

EUROPEAN PARLIAMENT

# EUROVIGNETTE III – RECENT DEVELOPMENTS AND MEDIUM-TERM POLICY OPTIONS

Briefing Paper

Zurich, 26. November 2008

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BRIEFING-PAPER-EUROVIGNETTE-MAIBACH\_FINAL2.DOC



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## 1. EXECUTIVE SUMMARY

This briefing paper is aimed at preparing the topics of the hearing with the members of the EU Parliament to be held on Dec 2<sup>nd</sup> 2008 in Brussels. It discusses the EU Directive proposal amending Directive 1999/62 and introducing charges for external costs for heavy goods vehicles HGV.

In a first step the Commissions proposal amending the Directive on HGV charging considering external costs is compared to the output of the Handbook on the estimation of external costs in the transport sector. The proposal concentrates on the most important externalities with most robust methodologies and values and proposes simplified valuation approaches for air pollution, noise and congestion. This is pragmatic and cautious at the same time, since not all external costs are considered and caps with maximum values are proposed.

In a second step the most controversial issues are discussed, such as the choice of external cost components, the treatment of congestion costs, the treatment of caps, the network application and the use of revenues. From a scientific point of view, a distinction between congestion costs (as sector internal costs) and other external costs (costs to society) is necessary. In addition the consistence between the approach in the current Directive (average infrastructure cost pricing) and the new proposal (social marginal cost pricing) is essential. Caps in order to prevent from overpricing might make sense if they are differentiated. Especially the proposed caps for congestion costs are too low compared to the figures in the Handbook. In general - due to the fact that the Directive proposal is not mandatory - some freedom should be given to the Member States.

In a third step the way forward is paved by two main directions. Firstly an interlinking of external cost charging with other policies such as climate change policy and infrastructure investment policy is necessary, considering as well the attempts of urban road pricing as a very effective and efficient policy, since external costs are highest in urban areas. Secondly the stepwise approach towards fair and efficient pricing in the transport sector has to consider the coherence between passenger and freight transport and the different transport modes.

## 2. CONSISTENCY BETWEEN THE HANDBOOK AND THE EU-DIRECTIVE PROPOSAL

### 2.1. THE OUTPUT OF THE HANDBOOK

The Handbook on the estimation of external costs in the transport sector (CE/INFRAS 2008) is a review of existing studies on the valuation of external costs in order to derive best practice methodology of valuation approaches and best practice input and output values as a basis for optimal pricing in the transport sector. The most important conclusions derived thereof are:

- › There are two types of externality to consider: congestion and scarcity costs as a transport sector internal externality, accident and environmental costs as an externality to society.
- › As a basis for pricing, the marginal costs (additional costs per additional transport unit) have to be considered.
- › Existing variable charges for infrastructure (such as road charges, mineral oil taxes) have to be taken into consideration in order to assess current degrees of internalisation and to indicate the need for corrective price setting.
- › There are solid methodologies and values available from research studies, especially based on European transport research and modelling. It has to be considered that the marginal external costs per transport unit depend strongly on the specification of traffic situations, vehicle and infrastructure performance. Hence there is a significant spread of values available.
- › These methodologies and values are most robust for congestion, air pollution and noise.
- › It is possible to derive methodologies and values for accident costs. This is especially true for total social accident costs. The derivation of marginal cost and external parts nevertheless is less robust since insurance systems differ widely between Member States.
- › It is possible to derive methodologies and values for climate change costs (expressed in Euro per tonne of CO<sub>2</sub>). Since climate change is a long term and global issue, there are different ways to elaborate national values in the short and in the long term (e.g. damage costs, avoidance costs). For road transport, there are different views on how to consider existing fuel charges as possible ways of internalisation.
- › For other external cost elements, the methodologies and values are less robust and not yet ready for internalisation. One important exception is the fact that marginal environmental costs in sensitive areas (such as the Alpine corridors) are higher (two to five times) than in flat areas. This is especially true for air pollution and noise.

The following figures show the level for different costs components and traffic situations shown in the Handbook.

Figure 1 Heavy goods vehicles: Unit cost per cost category in €/vkm (in €2000) based on unit values for all cost components from the Handbook (CE/INFRAS 2008).

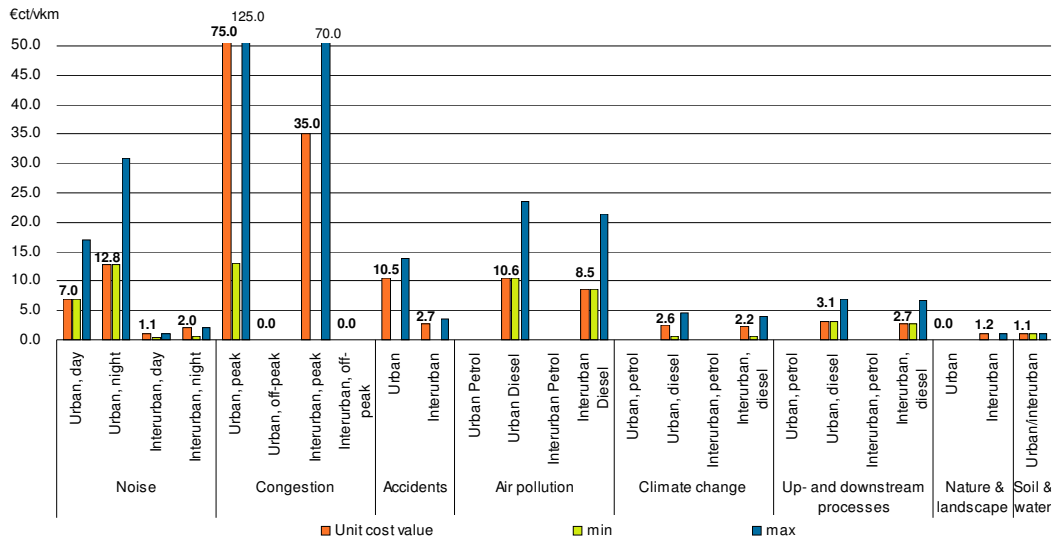
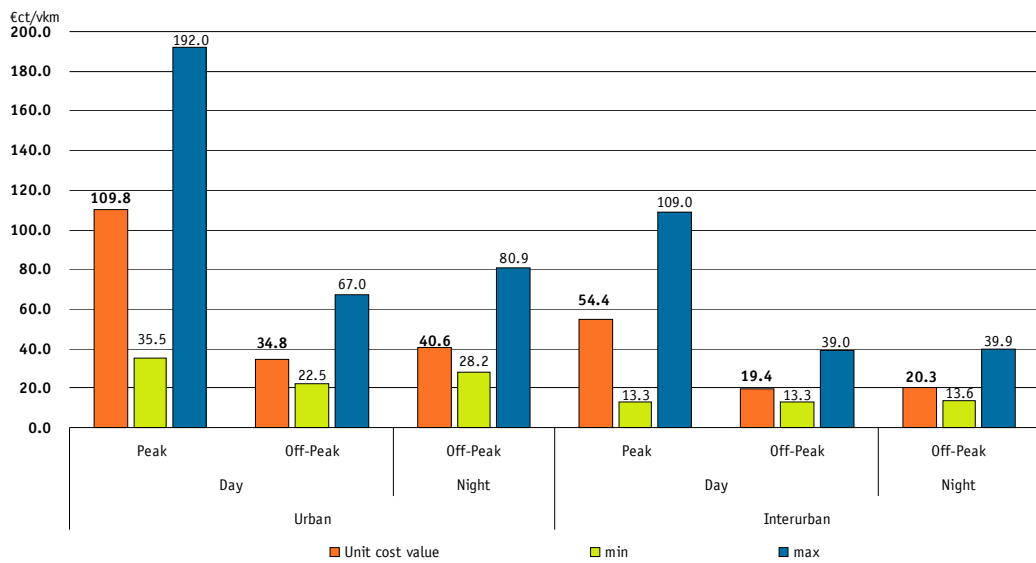


Figure 2 Heavy goods vehicles: Unit values per traffic situation in €/vkm (in €2000) based on unit values for all cost components from the Handbook (CE/INFRAS 2008).



## 2.2. THE APPROACH OF THE COMMISSION

The Commission's approach shown in the Directive proposal is based on a couple of principles to translate the Handbook values to real HGV pricing policy:

- › **Stepwise approach:** The path of internalisation of external costs shall consider the stepwise need for action. There is a need for urgent action in the road sector. A first step is the internalisation of external costs for heavy goods vehicles (HGV); whereas other sectors (aviation, railways) are partly considering externalities in their pricing schemes (e.g. noise related track or slot pricing, integration of the aviation sector in European Trading System ETS).
- › **Consideration of other ways of internalisation:** The Commission's proposal does exclude those externalities wherever other ways of internalisation are possible or even more appropriate than infrastructure cost charging: This is the case for accident costs (internalisation via insurance systems) and climate change costs (fuel charging, CO<sub>2</sub>-taxation, treating emissions from fuel production).
- › **Cautious approach:** The Commission's approach does exclude those externalities when no robust and accepted approaches are available. In order to prevent overpricing, the Commission does not consider further (rather shaky) externalities (such as nature and landscape) and introduces caps for each externality as maximum levels. Comparing the total levels in the Handbook compared to the caps proposed, the Commission's approach covers
  - › in peak hours about two third of the total unit external costs detected,
  - › in off peak hours a bit less than 50% of the total unit costs detected.
- › **Simplified procedures:** The Commission proposes for each externality a simplified approach. Especially for noise and air pollution, this leads to average cost approaches.
- › **Link to Directive Eurovignette II 2006/38/EC:** The proposed values within the Eurovignette III Directive proposal are on top of the existing Directive. However, there are some exceptions. Most important is the mark up for external costs (air pollution, noise) in sensitive areas. It is only possible as an alternative to the 25% mark up proposed in the current Directive.

## 2.3. CONSISTENCY CHECK

On a general level one can state that the proposal of the Commission is in line with the theory and the research results of external costs level derived in the Handbook. The translation of the Handbook values to the Annex in the Directive proposal is pragmatic and also includes political acceptance.

- › The limitation to three main externalities (air pollution, noise, congestion) is only consistent if approaches for the other major externalities, in particular accidents and climate change, are developed further (according to the stepwise approach) and internalised in future. If values are not robust today and other ways of internalisation are not proposed, it cannot mean that these costs are zero. Otherwise transport prices would remain too low and/or would not reflect well the cost drivers.
- › The caps might make sense in order to prevent overpricing. The values shown in the Handbook however are not really maximum values. They show the upper range of proposed average values for Germany. The Handbook has shown additional ways of value transfer from one country to another, based on GDP per capita adjustment.
- › The transfer of the values in the Handbook (differentiated according to urban, motorways, interurban) to two road categories (suburban and other interurban roads) is pragmatic and needs renaming, since there is no common road categorisation across Europe.
- › The procedure for **air pollution** is in line with the Handbook approach and follows the proposed unit values of major European attempts (such as CAFE and HEATCO research project). The caps proposed are averages (per Euro class, but averaged over size classes) of the fleet for suburban and other interurban roads, directly based on a table within the Handbook. These can be used as maximum levels for network wide km-charging. Although, they might be too low for the application to specific corridors (e.g. to a transit corridor with a high proportion of heavy trucks).
- › The procedure for **noise** shows a simplified approach based on average costs. The caps are taken directly from the Handbook. These are however considerably lower than the results of the formula since they refer to marginal cost values. There are some technical discussions going on for the time being in order to improve the formula considering more sophisticated approaches in the Member States. The distinction between day and night is probably difficult to put into practice, but is essential to generate incentives for less noise pollution as required by the economic welfare theory.
- › The **congestion cost** formula is directly taken from the Handbook. Although considerable difficulties arise when applied to practical cases without a full scale traffic model at hand. Main problems arise from the need to differentiate charges by traffic levels and by the strong variation of charge levels with traffic density. For the time being there are again some technical improvements of the application and assumptions of the formula happening. The caps (especially for interurban roads) are taken from the Handbook, showing average peak hour results of various traffic model applications across Europe. A comparison with the tool

developed in the GRACE research project shows that these caps are far too low in order to reflect marginal cost, particularly for interurban motorways. A complexity reduction of the approach seems appropriate, e.g. a definition of a limited set of road and congestion types, to obtain only a limited set of charge levels per country.

- › **Mark ups** for alpine areas for air pollution and noise costs are taken directly from the Handbook. The link between the 25% mark up in the existing Directive is albeit not based on the findings of the Handbook.

### **3. DISCUSSION OF THE MOST CONTROVERSIAL ISSUES**

#### **3.1. CONSIDERATION OF ADDITIONAL COSTS**

##### **Climate Change costs**

Transport related external cost of climate change are very important and of increasing significance. There are uncertainties with regard to valuation approaches and there are various possibilities of internalisation embedded in an overall climate policy approach. Nevertheless, there is a need for action. From this point of view it would be a wrong signal not to include climate change costs. It has to be noted that the costs would rise sharply if more ambitious reduction aims for post Kyoto would be proposed. On the other hand it has to be considered that within some Member States, parts of climate change costs might already be internalised, explicitly by CO<sub>2</sub>-charges or ecotaxes, implicitly by high levels of mineral oil taxes whose revenues lead to an excess burden of traffic within the infrastructure cost balance. Compared to mineral oil charging or emission trading, road user charges might slightly be less efficient, but lead as well to a reduction of GHG emissions.

- ▶ Since the whole approach is not mandatory, it makes sense that Member States can include climate change costs in HGV road user charging. In order to prevent from double charging, Member States should be obliged to consider existing CO<sub>2</sub>-charges or ecotaxes which also aim at reducing GHG-emissions.

##### **Accident costs**

Especially due to the fact that the cost of fatalities and heavy injuries are not paid by the transport user, there is a need for action to internalise external accident costs. The IMPACT project proposed a surcharge for the insurance premiums whose revenues could be used to



finance safety measures in the transport sector. There is no EU wide attempt visible to introduce such a charge. A second best approach might be to internalise accident costs with a safety surcharge on roads (according to the values proposed in the Handbook). From a scientific point of view though it has to be stated that the knowledge on the dependency of traffic levels and accidents risks and the external part of accident cost is still weak, since there is a complex relationship between the suffering and grief of those causing accidents (drivers), their near environment and society.

► It is appropriate to address accident costs in a later stage. This might lead to undercharging in the short run, but there is time to improve the knowledge on the external part of accident cost. It makes sense at a later stage to allow Member States (voluntarily) to include external costs in their charging proposals if they come up with own robust estimations.

#### **Other environmental costs**

Other environmental costs do exist, but their valuation approaches are yet rather weak and most of them do not directly vary with traffic levels, such as nature and landscape. A non-consideration of these costs is comprehensible, in order to follow a cautious approach.

### **3.2. CONGESTION COSTS**

Different to accident and environmental costs, congestion costs are a sector internal externality between different vehicles and their capacity demand in peak hours. Therefore it is important to consider the thematic link to the current Directive 2006/38/EC.

- › The current Directive aims at infrastructure cost recovery considering the possibility of differentiation of charges according to capacity use. The approach is based on average cost. Following this approach, congestion cost charges may not lead to an increase of the average charging level.
- › The new proposal follows the principle of social marginal cost pricing. The congestion cost formula considers existing variable charges and does (for peak areas) not lead to overpricing.
- › By combining the two Directive approaches however, a possible inconsistency might arise: The charges for non-congested roads are higher than social marginal costs, since average infrastructure costs are higher than marginal costs.
- The Directive proposal is consistent in itself and reflects social marginal costs. The approach of congestion costs notwithstanding should also be seen in combination to the existing Eurovignette Directive. The new proposal presents a methodology which differentiates capacity related charges. Combining the approaches, one might address possible compensation for non-congested roads, since they are – in contrast to congested roads - not charged according to the

principle of social marginal cost pricing. This argument might give way for compensation measures.

Since this heavily increases the complexity of the approach, one could argue (in a pragmatic way) that a compensation is (in average) not necessary since (as stated above) not all costs are addressed in the proposal and the caps for congestion are rather low. Thus, compensation measures (i.e. a decrease of existing HGV charges or a reduction of other charges which are not addressing the cost drivers properly) could be foreseen in a future step.

- ▶ An additional important issue is the integration of passenger cars in a congestion cost scheme. It is evident that a scheme addressing all vehicles is much more effective than a scheme which only addresses HGV. According to the principle of subsidiarity, this is up to the Member States.
- ▶ Congestion charging should prevent from monopolistic pricing. Thus it is useful to charge congestion only at a few specific cordons where it is possible to improve capacity (either by a reduction of traffic volumes and a subsequent reduction of congestion risk, or by capacity enlargement). Such an approach is much easier to implement (also from a technical point of view) than a complex differentiation of the whole network.

### 3.3. CAPS

The proposed caps in the proposal shall provide guidance for appropriate levels and shall prevent from overpricing. The caps can be seen as a practical element to reduce the freedom of Member States and thus the risk of overpricing. On the other hand the risk of such an approach is that most of the Member States might propose charges at the level of the caps: the burden of proof shifts then to the regulator; who has to prove that appropriate pricing would be below the caps. Thus caps might lead as well to overpricing in Member States with significantly lower externalities. In order to reduce this risk, there are three possibilities:

- › No caps at all: the Member States have to explicate their approach in detail. This leads to a high significance of an independent body and increased evaluation efforts.
- › A detailed value transfer procedure (between countries, between traffic situations, as proposed in the Handbook, with default values per countries). This approach is possible for standardising input values (such as cost per tonne of emission or annoyed person and value of time). A standardisation of traffic situations however is rather complex.
- › Caps with bandwidths (lower and upper bounds, e.g +/- 30%) increases the flexibility, but on the other hand the effort for detailed and independent evaluation is high as well.

- ▶ The idea to introduce caps is – from a practical point – of view useful. In order to use caps in a proper way, a further differentiation might make sense:
  - › The consideration of country-specific input figures for noise (annoyed people according to the HEATCO project) and congestion (country-specific figures for value of time).
  - › The consideration of caps for corridor pricing with real maximum values if Member States want to introduce external cost charges for specific corridors. This means that especially for congestion costs the values should be considerably higher.
  - › The consideration of national average caps (according to the existing proposal) if countries want to introduce nation wide network charges.
  - › Caps on the total revenues from TEN roads, based on vkm on TEN roads and maximum charge per vkm on these roads.

### 3.4. NETWORK APPLICATION

The values produced in the Handbook are differentiated according to all type of road, including urban areas. Since the approach in the Directive proposal is not mandatory, it makes sense that Member States are allowed to include all type of roads, according to the principle of subsidiarity. There is more flexibility, more interoperability and higher transparency within such an approach (e.g. application of differentiated network charging, avoidance of detouring). There is no specific need that Member States have to prove that charged roads have specifically higher costs than others. Looking at the figures produced in the Handbook, there should be incentives to include urban roads as well since externalities in urban areas are highest.

### 3.5. TREATMENT OF SENSITIVE AREAS

Sensitive areas such as Alpine corridors show higher specific external costs than other infrastructures. This is considered in the current proposal with mark up factors for air pollution (max. factor 2) and noise (max. factor 5), according to the recommendations in the Handbook. There is though a link to the current Eurovignette Directive where a mark up factor of 25% for sensitive corridors is possible if revenues are used for improving transport capacity for road and rail. The proposal mixes these two mark ups, saying that only one of these mark ups can be used. This is admittedly questionable, since these mark ups are addressing two different topics:

- › The mark up of 25% has been a political compromise to allow the charges at the Brenner axis. But, one could argue that specific infrastructure costs (like external costs) are higher in mountainous areas than in flat areas.

- › The mark ups for air pollution and noise in the proposal are based on scientific studies for these cost elements at a factual basis.
- ▶ From a factual point of view, a combination of the two mark ups (for infrastructure costs and for external costs) in sensitive areas is not justified. It does make sense to have a clear separation for the charging of Alpine corridors.

### 3.6. EARMARKING

The IMPACT project has shown that there are different ways to treat revenues from infrastructure charging. There is a strictly scientific perspective which says that revenues of external costs should be reallocated in a neutral way in order to prevent price distortions. On the other hand it is fair, effective and transparent if revenues are allocated in general to the transport sector.

- › Congestion charges as the basis for differentiated scarcity pricing should primarily be used for improving the capacity situation in the transport sector. Investment in other transport modes than road (such as the improvement of rail corridors) might be an alternative (e.g. in urban areas, in some specific interurban corridors) for congestion reduction. Thus it is appropriate to use the revenues of congestion charging within the transport sector.
- › As regards charges for environmental externalities, the use of revenues is much more open. Revenues might be allocated to other modes (in order to decrease externalities without decreasing mobility) or to finance cost effective measures to reduce the environmental nuisances (such as particle filters for public transport, noise protection measures, etc.).
- ▶ It is appropriate and comprehensive to use the revenues of external cost charging for the transport system. This approach considers fairness and transparency criteria as well. However, according to the principle of subsidiarity and based on the non mandatory approach, the decisions on revenue use might be left to the Member States.

## 4. A STEPWISE FORWARD APPROACH

It is useful and appropriate to start with the current proposal to internalise HGV related external cost within a first step. In order to follow a comprehensive approach embedded in transport and environmental policy and following the principle of subsidiarity, the following elements and steps are most important.

### 4.1. INTERLINKING

#### **Infrastructure costs and congestion; other externalities**

It is appropriate to link the current Eurovignette directive with the new proposal clarifying the treatment of differentiation charges according to scarcity (in congested areas, in non-congested areas). Within a future step it is necessary to include other externalities (e.g. accidents, other environmental costs) if the methodologies are more robust.

#### **Urban Road Pricing**

The highest level of externalities occurs in urban areas. Member States should start to introduce differentiated charging schemes (also considering congestion costs) in urban areas. Urban road pricing schemes are the proper way to do that. The recommendations within the Handbook and the directive proposal provide the basic approaches to interlink urban and interurban road pricing.

#### **Climate Change policy**

The mitigation of climate change is the most challenging policy. The mitigation policies should also consider road pricing as possible ways of providing incentives for energy saving transport behaviour, e.g. the purchase of fuel efficient cars and modal shifts.

#### **Long term pricing policy**

A fair and efficient pricing policy has to combine the two aims of long term infrastructure cost recovery and charging marginal external costs in order to reduce traffic nuisances. Thus revenues of infrastructure charging should support a coherent general transport policy using the specific advantages of the different modes of transport.

## 4.2. PHASING

### **Improving the scientific basis for the internalisation of additional costs**

An increased scientific basis paves the way to include additional costs and to improve the application and the adjustment of caps according to the state of the art and changed economic and transport-related circumstances.

### **From time-based to distance-based charging**

Efficient infrastructure charging schemes are based on a transparent differentiation (according to vehicle categories, according to different infrastructure links and nuisance levels). Only distance based charging schemes are able to provide that, given a sound technology (e.g. electronic, satellite based) which allows a charging scheme at low implementation costs and high convenience for the user. Hence in the mid term (until 2015) it is appropriate to phase out time-based charging and shift to distance-based charging with increasing level of differentiation, especially according to the level of capacity use and scarcity respectively.

### **From HGV to total road charging**

The inclusion of passenger transport within road pricing schemes is essential in order to improve fairness between modes and increase effectiveness (lower transport nuisances in general).

### **From voluntary to mandatory**

It is practicable and acceptable to introduce externality charges at a voluntary basis within forwarding Member States. In the mid term though, internalisation should not be just voluntary but mandatory. Given a comprehensive and standardised tolling technology (within the European Electronic Tolling System), the Commission is able to lead and coordinate this process at the same time.

### **Comprehensive road, track and slot pricing**

The inclusion of other modes (e.g. railways, airports, ports and inland water ways) is essential to guarantee an overall level playing field for all transport modes. That means: harmonised rules of externality charges especially with regard to scarcity pricing, the consideration of noise and air pollution within the differentiation of track prices and airport access charges and a coherent consideration of GHG emissions in the pricing schemes in parallel to other measures for climate change mitigation.

## LITERATURE

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