The Belgian Example: A Successful Distance-Based Toll for Trucks

31 March 2016

Summary

On 1 April 2016 Belgium becomes the 15th EU country to introduce km-based road charging for trucks. This toll will account for the road infrastructure damage caused by trucks and will be differentiated by the Euro class. The toll will apply to 6,700 km of Belgian roads – all motorways as well as to some major secondary roads. This will account for 4.5 billion vehicle km per year and generate €750 million in revenue.

The newly introduced toll will have multiple benefits.

1. **It will improve logistics efficiency**. Evidence from other countries where tolls were introduced demonstrate distance based tolls reduce empty driving, improve filling rates and generally help rationalise trip planning in the logistics sector.[i] By levelling the playing field between modes (rail-road-waterways) it could also contribute to a more optimal use of environmentally friendly modes. The CO_2 reductions that come from this could be greater still if the European Commission enable countries to give discounts to lower CO_2 trucks[ii].

2. **It will accelerate the purchase and use of cleaner trucks**. This should contribute to improving air quality which could help Belgium meet the European limits and avoid fines.[iii] However, the current toll does not differentiate between EURO V and VI. Differentiated tolls between Euro V and VI will be introduced in 2018[iv]. Given the major (real-world) benefits of EURO VI the gap introduced in 2018 should be significant in order to accelerate the purchase and use of EURO VI vehicles.[v]

3. **It will ensure trucks pay their fair share** to compensate for the external costs they cause. One truck can cause as much damage to roads as 10,000 cars[vi]. Thanks to the new toll, trucking companies will now contribute to the costs for maintaining and improving Belgium's road network. Unfortunately Flanders decided to exclude many secondary roads. This undermines the effectiveness of the toll and could lead to traffic diversion. Enforcement is key to ensuring that toll avoidance does not occur in all regions. It is likely that future governments will expand the scheme's coverage (as happened in other countries, for example, Germany).

4. **It is Belgium's first city toll.** The three Belgian regions were allowed to decide which roads to include in the charge. In the Brussels-Capital Region the authorities chose to include virtually all roads. Tariffs per kilometre in Brussels are significantly higher (up to 65% for large trucks) and tolls are differentiated between EURO V and VI. This could help discourage older and higher polluting trucks as well as big highway trucks from entering the city.

1. Belgium Will Benefit

1.1. Why is tolling trucks positive for the environment?

In a recent CE Delft report[vii] commissioned by T&E (2015) the total infrastructure and external costs of HGVs in the EU28 was calculated to be approximately **143 billion euro**. CE Delft have calculated that **only 30% of these costs are being covered** by the revenues from the taxes and charges that HGVs pay in Europe – this is also the case in Belgium.[viii] CE Delft monetised the cost of air pollution and found it to be 15 billion euro in 2013. Tolling is considered a way in which certain external costs can be internalised through the charge they pay. The toll that will be applied to trucks as of 1 April 2016 in Belgium can incentivise the purchase of cleaner vehicles as truck drivers who invest in trucks that emit less will pay a reduced amount. If the vehicle fleet is renewed in Belgium as a result of cleaner trucks being incentivised through the toll then the **air quality in Belgium will be improved as a result**. However, this requires a higher differentiation than the proposed one from the Belgian regional governments.

	FLANDERS, WALLONIA (EX VAT), BRUSSELS HIGHWAY			BRUSSELS URBAN AREA*		
[€ / km]	3,5 - 12 TONS	12 - 32 TONS	> 32 TONS	3,5 - 12 TONS	12 - 32 TONS	> 32 TONS
Euro 0	0.146	0.196	0.200	0.188	0.263	0.292
Euro 1	0.146	0.196	0.200	0.188	0.263	0.292
Euro 2	0.146	0.196	0.200	0.188	0.263	0.292
Euro 3	0.126	0.176	0.180	0.163	0.238	0.267
Euro 4	0.095	0.145	0.149	0.132	0.207	0.236
Euro 5	0.074	0.124	0.128	0.109	0.184	0.213
Euro 6	0.074	0.124	0.128	0.099	0.174	0.203

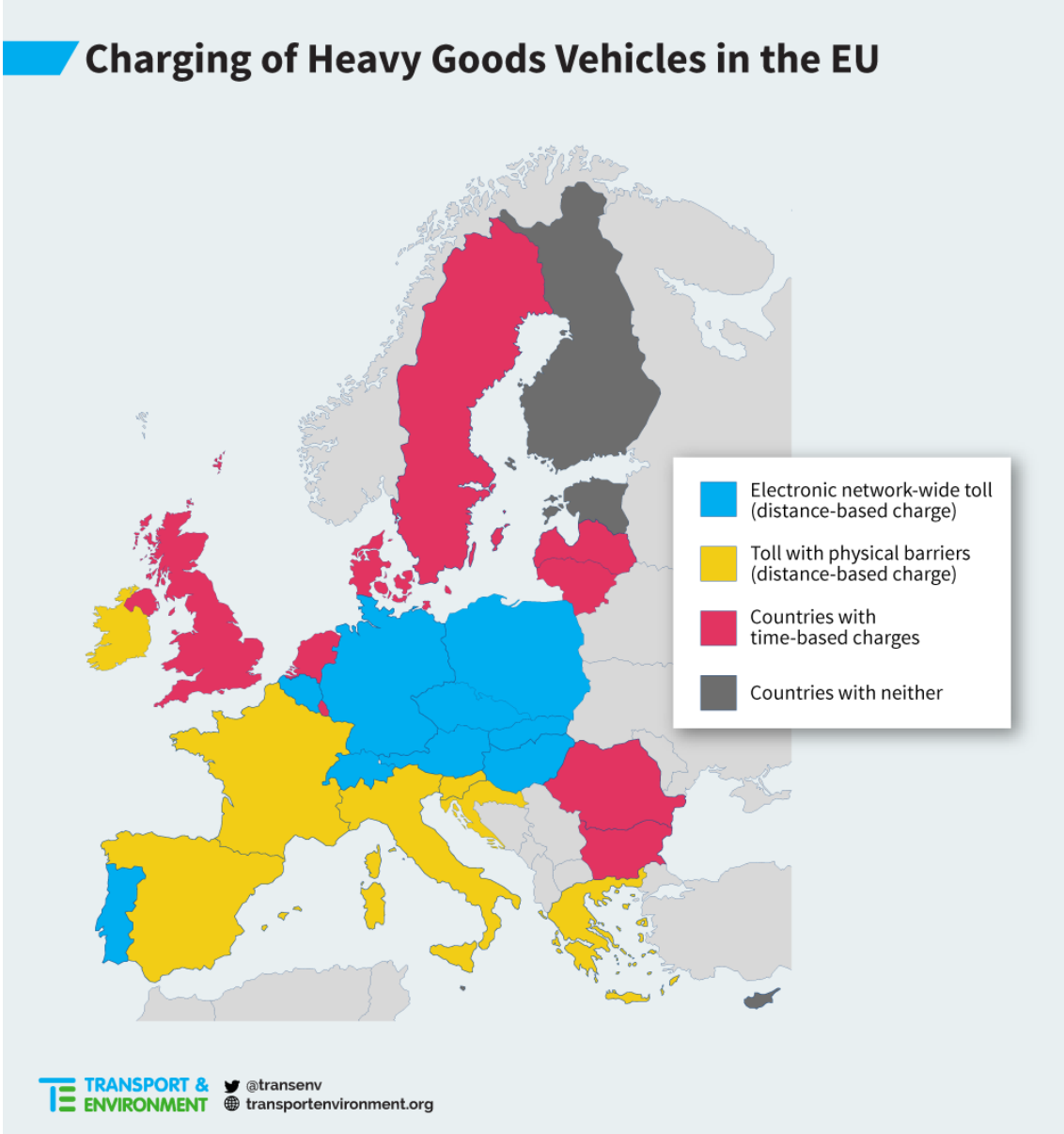
(*) Urban area = all local and regional roads that are not highway.

The gap between what Euro V will be charged and what Euro VI trucks are being charged should be widened in order to account for the fact that "only the Euro VI standard introduces a particle number (PN) limit for heavy-duty vehicles, leading to the use of diesel particulate filters (DPFs) for all diesel vehicles… **Euro VI lowers both NOX and PM limits**… [t]he standard also overhauls the testing procedures to better represent **real-world driving conditions**"[ix]. There will be a difference between Euro V and Euro VI charges as of 2018 but the rate at which they will be tolled has yet to be decided. It is evident that the bigger the gap, the more incentive there is for truck drivers to purchase a cleaner vehicle.

Although trucks only represent 3% of vehicles on the road, they are responsible for 25% of road transport's GHG emissions. This problem needs to be addressed through CO_2 standards for these vehicles and also through enabling CO_2 to be accounted for in truck tolls. These tolls will lead to behavioural changes among shippers and truck operators. Twenty percent of EU trucks drive around empty[x] and generally payload factors (how full a truck is) hover around 57%[xi]. One of these behavioural changes is the improvement in operational efficiency in order to get the most from the toll that they are obliged to pay. This means that tolls promote fewer transport movements for the same amount of tonnage[xii]. This is a positive improvement as it disincentives the inefficient use of trucks and reduces the CO_2 emissions from road transport as a result.

T&E are advocating for a differentiation mechanism for CO_2 emissions to be enabled in the European Commission's upcoming review of the Eurovignette directive[xiii]. If enabled, Belgium could amend their toll to incentivise the use of more fuel efficient, lower carbon trucks and use the toll as a mechanism to reach their EU climate targets.

Belgium's introduction of a road toll means that fifteen EU countries now have distance-based road charging: Austria, Belgium, Czech Republic, Germany, France, Greece, Hungary, Croatia, Ireland, Italy, Poland, Portugal, Slovakia, Slovenia and Spain. However, only Germany, Poland, Hungary, Austria, Czech Republic, Slovakia, Portugal and now Belgium have a km-based system. The Netherlands, Luxembourg and France are the only centrally located EU countries that have no km-based road charging (although France does have many tolled highways).

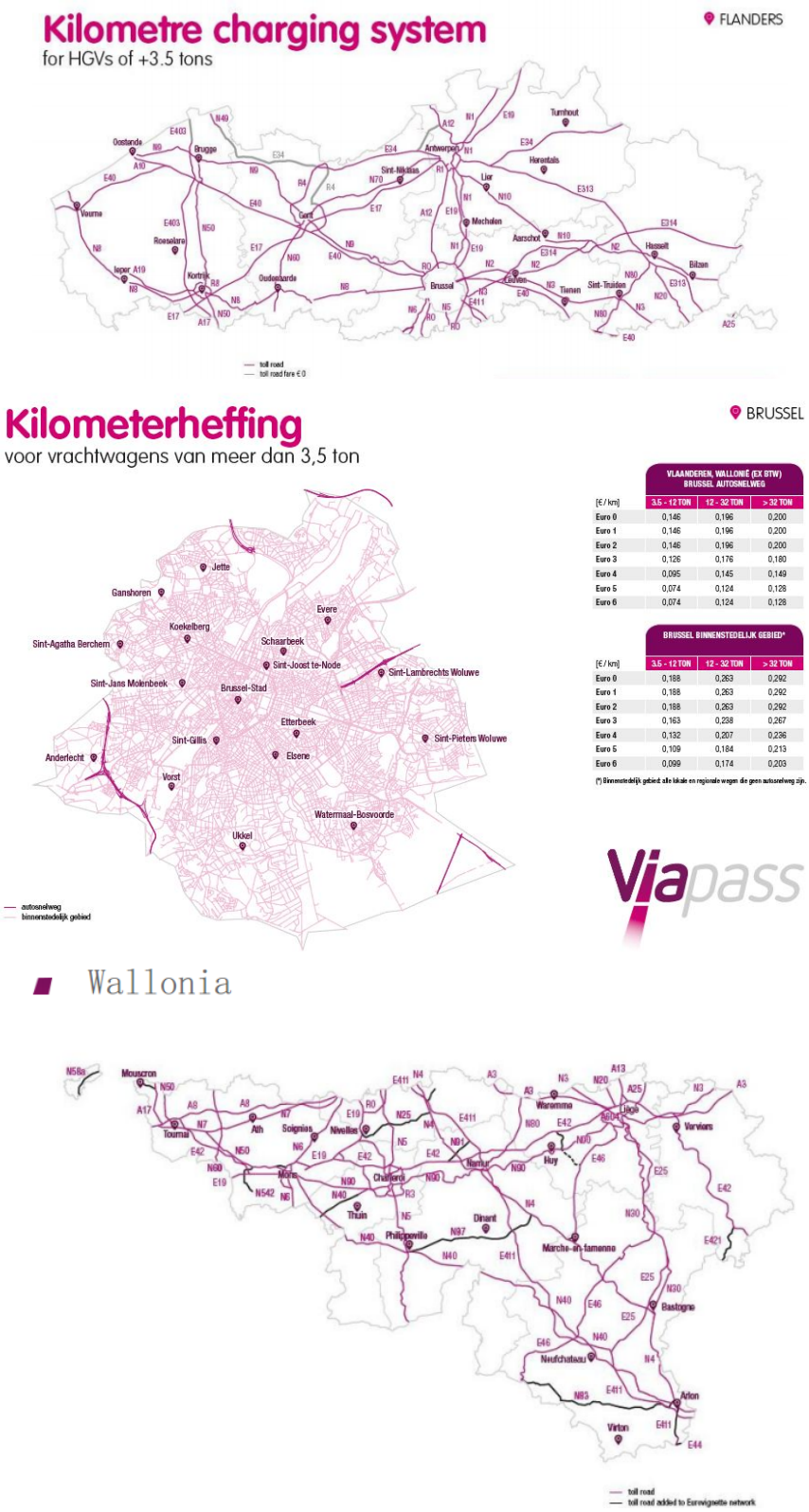


1.2. What will it look like?

The toll will be applicable to all trucks that have a gross vehicle weight of 3.5 tonnes or more. The toll will be higher depending on the weight of the vehicle. One truck causes as much damage to roads as 10,000 cars. The toll will be differentiated based on EURO class with trucks that emit less air pollution paying a reduced toll. In Germany, this differentiation was supplemented with a government subsidisation of cleaner vehicles (subsidy sourced from the revenues from tolling dirtier trucks) and the vehicle fleet became cleaner as a result. This toll that will come into force on 1 April 2016 will help to reduce the air pollution in Belgium; a country that was taken to court last year by the European Commission for its excessive levels of air pollutants[xiv] (namely NOX, PM and SO2). Road transport is the cause of 50% of Belgium's NOx emissions and almost a quarter of PM emissions.[xv] There are a lot of trucks on Belgian roads due to the importance of

Flemish ports. The majority of freight that arrives in these ports is transported via road to another country than Belgium. The Belgian toll will promote the same amount of tonnage to be shipped with fewer transport movements and, furthermore, will incentivise cleaner trucks. Both of these possible outcomes will have benefits for the air quality of Belgium. However, to drive such behavioural changes, tolls need to be set at an appropriate rate and across an expansive percentage of roads.

The tolled roads in Belgium (as of April 2016). Source: ViaPass[xvi]



The toll will apply to all of the motorways in Flanders and Wallonia, as well as to some major secondary roads. This means that the toll will apply to the 6,700 km of roads in Belgium. This will account for 4.5 billion vehicle km per year and raise **750 million euro in revenue**.[xvii] In Belgium, **6 out of 10 trucks are foreign**[xviii]. Belgium is largely a transit country for freight transportation as the Port of Antwerp receives goods that are mainly shipped to other countries in Europe. Under EU law, the toll will have to apply the same to foreign and domestic trucks. Vehicles for essential government tasks, medical emergency services, vehicles for forestry and agriculture will all be exempt from the toll. The issue of enforcement (stopping vehicles and fines) will be left to the regions of Belgium.

There are fears that the coverage in Flanders is not expansive enough to stop trucks being able to avoid tolled roads by using secondary infrastructure. The roads that were originally proposed to be tolled by the Flemish government were reduced during the finalisation of the toll.[xix] Contrarily, the tolled roads expanded in Wallonia during the drafting of the toll. All of the Belgian regions must pay close attention that tolls are not avoided by trucks using secondary infrastructure. If this is found to occur then the tolls must be expanded to account for the damage that trucks are causing by avoiding tolls. The Belgian regions must also monitor that light trucks are not replaced by vans in order to avoid the toll. It is possible for a van to weigh over 3.5t and many have large payloads that could equal a light truck. Therefore, the Belgian regions should make sure that light trucks are not simply replaced by vans.

There was some concern when the toll was being initially considered that it would place the Port of Antwerp at a competitive disadvantage. However, the University of Antwerp found that "the competitive position of **Flemish ports will not be adversely affected** by the introduction of kilometre charging"[xx]. It can be assumed that the Belgian government's internal impact assessment showed a similar result as this would have been an important factor in the toll's implementation. This also suggests a similar toll in the Netherlands would not adversely affect Rotterdam's competitive position; even more so since the Netherlands are now surrounded by toll countries.

Belgium will benefit from the revenue that will be gained from the implementation of this toll on trucks. The ICCT found that "Revenues from vignettes are very low compared to those collected from distance-based charges"[xxi]. The Flemish minister for mobility has already publically stated that 100 million of the toll will be earmarked for investment in road infrastructure[xxii]. The rest of the income will go to the general budget and can be spent on whatever the Flemish government so choose. The Wallonia region has not published any plans on how they are to spend the money raised from the toll but it is assumed to be reinvested into road infrastructure due to how the road management is structured there.

1.3. The Brussels Example

Within the "city zone" of Brussels the tolls will apply to all roads and the rates at which hauliers will pay will differ to charges applied to the roads outside of the capital. The tolls will be higher within Brussels' city zone and will be differentiated based on Euro class. Unlike the differentiation outside of Brussels, there will be a difference between what a EURO V truck pays and what a EURO VI truck pays. This measure is intended to incentivise the purchase of cleaner trucks. A 12 tonne Euro V truck will pay 0.184 euro per km, while a Euro VI truck of the same weight will pay 0.174 euro. This means that a haulier could save 1 euro for every 100km driven if he uses a Euro VI truck within the capital. The higher tolls within Brussels will also incentivise logistical improvements (i.e. the consolidation of shipments) which is a measure to reduce the amount of trucks within the city, which has a positive effect on congestion and safety within the capital.

	BRUSSELS HIGHWAY			BRUSSELS CITY ZONE		
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Brussels will use the HGV charge to incentivise a more efficient use of trucks within the city. The 14 other countries who have distance-based charging systems should follow the example of Brussels and consider applying a higher toll within their nation's cities. This toll can be a practical means to reduce the amount of trucks within cities (through logistic efficiency improvements) and can also improve the air quality within a city (if tolls are set at a level that drives fleet renewal).

1.4. How does it compare to other tolls in Europe?

The toll will apply to 6,700 km of roads in Belgium and will account for 4.5 billion vehicle km per year and generate 750 million euro in revenue. As such it adds around 5% to Europe's total of around 80bn vehicle kilometres tolled and EUR15 billion in total toll revenues. As mentioned, it is the 15th country to implement a distance-based toll and the 8th to implement an electronic km-based system.

There are approximately 155,200km of roads in Belgium and approximately 6,700km of these will be tolled. This means that 4.3% of the total network will be subject to HGV tolls. If we compare this to the other 7 countries that have electronic distance-based tolls then we can see that Belgium has the third highest percentage of their roads covered by tolls in the EU28.[xxiii] In comparison, German coverage of their overall network is only 2.2%. But German revenues are, at EUR4.5bn, around six times higher than Belgium's. The average charge per HGV vkm in Belgium will be €0.17, which is equal to that of Germany.[xxiv] This figure is average in comparison to the other countries who apply an electronic network-wide toll. For example, the Austrian average is €0.35.

2. Conclusion

2.1. Follow the Leaders

Belgium will introduce a toll on all trucks weighing 3.5 tonnes or more in April 2016. Belgium is the 15th European country to implement such a system. The level of roads tolled in these 15 countries should be expansive in order to avoid toll dodging and differentiation should be significant enough to encourage the purchase of cleaner trucks. The countries who do not have such a system – and the Netherlands in particular - need to catch up. Tolling is a tool that can help reduce the air pollution and GHG emissions from road transport. The CO_2 reductions could be much greater if the Commission enable the possibility to differentiate truck tolls based on CO_2 emissions in the upcoming review of the Eurovignette directive.

Further information

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Endnotes

[i] http://www.transportenvironment.org/sites/te/files/media/2010_07_briefing_effects_of_lorry_charging.pdf
[ii] http://www.transportenvironment.org/sites/te/files/publications/CO2%20differentiated%20road%20tolls_%20what%20the%20EU%20should%20do.pdf
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[v] ICCT, 2015. Accelerating progress from Euro 4/IV to Euro 6/VI vehicle emissions standards, Berlin: ICCT.
[vi] http://www.crab.wa.gov/Engineering/Compliance/Policies/documents/ModelDocuments/GeneralizedFourthPowerLaw.doc
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[x] http://europa.eu/rapid/press-release_IP-14-425_en.htm
[xi] http://ec.europa.eu/transport/modes/road/events/doc/2009_06_24/2009_gigaliners_workshop_acea.pdf
[xii] De Jong et al, Price Sensitivity of European road freight transport – towards a better understanding of existing rules (2010)
[xiii] http://www.transportenvironment.org/sites/te/files/publications/CO2%20differentiated%20road%20tolls_%20what%20the%20EU%20should%20do.pdf
[xiv] http://europa.eu/rapid/press-release_IP-15-5197_en.htm
[xv] EEA, 2014. Air pollution fact sheet 2014: Belgium, Copenhagen: EEA.
[xvi] http://www.roaduserchargingconference.co.uk/files/2015/03/Bart-Dewandeleer.pdf
[xvii] Figures were provided by ViaPass
[xviii] http://www.roaduserchargingconference.co.uk/files/2015/03/Johan-Schoups-PANEL.pdf
[xix] http://www.duurzame-mobiliteit.be/standpunt/kilometerheffing-vrachtwagens-doorgelicht
[xx] Road pricing and port hinterland competitiveness: an application to the Hamburg - Le Havre range Meersman Hilde, Sys Christa, Van de Voorde Eddy, Vanelslander Thierry. International Journal of Sustainable Transportation - ISSN 1556-8318 - (2014)
[xxi] ICCT, 2015. Accelerating progress from Euro 4/IV to Euro 6/VI vehicle emissions standards, Berlin: ICCT
[xxii] http://docs.vlaamsparlement.be/pfile?id=1135460
[xxiii] Network coverage based on the most recent data available: Belgium: 4.3% Portugal: 18%. Germany: 2.2%. Austria 2%. Poland 0.1%. Slovakia 4.7%. Czech Republic 1%. Hungary 3.3%
[xxiv] Own calculations: expected revenue divided by number estimated toll kilometres. For comparison average charge level per HGV vkm: Belgium €0.17. Portugal €0.15. Germany €0.17. Austria €0.35. €Poland 0.11. €Slovakia 0.16. Czech Republic €0.19. Hungary €0.21.