

## 8. Policy measures in the transport sector

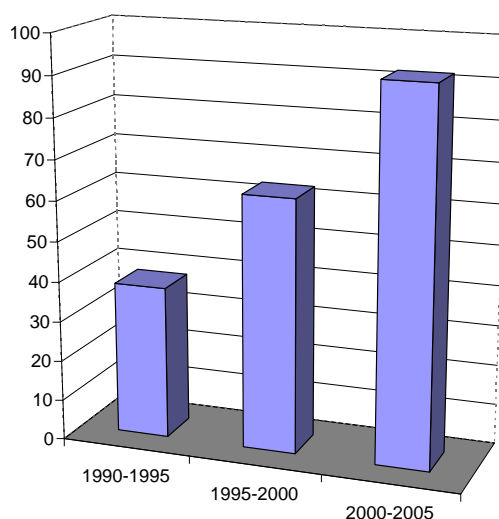
In the chapter on energy efficiency trends in transport, it was shown that increase in energy consumption of this sector slowed down after 2000 in the EU-15 and stabilised or even decreased in some countries. It was argued that, to a large degree, this resulted from the sharp price increase in oil in 2000 (+80 % compared to 1999), but in several countries, energy efficiency measures also helped to enhance this trend. In this chapter we will therefore try to discover which energy efficiency measures were implemented in the EU which were able to achieve such results and which types of measure contributed most to this trend. It is generally thought that new technologies are the main way to improve energy efficiency in the transport sector and that measures should therefore be directed towards promoting such technologies. Nevertheless, measures influencing behaviour or spatial planning are also very important. Transport policies are not easily identified: there are many local and regional aspects of transport policies which are not reflected in the MURE database. Further, it is difficult to separate classical transport policies affecting infrastructures (which are not targeted in MURE) from energy efficiency policies. The same is true for the effect of general environmental policies on transport and their relevance for the transport sector.

### 8.1. Patterns and dynamics of energy efficiency measures

#### Increasing number of transport measures in the last 15 years

The number of measures in the transport sector increased continuously in the period 1990 to 2005 (**Figure 8-1**) which may partially explain the fact that the energy consumption of this sector has started to slow down or even stabilise. This development reflects the growing attention paid by governments to this important sector.

**Figure 8-1: Evolution of the number of measures in the transport sector (EU-15)**

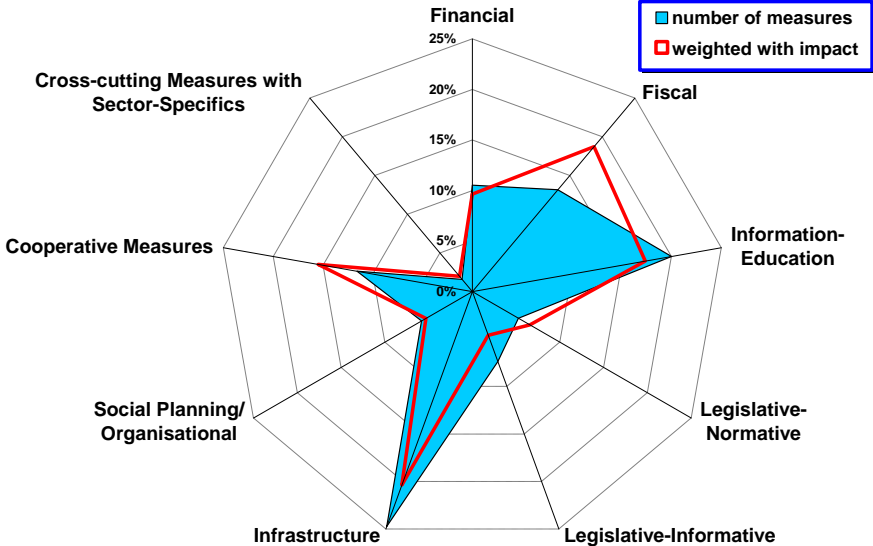


#### The main focus in transport is on infrastructure measures and information/education

Which types of measures have been implemented? Measures to improve public transport infrastructures have been the most frequent energy efficiency measures in the EU-15 transport sector in the period 1990 up to the present (**Figure 8-2**). However, information/education

measures, cooperative measures (voluntary or negotiated agreements to reduce energy consumption) and fiscal measures are also quite widespread. If the differences in impact are taken into account (see the introduction for how impacts are derived), fiscal measures appear to be at least as important as infrastructure measures.

**Figure 8-2: Measure types and their impacts in the transport sector since 1990 (EU-15)**



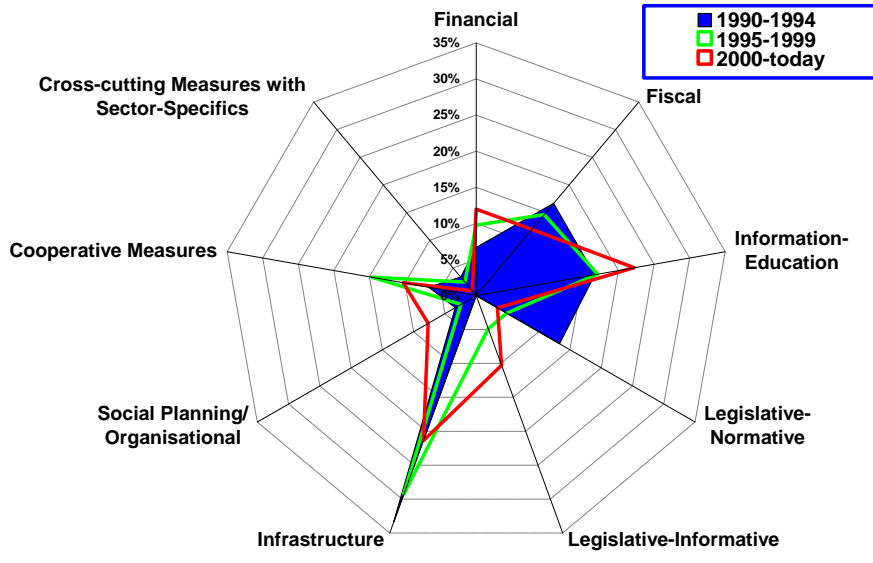
There are differences among the countries with respect to how the types of measure are weighted although the general picture shown above is quite common. There are a few exceptions, such as Finland, which has a dedicated focus on information/education measures; other countries may lack fiscal or financial measures.

**Recently, there have been fewer fiscal measures used for transport, even though these have the highest impacts**

The dynamics of measures over time (**Figure 8-3**) reveals that the relative importance of infrastructure and fiscal measures tends to decrease over time, while the importance of legislative-informative measures (labelling of car fuel consumption/CO<sub>2</sub> emissions), information/education measures and financial measures (subsidies for cleaner cars) has been growing.

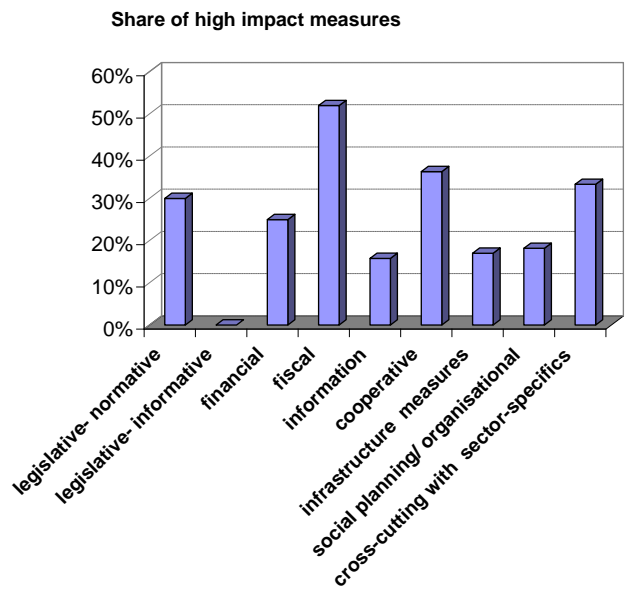
Cooperative measures (e. g. voluntary agreements, in particular the ACEA/JAMA/KAMA agreement on the reduction of CO<sub>2</sub> emissions from cars) had the largest relative impact in the second half of the last decade.

**Figure 8-3: Development of measure types over time in the transport sector (EU-15)**



As far as the impacts are concerned (**Figure 8-4**), fiscal measures have the largest share of high-impact measures. Over 50 % of these measures are considered to have a high impact. It appears that countries with significant fiscal or cross-cutting taxation measures such as Germany seem to have had more success in limiting transport energy consumption. The impacts from cooperative measures and legislative-normative measures (speed-limits) are also high, whereas the impacts of infrastructure measures, information/education measures and social planning measures (e. g. car sharing) are considered to be low. Infrastructure measures, in particular, despite the fact that they are the most frequent, have not yet managed to reverse the trend towards decreasing market shares of public transport.

**Figure 8-4: High-impact measures by type (transport sector, EU-15)<sup>109</sup>**

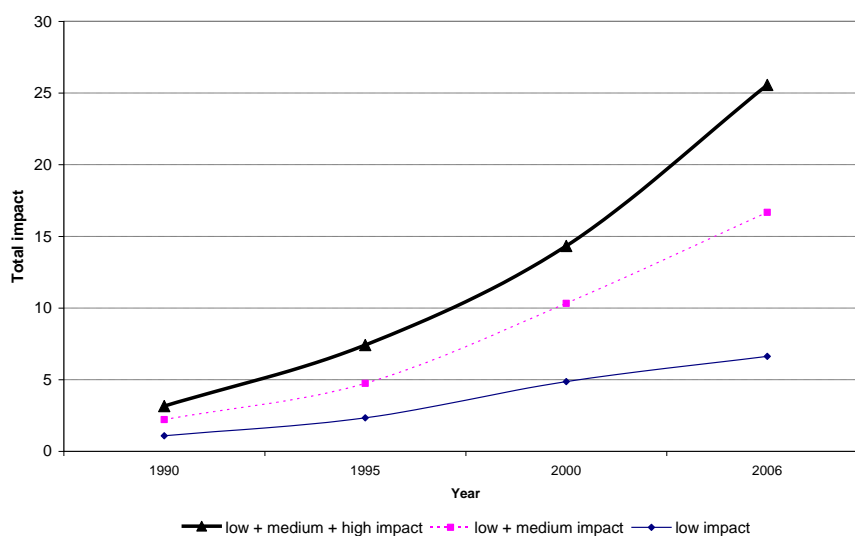


<sup>109</sup> High impact measures are measures with energy savings >0.5% of the total consumption in the sector.

No high impacts at all are associated with legislative-informative measures in the transport sector, although their importance has been growing recently, triggered by the EU Directive on car labels. This issue will be discussed in more detail in the following section (see **Table 3.1** for a selection of high impact measures).

**Figure 8-5** shows the total policy impact at EU-level for the period 1990-2006. The total impact has been rising sharply from 2000 onwards. Attributing the total impact to measures which are rated as low, medium or high shows that the impact of those policy measures rated medium and high has become more important.

**Figure 8-5: Development of the total impact of policy measures per category at EU-level<sup>110</sup>**



Note: ongoing and completed measures, weighting factors 5 (high), 3 (medium) and 1 (low). The impact results for all countries have been averaged using the final energy transport demand in 2000 as a weighting factor.

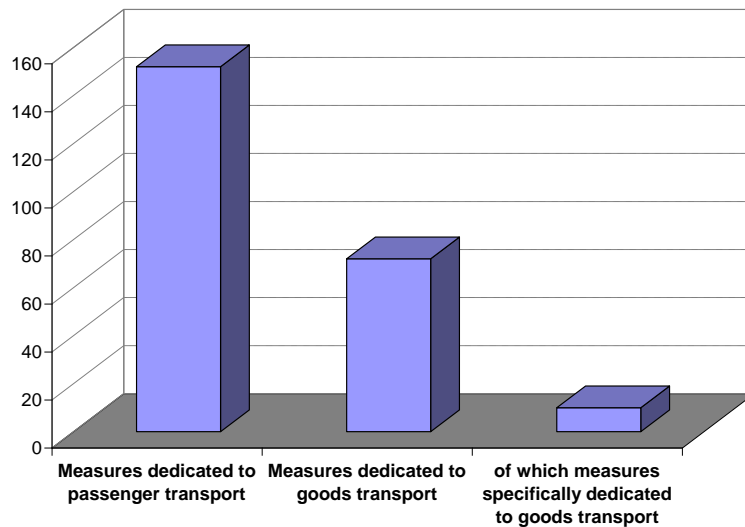
The lifetime of measures in the transport sector depends on their type: information/education measures or financial measures are naturally limited. For example, incentives for car scrapping that were used for some years in France or Italy were abolished after some time due to market distortions and limited resources. Infrastructure measures are also often terminated because they are superseded by other types of measures.

### Lack of specific measures for goods transport

Although the number of measures directed at goods transport in the MURE database is about half the number directed at passenger transport (**Figure 8-6**), this picture still overemphasises their relevance because many of them are not specific to goods transport, although they also concern goods transport. In fact, only a small number of measures specifically target freight transport. In addition, most of these measures are considered low impact or their impact has not been determined. Exceptions are road pricing systems such as the German Toll Collect system (**Box 8-1**) which is considered important. Specific freight transport measures include road taxation for trucks, interconnection of freight modes, voluntary/negotiated agreements with transport companies and training programmes for truck drivers.

<sup>110</sup> The measures are weighted according to their relative energy savings. Given the previously mentioned ranges weighting factors of 5 (high), 3 (medium) or 1 (low) are used.

**Figure 8-6: Measures directed at passenger and at freight transport, 1990 to the present (EU-15)**



### **An increasing influence of EU measures on national transport energy efficiency policies can be expected**

In the past, the influence of the European Union on national energy efficiency measures in the transport sector was limited to the following three areas: voluntary agreements with car manufacturers to reduce the consumption of new fleets to 140g CO<sub>2</sub>/km, the biofuels target of 5.75 % by 2010 (Directive 2003/30/EC) and the consumption labelling of cars.

In the future it can be expected that the impact of EU policies on national energy efficiency measures in transport will be enhanced, for example:

- Mandatory CO<sub>2</sub> standards for cars are currently being debated since voluntary agreements will not be able to deliver the desired results by 2008 even though some progress has been made in the right direction.
- Possible higher biofuels target beyond 2010.
- Air transport is under pressure to enter the European Emission Trading scheme.
- The Energy Service Directive explicitly mentions transport as a field of action and a future European-wide scheme of White certificates could also target this sector.

## **8.2. High-impact energy efficiency measures**

### **High impact measures in transport are frequently fiscal measures**

About one quarter of all the measures introduced in the transport sector in the EU-15 are considered to be high impact measures. **Table 8-1** shows a list of these measures. Strikingly, a very large number of these measures are fiscal in nature (either concerning fuel use or promoting clean fuels or clean cars). The list of high impact measures also contains two main EU-wide transport measures: the agreement with car manufacturers based in Europe (ACEA, JAMA, KAMA agreements) as well as the biofuel promotion with the targeted achievement

of a biofuel share of 5.85 % by 2010 (**Box 8-1**). This list does not include the EU energy consumption labels for cars. Integrated measure packages for transport as well as infrastructure measures and regulation also figure in the list of high impact measures.

**Table 8-1: Selection of high impact measures in the EU-15 transport sector<sup>111</sup>**

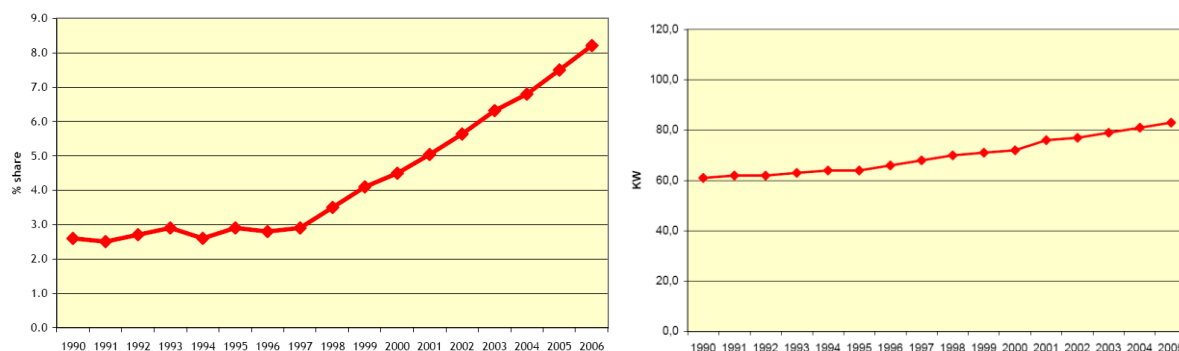
Austria	Tax on motor vehicles	<b>Taxation</b>
	Tax depending on motor vehicle's fuel consumption (NoVA)	<b>Taxation</b>
	Parking space management	Infrastructure
	Tax on oil - Mineraloelsteuer MOEST	<b>Taxation</b>
Denmark EU+natio- nal level	Increased taxes on gasoline	<b>Taxation</b>
	Promotion of the use of biofuels or other renewable fuels for transport (2003/30/EC)	Clean fuels
	Voluntary agreements to reduce CO <sub>2</sub> emissions from new passenger cars	Voluntary agreement
Greece	Exhaust emissions control card	Clean cars
Ireland	Excise tax relief for biofuels	<b>Taxation/clean fuels</b>
	Transport 21	Integrated measure set
Netherlands	Energy efficient short distance goods transport	Infrastructure/social planning
	Increase in fuel tax	<b>Taxation</b>
	Motor power speed limit	Regulation
	Transport regulations and their enforcement	Regulation
Portugal	Excise tax relief for biofuels	<b>Taxation/clean fuels</b>
	Favourable taxation on less polluting passenger vehicles	<b>Taxation/clean cars</b>
Spain	Action Plan 2005-2007 (comprising a larger number of actions on transport)	Integrated measure set
Sweden	Carbon dioxide tax on fuels	<b>Taxation</b>
	Energy tax on fuels	<b>Taxation</b>
	Vehicle taxation according to CO <sub>2</sub> emissions	<b>Taxation</b>
UK	Fuel duty levels	<b>Taxation</b>
	The Future of Road Transport	Integrated measure set

**Box 8-1: Why European voluntary agreements on the reduction of CO<sub>2</sub> emissions from cars have failed to deliver so far**

The latest monitoring report of the ACEA/EU Commission on CO<sub>2</sub> emission agreements for cars from 2006 shows that the target of 140 g/km in 2008 will most likely not be achieved, although progress has been made (see the transport section in the chapter on indicators). Some success has been achieved due to the ongoing shift from gasoline to diesel cars on the market. Nevertheless, other developments counteract these technical savings - especially the unbroken trend to more 4-wheel drive vehicles and larger, more powerful cars (Figure 8-7). Even the recent oil price increase does not seem to have influenced this trend. The lack of suitable car labels for energy consumption has also contributed to these consumer choices (see below). For this reason, regulating the CO<sub>2</sub> emissions of the new car fleet has increasingly become the focus of political debate. The Commission is proposing to introduce legislation which will force European carmakers to lower the average CO<sub>2</sub> emissions of new vehicles to 130g/km by 2012. This issue is aggravated by the fact that part of the energy consumption in cars is not included in the agreements (air conditioning) and that driving behaviour also influences the technical performance of cars, often negatively.

<sup>111</sup> High impact measures are measures with energy savings >0.5% of the total consumption in the sector.

**Figure 8-7: Market share of 4-wheel drive ("SUVs", left) and average power of cars (right)**



Source: ACEA (2006 and 2007)

### 8.3. Innovative energy efficiency measures

Innovative measures in the transport sector are not necessarily high-impact, although their influence on energy efficiency can be expected to be considerable due to the broad use. Furthermore, "innovation" here does not necessarily imply that the measure is completely novel; it may already have existed for years in a different form. For example, the purchase and use of cars have been taxed for many years, but only recently has there been greater interest in linking this to environmental or energy efficiency concerns.

Examples of particularly innovative measures in the transport sector:

- **Labelling the energy consumption and CO<sub>2</sub> emissions of cars:** despite the fact that they have had little impact on consumer choices so far, labels still represent an important tool to make consumers aware of the consequences of their choices.
- **Distance-based heavy load levy:** such systems have existed for many years; however, the recent development to link road charges to satellite-guided systems rather than terrestrial ones such as implemented in Germany might pave the way to introducing such road charging on a European-wide basis. Also, the European Union has opened the door to harmonising such systems with its "Euro-Vignette".
- **"Greening transport taxation":** Fiscal measures constitute a major instrument to improve transport energy consumption as discussed above; it is therefore very important to continue innovations in these types of measure. Innovative examples include vehicle taxation according to the CO<sub>2</sub> emissions as well as dedicated energy/CO<sub>2</sub> taxation of car use.
- **Energy efficiency obligations and White certificates** as discussed in the general cross-cutting section have so far mainly been applied to the residential and tertiary sectors and less frequently to the **transport sector**. So far, only France is considering including this sector in the White certificate scheme. This is why White certificates are also included in this section on innovative transport measures.
- **Mobility management** is a tool that exploits the benefits of older community schemes such as organised collective transport to school or work in a more modern frame.

## Labelling the energy consumption and CO<sub>2</sub> emissions of cars at EU level –why does it have so little impact?

According to the overview provided at the beginning of this chapter, mandatory energy efficiency labels for cars seem to have had a low impact so far in the EU countries. The basic legislation is the EU Directive 1999/94/EC relating to the availability of consumer information on fuel economy and CO<sub>2</sub> emissions concerning the marketing of new passenger cars. This directive was the basis for all existing mandatory labels at the national level. In principle labels are powerful tools to lower transaction costs for consumers. So why have labels had a lower impact in the transport sector than they did on electrical appliances where they have brought about substantial energy savings due to consumer choices?

One reason is certainly that the label chosen showed fuel consumption and CO<sub>2</sub> emissions but was not designed for comparisons. The main reason for not selecting a comparative label was that car size has a decisive influence on the classification of cars according to their energy efficiency, and although it would have been possible to define broad categories of car types to avoid this problem, this approach was not taken, making it more difficult for the buyer to compare fuel consumption at the moment of purchase<sup>112</sup>. However the directive also requires each country to prepare and regularly update lists of cars which can be used to compare their energy performance (see the example of a Portuguese website below in **Box 8-2**). Such websites can strongly support well informed consumer choices. Similar sites have also been developed in other countries, e. g. in France<sup>113</sup>.

A second reason is that car sellers tend to display the labels less prominently than the distributors of white goods did and do not promote them as much in their salesrooms.

The third reason is the heterogeneity of the labels used across Europe; they never achieved the visual impact of the comparative labels for electrical appliances which were deliberately designed along similar lines. As a result, consumers were confronted with the same type of label on many occasions which was more easily recognized.

The final explanation is that, until very recently, consumers tended to concentrate on car power as the main purchasing decision criteria. Fuel consumption has only become a relevant criterion in the last two years because of increased oil prices. So far, the trend towards ever more powerful cars has continued unbroken.

Currently several countries are thinking about introducing a comparative label similar to the one used for electrical appliances. Such labels are not new; some were developed nearly a decade ago, e. g. by the Austrian Energy Agency (**Figure 8-8, upper left**). In France, such a comparative label has been obligatory since May 2006<sup>114</sup>. There are two basic principles for the car comparison labels currently in use: the first is based on fixed values (such as the one in France), e. g. Class A covers cars with CO<sub>2</sub> emissions below 100g CO<sub>2</sub>/km. The second is based on comparison with the market average. In Spain, for example, a car is labelled Class A if it has emissions which are 25 % below the market average. So far, the following Member States have already introduced an energy efficiency rating system in addition to the minimum requirements of Directive 1999/94/EC: Belgium, Denmark, France (May 2006), Portugal, the

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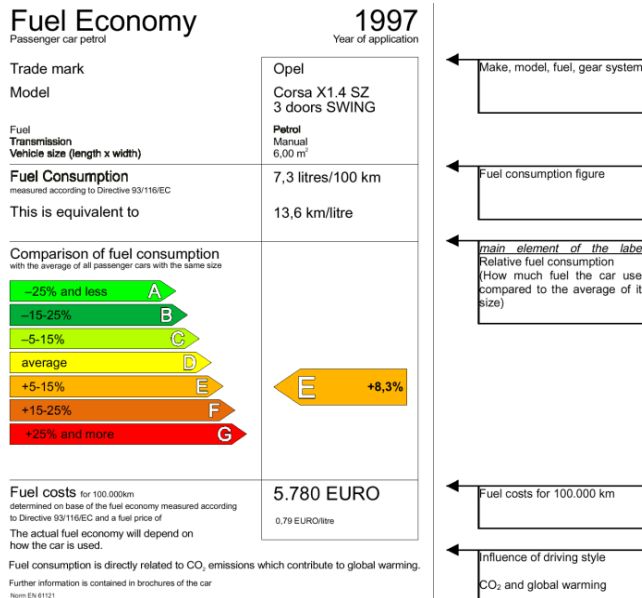
<sup>112</sup> Not to talk about the psychological impacts of comparison labels: it is more difficult to convince oneself if it is clearly written down that the car has a bad impact on the environment than when it is specified that the car emits 250g CO<sub>2</sub>/km.

<sup>113</sup> [http://www.ademe.fr/auto-diag/transports/car\\_lab/carlabelling/ListeMarque.asp?mode=suivant](http://www.ademe.fr/auto-diag/transports/car_lab/carlabelling/ListeMarque.asp?mode=suivant)

<sup>114</sup> <http://www.ecologie.gouv.fr/IMG/pdf/CP-Etiquette-V4.pdf>

United Kingdom (September 2005) all have an absolute comparison label; Spain (optional) and the Netherlands have a relative comparison label<sup>115</sup> (Figure 8-8, Spain (upper right), France (lower left), Portugal (lower right)).

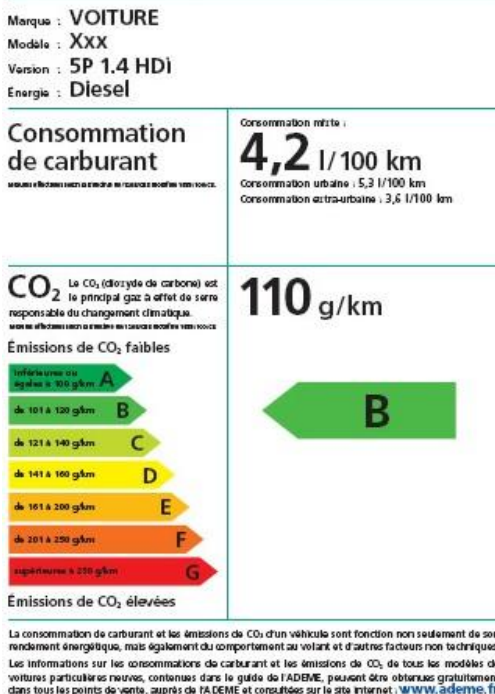
Figure 8-8: Comparative labels for the energy consumption of cars in the EU



**Eficiencia Energética**



**Consommation de carburant et émission de CO<sub>2</sub>**

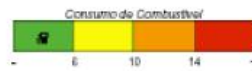


**INFORMAÇÃO SOBRE ECONOMIA DE COMBUSTÍVEL E EMISSÕES DE CO<sub>2</sub>**

**MARCA**

Marca / Modelo / Versão	
Cilindrada / Transmissão	1896 cc / Manual
Combustível	Gasóleo
Consumo de combustível *	5,6 litros / 100 km
Emissão CO <sub>2</sub> *	151 g / km

\* - Combinadas



Estará disponível gratuitamente em todos os pontos de venda, um guia sobre a economia de combustível e as emissões de CO<sub>2</sub> contendo os dados relativos ao consumo de combustível de todos os modelos de automóveis novos de passageiros.

Para além da eficiência em termos de combustível de um automóvel, o tipo de condução, bem como outros fatores não técnicos, influenciam e determinam o consumo de combustível e das emissões de CO<sub>2</sub>.

O CO<sub>2</sub> é o principal gás com efeito de estufa responsável pelo aquecimento do planeta.



Source: Austrian Energy Agency, Ministry of Environment France, ADAC (2005)

<sup>115</sup>ADAC (2005): Study on the effectiveness of Directive 1999/94/EC relating to the availability of consumer information on fuel economy and CO<sub>2</sub> emissions in respect of the marketing of new passenger cars, March2005 [http://ec.europa.eu/environment/co2/report/final\\_report.pdf](http://ec.europa.eu/environment/co2/report/final_report.pdf)

**Box 8-2: Information on the fuel consumption and CO<sub>2</sub> emissions of cars in conjunction with car labels in Portugal (Source: <http://home.moonlight.pt/acapco2/>)**

The Portuguese association of car distributors has developed a website to support consumer choices. Buyers can, for example, choose low energy models on this website (Figure 8-9). According to this website, out of around 4100 models, there are more than 250 which emit below 120 g CO<sub>2</sub>/km, while 15 models are below 100 g CO<sub>2</sub>/km.

**Figure 8-9: Website to choose energy-efficient cars**

The screenshot shows the ACAP website interface for searching cars. The search form includes fields for Marca, Versão, Potência, Cilindrada, and Emissão CO<sub>2</sub>. It also features a 'Pesquisa' button and a 'Legenda' for fuel types (Gasolina, Gasóleo, GPL, Eléctrico, Híbrido). Below the search form is a table of search results.

Marca/Modelo/Versão	Cilindrada	Potência CV/KW	Consumos Urbano	Consumos Extra Urbano	Consumos Combinado	Emissão CO <sub>2</sub>	Custo Anual Comb.
AUDI A3 1.9 TDI - 3 portas	1896	105/77.2	6,3	4,1	4,9	135	771,75
CITROEN C 2 1.4 HDI - 3 portas	1398	68/50	5,3	3,7	4,3	113	677,25
CITROEN C 2 1.4 HDI Caixa Automatica - 3 portas	1398	68/50	4,9	3,9	4,3	113	677,25
CITROEN C1 1.0 I - 3 portas	998	68/50	5,5	4,1	4,6	109	883,2
CITROEN C1 1.0 I - 5 portas	998	68/50	5,5	4,1	4,6	109	883,2

**Distance-based heavy load levy – the "Eurovignette"**

The so-called 'Eurovignette' Directive<sup>116</sup> was adopted in May 2006. It allows EU Member States to levy charges on heavy goods vehicles of more than 3.5 tonnes. The Directive's main novelty is to allow individual states to integrate the 'external costs' of road transport into toll prices. It was finally agreed that these 'external costs' can include costs for congestion, environmental pollution, noise, landscape damage and social costs such as health and indirect accident costs not covered by insurance. The costs have to be proved "undeniable" in order to be integrated ('internalised') in the charges. The Commission has promised to come up with a calculation method on how precisely to integrate such costs in toll prices within two years after the Directive comes into force. Member States are also given extra flexibility on how to levy tolls or charges. In particular, these can now be raised on the entire road network, not just motorways:

- Toll revenue should be used to maintain the road infrastructure concerned or to cross-finance the transport sector as a whole;

<sup>116</sup> <http://www.euractiv.com/en/transport/road-charging-eurovignette/article-117451>

- as of 2010, countries which already apply tolls or user charges will be obliged to vary their prices according to vehicle pollution standards (Euro standards series) in order to favour the cleanest ones;
- authorities may decide to exempt isolated areas or economically weak regions from tolls or user charges;
- an extra 15 % 'mark-up' charge can be levied to finance new alternative transport infrastructure projects such as rail or inland waterways;
- urban areas are not included in these extra mark-up charges. However, local authorities can still apply them under a provision taken from Article 9 of the current Eurovignette Directive (which for instance allowed the city of London to apply such charges);
- rebates will be possible for frequent users.

A particularly innovative approach to road charging for HGVs is described for the German Toll Collect system in **Box 8-3**.

### **Box 8-3: Distance-based heavy load levy in Germany (“Toll Collect”)**

In December 2001, the German parliament decided to introduce distance-based motorway tolls for heavy goods vehicles from 2003 on. Charges are 15 cent per kilometre on average, varying between 10 and 17 cent depending on axle classes and emission rates. The toll rate is based on the actual infrastructure costs. All heavy goods vehicles (both national ones and those in transit from other countries) with a total weight of more than 12 t using German motorways have to pay tolls. An automatic vehicle registration system has been installed allowing distance-based charges to be calculated without affecting traffic flow. As a result of this measure, the competition between rail and road freight traffic is expected to evolve in favour of the eco-friendly rail transportation of heavy loads. The revenue of about 3,400 million Euro per year will be used to develop and maintain road, railway and waterway systems as well as for an “Anti congestion campaign”. Because of serious technical problems, toll collection did not actually start in 2003 as planned, but on 1 January 2005. Ex-ante impact estimates range widely from 1 Mt reduction of CO<sub>2</sub> in 2010 to 5 Mt annually right from the start. So far no ex-post evaluation of the Toll Collect system has been carried out. Despite the initial problems, the system has the potential to be used in other countries as well since it does not require toll infrastructures on the motorways and does not disturb traffic flows. Charging heavy vehicles fees has been regulated recently by the EU<sup>117</sup> (Directive 2006/38/EC of the European Parliament and of the Council of 17 May 2006 amending Directive 1999/62/EC on the charging of heavy goods vehicles for the use of certain infrastructures, "Eurovignette", see below).

### **"Greening" transport taxation**

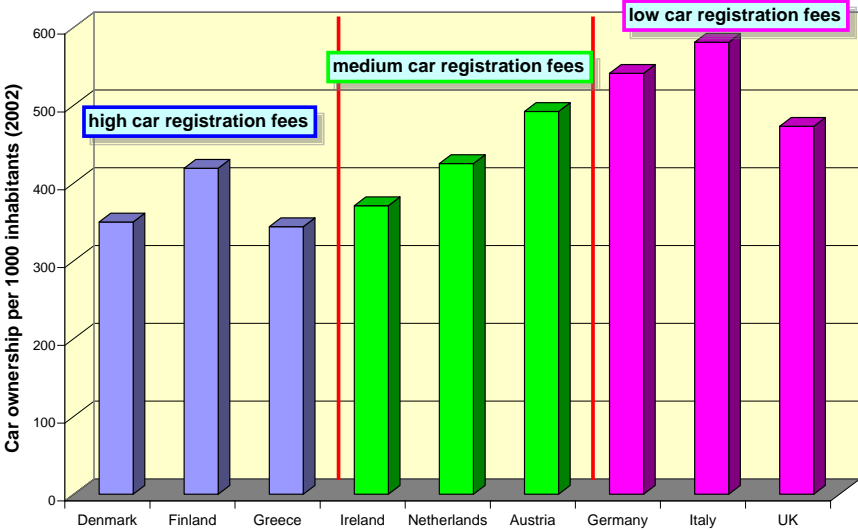
This issue was already introduced in the previous chapter on cross-cutting measures in the general framework of energy-related environmental taxation and it can be observed that a variety of governments have actually taken the opposite approach of decreasing transport taxation for fear of imposing a very unpopular type of measure. Nevertheless, fiscal measures constitute a major instrument to improve transport energy consumption as discussed above; and it is therefore very important that innovation in this field is continued.

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<sup>117</sup> Directive 2006/38/EC of the European Parliament and of the Council of 17 May 2006 amending Directive 1999/62/EC on the charging of heavy goods vehicles for the use of certain infrastructures. [http://eur-lex.europa.eu/smartapi/cgi/sga\\_doc?smartapi!celexplus!prod!CELEXnumdoc&lg=EN&numdoc=32006L0038](http://eur-lex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexplus!prod!CELEXnumdoc&lg=EN&numdoc=32006L0038)

**"Green" car purchase tax:** This type of "one-off" tax exists in many countries although its respective form varies widely, but it generally lacks a "green" component. It is very high in some countries (Denmark, Finland and Norway) but negligible in other, car producing countries (e. g. France, Germany, the UK). The tax may be based on different parameters such as engine size (this is the general case for most countries), weight (4 countries), fuel (6 countries), or, more recently, efficiency/CO<sub>2</sub> emissions: Austria since 1992, Denmark since 2000, Norway since 1996, the UK for company cars since April 2002, and France for "powerful" cars since July 2006. In 2006, the Netherlands introduced a car registration tax that differs according to a vehicle's environmental performance. The 'greenest' cars will benefit from a 6,000 Euro discount compared with the standard rate while those considered the most polluting will pay over 500 Euro more. The Portuguese government has approved a one-off purchase tax which will be partially weighted according to engine size and CO<sub>2</sub> emissions (the weighting for emissions will rise over time). The Spanish Government has announced plans to introduce fiscal measures in 2007 to discourage the purchase of diesel cars (although diesel filters might be an alternative), Sports Utility Vehicles (SUVs) and other heavily-polluting private vehicles. The EU Commission, however, proposes that purchase taxes should be phased out in order to avoid double taxation<sup>118</sup>. In its proposal, annual circulation taxes are expected to take up the slack left by the removal of purchase taxes. This proposal is being criticised by NGOs which argue that lifting registration taxes might make cars appear cheaper by bringing down their initial cost, and thus might actually encourage car ownership. **Figure 8-10** suggests that this argument may indeed have some basis in facts.

**Figure 8-10: Car registration tax levels and car ownership in some EU Member States**



Source: EU Commission (2005)<sup>119</sup>, TIS

**"Green" annual car taxes** are the second important type of car ownership tax. They exist in most countries, often also without a "green" component and may be based on different parameters similar to the car purchase tax: engine size (most countries, variable with fuel and age), weight (some countries), efficiency/CO<sub>2</sub> emissions (e. g. Denmark since 1999, Germany since 1997, the UK since 2001, France since 2006 for company cars, and Sweden since 2006 for new cars) (**Box 8-4**).

<sup>118</sup> [http://ec.europa.eu/taxation\\_customs/taxation/other\\_taxes/passenger\\_car/index\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/other_taxes/passenger_car/index_en.htm)

<sup>119</sup> [http://ec.europa.eu/taxation\\_customs/resources/documents/taxation/other\\_taxes/passenger\\_car/impact\\_assessment\\_EIAfinal\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/taxation/other_taxes/passenger_car/impact_assessment_EIAfinal_en.pdf)

#### Box 8-4: Annual vehicle taxation based on CO<sub>2</sub> emissions in Sweden

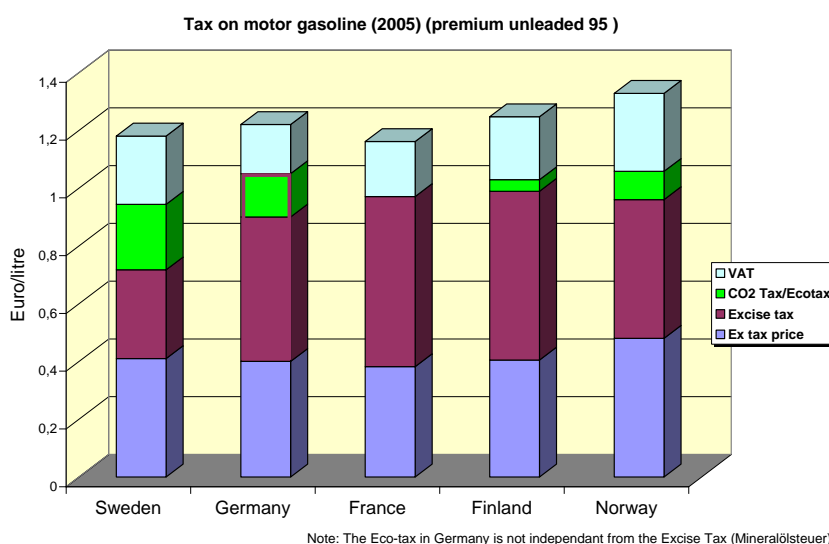
Sweden introduced a new law on vehicle taxation, applicable from 1 October 2006. Under the new rules, the tax will be set according to emissions of carbon dioxide instead of weight. At the start, around 800,000 cars will be affected by the new system. The remaining cars stay in the current weight-based system. Each year, around 250,000 cars will be added to the new taxation scheme. The tax level is based on the following three components:

1. A fiscal base tax of 360 Swedish Crowns SEK (39 Euro) for all passenger cars.
2. A carbon dioxide component of SEK 15 (1.6 Euro) for each g CO<sub>2</sub>/km over 100g/km. Fuel Flexible Vehicles get a reduction to SEK 10 (1.1 Euro) for each CO<sub>2</sub>/km over 100g/km.
3. An environmental factor of 1.3 and a fuel factor of 2.7, i. e. 3.5 in total (1.3\*2.7) for diesel cars that are to be multiplied by the fiscal base and the carbon dioxide component to compensate for the higher emissions of particles and nitrogen compared to gasoline-fuelled cars. The fuel factor is an extra charge for the lower energy tax on diesel.

For heavy vehicles, the vehicle taxation varies depending on the number of axles, vehicle configuration and weight. Trucks weighing more than 12 tons are also obliged to pay a road fee. Trucks that pay the road fee are granted a reduction in vehicle tax to the same amount.

*"Green" taxes on transport fuels* are applied in some countries (Figure 8-11). As discussed in the section on cross-cutting measures, they are similar in impact to the normal excise taxes on mineral oil. In Germany, for example, the eco-tax is legally part of the excise tax. However, CO<sub>2</sub>/environmental taxes enjoy greater acceptance by the general public, especially if part of the revenue is recycled to support energy /CO<sub>2</sub> efficiency measures. In total, there is a limited number of countries with such explicit "green" taxes on transport fuels.

Figure 8-11: "Green" taxes on mineral oil in some EU Member States



Source: ENERDATA (from IEA), German Ministry of Finance (BMF)

## Energy efficiency obligation and White certificates in the transport sector

Within the scope of its energy efficiency obligation and White certificates, France is planning the following four so-called "standard energy saving operations"<sup>120</sup> in the transport sector, two of which concern transport equipment and two transport services:

- *Intermodal Transport Unit*: This scheme rewards the acquisition of an intermodal transport container designed for combined rail-road inter-city freight transport. The applicant has to provide evidence for the number of combined freight journeys before being issued certificates. The lifetime of the measure is 12 years and the number of certificates depends on the size of the unit.
- *Bus tyres with low rolling resistance*: The tyres should show verified savings of 4 % compared to standard tyres and be combined with a servicing contract. The number of certificates issued depends on the duration of the contract (which determines the lifetime of the measure) and the type of vehicle.
- *Training public transport drivers in energy-efficient driving*: This scheme addresses public transport (urban and long-distance buses). The training needs to be provided by a recognised centre and comprise both theoretical and practical elements. The lifetime of this type of measure is limited to one year. The number of certificates differs depending on which type of driving is involved.
- *Training light vehicle drivers in energy-efficient driving*: Similar to the previous scheme but addressing drivers of light vehicle fleets. The number of certificates depends on the type of vehicle and the fuel.

## Mobility management

Mobility management is a new concept to promote sustainable transport. "Soft" measures comprise the core of mobility management (e. g. information or coordination of existing user services), which aims to enhance the effectiveness of "hard" measures of traffic management (e. g. new tram lines, new roads and new bike tracks). Mobility management tools (in comparison to "hard" measures) do not necessarily require large investments measured against their high potential to change mobility behaviour. The objective of mobility management is to reduce the number of car journeys made by single persons. The European Platform on Mobility Management (EPOMM)<sup>121</sup>, an international partnership, aims to promote and further develop mobility management in Europe.

In Austria<sup>122</sup>, for example, mobility management comprises the components:

- Mobility management for schools
- Mobility management in public administration
- Mobility management in companies
- Mobility management at the municipal and regional level
- Mobility management in tourism and leisure traffic.

Mobility plans for companies: In France, the energy and environment agency ADEME subsidises companies planning to propose collective transport schemes to their employees

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<sup>120</sup> [http://www.industrie.gouv.fr/cgi-bin/industrie/frame23e.pl?bandeau=/energie/developp/econo/be\\_eco.htm&gauche=/energie/developp/econo/me\\_eco.htm&droite=/energie/developp/econo/cee-sommaire.htm](http://www.industrie.gouv.fr/cgi-bin/industrie/frame23e.pl?bandeau=/energie/developp/econo/be_eco.htm&gauche=/energie/developp/econo/me_eco.htm&droite=/energie/developp/econo/cee-sommaire.htm)

<sup>121</sup> <http://www.mobilitymanagement.org/index.phtml?sprache=en>

<sup>122</sup> <http://www.klimaaktiv.at/article/archive/11981/>

within the framework of the Urban Transport Plans (PDU) in order to reduce passenger car traffic. ADEME finances 50 % of the cost of developing collective transport schemes in companies. From 2000 to 2003, 92 mobility plans for companies were financed by ADEME (55 in 2003) – the target was 210 mobility plans by 2006. Further, EMIF (Entreprises et Mobilité en Ile de France), an economic interest organization in charge of promoting and managing new organization systems in public transport and ADEME have signed an agreement to promote environmental policies to companies. EMIF offers advice to companies concerning the mobility of their employees and the promotion of public transport. EMIF was created by the Chamber of Commerce and Industry and RATP, a public transport society.

## 8.4. Conclusions

- Governments have taken an increasing number of measures in the transport sector over the past 15 years, which may partially explain the fact that transport energy consumption has remained steady or even decreased in several EU-15 Member States in recent years. It should not be overlooked, however, that the recent increase in transport fuel prices has certainly also had an important impact.
- Infrastructure measures are the most frequent type taken by governments. However, the impact on the modal split of these measures is not visible so far given the fact that investments in road infrastructures still exceed investments in public transport infrastructure by an order of magnitude.
- Fiscal measures in the transport sector – unlike other sectors - are considered the most effective type of measure with the highest impacts. However, the relative importance of fiscal measures has been decreasing at the expense of legislative-informative measures (car labels), information/education and financial measures (subsidies for clean cars).
- So far, car labels have not had the same impact as the labels on electrical appliances did. Explanations for this include the fact that the labels are non-comparative, the car distribution networks' lack of attention and, until very recently, the consumers' preference for powerful cars. It is currently being debated whether the car label should be turned into a comparative one similar to those for electrical appliances which would better support informed consumer choices.
- Voluntary agreements on reducing CO<sub>2</sub> emissions from cars in conjunction with high transport fuel prices have triggered progress in the fuel consumption of cars, although the target of 140 g/km will not be met in 2008/2009. Regulation is under preparation to introduce a standard of 130 g/km by 2012, but this takes into account the use of biofuels which eases the pressure on energy efficiency for cars. Thus regulation might still regain some lost ground in the transport sector.
- Energy efficiency measures which specifically target goods transport are rare with the exception of R&D support which helps to explain why this section of transport energy consumption is still growing at a fast pace. The same holds true for air transport, which is largely subsidised through the lack of taxes on air transport fuels.
- Innovative measures in the transport sector include "greening" car taxation by linking components to CO<sub>2</sub> emissions (although other environmental aspects such as particulate

emissions from diesel cars are also taken into account), improving existing car labels combined with easily accessible web-based information for comparing the energetic performance of cars, introducing innovative satellite-based toll systems for trucks and perhaps for cars, too, in the future, as well as measures under White Certificate Schemes. Innovative information campaigns aim to promote mobility management.