

Summary

The European Parliament Transport Committee is currently discussing the Commission's proposal to review Directive 96/53 on the dimensions of lorries. The Commission has proposed to allow lorry makers to produce slightly longer cabs on the condition that they are shown to be safer and more aerodynamic.¹ The Commission refrained from setting a length limit and wants to define this through comitology (delegated acts). On 18 March Parliament will vote on amendments that would provide either 400mm, 800mm or unlimited extra design space.

Why should longer lorry cabs be allowed?

Lorry cabs could be designed in a more fuel efficient and safer manner if they'd be slightly longer. For aerodynamic purposes a much longer nose would be optimal (eg. bullet train). This is also true for the crash box: the longer the depth, the more of the impact energy can be absorbed by the box, reducing intrusions into the passenger compartment.² A longer nose would also largely eliminate the blind spot in front of the cab and allow for a much bigger windscreen.

Why should there be a limit to cab length?

Whereas for aerodynamic and some safety aspects a significantly longer cab would be beneficial, infrastructure imposes restrictions. In order to make sure all lorries can run on current infrastructure (roundabouts, ramps, etc.) all new vehicles must fit within turning circle requirements.³ According to TRL a strongly tapered (rounded) nose of up to 1600mm would fit within the turning circle and with a self-steered trailer axle cabs could even be 2250mm longer!⁴



EU turning circle requirements

However, the Front Underrun Protection Regulation (FUP - UNECE R93) imposes another de facto length limit on cabs which in reality limits the possible length increase to 800-900mm (see ACEA slide next page). That means that in the absence of length restrictions, as proposed by the Commission, a change to the UNECE FUP regulation would also affect cab length. In that case the de facto 800-900mm limit would no longer apply.

¹ For a more detailed analysis of the potential improvements see:

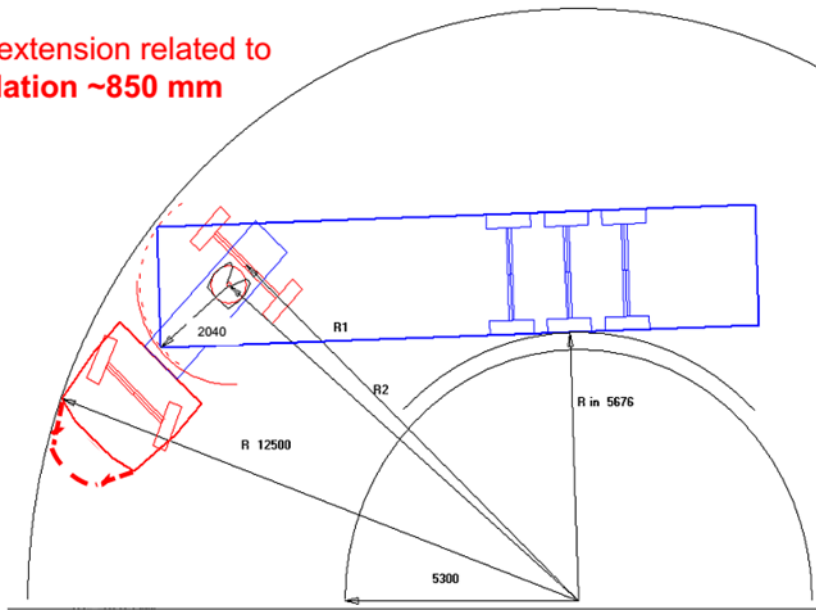
http://www.transportenvironment.org/sites/te/files/publications/Cleaner.%20safer%20lorries%20-%20briefing%20April%202013_final.pdf

² If 800mm of additional truck length is used (and 1000mm of ea-FUP crush depth), critical speeds would be likely to rise to 95-105 km/h. TRL, Safer aerodynamic frontal structures for trucks: final report, 2011, 13.

³ Defined by Directive 97/27/EC

⁴ Ibidem 2, p38.

Max BBC extension related to
FUP regulation ~850 mm



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What is the optimal additional cab length

Industry simulations indicate 900mm is the maximum achievable length extension under current rules. FKA 2011 concludes that 800mm is the best compromise between safety, aerodynamics and infrastructure. Tellingly, 800mm is also length increase applied to the most advanced smart cab prototype, [the MAN concept S](#).

Why combined transport is hardly affected by cab changes

Combined Transport (CT) ships by both rail/barge and road. In 90% of road-rail CT journeys loading units are transported which are not affected by the cab length (see picture).



In a small minority of CT journeys complete lorries are put on railway wagons. These so-called 'rolling highways' (RoLa) are mostly in Alpine countries and represent ca. 10% of total combined transport operations in Europe. However, their wagons can currently accommodate 18.75m road trains with 2 trailers plus the cab (see picture). Since around 90% of Europe's lorries are ordinary single-trailer 16.5m lorries (max. 17.3m with an 800mm longer cab)⁵ the impact on 'rolling highways' will therefore be minimal.



Road train (18.75m) on RoLa

All in all 0.5-1.5%⁶ of combined transport would be affected by cab changes. Given that new lorry cabs would only gradually penetrate the market (depending on whether European Parliament gets its way, from 2017-2018) it would take at least another decade before longer cabs become the norm. That should give CT operators more than enough time to adapt to the changes. There is therefore no reason to limit the cab extension to 400mm as CT demands.

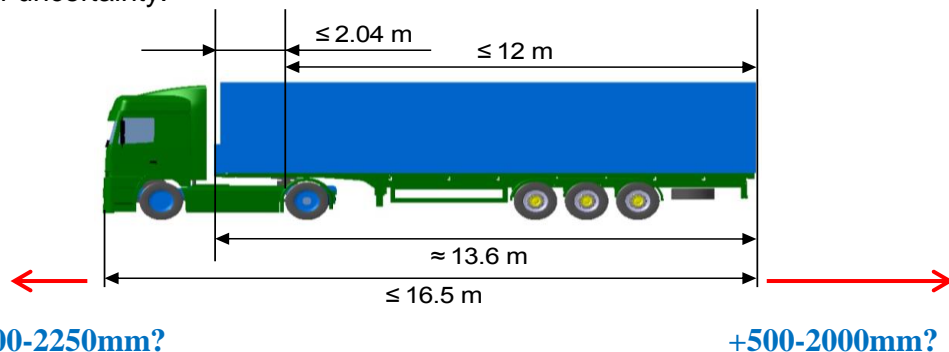
⁵ 88% in EU27. Road trains are more popular in Scandinavia (ca 75%) and also have more market share in Germany (23%) and Austria (18%) but they are virtually absent (4%) in Italy where many rolling motorways lead to).

AEA, *Reduction and Testing of Greenhouse Gas (GHG) Emissions from Heavy Duty Vehicles – Lot 1: Strategy*, 75.

⁶ Only 10% of Combined Transport is affected, of these 10% only 5-15% are road trains

Defined length restrictions vs. implicit length restrictions

The Commission proposed changes to both the front (cab) and the rear (aerodynamic devices) of lorries but did not propose specific length limits. Lorry makers prefer maximum flexibility on dimensions and would rather get rid of length restrictions entirely.⁷ That could lead to a lot of uncertainty:



Infrastructure operators and planners, warehouses and businesses need the rules to be clear and predictable. This speaks against a simple turning circle requirement and in favour of a fixed length limit. In addition to this the Commission proposes requirements (e.g. safety) linked to the length extension. Without clarity on what the length extension will be, it is difficult to define these requirements.

Conclusions

To make lorry cabs safer and cleaner more design space is needed. This length increase must find the optimal balance between the possible improvements, the space required for this and limitations imposed by infrastructure. The most up-to-date scientific evidence identifies 800mm as the best compromise between infrastructure requirements, complexity of redesign and improvements to safety and fuel efficiency.

Prototype vehicles exhibited by several lorry makers and industry simulations indicate such a length increase is appropriate and feasible. Combined transport would hardly be affected at all by changes to the size of cabins, so there is no reason to limit cab space to 400mm.

An alternative to setting a precise length limit is to opt for the implicit limits imposed by infrastructure requirements. However, for infrastructure operators and planner, warehouses and businesses the rules need to be clear and predictable. Setting a defined length restriction of maximum 800mm therefore seems to be the optimal solution.

⁷ ACEA statement on revision of Directive 96/53