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COMMISSION STAFF WORKING DOCUMENT

Ex-post evaluation of Directive 1999/62/EC, as amended, on the charging of heavy goods vehicles for the use of certain infrastructures

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1. INTRODUCTION

In view of the strategy of the 2011 Transport White Paper¹ to move towards the full application of the 'user pays' and 'polluter pays' principles, this ex-post evaluation analyses the effects of Directive 1999/62/EC of the European Parliament and of the Council on the charging of heavy goods vehicles for the use of certain infrastructures. The ex-post evaluation, which primarily is based on information provided by the Member States supplemented by information obtained from research literature, will provide conclusions as to whether the key objectives of the Directive were achieved and highlight possible gaps, which remain to be addressed in line with the above-mentioned strategy.

2. THE KEY OBJECTIVES AND REQUIREMENTS OF THE DIRECTIVE

The following section of the ex-post evaluation highlights and explains some important features of the Directive. The Directive does not oblige Member States to levy tolls or user charges on users but sets out the main requirements that Member States have to observe if they intend to introduce road charging schemes that fall within the scope of the Directive in terms of vehicle and geographic scope.

2.1. Vehicle scope

The 2006 amendment of the Directive extended the vehicle scope to include goods vehicles having a maximum permissible laden weight between 3.5 and 12 tonnes.

2.2. Geographic scope

The Directive applies to roads that belong to roads of the trans-European transport network (TEN-T) and to motorways. Other roads are outside the scope of the Directive as are sections of the trans-European network that are located in urban areas. This does not mean, however, that these other roads cannot be charged and it does not prevent Member States from implementing integrated road charging schemes that cover the entire road network.

2.3. User charges or tolls

The Directive allows two types of payment for the use of road infrastructure. The payment of a "user charge", as defined in the Directive, gives the user the right to use the infrastructure for a period of time (a day, a week, a month or a year) whereas tolls are based on the distance travelled. According to the Directive, tolls shall be

¹ COM(2011)144 Final

calculated in such a way that they can recover the infrastructure costs , including – optionally - a return on capital or a profit margin based on market conditions. As for user charges, the Directive stipulates the maximum amounts that can be charged for the yearly and the daily user charges and requires that the price of the monthly and the weekly rates have to be proportionate to their duration.

Kilometre-based tolls are generally preferable to user charges as they enable a fairer implementation of the "user pays" principle. The limits on the maximum amounts of the user charges that can be imposed on road users make it easier for Member States with large infrastructure networks to recover a fair share of the infrastructure cost from heavy goods vehicles as opposed to Member States with smaller infrastructure networks. As an example, if an average infrastructure cost of 15 eurocents per vehicle-kilometre is assumed, the maximum price of a daily vignette (which is capped by the Directive at 11 euros) would be the equivalent to the toll that could be charged for travelling a distance of only about 73 kilometres. Or, to look at it from another perspective, an average daily distance travelled of 300 kilometres would mean a cost per kilometre of less than 4 eurocents.

2.4. Toll differentiation

The Directive requires toll rates to be differentiated to combat air pollution and allows toll rates to be differentiated to tackle congestion but requires that the differentiation is proportionate to the objective pursued and revenue neutral.

Member States are required to vary toll rates according to the EURO emission class of the vehicles to which the tolls are applied unless they derogate from this requirement in a way that is compatible with the Directive. Differentiation of toll rates to reduce congestion is also allowed but unlike differentiation according to EURO class this is not an explicit requirement.

2.5. Mark ups

Securing financing for transport infrastructure projects in mountainous areas was also one of the objectives of the amendment of the Directive. The Directive allows a mark-up of tolls on specific road sections in mountainous areas provided that the corresponding additional income is earmarked to finance the construction of priority projects of the TEN-T² which offer alternative route on the same corridor, including projects involving other modes of transport.

2.6. Use of revenues

The Directive recommends that revenues from road charges should be used to benefit the transport sector and optimise the entire transport system but there is no obligation on Member States to earmark the revenues. Given that the Directive limits the level of tolls to what is necessary for the recovery of infrastructure costs, even in the absence of mandatory earmarking the revenues from tolls can compensate for past,

² In the proposal for a regulation establishing new guidelines for the development of the trans-European network, the concept of priority projects is replaced by the concept of core network projects (see COM (2011) 650).

present or future infrastructure costs. However, in the absence of earmarking there is no guarantee that the financing of adequate infrastructure is assured.

2.7. Internalisation of external cost

The Directive limits toll rates to what is necessary to recover infrastructure costs but the differentiation of toll rates according to the EURO emission class of the vehicle and the level of congestion allows price signals to be given to hauliers with a view to try to influence their behaviour. Such toll differentiation can be regarded as a rudimentary internalisation of the relevant external cost.

In 2011, the European Parliament and the Council adopted an amendment of the Directive³. Among other things the new Directive authorise the levying of external cost charges reflecting the costs of air and noise pollution generated by the use of vehicles, and it increases the scope of variance of tolls to combat congestion.

3. ANALYSIS OF APPLICATION IN MEMBER STATES

3.1. Transposition of the Directive

All the 27 Member States have communicated the steps they have taken for the transposition of Directive 1999/62/EC. For the time being, the Commission has initiated one infringement case against Portugal in 2011, primarily due to Portuguese law leaving existing concession toll systems entirely outside the scope of the Eurovignette Directive. The Commission is continuing the examination of measures implemented and notified by Member States.

3.2. Description of current charging schemes

The current situation in the EU shows a great diversity of approaches to the road charging of heavy goods vehicles, as shown in Annex I. Member States fall into one of the following categories.

3.2.1. Integrated electronic network-wide toll collection

Austria, the Czech Republic, Germany, Slovakia, Poland and Portugal operate integrated electronic tolling systems on their motorway networks. Some of these network-wide tolling systems include other roads as well in addition to motorways.

The first system to become operational was the Austrian *Maut* that was introduced on 1 January 2004, with the German *Maut* following one year later. The Czech Republic started its electronic tolling system on 1 January 2007 while Slovakia and Portugal launched their systems in 2010. The most recent electronic tolling system was implemented in July 2011 in Poland and several other Member States are preparing similar implementations (see chapter 3.2.2 and Annex 1).

³ Directive 2011/76/EU of the European Parliament and of the Council of 27 September 2011 amending Directive 1999/62/EC on the charging of heavy goods vehicles for the use of certain infrastructures published in the Official Journal of the European Union (OJ L 269, 14.10.2011, p.1)

3.2.2. Eurovignette Protocol

The Eurovignette Protocol refers to a time-based user charge that is applicable to all vehicles over 12 tonnes when using motorways and some other roads in Belgium, Denmark, Luxembourg, the Netherlands and Sweden. Since 2008 the physical vignettes are replaced with electronic vignettes (e-vignettes), which are linked to number plates of HGVs, and which are controlled by automatic number plate recognition (ANPR).

In Belgium the regions reached a political agreement in January 2011 to replace the Eurovignette for heavy goods vehicles with a kilometre charge that would be applied on the TEN-T network, motorways and other main roads. Denmark has also indicated that they will leave the Eurovignette in 2015.

3.2.3. National vignettes

Bulgaria, Hungary, Lithuania and Romania require heavy goods vehicles operators to purchase vignettes to use their main road networks. The roads which require vignettes range from motorways to national roads. Hungary and Romania apply e-vignette systems.

3.2.4. Toll collection with physical barriers on the main motorways

In France, Greece, Ireland, Italy, Portugal, Slovenia and Spain tolls are collected on a number of motorway sections through payments collected at toll stations. Tolls can usually be paid at the toll booths or through electronic toll services which allow free flow payments at a reduced speed of 30 km/h.

3.2.5. Neither vignettes nor tolls

In Estonia, Cyprus, Finland, Latvia, Malta and the UK road users do not currently pay directly for the use of the road infrastructure, except for a stretch of motorway in the UK with physical barriers⁴ and for certain bridges and tunnels. The UK Government has announced its intention to introduce a system of time-based charging for all goods vehicles using UK roads.

3.2.6. Length of charged road network

Annex II provides information by Member State about the length of charged roads.

3.3. Vehicle taxation

To contribute to a level playing field between hauliers registered in the different EU Member States, the Directive stipulates the minimum amounts of annual vehicle taxes. These amounts remain unchanged since the adoption of Directive 1999/62/EC.

Based on the analysis of the vehicle tax rates charged by the Member States the Commission arrived at the following observations:

⁴ The Dartford Crossing congestion charge and the M6 Toll between junctions 3a and 11a

Comparison of tax rates applied by the different Member States is not straightforward as there are many differences in the factors used to determine the level of the tax. Some Member States apply all the 3 criteria foreseen by the Directive (tonnage, number of axles and type of suspension) while many Member States apply only some of the criteria. A few Member States rely exclusively on tonnage.

There are large differences between the levels of taxes collected in different Member States. Even in the vehicle categories that are most widely used in international road freight transport the tax rate in the Member State that charges the highest rate can be up to more than 8 times higher⁵ than in the Member States that charge the lowest rate (which is the minimum rate specified by the Directive). For vehicle categories that are less relevant in international road freight transport the differences can be even much bigger than this.

The Directive prescribes different minimum rates for vehicles with air suspension systems (or recognised equivalents) and vehicles with other suspension systems. This is justified by the increased damage caused to the road network by vehicles that are not equipped with air suspension systems. Not all Member States distinguish between the two categories. Vehicles with non-air suspension systems are, however, still in operation and they usually account for 5-10% of heavy goods vehicles. The use of such vehicles is largely restricted to the construction and agriculture sectors and would therefore have only a minimal impact on the functioning of the internal market in road freight transport.

Four Member States differentiate annual vehicle taxes according to the EURO emission class of the vehicle. The UK created a reduced pollution tax class for vehicles that qualify for a higher emission standard than that required by the EU legislation when the vehicle was manufactured. In Slovenia different tax rates apply for each EURO emission class. Hungary gives a reduction to EURO III vehicles and a higher reduction to EURO IV and cleaner vehicles. Germany applies a system consisting of 4 tax bands with the lowest rates available for vehicles that meet at least the EURO II standard. Even though the differentiation of annual vehicle tax rate according to EURO standards is not mandatory, it is considered that such differentiation can be a useful addition to the policy mix to promote the use of more environmentally friendly vehicles.

Annex III provides an overview of annual vehicle tax rates for a typical truck and trailer combination that is widely used in international road freight transport.

⁵ For the same type of vehicle, in this case a EURO 5 HGV of max 25 tonnes gross laden weight with 3-axles and with air suspension

4. ASSESSMENT OF THE IMPACTS OF THE DIRECTIVE

4.1. Impact on the objectives of sustainable transport policy

Road user charges represent about 2% of total operating cost of European road freight operators. For this part, fuel costs account on average for about a third⁶ of European hauliers' direct operating costs, which explains why the fluctuations of fuel prices during the years 2006-2010 had a significant impact on the performance of road hauliers. Therefore the actual impact of road charges on the behaviour of road users has to be considered against the background of other changes in the cost structure of their operating costs.

4.1.1. Reduction in vehicle-kilometres travelled and efficiency improvements in road freight transport and logistics

Road charging can improve transport efficiency as transport users are encouraged to use their vehicles and available infrastructure more efficiently.

The response of transport users to the introduction of a road charge may involve a re-routing of the delivery, better logistic organisation (reduction of empty running, increase in load factors) or the choice of alternative modes of transport.

Increasing the average load and minimizing empty trips through improved organisation and scheduling limit the cost increases for the hauliers and shippers and increase the efficiency of the transport system as a whole.

The evaluation studies that have been published on the tolling systems in Austria, Germany and the Czech Republic suggest that road freight transport is sensitive to changes in transport prices and the relevant actors respond to the price signals given by the tolls. Statistics on freight transport in Germany and Austria show that the introduction of the tolls coincided with a decrease in the average distance travelled by trucks.⁷

In general it is nevertheless difficult to isolate the impact of the introduction of tolls from other, sometimes reinforcing, sometimes counteracting effects such as the impact of the increased efficiency of the road haulage market that has resulted from market opening, the introduction of stricter enforcement policies, market demand for freight transport services driven by the general economic situation or fuel prices.

The very competitive nature of the road freight transport market makes it more difficult for hauliers to systematically and fully pass on the cost of the tolls to their customers. This gives an incentive to both hauliers and shippers to look for opportunities for efficiency improvements in the supply chain that can result in more load consolidation, less empty running and more optimised routing.

⁶ UK RHA 2007

⁷ Significance and CE Delft, Price sensitivity of European road freight transport – towards a better understanding of existing results, 2010

Vignette systems and concession schemes that only apply to specific road sections are less efficient in changing user behaviour than network-wide integrated tolling systems. The price of the vignette does not properly reflect the costs generated by the actual use of the vehicle, especially in case of those hauliers who purchase annual vignettes. In case of isolated concession tolling schemes the impact of pricing on user behaviour is likely to be less pronounced than with fully integrated network-wide tolling systems.

4.1.2. Change of heavy goods vehicle fleet composition and reduction of harmful emissions

It is clear from experience that tolls that are differentiated according to the EURO emission class of the vehicle will accelerate the renewal of the vehicle fleet and the resulting shift to less polluting technology will have a significant positive impact on emissions.

Germany has been applying differentiated tolls from the very beginning of the Maut to promote fleet renewal and a shift to cleaner vehicles. The current toll rates are differentiated in such a way as to take almost full advantage of the maximum permitted variation between the most polluting and the least polluting vehicle classes. The electronic tolling system allows the actual number of vehicle kilometres travelled by each EURO class to be accurately monitored. Over a 5 year period the combined share of EURO V and EEV (enhanced environmentally friendly vehicle) vehicles increased from less than 1% to more than 60%, which is significantly higher than the usual fleet renewal rate. Over the same period the share of EURO II or more polluting vehicles was reduced from 33.8% to 2.3%. This confirms that differentiated tolls can be a very effective means to promote the use of less polluting vehicles, especially if such differentiated tolls are deployed as part of a wider policy toolbox that may include other measures such as differentiated vehicle taxes or financial support for the acquisition of vehicles that exceed the applicable EURO standard.

4.1.3. Reduction of traffic congestion

Congestion in interurban road networks is a result of insufficient infrastructure capacity and the lack of efficient demand management. Differentiated tolls can be used to soften congestion peaks and redistribute traffic across a wider time period. As a result, road and other transport infrastructure can be used in a more efficient way ideally saving public spending by reducing the need for capacity expansion.

Tolls that are efficiently differentiated to combat congestion deliver time savings as certain users will avoid congested time periods in order to reduce the charges to be paid. This leads to reductions in the time spent on the road for those that pay the higher peak time tolls. In addition to time savings, reducing congestion peaks would also reduce the uncertainty in travel time and increase the reliability of delivery times. As less buffer time needs to be incorporated this leads to a reduction in delivery times for both short and long distance trips. For freight operators, this brings advantages in the planning of complex logistic process, more efficient use of resources, and hence increased competitiveness. Furthermore, reliable delivery times provide advantages for customers, including manufacturers whose production processes depend on timely deliveries.

The time-based differentiation of toll rates with a view to reducing congestion and minimising environmental damage is allowed by the Directive but unlike differentiation according to EURO class this type of differentiation is not a requirement. From the Member States operating integrated network-wide toll collection systems the Czech Republic is the only one applying time differentiation across the network. Here higher toll rates are applied between 3-9 pm on Friday afternoons. These Friday afternoon toll rates are up to 53% higher than the regular toll rates that apply during the rest of the week. In Austria the toll on the Brenner Pass is differentiated according to the time of the day with 100% higher tolls being applied to the heavier vehicles (four axles or more) during the night with the objective of reducing the impact of traffic-based noise emissions.

As regards the motorways with toll barriers, a time differentiation according to peak and off-peak periods has been applied in France on the A1 motorway between Lille and Paris, on the A14 motorway between Orgeval and Paris and on a section of the A86 motorway. Experience from these schemes shows, that differentiated tolls have induced changes in users' behaviour with a portion of the users avoiding the peak periods for the benefit of the cheaper off-peak periods.

In Spain the variation of toll rates according to time is applied on 12 individual sections of concession motorways. Tolls are differentiated according to different criteria and to varying degrees on the different motorway sections. On four motorway sections higher toll rates are applied during the summer season and Easter week, on three sections reduced toll rates are charged during the night, on four sections increased peak period toll rates are applied during 5 to 8 hours per day while on one motorway section a reduced tariff is applied over the weekend. The extent of the toll differentiation ranges from 11% to 100%. On one particular motorway section (Hub airport M-12) the night period is zero rated while a toll is levied during the day.

Slovenia also differentiates tolls according to time of the day applying a lower toll rate during the night with a difference of 11% between the lower and the higher toll rates.

Despite these encouraging results from the existing toll differentiation schemes there are a number of reasons why toll differentiation has not been more widely applied in the Member States. Toll operators reportedly face practical difficulties to adjust the differentiated charges to the changes in traffic demand in a way which ensures that differentiation is implemented in a manner that is revenue neutral over a period of two years. There has also been a lack of incentives for toll operators to introduce differentiated charges and increase the complexity and operating costs of the tolling system if no extra revenue is allowed to be generated. Finally, the limitations on the maximum variation might also reduce the potential effectiveness of differentiated tolling and this can also discourage operators from applying differentiated tolls.

From the road hauliers' point of view differentiated tolls offer a solution that is preferable to outright traffic bans as differentiated tolls enable hauliers to make a rational business decision about the scheduling of their deliveries and have the flexibility to operate during congested time periods if client requirements or other operational reasons justify the payment of the higher tolls.

4.1.4. Modal shift

If the cost increases due to the introduction of road charges are transferred to the price of transport services, the competitive position of road against the other modes will change and for some combinations of product type, geographic area and time period it may become more economical to use rail, short-sea shipping or maritime transport.

Statistics indicate that rail transport increased in Austria after the introduction of tolling in Austria and Germany. Also in Germany the introduction of the road toll coincided with an increase in rail freight transport activity.

It is, however, difficult to establish a direct and general relationship between the introduction of road tolls and modal shift from road to other transport modes. This is due to the fact that not all loads are transferable to other modes either due to the characteristics of the load or the lack of available alternative transport options of the desired quality, the cost difference between road and other transport options might be more than the additional cost imposed on road transport by the introduction of the toll and price being only one of the criteria when decision makers decide between different transport modes.

One example of how road tolls can be used to promote modal shift is the mark-up levied on the Brenner motorway in Austria. The proceeds from the mark-up are earmarked to contribute to the construction of the Brenner Base Tunnel, a TEN-T priority rail project. The resulting shift from road to rail will deliver significant environmental benefits for the region. The mark-up therefore allows a kind of pre-financing of important new infrastructure projects. In 2011 the mark-up is extended to cover a longer section of the motorway across the whole sensitive region. Over the time of its application the mark-up is expected to generate revenues accounting for about 25% of the total cost of the Brenner Base Tunnel.

4.2. Trends in traffic density/detours

Tolling roads may divert traffic to parallel roads with no charges. This has a particularly negative impact when heavy goods vehicles use secondary roads which are usually less suitable and more accident prone than tolled motorways, and which may cross areas more sensitive to pollution and noise. Such traffic diversion is well known on roads parallel to concession motorways (e.g. between Zaragoza and Barcelona) or on un-tolled motorways in Alsace bordering the German tolled network. After the introduction of the toll on the Czech motorway network, the transport intensity of vehicles over 12 tonnes decreased by about 10% on the Czech motorways.⁸ The study did not cover how much of this traffic switched to non tolled roads within the Czech Republic but at the same time some transit traffic shifted from the Czech Republic to Austria as the overall cost advantage of transiting through the Czech Republic was reduced despite the fact that tolls are also applied in Austria. Experience in Germany also indicated that there was a detour effect especially in the first month after the introduction of the toll but then it gradually

⁸ Brzobohatý, T., Analysis of impact of toll on road freight traffic intensities in the Czech Republic, The Czech Transport Federation, 2009

reduced. It has to be noted that the quality of the available secondary road network is crucial as it makes a big difference to the willingness to take the detour. Detours can also be limited by imposing entry restriction on transit traffic.

While network-wide tolling offers a solution to the problem of detours within an individual Member State, it does not necessarily result in a decrease in net traffic density of the EU road network. It moreover does not eliminate potential detours through parallel or secondary roads.

4.3. Use of vehicles of more than 3.5 and less than 12 tonnes and all other road users

The more categories of vehicles are included in a road charging scheme, the higher the efficiency and effectiveness of the scheme. The risk of excluding certain categories of vehicles from charging schemes is that some road transport operators could be tempted to put more freight on vehicles excluded from charging schemes than otherwise justified. Increased sales of non-charged vehicle categories around the time of the introduction of road charging schemes appear to confirm this observation. This situation creates an uneven level playing field for

Currently, Member States with vignettes (see Annex I) have chosen to exclude vehicles between 3.5 and 12 tonnes from charging schemes due to high administrative costs.

A fuller implementation of the user pays principle, by including all categories of vehicles in charging schemes, would contribute to achieving the 60% GHG emission reduction target of the White Paper on Transport⁹. It would moreover have a beneficial effect on the revenue generating potential of road charging schemes allowing a higher proportion of infrastructure costs to be covered and enabling traffic management objectives to be achieved if the price signals apply to all users.

4.4. Interoperability

Electronic toll collection systems offer the possibility of charging road vehicles in a flexible way and allow targeted infrastructure charging policies but it is essential for such systems to be interoperable, also across national borders, to avoid creating new obstacles to traffic flow in Europe. Interoperability should enable road users to circulate throughout the European Union without having to install several devices to access different tolled infrastructure. There must be interoperability between the different charging systems so that paying charges would be a seamless operation throughout the EU.

Directive 2004/52/EC lays down the conditions for the interoperability of electronic road toll systems in the European Union. The Directive requires that all new electronic toll systems brought into service shall use one or more of the following technologies: satellite positioning (GNSS), mobile communications (GSM-GPRS) and microwave technology (DSRC). The Directive also sets up a European Electronic Toll Service (EETS), by which road users would only need to subscribe to

⁹ White Paper 'Roadmap to a single European transport area – Towards a competitive and resource-efficient transport system', COM(2011)144 final

a single contract with an EETS provider in order to be able to pay the tolls related to any road charging scheme requiring on-board equipment.

According to Directive 2004/52/EC, EETS should have been available for trucks in October 2012. This deadline could not be met, as explained in the Communication of the Commission on the implementation of EETS of 30 August 2012¹⁰. The Communication proposes a number of actions to remedy this delay. One of the actions, which has been initiated since the adoption of the Communication, is to promote a stepwise approach for EETS implementation with first deployment at cross-border regional level in Member States with significant volume of traffic and extended electronic road tolling. This initial regional deployment is promoted in a way that it can be extended at a later stage to cover all the electronically tolled road infrastructures in the EU. The Commission is providing its technical assistance for such regional deployment and is planning to grant TEN-T financial supports to those projects which can demonstrate their maturity, the full support of the Member States involved and their scalability so that they can be extended at a later stage to cover all EU tolled roads.

In addition under the latest amendment of the Directive which will be fully applicable at the latest by 28 September 2013, where a Member State collects tolls by means of a system that requires the use of on-board unit, it shall ensure that appropriate on-board units fully compliant with EETS can be obtained by all users. In other words, the Commission will therefore have to issue negative opinions on future tolling arrangements which would not comply with the EETS requirements, thereby reinforcing the need to accelerate the deployment of EETS.

4.5. Future charging schemes and developments in charging technology

As demonstrated by the existing tolling systems the technology is mature enough to enable reliable toll collection and enforcement. As a result, a number of Member States are developing new distance based tolling, in part replacing existing vignette or barrier-tolled systems.

For example, France plans to introduce in 2013 a so-called "Ecotaxe" on 10,500 kilometres of currently toll-free highways and on about 5,000 kilometres of secondary roads that would otherwise face diversion from national roads.

During spring 2010 a political agreement was reached on the principle of introducing a new distance-based road pricing scheme for trucks in Denmark. This new road charging system is intended to replace the Danish participation in the time-based Eurovignette Protocol in 2015.

In Belgium a political agreement was reached between the regions at the beginning of 2011 to implement distance-based charging system of trucks above 3.5 tons on the Belgian TEN-T network, other motorways and some other roads to be decided at the regional level. The system is planned to be implemented in 2016.

¹⁰ COM(2012) 474 final. Communication from the Commission. Implementation of the European Electronic Toll Service

Hungary continues the preparations for the introduction of a distance-based electronic tolling system to be implemented in 2013.

In October 2010 the Netherlands halted the relatively advanced preparations for introducing the planned distance-based charging system. The Netherlands intend to abolish the vignette scheme for heavy goods vehicles.

The UK Government has launched an official consultation concerning the introduction of a new vignette system for the use of almost entire road network by heavy goods vehicles of 12 tonnes and over. The scheme will be based on electronic vignettes (the tender for an electronic vignette provider is envisaged in 2013). Subject to the constraints of the legislative programme, the Government intends to implement the user charging scheme before the end of the current Parliament (May 2015). This would mean charging for foreign hauliers being introduced in April 2015, with UK hauliers facing road user charges and reductions in other taxes and charges from May 2014.

With the rapid advancement in information technology, the scope of a road pricing scheme could now include the deployment of a number of ITS technologies. The key functionalities include the collection and provision of information and guidance that can be used to enable better decision making by the transport user or the infrastructure operator, the controlling and directing of the movement of vehicles and the automating and enhancing of the efficiency of the road charging systems.

The successful integration of road charging systems with ITS applications will produce further benefits in terms of travel time reduction, improved security and service reliability and cost-effectiveness.

4.6. Impact on the internal market, including on island, landlocked and peripheral regions

The smooth functioning of the internal market is depending on efficient instruments to internalise transport costs. Road charging contributes to more efficient investments on the trans-European network and more efficient use of infrastructure. Tolls and charges reflect a part of real costs which transport users are generating in relation to infrastructure, and increasingly also to externalities. Unless these real costs of transport are paid by users, these costs will have to be borne by society, through other instruments such as taxes. Road user charges are fairer and more efficient, as each motorist or haulier pays for his/her own use of the infrastructure, not for that of other users. By sending the correct price signals, user charges can shape more sustainable transport behaviour, e.g. re-directing road users to acquiring and using cleaner vehicles or using the roads outside peak hours.

Moreover road pricing, whereby vehicle operators can pay the same fair price for using the road infrastructure independent of their country of establishment, is an important element in ensuring fair competition in the internal market. In this respect, the Directive provides an effective framework which allows Member States to apply road charging and at the same time ensures that the road charging schemes do not discriminate occasional users, or other hauliers on the ground of their nationality or origin.

However, in spite of the framework on road pricing provided by the Directive, a fully integrated Internal Market has not yet been achieved. The patchwork of charging systems (see Annex 1) and different technologies applied within these systems are causing higher administrative costs to hauliers, and in addition, different – and sometimes unclear – price signals encourage hauliers to perform detours around areas with relatively higher charges. Lastly, the patchwork of different charging systems may particularly disadvantage hauliers established in countries with high traffic density, such as transit countries where infrastructure needs, hence infrastructure expenditure, are typically higher. These countries have to more heavily rely on fuel and vehicle taxes, unless road pricing schemes are in place making resident as well as non-resident hauliers pay for their fair share of infrastructure costs.

In principle, the impact of road charging on final product prices is small, if not marginal, but this depends on how much of the additional cost can be absorbed by the hauliers through efficiency improvements and how much can be passed on to the customers in a highly competitive transport market. The actual (percentage or per kilometre) impact also depends on the characteristics of the goods transported. The impact will be higher on low weight-to-volume and low price-to-weight products.

At an aggregate EU level the benefits of road charging in terms of increased net welfare are positive. At regional level these benefits are not distributed equally and a clear pattern can be distinguished. Regions with a high proportion of through-traffic benefit from the increased toll income resulting from trade between other regions that crosses them. Peripheral, islands and landlocked regions benefit from improved accessibility and better integration with central regions if toll revenues are recycled into investment of transport infrastructure.

4.7. Impact on levels of investment in the sector

The financing of the construction and maintenance of transport infrastructure can be provided from various sources that include road user charges and tolls, taxes related to the use of the vehicles such as vehicle registration and annual vehicle circulation taxes and the excise duty levied on the fuel used in transport or general taxation or a combination of these. Theoretically the investment needs of the sector could be provided from any of these sources but at times when national budgets are under serious pressure and there are conflicting spending priorities, the existence of a steady and predictable flow of revenues from road user charges and tolls provides a sound basis for the financing of the transport infrastructure. This can be further strengthened by the earmarking of these revenues as it is recommended by the Directive. The use of the revenues from road charges is more heterogeneous when the latter are collected by the State. In Austria, Bulgaria, Czech Republic, Romania and Lithuania, income is earmarked to the maintenance and development of road infrastructure. In Germany and Poland, they are also earmarked, but to transport in general (road and rail infrastructure, as well as freight operations in Germany). Finally in the other countries (Hungary, Belgium, Denmark, Ireland, Luxemburg, the Netherlands and Sweden), the legislation on road charging does not foresee any earmarking of revenues.

Lastly, road charges provide regular and stable revenue streams, which is an important decision criteria for private investors to engage in infrastructure

investments, and which furthermore allows a more cost-effective¹¹ planning and execution of infrastructure maintenance.

5. CONCLUSIONS

Properly planned and executed transport infrastructure investments have a positive impact on economic growth, create wealth and jobs, and enhance trade and geographical accessibility. However, there is an increased pressure on public resources for infrastructure funding, which has continued to fall in Europe since the 1970s, and a new systematic approach to infrastructure maintenance and pricing is required. The implementation of the "user pays" and "polluter pays" principle, while reflecting more appropriately the total cost of transport infrastructure and external costs, can provide an additional, fair and efficient way to ensure the adequate financing of transport infrastructure. Road charges can also secure the revenue flow for the regular and timely maintenance of the infrastructure and help attracting private investors in the Public Private Partnerships by notably provide guarantees for innovative financial instruments.

Differentiated kilometre-based tolls offer an appropriate instrument to recover from the users of heavy goods vehicles a fair share of the road infrastructure costs leading to a more resource efficient and less environmentally damaging transport. It can also provide clear price signals to better manage traffic flows and create more resource-efficient and sustainable transport by reducing congestion and the environmental impact of road transport.

However, whereas the Directive has established an appropriate framework for the recovery of infrastructure costs from heavy goods vehicles, great disparities in national road charging policies exist, which largely can be attributed to a slower than expected move from time-based user charges to integrated network-wide electronic tolling. Consequently, users do not receive, across the EU, consistent price signals capable of steering them towards a more sustainable use of the infrastructure. Moreover, the lack of harmonisation in both the type of charges (vignettes, tolls differentiated or not) and the type of charge-collecting technologies that are used results in additional administrative burden and costs both for public authorities and users. As an example, international hauliers currently need 11 different on-board units and tolling contracts, as well as 5 vignettes to be able to drive unhindered on European roads.

This patchwork of charging systems (see Annex 1) does not allow reaping the benefits of a fully integrated Internal Market. Consequently, hauliers are faced with higher administrative costs and they encourage hauliers to perform detours around areas with relatively higher charges. Also, the patchwork of charging systems may dis-advantage hauliers established in high traffic density countries having to foot a high infrastructure bill, unless fair road pricing schemes ensure that resident as well as non-resident hauliers pay for their share of infrastructure costs. The successful implementation and operation of integrated electronic tolling systems in several EU Member States have demonstrated that mature technologies already exist that allow

¹¹ Up to 20% according to numbers from Germany

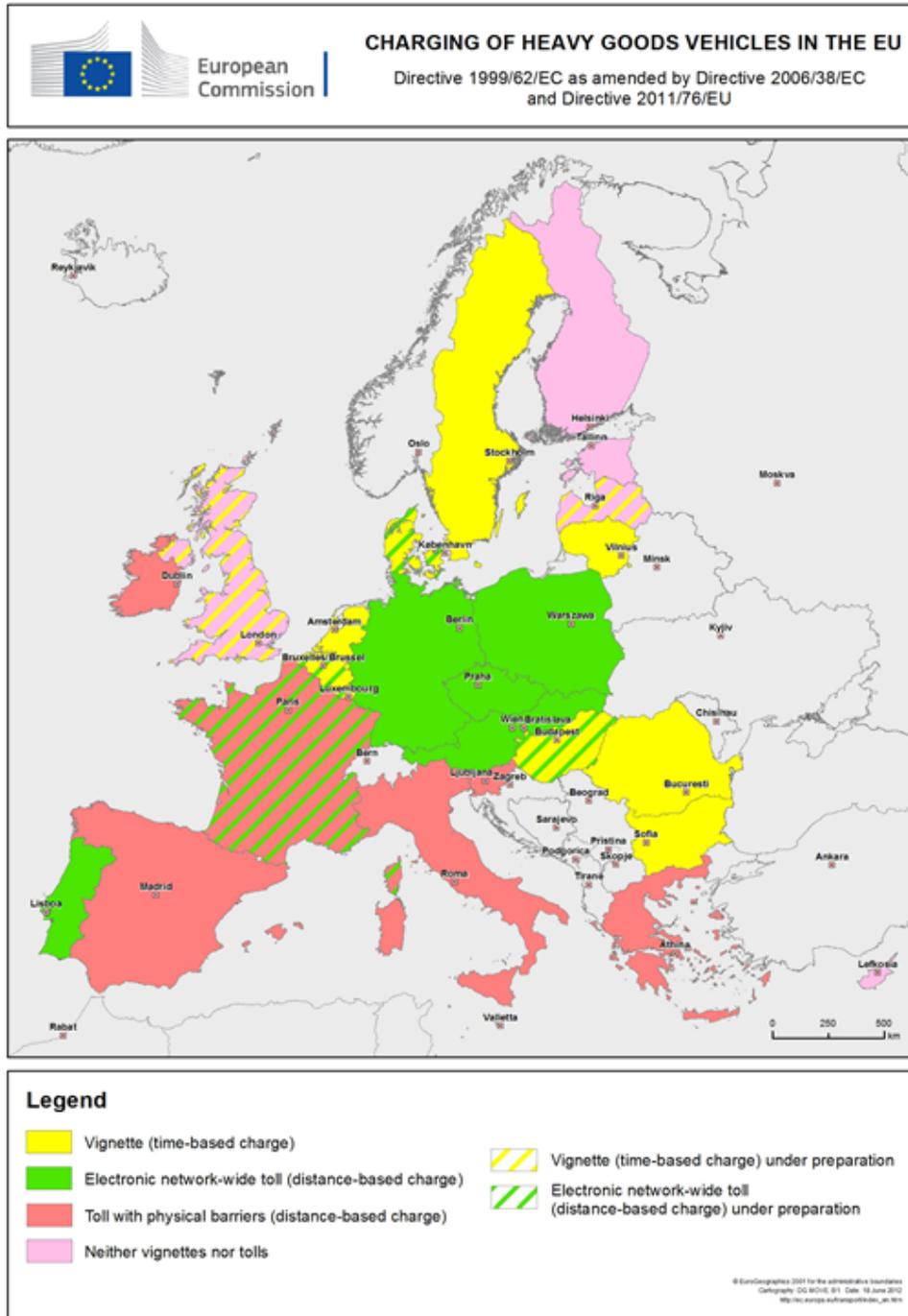
efficient tolling without hindering the free flow of traffic. Adequate enforcement of tolls is possible without setting up physical toll barriers that can themselves be a source of congestion and environmental problems. But, existing electronic tolling systems do not take full advantage of their potential to increase the efficiency of transport operations. The effectiveness of toll differentiation based on the EURO emission class of the vehicle has been clearly demonstrated but much more could be done in terms of differentiating tolls with a view to reducing congestion.

Directive 2011/76/EU which recently amended Directive 1999/62/EC has now created an opportunity for Member States to move towards a higher degree of internalisation of external costs generated by heavy goods vehicles. The new Directive gives Member States the option to charge heavy goods vehicles for the costs of air and noise pollution they generate. The opportunity for a wider differentiation of toll rates according to the time of road use allows road operators to better manage traffic and reduce congestion. Additionally, the new Directive provides a strong incentive to earmark some of the tolling revenues to contribute to the financing of certain types of projects defined in the Directive such as projects for alternative transport infrastructure, innovative clean transport systems or safe parking areas. Several Member States are already actively working in view of fully using these new possibilities provided by Directive 2011/76/EU such as Austria, Belgium and Denmark. As mentioned in the introduction, a separate assessment will be made of this Directive with a view to highlighting any possible areas that may need to be addressed in accordance with the strategy of the 2011 Transport White Paper to move towards the full application of the 'user pays' and 'polluter pays' principles.

Lastly - and in addition to the outstanding issues of adequate financing for maintenance as well as inconsistent charging systems and sometimes incorrect price signals – there is usually no arrangements for consulting and for informing users about yearly adjustments of toll levels creating a risk of toll chargers abusing their monopolistic position and undermining the public acceptability of road charging. This point is particularly relevant for passenger cars for which there is no EU legislation to ensure the non-discriminatory and proportional character of the tolls or user charges paid.

6. ANNEXES

Annex I – Charging of heavy goods vehicles in the EU



Annex II – Length of charged road network by Member State

Member States	TOLLED ROADS (KM)
with tolls	
Austria	2,178
Czech Republic	1,376
France	8,614
Germany	13,800
Greece	916
Ireland	304
Italy	5,773
Poland	2,368
Portugal	1,700
Slovakia	1,957
Slovenia	545
Spain	3,362
TOTAL ABOVE	42,893
with vignettes for heavy goods vehicles	
Belgium	3,996
Bulgaria	N.A.
Denmark	1,100
Hungary	1,610
Lithuania	1,742
Luxembourg	93
Netherlands	2,631
Romania	16,500
Sweden	4,000
TOTAL ABOVE	27,672
Others	
Cyprus	0
Estonia	0
Finland	0
Latvia	0
Malta	0
United Kingdom	42
TOTAL ABOVE	42
GRAND TOTAL	70,607

Annex III – Annual vehicle tax rates for a typical vehicle combination used in international road freight transport

Combination of a tractor unit (3 axles, 9 tonnes, equipped with air suspension and EURO III compliant engine) and a semitrailer (2 axles, 31 tonne maximum permissible gross laden weight)	
Member State	Annual vehicle tax (€)
IE	4496
SE	2523
FI	2183
UK	2151
SK ¹²	1948
CZ	1793
AT	1512
EL	1200
<i>EU-27 average¹³</i>	<i>1147</i>
HU	1101
DE	826
ES ¹⁴	797
NL	763
PL	729
PT	706
LT	655
DK	632
EE	630
LU	630
BE	628
BG	628
CY	628
FR	628
IT	628
MT	628
SI	628
LV	618
RO	602

¹² In Slovakia the different regions can charge different tax rates. The rate in the table represents the lowest rate charged

¹³ The EU-27 average shown is the arithmetic average of the 27 national vehicle tax rates. Because of the skewed distribution of values, the median (€706) is significantly lower than the average.

¹⁴ In Spain the different municipalities can charge different tax rates. The rate in the table is only illustrative and the actual tax rates charged can be different.