1	:
1994	:	:	0.2	0.0	0.0	:	:	:	0.0	:	:	:	:	:	0.0	0.2	:
1995	:	:	0.2	0.0	0.1	:	:	:	:	:	:	:	–	:	0.0	0.3	:

Source: Eurostat (New Cronos).

Lorries by energy source

(1 000 units)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
All energy sources																	
1980	10 199	7 535	217	248	1 277	383	1 338	2 515	65	1 284	9	314	184	183	149	182	1 852
1985	12 460	9 495	273	253	1 281	585	1 529	3 001	93	2 192	9	370	207	361	180	218	1 909
1986	12 960	9 917	246	268	1 295	610	1 679	3 087	101	2 308	9	415	212	378	187	230	1 935
1987	13 509	10 371	258	279	1 305	637	1 822	3 204	111	2 388	10	438	221	415	198	246	1 975
1988	14 229	10 900	270	287	1 322	662	1 976	3 322	119	2 518	10	468	235	448	214	267	2 113
1989	15 260	11 485	288	288	1 345	702	2 162	3 442	130	2 625	11	484	247	507	244	295	2 490
1990	15 325	11 656	285	287	1 389	743	2 333	3 568	143	2 349	11	507	253	555	264	310	2 330
1991	:	:	364	291	1 440	768	2 495	3 685	148	:	13	527	259	620	264	310	2 243
1992	16 663	12 756	375	297	1 825	787	2 650	3 677	145	2 532	14	565	269	442	263	305	2 519
1993	:	:	389	304	2 015	814	2 735	3 618	135	:	15	600	276	518	253	302	2 497
1994	:	:	403	313	2 114	837	2 826	3 606	136	:	15	608	283	595	249	304	2 497
1995	:	:	421	333	2 215	876	2 937	3 597	142	5 050	16	578	290	:	252	303	2 462
Petrol																	
1980	:	:	:	:	539	:	:	1 677	:	:	:	4	:	:	58	:	:
1985	:	:	103	:	455	:	:	1 847	:	:	:	2	:	:	45	117	:
1990	:	:	92	87	340	:	843	1 502	:	:	:	1	80	:	61	195	:
1991	:	:	:	:	320	:	:	1 398	:	:	:	:	74	:	60	201	:
1992	:	:	94	90	356	:	:	1 231	22	383	:	:	69	:	60	199	:
1993	:	:	85	93	367	:	:	1 062	15	:	4	1	64	:	55	197	:
1994	:	:	83	95	358	:	:	907	13	:	4	1	60	:	53	196	1 049
1995	:	:	78	97	345	:	917	763	:	:	:	1	56	:	52	198	840
Diesel																	
1980	:	:	:	:	737	:	:	835	:	:	:	76	:	:	92	:	:
1985	:	:	158	:	824	:	:	1 138	:	:	:	77	:	:	135	97	:
1990	:	:	240	196	1 047	:	1 490	2 051	:	:	:	83	173	:	200	114	:
1991	:	:	:	:	1 119	:	:	2 274	:	:	:	:	185	:	202	109	:
1992	:	:	277	205	1 467	:	:	2 435	122	2 123	:	:	200	:	200	105	:
1993	:	:	292	210	1 647	:	:	2 548	120	:	11	87	211	:	195	105	:
1994	:	:	308	217	1 753	:	:	2 692	123	:	12	86	223	:	193	107	1 438
1995	:	:	:	227	1 868	:	2 020	2 829	:	:	:	:	234	:	197	104	1 576
Electricity and other sources of energy																	
1980	:	:	:	:	1.8	:	:	:	:	:	:	:	:	:	:	:	:
1985	:	:	11.6	:	1.8	:	:	:	:	:	:	:	:	:	:	:	:
1990	:	:	:	0.6	1.6	:	:	:	:	:	:	0.1	0.0	:	0.0	0.3	:
1991	:	:	:	:	1.6	:	:	13.6	:	:	:	:	0.1	:	0.1	0.3	:
1992	:	:	3.8	1.6	2.0	:	:	10.8	0.4	26.0	:	:	0.1	:	0.1	0.3	:
1993	:	:	11.8	1.2	2.2	:	:	8.3	0.3	:	:	0.1	0.0	:	0.1	0.3	:
1994	:	:	12.5	0.7	2.2	:	:	7.2	0.2	:	:	0.0	0.0	:	0.1	0.2	9.9
1995	:	:	:	0.4	2.1	:	:	5.5	:	:	:	0.0	0.0	:	0.1	0.2	9.0

Source: Eurostat (New Cronos).

Locomotives by energy source

(units)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
All energy sources																	
1980	27 817	22 323	1 178	392	7 096	194	1 206	6 059	192	3 724	82	574	1 217	253	742	1 375	3 533
1985	:	:	1 147	:	6 602	:	1 385	5 858	153	3 337	85	582	:	332	:	:	2 793
1986	:	:	1 124	400	6 481	:	1 398	5 807	130	3 273	85	569	:	315	:	:	2 657
1987	:	:	1 088	391	6 226	214	1 362	5 768	126	3 240	85	544	:	319	691	1 225	2 480
1988	24 438	20 265	1 055	367	6 021	214	1 354	5 709	126	3 260	84	519	1 225	319	593	1 200	2 392
1989	24 088	20 143	1 045	341	6 005	221	1 297	5 699	126	3 246	80	529	1 227	314	575	1 076	2 307
1990	23 938	20 120	1 040	328	5 952	233	1 287	5 654	126	3 225	80	522	1 232	320	682	1 015	2 242
1991	29 277	25 718	1 040	312	11 580	233	1 230	5 667	126	3 230	80	486	1 263	324	692	912	2 102
1992	:	:	1 031	296	11 319	234	1 192	5 664	126	:	80	505	1 277	261	671	784	2 026
1993	:	:	1 040	290	10 528	234	1 148	5 390	112	:	80	545	1 245	267	670	723	1 895
1994	:	:	963	271	10 028	234	1 128	5 285	156	:	76	532	1 240	269	665	701	1 887
1995	:	22 521	977	277	8 957	234	1 081	5 295	114	3 224	76	526	1 333	275	663	671	:
Electricity																	
1980	9 834	8 776	249	–	2 715	–	445	2 463	–	1 950	19	112	691	48	84	751	307
1985	:	:	332	6	2 614	–	625	2 411	–	2 120	19	158	:	47	:	:	249
1986	:	:	354	10	2 597	–	623	2 363	–	2 089	19	150	:	44	:	:	244
1987	:	:	374	10	2 564	–	621	2 325	–	2 053	19	147	:	48	110	694	232
1988	9 888	8 938	381	10	2 545	–	621	2 297	–	2 046	19	147	720	52	110	680	260
1989	9 835	8 899	381	10	2 534	–	606	2 287	–	2 041	19	147	721	53	110	666	260
1990	9 813	8 896	381	10	2 533	–	593	2 298	–	2 037	19	146	725	54	110	629	278
1991	11 113	10 287	380	10	3 891	–	592	2 307	–	2 048	19	141	745	54	110	553	263
1992	11 038	10 284	378	10	3 899	–	570	2 310	–	2 027	19	166	751	54	110	484	260
1993	:	:	377	22	3 771	–	568	2 250	–	:	19	203	737	60	111	452	260
1994	:	:	376	22	3 718	–	548	2 203	–	:	19	:	736	71	111	450	258
1995	:	:	376	22	3 569	–	501	2 210	–	2 033	19	:	760	81	111	426	:
Diesel																	
1980	17 729	13 299	929	386	4 381	194	761	3 596	192	1 579	63	462	501	177	658	624	3 226
1985	:	:	815	417	3 988	214	760	3 447	153	1 164	66	424	:	274	:	:	2 544
1986	:	:	770	390	3 884	214	775	3 444	130	1 140	66	419	:	267	:	:	2 413
1987	:	:	714	381	3 662	214	741	3 443	126	1 159	66	397	:	267	581	531	2 251
1988	14 508	11 285	674	357	3 476	214	733	3 412	126	1 189	65	372	488	267	483	520	2 132
1989	14 207	11 198	664	331	3 469	221	691	3 412	126	1 179	61	382	488	261	465	410	2 047
1990	14 079	11 178	659	318	3 417	233	694	3 356	126	1 162	61	376	489	266	572	386	1 964
1991	17 945	15 212	660	302	7 516	233	638	3 360	126	1 156	61	345	498	270	582	359	1 839
1992	:	:	653	286	7 278	234	622	3 354	126	:	61	339	507	207	561	300	1 766
1993	:	:	663	268	6 666	234	580	3 140	112	:	61	342	492	207	559	271	1 635
1994	:	:	587	261	6 310	234	580	3 082	112	:	57	:	488	198	554	251	1 629
1995	:	:	601	255	5 357	234	580	3 085	114	1 168	57	:	539	234	552	245	:
Steam																	
1980	254	248	–	6	–	–	–	–	–	195	–	–	25	28	–	–	–
1985	:	64	–	:	–	:	–	–	–	53	–	–	–	11	–	–	–
1986	:	48	–	–	–	:	–	–	–	44	–	–	–	4	–	–	–
1987	32	32	–	–	–	–	–	–	–	28	–	–	–	4	–	–	–
1988	42	42	–	–	–	–	–	–	–	25	–	–	17	–	–	–	–
1989	44	44	–	–	–	–	–	–	–	26	–	–	18	–	–	–	–
1990	44	44	–	–	–	–	–	–	–	26	–	–	18	–	–	–	–
1991	219	219	–	–	173	–	–	–	–	26	–	–	20	–	–	–	–
1992	188	188	–	–	142	–	–	–	–	27	–	–	19	–	–	–	–
1993	:	:	–	–	91	–	–	–	–	:	–	–	16	–	–	–	–
1994	:	:	–	–	–	–	–	–	–	:	–	–	16	–	–	–	–
1995	88	88	–	–	31	–	–	–	–	23	–	–	34	–	–	–	–

Source: Eurostat (New Cronos).

Railcars by energy source

(units)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
All energy sources																	
1980	:	:	616	410	2 404	119	654	1 555	–	1 782	14	:	233	270	278	383	4 877
1985	:	:	730	495	2 177	117	723	1 637	:	1 753	16	689	:	272	:	:	3 727
1986	:	:	703	511	2 153	119	718	1 661	:	1 682	16	694	:	272	:	:	3 796
1987	:	:	692	511	2 177	119	716	1 664	40	1 661	16	708	:	227	160	:	4 330
1988	:	:	698	511	2 143	119	640	1 681	40	1 662	16	716	:	227	108	:	4 317
1989	13 512	8 308	695	521	2 118	137	673	1 723	40	1 660	16	733	313	229	108	287	4 259
1990	13 787	8 468	687	546	2 171	168	785	1 768	40	1 627	19	722	321	228	100	289	4 316
1991	:	:	698	664	3 002	178	827	1 808	40	1 622	32	:	334	276	100	316	4 513
1992	15 000	9 612	687	650	3 079	183	881	1 815	40	1 620	36	732	341	281	100	311	4 244
1993	15 112	9 860	659	674	3 223	187	1 004	1 866	40	1 627	36	665	348	292	100	315	4 076
1994	14 453	9 344	644	683	2 631	188	1 015	1 898	48	1 477	34	677	512	308	100	355	3 883
1985	:	9 179	597	506	2 784	196	762	1 921	48	1 410	34	645	520	358	100	352	:
Electricity																	
1980	:	:	529	277	1 833	–	477	632	–	606	6	:	145	130	96	165	2 900
1985	:	:	666	283	1 779	–	504	830	40	657	8	571	:	153	:	:	1 910
1986	:	:	665	299	1 757	–	503	874	40	632	8	576	:	156	:	:	1 916
1987	:	:	663	299	1 744	–	510	893	40	642	8	590	:	111	100	:	2 509
1988	:	:	672	299	1 658	–	489	921	40	667	8	598	:	111	100	:	2 446
1989	8 590	5 556	670	299	1 630	–	522	968	40	669	10	615	225	107	100	185	2 550
1990	8 750	5 727	663	299	1 684	–	635	1 013	40	643	13	604	225	107	100	189	2 535
1991	:	:	674	299	2 371	–	677	1 053	40	648	26	:	225	149	100	210	2 417
1992	:	:	663	299	2 427	–	731	1 062	40	648	30	:	225	153	100	231	2 399
1993	:	:	635	303	2 473	–	861	1 116	40	:	30	:	225	166	100	249	2 302
1994	9 093	6 320	624	312	1 786	–	879	1 154	40	632	32	561	332	180	100	263	2 198
1985	:	:	577	319	1 917	–	626	1 188	40	572	32	:	338	230	100	281	:
Diesel																	
1980	5 910	3 463	87	133	571	119	177	923	–	1 176	8	111	88	140	182	218	1 977
1985	:	:	64	212	398	117	219	807	:	1 096	8	118	:	119	:	:	1 817
1986	:	:	38	212	396	119	215	787	:	1 050	8	118	:	116	:	:	1 880
1987	:	:	29	212	433	119	206	771	–	1 019	8	118	:	116	60	:	1 821
1988	:	:	26	212	485	119	151	760	–	995	8	118	:	116	8	:	1 871
1989	4 922	2 752	25	222	488	137	151	755	–	991	6	118	88	122	8	102	1 709
1990	5 037	2 741	24	247	487	168	150	755	–	984	6	118	96	121	–	100	1 781
1991	:	:	24	365	631	178	150	755	–	974	6	:	109	127	–	106	2 096
1992	:	:	24	351	652	183	150	753	–	972	6	:	116	128	–	80	1 845
1993	:	:	24	371	750	187	143	750	–	:	6	:	123	126	–	66	1 774
1994	5 360	3 024	20	371	845	188	136	744	8	845	2	116	180	128	–	92	1 685
1985	:	:	20	187	867	196	136	733	8	838	2	:	182	128	–	71	:

Source: Eurostat (New Cronos).

Estimated average age of passenger cars

(years)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
1980	6.1	6.1	4.4	6.5	5.3	7.4	6.7	5.6	4.6	7.2	3.6	4.7	5.7	7.7	6.7	6.4	5.5
1981	6.1	6.1	4.6	6.8	5.5	7.8	7.1	5.6	4.5	7.2	3.6	5.0	5.9	7.5	6.9	6.6	5.5
1982	6.2	6.1	4.7	7.0	5.6	8.0	7.5	5.6	4.2	7.2	3.6	5.2	6.0	7.5	6.9	6.8	5.8
1983	6.2	6.2	4.8	7.1	5.7	8.3	7.8	5.6	4.6	7.4	3.5	5.3	6.0	7.7	7.0	7.0	5.7
1984	6.3	6.4	5.0	6.9	5.8	8.6	8.0	5.9	4.9	7.5	3.5	5.4	6.1	8.1	7.1	7.1	5.7
1985	6.4	6.6	5.1	6.9	5.9	8.7	8.4	6.1	5.1	7.9	3.4	5.5	6.2	8.3	7.2	7.1	5.3
1986	6.4	6.6	5.1	6.7	6.0	9.0	8.6	6.2	5.4	8.0	3.3	5.4	6.2	8.5	7.2	7.2	5.3
1987	6.3	6.6	5.1	6.8	6.0	9.5	8.5	6.2	5.9	7.8	3.2	5.4	6.4	8.4	7.1	7.1	5.2
1988	6.5	6.7	5.1	7.1	6.0	9.9	8.3	6.2	6.1	7.8	3.2	5.6	6.4	8.6	6.9	7.9	5.2
1989	6.4	6.7	5.1	7.5	6.1	10.1	8.1	6.2	6.2	7.6	3.3	5.8	6.5	8.8	6.8	7.5	5.2
1990	6.5	6.6	5.1	7.8	6.1	10.1	8.0	6.2	6.2	7.4	3.2	5.9	6.5	9.0	6.9	7.4	5.3
1991	6.5	6.6	5.0	8.0	6.4	9.6	8.1	6.2	6.2	7.3	3.1	6.0	6.4	9.2	7.4	8.2	5.3
1992	6.5	6.6	4.9	8.3	6.4	9.0	8.0	6.3	6.4	7.4	3.2	6.1	6.4	9.3	8.1	8.2	5.6
1993	6.7	6.8	5.1	8.6	6.5	8.9	8.2	6.5	6.6	7.7	3.5	6.4	6.5	9.5	8.3	8.9	5.7
1994	6.8	6.9	5.2	8.3	6.7	9.3	8.3	6.6	6.6	7.9	3.7	6.6	6.6	9.8	8.7	9.0	5.8
1995	7.0	7.1	5.4	8.3	6.7	9.4	8.5	6.7	6.6	8.1	3.9	6.8	6.8	10.1	9.1	9.6	5.9
1996	7.1	7.1	5.6	8.3	6.6	9.5	8.6	6.7	6.1	8.3	4.1	6.9	6.8	10.4	9.5	9.5	6.1
1997	:	:	5.7	8.2	6.6	:	8.5	7.0	5.5	8.2	4.3	7.0	7.0	10.6	9.6	9.8	6.1
1998	:	:	:	:	6.5	:	:	:	5.0	8.1	:	:	:	:	:	:	:

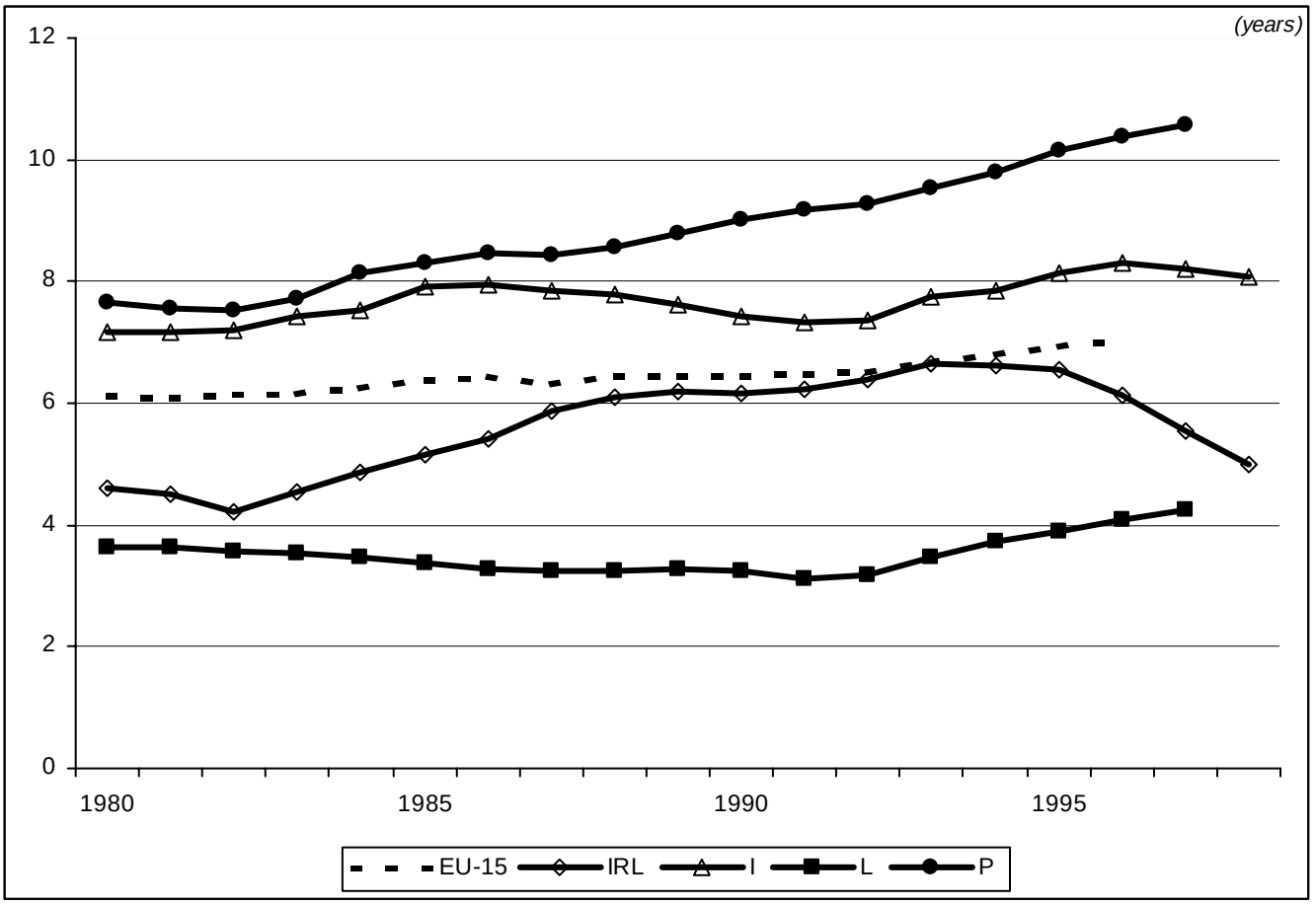


Figure 6.25: Estimated average age of the passenger car fleet

Source: Eurostat estimates.

Estimated share of petrol-engined cars fitted with catalytic converter

(%)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
1990	12	15	3	2	37	9	4	3	5	3	5	32	35	1	2	4	3
1991	16	19	7	4	43	18	5	5	14	6	12	40	37	3	5	8	5
1992	20	23	11	6	49	28	7	8	21	9	17	48	40	5	7	11	7
1993	27	30	20	12	54	34	10	15	27	15	30	53	48	9	12	20	13
1994	33	36	29	23	58	38	15	23	35	21	41	59	56	13	17	30	20
1995	39	42	37	32	63	43	18	30	44	27	52	65	63	16	23	40	27
1996	46	48	46	41	69	47	22	38	54	33	62	71	71	19	29	52	33
1997	52	54	54	50	73	51	26	43	66	41	70	76	76	22	37	67	40

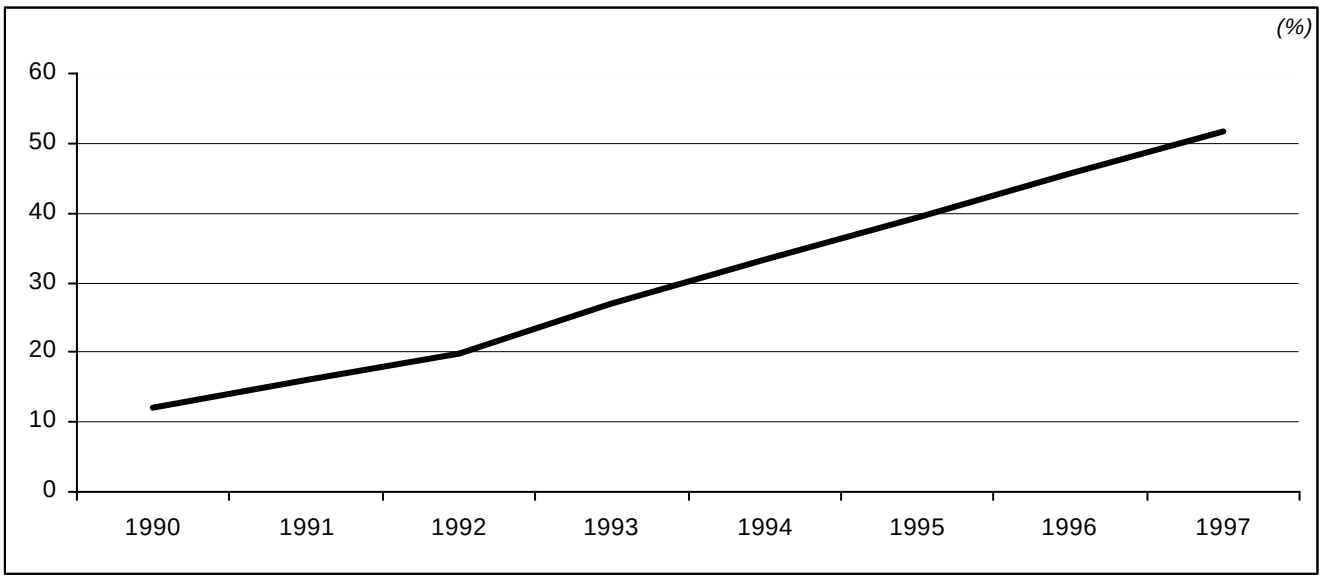


Figure 6.26: Estimated share of petrol-engined cars fitted with catalytic converter - EU-15

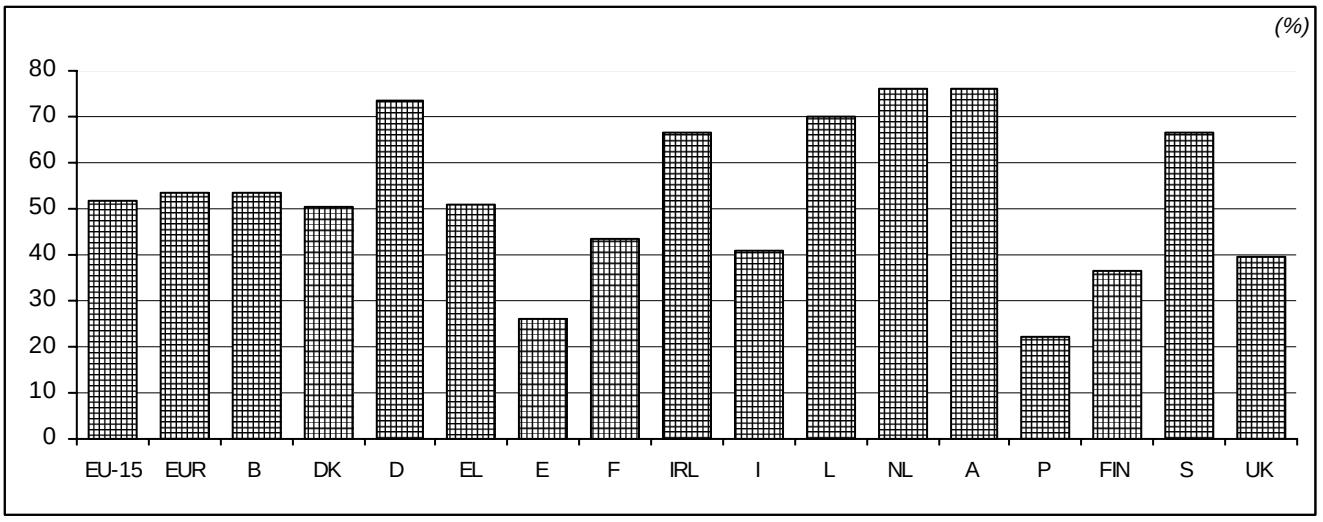


Figure 6.27: Estimated share of petrol-engined cars fitted with catalytic converter - 1997

Source: Eurostat estimates.

Notes to Chapter 6

Energy efficiency and specific emissions

The following assumptions have been made:

Ships

	Container	Bulk carrier
Average service speed (knots):	19.09	14.32
Typical loading factor:	0.65	0.5
Energy consumption (tonnes/day):	EC=8,0552+0,00235*GT	EC=0,9724+0,0019*GT
DWT-GT relationship:	DWT = 1,143*GT	DWT = 1,812* GT
Assumed energy consumption reduction factor when running in ballast condition	0.8	0.8
Fraction of Dead Weight available for freight	0.95	0.95
CO_2 emission factor, g/g fuel consumed	3.2	3.2
NO_x emission factor, g/g fuel consumed	0.0645	0.0645
SO_x emission factor, g/g fuel consumed	0.06	0.06
Sulphur content of fuel, %	3	3
Particulate emission factor, g/g fuel consumed	0.0012	0.0012
HC emission factor, g/g fuel consumed	0.0024	0.0024
CO emission factor, g/g fuel consumed	0.0074	0.0074

Road freight

	Gross vehicle weight (tonnes)	Load carrying capacity (tonnes)	Gross vehicle weight (tonnes)	Load carrying capacity (tonnes)
Correspondence between gross vehicle weight and load carrying capacity	5.5	2.95	12	7.87
	24	16.94	36	26.01
Representative speeds [km/h]	Rural:	50	Highway:	80
Lower heating value of diesel [MJ/kg]	42.5			
Weight related S content of diesel [kg/kg]	0.0005			

Road passengers

	Urban	Rural	Highway
Representative speeds (km/h)	25	60	90
PC Passengers	1	3	5
Motorcycle passengers	1	2	
Bus / Coach Passengers	20	40	
Lower heating value of gasoline (MJ/kg)	43.7		
Lower heating value of diesel (MJ/kg)	42		
Weight related S content of gasoline (kg/kg)	0.00005		
Weight related S content of diesel (kg/kg)	0.0005		

Rail freight

Proportion of train available for freight by mass	0.6
Energy consumption (MJ/t km)	EC=15,313*Gross weight^-0,6489
Lower heating value of diesel (MJ/kg)	42.5
CO_2 (g/g diesel)	3.18
NO_x (g/g diesel)	0.053
SO_x (g/g diesel)	0.004
Particulates (g/g diesel)	0.003
HC (g/g diesel)	0.011
CO (g/g diesel)	0.022

Passenger rail

Tractive consumption as factor of diesel consumption	0.35
Lower heating value of diesel (MJ/kg)	42.5
CO_2 (g/g diesel)	3.18
NO_x (g/g diesel)	0.053
SO_x (g/g diesel)	0.004
Particulates (g/g diesel)	0.003
HC (g/g diesel)	0.011
CO (g/g diesel)	0.022

Air freight

Short-haul aircraft	Maximum load (tonnes)	Long-haul aircraft	Maximum load (tonnes)
B727	17.2	B707	55.9
DC10	46.5	DC8	39.5
Bae146	11.7		

Air passengers

Short-haul aircraft	Average seats	Long-haul aircraft	Average seats
A320	152	A330	390
B737-12	124	A340	390
		B747-12	432

Uptake of cleaner fuels

Inland deliveries of petrol include all transport use. Less than 0.5% of the total is used by general aviation and inland waterways. Inland deliveries and consumption data for Germany, EU-15 and EUR include the former German Democratic Republic (DDR).

Vehicles by energy source

Some discrepancies occur in these figures. Additional data have been added from national publications and from the ECMT/UNECE/Eurostat pilot survey of the road vehicle fleet.

Average age of passenger cars and estimated share of petrol-engined cars fitted with catalytic converter

The simulation of survival and scrappage rates was carried out with the aid of a modified, two-parameter Weibull function with the following reliability function:

$$\varphi_i(k) = \exp -\left[\left(\frac{k+b_i}{T_i}\right)^{b_i}\right] \quad \text{and } \varphi_i(0) \equiv 1 \qquad (1)$$

where

k age of vehicles, expressed in years;

$\varphi_i(k)$ presence probability of vehicles of type i having age k (i.e. the probability that their lifetime is greater or equal to k);

b_i failure steepness for vehicles of type i ($b_i > 1$, i.e. failure rate increases with age);

T_i characteristic service life for vehicles of type i.

By examining closer the values of *T* and *b*, one can observe that *T* is close to the 99th percentile of the lifetime, while the value of *b* can be roughly approximated by the 50th percentile (i.e. approximately the maximum and the median lifetime respectively) of the fleet. This analogy, which works well for almost all EU countries, should be viewed as rather indicative and by no means precise.

In order to calculate the number of vehicles scrapped over the years, the age distribution for a starting year (e.g. 1960) is used as an initial condition. In accordance with Eq. (1), for each consecutive year the number of scrapped vehicles of age k is

$$CC_{si}(t,k) = CC_i(t-1,k-1)\cdot\left(1-\frac{\varphi_i(k)}{\varphi_i(k-1)}\right) \qquad (2)$$

and consequently the total number of scrapped vehicles in year t

$$C_{si}(t) = \sum_{k=1}^{n} CC_{si}(t,k) = \sum_{k=1}^{n}\left[CC_i(t-1,k-1)\cdot\left(1-\frac{\varphi_i(k)}{\varphi_i(k-1)}\right)\right] \qquad (3)$$

where

$CC_{Si}(t,k)$ the number of scrapped vehicles of age k in year t;

$CC_i(t\text{-}1,k\text{-}1)$ the number of vehicles of type i and age k-1 that existed in the previous year.

In order to produce lifetime functions an iterative process was applied using the new registrations over a period of time and assuming an age distribution for the starting year. It has been assumed that the average age of a vehicle for the year in which it was first registered is 6 months.

The estimates are based on 31 December for all countries. The number of vehicles of less than one year old, and consequently the average age, is highly dependent on the reference date. For this reason, these estimates may differ slightly from published figures for countries which use a different reference date.

The age distribution from the lifetime functions were then used in conjunction with an emissions reduction technology matrix to estimate the percentage of petrol-engined vehicles fitted with catalytic converters.

Results for Germany should be interpreted with caution owing to uncertainties in the vehicle stock of the former DDR.

CHAPTER 7: BACKGROUND STATISTICS

Gross domestic product at constant 1990 prices

(1 000 mio ecu)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
1970	3 061*	2 354*	92*	64	724	35	203	553	15	485	5	125	69	25	56	122	486
1971	3 160*	2 437*	96*	66	746	38	213	580	16	494	5	131	73	27	57	123	496
1972	3 299*	2 548*	101*	70	778	41	230	606	17	509	5	135	77	29	61	126	514
1973	3 490*	2 695*	108*	72	815	44	248	639	18	542	5	141	81	32	65	131	548
1974	3 561*	2 771*	112*	72	816	42	262	658	18	568	6	147	84	32	67	135	541
1975	3 537*	2 742*	109*	71	806	45	264	653	19	555	5	147	84	31	68	139	540
1976	3 695*	2 879*	116*	76	849	48	272	681	20	591	5	154	89	33	68	140	552
1977	3 807*	2 978*	117*	77	873	49	280	707	21	609	6	170	93	35	68	138	564
1978	3 917*	3 062*	120*	78	899	53	284	726	23	631	6	174	93	36	69	140	584
1979	4 059*	3 177*	123*	81	937	55	284	748	23	667	6	178	98	38	74	146	601
1980	4 118	3 243	128	80	947	56	290	758	24	691	6	180	100	40	78	148	591
1981	4 118	3 252	127	80	947	56	290	763	25	694	6	179	100	40	80	148	583
1982	4 153	3 273	129	82	939	56	295	780	26	697	6	177	102	41	82	150	592
1983	4 224	3 319	129	84	955	56	301	786	25	706	6	180	105	41	84	152	613
1984	4 323	3 391	132	88	982	58	305	796	27	724	7	186	105	40	87	158	628
1985	4 432	3 468	133	92	1 002	59	313	811	27	744	7	192	107	42	90	162	651
1986	4 564	3 564	135	95	1 025	60	331	830	28	765	7	197	110	43	92	165	679
1987	4 689	3 655	138	95	1 041	60	349	849	30	789	7	199	112	46	96	170	709
1988	4 885	3 804	145	100	1 079	63	367	885	31	819	8	204	115	50	100	174	744
1989	5 052	3 948	150	100	1 118	65	384	919	33	843	8	214	120	52	106	178	760
1990	5 200	4 089	154	102	1 182	65	398	940	36	861	8	223	126	54	106	181	763
1991	5 375	4 278	157	103	1 338	67	407	947	37	871	9	228	130	56	99	179	748
1992	5 425	4 333	159	104	1 368	68	410	956	39	876	9	232	132	57	95	176	744
1993	5 392	4 288	157	105	1 352	67	405	942	40	866	10	234	132	56	94	172	760
1994	5 552	4 402	161	111	1 388	68	414	967	43	885	10	242	136	58	98	178	792
1995	5 683	4 500	165	115	1 405	69	426	987	48	911	10	247	138	59	103	185	814
1996	5 778	4 569	167	118	1 423	71	435	1 001	52	917	11	255	141	61	107	187	832
1997	5 931	4 683	172	122	1 455	73	450	1 023	58	930	11	264	144	63	113	191	861

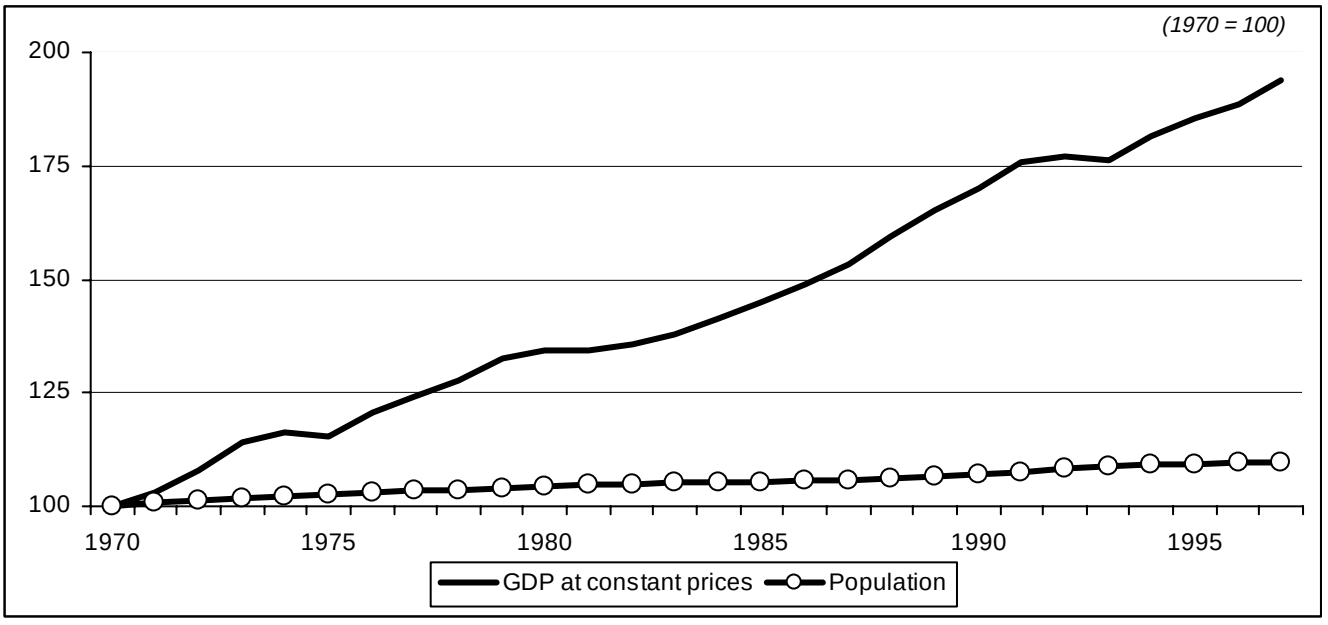


Figure 7.1: Evolution of GDP and population - EU-15

Source: Eurostat (New Cronos).

Mid-year average population

(mio persons)

	EU-15	EUR	B	DK	D	EL	E	F	IRL	I	L	NL	A	P	FIN	S	UK
1970	340.2	262.8	9.6	4.9	77.7	8.8	33.8	50.8	3.0	53.8	0.3	13.0	7.5	8.7	4.6	8.0	55.6
1971	342.6	264.8	9.7	5.0	78.4	8.8	34.2	51.3	3.0	54.1	0.3	13.2	7.5	8.6	4.6	8.1	55.9
1972	344.6	266.5	9.7	5.0	78.7	8.9	34.4	51.7	3.0	54.4	0.3	13.3	7.5	8.6	4.6	8.1	56.1
1973	346.4	268.1	9.7	5.0	79.0	8.9	34.8	52.1	3.1	54.8	0.4	13.4	7.6	8.6	4.7	8.1	56.2
1974	347.9	269.5	9.8	5.0	79.0	9.0	35.1	52.5	3.1	55.1	0.4	13.5	7.6	8.8	4.7	8.2	56.2
1975	349.2	270.7	9.8	5.1	78.7	9.0	35.5	52.7	3.2	55.4	0.4	13.7	7.6	9.1	4.7	8.2	56.2
1976	350.4	271.7	9.8	5.1	78.3	9.2	35.9	52.9	3.2	55.7	0.4	13.8	7.6	9.4	4.7	8.2	56.2
1977	351.5	272.7	9.8	5.1	78.2	9.3	36.4	53.1	3.3	56.0	0.4	13.9	7.6	9.5	4.7	8.3	56.2
1978	352.7	273.7	9.8	5.1	78.1	9.4	36.8	53.4	3.3	56.2	0.4	13.9	7.6	9.6	4.8	8.3	56.2
1979	353.9	274.7	9.8	5.1	78.1	9.5	37.1	53.6	3.4	56.3	0.4	14.0	7.5	9.7	4.8	8.3	56.2
1980	355.3	275.9	9.8	5.1	78.3	9.6	37.4	53.9	3.4	56.4	0.4	14.1	7.5	9.8	4.8	8.3	56.3
1981	356.5	277.0	9.9	5.1	78.4	9.7	37.7	54.2	3.4	56.5	0.4	14.2	7.6	9.8	4.8	8.3	56.4
1982	357.2	277.6	9.9	5.1	78.3	9.8	37.9	54.5	3.5	56.5	0.4	14.3	7.6	9.9	4.8	8.3	56.3
1983	357.7	278.1	9.9	5.1	78.1	9.8	38.1	54.8	3.5	56.6	0.4	14.4	7.6	10.0	4.9	8.3	56.4
1984	358.2	278.4	9.9	5.1	77.9	9.9	38.3	55.0	3.5	56.6	0.4	14.4	7.6	10.0	4.9	8.3	56.5
1985	358.8	278.7	9.9	5.1	77.7	9.9	38.4	55.3	3.5	56.6	0.4	14.5	7.6	10.0	4.9	8.4	56.7
1986	359.5	279.2	9.9	5.1	77.7	10.0	38.5	55.5	3.5	56.6	0.4	14.6	7.6	10.0	4.9	8.4	56.9
1987	360.3	279.8	9.9	5.1	77.7	10.0	38.6	55.8	3.5	56.6	0.4	14.7	7.6	10.0	4.9	8.4	57.0
1988	361.4	280.7	9.9	5.1	78.1	10.0	38.7	56.1	3.5	56.6	0.4	14.8	7.6	10.0	4.9	8.4	57.2
1989	362.9	281.8	9.9	5.1	78.7	10.1	38.8	56.4	3.5	56.7	0.4	14.8	7.7	9.9	5.0	8.5	57.4
1990	364.5	283.1	10.0	5.1	79.4	10.2	38.9	56.7	3.5	56.7	0.4	15.0	7.7	9.9	5.0	8.6	57.6
1991	366.2	284.4	10.0	5.2	80.0	10.2	38.9	57.1	3.5	56.8	0.4	15.1	7.8	9.9	5.0	8.6	57.8
1992	368.0	285.8	10.0	5.2	80.6	10.3	39.0	57.4	3.6	56.9	0.4	15.2	7.9	9.9	5.0	8.7	58.0
1993	369.7	287.3	10.1	5.2	81.2	10.4	39.1	57.7	3.6	57.0	0.4	15.3	8.0	9.9	5.1	8.7	58.2
1994	371.0	288.2	10.1	5.2	81.4	10.4	39.1	57.9	3.6	57.2	0.4	15.4	8.0	9.9	5.1	8.8	58.4
1995	372.1	289.0	10.1	5.2	81.7	10.5	39.2	58.1	3.6	57.3	0.4	15.5	8.0	9.9	5.1	8.8	58.6
1996	373.2	289.8	10.2	5.3	81.9	10.5	39.3	58.4	3.6	57.4	0.4	15.5	8.1	9.9	5.1	8.8	58.8
1997	373.7	290.2	10.2	5.3	82.2	10.5	39.3	58.5	3.6	57.3	0.4	15.6	8.1	9.9	5.1	8.9	58.9

Source: Eurostat (New Cronos).

ANNEX

- **ANNEX**

The aim of this annex is to provide supplementary information which may be of use in interpreting some of the datasets and indicators presented in this publication, and in understanding more of their background. It includes the following sections:

Additional notes on the indicators presented in this publication

Supplementary information on the indicators.

Further Development of TERM

Recent ideas on how TERM should be developed.

Emission inventories

An introduction to emission inventories.

How emissions are estimated: The example of MEET

A description of the MEET project carried out under the EU's Fourth Framework Programme for research and technological development as an example of how emissions are estimated.

Eurostat's transport and environment database system (TRENDS)

A brief description of Eurostat's tool for producing the TERM indicators.

- **ADDITIONAL NOTES ON THE INDICATORS PRESENTED IN THIS PUBLICATION**

Eurostat has compiled many of the datasets for this publication from its own databases. Some of these data are collected from the EU Member States on a voluntary basis through a series of standard questionnaires on transport, energy and other areas. Others are the result of obligatory reporting through statistical legislation. However, it has also been necessary to estimate some data and to use data collected by the Commission's Directorate-General for Transport.

The compilation of indicators is full of potential pitfalls. Data are collected for many purposes and may not be ideally suited for a particular indicator. This is often due to the definitions for different variables. For indicators to be compiled at EU level, these problems are compounded due to differences in national definitions. Furthermore, in the case of some indicators which are estimated using models and a great deal of background data, it is virtually certain that some essential data will not be available from at least some countries. The major difficulties, which have been encountered, are:

- no appropriate dataset;
- important variables not available (e.g. split by mode, means, passenger/goods);
- data gaps. If data for just one country are missing, there is a choice between not compiling the indicator, or estimating the missing value. However, if data are consistently missing from one or more countries, there may be no reasonable way of compiling the indicator at all at EU level;
- comparability between countries and over time (harmonisation of definitions and methods; use of national or centralised estimates);
- dataset available but defined in a way that makes it inappropriate for the indicator.

Notes on the limitations of some specific indicators are provided below:

Final energy consumption normally represents the energy delivered to the final user within a given territory. But in the case of transport there may be no way of knowing where energy is consumed. For electricity there is no difficulty, but more than 98% of the energy consumed by transport is fossil fuels. A passenger car has a range of less than 1 000 km on a full tank, a lorry or articulated vehicle may have a range of up to 3 000 km, and diesel trains also have a considerable range. The special case of air and waterborne transport were referred to in the notes to Chapter 1. There is therefore a certain degree of uncertainty in allocating the energy consumption of transport to a particular country or region. This is especially the case for small countries (e.g. Luxembourg) and transit countries (e.g. Austria), but to a far lesser extent for islands (e.g. United Kingdom).

National emission estimates are collected according to various international reporting requirements (mainly CLRTAP and UNFCCC, see section on emission inventories later in this annex). The differing methodologies used in different countries require that caution is needed in making international comparisons.

It should be noted that the CLRTAP source categories are grouped following the logic of emission estimation methods, rather than the needs of analysts. For example, transport is not a single category, and neither is it a combination of categories. Transport is in fact covered by the category *Road transport*, a part of *Other mobile sources and machinery* (for rail, inland waterways, maritime and air transport) and a part of *Extraction and distribution of fossil fuels* (for pipeline transport). Currently from the data for which reporting is obligatory, it is impossible to arrive at a total for transport emissions as a whole. This is true of all the major international emission inventories.

Problems with inventory quality are recognised within the main international conventions and other reporting obligations. It is expected that in particular the use of the new Common Reporting Format (CRF) under UNFCCC and the obligation to report source sub-sectors under CLRTAP will significantly improve the quality of emission data in 2000. In addition, the quality of emissions estimates and indicators needs to be enhanced by means of improved national reporting (in particular for the period 1980-1990). National estimates should be better documented, to identify possible inconsistencies. Consistent estimation methods should be used by Member States for the complete time-series. It is advised to compare national estimates with "centrally" produced estimates prepared with a consistent methodology for all Member States. The Eurostat TRENDS project (described at the end of this annex) provides such a consistent methodology and "centrally" produced estimates, making use of the main MEET (see section on MEET in this annex) results, and is fully consistent with the Copert 3 software. Results from TRENDS are expected by 2001. The results of comparisons between national and TRENDS estimates should be communicated to Member States to improve the consistency, transparency, comparability and reliability of national estimates, and ensure that the TRENDS estimates are converging with national estimates.

The **Eurostat estimates of carbon dioxide emissions** suffer from the same weakness as final energy consumption.

Accident data refer to accidents taking place on the national territory. National definitions of persons killed and injured differ.

With respect to the accident casualties per kilometre travelled, there are uncertainties due to the quality of passenger-kilometre data (see below).

The representation of railway employees and other people killed or injured per kilometre travelled may be misleading as the persons involved have not themselves travelled by train. An alternative, and perhaps sounder, indicator could be casualties per train-kilometre.

A further consideration is that a presentation of casualties per passenger-kilometre or per vehicle-kilometre has a bias against the shorter-distance means of transport, such as cycling and walking. More objective measures would be casualties per trip or per unit of travel time. These are not possible at present due to lack of data.

Further work is needed to develop EU-wide statistics on travel and **accessibility**. The data provided on regional vehicle densities and the length of railway lines per 1 000 square kilometres do, however, reflect dependence on personal transport and access to public transport across the regions of the EU.

Passenger and freight transport data relate neither to the economic territory nor to the inhabitants of a country. The presentations per unit of GDP should therefore not be interpreted as the amount of passenger transport induced by a certain level of GDP or the amount of freight transport required to produce one unit of GDP. Similarly, the per capita presentations should not be interpreted as the average distances travelled per person or the amount of goods transport required by each person.

Passenger-kilometres for bus and train transport are reasonably reliable, being based on ticketing and surveys, however, particularly in the case of passenger cars, the data are far less reliable, being based on assumptions (such as occupancy rates) which are uncertain. Alternative indicators could be vehicle-kilometres (which are more reliable) or journeys (which would eliminate the bias against shorter-distance means of transport).

Harmonised indices of consumer prices (HICPs) quantify price changes in one place over time. They show whether an item is becoming cheaper or more expensive in one particular country. However they are not able to quantify relative differences in price between specific items or between countries. Additional price indicators are therefore needed.

Large seasonal fluctuations in transport HICPs (particularly for air and waterborne transport) make interpretation of the monthly data shown in the figures difficult. One solution would be to "deseasonalise" the monthly indices. Eurostat is planning to produce deseasonalised HICPs in 2000.

Energy efficiency and specific emissions cannot yet be presented as indicators. Ranges of values for different vehicle types and operating conditions are provided, reflecting the situation in the mid-1990s. Eurostat is developing TRENDS (described later in this annex); a database system designed to produce such indicators. Results should be available in 2001.

Average ages of passenger cars do not take into account that older vehicles are used less, and that diesel vehicles are driven further than petrol vehicles. Vehicle-kilometres by age for different classes of vehicle would be a better indicator. Furthermore a low average age is not entirely beneficial for the environment. A relatively young vehicle stock may be technologically more advanced, and therefore less polluting than an older one, but younger vehicle stocks also imply more use and more waste.

The **estimated share of petrol-engined cars fitted with catalytic converter** is estimated by Eurostat. Statistical data are only available for a small number of countries and have been used to calibrate the estimations. Information on the type of catalytic converter is also needed.

- **FURTHER DEVELOPMENT OF TERM**

The TERM indicators are divided between two sections:

- performance, and
- determinants.

The first section attempts to quantify the outcomes of transport policies. In the table presented on page 3, only environmental consequences are included under this section. The environmental consequences are the result of how efficiently transport systems operate. Efficiency includes the technical characteristics of vehicles (emission-reduction technology, weight, cylinder capacity, fuel) as well as operational characteristics (occupancy, loading factors, choices about the mode and means of transport), pricing mechanisms (fuel prices, fares, vehicle prices, road pricing, parking fees, etc.) and transport policy as a whole.

However, transport volume and intensity could also be seen as an outcome of transport policy and could also be included in this section, especially when the split between modes and means is considered. If there is more transport of goods and persons, and if there is a shift towards or away from particular modes and means, it is because current and past policies create conditions that favour these trends. It is not just the inevitable consequence of growth in GDP and disposable income (although these play a role), it is rather the consequence of a complex combination of policy measures which can be managed more efficiently. It has therefore been proposed that these indicators be moved to the first section.

The second section, the determinants, would then attempt to quantify the forces that are responsible for the pattern of outcomes. Spatial planning and accessibility, supply of infrastructure, and technological and operational efficiency all play a role here. A further group of management integration indicators would also fit in this section.

These ideas are presented in the table overleaf.

Thus TERM is attempting to consider as wide as possible a range of outcomes and determinants, and to see beyond a limited approach based on just one set of determinants (e.g. prices or technology). The emphasis of TERM is on management of all relevant factors.

It is also being considered whether the three questions for TERM to address (see page 1) are adequate to cover this comprehensive approach. The seven groups of TERM in fact each pose questions which TERM should answer, and it would therefore make sense to ask seven questions:

- Is the environmental performance of transport improving?
- Are we getting better at managing transport demand and at optimising the modal balance?
- Are spatial planning and transport planning becoming better co-ordinated so as to match transport demand to access need?
- Are we improving the use of transport infrastructure capacity and moving towards a better-balanced inter-modal transport system?
- Are we moving towards a fairer and more efficient pricing system, which ensures that external costs are recovered?
- How rapidly are improved technologies being implemented and how efficiently are vehicles being used?
- How effectively are environmental management and monitoring tools being used to support policy and decision-making?

Possible development of TERM indicator list

GROUP	INDICATORS
TRANSPORT AND ENVIRONMENT PERFORMANCE	
ENVIRONMENTAL CONSEQUENCES OF TRANSPORT	Transport final energy consumption and primary energy consumption, and share in total (fossil, nuclear, renewable) by mode
	Transport emissions and share in total emissions for CO_2, NO_x, NMVOCs, PM_{10}, SO_x, by mode
	Exceedances of air quality objectives
	Exposure to and annoyance by traffic noise
	Infrastructure influence on ecosystems and habitats ("fragmentation") and proximity of transport infrastructure to designated sites
	Land take by transport infrastructures
	Number of transport accidents, fatalities, injured, polluting accidents (land, air and maritime)
TRANSPORT VOLUME AND INTENSITY	**Passenger transport (by mode and purpose):** • total passengers • total pkm • pkm per capita • pkm per GDP
	Freight transport (by mode and group of goods) • total tonnes • total tkm • tkm per capita • tkm per GDP
DETERMINANTS OF THE TRANSPORT/ENVIRONMENT SYSTEM	
SPATIAL PLANNING AND ACCESSIBILITY	**Average passenger journey time and length per mode, purpose (commuting, shopping, leisure) and territory (urban/rural)**
	Access to transport services e.g.: • number of motor vehicles per household • % of persons in a territory having in e.g. 500m distance access to a public transport station
TRANSPORT SUPPLY	Capacity of transport infrastructure networks, by mode and by type of infrastructure (e.g. motorway, national road, municipal road etc.)
	Investments in transport infrastructure/capita and by mode
PRICE SIGNALS	**Real passenger and freight transport price by mode**
	Fuel price
	Taxes
	Subsidies
	Expenditure for personal mobility per person by income group
	Proportion of infrastructure and environmental costs (including congestion costs) covered by price
TECHNOLOGY AND UTILISATION EFFICIENCY	Overall energy efficiency for passenger and freight transport (per pass-km and per tonne-km and by mode)
	Emissions per pass-km and emissions per tonne-km for CO_2, NO_x, NMVOCs, PM_{10}, SO_x by mode
	Occupancy rates of passenger vehicles
	Load factors for road freight transport (LDV, HDV)
	Uptake of cleaner fuels (unleaded petrol, electric, alternative fuels) and numbers of alternative fuelled vehicles
	Vehicle fleet size and average age
	Proportion of vehicle fleet meeting certain air and noise emission standards (by mode)
MANAGEMENT INTEGRATION	Number of Member States that implement an integrated transport strategy
	Number of Member States with national transport and environment monitoring system
	Uptake of strategic environmental assessment in the transport sector
	Uptake of environmental management systems by transport companies
	Public awareness and behaviour

- **EMISSION INVENTORIES**

The estimation, collection and presentation of data on air emissions is an important aspect of policy making and policy implementation aimed at reducing air pollution. The main aims of air emission inventories are:

- to identify and quantify the pressures on the environment and to assess the impacts on the state of the environment (regarding the environmental issues climate change, acidification, ground-level ozone, reduced urban air quality, dispersion of hazardous substances);
- to develop abatement strategies and prioritise policies and measures for the main source categories (sectors) in a cost-effective way. This is increasingly done by making use of integrated assessment models;
- to monitor the effects of implemented policies and measures in terms of reduced or avoided emissions. This includes monitoring of internationally agreed emission reduction targets (EC legislation and/or international conventions).
- to inform the public, by means of air emission indicators (which are usually an aggregation of more detailed data).

To fulfil these aims there is an increasing demand for reliable (accurate) emission estimates for the national total emissions and for the main source categories. These estimates should be consistent over time and should be comparable between countries. To increase consistency the same methodologies should be used by a country for the complete time series of data, which can mean recalculation of the complete time series when better methodologies have become available. To increase comparability it is important that all countries use the same source categories. Furthermore emission estimates should be transparent, meaning that the assumptions and methodologies used should be clearly explained. This is essential for successful communication of the information. Inventories should ideally be complete, meaning that all relevant sources are covered of the geographic area of concern (often a country, although also regional and local inventories are prepared).

For each pollutant the potential sources are identified and listed in a hierarchical nomenclature comprising major categories and several levels of sub-categories. Except for large industrial or other “point sources”, most emissions data are estimated rather than measured directly, and this is especially the case for transport. Division into categories may be useful for the purposes of analysis (e.g. which classes of vehicles produce the most of which pollutant), but are also desirable in order to produce reliable estimates. Different types of vehicle and different types of driving (e.g. urban, rural, highway) have different emission profiles so it makes sense to estimate the emissions for each type, and add them all together to provide a total. This type of estimation is known as "bottom up", because the total is built up from the bottom of the hierarchy. So called "top-down" estimation methods, in which the estimation is made at an intermediate level of the hierarchy and then split into the lower levels, are less reliable than bottom up, but may be necessary when detailed data are not available. “Top-down” inventories are useful in particular for sectors that involve energy usage for checking “bottom-up” methods, but are less suitable for most emissions from transport (except carbon dioxide). In practice most inventories involve a mixture of the top-down and bottom-up approaches, as well as some direct measurements (mainly for large “point sources”).

Convention on Long Range Transboundary Air Pollution (CLRTAP)

Air quality is affected by emissions to the atmosphere from energy use, industry, transport and other sources. Harm to human health, the acidification and eutrophication of water and soils, and damage to natural ecosystems and crops are the main environmental problems associated with air emissions. The effects of air pollution are inter-related and have a significant transboundary contribution. Local emissions are also relevant to human exposure as this occurs mainly in urban areas.

The stimulus to develop European emission inventories arose from the need to establish air pollution abatement strategies and in addition monitor progress towards emission reduction targets within the United Nations Economic Commission for Europe (UNECE) Convention on Long Range Transboundary Air Pollution (CLRTAP), which was signed in 1979 and entered into force in 1983.

Originally CLRTAP was aimed at reducing acidification and ground-level ozone, resulting in several Protocols that are in force for most European countries, including the EU and its Member States, requiring reductions of emissions of SO_2, NMVOC and NOx, expressed in national emission ceilings or percentage reductions. The Second Sulphur Protocol of CLRTAP (1994) for the first time used the approach of closure of the gap between the exceedance of critical deposition levels for ecosystems and the critical level for such deposition. This Protocol thereby resulted in national emission reduction commitments that are quite different for each country.

In 1998 CLRTAP Protocols were adopted that require reductions of the use and the emissions of a number of heavy metals (such as mercury, cadmium) and persistent organic pollutants (POPs, such as dioxins).

In 1999 the European Commission prepared a proposal for a Directive on national emission ceilings (NECD) for the same pollutants as mentioned above and in addition for the first time for ammonia. These targets are much stricter than the currently agreed targets. The proposal has not yet been adopted by the Council. Parallel, within CLRTAP in November 1999 draft national emission ceilings were agreed in a new multi-pollutant Protocol for the same four pollutants, for many European countries, including EU Member States.

Countries are required to report annually by 31 December inventories for all pollutants mentioned above for national totals and for 11 major source categories and are encouraged to provide more detail. From 1999 onwards countries will be required to also report data for 75 source sub-categories. Countries are encouraged to use the Atmospheric Emission Inventory Guidebook for estimating their emissions (EEA/UNECE, second edition, 1999).

For transport this involves part of three source categories:

Road transport:
- Passenger cars
- Light duty vehicles (< 3.5 t)
- Heavy duty vehicles (> 3.5 t)
- Mopeds and motorcycles (< 50 cm^3)
- Mopeds and motorcycles (> 50 cm^3)
- Gasoline evaporation from vehicles
- Automobile tyre and brake wear

Other mobile sources and machinery:
- Military
- Railways
- Inland waterways
- Maritime activities
- Air traffic
- Agriculture
- Forestry
- Industry
- Households and gardening

Extraction and distribution of fossil fuels
- Extraction and first treatment of solid fossil fuels
- Extraction and first treatment of liquid fossil fuels
- Gasoline distribution
- Gas distribution networks

United Nations framework Convention on Climate Change (UNFCCC)

Concern over the mounting scientific evidence for global climate change resulting from increasing emissions of greenhouse gases led to the adoption of the United Nations Framework Convention of Climate Change (UNFCCC) in 1992. Developed countries made a commitment to aim to return their emissions of greenhouse gases to 1990 levels by 2000. By September 1999, 180 countries or groups of countries had ratified the Convention, including the European Union, all 15 Member States and most other European countries.

At the Third Conference of the Parties of UNFCCC held in Kyoto in December 1997, developed countries agreed to reduce their emissions of carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride by an overall 5% from 1990 levels by 2008-2012, expressed in carbon dioxide equivalents (using global warming potentials with a 100-year time horizon).

The EU and its Member States are committed to a reduction of 8% below the 1990 level in the period 2008 to 2012, while Central and Eastern European (CEE) countries are committed to reductions of 5-8%. In June 1998, a system of ‘burden sharing’ or ‘target sharing’ was agreed by EU Member States, resulting in very different commitments for each Member State.

By September 1999, 84 Parties to the UNFCCC - including the European Union and the Member States - had signed the Kyoto Protocol. However, only 16 Parties have ratified it and, as yet, no major developed country has ratified. The Protocol has therefore not yet entered into force.

Countries are required to report annually by 15 April inventories for the following direct greenhouse gases: carbon dioxide, methane, nitrous oxide, nitrogen oxides, non-methane volatile organic compounds, carbon monoxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride, and countries are encouraged to provide information on indirect greenhouse gases (carbon monoxide, nitrogen oxides, non-methane volatile organic compounds) and on sulphur oxides. Countries are required to use the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories for estimating and reporting their national inventories. However other national methods can be used, provided that these are compatible with the IPCC Guidelines and that background information and documentation are made available.

From 15 April 2000 onwards countries should report according to a new Common Reporting Format (CRF), that requires much more detailed additional information on emission factors and activity data (for example energy consumption per sector, vehicle-kilometre per type of vehicle/driving, etc.). Furthermore a national inventory report should be provided, with complete background information on the time series of the emissions estimates, activity data and emission factors.

Reporting of the following source categories for transport is required:

Civil aviation:
- International aviation (international bunkers)
- Domestic

Road transport:
- Cars
- Light duty trucks
- Heavy duty trucks
- Motorcycles
- Evaporative emissions from vehicles

Railways

Navigation:
- International marine (bunkers)
- National navigation

Other transportation:
- Pipeline transport
- Off-road

International bunkers emissions should be reported separately and not included in the national totals.

Corinair and EEA

The Corine work programme was established in 1986 as an experimental project for gathering, coordinating and ensuring the consistency of information on the state of the environment and natural resources in the Community. This programme included a project, Corinair, which had the objective of compiling a coordinated inventory of atmospheric emissions from the 12 Member States of the Community for 1985. The Corinair 1985 inventory covered three pollutants (sulphur dioxide, nitrogen oxides and volatile organic compounds) and recognised eight main source categories. In 1991 it was decided to provide an update for the year 1990 to assist in the preparation of inventories required under CLRTAP and the Framework Convention on Climate Change (see below). This work developed the cooperation with other international organisations (UNECE and OECD) which had started during the preparation of the 1985 inventory. Alongside the 12 Member States, EFTA countries, the Baltic States and nine central and eastern European countries were involved. Both the list of pollutants covered and the list of source categories and sub-categories were expanded.

The European Environment Agency was established in 1995 in Copenhagen (Denmark) to provide timely, targeted, relevant and reliable information to policy makers and to the public and is fully operational since 1996. The EEA co-operates within its work programme with the 15 EU Member States, the three EFTA countries, 13 Central and Eastern European countries and various other European countries. An important product of the EEA is its regular State of the Environment report, such as the report “Environment in the European Union at the turn of the century” (June 1999) and the forthcoming Indicator Report (2000).

To assist the EEA, European Topic Centres, funded by the EEA, have been established for a number of topics, such as the European Topic Centre on Air Emissions (ETC/AE). The ETC/AE is led by the German Federal

Environmental Agency (UBA) and consists furthermore of organisations in seven EU Member States. ETC/AE contributes to the production of the state of the environment reports, where air emission estimates are needed for assessing the environmental problems climate change, ozone depletion, acidification, tropospheric ozone, dispersion of hazardous substances and urban air quality. An important task of the work programme of ETC/AE is to set up an annual European air emission inventory from the year 1990 onwards (Corinair: CORe INventory of AIR emissions), based on official national inventories, including national total emissions and emissions by source sector. The latest emissions data collected by EEA have been published in EEA's main assessment reports, the draft Indicator Report (2000) and are also available on the EEA web site (http://www.eea.eu.int/).

ETC/AE furthermore assists countries to report their national emission inventories to the various international obligations in a complete, comparable, consistent, transparent and timely way. The main relevant reporting obligations are (see above):

- UNECE Convention on Long Range Transboundary Air Pollution
- UN Framework Convention on Climate Change
- amended EC Monitoring Mechanism of Community CO_2 and other Greenhouse Gas Emissions (1999/296/EEC)

The Commission also requires its Member States to report emissions from Large Combustion Plants (LCP Directive) and will in future in addition require reporting of emissions to air and water from other large industrial sources as well under the Integrated Pollution Prevention and Control Directive (IPPC, European Polluting Emissions Register).

Apart from the individual Member States the European Community is also a Party to UNECE/CLRTAP and UNFCCC, requiring the European Community (Commission, DG Environment) to report total EU-15 emissions by source sector, as requested by the main reporting obligations. EEA (with ETC/AE) is assisting the Commission in preparing these EU-15 emission estimates as well as the necessary reports under the EC Monitoring Mechanism.

The ETC/AE has reached full consistency in 1997 between the CLRTAP/EMEP/Corinair source sectors and UNFCCC/IPCC source sectors by developing the source nomenclature SNAP97 (Selected Nomenclature for sources of Air Pollution). In 1998 ETC/AE made available to participating countries a software package (CollectER, Collect Emission Register), which incorporates SNAP97, to enable countries to report to all EU legislation and other international obligations mentioned above. In addition a software package to estimate national emissions from road transport was made available (see below).

EMEP/Corinair methodology

The Co-operative Programme for Monitoring and Evaluation of the Long-Range Transmission of Air pollutants in Europe (EMEP) was set up in 1988 by a Protocol under CLRTAP and arranged a series of workshops on emission inventory techniques organised by the Task Force on Emission Inventories (TFEI) to develop guidelines for estimation and reporting of emission data. EEA and its ETC/AE continue to work closely together with TFEI. This has led to the publication of a joint EMEP/Corinair Emission Inventory Guidebook (EEA, 1996), which provides a harmonised nomenclature of source categories with recommended methodologies for estimating emissions. The first version of the Guidebook (1996) was published by EEA on paper and CD-ROM and is also available on the EEA internet site (http://www.eea.eu.int).

During 1997 and 1998 the expert panel on transport of TFEI incorporated the first experiences from COST 319 and MEET (see below) into the Guidebook chapters on transport emissions. In June 1998 a revised draft Guidebook was made available on the TFEI Internet site, which includes these revised chapters on transport: http://www.aeat.co.uk/netcen/airqual/TFEI/unece.htm

The second version of the Guidebook has been published at the end of 1999 (on the EEA web site). The second version of the Guidebook is fully consistent with the source nomenclature SNAP97, developed by ETC/AE and TFEI.

In subsequent versions of the Guidebook it is intended to include the main MEET and COST 319 results. These versions will in future appear in draft on the TFEI web site and after approval within CLRTAP/EMEP on the EEA web site.

Parties to CLRTAP are encouraged to use the Guidebook for estimating and reporting their national inventories. However other national methods can be used, provided that background information and documentation are made available.

Copert

In 1998 ETC/AE made available a software package, manual and methodology report to estimate national emissions from road transport Copert 2 (Computer Programme to Calculate Emissions from Road Transport, version 2).

Since then assistance has been provided to several organisations in various countries and an increasing number of national reference centres are making use of Copert 2 for compiling their road transport emission inventories. Copert 2 does not yet fully incorporate all relevant results from DG Transport projects MEET (Methodologies for Estimating pollutant Emissions from Transport) and COST 319, and the Auto/Oil2 programme coordinated by DG Environment.

Mid 1999 ETC/AE distributed a first version of Copert 3, which is fully in line with these projects. Copert 3 is thereby also fully compatible with the TRENDS project. All software and documentation is available from the EEA web site.

- **HOW EMISSIONS ARE ESTIMATED: THE EXAMPLE OF MEET**

The MEET project (Methodologies for Estimating pollutant Emissions from Transport) was undertaken within the EU's Fourth Framework Programme for research and technological development in order to provide basic, Europe-wide procedures for evaluating the impact of transport on air pollutant emissions and energy consumption. It brings together the most comprehensive and up-to-date information on emission rates and activity statistics which, together, make it possible to estimate the emissions resulting from almost any transport operation.

Transport modes included

In some classifications (e.g. Corinair), sources of pollutant emissions are classified as mobile or stationary, and the mobile grouping includes, for example, machinery used for industrial and agricultural purposes. In the MEET project, however, the criterion used for the inclusion of an activity is whether it contributes to the transport of goods or people. The following modes are included:

- road transport
- railways
- water transport (inland and marine, but excluding leisure activities and fishing)
- air traffic

Pollutants covered

A large number of different species produced by transport activities are considered to be pollutants. For some of them, emissions have been investigated in detail, while for others only limited data exist. For this reason, it was decided to classify the pollutants in three levels, according to the reliability of the available data on emission factors:

Level 1: includes the pollutants for which the existing data allow the definition of emission factors with a high degree of certainty (energy consumption, CO_2, CO, VOC, NO_X, PM, SO_2, Pb).

Level 2: includes the pollutants for which the existing emission factors are to be considered only as an indication of the order of magnitude (N_2O, CH_4, NMVOC, VOC species [e.g. PAH, benzene]).

Level 3: includes the pollutants for which there are only very few data, and no emission factors will be given (PM size distribution, NH_3, H_2S, NO_2, heavy metals).

Calculation methods for energy consumption and emissions

A variety of methods are used to calculate energy consumption and emissions, depending on the pollutant, the transport mode and the vehicle type. The methods may be grouped into four classes:

Based on transport activity - this is the basic method for the more common emissions from road vehicles and for the energy consumption for non-road modes; the emissions calculated in this way may include hot emissions, trip start emissions, evaporative emissions and fuel production emissions.

Based on energy consumption - this is the standard method for emissions from non-road modes, and also for SO_2 and Pb emissions from road vehicles; the types of emission included (hot, start, evaporative, fuel production) depend on those included in the energy consumption estimate.

Carbon balance calculations - calculations of fuel consumption or carbon dioxide emissions may be based on the equation representing the mass balance of carbon in the fuel and its combustion products; for road vehicles (with combustion engines), the method is applied to calculate fuel consumption, while for other modes it is used to calculate CO_2; it may take into account hot, start and evaporative emissions.

Pollutant-specific calculations - some pollutants are sub-categories of others (e.g. VOC species are part of total VOC, particle size fractions are part of total PM); estimates may be made from the main pollutant and details on speciation and size distribution; hot, start, evaporative and fuel production emissions may be included.

Road transport

Road vehicle emissions have justifiably received the greatest attention of all transport modes because of their dominance as a means of transporting both passengers and goods. Not only does road transport have the biggest share of transport activity, but its decentralised and groundborne nature bring it into close proximity with more people than the other modes. Because a large amount of information on road transport emissions is available, it has been possible to propose a relatively detailed methodology.

Basic principles

The main sources of emission from road vehicles are the exhaust gases and hydrocarbons produced by evaporation of the fuel. When an engine is started below its normal operating temperature, it uses fuel inefficiently, and the amount of pollution produced is higher than when it is hot. These observations lead to the first basic relationship used in the calculation method, i.e:

$$E = E_{hot} + E_{start} + E_{evaporative}$$

where:

E	is the total emission
E_{hot}	is the emission produced when the engine is hot
E_{start}	is the emission when the engine is cold
$E_{evaporative}$	is the emission by evaporation (only for VOC)

Each of these contributions to the total emission depends on an emission factor and one or more parameters relating to the operation of the vehicle, so that in general:

$$E_x = e_x \, X \, a$$

where:

E_x	is one of the contributions to total emissions
e_x	is an activity related emission factor
a	is the amount of traffic activity relevant to this type of emission

The parameters e_x and a are themselves functions of other variables.

For hot emissions, the activity related emission factor, e_{hot}, is expressed primarily as a function of the average speed of the vehicle. Modification factors (which may themselves be functions of other variables) allow corrections to be made for the road gradient, the load carried by a vehicle, the degradation of pollution controls with increasing mileage of the vehicle, and the ambient temperature. Thus, for one vehicle type and pollutant:

$$e_{hot} = f(v) \, X \, GC \, X \, LC \, X \, MC \, X \, TC$$

where:

e_{hot}	is the corrected hot emission factor
$f(v)$	is the average speed dependent emission factor for standard conditions
GC, LC, MC & TC	are factors to correct for gradient, load, mileage, temperature respectively

The activity, *a*, is then the amount of operation (vehicle-kilometres) carried at a particular average speed, on roads with a certain gradient, for vehicles with a certain load and mileage, and at a particular ambient temperature. In practice, the necessary vehicle operating conditions (speeds, loads, etc.) are based on statistical distributions of the various parameters as the movements and properties of individual vehicles are not known.

Start emissions, because they only occur during the early part of a journey, are expressed as an amount produced per trip, and not over the total distance travelled. The emission factor, e_{start}, is calculated as a function of the average vehicle speed, the engine temperature, the length of the trip and the length of the cold part of the trip. The activity, *a*, is the number of trips. This procedure is used only for light duty vehicles. Because data for other types is very limited, such detail cannot be used, and cold start emissions are proposed simply as constants (excess emissions per cold start).

Evaporative emissions occur in a number of different ways. Fuel vapour is expelled from the tank each time it is refilled, the daily increase in temperature causes fuel vapour to expand and be released from the fuel tank, and

vapour is created wherever fuel may be released to the air, especially when the vehicle is hot during or after use. There are therefore a number of different emission factors, $e_{evaporative}$, depending on the type of evaporative emission. Generally, these factors are a function of the ambient temperature and the fuel volatility. Similarly, a number of activity data are also needed, including total distance travelled and numbers of trips according to the temperature of the engine at the end of the trip.

These principles apply, with some exceptions, to all pollutants and all vehicle types, but different classes of vehicle behave differently and relationships between emissions and operating characteristics vary for each pollutant. For that reason, an estimate of emissions from mixed traffic must be made as a summation of emissions from each homogeneous vehicle class in the traffic, and where the area studied contains roads with different traffic behaviour, this must also be taken into account. And, of course, this must be done separately for each pollutant.

Fuel consumption, lead and sulphur dioxide emissions

The combustion of a hydrocarbon fuel (such as petrol, diesel, CNG) in air, in ideal conditions follows a simple chemical reaction, and because the masses of reactants and products are related in accordance with their molecular weights, it is possible to calculate the amount of fuel that would produce a certain combination of CO_2, CO, VOC and PM since there must be a balance between the total carbon in the fuel and the total carbon in all of the combustion products. Emission tests usually include the measurement of CO_2 as well as the other pollutants, and it is less frequent that fuel consumption is measured directly. For that reason, road transport emission factors are presented for the exhaust components, including CO_2, and fuel consumption may be derived using the 'carbon balance' method outlined above. It is also uncommon to find directly measured data on the emissions of lead and sulphur dioxide, but this is unimportant as they may be estimated with reasonable accuracy from the fuel consumption and the amounts of lead and sulphur in the fuel.

Vehicle categories

The emissions performances of different types of vehicle vary considerably, so it is necessary to establish a classification in which the vehicles in each class display sufficient homogeneity to be treated as a single group. Four main categories are defined as follows:

- passenger cars (PC)
- light duty vehicles (LDV)
- heavy duty vehicles (HDV)
- two-wheel vehicles (2W)

Within each of these main categories there is still a diversity of vehicle types and it is necessary to define a further sub-classification of the vehicles so that each group displays a reasonably uniform emissions performance. The parameters on which this sub-classification are based are:

- vehicle size (engine capacity or gross weight)
- level of emission control (according to stages of EU emission control legislation)
- fuel (petrol, diesel, LPG or, for the future, alternatives such as CNG and electricity)
- engine (for PC and 2W, 4-stroke or 2-stroke)
- operational purpose (for HDV, whether goods vehicle, urban bus or coach)

Emission factors

Existing vehicles and fuels

Emission factors for existing vehicle types and conventional fuels have been derived by analysing all of the available data from measurement programmes in Europe. For hot emission factors, and the correction factors for gradient, load, etc. the analysis involved empirical curve fitting to provide appropriate functions. Thus, basic hot emission factors are expressed as a function of average vehicle speed, the load correction factors as a function of average speed and gradient, the temperature correction factors as a function of ambient temperature, and so on.

An entirely new method was devised to estimate cold start excess emissions. They are given as a reference value (the excess emissions for a trip at 20 ^{o}C and 20 km/h) which is modified by functions of the engine temperature at the start of the trip, the average speed of the trip and the distance travelled.

For evaporative emissions, the procedure developed by the CORINAIR Working Group was used.

The MEET methodology is designed to be applicable over the time period to 2020, and by that date, vehicle types will be in use for which no emission measurements are available. Estimated emission factors were therefore also produced for future vehicle categories.

Improved fuels

New improved fuels are expected to start appearing in the market by the turn of the decade. For the calculation of the effects of these improved fuels on emissions, the results of the EPEFE programme and the evaluation of the American Auto/Oil activities conducted by the Working Group 1 of the European Auto/Oil Programme have been used. The following fuel properties are covered by the Auto/Oil results:

Gasoline: Reduced lead content, reduced sulphur content, increased oxygenates, reduced aromatics, reduced benzene, reduced olefins, reduced Reid vapour pressure, increased mid range and tail end volatility

Diesel: Reduced sulphur content, reduced polyaromatics, increased cetane number, reduced back end distillation

Near future vehicle types

Reduction factors are proposed in order to adapt emission factors of the present vehicle categories to near future engine technologies. The adaptation is based, where possible, on proposed changes to vehicle emission standards.

Reduction rates for gasoline and diesel light duty vehicles have been derived for the EURO II, III and IV stages of legislation, relative to EURO I vehicles. In order to comply with the future standards, automobile manufacturers may reduce the hot emission level, the cold extra emission at the start of the test, or both, and hot and cold emission reduction factors are defined separately.
In the case of heavy-duty vehicles, insufficient data for EURO I vehicles are available to allow them to be used as the base vehicle type. Instead, well maintained vehicles representing the vehicle mix in 1990 have been taken as the reference type. Reduction rates for EURO I, II and III vehicles have been estimated from these base values and from the requirements of the published or proposed changes in legislation. In 1999 the Commission will submit a proposal for the EURO IV standards. In 1996 the German Environmental Agency proposed emission reduction targets from an environmental point of view which may come into force in 2005 or later. The reduction rates for EURO IV HDVs are based on these UBA emission reduction targets.

New vehicle technologies

A number of new vehicle technologies are emerging that may have significant market penetration over the next 20 years. Electric vehicles (including hybrids and fuel cell vehicles) were assessed in detail, and emission and energy consumption factors have been given, based on data available in the literature. The emission factors for each type of vehicle are given by a quadratic equation, as a function of the vehicle speed. Two new vehicle categories have been introduced for battery electric vehicles, and also for hybrid electric vehicles: passenger cars and light duty vehicles, while three categories of fuel cell electric vehicle are included: passenger cars, light duty vehicles and urban buses. The percentage penetration of new technology vehicles into the European fleet was also estimated for two growth rate assumptions for the period to 2020.

Alternative fuels

Alternative fuels for automotive applications which may have significant market penetration over the next 20 years include natural gas, methanol, ethanol, biodiesel and dimethyl ether. Emission reduction factors for these fuels have been produced in relation to vehicles of current technologies. Owing to the relatively small amount of experimental data, it was not possible to differentiate between the effects on different types of emission (i.e. cold start and hot operation or urban, rural and highway operation).

Rail transport

Rail traffic is characterised by its diversity. Typically, each country in Europe has a national railway system and a number of railways owned by private companies, and within each of these systems there is a variety of applications. Passenger traffic varies from small urban trains, usually electrically powered with a low maximum speed and frequent stops and starts, to very high speed passenger trains with infrequent stops. Trains are also used to carry goods, and there are again differences from shunting to high speed international freight traffic. Traffic data for passenger trains are available from timetables, from which average speeds and distances can be determined, but freight traffic is less scheduled and it is more difficult to obtain traffic information.

The concern with emissions from trains is only around ten years old, so the results of detailed emission calculations are quite limited. From the limited available literature, it has been attempted to make a calculation model that is better than those previously used, that simply use an emission factor which is multiplied by the total

amount of rail traffic (passenger-kilometres or tonne-kilometres) regardless of its type. To improve the existing model, the degree of detail is increased with regard to the speed and number of stops of train services.

Calculation methods

The basic method is to calculate emissions from energy or fuel consumption, using energy specific emission factors (in g/kWh or g/kg of fuel). The procedure applies equally to diesel and electric trains, but in the latter case, the emission factors relate to the production of the electricity rather than the combustion of fuel in the locomotive. Where the total fuel (or energy) used to carry out a certain amount of rail transport is known, then the emissions are estimated simply as the product of the amount of energy and the specific emission factor. The emissions derived using this approach will typically be valid for the entire mix of trains. When calculating emissions for a smaller local area or for a given type of train, the energy or fuel consumption data required for emission calculations may not be known. It is then necessary to use additional methods to estimate the energy consumption, and hence, emissions from this type of traffic.

The first step in the calculation procedure is the estimation of the energy consumption of a given type of train in kJ per tonne-km. This energy is the energy required to move the train and is essentially independent of the type of locomotion used. Two methods have been developed by which the energy consumption may be calculated.

Average speed plays a major role in the determination of the energy consumption of rail traffic, and speeds depend on train type and distance between stops. Empirical correlations were obtained for train energy consumption in kJ per tonne-kilometre, as a function of average train speed and distance between stops.

The second method was derived from the principles of the dynamics of train movement. The steady state load of the train is related to its speed by a quadratic function because of the aerodynamic loading. The steady state load can be combined with the acceleration energy and the energy needed to move up or down a gradient to estimate the instantaneous energy consumption. For emissions estimations from traffic, this energy consumption must be integrated over a trip length with a representative value for the average speed.

Typical values

Passenger train occupancy: Occupancy of trains is dependent of the attractiveness of a route, the time of day, and the time of year. Default annual average values, based primarily on German and Danish data are given for urban, regional and intercity or international trains.

Passenger train weight: Passenger train weights vary considerably for different types and within a given type, depending on the specific train and configuration for a special route. Representative values for common train types vary from 1.1 tonnes/seat for high speed trains and 0.4 tonnes/seat for modern lightweight urban trains.

Freight train weight: For freight traffic, in addition to the weight of the freight, one must also consider the weight of the cars used to carry the freight. The load capacity of freight cars depends to a large extent on the allowable loading per axle. Modern trains in international traffic permit axle loads of about 22.5 tonnes per axle. Older trains, and trains in some countries allow loading of 20 tonnes per axle or lower.

Locomotive weight: In addition to the weight of the cars, the locomotive must also be considered. General correlations were established by which the mass of a locomotive may be estimated as a function of its power.

Future emissions

In order that the methodology may be used to investigate future conditions and scenarios, it is necessary to estimate what changes in rail transport are likely, and so future developments in both the activity and the rates of emission were examined.

Trends in rail traffic: The overall average changes in the EU between 1970 and 1990 were an increase of 1.3% per year in rail passenger-kilometres and a reduction of 0.5% per year in rail tonne-kilometres of freight. There is, however, much variation between individual countries and types of service. The growth rate of high speed trains is expected to be around 8 to 10% per year, while it is expected that there will be an annual increase of 2% in local urban train transport and 1% on regional services. Assuming that there are no major political incentives to promote rail freight transport, it is expected that rail freight traffic will grow slowly, at a rate of 1% per year, in tonne-kilometres.

Trends in propulsion type: The proportion of European rail traffic powered by electricity in 2020 is expected to increase to 80% from the present share of about 65 to 70%.

Trends in train construction: It is expected that the total potential for weight reduction of a typical train wagon based on material improvement is around 10%. Any reductions in car weight could allow the weight of the locomotive also to be reduced, but it is more likely to be used to allow locomotives to pull longer trains. It is not expected that rolling resistance will change significantly. The only way of limiting the general increase in aerodynamic resistance is to modify the aerodynamic styling of the train. Advanced aerodynamic shapes are already used for high speed trains, and it is difficult to make further significant improvements.

Trends in power technology: The basic emissions from heavy duty road diesel engines and railway diesel engines are similar, and the technologies developed for emission control could be applied equally to railway engines. The major factor that will determine whether equivalent improvements are achieved for railway locomotives is the legislative process. Given the long lifetime of railway locomotives, there will not be a significant impact on overall emissions until perhaps the year 2015, even though new railway engines are then expected to have very low emissions. It is expected that the mix of electricity generating plant will remain unchanged until 2020, but that new combustion plants will be less polluting than those they replace and steps will be taken to reduce pollution from existing plants.

Ship transport

Two procedures to estimate the energy consumption and pollutant emissions from ships have been developed: a simplified method and one that is more detailed. The choice of method for a particular application depends mainly on the amount of information that is available to describe the shipping activity. The more detailed methodology has been developed to take into account transient operations, port loading and unloading and auxiliary power generation, thus providing an estimate of emissions from ships cruising and in port. The simplified methodology has been developed for use when dockside activities are unimportant or when information on harbour activities is not available.

As well as distinctions between types of activity, the other main aspects of ship transport that must be taken into account are the type of ship, the type of engine and the type of fuel used, and both the simple and detailed methodologies provide a classification according to these properties. The principle used in both methods is initially to calculate the energy consumption associated with the defined shipping activity and then to estimate pollutant emissions using fuel specific emission factors. The basic information on fuel consumption and emission factors was derived from an extensive literature review.

Classification system

The following categories of pollutant, ship, engine, fuel and operating mode are included. Items only included in the more detailed method are shown in brackets.

Pollutants: NO_X, SO_X, CO, VOC, PM, CO_2

Ship types: Solid bulk, liquid bulk, general cargo, container, Ro-Ro ferry, passenger, high speed ferry, inland cargo, sail ship, tugs, fishing, other

Engine types: Steam turbine, high, medium and slow speed motor engines, (inboard engines, outboard engines, tanker loading and offloading)

Fuel types: Bunker fuel oil, marine diesel, marine gas oil, gasoline

Operating modes: (Cruising, manoeuvring, hotelling, tanker offloading, auxiliary generators)

Outline methodologies

In the simplified methodology an estimate of the number of working days is required for each class of ship, engine type and fuel. The emissions are estimated as the product of the number of days in navigation, the daily fuel consumption and the fuel specific emission factor. The detailed methodology differs only by distinguishing between the different operating modes of the ships. In this case, the emissions are obtained as the sum of the emissions from each mode of operation. The emissions in each mode are again equal to the product of the number of days spent in that mode, the appropriate daily fuel consumption and the fuel specific emission factor.

Energy consumption

The first requirement for a calculation of emissions is to determine the fuel consumption of the ship or ships involved. Data for this purpose have been derived by analysing data from Lloyd's Maritime Information Services Ltd. Particularly, regression analyses on fuel consumption as a function of gross tonnage were performed for

each ship class. The data are highly correlated (r > 0.68 for all cases) and all the regressions are significant at a confidence level greater than 99%.

The data from Lloyd's provide fuel consumption figures at full power. Corrections may be made to take into account the different throttle settings used for the different operating modes.

Pollutant emissions

Pollutant emission factors have been derived from a review of all the emission data available in the literature. They are reported as fuel or energy specific emission factors, in units of kg/tonne of fuel or g/kWh respectively. Emission factors for sulphur oxides, and in some cases particulates, are given as a function of the sulphur content of the fuel. The data from the review have been used to specify default emission factors for use in both the simplified and detailed methodologies.

Days in navigation

If the number of days in navigation is not known, it can be estimated from the speed of the ship and the distance covered. Average speed data from Lloyd's are presented and may be used for this purpose.

Future emissions

In the future, it is likely that there will be changes in the emissions from waterborne transport. The changes will result from legal requirements regarding ship engines and the fuels they use, and also from engineering improvements providing improved technologies and emission control systems. Quantitative estimates of future improvements in emissions have been based on a review of legal developments and of the technologies available to reduce emissions from ship engines. These estimates are presented in the form of emission reduction factors that may be applied to emission estimates for the current fleet.

Three future scenarios are considered, representing high, intermediate and low estimates of the potential emission reduction. Depending on the engine type and scenario, reductions of NO_X and SO_X of up to 80% are foreseen.

Air transport

Three main classes of air transport can be distinguished:

flights performed under Instrument Flight Rules (IFR)
military operational air traffic
flights performed under Visual Flight Rules (VFR)

Each category has its own typical dataset available for traffic characteristics and engine emissions, although the accuracy of the data is different for the three categories. About sixty to eighty percent of emissions originate from IFR flights. Normally IFR flights are controlled by Air Traffic Services within controlled airspace only, and detailed information on aircraft type and route is available. Flights that are performed under VFR generally are not operated as controlled flights so no detailed information on the route flown is available. However, VFR flights represent just less than 5 % of fuel consumption and pollution caused by air traffic. Operational military air traffic represents another group of aviation on which limited or inaccurate information is available.

Outline methodology

In common with the other MEET methodologies for emission calculations, that for air traffic combines an estimate of the amount of transport activity with emission factors per unit of activity to derive total emissions. And, also as for the other modes, there needs to be a classification of the transport activity to take into account the differences between types of aircraft/engine combination, their different operating modes, the different pollutants and so on. The method follows those for the other non-road modes: an initial estimate is made of the fuel consumed during an air transport operation and pollutant emissions are calculated using fuel-specific emission factors.

Emission indices

For IFR flights, emission indices (EI, the mass of pollutant produced per mass of fuel used) are provided for eight typical operational conditions, which may be combined to cover most of an aircraft's operation during a flight. The standard operating conditions are:

taxi out, take off, climb, cruise, descent, landing, taxi in

Emission factors are based on engine certification data in the ICAO (International Civil Aviation Organisation) Engine Exhaust Emission Databank. It contains datasets of thrust (engine performance), fuel flow and emissions of components CO, NO_X and VOC which apply to four different power settings, Mach number 0 and altitude 0 m. Using also information on the aircraft performance during the flight from the emission simulation model ATEMIS leads to average emission indices. Simulations were carried out for thirty of the most common aircraft used in Europe, representing about 70% of flights. Components included are fuel burnt, H_2O, CO_2, CO, NO_X, VOC and SO_2. There is a great uncertainty about other pollutants such as particulates, PAH, CH_4, NO_2 or NH_3 so these cannot be included at the moment.

EI for military and VFR flights are based on hours of operation and average fuel consumption per hour because of limitations in the nature of the data available. Components included are H_2O, CO_2, CO, NO_X, VOC and SO_2.

Verification

The ANCAT/EC emission inventory group produced an aircraft NO_X emission inventory in support of the Aeronox aircraft emissions research project. Comprehensive data on length and time of climb, cruise and descent and on fuel consumption and NO_X emissions were available, so a comparison between results from the MEET method and ANCAT/EC profiles was carried out for four aircraft types on a 1 000-km flight.

There was a fairly good agreement of specific fuel consumption in the two methodologies. However, some trends were evident:

The ANCAT/EC profiles tend to have lower fuel consumption than the MEET profiles. That is due to different assumptions in the model parameters on:

take off weight (ATEMIS uses maximum take off weight, ANCAT only 70% of payload),
engine performance (ATEMIS uses different climb rate) and
the engine mix used for the aircraft type.

Another comparison, for the area of Austria, has been carried out using results from the ANCAT/EC inventory and the ATEMIS calculation which showed a difference of about 10% between these two inventories.

Future emissions

Future emissions from aviation will depend on the balance between improvements in technology, producing more efficient and less polluting aircraft, and the growth in air transport. New and improved technologies were briefly reviewed and predictions of future levels of traffic examined. On the basis of this information, a number of future scenarios for aircraft emissions are presented.

New technologies

New engine technologies: Several methods of achieving low levels of emissions exist, but none has been accepted as the optimum solution. Manufacturers will continue to add to the advances already made, and these continuing advancements will lead to greater reductions in aircraft emissions.

Aerodynamic improvements: For a fuel-efficient aircraft, it is important to minimise its aerodynamic resistance. Recent advances include the use of winglets, which provide additional lift while not contributing to drag as much as conventional wings, and the development of laminar flow control. A revolutionary configuration, the blended wing body was conceived by the McDonnell Douglas Corporation. The idea behind this design approach is to maximise overall efficiency by integrating the engines, wings, and the body into a single lifting surface.

Aircraft materials: Lightweight composite materials have the potential to reduce airframe weight by 30% with equal or better structural strength. Lighter aircraft require smaller engines, smaller engines require less fuel and less fuel leads to a reduction in aircraft emissions.

Alternative fuels: The main contender to replace conventional aviation fuel is hydrogen, and even hydrogen has a long way to go until it is in commercial use. Other possibilities include liquid natural gas and renewable fuels such as vegetable oils, ethanol and methanol, though these have some disadvantages compared with kerosene.

Aircraft operations: Efficiency of an aircraft is not limited to the manner in which fuel is consumed or an aircraft's aerodynamic effectiveness, it is also a function of the manner in which the aircraft is operated. Significant reductions in aviation emissions could be achieved through improved operational efficiencies using improved communications, navigation and air traffic management procedures.

Future air traffic

Air travel is growing more quickly than any other transport mode. Growth in worldwide air travel is projected to average 5% per year over the next 10 years. Air travel growth and airline profitability have led to more aircraft orders, and the Boeing Company suggests that the fleet size will more than double in the next 20 years. Other estimates are a little more conservative, but still forecast significant increases.

Eurocontrol have produced forecasts of air traffic up to and including 2015, based on three different growth scenarios. They estimated that the number of flights in the Eurocontrol area will increase from less than 6 000 in 1998 to more than 10 000 in 2015.

Future emission scenarios

The Eurocontrol traffic scenarios were combined with assumptions concerning the size and technology of the aircraft fleet in order to develop three scenarios for future emissions: high emission, low emission and baseline scenarios, for the years 2010 and 2020.

The total expected reduction in aircraft emissions in the baseline scenario is in the region of 19%, with a reduction of about 24% in the low emission scenario and 12.5% in the high emission scenario. These figures represent the emission reduction attributable to improvements in fuel efficiency. However, efforts are also being made to reduce emission indices, thus additional benefits may come from that area.

Fuel and energy production

Air pollutant emissions from the production of a range of fuels for use in the transportation sector are considered. The fuels considered are gasoline, diesel, liquefied petroleum gas (LPG), kerosene, heavy fuel oil (HFO), compressed natural gas (CNG), electricity and rapeseed methyl ester (RME). In combination with the other parts of the project the information enables the calculation of life-cycle emissions for the majority of transport applications.

Crude oil based fuels

The crude-oil-based fuels, gasoline, diesel, LPG, kerosene and heavy fuel oil are considered together due to their similar production routes. The production route for these fuels consists of extraction, transportation of the crude oil, refining and distribution of the refined fuel. Additionally for LPG there is a parallel route as some low molecular weight compounds do not require further processing and can be transported directly to the distribution terminal.

The results show that the emissions associated with the high value products such as gasoline tend to be greater than from low value products such as HFO. This is related to the greater profits associated with high value products, which result in it being financially worthwhile to introduce extra processing stages to increase the yield. Small variations were observed between the results for different countries. The variations relate primarily to the types of refinery that are used in each country, as certain types of refinery are more suited to certain products than others.

Natural gas

Compressed natural gas is different to the other fuels in that the final product requires much less processing than the other alternatives considered here. The processing is limited to removal of impurities, including water. Transportation is via pipeline which is assumed to be powered by electricity. A much higher proportion of the emissions come from the distribution stage for CNG compared to the other fuels. This is due to its gaseous nature, which gives rise to a greater potential for fugitive hydrocarbon emissions. The emissions data for CNG are generic values for all countries in Europe, as few data are available on the differences between the fuel supply networks in different countries.

Electricity

The emissions from the production of electricity are much greater than for the production of other fuels. However, electric vehicles produce no emissions at the point of use. The data show wide variations in the emissions per unit of useful energy output between the countries considered. This is because a wide range of energy sources is used for the production of electricity depending on local conditions. Furthermore, even for one fuel type, there are variations in the emissions abatement technologies used in different locations.

Biodiesel

Several studies on the production of rapeseed methyl ester (biodiesel - RME) have been reviewed. Wide variations were found between the results in the individual reports, especially in terms of the energy input to fuel

production, which depends on the fuel used to provide the production energy. For example, the energy input per GJ of RME produced was estimated as 870 MJ but reduced to 664 MJ per GJ of RME if straw is used as the process fuel.

Summary

Comparison of the various fuels suggests that natural gas production gives the lowest emissions per unit of useful energy output, due to the low processing requirement. The liquid crude oil based fuels all have similar production emissions, with small variations due to the amount of processing required at the refinery, and due to the different specific energy contents of the various grades of fuel. The emissions from RME production are higher than for the crude oil based fuels because of the significant agricultural input as well as the processing of the rapeseed oil into RME. The highest emissions are associated with electricity production from non-renewable energy sources. However, in this case it should be remembered that, unlike for all the other fuels, there are zero emissions at the point of use.

- **EUROSTAT'S TRANSPORT AND ENVIRONMENT DATABASE SYSTEM (TRENDS)**

During the 1970s, concern over air pollution led to a concerted international effort to estimate the emissions from different sources and to compile these data into inventories. The main focus was to estimate total emissions and to allocate their origins spatially. To this end the major source categories were identified (e.g. combustion plants, diesel engines, etc.) and appropriate methodologies devised. The resulting inventories can then be used to say where emissions are produced and where they go. In the course of time the methodologies have been refined, the source categories have been extended, and the range of pollutants estimated has increased.

The concerns of the 1970s have not gone away, and indeed new problems such as global warming have become politically prominent. Inventories are now needed as much today as they were 20 years ago. But the conceptual framework for analysing the politics of the environment has become more sophisticated. Policy-makers need more information than can be provided by inventories alone. They particularly need information which explains the linkages and leverage points between policy and environmental impacts and which helps to evaluate the probable consequences of policy proposals. Inventories are not a great deal of help here because they do not go far in relating human activities to their environmental consequences, and this is particularly the case for transport. For these purposes, more powerful indicators are needed.

Further difficulties in using inventory data for indicators are:

- Member States use many different methodologies and datasets to estimate transport emissions. Nevertheless, standard methodologies have been proposed by the Corinair/EMEP working groups, and are followed by some countries;
- Inventories are based on the territorial concept, whilst much transport is across borders or even outside any borders at all. This basis is not always appropriate for indicators. For example, the ratio of emissions to GDP only makes sense if emissions are based on "economic" territory and include extra-territorial transport activities providing economic benefit to a country (as in NAMEAs). Similarly, the ratio of emissions to population only makes sense if emissions are based on the movements of a country's inhabitants and exclude foreign visitors;
- Only the direct source of emissions is provided in inventories. The indirect emissions of electric trains in particular also needs to be taken into account in comparing modes of transport;
- There are still many gaps and breaks in time-series in the official submissions, making international comparisons or aggregation to EU level unreliable;
- Emission estimates for modes other than road, and a split between goods and passenger transport, are still largely unavailable. A total for transport is often unavailable.

Following an analysis of the needs for environmental information concerning transport, Eurostat concluded that it would be useful to link the estimation of emissions from transport to its statistical databases. It would then be possible to allocate emissions on the basis of different types of transport data. It would also be possible to provide emission estimates per vehicle-kilometre, passenger-kilometre or tonne-kilometre, in order to compare the relative environmental efficiency of each component in different places over time. Projections of past trends, in combination with expected social and technological developments, would be used to provide forecasts. Furthermore, by having the calculations for all modes within one system it would be possible to look at what would happen to the overall emissions if the balance between components were changed, i.e. what would be the result of moving 5% of road pkm to water? However, TRENDS is not confined to emissions: it will also estimate waste from road vehicles and explore the possibilities for using a similar approach for noise from road traffic. Transport policy makers would then have a tool for identifying the most environmentally damaging components of the transport system and for testing probable outcomes of proposed policy.

There are other projects at the national and international level which are aimed at producing information specifically intended for transport policy makers. TRENDS is not attempting to duplicate these. The particular features of TRENDS are its links to emission inventories, especially Corinair (the European core air emissions inventory programme), and its links to transport statistics. The link to emission inventories is important. Firstly, it means that methodologies can be fairly easily moved between systems: there should be no need to invent new methods, but to adapt existing ones to the requirements of each system and to encourage cooperation. Secondly, the outputs of TRENDS should be broadly compatible with those from Corinair, making sectoral comparisons possible. The link to transport statistics is equally important because it will lead to environmental data, which is compatible with the multi-dimensional and highly aggregated nature of transport statistics. Statistics also provide long time-series, which are regularly compiled. The system therefore has a low-cost

future, and is not a one-off exercise. Eurostat has recognised that some of the basic data needed by emission modellers are not currently covered adequately by the statistical system. For this reason, the development team will work closely with Eurostat in identifying the priority areas for action.

Since the TRENDS project was launched at the beginning of 1998, the demand for environmental indicators has grown. TERM is a manifestation of that demand. As a consequence, TRENDS is now being adapted to supply many of the TERM indicators.