

Summary

The introduction of longer and heavier lorries (LHVs) could lead to more CO₂ and pollutant emissions, increased road accident risk and higher infrastructure bills for taxpayers. These impacts are contrary to the EU's objectives to make transport cleaner and safer. By making road transport cheaper, it will also undermine the EU (Transport White Paper) goal of shifting freight to rail. **Therefore, T&E believes the introduction of LHVs is unacceptable under the present conditions.**

Context and policy recommendations

Lorries represent just 3% of vehicles and 7% of distance driven in the EU, yet they emit 25% of CO₂ from road transport in Europe. Three-quarters of goods in the EU are carried by lorry. Lorries Over the past 20 years the fuel efficiency of lorries has stagnated whilst lorry traffic has increased – leading to a dramatic increase in CO₂ emissions. Lorries are also involved in a disproportionate number (15%) of road deaths.¹

The EU limits the maximum weights and dimensions of lorries in international transport to 18.75m and 40 tonnes maximum (Directive 96/53/EC). The European Commission has proposed that longer and heavier vehicles (LHVs) should be allowed to cross borders between consenting, neighbouring countries.² This briefing assesses the likely impacts of LHVs as well as the merits and flaws of the Commission proposal on cross-border use.

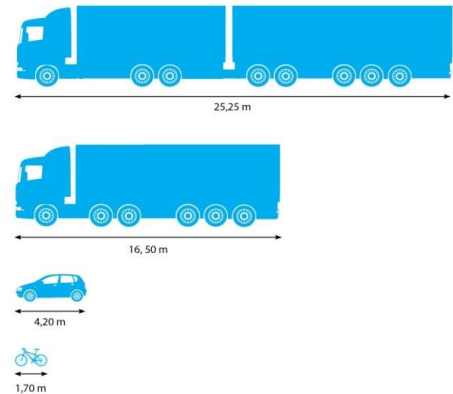
The Commission proposal to allow 'consenting countries' to allow cross-border use would lead to the gradual spread of LHVs without any guarantees for road safety, the environment or the public purse. Moreover, it would lead to a patchwork of different systems whereby different Member States have different rules and provisions and, as such, would fragment the single market. The Commission has taken this decision unilaterally and without impact assessment. **Hence, T&E does not support the Commission proposal on cross-border use and insists that any steps towards cross-border use of LHVs must not be considered unless the following requirements are first met:**

1. An **update of the road charging Directive (Eurotoll)** to mandate the full internalization of the infrastructure, safety and environmental external costs of all lorries, in particular LHVs;
2. **Strict safety standards for LHVs** with regards to additional safety equipment, vehicle age, regular maintenance, safety checks and driver experience and training;
3. Measures to **reduce negative impacts on rail freight**, such as effective weight limits and control for lorries and considering restricting cross-border LHV use to combined transport;
4. **Safe and aerodynamic redesign of lorry cabs** to improve lorry safety, fuel economy and reduce CO₂ emissions;
5. Even if these requirements are met, it should still be guaranteed that **national or regional governments decide** whether they wish to allow LHVs or not.

1. What are Longer and Heavier Vehicles (LHVs)?

LHVs are tractor-trailer combinations with an extra trailer that can carry payloads of up to 60 tonnes. The total length of an LHV combination is 25.25m, almost 9m longer than today's typical 16.5m lorry. The payload of an LHV is 50% higher.

LHVs are allowed and widely used in Sweden and Finland. Sweden is also experimenting with triple-trailer lorries of 32m and 80 tonnes.³ LHVs were recently allowed in the Netherlands and circulate in Denmark on a prolonged trial basis. Flanders (BE) approved a cross-border trial with the Netherlands last year. Germany has a trial allowing the second trailer, but keeping total weight restricted to 44 tonnes.



LHVs were until recently understood not to be allowed in international or cross-border transport but a controversial reinterpretation by the Commission overturned this 16 year old ban in 2012.⁴

1. What are the impacts of the introduction of LHVs?

The potential impact of allowing wider use of LHVs has been subject to fierce debate over recent years. That LHVs are economically interesting for users of road freight is clear: by carrying more cargo per trip, transporters can save a lot of money on driver wages. But there are also potential negative effects which would have to be paid for by citizens.

1.1 Environmental impacts

Often dubbed eco-combis, LHVs are said to reduce transport emissions by reducing the number of vehicles needed to carry the same amount of goods. Proponents claim that two LHVs would replace three normal lorries and emissions would fall accordingly. Such claims ignore the realities of the freight transport market.

Higher capacity vehicles can reduce the number of trips needed to transport a given amount of goods (although this depends on the levels of utilization and empty runs) and this of course has big implications for the cost of trucking. The use of LHVs could reduce the cost of (long haul) lorry transport by about 20%.⁵ Cheaper road freight will create more demand, in particular for goods being hauled over longer distances. As road transport gets cheaper, freight will also be shifted away from rail. This will offset the initial efficiency gains and will lead to a net increase in overall emissions. This is known as the 'rebound effect' and leads to 'induced demand'.

**It's the
eco₂nomy,
stupid.**

Flickr / net-efekt

The most complete and up to date analysis of the rebound effect was done by CE Delft in 2010. The study concludes that if the cost of trucking falls by 20%, demand for it grows by 18% and that 1/3 of this demand comes from rail freight, known as reverse modal shift.⁶

A 2012 analysis by CE Delft shows that introducing LHVs in the EU would lead to an increase of CO₂ emissions by 2-4%. Demand for rail freight services would fall by more than 10%.⁷ These findings are in line with the conclusions of a 2008 study by the Fraunhofer Institute.⁸

1.2 Impacts on safety

A number of studies find that LHV's create extra road safety problems as compared to normal lorries. Concerns include the higher impacts of crashes, increased severity of rear end accidents and higher risk of secondary crashes, increased blind spots, loss of stability at cruising speeds and a decreased manoeuvrability.⁹ Where LHV's are used (e.g. Sweden, Finland, Netherlands) extra precautions have been taken to improve the safety performance of LHV's (e.g. specially adapted infrastructure, best equipment, driver training, only certain routes and strict controls). More generalised use carries a real risk of reduced road safety which is why the European Transport Safety Council (ETSC) opposes cross-border use.¹⁰

1.3 Impacts on infrastructure

Existing road infrastructure wasn't designed or built for longer and heavier vehicles. The generalised use of LHV's would necessitate adapting road infrastructure such as bridges, parking spaces, tunnels, side barriers and junctions.¹¹ "Sweden invested in total 5.65 billion SEK between 1988 and 1998 in bridges. Not all of this investment was meant to accommodate for LHV's. [But] an extrapolation of this number to EU27 based on the tonne-km would give a cost of 26.7 billion euro for bridges alone."¹²



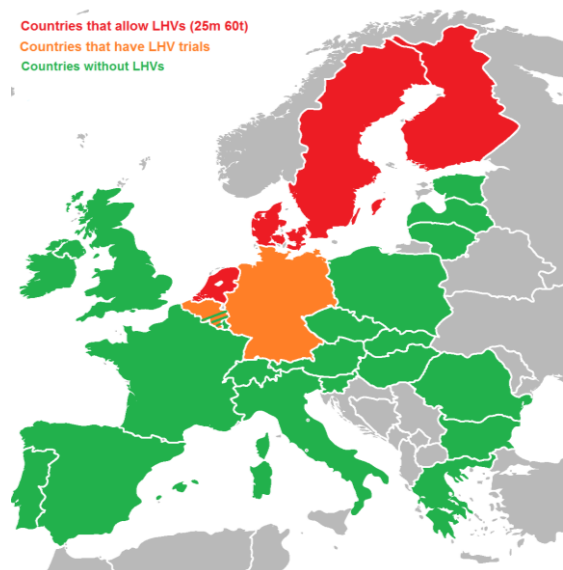
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Road wear and tear would also increase, in particular for the heavier variants (50-60t). Although the extent of the additional damage depends on the number of axles, even an 8 axle LHV with axle weights similar to a normal lorry, will cause more damage, simply because it has more axles.¹³

2. The Commission's 'consenting countries' approach

The Commission proposal to review Directive 96/53/EC¹⁴ published in April 2013 proposes that vehicles that are longer (but not heavier) than allowed by Directive 96/53 can cross borders, if neighbouring countries that have such vehicles agree with cross-border traffic. By removing length limits at EU level, the Commission opens the door for the Europe-wide use of LHV's. It does so without considering the impact of this or even attempting to put the right framework in place.

Although surveys show that public opinion is very hostile towards bigger lorries¹⁵ liberalised cross-border traffic of LHV's would probably lead to the gradual spread of such vehicles. If Germany, the Netherlands, Belgium and Scandinavia were to adopt LHV's and allow them to circulate freely, this would surely increase pressure from hauliers, industry and shippers from surrounding countries to follow.



3. Limiting the negative impacts of LHVs

The European use of LHVs, enabled by a cross-border allowance, would have a negative impact on the environment, road safety and on infrastructure but some of these impacts could be reduced given the right policy framework and accompanying measures.

3.1 Internalising external costs

It is essential that LHVs pay for the additional costs they cause for infrastructure, safety and the environment, to ensure that this bill does not fall to society and taxpayers. The external costs should be paid for by the businesses that profit from operating these vehicles. It would also encourage LHV operators to only use LHVs when there is a real need and reduce empty driving. As the Joint Research Centre of the European Commission wrote in 2009, *“using a charging system that internalises external costs would be a safeguard against additional externalities and would stimulate the rational use of LHVs.”*¹⁶



Swedish "Road toll" sign

A 2013 study by INFRAS and Fraunhofer Institute¹⁷ shows that external costs of a typical 60t LHV would be considerably higher (roughly 50%) than for a 40t lorry. Particularly infrastructure and air pollution costs are much higher than for standard lorries. Unfortunately the current charging law (Eurovignette Directive) doesn't even recognise the existence of LHVs and makes it impossible to charge them, even in countries where they are widely used.

External costs of 60t – 8 axle LHV¹⁸

External cost	Relative cost increase	Absolute cost increase
Infrastructure costs	+13%	+2.3 cts
Air pollution costs (Euro V)	+69%	+6.5 cts
Noise	+10%	+1.2-2.1 cts
Accidents	+24-28%	+4.52-4.65cts

According to CE Delft 2012, a surcharge of €0.07 to €0.10 per kilometre would ensure that the introduction of LHVs would not lead to additional overall CO₂ emissions. It would however still lead to a modal shift of around 10%. A surcharge of around €0.25/km would yield *emission savings* of 1-2% and limit reverse modal shift to 4%.¹⁹ It should be noted that other conditions related to safety or use would also have the effect of adding a cost penalty to LHVs but this is more difficult to quantify.

Such surcharges would by no means eliminate the price advantage of LHVs, such is their dramatic cost reduction potential. To completely price them out of the market, a surcharge of €0.40 to €0.60/km would be required. **Hence, even with a very high surcharge LHVs remain very attractive to business.**²⁰

3.2 Minimising safety risks

Lorries have a very problematic safety record. Per kilometre driven they are twice as deadly as passenger cars and they are involved in over 4000 road deaths every year. Changes to the frontal design of a lorry could save several hundreds of lives every year. The review of Directive 96/53 offers an opportunity to provide lorry makers with the required space to make lorries safer but also cleaner. This should be the priority of the review of the dimensions law.

LHVs must not be used in densely populated or urban areas. This needs to be strictly controlled and supported with appropriate penalties. To ensure LHVs are as safe as possible, a number of conditions are necessary: e.g. weight sensors, secondary braking systems, stability control, lane departure warning, blind spot cameras. Only the state-of-the-art, best equipped trucks and trailers should be allowed to be used in LHV combinations. In addition to this, LHV drivers should be experienced drivers having received specific training to operate high capacity vehicles.²¹ Extra enforcement provisions should also be introduced, for example on speed, overloading and driving and rest times and appropriate training and control equipment for authorities.

3.3 Reducing negative impacts on rail freight

The negative impacts on rail freight are the most difficult to mitigate. Increasing the capacity and competitiveness of road freight as compared to rail freight will continue to have negative effects on the latter and is at odds with modal shift policies.

It is crucial to levy appropriate road charges as described above but reducing the negative impacts on the competitive position of rail freight could also be achieved by limiting the maximum weight of LHVs to 44t²², like in the German trial. As it is often claimed by LHV proponents that LHVs are very compatible with combined transport, linking cross-border operations to combined transport operations could also be considered. A similar mechanism was suggested by the European Commission for 45ft containers and currently exists for 44t lorries that can only be used across EU borders for combined transport operations.

4. Policy recommendations and conclusions

Under the present conditions, the introduction of LHVs would lead to increased CO₂ emissions, reverse modal shift and a reduced level of road safety. Whilst there would be economic benefits for transport operators and users, society (taxpayers) would be left to pick up the bill.

Given the right framework, the negative impacts of LHVs could be reduced. At the heart of such a framework is a charging scheme that fully internalises the external costs of LHV use. In addition to this, safeguards for road safety are needed. Combined these measures could mitigate possible negative impacts but given the high infrastructure adaptation costs related to the introduction of LHVs, national (and, where appropriate, regional) governments and cities must always retain the right to refuse entry to LHVs.

The European Commission proposal failed to take these considerations into account. In fact, it has not even assessed the full wide-ranging impacts of its proposal for cross-border use, let alone the possible need for accompanying measures.

We therefore recommend that until the necessary conditions are put in place, the use of LHVs is restricted to national operations only. The requirements to be met before cross-border use is further considered are the following:

1. A swift **update of the road charging directive (Eurotoll)** to mandate the full internalization of the infrastructure, safety and environmental external costs of all lorries, in particular LHVs;

2. **Safety standards for LHVs**, in particular with regards to additional safety equipment, vehicle age, regular maintenance, safety checks and driver training;
3. Measures to **reduce negative impacts on rail freight**, in particular effective weight limits (44t) and control for lorries and consideration of restricting cross-border LHV use to combined transport;
4. **Safe and aerodynamic redesign of lorry cabs** to improve lorry safety, fuel economy and reduce CO₂ emissions;
5. Even if these requirements are met, it should still be left to **national or regional governments to decide** whether or not to consider LHVs.

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² EC (2013) Proposal for a Directive amending 96/53/EC on maximum authorised dimensions for certain road vehicles, 15 April 2013, [COM\(2013\)195final](#).

³ <http://www3.volvo.com/investors/finrep/sr12/en/futuretransports/freightefficiency/duo2/duo-2.html>

⁴ The European Commission has reinterpreted Directive 96/53/EC as allowing cross-border use of longer vehicles. This interpretation was however challenged by the European Parliament. The Commission now proposes to allow cross-border use in its review proposal.

⁵ TML 2009 refers to 20% cost reduction, Fraunhofer 2008 assumes between 20 and 25%.

⁶ CE Delft, 2010.

⁷ CE Delft, *Longer and Heavier Vehicles (LHVs) and User Charges*, 2013. (publication forthcoming)

⁸ Fraunhofer, *Long-Term Climate Impacts of the Introduction of Mega-Trucks*, 2008 (publication forthcoming).

⁹ ETSC, *Position on Longer and Heavier Goods Vehicles on the roads of the European Union*, 2011;

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¹¹ BAST, *Auswirkungen von neuen Fahrzeugkonzepten auf die Infrastruktur des Bundesfernstraßennetzes*, 2006, 33.

¹² TML, 141.

¹³ INFRAS-Fraunhofer, *External Costs and Long and Heavier Vehicles (LHVs)*, 2013 (Forthcoming).

¹⁴ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2013:0195:FIN:EN:PDF>

¹⁵ <http://www.nomegatrucks.eu/deu/meinungsumfragen/forsa-umfrage-gigaliner-deutschland/gigaliner-umfrage-forsa-2011-deutschland.pdf>

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¹⁶ JRC, *Longer and Heavier Vehicles for freight transport*, 2009, 2.

¹⁷ INFRAS-Fraunhofer, *External Costs and Long and Heavier Vehicles (LHVs)*, 2013 (Forthcoming).

¹⁸ INFRAS-Fraunhofer, *External Costs and Long and Heavier Vehicles (LHVs)*, 2013 (Forthcoming).

¹⁹ CE Delft 2013.

²⁰ Ibidem.

²¹ JRC, *Gigaliners. Technical Fiche*, 2009, 25-28.

²² CE Delft, *Inzet van langere en/of zwaardere vrachtauto's in het intermodaal vervoer in Nederland Effecten op de uitstoot van CO₂ en NO_x*, 2000.