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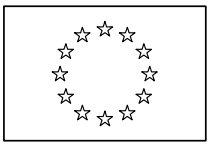

EUROPEAN COMMISSION

Brussels, 4.6.2012
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REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL

on the implementation of Directive 2007/38/EC on the retrofitting of mirrors to heavy goods vehicles registered in the Community

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1. INTRODUCTION

A significant number of road accidents involve larger vehicles when their drivers are not aware of the presence of other road users very close to them.

These accidents are often related to a change of direction at crossings, junctions or roundabouts when the drivers fail to see other road users that are placed in a 'blind spot'. Blind spots are areas around a vehicle that cannot be seen by the driver, either by looking directly through the windows or indirectly using the mirrors or other devices.

Particularly important for road safety are blind spots in heavy goods vehicles (HGVs), i.e. vehicles designed for transporting goods and having a maximum mass[1] of more than 3.5 tonnes. Blind spots are significant factors in accidents involving HGVs and vulnerable road users such as motorcyclists, cyclists and pedestrians.

Improvements in technology and a better understanding of the causes of accidents have led the EU to adopt legislation aimed at reducing by means of appropriate devices the number and size of blind spots and consequently the number of accidents and fatalities. Directive 2003/97/EC[2] requires all new vehicles put into circulation in the EU as of 27 January 2007 to be equipped with blind spot mirrors.

In the light of a study carried out in 2004[3], the Commission decided that it would also be cost-effective to retrofit existing HGVs with mirrors of the kind required for new vehicles.

The Commission's proposal was adopted by the European Parliament and the Council as Directive 2007/38/EC[4] on the retrofitting of mirrors to heavy goods vehicles, which will be referred to in this report as the 'Retrofitting Directive'.

This report has been drawn up in accordance with Article 5 of the Retrofitting Directive, which requires the Commission to:

- report on the implementation of the Directive;
- consider whether revision of the existing legislation is necessary.

2. BLIND SPOTS AS A FACTOR IN ROAD ACCIDENTS

Accident research[5] has shown that blind spots increase the risk of accidents, particularly those involving HGVs and small road users such as motorcycle and

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1 Technically permissible maximum laden mass.

2 Directive 2003/97/EC of the European Parliament and of the Council of 10 November 2003 on the approximation of the laws of the Member States relating to the type-approval of devices for indirect vision and of vehicles equipped with these devices, amending Directive 70/156/EEC and repealing Directive 71/127/EEC, OJ L 25, 29.1.2004, p. 1–45.

3 Cost-benefit analysis of blind spot mirrors: http://ec.europa.eu/transport/road_safety/pdf/projects/mirrors.pdf.

4 Directive 2007/38/EC of the European Parliament and of the Council of 11 July 2007 on the retrofitting of mirrors to heavy goods vehicles registered in the Community, OJ L 184, 14.7.2007, p. 25–28.

moped riders, cyclists or pedestrians, and that mirrors or other devices that enhance the field of vision and reduce or eliminate blind spots can be effective in preventing a significant proportion of these accidents.

This is particularly true when an HGV is carrying out what is known as a 'critical manoeuvre' — for example, when it is turning right (or left in countries where vehicles drive on the left) and a motorcycle, moped or bicycle is next to the HVG on its passenger side. This manoeuvre may also be dangerous for pedestrians, but to a lesser extent.

Other critical manoeuvres carried out by an HGV involve changing lanes when a motorcycle, moped or bicycle is alongside it, and setting off when a vulnerable road user, especially a pedestrian, is in front of the HGV.

Accidents involving HGVs and cyclists are more common in urban areas, while those involving motorcycles happen mostly in non-urban areas.

The great variety of traffic patterns across the EU makes it difficult to quantify the number of accidents or fatalities that can be attributed to blind spots. Moreover, accident databases generally do not include information that would make it possible to establish a causal link between an accident and a blind spot. Consequently, the number of accidents where an HGV's blind spot has played a decisive role can only be assessed through in-depth investigations.

The above-mentioned cost-benefit analysis assumed that, in 56% of the accidents involving a cyclist or a motorcycle/moped rider, the HGV was turning right (or left in a country where vehicles drive on the left). It was also assumed that 40% of those accidents could be prevented by fitting the HGV with mirrors with an enhanced field of vision.

On this basis, in 2007 the Commission estimated that approximately 400 fatalities per year could be attributed to blind spots[6].

3. EU LEGISLATION ON THE FIELD OF VISION

EU legislation on the 'type-approval of systems for indirect vision' dates back to 1971. The first piece of legislation was Directive 71/127/EEC[7] on the rear-view mirrors of motor vehicles. This directive was amended by a number of subsequent directives that added more advanced mirrors and required them to be fitted to a wider range of vehicles.

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5 Truck accident causation study (ETAC 2007): http://ec.europa.eu/transport/roadsafety_library/publications/etac_exec_summary.pdf.

6 Commission Staff Working Document accompanying the Proposal for a Directive of the European Parliament and of the Council on the retrofitting of mirrors to heavy goods vehicles registered in the Community. Full impact assessment. SEC(2006) 1238.

7 Council Directive 71/127/EEC of 1 March 1971 on the approximation of the laws of the Member States relating to the rear-view mirrors of motor vehicles, OJ L 68, 22.3.1971, p. 1–17.

3.1. The 2003 directive on type-approval

A significant change in the legal framework was made by Directive 2003/97/EC. This repealed Directive 71/127/EEC and laid down common mandatory requirements for mirrors, and for the first time allowed other systems for indirect vision.

In the new Directive, the mirrors are classified into six categories, according to their field of vision. Some of them are commonly referred to as 'blind spot mirrors' because they were designed to reduce or eliminate blind spots. They can be briefly described as follows.

Wide-angle exterior mirrors, named 'class IV' mirrors. These cover an area on both sides of the vehicle which starts closer to the driver's position and is much wider to the side than the area covered by the normal ('class II') rear mirror.

Close-proximity exterior mirrors, named 'class V' mirrors. These cover an area immediately adjacent to the vehicle cab on the passenger's side.

Front mirrors, named 'class VI' mirrors. These cover the area in front of the vehicle which cannot be seen from the driving position.

The new requirements for class IV (wide-angle) and class V (close-proximity) mirrors laid down in the 2003 Directive significantly increased the driver's field of vision compared to the previous Directive. The ground area covered by the new class IV mirrors increased by 43 % while the area covered by class V mirrors more than doubled. Class VI mirrors were included in EU law for the first time.

Figure 2 in the Annex to this report sums up the changes to the field of vision provided by class IV (on the passenger's side) and V mirrors, as required by Directive 2003/97/EC.

According to that Directive, all new HGVs with a maximum mass of more than 7.5 tonnes had to be fitted with class IV, V and VI mirrors by 26 January 2007. HGVs with a maximum mass of less than 7.5 tonnes had to be fitted with class IV and V mirrors but were exempted from the obligation to install class VI mirrors.

The General Safety Regulation[8] repeals Directive 2003/97/EC as from 1 November 2014 and replaces it by Regulation No 46 adopted under the United Nations Economic Commission for Europe (UNECE). This does not bring any changes relative to the requirements of Directive 2003/97/EC concerning mirrors but results in these requirements being applied to vehicles registered in countries outside the EU.

3.2. The Retrofitting Directive

The Commission considered that it would take a long time — at least 16 years — to bring all HGVs in Europe into line with the requirements of Directive 2003/97/EC, given the need to completely renew the HGV fleet.

[8] Regulation (EC) No 661/2009 of the European Parliament and of the Council of 13 July 2009 concerning type-approval requirements for the general safety of motor vehicles, their trailers and systems, components and separate technical units intended therefor, OJ L 200, 31.7.2009, p. 1–24.

The Commission also estimated that approximately 400 fatalities every year were caused by HGV blind spots. It therefore proposed to make it compulsory to retrofit blind spot mirrors to existing vehicles as a cost-effective measure to reduce accidents and fatalities. The Commission's proposal was adopted as the Retrofitting Directive (Directive 2007/38/EC).

The Retrofitting Directive applies to vehicles designed to carry goods and having a maximum mass of between 3.5 and 12 tonnes (category N_2) and those having a maximum mass of more than 12 tonnes (category N_3), which were registered as from 1 January 2000. In accordance with Article 3 of the Directive, these vehicles had to be fitted with class IV and V mirrors by 31 March 2009 at the latest.

Article 2(2) of the Retrofitting Directive exempted HGVs weighing less than 7.5 tonnes on which it was not possible to fit class V mirrors. It also exempted HGVs to which national rules already applied before the Directive became part of national law. Special allowance was also made for vehicles already fitted with mirrors that covered a field of vision only slightly smaller than what was required under the Directive.

In cases where it was impossible to fit mirrors complying with the new requirements, Article 3(3) of the Directive allowed the use of alternative technical solutions, including supplementary mirrors or other devices such as monitor and camera systems. Member States where such alternatives were used had to send the Commission their list of acceptable technical solutions.

4. TRANSPOSING THE RETROFITTING DIRECTIVE

The deadline for transposing the Directive into national law was 6 August 2008, allowing the vehicles concerned to be retrofitted with blind spot mirrors by 31 March 2009. The Commission took legal action ('infringement procedures') against some Member States for failing to notify it accordingly. Full transposition was finally achieved by June 2009. The transposition dates are shown in Table 1 below.

Generally, the transposition of this Directive into national legislation was unproblematic and — except in some cases — was done on time. In one Member State (Denmark), transposition took place well ahead of the deadline, since corresponding national rules were already in place when the Directive was adopted.

Table 1. Dates on which Member States transposed Directive 2007/38/EC

Belgium	21/02/2008	Luxemburg	28/05/2009
Bulgaria	14/11/2008	Hungary	14/08/2008
Czech Republic	27/10/2008	Malta	14/12/2007
Denmark	1/10/2004	Netherlands	28/08/2008
Germany	29/09/2007	Austria	11/10/2007
Estonia	18/12/2007	Poland	12/06/2009
Ireland	8/08/2008	Portugal	17/11/2008
Greece	25/08/2008	Romania	15/08/2008

Spain	11/06/2008	Slovenia	17/12/2007
France	30/04/2008	Slovakia	1/04/2008
Italy	31/03/2008	Finland	17/12/2007
Cyprus	22/05/2009	Sweden	2/06/2008
Latvia	29/10/2008	United Kingdom	31/03/2009
Lithuania	26/07/2008		

5. IMPLEMENTING THE RETROFITTING DIRECTIVE

The Commission asked Member States to report on the implementation of the Retrofitting Directive by filling in a questionnaire. Only thirteen Member States responded[9] to this request.

Before the transposition date, the Netherlands and Denmark had already adopted national rules requiring vehicles covered by the Directive to be fitted with mirrors that provided the enhanced field of vision. These rules applied to vehicles registered before 1 January 2000 or type N2 vehicles weighing less than 7.5 tonnes.

Only five Member States said that they permitted alternative technical solutions as provided for in Article 3(3) of the Directive. In accordance with Article 3(4), the Netherlands notified the Commission of an alternative technical solution it had adopted. The Commission then published this information on the road safety website[10], as required by the Directive.

On 18 December 2007, the Technical Adaptation Committee set up under the Roadworthiness Directive[11] discussed the implementation of the specific provisions of Article 4(2) of the Retrofitting Directive.

They came to the conclusion that the Roadworthiness Directive did not need to be amended, since it already required annual tests for the vehicles covered by the Retrofitting Directive, and these compulsory tests included rear-view mirrors and their field of vision. Member States were free to adopt their own rules on the testing procedures. The Commission made some recommendations on how to carry out these tests.

From the answers to the questionnaire there appear to have been no major problems in implementing the Retrofitting Directive. However, most Member States had no detailed information on how many vehicles failed their roadworthiness test because they failed to comply with the retrofitting requirements. Technical inspection records show whether a vehicle had mirror problems, but they do not specify whether the mirrors failed to comply with the Retrofitting Directive or had other types of defect.

9 Denmark, Germany, Ireland, Spain, France, Italy, Latvia, Luxembourg, Netherlands, Poland, Romania, Slovakia, Finland.

10 http://ec.europa.eu/transport/road_safety/vehicles/blind_spot_mirrors_en.htm.

11 Council Directive 96/96/EC of 20 December 1996 on the approximation of the laws of the Member States relating to roadworthiness tests for motor vehicles and their trailers OJ L 46, 17.2.1997, p. 1–19.

6. THE EFFECTS OF RETROFITTING BLIND SPOT MIRRORS

In 2011 the Commission carried out a study on blind spot accidents as required by Article 5 of the Retrofitting Directive. The purpose of the study was to update the 2004 cost-benefit analysis and to compare the situation before and after the Directive was implemented. The study included a review of how Member States had implemented the Directive (presented in sections 4 and 5 above) and an assessment of the effectiveness of retrofitting blind spot mirrors in terms of the number of fatalities avoided.

6.1. Methodology for assessing the results achieved by blind spot mirrors

The study used the same methodology as the 2004 cost-benefit analysis. In essence, this involved calculating the expected trend in fatalities if blind spot mirrors were or were not retrofitted.

In the 2011 study these calculations were updated and the result was then compared with the actual number of fatalities according to the official statistics recorded in the CARE database.

The methodology can be briefly described as follows.

(1) To calculate the number of fatalities if blind spot mirrors were not retrofitted, it was assumed that:

- the overall number of road fatalities would continue to decline at the same yearly rate as observed in previous years;
- fatalities resulting from accidents involving vulnerable road users and HGVs would continue to represent the same proportion of total fatalities.

To calculate the number of fatalities if blind spot mirrors were retrofitted:

- only accidents involving motorcycles, mopeds and bicycles were considered, and only those where the HGV was turning right (or left in countries where vehicles drive on the left);
- in accidents involving an HGV turning right (or left in some countries) and a bicycle, moped or motorcycle, the proportion of fatal accidents was taken to be 56%;
- it was assumed that 40% of such fatalities could be prevented by fitting the new blind spot mirrors;
- the number of fatalities that would be avoided by fitting the new blind-spot mirrors was considered to be proportional to the number of HGVs to be retrofitted.

These calculations were updated using actual accident data to 2005 and the results were compared with the actual figures.

6.2. Findings of the study

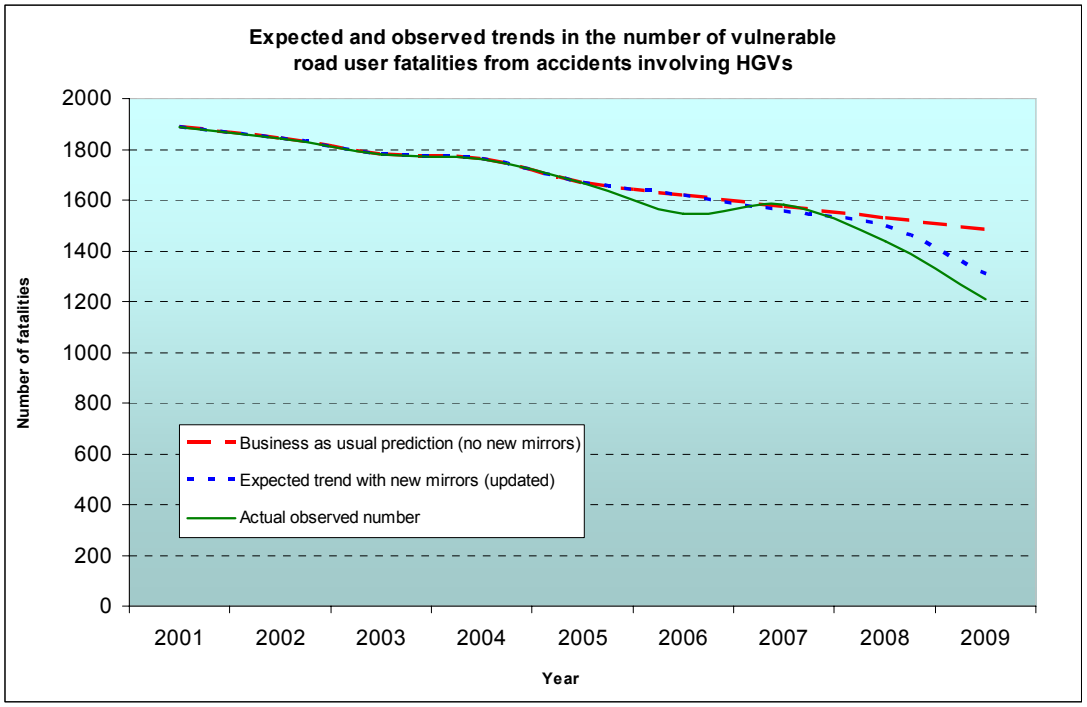
It was estimated that in 2009 there were approximately 3.7 million vehicles to be retrofitted as a result of the Directive.

Updating the calculations performed when the Directive was adopted showed that the total number of fatal accidents involving an HGV and vulnerable road users would have been expected to decrease by 21.5 % between 2005 and 2009 as a result of the Retrofitting Directive. In reality the actual number of fatalities in this type of accident decreased by 27.5 % over this period.

The trend in the actual number of fatal accidents involving HGVs and vulnerable road users is shown in Annex 1. The comparison suggests that the retrofitting has been effective. As shown in Figure 1 below, the total number of vulnerable road user fatalities actually recorded is lower than what was estimated to be the result of the Retrofitting Directive.

However, the extent to which this positive trend can be attributed to the Retrofitting Directive remains uncertain. For one thing, the number of pedal cyclist fatalities had already fallen sharply in 2006, before the Retrofitting Directive was implemented.

Figure 1



It should also be noted that the available data cover a very short period after the implementation of the Retrofitting Directive. The date after which the vehicles concerned would fail a roadworthiness test if they did not comply with the Directive was 31 March 2009. When the implementation study was carried out, however, the CARE database contained no data more recent than the end of 2009. So it is possible that the full effect of the Directive will not be seen until a longer time series of data is available.

The CARE database contains information on the circumstances of accidents but not on the contributing factors. It is thus impossible to precisely identify those accidents in which blind spots may have been a contributing factor. This was also a constraint on the original 2004 study on the cost-effectiveness of retrofitting blind spot mirrors to existing vehicles. To overcome this difficulty, the share of accidents attributable to blind spots and the effectiveness of the mirrors in preventing them were both taken from in-depth research studies carried out by some Member States, as explained above.

To sum up, there is a downward trend in the number of fatal accidents involving vulnerable road users and HGVs, but it is not clear how much of this progress can be attributed to the Retrofitting Directive, or if even better results could be achieved by imposing additional technical requirements.

6.3. How to improve the situation

Despite the reduction in the number of fatal accidents involving vulnerable road users and HGVs, there is still room for improvement. However, there is no single or simple solution that can bring about a substantial reduction in the number of accidents and fatalities. Action should be taken to improve both the vehicles and the behaviour of road users.

6.3.1. Action to improve vehicles

Where the vehicle is concerned, technical improvements could help to further reduce blind spot accidents. These improvements fall into two categories.

(1) Reducing or eliminating blind spots

The simplest solutions consist in fitting additional mirrors or Fresnel lenses. The latter allow the HGV driver to see a vulnerable road user who is immediately next to the vehicle on the driver's side.

Monitor and camera systems could either complement or replace some mirrors. They show one or more images of the vehicle's sides displayed on a monitor inside the cab.

The driver's direct vision, i.e. without using technical aids, can be improved by better designing both the cab windows and the position of the driver. A balance has to be struck between the vision requirement and other constraints.

Warning the driver of a potential danger

HGVs can be fitted with devices that warn the driver about the presence of vulnerable road users. For example, ultrasound sensors that detect vulnerable road users when they are in close proximity to the vehicle and alert the driver by means of audible or visual signals. These systems can also warn the vulnerable road user of a potentially dangerous manoeuvre by the HGV.

The cost-effectiveness of these technical devices has not yet been thoroughly assessed and the available studies are not conclusive. In particular, it is not clear that the benefits would increase in proportion to the number of technical devices fitted.

All of them (with the exception of better windows) impose on the driver an additional workload which may adversely affect his ability to use them efficiently. It must also be borne in mind that warning systems do not exempt the driver from the responsibility of using all the means available, including mirrors, to check for the presence of vulnerable road users.

6.3.2. Action targeting road users

There is room for improvement in the behaviour of both HGV drivers and vulnerable road users. Professional and licence training, particularly for HGV drivers, should do more to stress the dangers of blind spots and to teach the necessary skills for dealing with them. Vulnerable road users also need to be aware that, because of blind spots, the driver of an HGV cannot always see them. This is particularly important for cyclists. Training schemes and targeted awareness-raising campaigns are an effective way to address vulnerable road users.

6.3.3. Action to improve infrastructure

Roadside mirrors and other external devices can be installed at intersections to help drivers detect the presence of vulnerable road users.

Traffic management measures, such as traffic segregation or speed reduction, may also help reduce blind spot accidents, particularly those involving cyclists and pedestrians in urban areas.

7. THE WAY FORWARD

The Commission departments concerned will continue to monitor accident data in order to see whether the number of accidents involving HGVs and vulnerable road users continues to fall, as it did until 2009. Further in-depth accident investigation is needed to update our knowledge of the extent to which blind spots lead to fatal collisions between vulnerable road users and HGVs.

Moreover, the contribution of blind spots to road injuries still needs to be better assessed. Measures to ensure proper reporting of blind spot accidents will be a part of the EU's strategy to counter road traffic injuries.

Technology, already available or being developed, could help to further reduce accidents involving vulnerable road users and HGVs. It includes camera and monitoring devices and detection and warning systems. The Commission believes that further research is needed to assess their potential and cost-effectiveness. They are still at an early stage of development, and we must beware of overloading HGV drivers with extra devices that may distract them.

Discussions are under way at the UN-ECE on improvement of HGVs' field of vision. In particular UN-ECE is developing technical requirements for the type-approval of monitor and camera systems. Once these requirements are established, only type-approved systems will be allowed on HGVs registered in the EU[12]. The replacement

[12] This obligation will apply as from 26 July 2013. Series of Amendments 03 to UNECE Regulation No 46 (Add.45/Rev.4) in adoption process.

of mirrors by monitor and camera systems is amongst the possibilities being discussed for future improvements in the field of vision.

Revision of the current EU legislation will only be appropriate once further evidence becomes available that justifies fitting additional devices to vehicles on a mandatory basis.

Meanwhile, there are various other ways of potentially preventing blind-spot accidents — not by adding technical equipment to vehicles but rather by improving road infrastructure and the behaviour of road users.

As part of the CARS 21[13] process, the Commission will discuss with Member States and stakeholders what further action ought to be taken to deal with blind spots.

The Commission has launched a public consultation on amending the Directive on the weights and dimensions of HGVs with the aim of improving, amongst other aspects, their design in terms of road safety. The revision of this Directive will provide an opportunity for looking at possible improvements to the driver's direct field of vision, as explained above.

A grant from the Commission helps to finance the BIKE PAL[14] project, which includes demonstrations of the HGV driver's field of vision in order to raise awareness among cyclists. The Commission also helps to finance the Safecycle[15] project, which will identify information and communication technologies that can improve the safety of cyclists.

8. CONCLUSIONS

The Directive on the retrofitting of blind spot mirrors has been successfully implemented by EU Member States. No major technical difficulties were encountered, though some countries were late in transposing the Directive into their national legislation.

The number of vulnerable road users killed in a collision with an HGV fell substantially from 2001 till the end of 2009. The assessment carried out by Commission staff suggests that blind spot mirrors have contributed to this trend, especially where cyclists are concerned: research shows that cyclists are particularly vulnerable to accidents caused by blind spots.

However, on the basis of the available data it is not possible to establish the proportion of HGV accidents in which blind spots were a contributing factor. This can only be estimated from in-depth studies which have a very limited coverage and are based on data collected before the Retrofitting Directive was implemented. Consequently, it is not possible to distinguish between the effect of retrofitting blind spot mirrors to existing vehicles and the effect of fitting such mirrors to new vehicles. Moreover, it is not possible to separate the effect of blind spot mirrors from the general downward trend in the number of fatal road accidents.

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13 'Competitive Regulatory System for the 21st century'.

14 http://www.etsc.eu/documents/ETSC_BIKE_PAL.pdf.

15 http://www.safecycle.eu/.

Despite the very positive reduction in the number of vulnerable road users killed in road accidents, there are still more than 1 200 such deaths each year resulting from accidents involving an HGV. Efforts to prevent these accidents must be pursued and the Commission is committed to working on this issue as one of its priorities for the period 2011-2020[16].

The Commission will follow closely any technological developments aimed at preventing blind spot accidents which may be incorporated into new vehicles in the future, once they prove their cost-effectiveness.

The Commission will continue to promote better training and awareness, both for HGV drivers and for vulnerable road users, along with actions aimed at improving infrastructure so that vulnerable road users and HGVs can safely share it.

[16] COM(2010) 389 final, Towards a European Road Safety Area: policy orientations on road safety 2011-2020.

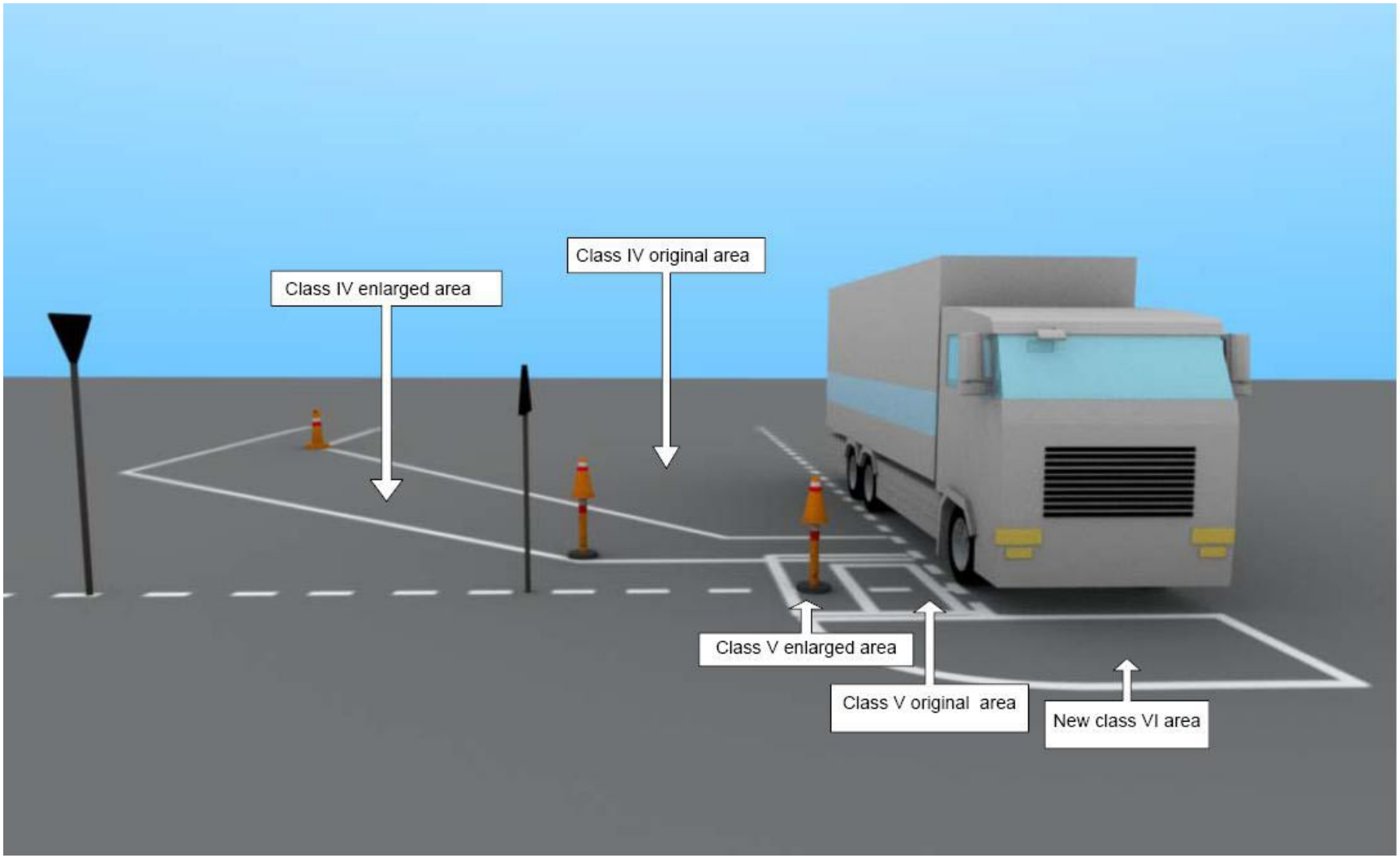
9. ANNEX

Table 2. Trend in the number of fatalities in accidents involving HGVs and vulnerable road users in 19 Member States *

Year	Type of vulnerable road user				
	Motorcycle	Moped	Bicycle	Pedestrian	Total
2001	318	170	427	972	1 887
2002	308	148	424	961	1 841
2003	315	150	395	918	1 778
2004	298	140	410	913	1 761
2005	298	135	401	835	1 669
2006	308	130	337	773	1 548
2007	289	102	353	837	1 581
2008	301	110	288	738	1 437
2009	249	83	250	628	1 210

* Data extracted from the CARE database for 19 Member States: EU 15 plus CZ, SI, PL and RO

Figure 2


Class IV enlarged area
Class IV original area
Class V enlarged area
Class V original area
New class VI area