European Environment Agency

Indicator Fact Sheet

TERM 2006 12b – Modal shares in passenger transport

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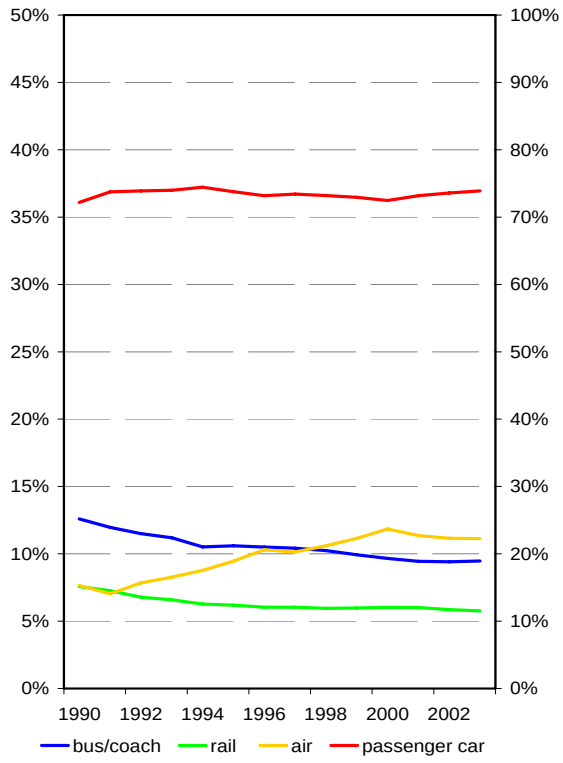
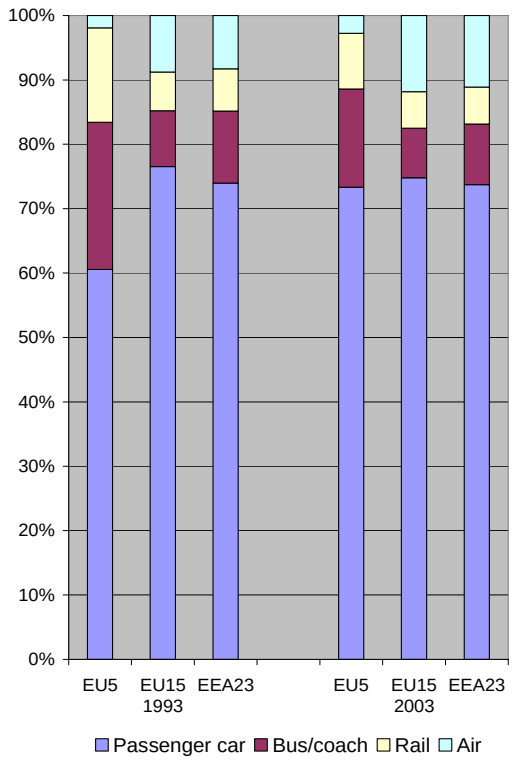
😐 **Changing the modal split towards less environmentally harmful modes and away from passenger cars is not being achieved. There are still no signs of this common transport policy goal being met. Rail and road are growing at the same rate as the total passenger transport volume. In addition, the share of aviation is increasing whereas the share of bus and coach is decreasing.**

Figure 1: a) Modal shares of passenger transport demand in 23 EEA countries and b) Development in share of each mode, by region.





Note: a) Observe the two y-axes. Shares are based on passenger-km. For a list of the EEA-23 and EU-5 countries, see the Metadata section.

Source: Eurostat, 2006; European Environment Agency, 2005 (air travel data)

Results and assessment

Policy relevance:

The European Union has set itself the following objectives to achieve more sustainable transport (reduction of congestion and other negative side effects):

Bring back the shares of alternative modes (rail, water and public passenger transport) to their 1998 levels by 2010 and make for a shift of balance from 2010 onwards.

Policy context:

Shifting transport from road to rail is an important strategic element in EU transport policy. The objective was first formulated in the Sustainable Development Strategy (SDS) (European Commission, 2001a). In the review of the Transport & Environment integration strategy in 2001 and 2002 (European Council 2001; European Council, 2002), the Council states that the modal split should remain stable for at least the next ten years, even with further traffic growth. In the White Paper on the Common Transport Policy (CTP) "European Transport Policy for 2010: Time to Decide" (European Commission, 2001b), the modal shift is central and the Commission proposes measures aimed at the modal shift. Also in the mid-term review of the CTP, modal shifts to more environmentally friendly modes are mentioned, especially on long distance, in urban areas and on congested corridors. However, all modes must be become more environmentally friendly, safe and energy efficient.

Important concrete policies and initiatives bearing on the modal split policy are listed in the following paragraphs. Many have origins in the CTP paper.

To shift passenger transport flows from car to alternative modes, the CTP proposes measures to revitalise alternative modes, in particular rail. The adopted second railway package (European Commission, 2002a) aims at creating an interoperable high-speed and conventional railway network, and the proposed third railway package (European Commission, 2004) seeks to open up international passenger services to competition within the European/ Union.

Infrastructure investments

The trans-European Network (TEN-T) guidelines were revised in 2004 (884/2004/EC). Currently, the focus is on a limited number of priority projects – generally large infrastructure projects, and include projects for rail-, water- and road modes. The major focus is on relieving bottlenecks and avoiding congestion. Environmental concerns are secondary though the guidelines call on Member States to perform Strategic Environmental Assessment of national transport programmes, and requires funding for TEN-T projects to be conditional on compliance with EU environmental legislation

Fair and efficient pricing mechanisms

Fair and efficient pricing should encourage use of the best performing modes of transport (see also TERM 26 – Internalisation of external costs). The Commission proposes in the CTP to allocate the additional revenues raised, which are generally higher than the costs of infrastructure, to new rail infrastructure thereby promoting rail transport further.

CIVITAS

The CIVITAS programme (European Commission, 2000a) provides funding for cities experimenting with the development of urban transport, encourages competitive alternatives to cars in city centres and combats growing congestion and pollution. The CIVITAS initiative supports the best-integrated and innovative proposals put forward by European cities.

Environmental context:

The relevance of the modal split policy for environmental impact of passenger transport arises from differences in environmental performance (resource consumption, greenhouse gas emissions, pollutant and noise emissions, land consumption, accidents etc.) of transport modes. For the given vehicle fleet aviation and car transport are – on average – more environmental

harmful than public transport modes, not to speak about walking and cycling. However, these differences are becoming smaller, which makes it increasingly difficult to determine the direct and future overall environmental effects of modal shifting. This effect can in detail only be determined on a case-by-case basis, where local circumstances and specific local environmental effects can be taken into account (e.g. transport in urban areas or over long distances). However there is a high probability that modal shift towards alternative modes in general has positive environmental effects.

Assessment:

Decline of bus/coach transport

The slow decline of bus/coach passenger transport demand is a problem in light of the objective of stabilizing and eventually increasing the shares of alternative modes. On EEA-23 level the decline is nevertheless slow. However, for the five new Member States for which data are available, the decline has been much greater, and is probably greater yet if the 1990-1993 period is included. The decline is related to increased car ownership in those countries (see TERM 32 – size and composition of vehicle fleet) and – at least for some relations – to improved rail transport.

Other underlying reasons could be the (real and perceived) advantages of private transport over public and alternative transport modes: private transport is generally perceived as faster, more flexible (in particular outside urban areas), more comfortable and cheaper than public transport. First, the increasing participation of women in the labour market forces people to combine professional and family tasks. This force to combine several tasks is also caused by an increasing amount of time spending to leisure activities. Combining tasks lead to a call for more flexible and faster means of transport. In most cases, these requirements are met by private cars better than by public transport. Second, the current transport costs structure (with high share of fixed vehicle costs rather variable costs linked to transport usage) does not contribute to remove the perception of private transport being cheaper than public transport. Car users generally only take the additional fuel costs into account when deciding on a trip. As a result, in many cases variable costs of car transport are lower than those of public transport.

In urban areas, the situation can be somewhat different. Public transportation is often well developed in the central parts of urban areas and competitive with cars in terms of time and costs. Introduction of a congestion charge, like in London (see Box 2), as part of a package of instruments which complements each other (e.g. parking policy, better public transport, etc.) will significantly influence the competitiveness of the various modes by favouring public transport over private car usage. In the outskirts of urban areas, where public transport is much less accessible, accessibility to basic services by public transport, cycling or walking decreases. This leads to more car usage and subsequent traffic bottlenecks around and in cities. Hence, urban sprawl – the expansion of cities – could lead to greater car dependency and usage, and more urban congestion.

(High-speed) rail transport

The share of rail transport has remained stable since 1996. However, the regular rail connections have lost some share in favour of high-speed rail. Long distance rail transport competes with air transport and the rise of low-cost carriers has made regular rail transport less favoured for longer distances. Besides, international rail connections are still slowed down by border-crossings. High-speed rail lines are developing quickly to better compete with air transport. Moreover, high-speed rail in certain cases promotes commuting to and from work over longer distances, especially when prices are kept low. This is the case on many TGV lines from and to Paris. Furthermore, high-speed rail is more energy-consuming than regular rail transport. Therefore, the observed trend may cause additional environmental problems.

Growing share of air transport

The growing share of air traffic is linked to a rapidly growing tourism industry. The high growth of low cost airlines has also contributed. In 2001 the share of air transport declined for the first time as a consequence of the terrorist attacks on the World Trade Centre in New York. Later, the war in Afghanistan and Iraq, and SARS added to the decline. The crisis forced the carriers into fierce competition to accelerate the recovery of the demand, and hence a hold to price increases. The number of flights declined in 2001 and 2002, but this decline was temporary in nature. In the period 2002-2004 the number of flights increased by 7% (Eurocontrol, 2004).

Private car transport

The share of car transport in the EEA-23 has been stable, but there are regional disparities. In the new member countries the share has increased (see figure 1b), a trend linked to increased car ownership. The faster growth in air transport compared to car transport in the EU-15 causes the decreasing share of car transport in total passenger transport for this group of countries. Increased congestion and higher fuel prices since 1999 may be other contributing factors.

Other

Cycling and walking have the potential to increase their modal share at the expense of cars in local transport, especially in urban regions. Half of all car trips are for less than 6 km, for which cycling could often be faster than driving (in urban areas), certainly when time for finding a parking space is included. 10 % are for less than 1 km, an ideal walking distance (European Commission, 2002b). Box 1 provides additional information about the potential of these environmentally friendly modes.

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Data

Table 1: Trends in modal shares of passenger transport demand in the EEA-23

Unit: % shares of passenger-km

	car	bus	rail	air
1990	72,2%	12,6%	7,6%	7,7%
1991	73,7%	12,0%	7,3%	7,0%
1992	73,9%	11,5%	6,8%	7,8%
1993	74,0%	11,2%	6,6%	8,3%
1994	74,4%	10,5%	6,3%	8,8%
1995	73,8%	10,6%	6,2%	9,4%
1996	73,2%	10,5%	6,0%	10,3%
1997	73,4%	10,4%	6,0%	10,1%
1998	73,2%	10,2%	5,9%	10,6%
1999	73,0%	9,9%	6,0%	11,1%
2000	72,5%	9,7%	6,0%	11,8%
2001	73,2%	9,4%	6,0%	11,3%
2002	73,6%	9,4%	5,9%	11,2%
2003	73,9%	9,5%	5,8%	11,1%

	car	bus	rail	air
1990	72,2%	12,6%	7,6%	7,7%
1991	73,7%	12,0%	7,3%	7,0%
1992	73,9%	11,5%	6,8%	7,8%
1993	74,0%	11,2%	6,6%	8,3%
1994	74,4%	10,5%	6,3%	8,8%
1995	73,8%	10,6%	6,2%	9,4%
1996	73,2%	10,5%	6,0%	10,3%
1997	73,4%	10,4%	6,0%	10,1%
1998	73,2%	10,2%	5,9%	10,6%
1999	73,0%	9,9%	6,0%	11,1%
2000	72,5%	9,7%	6,0%	11,8%

2001	73,2%	9,4%	6,0%	11,3%
2002	73,6%	9,4%	5,9%	11,2%
2003	73,9%	9,5%	5,8%	11,1%

Note: Minor estimates have been done in some cases, see 'Meta data' section. Countries included in EEA-23: see 'Meta data' section,
Source: Eurostat, 2006, European Environment Agency, 2005 (air transport).

Meta data

Web presentation information

1. Abstract / description / teaser:

   The share of alternative transport modes (rail and bus transport) has declined, and the objective of stabilising the shares of alternative modes at their 1998 levels requires greater effort. The share of air transport has grown rapidly, but had a dip after the 2001 terrorist attacks on the WTC in New York.

2. Policy issue / question:

   Are we moving towards stabilising the shares of alternative modes at their 1998 levels?

3. EEA dissemination themes:

   Transport

4. DPSIR: D

Technical information

1. Data source: Term 2006 12 data (sec draft).xls

   Passenger-km from Eurostat Structural indicator data (Eurostat, 2006). Air transport demand data from European Environment Agency, 2005

2. Description of data:

   Data contains the number of passenger-km by private cars, buses and coaches, and rail. Data for other modes are limited available and come from other sources, as indicated in the text. 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).

3. Geographical coverage:

   EEA-23 : 23 countries were selected for which sufficient data was available. That group is composed of the EU-15 (Belgium, Denmark, Germany, Greece, Spain, France, Ireland, Italy, Luxembourg, the Netherlands, Austria, Portugal, Finland, Sweden and the United Kingdom), 5 new Member States (Poland, Czech Republic, Slovakia, Slovenia, and Hungary), plus Norway, Iceland and Turkey.

   EU-5: Poland, Czech Republic, Slovakia, Slovenia, and Hungary

4. Temporal coverage:

   1990-2003, but with numerous gaps. For the EU-5, 1993 is the first year for which complete data is available.

5. Methodology and frequency of data collection:

   EU-15: annually collected by a Common Questionnaire developed jointly by Eurostat, UNECE and ECMT. New Member States: Also collected by Eurostat; data previously very incomplete, but now improving. Data for less used modes has in some cases come from

individual studies. Data is frequently, particularly for passenger cars, estimated rather than recorded. See TERM 2006 12 - Passenger transport.xls for details.

Coverage is not exactly the same in all countries. For example, in Poland, bus transport by companies with less than 9 persons is excluded, in the Netherlands, car transport excludes foreign vehicles. In some countries, urban bus transport is included, in some it is excluded.

Data on trips is based on the results of national mobility surveys. Eight EU countries carried out passenger mobility surveys in the 1990s (Continuous/regular surveys: Denmark, Netherlands, Sweden and the United Kingdom. Periodic surveys: Germany. Other surveys: France, Finland and Austria)

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

Since no volume data for air was available for 2003, these data are assumed to be equal to volume data for air for 2002.To a limited extent, missing values were guessed to allow for a better analysis. This was done using linear extrapolation based on nearby years (EX) or linear interpolation based on nearby years (IN), similar development as in an indicative neighbouring country (SD) Passenger cars. UK: 1990 (EX); CZ: 1990-1992 (SD: Poland); PL: 1991-1994 (IN), 2001 (EX); SK: 1990-1992 (SD: Poland); TR: 1997-1998 (IN), 2000-2002 (EX); IS 1991-1994 (IN).
Buses and Coaches. D: 1990 (EX); CZ: 1990-1992 (SD: Poland); SK: 1990-1992 (SD: Poland); IS 1991-1994 (IN).
Rail. NL, UK: 1990 (EX); CZ: 1990-1992 (SD:Poland); NO, 2003 (EX)
Air. EE, LT, LV, SK, SI 1990-1991 (assumed equal to 1992) Any error arising from this will have minimal effect on the EEA-23 average.

Quality information

7. Strength and weakness (at data level):

The data on passenger-km is estimated and not directly recorded. However, since the same methodology has been used for many years, the trends generally give a good indication of the developments in passenger transport demand.
Data for transport by ferries is not available, but its share is small. Large data gaps have made it necessary to exclude some countries from the analysis.

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

Data is considered to be fairly reliable and consistent for the Old-15. For central and Eastern European countries the data are generally much less reliable and much less comparable, and data updates often results in significant revisions of historical time series.

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

Relevancy: 2 (Vehicle-km provides a better unit of measurement, since it is more directly linked to environmental impact of transport movements)

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

Comparability over time: 2 (some extrapolations for 1990-1992 and 2001)

Comparability over space: 2 (coverage not uniform, see heading 5)

Further work required

Data coverage should be improved. For some countries there is either no data at all, or large holes.

Further work is needed to develop reliable and comparable statistics on vehicle-km used for passenger transport. Such data are more closely connected to the environmental consequences of transport than figures on passenger-kilometers.

Shifting passenger transport flows towards cleaner transport modes in urban or rural areas or international trips requires different policy approaches. It would therefore be valuable to be able to monitor the modal split for these specific areas and trips.

Box 1: Short car trips and walking and cycling trips

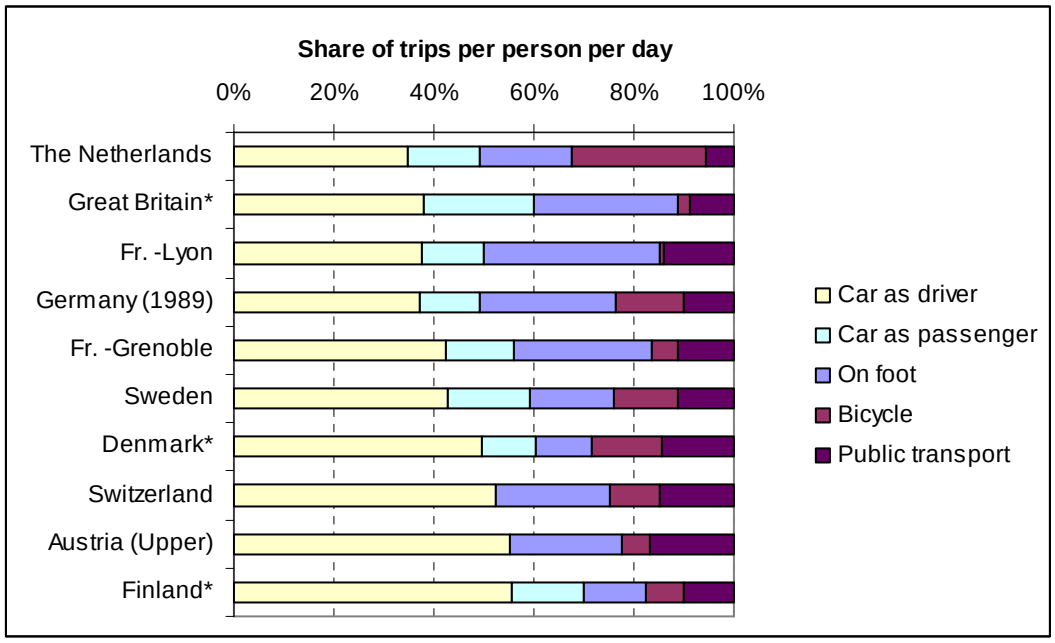
The average European makes about three trips per day. Most trips are 1 km or less for walkers and 3-5 km for cyclists, although this differs between countries. The share of cycling in Europe is around 5-10 % of all trips, with much higher rates in the Netherlands (29 %) and Denmark (17 %).

Many car trips are quite short; a change from car to walking or cycling for trips shorter than 3-5 km could replace half of all car trips in many European cities. *Trip chains* (a sequence of trips to travel between origin and destination) could only explain some of the car use on short trips. There are important differences between men and women, young and old, car-owners and those without a car, workers and non-workers.

Some other findings about walking, cycling and short car trips:

- Walking and cycling are often done as a purpose in themselves.
- Women walk more than men.
- People working part-time make most trips.
- The larger the city, the more people walk.
- Cycling competes more with buses than with cars.
- Better public transport and better access to basic services leads to lower car ownership

Figure 2: Modal split of all trips in 9 European countries



Note: Share based on number of trips. Great Britain, Denmark and Finland: based on trips longer than 200-500 m.

Source: European Commission, 2000b

Box 2: London congestion charge

In February 2003 the city of London introduced a flat congestion charge to alleviate congestion. The congestion charge applies for central London (20 km^2) from 07.00 to 18.30, Monday to Friday, excluding public holidays. The charge does not apply at weekends. From July 2005, drivers pay GBP 8 (ca. EUR 12) per day up from the original GBP 5 in the beginning The system is enforced by camera observation and the penalty for non-payers is £80. Revenues for the first year were less than the expected GBP 130 million per year, only 80 million, indicating the scheme's success as traffic was reduced even more than assumed. Congestion was reduced by about 30 % and was lower than in the mid-80's. Revenues will go back into the capital's transport system and mainly destined for investments in buses and road safety, such as street lighting and better marked road crossings.

There are a range of exemptions and discounts for certain categories of drivers and certain categories of vehicles and individuals. Residents and crucial staff receive a 90 and 100 % discount respectively. Drivers of alternative fuel vehicles, vehicles with nine or more seats and taxis are allowed to enter the zone without charge.

Source: www.cclondon.com;