

User charges for road infrastructure in certain European Union member states

Piotr Lewandowski

Maritime University in Szczecin, Faculty of Economics and Transport Engineering
Institute of Transport Management
11 H. Pobożnego St., 70-507 Szczecin, Poland
e-mail: p.lewandowski@am.szczecin.pl

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Abstract

New regulations enforced by the European Commission have greatly extended the possibilities to levy charges. The regulations include not only the TEN-T network, but also all motorways in Europe. The directive has given Member States the opportunity to charge heavy goods vehicles in a way to balance not only the costs of infrastructure but also those connected to noise and pollution caused by road traffic. The new provisions have enabled Member States to increase the charge during peak periods and to lower it in the off-peak hours in order to reduce traffic more effectively. The binding norms provide that the revenue from the charges should be destined to enhancing the stability of the transport section. The new rules provide a strong incentive to set aside new revenues from charging to finance certain types of transport projects. Poland has adapted very well to this new situation. The ever-increasing network of toll roads gives new opportunities for the development of transport. The increasing number of national and foreign hauliers guarantees constant investment in the development of road infrastructure and therefore a good use of the country's geographical location.

Introduction

The liberalisation of provisions concerning international transport in EU Member States has been subject to criticism by certain groups of road hauliers, in reference to equal opportunities in the use of road infrastructure.

The transport of cargo within the Community is subject to tolls. The 1999 Eurovignette Directive on the charging of heavy goods vehicles weighing over 3.5 tonnes for the use of certain infrastructures made it possible to recover the costs sustained in the maintenance of road infrastructure. The directive authorises Member States to levy time-based 'user charges' (e.g. per day, per week, per year) or distance-based tolls (e.g. per kilometre). Said provisions prohibit the recovery of the so-called external costs, such as those related to air and acoustic pollution, currently borne by society at large and tax payers in particular.

On June 1st, 2011 the European Parliament passed new regulations allowing Member States to levy additional charges on heavy goods vehicles, connected not only with the maintenance of infrastructure but also with noise and pollution. Since 2012, this new regulation has allowed Member States to address the issue of heavy traffic, allowing them to regulate the amount of the charge (with the possibility to increase it up to 175%), according to the time of day (European Commission, 2008; 2011). Additionally, a new mechanism allows assigning the revenue from the new charges to new investment projects for the modernisation of transport infrastructure.

The EU provisions therefore send price signals to operators, thanks to which heavy goods vehicles bear the entire cost connected with the noise and pollution they create. The tolls also constitute a tool to regulate traffic depending on the time of day, discouraging the entrance on the roads of heavy goods vehicles during peak hours (etransport.pl).



Figure 1. States whose user charges are subject to analysis

In practice, the charges for external costs amount to 3–4 cents per kilometre, depending on the Euro class of the vehicle, the location of the road and the traffic. According to the European Commission's decision, the charges are to be collected via electronic systems and the drivers are to be issued a proof of payment, directly stating the amount of external costs so that these can be transferred to the final clients.

Member States determine individually the roads for which they wish to charge user fees and they also individually settle the amounts. The charging systems also vary from country to country.

The analysis of the rates of charges for the use of road infrastructure and the systems used for their calculation in chosen EU states will allow to evaluate some of the problems faced by professional road hauliers (DKV Euro Service, 2016).

The following states have been subject to analysis: Poland, Austria, Belgium, the Netherlands, the

Czech Republic, Spain, France and Germany (Figure 1).

Poland – electronic toll collection system viaTOLL

Poland has an electronic toll collection system for the passage on national roads. The charge is collected on the chosen sections of the road and goes to the National Road Fund.

The amounts of electronic charges that apply in the viaTOLL system have been advised by the Ministry of Transport, Construction and Marine Economy (formerly the Ministry of Infrastructure).

The categories of vehicles subject to charges are (Eurovignette, 2016):

- a vehicle or a combination of vehicles of MPW (maximum permissible weight) over 3.5 tonnes but below 12 tonnes;
- a vehicle or a combination of vehicles of MPW over 12 tonnes;
- buses, regardless of their maximum permissible weight.

Road categories:

- Class A and S national roads, with class A referring to motorways and S referring to express ways (Table 1);
- Class GP and G national roads, with GP referring to major trunk roads and G referring to major roads (Table 2).

The viaTOLL system is based on the short-range wireless communication technology. The system consists of the following elements: above the toll roads there are gantries fitted with antennas. The antennas allow the communication between

Table 1. Electronic toll rates for Class A and S roads

| Vehicle category | Toll rate per 1 km of national road (in PLN) | | | |
|---|--|--------|--------|----------------|
| | EURO class, according to exhaust emissions (1) | | | |
| | max. EURO 2 | EURO 3 | EURO 4 | min. EURO 5 |
| Vehicles with MPW (2) over 3.5 tonnes but below 12 tonnes | 0.40 | 0.35 | 0.28 | 0.20 |
| Vehicles with MPW (2) over 12 tonnes | 0.53 | 0.46 | 0.37 | 0.27 |
| Buses regardless of MPW | 0.40 | 0.35 | 0.28 | 0.20 |

Table 2. Electronic toll rates for Class GP and G roads

| Vehicle category | Toll rate per 1 km of national road (in PLN) | | | |
|---|--|--------|--------|----------------|
| | EURO class, according to exhaust emissions (1) | | | |
| | max. EURO 2 | EURO 3 | EURO 4 | min. EURO 5 |
| Vehicles with MPW (2) over 3.5 tonnes but below 12 tonnes | 0.32 | 0.28 | 0.22 | 0.16 |
| Vehicles with MPW (2) over 12 tonnes | 0.42 | 0.37 | 0.29 | 0.21 |
| Buses regardless of MPW | 0.32 | 0.28 | 0.22 | 0.16 |

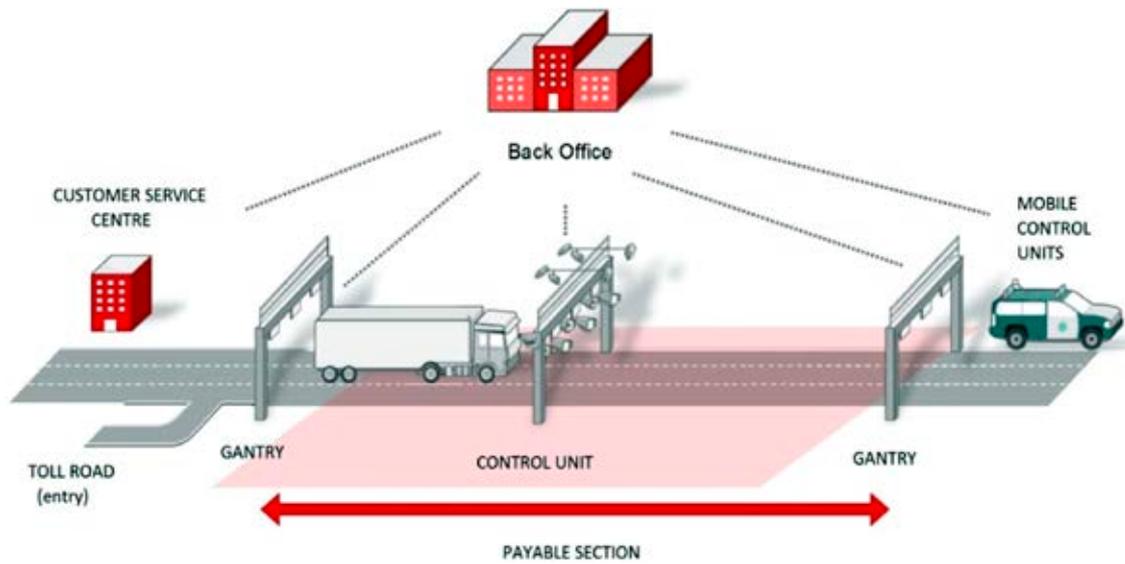


Figure 2. The viaTOLL operation principle

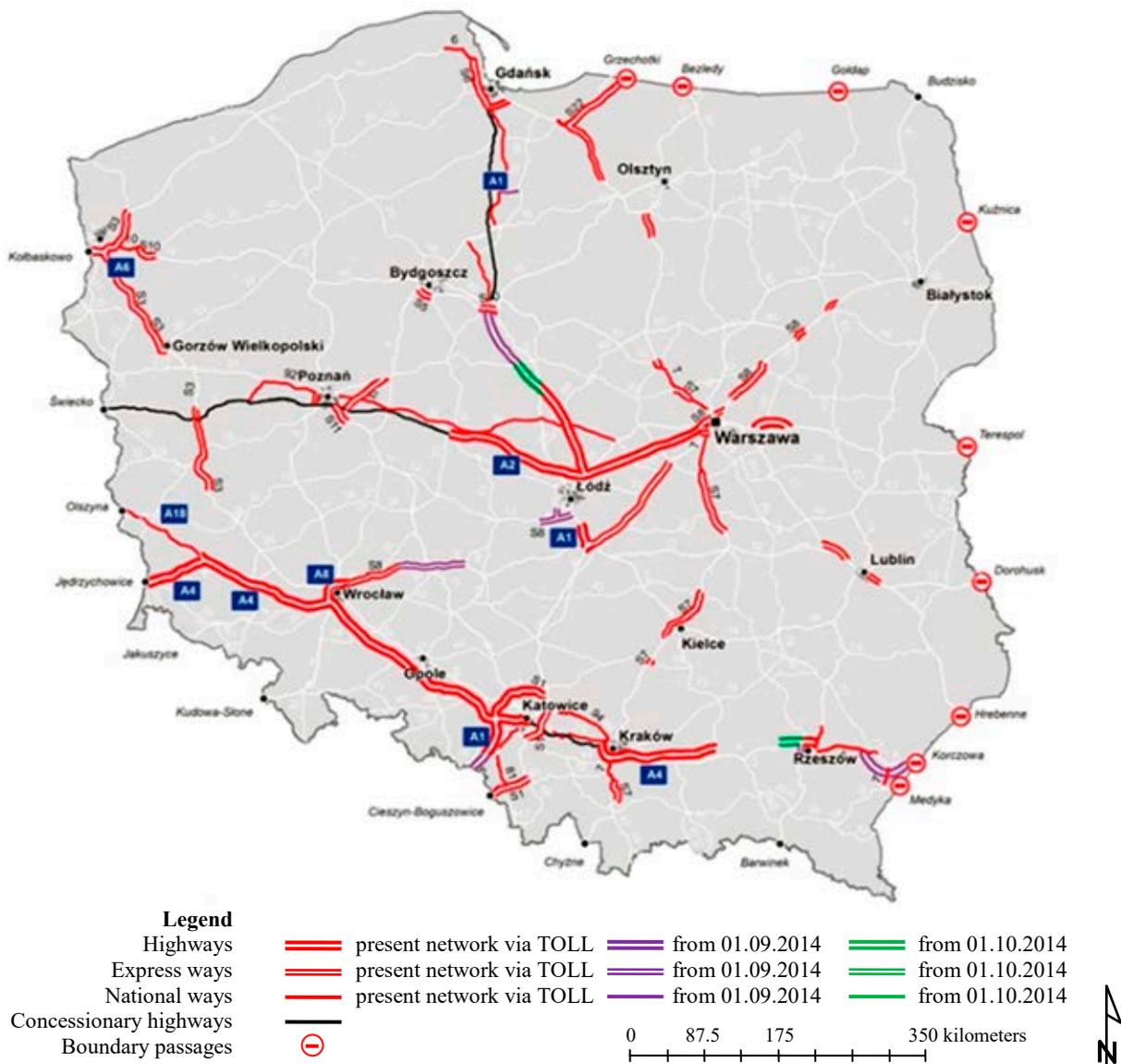


Figure 3. Poland – a map of toll roads (author’s own compilation based on GDDKiA data)

transmitters and viaBOXes installed in cars. Every time a car (equipped with a viaBOX) passes under a gantry, a toll is calculated for the passage on a toll-charging section (Figure 2).

The viaTOLL system was introduced in March 2011. Initially it covered express ways and motorways, for a total length of 1565 km. Poland (using primarily EU funds) is still introducing new transit sections, with 325 km being added in 2012, 300 km in March 2013, 465 km in October 2013 and 265 km in September 2014.

The 22 February 2015 Regulation of the Council of Ministers has introduced an additional extension. Since June 30th, 2015, 251 km of national roads (35 km of motorways and 216 km of express ways) are being added to the system. Within four years, the total length of toll roads has doubled and currently amounts to 3171 km. However, the map presented in Figure 3 shows how much there is still to be done and how the topography and location of Poland facilitates the use of EU laws to collect charges, which substitute EU funds expected in the future. This is best seen by considering the increase of profits from e-toll. In 2014, the viaTOLL system collected PLN 1.42 billion, i.e. a third more than in the previous year. The number of users and first-time registrations has also increased (843 000 in 2014 in comparison with 766 000 in 2013).

The comparison between the total size of infrastructure and the amount of toll roads in the chosen EU states proves truly interesting.

Austria

In the territory of Austria there is an electronic toll system for lorries and buses over 3.5 tonnes using highways and freeways. Vehicles under 3.5 tonnes are subject to a different type of toll, as they are obliged to buy motorway vignettes (Table 3). The automatic system, called GO, has replaced both the vignettes and the road tax. The toll collection

Table 3. Toll rates per one kilometre of highway

| Tolling according to EURO emission classes Rates for vehicles with a max. permissible gross weight of more than 3.5 tonnes from 01-01-2015 | | | |
|---|--|---|---|
| Rate group |  Category 2 2 axle |  Category 3 3 axle |  Category 4+ 4 a. more axle |
| A EURO – emission class EURO VI | 0.156 | 0.2184 | 0.3276 |
| B EURO – emission class EURO EEV | 0.170 | 0.2380 | 0.3570 |
| C EURO – emission class EURO IV a. V | 0.188 | 0.2632 | 0.3948 |
| D EURO – emission class EURO 0 to III | 0.211 | 0.2954 | 0.4431 |

system has been designed by the Kapsch TrafficCom Company. The amount of toll differs according to the EURO emission class, the number of axles of a vehicle and the length of the section.

Increased rates are applied to particular sections of highways and freeways. The following are the special toll routes:

- A9 – Bosrucktunnel (km 57–67), Gleinalmtunnel (km 133–157);
- A10 – Kataschbergtunnel / Tauerntunnel (km 104–113);
- A11 – Karawankentunnel (km 11–21);
- A13 – Hangbrücken Schönberg-Matrei (km 10–19);
- S16 – Arlbergtunnel (km 22–39).

Belgium and the Netherlands

The Eurovignette system applies in Belgium and it is required from any vehicle over 12 tonnes using motorways in Belgium, the Netherlands, Luxembourg, Denmark and Sweden. The Eurovignette is bought for a specified period of time: day, week, month, or year. The charges are calculated according to the period of use, emission class and the number of axles. From 2016 the Viapass, a satellite toll system for vehicles over 3.5 tonnes MPW, will be applicable in the territory of Belgium (European Commission, 2016).

For all categories, a day vignette costs EUR 8.00. The other charges are described in Tables 4 and 5.

Table 4. Charges for passage – weekly tariff

| Charges for passage on motorways and expressways, according to the EURO emission class for vehicles over 12 tonnes MPW – weekly tariff | | |
|--|-----------|-----------------|
| Emission class | 1–3 axles | 4 or more axles |
| EURO 0 | 26.00 | 41.00 |
| EURO 1 | 23.00 | 37.00 |
| EURO 2 and over | 20.00 | 33.00 |

Table 5. Charges for passage – monthly tariff

| Charges for passage on motorways and expressways according to the EURO emission class for vehicles over 12 tonnes MPW – monthly tariff | | |
|--|-----------|-----------------|
| Emission class | 1–3 axles | 4 or more axles |
| EURO 0 | 96.00 | 155.00 |
| EURO 1 | 85.00 | 140.00 |
| EURO 2 and over | 75.00 | 125.00 |

The Czech Republic – the electronic toll system MYTO CZ

The Czech toll system MYTO CZ (Figure 4) is applied to all motor vehicles over 3.5 tonnes MPW. In this system the charge is based on the actual number of kilometres covered by the vehicle, EURO emission class and the number of axles, and it is calculated electronically by an on-board equipment Premid-Box (Table 6). The government of the Czech Republic decided to increase the toll as of January 1st, 2015 and to introduce a new Euro 6 tariff category. The Euro 6 Tariff is designated for vehicles belonging to the EURO VI category

or EEV emission class and maintains a favourable rate.

Spain – the electronic toll system DKV

All vehicles are charged for using Spanish motorways (“Autopistas”) (Figure 5). The charges for the passage on motorways and via tunnels may be settled by the use of DKV CARD or an on board toll equipment DKV BOX (Table 7). The DKV CARD enables also non-cash settlements when using secured car parks.

France – the electronic toll system TIS PL

The abbreviation TIS PL (“Télépéage Inter-Sociétés Poids Lourds”) refers to the French toll system for trucks of categories 3 and 4. Approximately 9,000 km of French motorways, several bridges and tunnels are subject to toll for all vehicles weighing 3.5 tonnes or more (Figure 6).

Road tolls in France can be settled via DKV BOX or DKV CARD. In case of using the DKV BOX, the

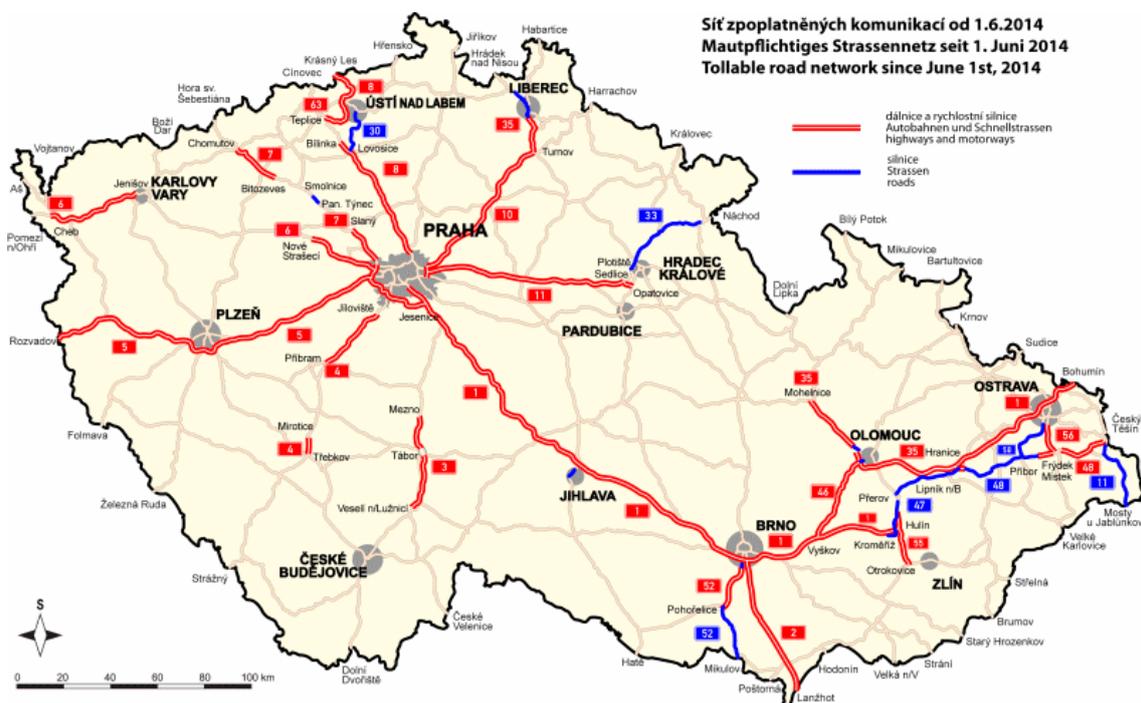


Figure 4. The Czech Republic – a map of toll roads

Table 6. The Czech Republic – charges for passage

| Rates for the passage on highways and motorways, according to the emission class and the number of axles for vehicles over 3.5 tonnes MPW in Czech korunas | | | | | | | | | | | | |
|--|----------|------|------|----------|------|------|--------|------|------|-------------|------|------|
| Emission class | EURO 0–2 | | | EURO 3–4 | | | EURO 5 | | | EURO 6, EEV | | |
| Number of axles | 2 | 3 | ≥4 | 2 | 3 | ≥4 | 2 | 3 | ≥4 | 2 | 3 | ≥4 |
| Highways and motorways | 3.34 | 5.70 | 8.24 | 2.82 | 4.81 | 6.97 | 1.83 | 3.13 | 4.52 | 1.67 | 2.85 | 4.12 |
| 1 st class roads | 1.58 | 2.74 | 3.92 | 1.33 | 2.31 | 3.31 | 0.87 | 1.5 | 2.15 | 0.79 | 1.37 | 1.96 |



| | |
|--------------|---------------|
| Acceptance | Acceptance |
| DKV BOX/CARD | DKV BOX |
| AP1 | AP2 |
| AP8 | AP4 |
| AP9 | AP6 |
| AP12 | AP7 |
| AP15 | AP51 |
| AP17 | AP61 |
| AP18 | AP68 |
| AP19 | AP71 |
| AP36 | C31 |
| AP37 | C32 |
| AP41 | (former AP16) |
| AP46 | C33 |
| AP53 | |
| AP55 | |
| AP57 | |
| AP66 | |
| M12 | |
| R2 | |
| R3 | |
| R4 | |
| R5 | |

Tunnel:

- ① Túnel del Cadi (North of Barcelona); ② Túneles de Artxabda (Bilbao): But only for coaches, two axle-mini van and cars
- ③ Túneles de Vallvidrera (Barcelona)

Figure 5. Spain – the system of toll roads

Table 7. Spain – charges for passage

| Section | Class 1 | Class 2 | |
|--|------------------------------|---------------------------------|-----------|
| | (vehicles with 2 or 3 axles) | (vehicles with 4 or more axles) | |
| | [EUR] | [EUR] | |
| Alicante (Crevillente) → Cartagena (Beatos) | 4.30 | 5.20 | A37 |
| Ávila → Adanero | 10.20 | 11.70 | A51/A6 |
| Ávila → Villacastín (A 6) | 3.00 | 3.75 | A51 |
| Barcelona (Mataró) → Malgrat / Palafolls | 5.44 | 6.77 | C32 (A19) |
| Barcelona (Martorell) → Tarragona | 13.55 | 17.05 | A7 |
| Barcelona (Molins de Rei) → El Vendrell | 11.00 | 13.80 | A7 |
| Bilbao → Zaragoza | 58.30 | 67.60 | A68 |
| Burgos (Castanares) → A68 (Bilbao) | 12.45 | 12.45 | A1 |
| Burgos (Castanares) → Arminón | 13.00 | 13.00 | A1 |
| Castelldefels Sud (Barcelona) → El Vendrell | 10.28 | 18.14 | C32 (A16) |
| El Campello (Alicante) → Monforte del Cid / A-31 | 5.15 | 6.15 | A7 |
| Girona – Norte → Granollers | 12.95 | 16.45 | A7 |
| Irun (Behobia) → San Sebastian (Donostia) | 3.95 | 4.72 | A8 |
| La Coruna → Ferrol | 8.20 | 10.70 | A9 |

Table 8. France – charges

| Motorway No. / payable section | Category | |
|--------------------------------|--------------------|-----------------------------|
| | 3 (2-axle vehicle) | 4 (3-axled or more vehicle) |
| Paris – Arras (A26) | 23.6 | 30.9 |
| Paris – Metz (A4) | 49.3 | 65.2 |
| Paris – Strasburg (A4) | 74.1 | 98.6 |
| Bordeaux – Toulouse (A62) | 38.3 | 50.6 |
| Lyon – Les Abrets (A43) | 13.2 | 16.8 |
| Reims – Troyes (A5) | 23.2 | 30.9 |

toll system operators generally offer an additional 13% discount (Table 8).

Germany – the electronic toll system TOLL COLLECT

In Germany, all trucks with a total weight of 7.5 tonnes or over must pay distance-based tolls for the use of motorways. German toll amounts depend on (Table 9):



Figure 6. France – the network of motorways

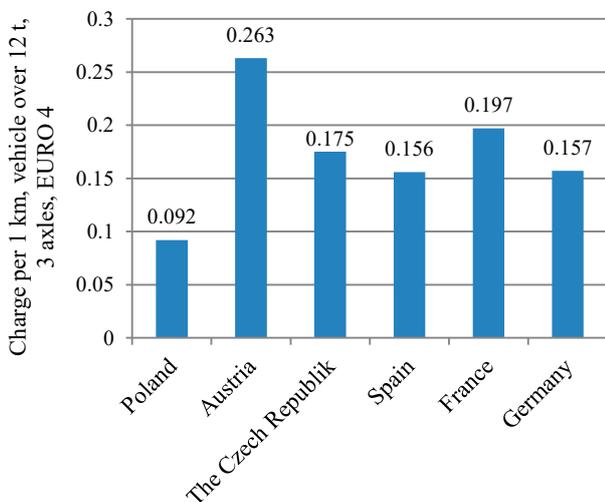


Figure 7. The cost of 1 km by a 3-axle, Euro IV-class vehicle over 12 tonnes

- emission class,
- number of axles,
- length of the toll stretch.

In addition, circa 1,000 km of four-lane main roads are subject to toll charges.

Charges for the use of infrastructure are calculated on the basis of environmental protection. Member States base their fees on the EURO class. The higher the engine class, the lower the price. As a consequence, road hauliers are forced to invest continuously in eco-friendly equipment (Go-Maut, 2016). Figure 7 shows the cost per kilometre for a EURO IV Class vehicle, which is one of the most common engine classes. Charges in Poland, which is still in the early stages of toll introduction, are very low.

Table 9. Germany – charges

| Category | Proportion of toll rate (in cents) Costs for air pollution | Number of axles | Proportion of toll rate (in cents) Costs for infrastructure | Toll rate (in cents) |
|------------|---|-----------------|--|-------------------------|
| A (EURO 6) | 0 | less than 3 | 12.5 | 12.5 |
| | | more than 4 | 13.1 | 13.1 |
| B (EURO 5) | 2.1 | less than 3 | 12.5 | 14.6 |
| | | more than 4 | 13.1 | 15.2 |
| C (EURO 4) | 3.2 | less than 3 | 12.5 | 15.7 |
| | | more than 4 | 13.1 | 16.3 |
| D (EURO 3) | 6.3 | less than 3 | 12.5 | 18.8 |
| | | more than 4 | 13.1 | 19.4 |
| E (EURO 2) | 7.3 | less than 3 | 12.5 | 19.8 |
| | | more than 4 | 13.1 | 20.4 |

Conclusions

The new regulations enforced by the European Commission have greatly extended the possibilities to levy charges. The regulations include not only the TEN-T network, but also all motorways in Europe. The directive has given Member States the opportunity to charge heavy goods vehicles with charges which not only balance the costs of infrastructure but also the costs of noise and pollution caused by road traffic.

The new provisions have enabled Member States to increase the charge during peak periods and to lower it in the off-peak periods in order to reduce traffic more effectively. The toll may be increased by as much as 175% over the average amount, with the highest charges to be collected for maximum five peak hours daily (for the rest of the time lower charges must apply).

The binding norms provide that the revenue from the charges should be reserved to enhancing the stability of the transport section. The new rules provide a strong incentive to set aside new revenues from charging to finance certain types of transport projects. Member States can also decide to earmark 15% of the total revenue collected for projects on the trans-European network. There is also an obligation for transparent reporting, as Member States will have to report regularly on how the total revenues of tolls are used.

Special provisions are made for mountain areas which will be allowed to simultaneously apply the existing mark-up and the new external cost charges, which will have to be spent on financing TEN-T priority projects situated on the same TEN-corridor.

The “rendez-vous” clause keeps the issue of “polluter pays” and internalisation of external costs under constant review. It allows the Commission to produce reports on further internalisation of external costs, including the extension to other transport modes, for other vehicles and to ensure a more harmonised approach.

Poland has adapted very well into this new situation. The ever-increasing network of toll roads gives new opportunities for the development of transport. The increasing number of national and foreign hauliers guarantees constant investment in the development of road infrastructure and therefore a good use of the country’s geographical location.

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