

Longer and heavier lorries (LHLs) and the environment

Position Paper

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**European Federation for
TRANSPORT and ENVIRONMENT**

Summary

The introduction of longer and/or heavier lorries (LHLs) on the major European road network is **not acceptable** under current haulage market conditions.

Consideration would only be acceptable if **all** of the following requirements are first met:

1. **Road user charges** that internalise all infrastructure and external costs must be introduced before the introduction of LHLs can be considered. As a first step, the Eurovignette Directive should be modified so that external costs can be included in road charges.
2. Any change of the rules must be accompanied by **stricter and more frequent enforcement** to ensure that LHLs do not use inappropriate roads, are not overloaded, loads are correctly secured, and road haulage regulations are strictly adhered to.
3. Thorough **ex-ante impact assessments** must be carried out on infrastructure sections, particularly bridges, tunnels and access roads, which may require adaptation, widening or reinforcement before longer and heavier vehicles can safely be permitted. These costs must be taken into account in **cost-benefit analyses** and the cost of infrastructure adaptations should be passed on in LHL road charges;
4. If the previous requirements are met, the permitted weight should be a maximum of **50 tonnes**. This weight limit retains the potential for environmental gains while minimising safety impacts and the effect on the competitive position of intermodal transport.
5. LHL equipment should be fully compatible with that currently used to transfer or transport freight using alternative modes.

The EU Logistics Action Plan should concentrate on the use of logistics to **optimize** transport-efficiency (minimising the use of all modes) and reduce the environmental impacts of **all** vehicles and distribution chains.

The external costs imposed by heavy goods vehicles on infrastructure and the costs imposed on citizens and the environment by pollutant emissions, congestion and accidents must be internalized via charges for the use of infrastructure.

Background

The majority of EU Member States impose a 40-44 tonne weight restriction and maximum 18.75m length for truck and trailer unit combined, as outlined in Directive 96/53/EEC [1]. However, longer and heavier vehicles, so-called 'gigaliners', are permitted in Sweden and Finland. These heavy goods vehicles have a maximum length of 25.25 meters and maximum load weight of up to 60 tonnes. Following pilot schemes on selected routes in some regions, the Netherlands and Germany are also discussing granting licenses for significantly longer and heavier goods vehicles. Some stakeholders are urging the European Commission to bring forward a proposal allowing general introduction of gigaliners on the trans-European network roads (TEN-r). The European Commission has not yet announced an official position but will bring the matter forward for discussion in advance of the forthcoming Logistics Action Plan [2]. The Commission plans to launch a call for tenders in 2007 for a study to examine aspects relating to general authorisation of gigaliners.

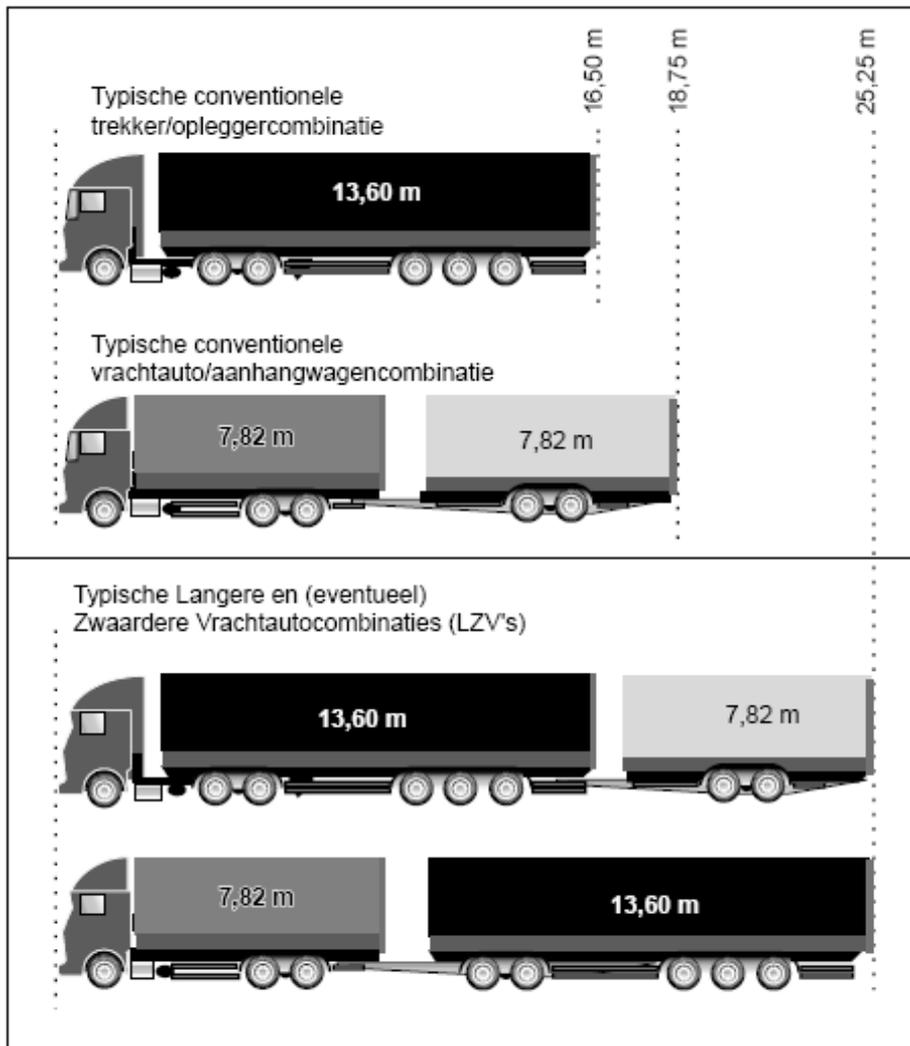


Fig 1:
Current HGV composition and proposed longer and (potentially) heavier HGV composition [3]

Environmental effects

The primary argument used in support of gigaliners is the environmental gain, which is increased by the improved transport efficiency of higher load factors. For very light loads, this can represent a reduction of CO₂ emissions per tonne/km of up to 25%. A recent study found that use of gigaliners for domestic freight transport in the Netherlands would bring a total estimated reduction of approximately 1% of the total CO₂ emissions of domestic freight transport (excluding delivery vans). [3]

The reduction in emissions is less marked for loads over 50 tonnes. [3] The use of longer and heavier vehicles to transport lighter loads would offer an improvement in emissions compared to standard vehicles, and decrease the environmental differential between road and other transport modes. However, in terms of emissions, railway and waterway transport are better suited for transporting heavier goods.

Studies of NO_x emissions from larger vehicles have been inconclusive, but no significant impact is expected.

As yet, studies examining noise emissions from these vehicles have been inconclusive. Noise minimisation must be taken into consideration in vehicle and component design. LHLs are generally louder than standard lorries due to more powerful engines and a greater number of axles [4]. However, the overall noise impact would be dependent on the change in the number of vehicles on the roads.

As for all means of transport, emissions are variable depending on the type of engine used, driving speed, load weight and distances covered. User charges must be differentiated to provide an incentive to buy low-emission, fuel efficient vehicles.

An analysis by the German Federal Environment Agency (UBA) of the potential effects of introducing LHLs on German roads under current market conditions concludes that they would have net negative effects on the environment, due to modal shift towards road transport from railways and waterways [4]. Any environmental benefits over standard lorries would be offset and most likely overshadowed by an increase in road transport volumes. Even at optimal load capacity LHLs emit considerably more CO₂, NO_x and particulates per unit transported than freight trains.

The UBA study finds that the potential of LHLs to reduce fuel consumption tonne/km is highly dependent on the optimised use of loading capacity. If less than 40 pallets are loaded (77% of the full capacity for 52 pallets;), fuel consumption per pallet/km is worse than for a fully laden standard lorry. [4] Whilst the small number of designated trial routes for LHLs in Germany has permitted optimisation of load factors, it is extremely doubtful that this would be maintained over the entire national or European (TEN-r) network.

Congestion effects

Advocates argue that two larger lorries would replace three lorries of currently permitted dimensions, and thus reduce road traffic. It must however be ensured that these gains are not cancelled out over time by increased traffic. Appropriate road user pricing including cost-internalisation must be a prerequisite to avoid rapid dramatic increases in transport volumes, and hence worsening congestion.

Road infrastructure costs

The impact on road infrastructure of heavier vehicles would entail considerable additional maintenance and renewal costs. The additional costs would depend on the axle load. Some infrastructure sections, notably bridges, tunnels and junctions, would require adaptation and/or more frequent maintenance and renewal in order to accommodate substantially longer and heavier vehicles [5]. Further investment would be required in the interests of safety, especially in tunnels. The users of these vehicles – rather than taxpayers - must bear the additional costs. Toll fees for road use must therefore be differentiated by vehicles' dimension and number of axles as well as by environmental impact characteristics.

The infrastructure effects and thus costs must be limited in scope to major freight transport axes. There must be no question of allowing the LHLs in urban areas, regional or minor roads, and this must be very strictly enforced.

Safety aspects

The safety aspects still require thorough investigation. Trials to date have been undertaken on longer vehicles, but not fully loaded to maximum weight. Studies following the German trials conclude that the heavier vehicles are considerably more dangerous when involved in collisions. [4,5] Safety impact assessments must be carried out on affected roads and safety implications of heavier loads must be more thoroughly analysed prior to a decision. Even if this is clarified, any use of such vehicles is best suited to high-volume, low-weight cargoes.

Overloaded lorries already pose a serious danger on Europe's roads. This would be even more important for longer and heavier lorries. There must be provision for stricter and more frequent control of vehicles, to ensure that they are not overloaded, cargo is properly loaded and secured and that all other relevant rules and regulations, regarding speed limits, driving hours, etc. are strictly respected.

Such vehicles would be restricted to motorways and main roads (following the EU definition of the trans-European road network), and thus must not circulate in urban or rural areas [6]. Along with the aforementioned checking of vehicles, national authorities in all Member States must strictly enforce the network to which longer and heavier vehicles have access. It must be absolutely guaranteed that these vehicles cannot drive on minor roads, or in urban or rural residential areas.

The vehicles are intended to deliver to distribution centres, where loads would be split into smaller loads for regional or local delivery. Before a decision is reached, the question of whether this would actually increase traffic in urban areas (eg. delivery vans) should be thoroughly investigated and taken into account in cost-benefit analyses.

Rebound effects

In the absence of user charging to internalise external costs, the increased demand for road transport including modal shift effects will undermine all of the arguments on congestion and environmental benefits presented by the advocates of LHLs.

Studies have found that transport costs per tonne/km can be reduced by 20-25% for relatively light goods on larger HGVs [3,4]. Falling costs per tonne/km with the larger vehicles will lead to increased demand for road transport. Increased demand for road transport would cancel out any environmental gains from the increased efficiency, as well as cancelling out any initial effects on congestion.

An effective user charging system must therefore be a precondition. Without such a scheme, the entire cost advantage would accrue to the road users, whilst all the additional infrastructure costs would be borne largely by taxpayers and other costs would be imposed on society as a whole. Without appropriate user charging, the introduction of gigaliners cannot be considered to be a sustainable solution to road congestion due to the demand effects that will follow the reduction of costs.

Competitive position of railways, inland waterways and intermodal transport

A reduction of costs per tonne/km would clearly have an effect on the competitive advantage of road transport in comparison with other modes including railway, inland waterway, and combined freight transport. A study in Germany has calculated that (under current market conditions, including user charges on German motorways) combined transport volumes would fall by a third by 2015, due to reduced road transport costs of the larger vehicles. [5] The UBA study cites previous experience of price elasticity in road transport, where a 1% price reduction leads to a 1.8% reduction in demand for rail freight transport, and 0.8% reduction for inland waterways. Thus, UBA foresees that a 20% cost reduction in road transport would lead to a 38% loss of volume for rail, and 16% loss for inland waterways. [4]

However, if the weight limit for gigaliners is restricted to 50 tonnes, the 'reverse modal shift' effects from intermodal to road transport could be minimized. This would minimize the portion of the intermodal market with which road transport can compete as intermodal's current share for relatively light loads is limited (eg. 1.5% of total t/km transported by all modes in the Netherlands). [3]

In terms of environmental impacts, the difference in CO₂ emissions between gigaliners transporting light loads and intermodal transport is relatively small. These arguments are most relevant with a 50t weight limit for gigaliners.

The European Union must ensure that any approval of longer and heavier trucks does not provide a cost advantage to the road haulage sector at the expense of other modes. Stated European transport policy goals to minimise transport growth and environmental impacts and to promote alternative modes must be simultaneously reinforced, for example by redoubling efforts to improve efficiency of freight transport by rail, inland waterways and short-sea shipping [7]. The projections demonstrate the need for stronger and more competitive rail and intermodal transport sectors in Europe.

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