Technical specifications for call for tender EEA/ITS/02/005 Annex IIa

(Reference award criteria for areas of expertise 10.1 and 10.2 of call for tender for editing, copyediting, proofreading and indexing work)

Draft chapter from EEA report Environmental Signals 2002

4. Transport

Policy issue	Indicator	Assessment
Decoupling transport growth from economic growth	Passenger and freight transport volumes and GDP	☹
Shifting the balance between modes of passenger transport	Modal split in passenger transport	☹
	Passenger cars	☹
Shifting the balance between modes of freight transport	Modal split in freight transport	☹
Reducing use of resources and emissions that damage the environment	Transport eco-efficiency	☹
Shift to improved technologies	Cleaner technologies and fuels	☺
Internalise external costs	Real changes in the price of passenger transport	☹
Stimulating fuel efficiency	Real changes in fuel prices	😐

Current trends are away from achieving the EU's recently-announced objectives of breaking the link between economic growth and growth in transport, and also of returning to the 1998 market shares for rail, maritime and inland waterway transport in 2010. Alongside greater use of cars and planes, passenger transport is growing at a rate close to gross domestic product development, while freight transport grows much faster than GDP.

Lower occupancy rates and the use of heavier and more powerful vehicles have offset the improvements in energy efficiency of cars. Growth in energy use and greenhouse gas emissions from transport is jeopardising the EU's ability to meet its targets under the Kyoto Protocol on combating climate change. Despite advances in technology and fuels, in many cities air quality still poses health risks and further improvement is needed.

Whilst there are signs that several Member States are now moving towards tax structures that differentiate between the various transport modes reflecting their environmental costs, significant barriers to implementation remain.

Progress towards a more sustainable transport system has become imperative in the European Union (EU). Transport therefore features prominently in the EU's Sixth Environment Action Programme (European Commission, 2001a) and Sustainable Development Strategy (European Commission, 2001b). At its June 2001 summit in Gothenburg, the European Council singled out

the transport sector as one of the four priority areas where sustainability policy development must be put on a faster track.

An important policy development is the publication, end last year, of the White Paper "European Transport Policy for 2010: Time to Decide" (European Commission, 2001c). This proposes an action plan of sixty or so measures around four main themes:

- shifting the balance between modes of transport (improving the quality of the road sector, revitalising rail, controlling air transport growth and adapting maritime and inland waterway transport systems, linking up of transport modes);
- eliminating bottlenecks (developing the trans-European transport network);
- placing the users at the heart of transport policy (improving road safety, fair and efficient pricing through infrastructure charging and harmonisation of fuel taxation); and
- managing the globalisation of transport (linking the future Member States to the trans-European transport network).

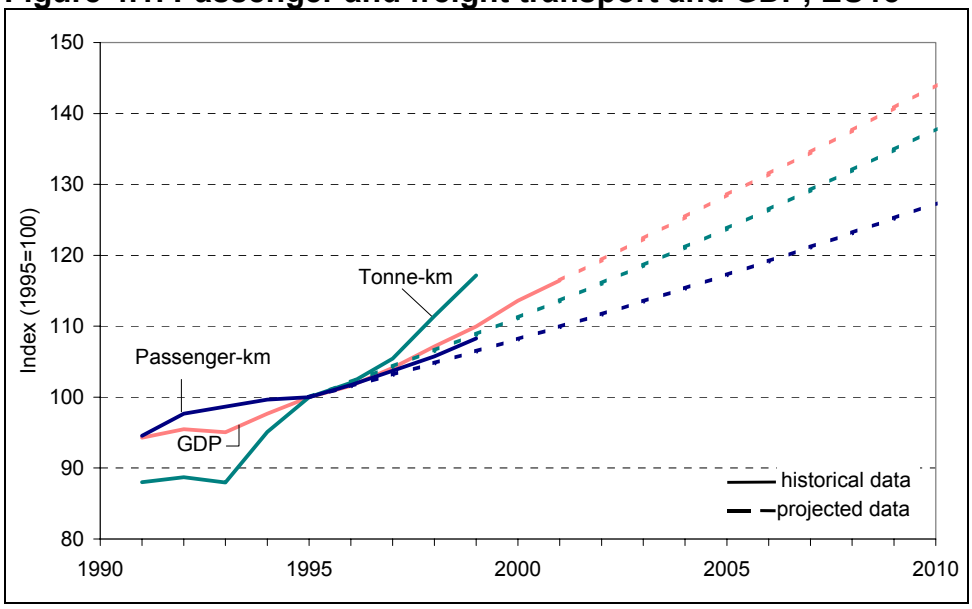
The proposed actions are focusing mainly on the objective of stabilising the modal shares at 1998 levels. The White Paper suggests that this would also result in decoupling of transport growth (in terms of vehicle-km) and GDP. However, no proper evaluation has been made of the effectiveness of the proposed measures, nor of their environmental gains.

Achieving progress requires better integration of environmental considerations into all areas of transport policy-making. To monitor progress made in this field the Transport and Environment Reporting Mechanism (TERM) has been established providing a regular indicator-based report through which the effectiveness of transport and environment integration strategies can be assessed (EEA, 2001).

[*Pressure of sectors on transport* - Summary box – to be added]

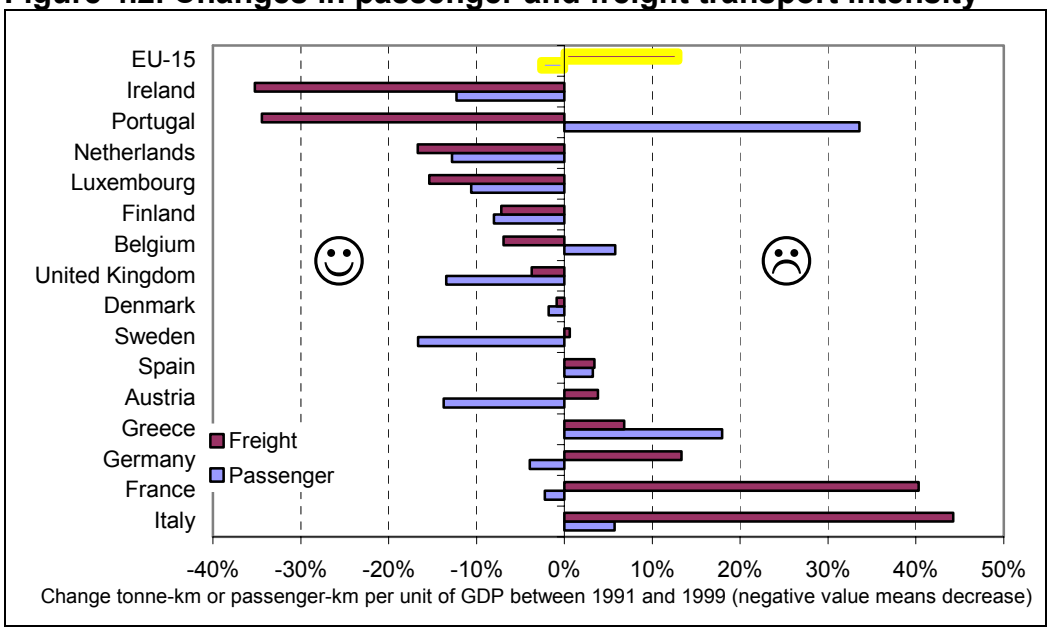
4.1. Passenger and freight transport volumes and GDP

Figure 4.1. Passenger and freight transport and GDP, EU15



Note: Passenger transport excludes motorcycle and inland waterway transport due to lack of historical data, and tram/metro since these modes are not included in the projection model PRIMES. For the same reason, short-sea shipping and air transport are not included in freight transport.
Source: Eurostat; European Commission.

Figure 4.2. Changes in passenger and freight transport intensity



Note: Passenger transport includes passenger car, bus/coach, rail, tram/metro, air (domestic) - Freight transport includes road, rail, inland water and oil pipelines
Source: Eurostat
[Designer: EU15 bars in order and outstanding]

Both passenger and freight transport (in passenger-km and tonne-km respectively) grew faster than projected between 1995 and 1999. EU enlargement is expected to result in significant added growth of passenger and freight transport in present decade.

Passenger transport grew at the same pace as GDP between 1991 and 1999. The total number of passenger-km travelled in the EU (excluding waterborne, motorcycles, walking and cycling) has

increased from 4 100 billion in 1991 to more than 4 600 billion in 1999. The data for aviation includes domestic and intra-EU aviation only. If extra-EU aviation, motorcycle and waterborne transport are included, growth in passenger transport (2.1 % per year) outstripped that of GDP growth.

The strong linkage between passenger transport demand and economic growth follows from people spending more or less the same share of their disposable income on transport (around 11 to 12%). Additional travel budget allows more often, further, faster and more luxurious travelling. Infrastructure development not only facilitates travelling, but also engenders additional traffic. As a consequence, people are able to live further away from every day destinations like schools, shopping and sporting facilities (urban sprawl) while at the same time these every day destinations are being located further away from city centres due to ill spatial planning (see Chapter 14).

Future passenger travel is expected to grow less than income, because of limitation of the average speed of travelling (due to safety concerns and congestion) and the assumption that people have a fixed time budget for travelling. Also, the strong growth in car ownership in current Member States is expected gradually to level out, because of saturation of roads and car ownership. However, this will not be the case in the candidate countries.

Freight transport (in tonne-km) in the EU increased by almost 30% between 1991 and 1999 at an average rate of 3.3% per year and is thus growing much faster than GDP (1.9% annually over the same period), due largely to globalisation of the economy and the liberalisation of the internal market. This leads to more complex production and trading networks, and thus greater distances. Also, loading factors decreased, amongst others as a result of 'just-in-time' deliveries: empty runs account for between 25 and 40% of total vehicle-km (based on data from Germany, The Netherlands and the UK).

The main assumption for the projected decoupling of freight transport demand and economic growth is a gradual shift away from industry towards a knowledge-based economy. However, the above-mentioned factors could counterbalance any benefits from this shift, as appears to been happening in most recent years. Again, enlargement of the EU is expected to increase transport flows, and in particular road haulage traffic.

Smiley box

☹ The objective to gradually break the link between economic growth and transport growth has not yet been achieved. Passenger transport demand has grown in the same pace as the economy, while freight transport even outstripped economic growth.

Quality information

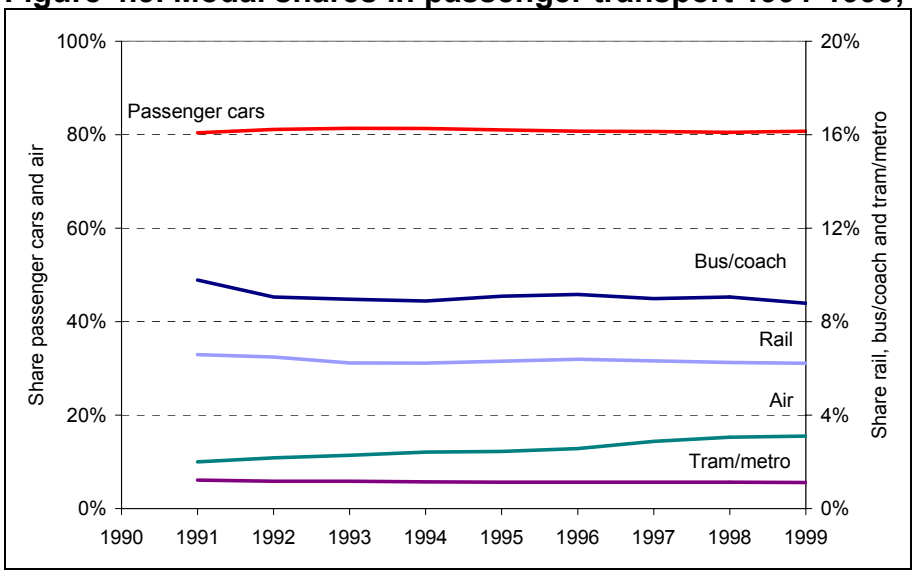
2: Data on passenger-km and tonne-km are calculated rather than directly measured and some modes are excluded due to a lack of historical data.
[Note that the above score has been generated for Signals 2002 as quality scores not available in factsheets]

Weblinks

[To be added]

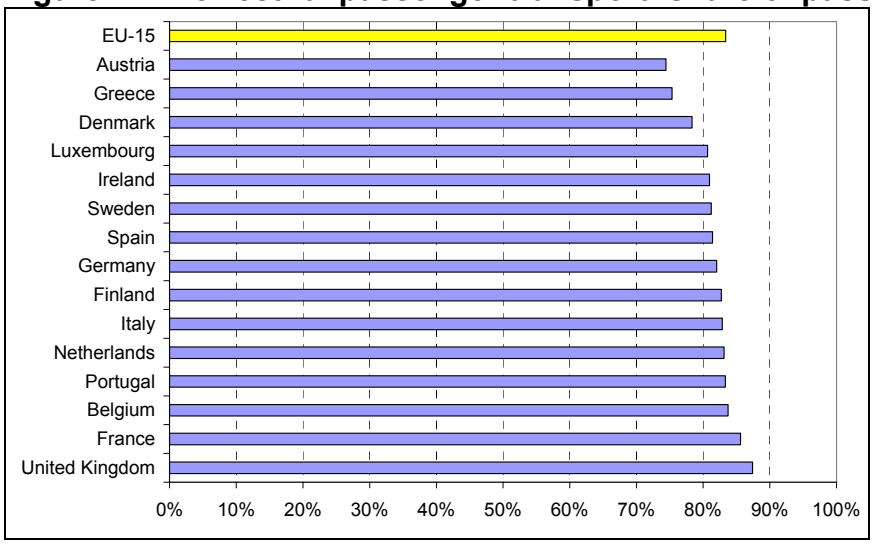
4.2. Modal split in passenger transport

Figure 4.3. Modal shares in passenger transport 1991-1999, EU15



Note: shares are calculated by using the modes shown in the graph. No sufficient data is available on motorcycle or waterborne transport. Aviation includes intra-EU and domestic only
Source: Eurostat
[Designer: split into two small graphs for each of the Y-axis]

Figure 4.4. Terrestrial passenger transport: share of passenger car transport, 1999



Note: modes included: car, bus/coach, rail and tram/metro (inland waterways and motorcycles left out due to missing data, aviation left out due to difficulties in allocating air transport volumes to countries). [1990-99 data? If yes, will replace graph]
Source: Eurostat
[Designer: EU15 bar in the order and outstanding]

By adopting the White Paper the Commission has proposed various measures with the aim of stabilising modal shares at 1998 levels by 2010, and shifting this split from then onwards. It is, however, unclear how far the proposed measures will contribute to achieving the modal stabilization, and what the extent of the environmental gains will be if stabilisation is reached.

The share of passenger car transport slightly increased from 80 to 81% between 1991 and 1999, while the share of domestic and intra-EU aviation rose from 2 to 3%. Growth in both modes resulted in a 2% decrease in the share of land public transport (rail, bus/coach and tram/metro) to

16% in 1999. In some Member States (Austria, Germany, Luxembourg, Spain, Sweden and the United Kingdom) the share of car transport in inland transport is, however, declining.

The main underlying factors for the observed developments in passenger modal split are:

- private transport is yet to a large extent faster and more flexible than public transport and is considered to be more luxurious than public transport (as the car is still seen as a symbol of wealth);
- inefficient pricing (i.e. prices that do not fully reflect all costs to society and the environment) has made both private and public transport relatively cheap. The mode choice for a trip based on economical considerations will favour private transport;
- investments have been mainly directed towards road, as a response to problems of traffic bottlenecks (Environmental signals 2001, section 5.5). Public transport received only a small part of all investments (high-speed rail being a notable exception). As a consequence, road (i.e. private) transport has gained in speed and flexibility over public transport. Some destinations can only be reached by private transport.

The increasing share of air passenger transport is a result of growth in both tourism and business travelling. Between 1990 and 1999 the number of international tourist arrivals in Europe, which can be used as a proxy indicator for tourism and business related passenger-km increased by almost 40% (WTO, 2000). The emerging high-speed rail services are already altering this trend on some intercity connections: the market share for flying between Madrid and Seville fell from 40 to 13% with the entry into service of the Spanish high-speed train (European Commission, 2001), and Air France eliminated flights between Paris Charles-de-Gaulle and Brussels. Airports more and more see high speed rail as a complementary mode to reduce short distance flights, and thus to free more slots for long distance flights, which are often more profitable.

[Possible Green Box: Innovative solutions to transport problems - Multi Modal approaches (e.g. specific examples of the role of "Multi-Modal Studies" in the UK and/or Finland/Sweden (elsewhere?) in coming up with innovative solutions)]

Smiley box

☹ Passenger transport continues be dominated by car (81% of the total), but air transport is now the fastest growing mode. The share of the more environmentally friendly modes (bus/coach, rail and tram/metro) continued declining, challenging the Common Transport Policy's target.

Quality information

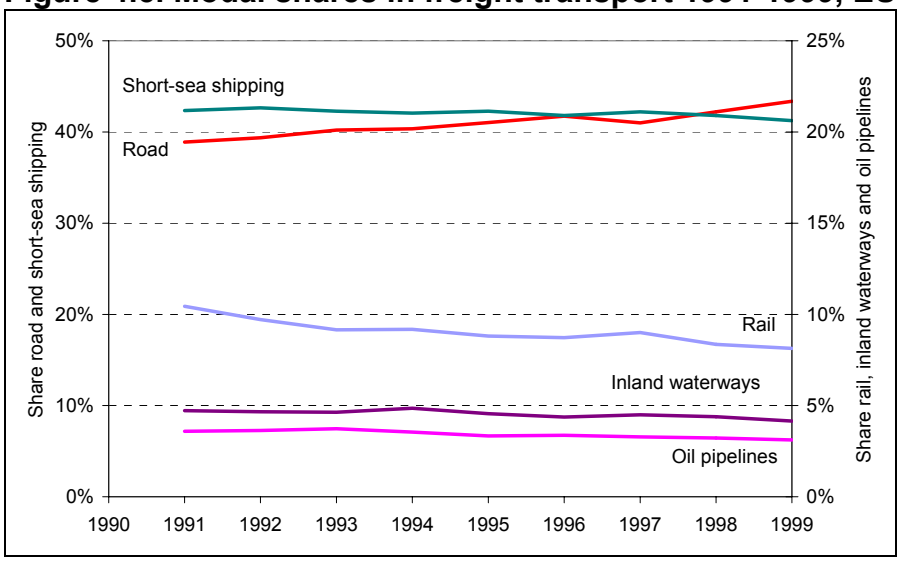
2: Motorcycle and waterborne modes are excluded due to a lack of data.
[Note that the above score has been generated for Signals 2002 as quality scores not available in the factsheet]

weblinks

[To be added]

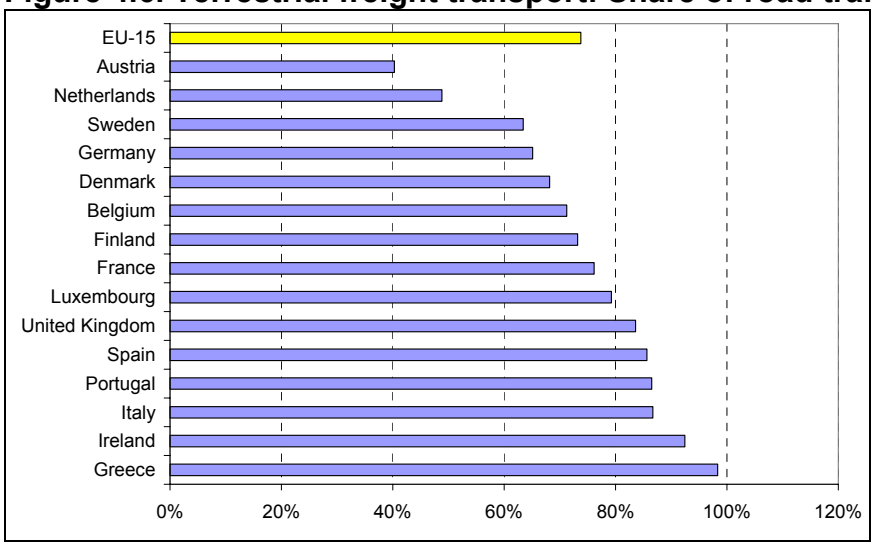
4.3. Modal split in freight transport

Figure 4.5. Modal shares in freight transport 1991-1999, EU15



Note: Shares are calculated by using the modes shown in the graph
Source: Eurostat
[Designer: split into two small graphs for each of the Y-axis]

Figure 4.6. Terrestrial freight transport: Share of road transport



Note: only road, rail, inland waterways and oil pipelines are included (short-sea shipping left out due to missing country breakdown and difficulty of allocating transported volumes to countries). [1990-99 data? If yes, will replace graph]
Source: Eurostat
[Designer: end figure at 100%]

The White Paper includes the target of returning the modal split in 2010 to the level of 1998 and shifting this split from 2010 onwards. Between 1991 and 1999 road freight transport share in total freight transport rose from 39 to 43% (80% of total tonnes transported in 1996, European Commission, 2001e). It is the fastest growing mode of transport (4.7% per year), followed by short-sea shipping (2.9%). The shares of rail, inland waterways and oil pipelines all decreased.

The preference for road can be explained by the following factors:

- Modern trade demands 'just-in-time' delivery of goods. Transport speed and flexibility are therefore of great importance. Despite congestion, road transport is often still faster and more flexible than rail or water transport;

- The road sector is liberalised to a great extent (with relatively low prices), while the rail sector is just starting to open up;
- The average tonne of goods carried by road travels 110 km (European Commission, 2001e), a distance over which rail and inland waterways are less efficient because road transport is still needed to and from points of loading. Moreover, efficient multi-modal transport is still often hampered by lack of close connections between sea, inland waterways and rail and standardisation of loading units.

For longer distances, short sea shipping has become quite successful in some parts of the EU. Also, the recently adopted railway package, aiming at full liberalisation of the rail freight market, together with the Commission's intention to create a dedicated rail freight network, should revitalise the rail freight sector and make it an attractive competitor to road. However, growing concerns are being expressed concerning the environmental performance of shipping (in particular related to its high emissions of acidifying substances) and rail (in particular related to noise).

Appropriate infrastructure pricing and internalisation of external costs (see section 4.8) is an important prerequisite for modal shifting, since commercial enterprises will search for the least expensive and fastest transport mode. Switzerland has sought to decouple economic growth from a growth in freight by introducing a differentiated kilometre charge, to replace current fixed charges and to internalise external and infrastructure costs on 1 January 2001. Several countries such as Germany and Austria are planning introduction of a similar charge by 2003.

[Possible Green Box: Switching freight to more environmentally friendly modes – some examples (Kraft Foods and IKEA) or European Commission's Marco Polo funding for freight intermodality]

Smiley box

☹ The share of road freight transport has grown at the expense of rail, contrary to the EU's objective to shift towards more environmentally friendly modes. Road freight and short sea shipping remain the main freight transport modes, accounting for 85% of the tonne kilometres travelled.

Quality information

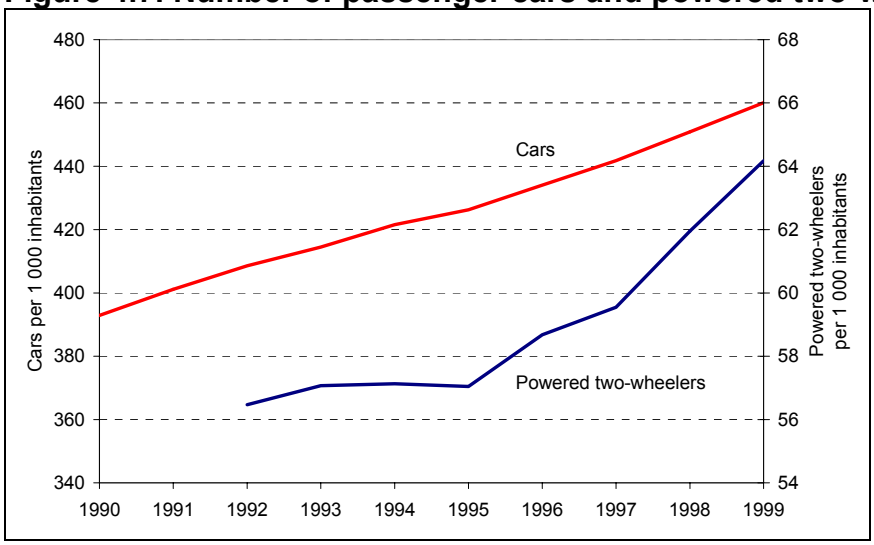
2: Some data are lacking for individual countries.
[Note that the above score has been generated for Signals 2002 as quality scores not available in the factsheet]

weblinks

[To be added]

4.4. Passenger cars per

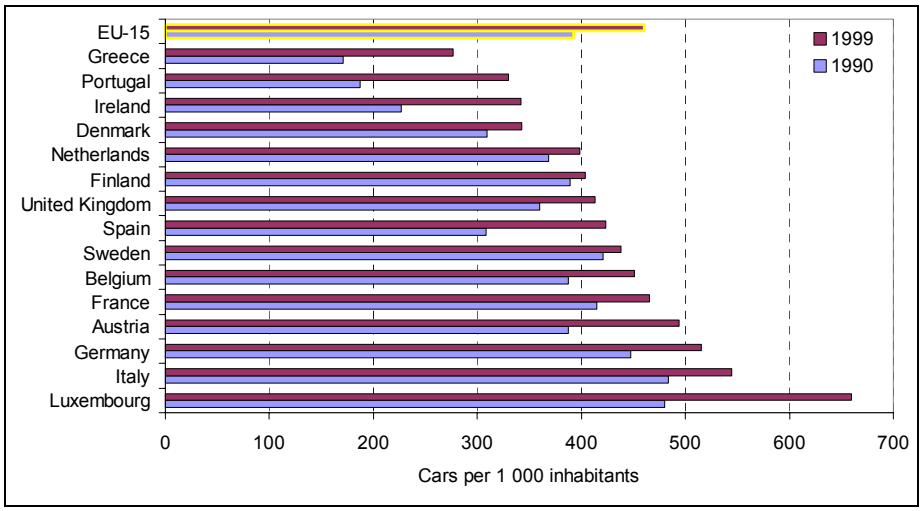
Figure 4.7. Number of passenger cars and powered two-wheelers, EU15



Source: European Commission

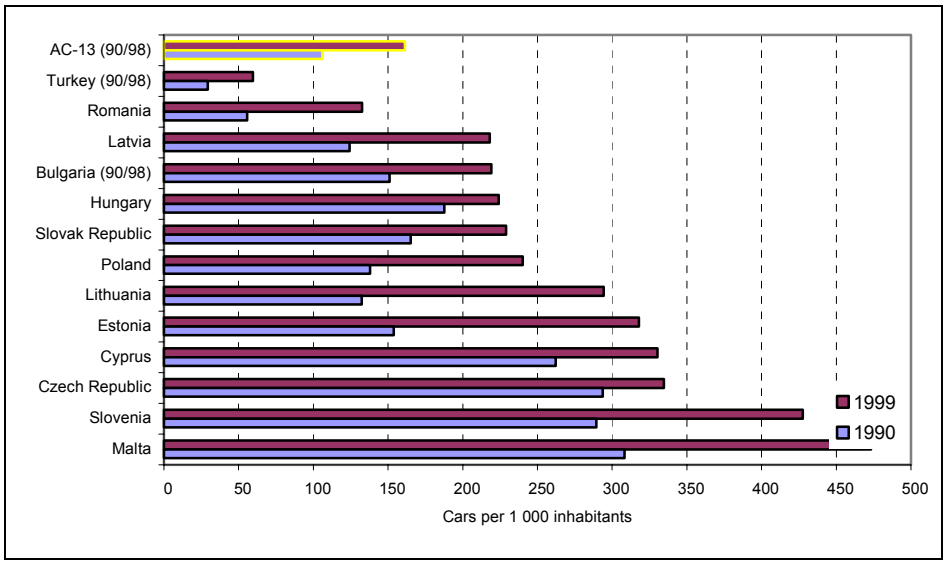
[Designer: two smaller diagrams; signature on Y-axis to mark non-zero axis]

Figure 4.8. Number of passenger cars by EU Member States and Accession countries



Source: European Commission

[Designer: EU15 bars in order and outstanding]



Source: UNECE

[Designer: Y-axis identical to EU15 graph]

The number of passenger cars in Europe has increased by almost 30 million between 1990 and 1999, corresponding with a per capita increase of 17% to 460 cars per 1 000 inhabitants. This represents an average annual growth rate of 1.8%, which is slightly higher than that of GDP per capita (1.6%).

The main factors underlying the strong link between the numbers of cars per capita and GDP per capita are:

- decreased accessibility by alternative modes to every day destinations (like shopping, work and leisure) due to urban sprawl and ill spatial planning;
- an increasing number of households (see Chapter 3), many of which need a car to reach every day destinations since public transport cannot provide the required accessibility. Moreover, an increased number of double-income families, requiring transport flexibility for both partners, stimulated car ownership even more;
- the car (and increasingly the powered two-wheeler as well) is still seen as a symbol of wealth and considered more convenient than using public transport.

In those countries with high levels of car ownership, the growth in car ownership is slowing as households may need one or two cars, but generally not more. In contrast, countries with lower numbers of cars per capita show rapid increases in vehicle ownership. For example, in 1990, the lowest levels of car ownership were found in Greece and Portugal with these countries having the highest increases in car ownership between 1990 and 1999. On the contrary, in Denmark and the Netherlands, countries with a relatively low car ownership, growth was small, whereas in Luxemburg, with the highest car ownership in the EU, growth was high. For the 13 EU pre-accession countries, the growth in car ownership between 1990 and 1999 was, on average, more than 52%.

The number of powered two-wheelers is increasing rapidly. The strong growth is of great concern, since emission limits for powered two-wheelers are much less strict. New emission standards will however come into force as from 2003.

Smiley box

☹ The level of car ownership is rising rapidly, especially in countries with relatively low car ownership levels, pushing the modal split in passenger transport towards road. The strong

increase in powered two-wheelers is worrying.

Quality information

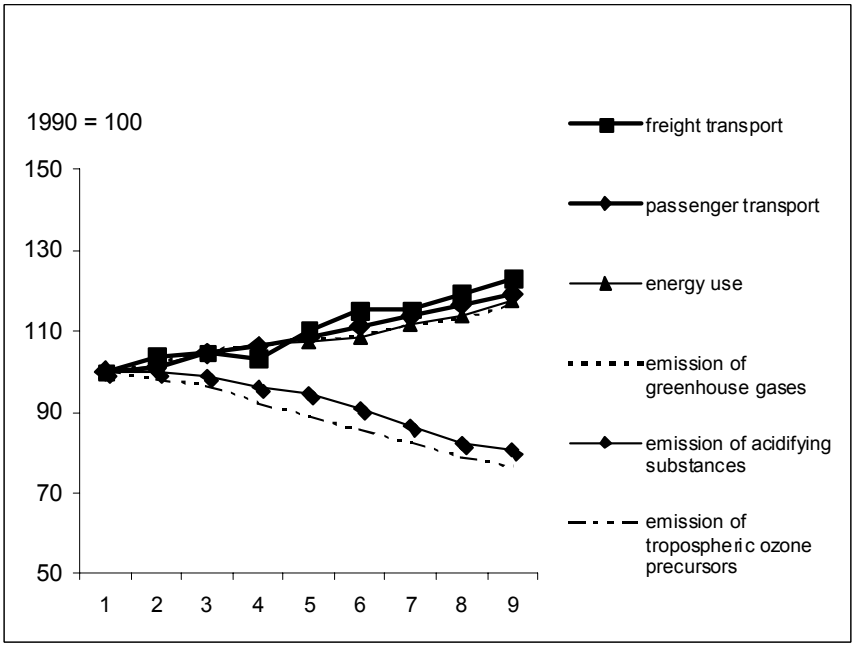
[To add a quality score and comment in relation to the EC 2001e source]

Weblinks

[To be added]

4.5. Transport eco-efficiency

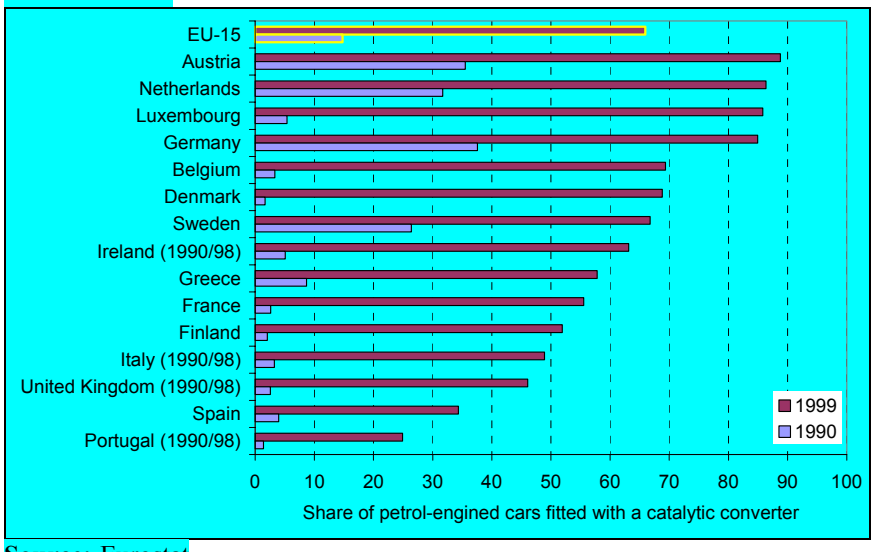
Figure 4.9. Some indicators of the eco-efficiency of transport, EU15



Note: Passenger transport includes travel by motorbike, car, bus, tram / metro, rail, water and air. Freight transport: includes freight by road, rails, inland waterways, short sea shipping, oil pipelines, and air.
Sources: EEA; Eurostat.
[Designer: Y-axis to start at 40 to ensure comparibility with Fig 3.1, 5.3 & 6.1]

[Note that the graph above and the following text is from Signals 2001 pending a shortened re-write if 1999-2000 data from Eurostat becomes available.

Figure 4.xx. Estimated share of petrol cars fitted with catalytic converter 1990 and



Source: Eurostat
[design note: label x axis with a % sign and add country names in full. Place EU15 bar in sequence]

Transport is the fastest-growing energy consumer in the EU: energy use since 1985 increased by 47%, compared with 4.4% for the remaining economic sectors. More than 30% of final energy in the EU is now used by transport. The energy efficiency of passenger transport (and thus its

specific carbon dioxide emissions) has improved only slightly, following technological improvements. There have been no improvements in the energy efficiency of freight transport. The discrepancy between improvements in technology and actual energy efficiency is partly the result of the use of heavier and more powerful vehicles and low occupancy rates and load factors.

In 1998, road transport contributed 20% of total carbon dioxide emissions. The voluntary agreement of the Commission with the car industry on the reduction of carbon dioxide emissions of new cars has led to a reduction of almost 6% in emissions from new cars between 1995 and 1999. However, all three cooperating car manufacturing associations (Europe, Japan, Korea) will have to increase their efforts if the final target of the agreement for 2010 is to be met.

Road transport is also a small but growing source of nitrous oxide emissions, a side-effect of the fitting of catalysts to passenger cars. Nitrous oxide emissions from transport almost doubled between 1990 and 1998 to 7% of total emissions. A substantial further rise is expected by 2010. However, since transport is not a large source of nitrous oxide, this will not have a major impact on the overall trend of greenhouse gas emissions.

Emissions from international shipping are currently not included in national inventories, but it is estimated that shipping in European waters contributed 24% of total sulphur dioxide emissions and 22% of total nitrogen oxide emissions from EU15 countries in 1998.

Between 1990 and 1998, EU greenhouse gas emissions from international transport (based on fuel sold in the EU to ships and aircraft engaged in international transport) increased by 33% to reach 5% of total EU emissions. These emissions are not addressed under the Kyoto Protocol, but the International Civil Aviation Organisation and the International Maritime Organisation are currently examining reduction options.

Transport is responsible for more than half of emissions of tropospheric ozone precursors and more than 20% of emissions of acidifying substances. There were significant reductions in emissions of tropospheric ozone precursors (by 25%) and acidifying substances (by 20%) from the sector between 1990 and 1998, due primarily to the introduction of catalysts in new petrol-engine cars and stricter regulations on emissions from diesel vehicles. Without these measures, nitrogen oxides emissions from traffic in the EU would have been 50 % higher in 1998.

The rate of penetration of new technologies is highly correlated with the average lifetime of vehicles and the average age of the fleet. Estimates based on the numbers of cars fitted with catalytic converter suggest that it takes at least ten years for a new technology to penetrate the entire car fleet. The proportion of trucks and aircraft that comply with new higher emission standards is even lower than for cars, mainly because of the relatively high lifetimes of these vehicles. For example, in 1998 10% of the commercial aircraft fleet were more than 20 years old.

In 1999, 63% of petrol-driven cars had catalytic converters, with wide variations between Member States. Although many Member States had already encouraged the use of catalysts in cars before 1990, Directive 91/441/EEC (introducing the Euro I standard) made it happen in all Member States. The gradual increase in sales of diesel passenger cars in some European countries contributed further to a reduction in nitrogen oxide emissions, particularly in Austria, Belgium, Germany, France and the Netherlands. The introduction of stricter emissions standards in 1996 and 1997 (Euro II for passenger cars, light- and heavy-duty vehicles) has also contributed to the reduction in nitrogen oxide emissions.

The introduction of unleaded petrol is a major success story in the EU (total inland deliveries rose from 0% in 1985 to over 80% in 1999). It is expected that leaded petrol will be completely phased

out by 2005. The objective of switching to less environmentally harmful fuels has thus been achieved. Many member states now also encourage the use of low sulphur petrol and diesel.

Despite efforts at the EU level to promote alternative (electricity, natural gas, fuel cells) and renewable energy sources (biofuels) for transport, these still have a low penetration. However, the share of LPG and natural gas in total energy consumption by road transport has been rising from 1992 to 1998 and dropping in 1999. Although alternative fuels still account for only a small fraction of total fuels sold, their usage is increasing.

Smiley box

☹ As a consequence of the drastic growth in transport, and the shift to road and aviation, carbon dioxide emissions from the transport sector are continuing to grow.

☺ Cleaner technologies, notably the introduction of three-way catalysts resulted in an absolute decoupling of the emissions of acidifying substances and ozone precursor substances from transport development. There is however approximately a ten year time lag for technological improvements to have an effect on reducing environmental pressures.

Quality information

2: A vehicle de-registration procedure would be needed to identify more precisely the actual share of the fleet complying with certain emissions standards.

Smiley box

Quality information

[To be added]

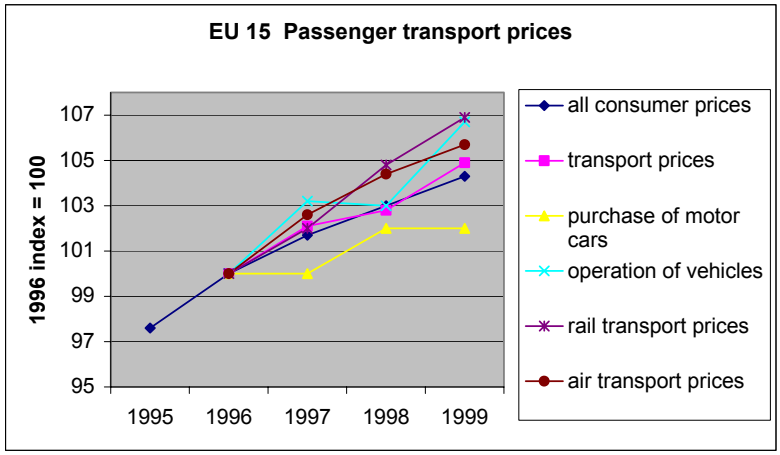
weblinks

[To be added]

4.6. Real changes in the price of passenger transport

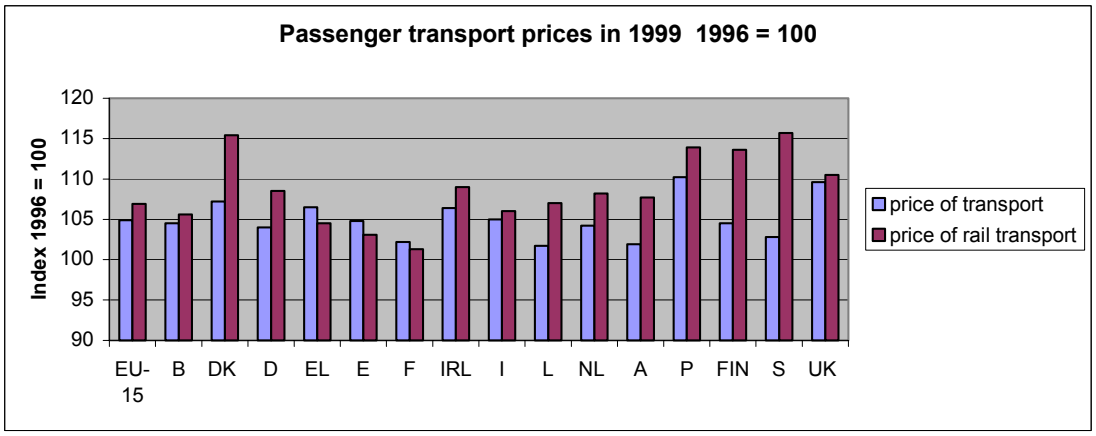
[Note - More data may become available from CE DELFT]

Figure 4.10. Passenger transport prices, EU15



Source: Eurostat

Figure 4.11. Passenger transport prices in 1999 relative to 1996



Source: Eurostat

[Designer: switch axes to make horizontal bars. Country names in full. Change country order to run from those with least gap to those with most and place EU15 bar in sequence]

European policy action on transport pricing is attempting to influence businesses and citizens to make decisions through price signals by ensuring that transport prices reflect all relevant costs and address efficient charging for transport infrastructure (European Commission, 2001c). Internalising external costs requires that:

- The price of transport services should include the marginal external cost imposed on society (accidents, congestion and environmental impacts, that in most cases do not have any direct market evaluation);
- When the price of a transport service does not comply with the principle defined above, the public authority should introduce efficient policy tools to achieve this result (e.g. through taxes and charges, or subsidies, or through setting tradable polluting permits).

Most Member States are considering refocusing transport related charges and taxes to internalise external costs but there are difficulties in determining the most appropriate tax framework and charging and taxation levels and strong objections from automobile lobbies. Existing

internalisation measures concentrate on air pollution from road transport and noise emissions from aviation. The internalisation of environmental costs by public transport remains an issue.

Between 1995 and 1999 rail transport prices have risen more than the general consumer prices index and also more than the average price of all transport modes across most countries. Indeed in the UK and Denmark, for example, the gap between the average price of car transport and the average price of collective transport (bus and train) has increased during the last 20 years. Freight transport prices, in The Netherlands, have also been decreasing in real terms.

These trends favour neither a wider use of public transport nor a decoupling of transport volumes from economic growth. Inequitable pricing structures across modes therefore remain a major barrier to encouraging a shift in modes, shifts of demand away from peak periods and increases in occupancy rates.

Smiley box

☹ The price of rail and other public transport has increased more than the price of car transport. This has not encouraged the use of the more environmentally-friendly modes.

Quality information

2: Further work is required to enable a comparison to be made taking into account differences in purchasing power across countries.
[Note that the above score has been generated for Signals 2002 as quality scores not available in the factsheet]

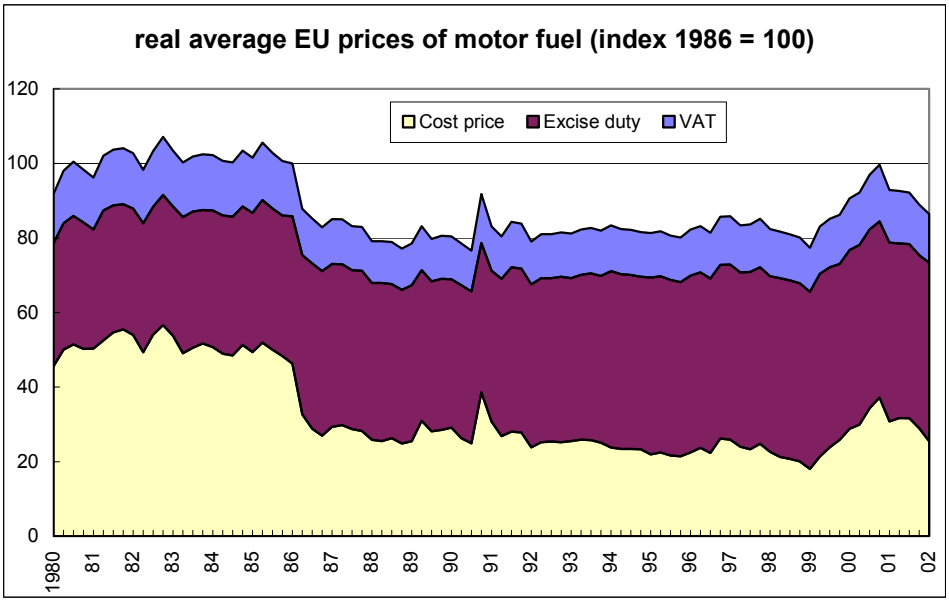
Weblinks

[To be added]

4.7. Real changes in fuel taxation

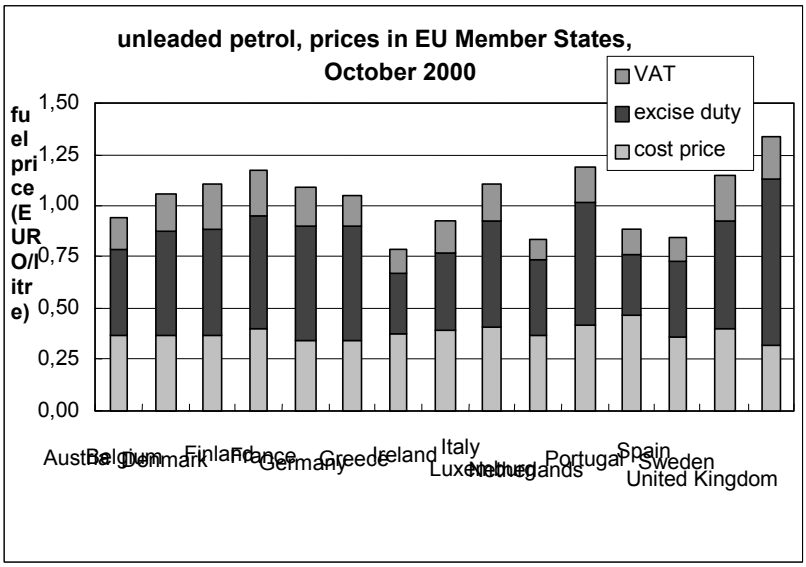
[Note - More data may become available from CE DELFT]

Figure 4.12. Real average prices of motor fuel, EU15



Note: Index 1986 = 100
Source: Eurostat (processed by CE Delft)
[design note: write years in full i.e. 1985, 2000]

Figure 4.13. Unleaded petrol prices in October 2000



Source: Eurostat, 2001

[design notes: switch axes to make horizontal bars. Replace commas with full stops in y axis numbering. Re-order from lowest to highest on excise + VAT. Colour and key need attention]

Fuel taxation remains the only pricing instrument used throughout the EU that is related to vehicle usage. Road pricing schemes are also related to vehicle usage, but their application is limited to motorways in some Southern European countries (e.g. France, Italy) and to some urban situations.

Fossil fuel consumption is directly linked with carbon dioxide emissions, the primary greenhouse gas. Therefore fuel taxes, originally instruments of fiscal policy, are increasingly seen as instruments to reduce greenhouse gas emissions and minimum tax levels have been promoted by the EU (European Commission, 1997) and through the European Climate Change Programme (ECCP) (see also Chapters 6 and 9). Until now fuel taxes have been mainly used to promote cleaner fuels and improved fuel efficiency. In this context, several Member States are using taxation to promote low or ultra-low sulphur fuels to attain the standards set for the 2005 by Directive 98/69 (see Chapter 16).

Despite the fact that nominal fuel prices, and certainly nominal fuel taxes, have been rising over the past two decades, and despite the spike in fuel prices during the last months of 2000, the inflation-corrected EU average price of road fuel in October 2000 was lower than in the first half of the 1980s. This has been caused by:

- pre-tax fuel prices being slightly lower in real terms than 20 years ago; and
- a move to cheaper fuels: the fuel 'mix' has moved from the relatively expensive leaded petrol to the cheaper unleaded petrol and diesel fuel;

The UK, France and The Netherlands experienced an increase in the real price of both unleaded petrol and diesel compared with 1980-1985. Italy, Greece and Denmark had substantially increased diesel prices, but decreased petrol prices; Portugal and Ireland saw decreased real prices of both unleaded petrol and diesel. Complete data for Austria, Sweden and Finland were not available for the period.

Research has suggested that a 1% increase in the petrol price will, in the long run, reduce petrol consumption and hence carbon dioxide emissions by 0.4 to 1.0%, compared to the situation where prices do not change (Goodwin, 1992; Johansson et al., 1997; Hager Bailly, 1999). This reduction is due mainly to the increased attractiveness of fuel-efficient vehicles.

[Possible green box: the introduction of differential taxation for new fuel types (e.g. LPG in the UK)]

Smiley box

😐 Current trends in fuel prices do not encourage fuel-efficient driving, but tax differentiation helps to promote the use of cleaner fuels.

Quality information

[No quality scores given in factsheets].

weblinks

[To be added]

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