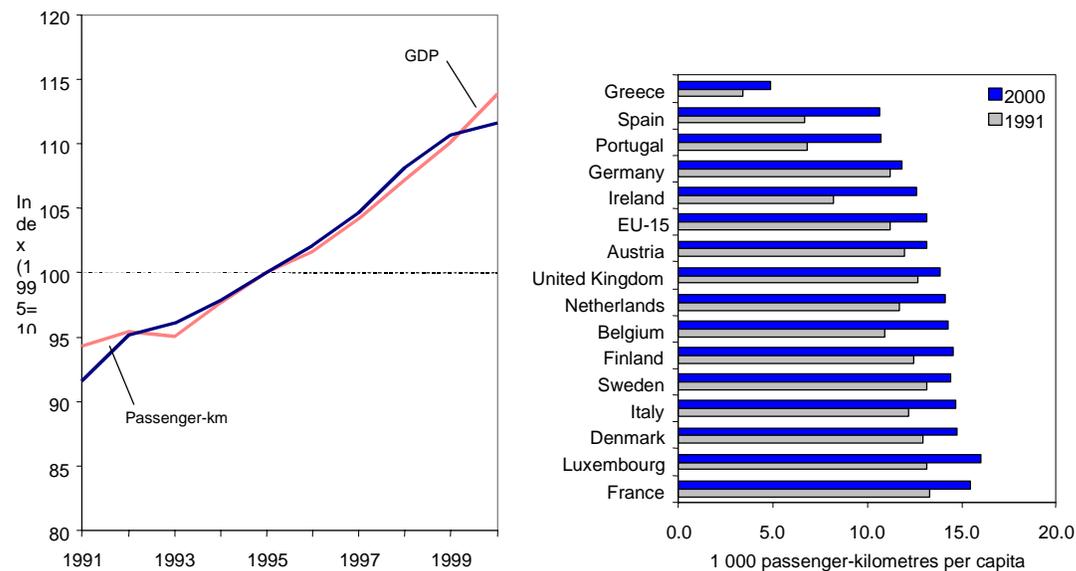


Indicator fact sheet

TERM 2003 12a EEA 17 — Passenger transport demand by mode and purpose

⊗ **Passenger transport (in terms of passenger-km) grew at the same rate as GDP in the 1991–2000 period. Recently, between 1999 and 2000 a slight decoupling of economic development and passenger transport demand is visible. This decoupling is caused by a decrease in the demand for private car transport in Germany and the United Kingdom. However, the EU-wide passenger transport demand still increases, particularly in air transport.**

Figure 1: Passenger transport demand and GDP (EU)



NB: Passenger transport (passenger-km) includes car, bus/coach, rail and domestic, intra- and extra-EU aviation. GDP based on Euros and in constant 1995 prices.

Source: Eurostat, 2003.

Results and assessment

Policy relevance:

The European Commission has set itself the objectives to reduce the link between economic growth and passenger transport demand ("decoupling") in order to achieve sustainable transport.

Policy context:

The objective of decoupling was first defined in the Transport & Environment (T & E) integration strategy (European Council, 1999) that was adopted by the Council of Ministers in Helsinki. Also in the sustainable development strategy (European Commission, 2001a), that was adopted by the

European Council in Gothenburg, the objective of decoupling is mentioned in order to reduce congestion and other negative side-effects of transport.

In the review of the T&E integration strategy in 2001 and 2002 (European Council 2001; European Council, 2002a), the objective of decoupling was reaffirmed by the Council.

In the sixth community environmental action programme (European Council, 2002b), decoupling of economic growth and transport demand is mentioned as a key action in order to deal with climate change and to alleviate health impacts from transport in urban areas.

In the White Paper on Common Transport Policy (CTP) 'European transport policy for 2010: Time to decide' (European Commission, 2001b), the Commission subsequently proposes 60 or so measures aimed, amongst others, at reaching this decoupling objective (e.g. fair and efficient pricing).

Environmental context:

Transport is one of the main sources of greenhouse gases and also gives rise to significant air pollution, which can seriously damage health and ecosystems. Passenger transport (in terms of passenger-km) and freight transport (in terms of tonne-km; see TERM 2002 13 EU — freight transport) are indicators for total transport volumes.

The indicator helps to understand developments in the passenger transport sector (transport's 'magnitude'), which in turn explains observed trends in transport's impact on the environment. For a complete picture of transport demand and the environmental problems that arise from it, it would be valuable to complement the data on the number of passenger-kilometres by mode with vehicle-kilometres by mode. However, only limited and low-quality data is available for the number of vehicle-kilometres. Data availability of the number of passenger-kilometres by foot and bicycle is also limited. Such data would further complement the information presented here, in particular when such data can be combined with passenger transport statistics at the urban level, where the non-motorised modes play a significant role in every day transport.

Assessment:

General

The total number of passenger-km travelled in the EU-15 ⁽¹⁾ has increased from 4 000 billion in 1991 to more than 4 900 billion in 2000, a 22 % increase or an average of 2.1 % per year, roughly equal to that of GDP (2.1 % increase per annum). This is shown in Figure 1a.

During the 1990s, the passenger transport demand *per capita* also increased with 22 % to over 13 000 km per capita in 2000, as is shown in Figure 1b. There are several factors underlying the strong relation between passenger transport demand and economic growth and hence the continuing growth of passenger-km.

1. The main factor is growing incomes and the fact that people spend more or less the same share of their disposable income on transport (around 11 to 12 % in the period from 1980 to 1997). Additional travel budget allows more frequent, faster, farther and more luxurious travelling. Indeed, the average daily distance travelled by EU citizens steadily increases (from 32 km in 1991 to 37 km in 1999), and passenger car and aviation (both fast and relatively more luxurious than bus/train) are the fastest growing modes of transport.
2. Another major explanatory factor of the growth of passenger traffic is the increase in travel distances to destinations like work, shops, schools and leisure activities. Increasing speeds and quality of transport and improved infrastructure have made these developments possible. Changes in relative speeds in recent years have allowed travelling longer distances. In the longer run, the process can accelerate urban sprawl. Additionally, easy

⁽¹⁾ Walking, cycling, motorcycles, waterborne and tram/metro are not included in the assessment, since no EU-wide reliable data is available for the 1991–2000 period. The assessment includes passenger cars, bus/coach, rail and air traffic (domestic, intra- and extra-EU).

accessibility has not only increased travelling distances, but also induced additional transport since more distant destinations can be reached within the same amount of time.

EU-wide data on travel purposes are not available. However, based on national mobility surveys 40 % of passenger transport demand was for leisure in the 1990s. For the Netherlands, the distribution of travel over different purposes is shown in Box 1.

Tourism is an important travel motive, and most of the trips attributed to tourism are long-distance trips. The importance of tourism in air traffic is stressed by the presence of Palma de Mallorca, Tenerife and Malaga in the top 20 of airports handling most passengers (European Commission, 2001e). See also Box 2.

An overview of passenger transport demand for the main modes is shown for all Member States, Norway and Iceland in Table 1.

Private car transport

Passenger transport by car has grown with 16.7 % between 1991 and 2000. However, between 1999 and 2000, passenger transport has declined with 0.4 % in the EU-15 region. This decline is caused by a reduction of transport by passenger car in Germany and the United Kingdom.

The decrease of transport by passenger car in Germany and the United Kingdom, which is confirmed by the Energy and Transport DG Statistical Pocketbook (European Commission, 2001e), is accompanied by lower oil consumption in these countries. The high fuel prices probably play a role ⁽²⁾, as well as stronger increase in fuel prices in the UK and Germany than in the EU-15 between 1999 and 2001 (except for the price of euro95 in Germany, which closely followed the EU average). High levels of congestion in car traffic could also have influence on this development.

Passenger car transport per capita grew drastically in Portugal, Greece, Spain and Ireland — all with more than 60 % — in correspondence with high increases in GDP and car ownership (see TERM 2002 32 EU — size of the vehicle fleet). In spite of the generally strong relation between car ownership and passenger transport by car, growing car ownership does not in all countries entail more car usage: in Austria, Germany and the United Kingdom car ownership grew substantially faster than passenger-km by car. In Sweden, passenger-km by car even decreased with growing car ownership between 1991 and 2000.

The limited data that is available on the number of vehicle-km by passenger cars shows that the number of passenger-km grew at a slower rate than that of vehicle-km in the early 1990s, suggesting a drop in vehicle occupancy rates (see also TERM 2002 29 EU — occupancy rates). From 1995 onwards however, the growth in vehicle-km closely followed that of passenger-km.

Air transport

Air traffic is the fastest growing transport mode. The demand for air transport shows a yearly increase of 6.3 % for domestic air transport, 8.0 % for intra-European and 9.2 % for extra-European air transport. For the 1990–2000 period, the growth totalled at 97 %. For comparison, the overall increase for all transport modes together is 22 %. The high growth in the demand for air transport can be only partially explained by the high growth of low cost airlines (see Box 4). An important reason for the strong growth in aviation is the rapidly growing tourism industry.

The highest per capita demand for air passenger transport in 1999 was in the Netherlands and the United Kingdom (more than 3 200 and 1 600 passenger-km per capita, respectively). This is mainly caused by the high competitiveness of Schiphol and London Heathrow airports that serve intercontinental flights, which account for 87 and 80 % of the per capita demand respectively. Note that this international air transport demand cannot be solely attributed to the UK and the Netherlands, as much of this transport activity is related to transfer of passengers. Sweden, Spain, Denmark and Finland all show high domestic air transport demand, which is related to these countries' geographical sizes (Sweden, Spain and Finland) and shapes (Denmark).

⁽²⁾ From personal communication with Chris Overson, principal contact point for TERM in the UK.

Rail transport

The number of passenger-km travelled by rail in the EU increased on average by 1.4 % per year, though this rate has increased in more recent years. Passenger-km by rail decreased in Greece (18 %), Italy (3 %), Austria (13 %) and Portugal (33 %). In Greece and Portugal these strong decreases are associated with the high growth in car ownership between 1991 and 2000. The strongest growth rates have been shown in Sweden (43 %), Norway (34 %), Germany (32 %) and Spain (24 %).

Bus and coach

Bus and coach transport in the EU-15 has grown by 9 % to 198 billion passenger kilometres. Bus and coach transport has declined in Germany (5.2 %), the Netherlands (8.5 %), Finland (4.9 %) and the United Kingdom (0.4 %), whereas it increased in all other countries, including Iceland and Norway. Bus and coach transport has been growing the strongest, over 50 %, in Luxembourg, Ireland and Austria.

Motor cycle

Passenger transport by motorcycle is the most popular in Italy and Greece, almost 4 times as popular as on average in the EU region. In the EU-15 motorcycle transport shows a growth rate of 18 % in the 1994–2000 period (longer time series are not available). The strongest growth rates in this period can be observed in Denmark, Greece and Portugal.

Walking and cycling

Passenger-km by foot and bicycle remained stable. On average a European citizen walks about 1.0 to 1.4 kilometres per day. Variation in bicycle usage is much greater, from an average of 100 metres per person a day in Greece, Portugal and Spain to 2.3 and 2.6 km in the Netherlands and Denmark respectively.

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Data

Table 1: Passenger transport demand by mode in EU-15, Norway and Iceland in 2000

Unit: 1 000 million passenger kilometres

	Private car	Rail	Bus/coach	Air (domestic, intra- and extra EU)	Motorcycle	Tram/metro
Belgium	106	8	13	19	1	1
Denmark	59	4	9	6	1	0
Germany	715	75	77	94	17	15
Greece	34	2	6	9	19	1
Spain	303	19	50	45	14	5
France	700	70	45	92	12	10
Ireland	32	1	6	9	0	0
Italy	665	44	94	41	67	5
Luxembourg	5	0	1	1	0	0
Netherlands	141	15	8	60	3	1
Austria	74	8	14	9	2	3
Portugal	81	4	12	10	7	1
Finland	56	3	8	7	1	1
Sweden	93	8	9	16	1	2
United Kingdom	613	39	45	123	5	8
Iceland	4	0	0	:	:	:
Norway	49	3	4	:	:	:
EU-15	3 676	301	397	542	150	53

Source: Eurostat, 2003; European Commission, 2002e.

File: TERM 2003 12 EU — Passenger transport.xls

Meta data

Technical information

1. Data source:

Energy and Transport DG Pocketbook: (European Commission 2002e)

Eurostat structural indicator data (Eurostat, 2003):

(<http://europa.eu.int/comm/eurostat/Public/datashop/print-product/EN?catalogue=Eurostat&product=1-structur-EN&mode=download#Emploi>)

GDP and population from Eurostat. File: TERM 2003 00 EU+AC — Basedata.xls.

2. Description of data:

Data contains the number of passenger-km by private cars, buses and coaches, rail, tram/metro, domestic, intra- and extra-European aviation. Data on motorcycles, waterborne, walking and cycling are limited available. Passenger-km: unit of measure representing the transport of one passenger over one kilometre (the distance to be taken into consideration is the distance actually run).

GDP: Gross Domestic Product in constant 1995 prices (billion euro).

3. Geographical coverage:

EU-15 (Belgium, Denmark, Germany, Greece, Spain, France, Ireland, Italy, Luxembourg, the Netherlands, Austria, Portugal, Finland, Sweden and the United Kingdom), Norway and Iceland.

4. Temporal coverage:

1991–2000

5. Methodology and frequency of data collection:

Passenger-km by mode: annually collected by a common questionnaire developed jointly by Eurostat, UNECE and ECMT

6. Methodology of data manipulation, including making 'early estimates':

Passenger car and bus/coach data for Belgium, 1991–94 is taken from TERM 2002, since the data was not available.

Quality information

7. Strength and weakness (at data level):

The data on passenger-km is calculated rather than directly measured. However, since the same methodology has been used for many years, the trends give a good indication of the passenger transport demand.

8. Reliability, accuracy, robustness, uncertainty (at data level):

Data is considered to be fairly reliable and consistent.

9. Overall scoring (give 1 to 3 points: 1=no major problems, 3=major reservations): 2

Relevancy: 2 (vehicle-kilometres data should be available to complement the passenger-kilometre data in order to reveal developments of occupancy rates and create better links between transport activity and environmental problems)

Accuracy: 3 (passenger-kilometre figures are estimated rather than measured — more uncertainty for cars than for bus/trains, etc. — and vary by source (ECMT, UNECE, etc))

Comparability over time: 1

Comparability over space: 1

Further work required

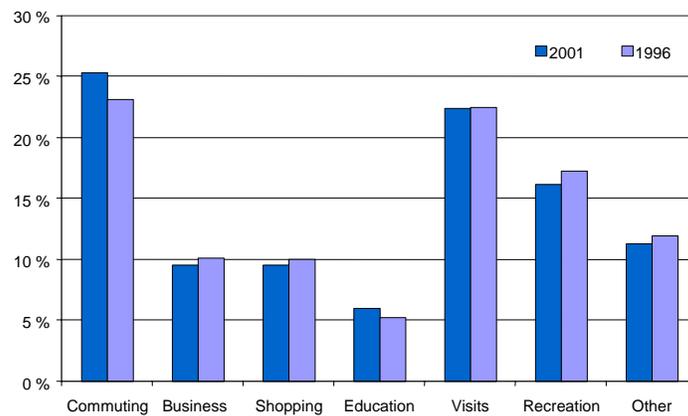
Further work is needed to develop reliable and comparable statistics on vehicle-km used for passenger transport, since such data is closer connected to the environmental consequences of transport and might reveal evolution of occupancy rates.

Box 1: Travel purposes in the Netherlands

No EU-wide data on travel purpose are available. Moreover, the definition of travel purposes is often unclear and countries use different classifications. Therefore, we fall back on national statistics to obtain insights in the distribution of passenger transport over travel purposes.

In the Netherlands, total passenger transport demand remained more or less stable at around 32 kilometres (increase of 31.7 to 32.4) per day per capita. The distribution of the total transport over the different purposes is given in Figure 2.

Figure 2: Purposes in travelling in the Netherlands



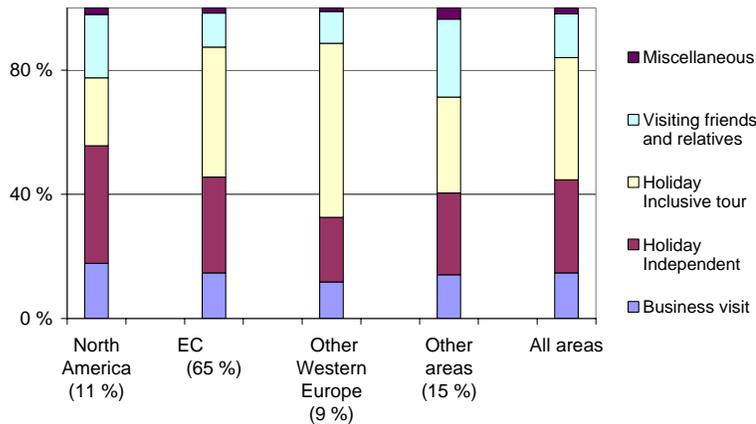
Some changes in travel patterns can be observed. The shares of commuting and education have increased, whereas the share of recreation decreased. Information about the use of the different modes within the various travel purposes is unfortunately not available.

Source: CBS, 2003

Box 2: Purposes in air travel by United Kingdom residents

Air travel plays a large role in reaching tourism destinations in the United Kingdom. 70 % of all overseas UK air travel (by number of visits) is dedicated to tourism purposes. In 15 % of all cases the purpose of travel is for business. Another 15 % of all trips are made for visits to friends or relatives. A country within the European Community is the destination in 65 % of all cases, other countries in western Europe in 15 % of all cases. 11 % of all passengers travel to North America. Figure 3 presents the purposes and destinations of UK air travels.

Figure 3 Overseas air travel by UK residents: travel purposes and destinations in 2001



Based on Figure 3, one can argue that air traffic plays a major role in the receiving tourism destinations and only a small role in business travelling. Tourism is the most important travel purpose in air transport.

In other west European countries, air transport probably plays a smaller role in reaching tourism destinations, since the United Kingdom is an island and depends heavily on aviation for its passenger transport abroad.

Source: UK Department for statistics, 2003; WTO 2000.

Box 4: The impact of low-cost airlines on overall traffic growth

The market share (based on the number of operated flights) of low-cost operators in the CRCO88⁽³⁾ area has increased from 0.2 % in 1991 to 6 % in 2001. This extensive growth of the market share of low-cost carriers is caused (a) by increased traffic volumes that they generate and (b) due to reduction in traffic by the traditional aircraft operators. About 24 000 new flights have been added by low cost carriers between the first quarter of 2001 and the first quarter of 2002, whereas the number of operated flights of conventional carriers decreased by 2 % over the same period.

On the one hand, the low cost carriers cause additional traffic because they offer tickets at lower prices. On the other hand, low-cost carriers generally achieve larger load-factors, 80 % versus 70 % for flag carriers. An increase in passengers is thus achieved at a reduced growth in traffic.

In the longer run, the overall amount of air traffic is expected to grow significantly because the low airfares make aviation affordable for more and more people.

Source: Statfor, 2002.

Box 5: Car sharing

The urban rhythms have sped up in recent years; cities are now 'open' 24 hours and 7 days per week to answer the demand of the city users. Demand-respond services, taxi, car-rental, integration of bike-orientated services, etc. are supplementary services to the classic line and timetable-bound services. These new integrated forms of mobility are not to be considered as

⁽³⁾ CRCO 88 includes: Belgium/Luxembourg, Germany, France, UK, Netherlands, Ireland, Switzerland, Austria, Spain, Canaries, Lisbon FIR, Santa Maria FIR.

competitive, but can be mutually reinforcing. One of the elements of such an integrated system is car-sharing. Car sharing refers to short period automobile rental services intended to substitute private vehicle ownership. It gives access to a vehicle whenever it is required, while providing an incentive to minimise driving and rely on alternative travel options as much as possible. To be efficient, the system needs to be accessible, affordable, convenient and reliable.

Car sharing offers medium convenience at a lower cost for those who drive less than about 12 000 to 15 000 km per year. It reduces the number of cars that are idle, increase the use of newer, smaller cars with higher environmental standards and reduces the mobility in private cars by shifting people to rail and other public services.

MOSES (mobility services for sustainable urban development), founded by the EU with a budget of EUR 3 million, is designed to explore the prospects for developing and expanding car-sharing in real-life locations across Europe: Italy (Genoa, Palermo, Turin), London (Southwark, Sutton), Stockholm, Bremen, Walloon Region (Namur, Louvain-la-Neuve, Dinant) and Bucharest. MOSES sees an option for the replacement of 10 % of private cars in the urban areas of Europe by innovative mobility services and supportive framework conditions within one decade.

This would lead to an annual reduction of the distance covered by cars of 30 to 50 billion kilometres (1 % of total private car transport in Europe) which corresponds with around 6 to 8 million tonnes of CO₂.

At the moment 100 000 people use car-sharing, essentially in four countries (Germany, Austria, Netherlands, Switzerland). The ambition of the MOSES project is to reach 12 000 additional users by the end of 2004 when the project ends.

Source: UITP, 2002.

Box 6: E-business and dematerialisation

Modern and forthcoming ICT obviously can create transport savings, either by substitution of physical transport or by the more sophisticated organisation of transport. ICT's potential to generate transport savings should not be overestimated. Whether it will lead to transport savings may depend on a range of framework conditions. For e-business analysed by the Wuppertal Institute, the main results included:

Teleshopping only has the potential to generate small transport savings. This is because shopping travel represents only a small portion of the overall distances travelled, teleshopping generates additional delivery transports, bigger potential for additional transport due to possible compensating passenger transport and rebound effects.

Home-based telework offers relatively clear possibilities for small transport savings (up to about 1.6 %) as well as for small additional transport (up to about 2.5 % of passenger kilometres travelled, based on transport activity), depending upon rebound effects.

Mobile Telework appears to generally stimulate transport by increasing the acceptance of trips with longer duration. The transport savings generated by mobile telework are difficult to determine quantitatively.

Teleconferencing provides a relatively high theoretical potential for transport savings. The savings can be up to about 10 % of passenger-kilometres travelled, based on present transport activity. However, it is more likely that teleconferencing stimulates additional transport but is hard to quantify how much.

Practical experience will cover a broad range in any of the fields due to the individual conditions. This will include a variety of examples, but they may not become generalised.

Looking to the future, the outcome may follow different paths. On the one hand, the spread of any of the e-services will depend on their cost and comfort. It is highly likely that a continuation of the present trend will lead to significantly widespread use. On the other hand, transport habits will largely depend on cost and speed of transport; as long as costs continue to fall (in relation to average income) and speed continues to increase (especially by the availability of cheap air transport), reducing the distance travelled is not a very likely possibility.

Source: Wuppertal Institute, 2003.