

## **European Federation for Transport and Environment**

Fédération Européenne pour le transport et l'environnement Europäischer Verband für Verkehr und Umwelt

# Bringing the Eurovignette into the Electronic Age:

The need to change Directive 1999/62/EC to allow kilometre charging for heavy goods vehicles



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*T&E* 00/4 **June 2000** 



T&E 00/4 – Bringing the Eurovignette into the electronic age: The need to change Directive 1999/62/EC to allow kilometre charging for heavy goods vehicles.

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With funding from the Swedish Environment Protection Agency

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## 1. Introduction

Directive 1999/62/EC on the charging of heavy goods vehicles (HGVs) regulates the road tolls and user charges that Member States can apply to HGVs with a Gross Vehicle Weight (GVW) exceeding 12 tonnes for their use of motorways. The Directive takes effect on 1 July 2000.

According to the new Directive, Member States may maintain or introduce tolls or user charges on motorways and other multi-lane roads with characteristics similar to motorways, bridges, tunnels and mountain passes. However, in a Member State where no general network of motorways or dual carriageways with similar characteristics exists, tolls and user charges may be imposed in that State on users of the highest category of road from the technical point of view.

The Directive defines toll as "payment of a specified amount for a vehicle travelling the distance between two points" and states that "the amount shall be based on distance travelled and the type of vehicle" (article 2b). A user charge is, according to the Directive, payment of a specified amount conferring the right for a vehicle to use the specified infrastructure "for a given period" (article 2c).

Tolls and user charges may not be imposed at the same time for the use of a single road. However, Member States may also impose tolls on networks where user charges are levied, for the use of bridges, tunnels and mountain passes.

The weighted average toll shall, according to article 7(9) of the Directive, be related to the costs of constructing, operating and developing the infrastructure concerned. The weighted average toll can be differentiated for vehicle emission classes, provided that no toll is more than 50 per cent above the toll charged for equivalent vehicles meeting the strictest emission standards, and for the time of day, provided that no toll is more than 100 per cent above the toll charged during the cheapest period of the day.

Member States preferring user charges may differentiate the annual and monthly charges for vehicle emission classes. The Directive, however, puts upper limits on the amounts of user charges. The annual maximum permissible amounts of user charges (other than vehicle tax) for vehicles fulfilling the requirements of Euro 2 is €750 and 1 250 for respectively a maximum of three axles and a minimum of four axles. Maximum monthly and weekly charge rates shall be in proportion to the duration of use made of the infrastructure. The daily user charge is the same for all vehicle categories and amounts to €8.

Directive 1999/62/EC also regulates the minimum levels of the annual vehicle tax for different categories of heavy goods vehicles. The minimum tax rate is differentiated according to gross vehicle weight and number of driving axles with a reduction for driving axles with air suspension (or recognised equivalent). The new minimum rate for a 40 tonne HGV with 3+2 axles and air suspension is €628 per year.

The Directive does not prevent the application by Member States of parking fees and specific urban traffic charges or regulatory charges specifically designed to combat time and place related traffic congestion (article 9).

## 1.1 Kilometre charging replaces the Eurovignette

Currently six Member States run an integrated system of user charges known as the Eurovignette. It was introduced jointly in 1995 by Belgium, Denmark, Germany, Luxembourg and the Netherlands for HGVs with a GVW exceeding 12 tonnes. Sweden joined the system in 1998. The Eurovignette is a charge for the use of the motorway systems of the participating Member States. The maximum annual charge is  $\epsilon$  750 and 1 250 for vehicles with respectively three and four axles. The current system is thus in line with the stipulations of Directive 1999/62/EC.

The future of the Eurovignette is uncertain as Germany plans to replace it with a kilometre charge in 2003. It hardly makes sense for the remaining parties to the Eurovignette to continue this charge regime when the most centrally located and most important transit country no longer participates. This raises the issue of whether other Eurovignette countries might decide to follow the route taken by Germany.

Austria operates a user charge system similar to the Eurovignette on a national basis but has decided to develop it into a more distance-based scheme. Several other Member States have recently shown an interest in km charging. Outside the EU, Switzerland has decided to introduce km charging of HGVs on its entire public road network in 2001.

## 1.2 The aim of this paper

Directive 1999/62/EC does not prohibit the transition from traditional road charges to kilometre charging but puts some constraints on Member States wishing to do so. The objective of this paper therefore is to analyse the extent to which the current Directive should be amended to facilitate a shift to a scheme for km charging which is fair and cost-efficient. It is presumed that the necessary changes can be made within Directive 1999/62/EC and that a special Directive on km charging is not required. The current Directive already contains the necessary vehicle classification. In Annex I, it divides HGVs with GVW >12 tonnes into 15 categories for motor vehicles (according to GVW and number of axles) and 24 additional categories of vehicle combinations (articulated vehicles and vehicle trains). The environmental differentiation, however, should be based not only on Euro 0, Euro 1 and Euro 2, as in the current Directive, but also on future vehicle standards that have already been decided upon.

With relatively small changes and amendments, Directive 1999/62/EC could thus be turned into a Framework Directive for European km charging of HGVs.

T&E's general views on km charging are set out in a report by Kågeson and Dings (1999), "Electronic Kilometre Charging for Heavy Goods Vehicles in Europe" (T&E 99/6), and will not be repeated here. The report is also available in German. An extensive summary of the report is available in four different languages (English, French, German and Spanish).

## 2. Merits and shortcomings of Directive 1999/62/EC

As underlined in the Commission's White Paper on Fair Payment for Infrastructure Use and the reports from the High Level Group on Transport Infrastructure Charging, electronic kilometre charging for heavy goods vehicles is an attractive policy option for achieving fair and efficient pricing. In order to achieve this goal, the system should, according to Kågeson and Dings (1999), fulfil the following requirements:

- charges should be linked as closely as possible to underlying costs;
- charges should therefore apply to all kilometres driven, not just kilometres on certain road types;
- charges should be non-discriminatory for the nationality of the vehicle and the origin or destination of the goods transported.

The current Directive does not fully comply with the first two of these conditions. Therefore establishing a unilateral or a common European scheme for km charging would be facilitated if some changes were made in the Directive.

## 2.1 Maximum charge levels?

The most noticeable defect of the current Directive is that the same maximum amount of user charges applies regardless of the size and characteristics of the network. This restriction makes it difficult and in many cases impossible to relate the charge to actual costs. However, the legal situation is different where road tolls are concerned. They shall, according to article 7(9) of the Directive, reflect "the costs of constructing, operating and developing the infrastructure network concerned". The Directive does not define an upper limit for the rate of road tolls. Nor does it enforce any constraints on the rates applied to "specific urban traffic charges" (article 9:1b) or "regulatory charges specifically designed to combat time and place-related traffic congestion" (article 9:1c), which may be introduced as a supplement to user charges.

The Directive defines toll as "payment of a specified amount for a vehicle travelling the distance between two points" (article 2b) and user charge as payment for using the specified infrastructure "for a given period" (article 2c). In the latter case it is the duration, not the distance, which is the basis of the charge. Km charging should be regarded as a form of road toll as the charge relates to the distance driven and not to the duration of the use of the infrastructure.

Member States should be allowed to take the full opportunity of using km charging for internalising the marginal social costs of HGVs in accordance with the plan outlined in the Commission's White Paper on infrastructure charging. This can be done in accordance with the current articles 7(9) and 7(10) if the meaning of the costs of "operating" the infrastructure (7:9) is taken to mean the social marginal cost of traffic surveillance, road maintenance, traffic accidents and pollution.

Unilateral action by one Member State to this effect would not have any negative impact on the internal market, as the km charge is non-discriminatory and based on the principle of territoriality. A major advantage of the km charge is also to allow Member States to apply the principle of subsidiarity on charges for the use of their national road networks<sup>1</sup>.

## 2.2 Only motorways?

A drawback of the current Directive is that it only allows road tolls and user charges to be applied to motorways<sup>2</sup>. From a cost-efficiency point of view motorways should not be charged more heavily than trunk roads as this may stimulate hauliers to shift to roads with a higher marginal infrastructure cost. Environmental costs and accident risks are also generally higher on trunk roads than on motorways. The only thing that might argue in favour of charging more for motorways is the fact that hauliers would in many cases be willing to pay a little extra for a fast and convenient road. This, however, means giving priority to fiscal simplicity at the expense of national welfare.

A recent Swedish study commissioned by the Ministry of Industry and Communications shows that a charge of SEK 0.96 (€0.11) per vehicle km on motorways covered by the current Eurovignette would reduce the amount of HGV traffic on that network by 13 per cent, most of which would be shifted to roads not covered by the charge (SIKA, 2000). A km charge of SEK 1.16 (€0.14), based on estimated short-term marginal costs, would displace approximately 15 per cent of the current HGV traffic. In the case of Sweden, however, it was not possible to establish the difference in marginal cost between motorways and other parts of the public network. The report therefore does not contain any estimates of the loss of welfare that would occur in a case where km charging is applied only to motorways.

For Germany, however, official figures are available. Table 1 compares the short-term social marginal cost of HGVs on German motorways to the cost when the same type of vehicle uses the country's entire public road network. Please note that the motorways are part of the latter. A comparison between motorways and all other roads would thus reveal a greater difference in short-term marginal cost. The table also includes a column showing the average infrastructure costs of HGVs in Germany (including the fixed costs). It should be observed that the figures in Table 1 reflect the way costs are officially allocated between different types of road users in Germany. According to this method, HGVs with GVW > 3.5 tonnes are responsible for 46.8 per cent of the overall costs of the German road network.

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<sup>&</sup>lt;sup>1</sup> However, unilateral introduction of km charging is less attractive than multilateral for a number of reasons identified by Kågeson and Dings (1999).

<sup>&</sup>lt;sup>2</sup> A Member State may, according to article 7(6), provide that vehicles registered in that Member State shall be subject to user charges for the use of the whole road network in its territory. This, however, is nothing but another name for annual vehicle taxation, and would cause distortions in competition with foreign hauliers if carried too far.

Table 1. Infrastructure costs for HGVs with GVW > 3.5 tonnes as a group, and for lorries with trailers, in Germany (in € per vkm at 1994 prices)

All HGVs	Marginal cost	Average cost*
A. Motorways	0.0212	0.091
B. Total road network	0.0857	0.233
Difference between A and B	0.0645	0.142
Lorry with trailer		
A. Motorways	0.0256	0.093
B. Total road network	0.0870	0.272
Difference between A and B	0.0614	0.179

<sup>\*</sup> Including fixed costs.

Source: Based on DIW et al (1998)

It is hardly surprising to find that both the marginal and the average cost of HGVs are much lower on motorways than on the total road network (in non-congested situations). However, the introduction of km charging on German motorways would probably result in a smaller shift of heavy goods traffic to trunk roads compared to the Swedish case, the reason being that alternative routes in Germany are more congested. Nevertheless the negative socio-economic effect on Germany would be considerable. The way to avoid this is to allow Member States the right to introduce km charging on their entire public network.

There is one more argument in favour of extending km charging to the entire public network. Local distribution by lorry accounts for a large percentage of the total annual mileage in goods transport by road and most of the traffic takes place on roads other than motorways. The external costs of these vehicles cannot be internalised without taking both distance and vehicle characteristics into account, and this can only be done by a system of km charging. Exempting vehicles registered in other Member States from such charges would distort competition and possibly prevent any Member State from enforcing km charges on its own vehicles. However, extending km charging to all roads would have little impact on long-distance traffic as the vehicles involved mainly use motorways.

### 2.3 Is there a need for an annual vehicle tax?

When Directive 1999/62/EC is changed to allow a Member State to introduce kilometre charging on its entire public road network, there is cause to question whether the current system of mandatory annual taxation of vehicles needs to be sustained. A possibility could be to allow Member States the freedom to replace the annual vehicle tax with the km charge. Not allowing such a shift means forcing Member States to use two different tax regimes for more or less the same purpose.

## 2.4 Degree of differentiation?

On-board electronic units provide an opportunity for an extensive differentiation of user charges. Differentiation according to total weight, number of axles, exhaust performance and noise would be based on vehicle registration just as in the case of the current vehicle tax. GPS, or a combination of the tachograph and roadside beacons, would add information on annual mileage in different Member States and on

different kinds of roads. It is also feasible to vary the charge over a 24-hour period in order to enforce a night time noise penalty on HGVs or to make it more expensive to use certain parts of the network at times when the roads are usually congested. This is legally possible according to the current Directive provided that article 7(10) is adjusted to cover all types of road tolls, including km charging.

Several Member States are now in the process of establishing a computerised national road database, which will in a few years cover the entire public road system down to its smallest elements. Such a database could also be made to include information on road characteristics such as road surface conditions, accident risks and environmental concerns. In a GPS-based system this would provide an opportunity to differentiate charges in order to make HGVs choose roads where an increasing traffic would cause minimal additional costs (especially road wear and tear). This kind of differentiation appears to be in line with articles 7(9) and 7(10) of the Directive which talk of "the weighted average tolls" but do not limit the right of a Member State to enforce differing rates on different parts of the network.

## 2.5 Vehicle classification and extended environmental differentiation?

The Directive already contains the necessary vehicle classification for a European system of km charging. However, at present the vehicle classification only applies to user charges. It may therefore be useful to make clear that Member States should differentiate km charges according to the same classification. This would make different national schemes interoperable and facilitate the allocation of revenues in a case where several Member States in future decide to operate a joint scheme.

Environmental differentiation, however, should be based not only on Euro 0, Euro 1, and Euro 2, but also on future vehicle standards that have already been decided upon (i.e. Euro 3, Euro 4, Euro 5 and EEV). Some vehicles will be able to meet these requirements in advance.

The increasing importance of goods transport by road vehicles weighing less than 12 tonnes adds to the social costs of these vehicles. The inclusion of goods vehicles with a maximum permissible gross laden weight between 3.5 and 12 tonnes in systems for road tolls, km charging and user charges would contribute to a fairer pricing system and reduce distortions in road freight transport.

## 2.6 The importance of interoperability

It is extremely important that technical systems used for km charging in different Member States are made interoperable. Of particular importance is ensuring that the electronic tachograph, which following Council Regulation 2135/98 is mandatory for all vehicles above 3.5 tonnes, has a standardised interface to connect an "On-Board Unit (OBU) for km charging. This would enable the distance travelled to be recorded which is a prerequisite for any km charging system. Ideally, the tachograph would interface to a standardised in-vehicle bus, like the CAN-Bus. Other telematics devices such as GPS receivers, GSM phones and electronic licence plates could also connect to this bus.

Interoperability should also be considered an important issue in terms of avoiding a situation in which large numbers of vehicles would find themselves unequipped (or wrongly equipped). A standardised communication and transaction interface should be defined for km charging applications as currently happens with traditional motorway toll collection systems by CARDME.

The issue of interoperability need not be solved within Directive 1999/62/EC but it is essential that Member States preparing the introduction of systems for km charging co-operate with each other, as prescribed in Article 11, with the aim of achieving an appropriate level of interoperability. This article of Directive 1999/62/EC should be interpreted as a right for all other Member States to demand formal consultations in a case where one or several Member States plan the introduction of a system for km charging.

## 3. Proposed amendments to Directive 1999/62/EC

All proposed amendments are underlined in the text below. Only new and amended paragraphs are included.

### 3.1 The Preamble

#### Whereas:

- (1) the elimination of distortions of competition between transport undertakings in the Member States calls for both harmonisation of levy systems and the establishment of fair mechanisms for charging infrastructure <u>and other social</u> costs to hauliers;
- (12) existing distortions of competition cannot be eliminated solely by harmonising taxes or fuel excise duties; however, until technically and economically more appropriate forms of levy are in place, such distortions may be attenuated by the possibility of retaining or introducing tolls and/or user charges for the use of motorways or alternatively introducing kilometre charges for the use of motorways or the entire public road network of a Member State; in addition Member States should be allowed to levy charges for the use of bridges, tunnels and mountain passes;
- (14) tolls, <u>kilometre charges</u> and user charges should not be discriminatory nor entail excessive formalities or create obstacles at internal borders; therefore, adequate measures should be taken to permit the payments of tolls, <u>kilometre</u> <u>charges</u> and user charges at any time and with different means of payment;
- in order to ensure that user charges, <u>kilometre charges</u> and tolls are applied homogeneously, certain rules for determining their manner of application should be laid down, such as the characteristics of the infrastructure to which they are applicable, the maximum levels of certain rates and other general conditions that will have to be complied with; weighted average tolls <u>and kilometre charges</u> should be related to the costs of construction, operating and developing the infrastructure network concerned;
- the principle of territoriality should be applied; two or more Member States may co-operate for the purpose of introducing a common system of user charges or kilometre charges, subject to compliance with some additional conditions;

## 3.2 Chapter I

#### **Article 1**

(first section) This Directive applies to vehicle taxes, tolls, <u>kilometre charges</u> and user charges imposed on vehicles as defined in Article 2.

#### Article 2

- (c) (new) 

  "kilometre charge" means payment of a specified amount for a vehicle travelling the distance of one kilometre on the infrastructures referred to in Article 7(2); the amount shall be differentiated according to the type of the vehicle;
- (e) (old d) "Vehicle" means a motor vehicle or articulated vehicle combination intended exclusively for the carriage of goods by road and having a maximum permissible gross laden weight of not less than 3.5 tonnes;
- (h) (new) "EURO III vehicle" means a vehicle having the characteristics set out in line A of Table 1 or Table 2 in section 6.2.1 of Annex 1 to Directive 1999/96/EC as of 13 December 1999.
- (i) (new) "EURO IV vehicle" means a vehicle having the characteristics set out in line B1 of Table 1 or Table 2 in section 6.2.1 of Annex 1 to Directive 1999/96/EC as of 13 December 1999.
- (j) (new) "EURO V vehicle" means a vehicle having the characteristics set out in line B2 of Table 1 or Table 2 in section 6.2.1 of Annex 1 to Directive 1999/96/EC as of 13 December 1999.
- (k) (new) "EEV vehicle" means a vehicle having the characteristics set out in line C of Table 1 or Table 2 in section 6.2.1 of Annex 1 to 1999/96/EC as of 13 December 1999.

## 3.3 Chapter III

#### **Article 7**

- 1. Member States may maintain or introduce tolls, <u>kilometre charges</u> and/or user charges under the conditions set out in paragraphs 2 to 10.
- 2. (b) (new) Kilometre charges may be imposed on the entire public road network of a Member State.
- 4. Tolls, <u>kilometre charges</u> and user charges may not discriminate, directly or indirectly, on the grounds of nationality of the haulier or the origin or destination of the vehicle.
- 5. Tolls, kilometre charges and user charges shall be applied and collected and their payment monitored in such a way as to cause as little hindrance as possible to the free flow of traffic and avoid any mandatory controls or checks at the Community's internal borders. To this end, Member States shall co-operate in establishing methods for enabling hauliers to pay user charges 24 hours a day, at least at major sales outlets, using all common means of payment, inside and outside of the Member States in which they are applied. Member States shall provide adequate facilities at the points of payment for toll, kilometre charges and user charges so as to maintain normal road-safety standards.

- 9. The weighted average tolls <u>or kilometre charges</u> shall be related to the costs of constructing, operating and developing the infrastructure network concerned.
- 10. Without prejudice to the weighted average tolls <u>or kilometre charges</u> referred to in paragraph 9, Member States may vary the rates at which tolls <u>or kilometre charges</u> are charged for according to:
  - (a) vehicle emission classes, provided that no toll is more than 100% above the toll <u>or kilometre charge</u> charged for equivalent vehicles meeting the strictest emission standards,
  - (b) time of day, provided that no toll <u>or kilometre charge</u> is more than 100% above the toll <u>or charge</u> charged during the cheapest period of the day.

## 3.4 Chapter IV

#### **Article 11**

3. Member States introducing electronic toll, <u>kilometre charge</u> and/or usercharging systems shall co-operate with the aim of achieving an appropriate level of interoperability.

### **3.5 Annex 1**

Annex 1 will have to be amended following an extension of the Directive to vehicles with a maximum permissible gross laden weight between 3.5 and 12 tonnes. However, no details are presented here.

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Road haulage transports more goods than any other means of transport in Europe, and has grown rapidly in recent decades, providing prosperity to those in the industry. But there have been problems arising from this growth, all caused by lorries which pay for some but not all the damage they cause. Road haulage has grown partly because it does not have to pay the full costs of its activity. This is a situation which politicians, economists, campaigners and the European Commission recognise cannot be allowed to continue.

A promising way to make road haulage pay for the damage it does is to introduce kilometre charging for heavy goods vehicles. Directive 1999/62/EC does not prohibit the transition from traditional road charges to kilometre charging but puts some constraints on Member States wishing to do so. The objective of this paper therefore is to analyse ways in which the current Directive should be amended to turn it into a Framework Directive for European kilometre charging of heavy goods vehicles in a way that is fair and cost-efficient.

T&E's general views on km charging are set out in a report by Kågeson and Dings (1999), "Electronic Kilometre Charging for Heavy Goods Vehicles in Europe" (T&E 99/6). An extensive summary of the report is available in four languages (English, French, German and Spanish) from the T&E Secretariat or the web-site, www.t-e.nu

#### **About T&E**

The European Federation for Transport and Environment (T&E) is Europe's primary non-governmental organisation campaigning on a Europe-wide level for an environmentally responsible approach to transport. The Federation was founded in 1989 as a European umbrella for organisations working in this field. At present T&E has 37 member organisations covering 20 countries. The members are mostly national organisations, including public transport users' groups, environmental organisations and the European environmental transport associations ('Verkehrsclubs'). These organisations in all have several million individual members. Several transnational organisations are associated members.

T&E closely monitors developments in European transport policy and submits responses on all major papers and proposals from the European Commission. T&E frequently publishes reports on important issues in the field of transport and the environment, and also carries out research projects.

The list of T&E publications in the annex provides a picture of recent T&E activities.

#### **T&E** member organisations

Associació per la Promoció del Transport Públic (Spain) Aviation Environment Federation (United Kingdom) Cesky a Slovenský Dopravní Klub (Czech Republic) Danmarks Naturfredningsforening (Denmark)

Ecologistas en Acción (Spain)

Environmental Transport Association (UK)

Estonian Green Movement (Estonia)

Fédération Nationale des Associations d'Usagers de Transports (France)

GAJA (Slovenia)

Gröna Bilister (Sweden)

Groupement des Usagers des Transports Intercommunaux

Bruxellois (Belgium)

Inter-Environnement Bruxelles

Komitee Milieu en Mobiliteit (Belgium)

Levegõ Munkacsoport (Hungary)

Liikenneliitto (Finland)

Magyar Közlekedési Klub (Hungary) Norges Naturvernforbund (Norway) Polish Ecological Club (Poland)

Pro Bahn (Germany)

Pro Bahn der Schweiz (Switzerland)

Quercus (Portugal)

Society for Nature Protection and Eco-development

(Greece)

Romanian Traffic Club (Romania)

Stichting Natuur en Milieu (Netherlands)

Svenska Naturskyddsföreningen (Sweden)

TRANSform Scotland (United Kingdom)

Transport 2000 (United Kingdom)

Verkehrsclub Deutschland (Germany)

Verkehrsclub Österreich (Austria)

Verkehrsclub der Schweiz (VCS/ATE/ATA)

(Switzerland)

Associate members

Alpine Initiative

BirdLife International

Community of European Railways

European Cyclists' Federation

Union Internationale des Chemins de fer (UIC)

International Union for Public Transport

Worldwide Fund for Nature