







EUROPEAN CYCLISTS' FEDERATION

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European Cyclists' Federation; Gigaliners/Megatrucks and Road Safety for Cyclists

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Within the European Union, Directive 96/53/EC¹ regulates the permissible dimensions and weights for lorries and trucks in international traffic. Currently the maximum length of lorries for crossborder use in the EU is limited to 16,5 metres for articulated vehicles and 18,75 metres for combination lorries, and weighing up to 40 tonnes. The European Commission has committed itself to updating this Directive². There is pressure from the Road Haulage industry to increase the length of the lorries up to 25,25 metres and weighing up to 60 tonnes. There has been a call for the limit on the size of lorries to be increased, the main options would then be as seen in the picture below.³

		vehicle concept ²³	gross vehicle weight	scenario
1		6 x 4 lorry with semi-trailer on dolly (25.25 m)	60 t	2 & 3
2		6 x 4 lorry with two drawbar trailers (25.25 m)	60 t	2 & 3
3		E-Double, tractor with interlink semi-trailer + semi-trailer (25.25 m)	60 t	2 & 3
4		4 x 2 tractor with semi-trailer and drawbar trailer (25.25 m)	48 t	2 & 3
5		4 x 2 tractor with longer semi-trailer of 14.92 m (17.8 m)	40 t	4
6		not yet defined future option with length of 25.25 m	40 t	2 & 3

¹ http://eur-lex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=31996L0053&model=guichett

² http://ec.europa.eu/transport/road/weights-and-dimensions_en.htm

³ Final report Effects of adapting the rules on weights and dimensions of heavy commercial vehicles as established within Directive 96/53/EC, Transport & Mobility Leuven, 2008
http://ec.europa.eu/transport/strategies/studies/strategies_en.htm

Mission Statement of ECF:

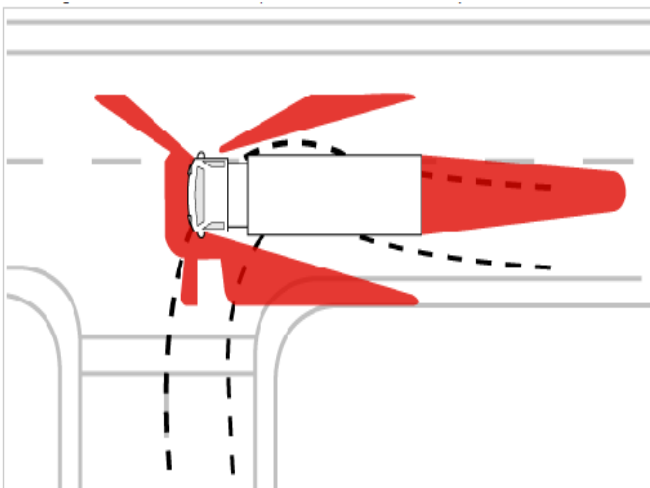
Founded in 1983, The European Cyclists' Federation (ECF) is the umbrella Federation of more than 65 bicycle user and related associations in Europe and beyond. On behalf of our members, we are pledge to ensure that bicycle use achieves its fullest potential so as to bring about sustainable mobility and public well being.

If this were to be the case and if these lorries were allowed to mix with urban traffic, the ECF would have grave misgivings about the effects that this would have on road safety, particularly for cyclists and other vulnerable road users. We would be very much against cyclists and larger sized Gigaliners sharing the roads. Though there are 'trials' being run on the larger lorries at the moment in Denmark, Germany and the Netherlands there has not yet been a great deal of data coming from the tests⁴. However despite the lack of clear empirical evidence we believe that there would be increased road safety issues concerning blind spots; manoeuvrability and handling; infrastructure damage and changes.

Blind Spots

Currently HGV lorries are disproportionately involved in serious accidents with other road users. They make up about 3% of the EU vehicle fleet, but give rise to 14 % of fatal collisions, amounting to more than 4 000 annual fatalities⁵.

The most common incident involving blind spots and lorries occur when the lorry turns right (or left in Cyprus, Ireland, Malta and the UK) without being able to see the cyclist sitting in an unsighted area to the side or just in front and to the side. The cyclist is knocked off the bike and falls under the lorry as the corner is cut off as the lorry turns and the cyclist goes under the back wheels.



The blind spot on a conventional HGV is the area around a lorry over which the driver lacks a direct or indirect view⁶. Blind spot's therefore vary very much from lorry to lorry, the picture below⁷ shows the possible various blind spots on a right hand drive lorry. Blind spot crashes between a cyclist and a lorry typically occur at right turn junctions (left in Cyprus, Ireland, Malta and the UK). In the Netherlands almost one third of the severely injured casualties in collisions with a lorry occur in the blind spot of a lorry turning right⁸. This is backed up by figures looking at

where accidents happen on the lorry⁹ (see below). In the EU as a whole 236 lateral accidents compared to 25 frontal impacts.

⁴ We would also be sceptical of the type of data that would come out of these trials given that they are not under typical logistics deadlines, they are also using optimal routes and highly experienced drivers. This is not a true picture of the sort of conditions the vehicles will be driven in.

⁵ European Commission Care Database "Heavy Goods Vehicles and Buses", 2010

⁶ A direct view is where the driver can see through the window; and indirect view is via a mirror or camera or other visual device

⁷ <http://www.tfl.gov.uk/roadusers/cycling/14799.aspx>

⁸ SWOV Fact sheet Blind spot crashes

⁹ Jacobs consultancy: Cost-benefit analysis of blind-spot accidents, 2004. See http://ec.europa.eu/transport/roadsafety_library/publications/mirrors_final_report.pdf

Country	Abbrev.	Motorcycle**			Cycle			Pedestrian		
		Total, of which:	Frontal	Lateral	Total, of which:	Frontal	Lateral	Total, of which:	Frontal	Lateral
Austria	AT	12	2	1	1	1	0	17	0	0
Belgium	BE	18	6	8	29	3	21	17	0	0
Denmark	DK	9	2	3	20	2	9	10	0	0
Finland	FI	4	1	2	9	2	4	10	0	0
France	FR	99	21	41	25	2	18	86	0	1
Germany	D	102	18	50	43	3	26	97	0	1
Greece	GR	39	6	22	3	0	2	32	0	1
Ireland	IE	5	2	0	1	0	1	15	0	0
Italy	IT	152	27	99	75	5	54	108	0	2
Luxembourg	LU	4	2	3	0	0	0	2	0	0
Netherlands	NL	31	3	22	65	1	62	22	0	1
Portugal	PT	25	9	10	5	1	2	26	0	0
Spain	ES	67	11	35	11	1	7	88	0	1
Sweden	SV	8	2	5	6	1	5	17	0	0
United Kingdom	GB	55	12	23	34	3	25	105	0	1
Total	EU15	665	123	324	356	25	236	549	2	9
Cyprus	CY	5	2	3	4	1	2	11	0	0
Czech Republic	CZ	29	5	11	26	2	16	29	0	0
Estonia	EE	5	2	3	4	1	2	11	0	0
Hungary	HU	22	5	11	21	2	16	21	0	0
Latvia	LV	5	2	3	4	1	2	11	0	0
Lithuania	LT	5	2	3	4	1	2	11	0	0
Malta	MT	5	2	3	4	1	2	11	0	0
Poland	PL	102	18	50	43	3	26	97	0	1
Slovakia	SK	5	2	3	4	1	2	11	0	0
Slovenia	SL	5	2	2	4	1	2	8	0	1
Total	New	189	39	89	117	11	74	221	1	4
Total	EU25	854	161	414	473	36	309	770	3	13

Values in red calculated as averages from all other countries in same colour band

When it comes to larger, longer lorries A UK TRL report¹⁰ claims that

“When cornering, most of the LHVs assessed would suffer some additional blind spots. These would be similar for the B-double...rigid/A- dolly/semi ... and the C-train...configurations. For each of these, the rigid vehicle or front trailer would prevent vision of the area in front of the rear trailer.”

In other words this would make LHV's less safe and would increase the number and size of blind spots. It would be a reasonable assumption to conclude that with a decrease in the ability of the driver to see into the most dangerous areas around the lorry, there would be an increase in fatalities and serious injuries to cyclists and indeed other road users.

We can also assume (though this lacks empirical data) that there will be more visual impairment of those drivers of *other* road users around the large lorry. The other road user will not be able to see for *at least* 25 metres further up the road, this could create many problems concerning the interaction between other road users.

Manoeuvrability and Handling

Given the more complicated and difficult type of manoeuvring that an LHV also has to go through to get round corners that were not designed for such large vehicles, risks of accident on cornering would be increased. A Commission sponsored report produced by Transport & Mobility Leuven¹¹ claims that

“The additional 6.5 m length of LHVs type 1 to 4 (see previous diagram on different trailer types) can lead to a decrease of manoeuvrability and thus potentially increases the accident risk”

¹⁰ Longer and/or Longer and Heavier Goods Vehicles (LHVs) – A Study of the Likely Effects if Permitted in the UK: Final Report, TRL Limited. UK: 98, Knight, Newton, Mckinnon, 2008

¹¹ *ibid*

There can also be a problem with the additional amount of road space when turning. A German Federal Highway Research Institute report¹² states that

“Room for manoeuvre and safety distances are generally no longer available, so that even small deviations from a correct line will result in adjoining surfaces being driven on” [...] “Driving over or touching surfaces in adjoining areas can endanger other road users (pedestrians and cyclists)[...]”

Indeed many vehicle types would have real difficulties in complying with Directive 97/27/EC on out-swing limits and Regulation 96/53/EC on swept path limits, particularly if they are not (as is the case in Sweden and Finland) fitted with steered axles or dollies¹³. This could obviously cause major problems for cyclists if LHV's are to make a habit of crossing over onto cycling infrastructure and, taken together with concerns over blind spots, could lead to major problems and incidents on cycling infrastructure.

In terms of stability there are also problems with how the trailers react when being driven in a straight line. In tests carried out¹⁴ most, and sometimes, all of the large lorry combinations performed worse in the following tests

- Rearward amplification - the degree to which the trailer(s) amplify or exaggerate the sideways motion of the tractor unit
- High speed off-tracking - at speed the rear trailer(s) may track to the outside of the path of the towing unit
- Yaw damping - this quantifies how quickly yaw oscillations (sway) of the rear of a trailer take to settle after a rapid steering manoeuvre

The major consequences of these results for cyclists would be that LHV's would have problems staying within its given lane or road space and could, given unfavourable weather conditions or the need for quick, emergency manoeuvres, veer into cycle lanes or to the side of the road occupied by the cyclist.

Indeed there is early, but significant evidence that, lorries with trailers (the vast majority of Gigaliners will have trailers) have a serious weakness that is not seen with the traditional single wagons. As described earlier, traditional single wagon lorry accidents with cyclists tend to occur within the blind spot at the level of the cab and on the right hand corner of the lorry, particularly when turning at corners from junctions. However (see table below) research¹⁵ from SWOV the Dutch national road safety research institute has shown that lorries with trailers there is an almost equal if not greater risk of accidents occurring on the side of the lorry and/or on the side of the trailer and thereby possibly doubling the risk that cyclists face with all lorries.

¹² Auswirkungen von neuen Fahrzeugkonzepten auf die Infrastruktur des Bundesfernstraßennetzes
Schlussbericht, Klaus-Peter Glaeser et al, 2006 http://www.bast.de/nn_42642/DE/Publikationen/Download-Berichte/unterseiten/60-tonner.html

¹³ Longer and/or Longer and Heavier Goods Vehicles (LHVs) – a Study of the Likely Effects if Permitted in the UK: Final Report, TRL Limited. UK: 98, Knight, Newton, Mckinnon, 2008

¹⁴ Longer and/or Longer and Heavier Goods Vehicles (LHVs) – a Study of the Likely Effects if Permitted in the UK: Final Report, TRL Limited. UK: 98, Knight, Newton, Mckinnon, 2008

¹⁵ <http://www.swov.nl/rapport/R-2008-11A.pdf>

Type of vehicle	Front + Right of lorry	Side of lorry	Side of trailer/semi- trailer	Total	Percentage
Bulk weight lorry with Trailer	15	11	4	30	57%
Lorry (with Trailer)	6	0	4	10	19%
Single container lorry	7	0	0	7	13%
Tipper, concrete and crane lorry	3	0	1	4	8%
Rubbish/garba ge Truck	2	0	0	2	4%
Total	33	11	9	53	100%
Percentages	62%	21%	17%	100%	

Adapted from SWOV Report' table showing distribution of the occurrence of lorry/bicycle accidents and point of impact¹⁶

Similarly a US Report showed that trucks with trailers were two to three times as likely as other configurations to be involved in crashes¹⁷

The possibility that the larger Gigaliner lorries will also veer into other lanes could compound these figures and leave cyclists having to deal, not only with right turn blind spots, but also common impact points all the way along the side of the lorry.

There is a lack of clear empirical research concerning the larger lorries, however given that trailer lorries in general have real safety problems, and that Gigaliner trailers also have handling and blind spot issues, we could make an educated assumption that these lorries would be significantly more dangerous than conventional lorries.

Conclusion

There is little empirical research on this within the European context, particularly on safety issues. There has not been much data coming out of the countries that are trialling, or are exempt from, Gigaliners, possibly due to the limited time. However we remain very sceptical that changing Directive 96/53/EC to accommodate larger lorries up to 25,25 metres and with/without 60 tonnes, if put forward by the Commission, would have anything other than a negative effect on road safety for cyclists if larger LHV Gigaliner lorries were allowed to mix with regular urban traffic where cyclists make up part of this traffic.

¹⁶ Table based on table 8.4 page 60 De toedracht van dodehoekongevallen en maatregelen voor de korte en lange termijn Ing. C.C. Schoon, dr. M.J.A. Doumen & D. de Bruin, 2008. <http://www.swov.nl/rapport/R-2008-11A.pdf>

¹⁷ Stein, H.S. and Jones, I.S. 1988. Crash involvement of large trucks by configuration: a case-control study. American Journal of Public Health 78:491-98.

Again, the major points of contention are

- Blind spots would be increased along the side of the larger lorries. Currently the major blind spot is the front passenger side. However this would be increased to include the front side of the trailer of larger lorries. There would also be a lack of vision for other road users around the lorry.
- Manoeuvrability would be impaired given the greater size which would mean lorries encroaching onto cyclist infrastructure and into other road users lanes
- These lorries would have decreased handling of which no amount of skill on the part of the driver can overcome.
- Other areas of the lorry, other than the well-known 'right turn blind spot', would be opened up as dangerous such as the side of the lorry during straight ahead driving. Of course, in the event of a collision, the consequences would be greater given the greater weight and size.

Surrounding 'out of scope', though related, issues

Decreased haulage prices – Though out of the scope of this report it is unfortunate that the European Commission sponsored Leuven report, of which this report has taken various figures, do not see this decrease in road safety of the LHV's as a problem. They argue that since the lorries are larger and can take a larger load there will be less lorries on the road and so, despite the increase safety risks of each individual LHV, the roads will be safer as there will be less lorries in total on the road. However the report fails to discuss or take into account the possibility of a decrease in road haulage prices, due to the Gigaliners ability to take bigger loads, which would then lead to a shift from rail, inland waterway and/or other modes of transport to the road sector and consequently an *increase* in the numbers of lorries, of all types, on the road¹⁸. Again this would have serious consequences for road safety in general given the disproportionate number of accidents per lorry on the road. The idea that bigger lorries would lead to less lorries and therefore safer roads is debatable at best and unlikely at worst.

Infrastructure changes - 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 vehicles¹⁹. We would have major concerns about whether this would take away important resources needed for cycling infrastructure and for the upkeep and maintenance of regular road surface to provide a safe environment for all road users.

However it is not just about funds it is also the infrastructure itself; anecdotal evidence from Denmark, where Gigaliners are in operation, has suggested that where infrastructure has been changed to accommodate the larger lorries, cyclists and other road users are being put at risk by

¹⁸ A French study is here <http://www.faq-logistique.com/TL&A-Focus-Feuillet-Environnement-Bilan-Environnemental-EMS-25-Neutre.htm>; Others can be found here <http://www.noGigaliners.eu/the-facts/independent-research/>

¹⁹ In German Bundesanstalt für Strassenwesen (BASt) (2007): Auswirkungen von neuen Fahrzeugkonzepten auf die Infrastruktur des Bundesfernstrassennetzes: Schlussbericht, Germany. http://www.bast.de/cIn_007/nn_42254/DE/Publikationen/Fachliche/Einzelschriften/unterseiten/60-tonner.html

changes in cornering and road sizes. There have already been fatalities in areas where roads have been update to accommodate Gigaliners.

Perceived danger for cyclists - For cyclists the proven best policy to increase safety on the roads is to have more cyclists on the road; this is the 'safety in numbers' principle²⁰. Figures show that across the board, with an increase in cycling numbers comes a decrease in cycling casualties per cyclist trip or distance travelled. The reasons for this could be multifarious (cycling confidence; drivers being more aware; more infrastructure invested etc), but one that could be important is the perception of danger on the roads. With or without the fact of roads being more or less dangerous people will take up cycling if it is seen as safe, and will stop if it is seen as dangerous. Regardless of casualty figures larger and heavier lorries would give the impression of roads being more dangerous, and, unless cyclists were completely separate from them, would have the effect of discouraging cycling uptake, which would in turn make the roads less safe for those remaining cyclists.

²⁰ More details on ECF website here <http://www.ecf.com/road-safety/>