Indicator Fact Sheet

TERM 2004 13b – Modal split in freight transport

| Indicator code / ID | |
|-------------------------------------|--------------------------------------|
| Analysis made on (Assessment date) | 8 April 2004 |
| EEA contact /fact sheet responsible | Fact Sheet development contact point |
| Name Peder Jensen: | Name: Eelco den Boer, CE Delft |
| Email: peder.jensen@eea.eu.int | Email: <u>boer@ce.nl</u> |

The share of road freight transport increased during the 1992 – 2002 period. The modal shares of rail and inland waterways continue to decrease, thereby moving away from the objective of stabilising the share of alternative transport modes.



Shares of the sum of freight transport tonne-km's by road, rail and inland waterways. Other modes, notably maritime transport and pipelines are not included as there is insufficient data available. The lack of data on maritime transport has a significant impact on the shares; for more information, see figure 2. Data for CC-3 and EFTA-2 refer to 1995 rather than 1992.

Note: For region codes, see the 'Meta data' section 2. *Source*: Eurostat, 2004a



Figure 2: Freight transport demand by mode in the old 15 EU member states (including short sea and oil pipelines)

The 2001 shares are: Road 45 %, short Sea 40 %, Rail 8 %, inland waterways 4 %, and 3 % for oil pipelines. The 15 old member states presently account for some 76 % of total transport energy consumption in the EEA-30 and the distribution above is therefore roughly indicative of the transport demand in the EEA-30. Short Sea transport does not include maritime transport to or from destinations outside the EU.

Results and assessment

Policy relevance

The European Commission has set itself the following objectives to achieve sustainable transport:

To bring *back* the shares of alternative modes to road (rail, inland waterways, short sea shipping and oil pipelines) to their 1998 levels by 2010, and to make for a shift of balance onwards

Policy context:

Shifting freight from road to water and rail is an important strategic element in the EU transport policy. The objective was first formulated in the Sustainable Development Strategy ("SDS", European Commission, 2001a). In the review of the T&E 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 Commission proposes a number of measures aimed at the modal shift.

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

Revitalizing non-road modes

In 2003, the EU adopted the Marco Polo programme (European Commission, 2003b) with the objective to reduce road congestion, to improve the environmental performance of the freight transport system within the Community and to enhance intermodal transport. To achieve this objective, the Programme supports actions contributing to maintain the distribution of freight between the various modes of transport at 1998 levels by helping to shift the expected aggregate increase in international road freight traffic to short sea shipping, rail and inland

waterways or to a combination of modes of transport (multimodal) in which road journeys are as short or as sustainable as possible.

The second railway package (European Commission, 2002) aims to achieve fuller integration of European railway services by greater and faster opening of the rail freight market. It proposes to open up the entire rail freight market to competition by 2006. This opening up not only refers to international services but also to national services, thus facilitating cabotage.

In the field of maritime shipping, the CTP seeks to develop "motorways of the sea", particularly by adopting shipping links into the trans-European network. Furthermore, documentary procedures for ships that call at EU ports have been simplified (European Commission, 2001c).

The market for inland navigation has been completely opened as of 1st January 2000, by entering into force of Council Directive 96/752.

Infrastructure investments

The Trans-European Network (TEN-T) guidelines are currently being revised. Currently, the focus is on a limited number of priority projects on the major corridors, which will carry the heavy flows of freight traffic between the states in the enlarged Union. The priority projects are generally large infrastructure projects, and include projects for rail-, water- and road modes. It is currently under consideration to include "motorways of the sea" and to apply full Strategic Environmental Assessments to the projects (Environment Daily, 2004).

Fair and efficient pricing mechanisms

Fair and efficient pricing should encourage use of the best performing modes of transport (see also TERM 2002 - 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 stimulating a modal shift. However, there is currently great discussion on the issue of earmarking of revenues, related to the revision of the Eurovignette directive.

Environmental context:

The relevance of the modal split policy for environmental impact of freight transport arises from differences in environmental performance (resource consumption, GHG emissions, pollutant and noise emissions, land consumption, accidents etc.) of transport modes. These differences are becoming smaller, which makes it increasingly difficult to determine the direct and future overall environmental effects of modal shifting. Additionally the differences in performance within specific modes can be substantial as for example old trains versus new trains. The total environmental effect of modal shifting can in fact 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 through sensitive areas). The magnitude of environmental effects from modal shifting may be limited, as modal shift is only an option for small market segments (CE, 2002). Opportunities for modal shifting depend amongst others on the type of goods lifted – e.g. perishable goods or bulk goods – and the specific transport requirements for these goods.

Assessment:

The share of alternative modes (rail+inland waterways) in freight transport has declined during the last decade. As a result, the objective of stabilising the shares of rail, inland waterways, short sea shipping and oil pipelines, and to make for a shift of balance from 2010 onwards, outlined in the Common Transport Policy (CTP) will not be achieved unless a strong reversal of the current trend (see fig. 1) is achieved.

The explanation of the steadily growing modal share of and the preference for road can be sought among some important factors:

• The type of the goods transported plays an important role in mode choice. Perishable and high value goods require fast and reliable transportation – road transport is often the fastest and most reliable form of transport available, providing much flexibility with pickup and delivery points. *Agriculture products* and *manufactured goods* belong to the most important goods transported throughout Europe. Their shares in tonne-kilometres are also rising (see TERM 2004 13a – Freight transport demand, sub-indicator on types of goods). As such

goods are often perishable and have high values, it can partly explain the strong position and increasing share of road transport.

- Modern trade prefers 'just-in-time' delivery of goods. Transport speed and flexibility are therefore of great importance. Despite congestion, road transport is often faster and more flexible than rail or water transport. Besides, due to spatial planning and infrastructure development, many destinations can only be reached by road and combined transport is only practised to a limited extent.
- The road sector is liberalised to a great extent, while the inland waterway and rail sectors have only relatively recently been opened up for broad competition.
- The average tonne of goods carried by road travels about 110 km (European Commission, 2001f), a distance over which rail or inland waterways are less efficient because road transport is needed to and from the points of loading. Moreover, in using multi-modal transport for such short distances valuable time will be lost due to lack of standardisation of loading units and convenient and fast connections between inland waterways and rail. For short sea shipping the average tonne of goods is carried over 1430 km (European Commission, 2001f). Here, time is less an issue. The low price of shipping is probably of overriding importance (see TERM 2002 20– Transport prices).

The lack of complete data for short-sea shipping and (to lesser extent) oil pipelines on country level hinders an assessment of trends in modal shares of all modes in the EEA-30. Nevertheless, the share in the 15 old member states (see figure 2) is large. Freight demand by short sea shipping grew 30 % over the last decade but its share nevertheless remains at about 40 %. However, short sea shipping does not include maritime transport between EU and non-EU destinations. If that were to be included, it would lead to a larger share of maritime transport, but unfortunately it is not recorded in the statistics.

The pattern of modal shares of freight transport seen in Europe is not universal for industrialised societies. The share of rail in the United States (see figure 3) is much larger, whereas the share of road is about half as big compared with Europe. It shows that low shares of rail and inland shipping are not inevitable and indicate that the targets of the CTP are within the limits of the possible. But Europe and the US are not directly comparable due to differences in geography, spatial planning, infrastructure use, and 'border trouble'. For example, many rail networks in United States only service freight transport, thereby avoiding a common cause of delays in EU – having to give way to passenger trains.





References

CE, 2002. Towards a more sustainable transport indicator. Critical assessment of the modal split as an indicator for the EU sustainability Strategy, CE, Delft 2002. http://www.cedelft.nl/eng/redirect/publ_rap_index.html

Environment Daily, 2004. *Tougher green checks urged for transport plans*. Environment Daily. Issue 1628, 15 March 2004. <u>http://www.environmentdaily.com</u>

European Commission, 2001a. Communication from the Commission – A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development (Commission's proposal to the Gothenburg European Council). Commission of the European Communities (COM(2001)264 final). Brussels, 15 May 2001 (<u>http://europa.eu.int/eurlex/en/com/cnc/2001/com2001_0264en01.pdf</u>)

European Commission, 2001b. *European transport policy for 2010: time to decide*. COM (2001) 370. White paper of the Commission of the European Communities. Brussels, Belgium, 12 September 2001 (http://europa.eu.int/comm/energy_transport/library/lb_texte_complet_en.pdf)

European Commission, 2001c. Proposal for a Directive of the European Parliament and of the Council on reporting formalities for ships arriving in and departing from Community ports (COM(2001) 46 final). Commission of the European Communities. Brussels, 7 February 2001 (http://europa.eu.int/comm/transport/library/com2001-46-en.pdf)

European Commission, 2002. *Towards an integrated European railway area.* Communication from the Commission to the Council and the European Parliament (COM(2002)18 final). Brussels, 23 January 2002 (<u>http://europa.eu.int/comm/energy_transport/en/lb_en.html</u>)

European Commission, 2003a: *EU Transport in figures - statistical pocketbook 2003.* European Commission Directorate General for Energy and Transport in cooperation with Eurostat. Brussels, Belgium (<u>http://europa.eu.int/comm/energy_transport/etif/index.html</u>).

European Commission, 2003b: *on the granting of Community financial assistance to improve the environmental performance of the freight transport system (Marco Polo Programme).* Regulation (EC) No 1382/2003 of the European Parliament and of the Council of 22 July 2003. (see website: <u>http://europa.eu.int/comm/transport/marcopolo/index_en.htm</u>).

Eurostat, 2004a, *Transport and Environment: Statistics for the Transport and Environment Reporting Mechanism (TERM) for the European Union.* Unpublished electronic update, January 2004.

Eurostat, 2004b, *Transport and Environment: Statistics for the Transport and Environment Reporting Mechanism (TERM) for the European Union.* TERM 11 (theme 8). Available on EIONET under "TERM 13 - Freight transport demand by mode ", March 2004.

Data

Table 1: Trends in freight transport modal shares in the EEA-30 (excluding short sea shipping and oil pipelines)

Unit: % of total tonne-km

| | 1992 | 1994 | 1996 | 1998 | 2000 | 2002 |
|------------------|-------|-------|-------|-------|-------|-------|
| Road | 70 % | 71 % | 74 % | 75 % | 76 % | 77 % |
| Rail | 24 % | 22 % | 20 % | 19 % | 18 % | 17 % |
| Inland waterways | 6.7 % | 6.7 % | 6.1 % | 6.2 % | 6.0 % | 6.0 % |

Source: Eurostat, 2004a

Table 2:Modals shares in freight transport in 2002 by country or region (excluding
short sea shipping and oil pipelines)

| Shares in 2002 | Road | Rail | Inland | |
|----------------|------|------|-----------|--|
| | | | waterways | |
| Austria | 66% | 29% | 5% | |
| Belgium | 78% | 11% | 11% | |
| Bulgaria | 63% | 33% | 4% | |

| Cyprus | 100% | 0% | 0% |
|----------------|------|------|-----|
| Czech Republic | 73% | 26% | 1% |
| Denmark | 92% | 8% | 0% |
| Estonia | 32% | 68% | 0% |
| Finland | 77% | 23% | 0% |
| France | 78% | 19% | 3% |
| Germany | 68% | 17% | 15% |
| Greece | 98% | 2% | 0% |
| Hungary | 67% | 31% | 2% |
| Iceland | 100% | 0% | 0% |
| Ireland | 97% | 3% | 0% |
| Italy | 90% | 10% | 0% |
| Latvia | 29% | 71% | 0% |
| Lithuania | 52% | 48% | 0% |
| Luxembourg | 90% | 6% | 4% |
| Malta | 100% | 0% | 0% |
| Netherlands | 62% | 3% | 35% |
| Norway | 85% | 15% | 0% |
| Poland | 61% | 38% | 1% |
| Portugal | 93% | 7% | 0% |
| Romania | 57% | 34% | 8% |
| Slovakia | 67% | 31% | 2% |
| Slovenia | 60% | 40% | 0% |
| Spain | 94% | 6% | 0% |
| Sweden | 66% | 34% | 0% |
| Turkey | 95% | 5% | 0% |
| United Kingdom | 90% | 10% | 0% |
| CC-3 | 86 % | 12 % | 2 % |
| EFTA-2 | 86 % | 14 % | 0 % |
| Old-15 | 79 % | 14 % | 7 % |
| New-10 | 61 % | 37 % | 1 % |
| EU-25 | 76 % | 17 % | 6 % |
| EEA-30 | 77 % | 17 % | 6 % |
| | | | |

Note: For region codes, see the 'Meta data' section 2 Source: Eurostat, 2004a

| Table 3: | Share of road by country or region (excluding short sea shipping and oil |
|------------|--|
| pipelines) | |

Unit: % of total tonne-km for country

| | 1992 | 1994 | 1996 | 1998 | 2000 | 2002 |
|----------------|------|------|------|------|------|------|
| Austria | 51.3 | 50.8 | 64.3 | 64 | 64.8 | 65.9 |
| Belgium | 73.1 | 76.7 | 76.4 | 75.1 | 77.4 | 77.8 |
| Bulgaria | 75.5 | 80.1 | 77.2 | 77 | 52.3 | 62.9 |
| Cyprus | 100 | 100 | 100 | 100 | 100 | 100 |
| Czech Republic | | 49.5 | 56.2 | 63.3 | 68.1 | 73.3 |
| Denmark | 91.2 | 91.5 | 92.4 | 91.2 | 92.2 | 92.3 |
| Estonia | 30 | 28.3 | 31.1 | 38.4 | 32.7 | 32.2 |
| Finland | 75.8 | 71.9 | 73.7 | 73.8 | 75.8 | 76.6 |
| France | 73.9 | 75.3 | 76.4 | 75.3 | 76 | 77.8 |
| Germany | 60.6 | 61.4 | 64.4 | 65 | 66.3 | 67.7 |

| Greece | 96 | 98.1 | 97.8 | 98 5 | 98.1 | 98.2 |
|-----------------|------|------|------|------|------|------|
| Hungon | | 60 | 61.3 | 65.0 | 69 | 66.6 |
| пипуату | | 00 | 01.3 | 05.0 | 00 | 00.0 |
| Iceland | 100 | 100 | 100 | 100 | 100 | 100 |
| Ireland | 89.1 | 90.2 | 91.7 | 94.6 | 96.2 | 97.1 |
| Italy | 88 | 87.1 | 89.2 | 89.1 | 88.9 | 90.3 |
| Latvia | 19.8 | 12.8 | 15.1 | 24 | 26.5 | 29.1 |
| Lithuania | 30.5 | 36.3 | 34.1 | 40.4 | 46.5 | 52.2 |
| Luxembourg | 79.9 | 79.7 | 79.7 | 83.4 | 87.8 | 90.4 |
| Malta | 100 | 100 | 100 | 100 | 100 | 100 |
| Netherlands | 62.7 | 62.2 | 64.2 | 63.8 | 63.4 | 61.9 |
| Norway | | | 81.7 | 83.6 | 83.5 | 85.1 |
| Poland | 41.8 | 40.9 | 45.3 | 52.9 | 56.9 | 61.3 |
| Portugal | 90.7 | 91.9 | 92.6 | 92.5 | 92.5 | 93.2 |
| Romania | 37.4 | 44 | 41.4 | 43.1 | 42.9 | 57.4 |
| Slovak Republic | | 47.7 | 53.8 | 57.8 | 62.9 | 67 |
| Slovenia | 52.1 | 49.5 | 57.9 | 57.1 | 65 | 59.8 |
| Spain | 90.7 | 91.5 | 90.2 | 91.7 | 92.8 | 94.1 |
| Sweden | 55.8 | 58.6 | 63.9 | 63.5 | 63.9 | 65.9 |
| Turkey | | 92 | 93.8 | 94.8 | 94.3 | 95.4 |
| United Kingdom | 89.6 | 92.2 | 91.6 | 90.8 | 90 | 89.7 |
| CC-3 | | 78.6 | 80.3 | 84.1 | 84 | 85.6 |
| EFTA-2 | | | 82.2 | 84 | 84 | 85.6 |
| Old-15 | 74.3 | 75.3 | 77.1 | 77.1 | 77.7 | 79 |
| New-10 | 42.2 | 44.4 | 48.4 | 54.6 | 58.3 | 61.3 |
| EU-25 | 69.2 | 70.6 | 72.6 | 73.6 | 74.7 | 76.3 |
| EEA-30 | 69.7 | 71.5 | 73.5 | 74.8 | 75.7 | 77.2 |

Note: total tonne-km includes freight by road, rail, and inland waterways. Insufficient data is available for maritime and pipeline transport. Note: For region codes, see the 'Meta data' section 2. Some gap filling has taken place to calculate the aggregate totals – see the Meta data section.

Source: Eurostat, 2004a

Meta data

Web presentation information

- Abstract / description / teaser: Instead of shifting freight transport to alternative modes (rail and inland waterways), the share of road transport is steadily growing.
- Policy issue / question:
 Is freight transport shifted from road to other modes?
- 3. EEA dissemination themes: Transport
- 4. DPSIR: D

Technical information

Eurostat, 2004a. *Transport and Environment: Statistics for the Transport and Environment Reporting Mechanism (TERM) for the European Union,* Unpublished electronic update, January 2004. Supplied by Graham Lock (Eurostat) in 'SI-freight-v15012004.xls

5. Description of data: Data contains the number of tonne-km by road, rail, and inland waterways. Also included: GDP: (Gross Domestic Product).

Original measure units: Tonne-km (a unit of measure of goods transport which represents the transport of one tonne by road over one kilometre; the distance to be taken into consideration is the distance actually run). GDP in constant 1995 prices (bn. Euro).

 Geographical coverage: old-15 (Belgium, Denmark, Germany, Greece, Spain, France, Ireland, Italy, Luxembourg, the Netherlands, Austria, Portugal, Finland, Sweden and the United Kingdom), new-10 (Cyprus, Malta, Czech Republic, Slovak Republic, Poland, Estonia, Lithuania, Latvia, Slovenia and Hungary), EFTA-2 (Iceland and Norway), and finally CC-3 (Turkey, Romania and Bulgaria) EEA-30 is all these countries combined.

- 7. Temporal coverage: Tonne-km: 1990-2002 (with gaps)
- 8. Methodology and frequency of data collection: Tonne-km, old-15: annually collected by a Common Questionnaire developed jointly by Eurostat, UNECE and ECMT. Tonne-km, new-10: Also collected by Eurostat; data previously very incomplete, but now improving.
- 9. Methodology of data manipulation, including making 'early estimates': Road, 1992-1994, Norway, Iceland, Cyprus, Malta: linear extrapolation based on adjoining years. Road, 1992, Slovak Republic, extrapolated from adjoining years assuming same trend as in neighbouring Poland. Road, 1992, Turkey: linear extrapolation based on adjoining years. Rail, 1992, Czech Republic, Slovak Republic: linear extrapolation based on adjoining years. Rail, 1992-94, Norway: Assumed equal to 1995 level. Inland navigation, Slovak Republic, Hungary, Czech republic, 1992: linear extrapolation based on adjoining years. GDP, 1992, Estonia: linear extrapolation based on adjoining years. GDP, 1992, Estonia: linear extrapolation based on adjoining years. A systematic error of 20 % (arbitrarily chosen) would lead to a 2 % error in the 1992 estimates for EEA-30, and 7 % in the 1992 estimates for new-10. Moreover, the basedata themselves are occasionally based on estimates from Eurostat or national authorities.

Quality information

- 10. Strength and weakness (at data level): Data for maritime transport does not include transport between EU and non-EU destinations, which is probably considerable.
- 11. Reliability, accuracy, robustness, uncertainty (at data level): Data is quite reliable
- 12. Overall scoring (give 1 to 3 points: 1=no major problems, 3=major reservations): 2 (data for maritime transport is lacking)

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

Accuracy: 2 (Tonne-km figures are estimated rather than measured, but are rather consistent between sources)

Comparability over time: 2 (1 for old-15 data, but new member states and applicant countries occasionally have breaks in time series)

Comparability over space: 2 (differences exist in methodology of what data is included)

Further work required

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

More recent and complete data is needed on short-sea shipping and may become available during 2004. Data on deep sea shipping would be a valuable supplement to the short sea data.

More comprehensive and reliable statistics for the ten new member countries is desired.

Comprehensive data on intermodal services could provide a clearer picture of trends in this subsector of transport, which would facilitate research and policy in this field