European Transport Safety Council

ETSC Response to the European Commission Staff Working Document "First Milestone towards a Serious Injury Strategy"

Introduction

The European Commission presented its '*First Milestone towards a Serious Injury Strategy*'[1] on the 19th of March 2013. In this paper ETSC sets out its response. Part I lays out the policy framework in which this new initiative is taking shape. Part II looks at the proposed new definition for Serious Injury and how the data will be collected as well as its important use to inform decision makers about impact of their measures. Part III looks at measures that are needed to reduce serious injuries on Europe's roads. Part IV outlines some special areas of priority that have not been touched upon in great detail by the European Commission and that ETSC believes deserve more attention.

The European Commission's *'First Milestone towards a Serious Injury Strategy'* presents an overview of progress so far and looks at next steps towards coming up with a 'Serious Injury Strategy'. ETSC commends the European Commission for announcing a common definition of serious injuries in road traffic collisions: improving the quality of data about seriously injured survivors of road collisions will help in designing more effective safety policies. ETSC is now hopeful that a target to reduce serious injury will follow suit quickly and that concrete measures will follow without delay.

Part I

1.1 Political Support to Act

There is strong political support to take action on serious injury. In 2010 the European Commission dedicated an entire objective of its 'Road Safety Policy Orientations 2011-2020' to serious injury in road traffic. What the European Commission presented in March is the first step towards coming up with a strategy. In 2010 the Council underlined the 'urgent need to address serious injuries, supporting the development of a common definition and agreeing to the principle of a specific quantitative target'[2]. In 2011 the European Parliament called on the European Commission to 'quickly' come up with a target of 40% reduction in the number of seriously injured on the roads and called on the Commission to establish a common definition of seriously injured in road traffic accidents[3].

[1] European Commission (2013) Commission Staff Working Document: On the Implementation of Objective 6 of the European Commission's Policy Orientations on Road Safety 2011-2020 – First Milestone Towards an Injury Strategy.
[2] Council conclusions on road safety, 3052th Transport, Telecommunications and Energy Council meeting, Brussels, 2–3 December 2010.
[3] European Parliament Resolution of 27 September 2011: European road safety 2011-2020, 2010/2235(INI).

ETSC has called for the EU to take action on tackling serious injury for over a decade. In its Blueprint for a 4th Road Safety Action Programme ETSC proposed to set a target to reduce serious injury and adopt measures to accompany it[4].

ETSC joined the overwhelming majority of respondents to the EC Consultation on Serious Injury last year in recognising the EU added value of introducing a strategy to reduce the number of injuries[5].

In its White Paper on the future of Transport, the European Commission committed to following a 'zero-vision' in road safety and to help in this it intends to "*develop a comprehensive strategy of action on road injuries and emergency services, including common definitions and standard classifications of injuries and fatalities, in view of adopting an injuries reduction target*"[6].

1.2 Scale of the Problem

According to the latest data published by the European Commission, more than 250,000 people were recorded as seriously injured following traffic collisions in 2011 compared with 28,000 deaths[7]. For every road death in the EU, at least 44 road injuries are recorded, of which 10 are categorised as "serious"[8]. Involvement in road accidents is one of the leading causes of death and hospital admission for EU citizens under 45 years of age[9]. The most common serious road traffic injuries are head and brain injuries followed by injuries to legs and spine. Vulnerable road users, for example pedestrians, cyclists, motorcyclists or users in certain age groups – notably the elderly – are especially affected by serious road injury. Serious road traffic injuries occur on all kinds of road, but a larger proportion of them occur in urban areas and involve vulnerable road users[10]. On rural roads these injuries are more severe.

Progress in reducing serious injuries on the roads – as reported according to the current definition in each Member State – has been slower than the corresponding figure for road deaths. Road deaths decreased by 43% between 2001 and 2011 and serious injuries by 36% according to EC figures[11].

[4] ETSC (2008) Blueprint for the EU's 4th Road Safety Action Programme 2010-2020.
[5] http://ec.europa.eu/transport/road_safety/take-part/public-consultations/road_injuries_en.htm.
[6] European Commission (2011) Roadmap to a Single European Transport Area.
[7] European Commission (2013) Commission Staff Working Document: On the Implementation of Objective 6 of the European Commission's Policy Orientations on Road Safety 2011-2020 – First Milestone Towards an Injury Strategy.
[8] M. Mackay (2005) "Quirks of Mass Accident Data Bases".
[9] EC Public consultation on the European Road Safety Action Programme 2011-2020.
[10] European Commission (2013) Commission Staff Working Document: On the Implementation of Objective 6 of the European Commission's Policy Orientations on Road Safety 2011-2020 – First Milestone Towards an Injury Strategy.
[11] ibid

1.3 Cost

There is a strong economic case to include the prevention of road traffic deaths and serious injury on the EU's health agenda as well as its transport one. In the last decade the annual socio-economic cost of road traffic injuries is estimated to be equivalent to around 2% of GDP, 250 billion EUR in 2012[12], of which serious injuries account for around one-quarter. The road safety community has been advocating that investing in road safety offers a great potential for saving human suffering and reallocating resources for a more productive use. Estimates undertaken by ETSC show that, if all the road deaths recorded in 2010 could have been prevented, the benefits to society would have been some 53 billion euro, and a corresponding prevention of all serious injuries would have yielded social benefits of the same order[13].The EU Transport White Paper recognises that the social costs of road collisions will rise in the future. The increase in traffic would lead to an external cost of collisions of 60 billion Euro higher by 2050[14].

A large number of road users involved in traffic collisions recover from their injuries, but some of them never recover fully and suffer from some kind of permanent disability. An increasing number of people live with lasting impairments as a result of traffic injury. Many serious injuries lead to life-long suffering or permanent disabilities. A large proportion of relatives of dead and disabled victims, suffer psychological disorders. ETSC welcomes that the EU has recognised that road collisions and injuries are a public health problem and that in its new document it communicated the benefits of countermeasures in terms of public health and costs to EU citizens.

1.4 'Safe System Approach'

The European Commission recognises that the overall aim of EU road safety work is, in line with the Safe System Approach, to reduce the total number of accidents resulting in deaths and injuries[15].

"The Safe System philosophy takes a wider perspective of road accidents, recognising that human beings are fallible, that their errors must be anticipated and the risk of serious consequences from these errors minimised. The responsibility for reducing fatalities and serious injuries is therefore not solely placed on the road users but shared with e.g. vehicle producers and infrastructure managers. The basic ethical assumption is that it is not acceptable to pay a price in deaths for the mobility the society needs."

[12] WHO (2004) World Report on Road Traffic Injury Prevention.
[13] ETSC (2011) 5th PIN Report.
[14] European Commission (2011) Roadmap to a Single European Transport Area.
[15] European Commission (2013) Commission Staff Working Document: On the Implementation of Objective 6 of the European Commission's Policy Orientations on Road Safety 2011-2020 – First Milestone Towards an Injury Strategy.

ETSC commends the European Commission for including the Safe System approach in its new Serious Injury Strategy and calls on it to think about applying it more widely across the measures that are now needed.

Recommendation to the EU

- The EU must take up its leadership role in road safety by pushing ahead a comprehensive Strategy to tackle serious injury without delay.

Part II

2.1 Definition and Data Collection

ETSC welcomes the adoption by the European Commission of a common EU definition of serious injuries as in-patients with an injury level of MAIS 3 or more. The Abbreviated Injury Scale (AIS) is a globally accepted trauma classification of injuries used by medical professionals, ranging from 1 (minor injuries) to 6 (fatal injuries). As one person can have more than one injury, the Maximum Abbreviated Injury Score (MAIS) is the maximum AIS of all injury diagnoses for a person. The definition of serious injuries as in-patients with an injury level of MAIS 3+ or more was confirmed by the High Level Group on Road Safety representing all EU Member States in January 2013. The adoption of a common EU definition will enable the EU to overcome the challenge of widely differing national definitions of serious injury. The European Commission sees it as important for this definition to be adopted as a prerequisite for effective intervention. However, ETSC regrets that the European Commission has missed the opportunity to set a target and adopt measures to tackle serious injury in 2013.

The EC-funded SafetyNet project looked at varying definitions of a 'serious crash' and concluded in 2008 that '*results based on MAIS are more likely to monitor casualty and severity trends reliably than results based on length of stay*'. The International Traffic Safety Data and Analysis Group (IRTAD) in 2011 supported this with a recommendation that '*given the existing knowledge and practices, IRTAD proposes to define 'as seriously injured road casualty' as a person with injuries assessed at level 3 or more on the Maximum Abbreviated Injury Scale i.e. MAIS 3+*'[16].

The High Level Group identified three main ways Member States can choose to collect the data: continue to use the police data but apply a correction coefficient; report the number of injured based on data from hospitals; or create a link between police and hospital data. ETSC recommends the third option – creating a link between police and hospital data[17]. Member States should also continue collecting data based on their previous definitions so as to be able to monitor rate of progress prior to 2014.

[16] IRTAD (2011) Reporting on Serious Road Traffic Casualties.

[17] ETSC supports the EC's recommendation that the principles of data protection must be kept in mind and that the relevant data from hospital records would need to be processed into road traffic databases in anonymised form.

Recommendation to Member States

- Adapt or supplement their data collection system as soon as possible to be able to report the 2014 total number of serious injuries as MAIS3+ in 2015.
- Continue collecting data based on their previous definition of serious injury for three whole years after implementing the new definition.

2.2 Underreporting of serious injuries

The actual number of people injured in road collisions is not yet fully known, but sample studies have shown it to be considerably higher than the official recorded number based on police reports[18]. For example, the true figure for the UK is estimated to be perhaps more than three times that reported to the police. The magnitude of underreporting is an obstacle to proper allocation of resources. Improving the quality of data concerning seriously injured will help in designing more effective policies for reducing their number and severity. For serious injuries data can be estimated by comparing the number of injured road users treated in hospitals to the number recorded by the police. This was undertaken within the SafetyNet project for eight countries participating and results were published in a Report "*Estimating the real number of road accident casualties*"[19]. In general, the lower the injury severity, the higher the underreporting in accident statistics tends to be. The level of reporting tends also to be lower for pedestrians, cyclists and motorcyclists than for car occupants. This is because, in particular with collisions with no motor vehicle involved, or between one motor vehicle and a pedestrian or cyclist and no victims killed on the spot, the emergency services are called to the scene, but not necessarily the police.

In addition to the obvious advantages of having a more complete picture of road collisions, a data system linking police and hospital records could provide numerous other opportunities[20]. The impact of countermeasures such as the effectiveness of seat belt laws would be evaluated more comprehensively by including serious injury figures in addition to data on deaths prevented. It would provide an opportunity to improve cooperation with medical and public health community stakeholders. At national level, and even more at local level, counts of different types of injury are also used as additional indicators of road safety outcomes when the numbers of people killed are too small to provide a statistically significant basis for assessing road safety policies.

In most countries the Police is asked to report the same level of information for slight, serious and fatal collisions. However, the accident databases should consider differentiation in the detail of the contents to be collected according to the severity of the

[18] ETSC (2010) 4th PIN Report.
[19] Broughton et.al (2008), "Estimating the real number of road accident casualties", deliverable D.1.15, SafetyNet. www.erso.eu/safetynet/content/safetynet.htm. Countries participating: the Czech Republic, France, Greece, Hungary, the Netherlands, Spain and the UK.
[20] ETSC (2010) 4th PIN Report.

collision. Less in-depth reporting requirements for collisions involving slight injuries would free police resources and police officers would be able to focus on the more severe collisions and provide key information for traffic research. Such a record system is being used in Catalonia, Spain, for example since 2006[21].

Recommendations to Member States and the EU

- Allocate resources to road safety policy which take account of the real social values of prevention of road traffic injuries once the improved data set is available.
- Include serious injuries in the impact assessment of countermeasures, where this does not take place already.
- Continue to review the procedures used by Member States to estimate the number of people seriously injured to ensure comparability since a variety of methods will be used in practice.

2.3 An EU Target for Serious Injury Reduction

Road safety visions need numerical targets to help towards their being realised. It is unfortunate that the European Commission did not include a common EU 2020 injury target in this publication. However ETSC welcomes their intention to set a target for the reduction of seriously injured people alongside a target for continued reduction in deaths as a matter of priority. A 35% reduction in the number of road traffic serious injuries over the period 2014- 2020 would be both challenging and achievable for the Member States.

[21] Cardona, F.; Cermeron, F.; Chisvert, M.J.; Dalmases, J.; Fosch, J.M.; Gasulla, V.; Haro, M.; Marsellès, J.; Martínez, J.M.; Montoro, L.; Roche, M.; Sanmartin, J.; Tormo, M.T. (2006). Sistema Integral de recollida de dades d'accidents de trànsit SIDAT. *(pages 75-76)* Quaderns de trànsit 3. Generalitat de Catalunya.

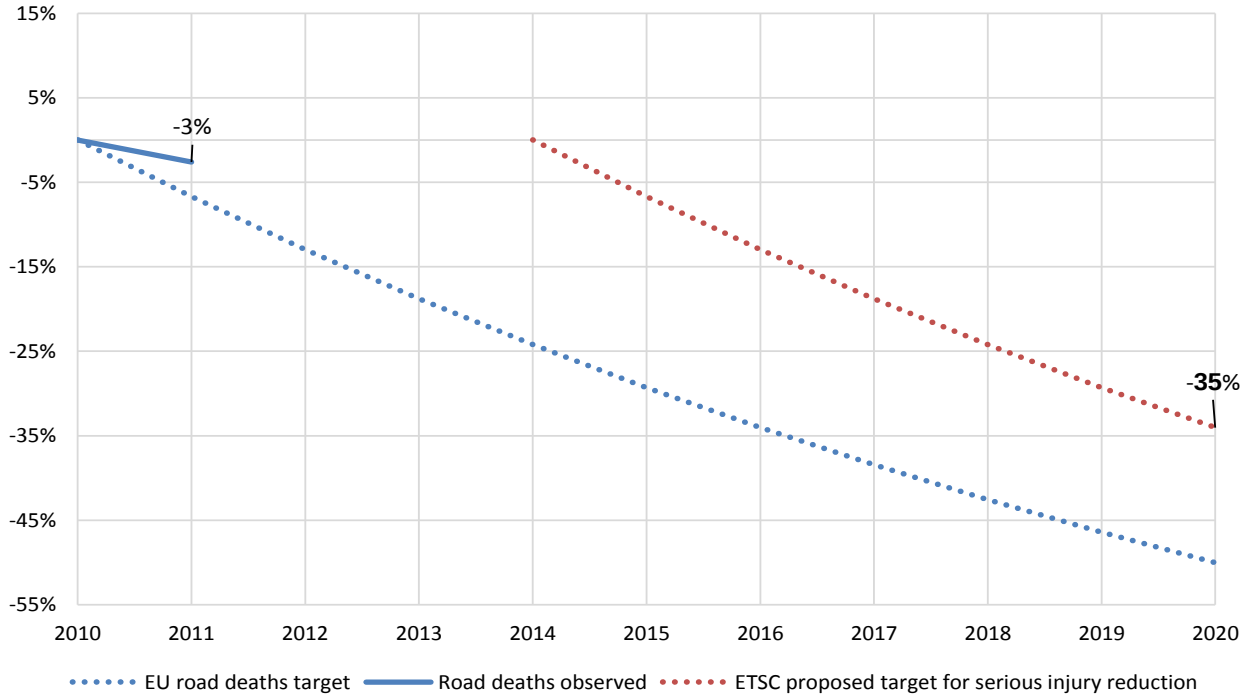

Figure 1: The blue line shows the estimated trend of reduction in road deaths to reach the EU target through constant annual improvements. The red line shows the proposed ETSC target for reducing the number of serious injuries, set at the same level of ambition as the EU 2020 target for road deaths.

In 2011, ETSC strongly welcomed the adoption of a new EU target to reduce road deaths by 50% by 2020[22].

Targets motivate stakeholders to act and help those responsible for the road transport system to be accountable for achieving defined results. A shared target at European level helps each Member State to see that its road safety improvements are contributing to addressing a Europe-wide problem. Targets sharpen the focus on results and also on the development of system-wide interventions and effective institutional management processes to achieve them. A shared EU target is helpful for countries to guide them in setting up their national targets and align their national efforts with the European one.

The adoption of the EU target in 2001 gave a boost to the combined efforts at national and EU level. As a result, reductions in the number of deaths have been much steeper in 2001-2010 than in the preceding decades. Since 2001, road deaths have been cut by 43% in the EU27. In the EU15, the countries who originally set the target, road deaths have been cut by 48%[23]. Reductions also gathered pace towards the end of the decade in the EU10, the group of countries who joined in 2004, to reach 38% in 2010. The EU target for

[22] ETSC (2010) ETSC Response to the European Commission's Road Safety Policy Orientations 2011-2020.
[23] ETSC (2011) 5th PIN Report.

reducing the number of road deaths served as a strong catalyst for progress. It is likely that adopting a target for serious injuries will provide the same type of incentive to boost efforts in reducing them.

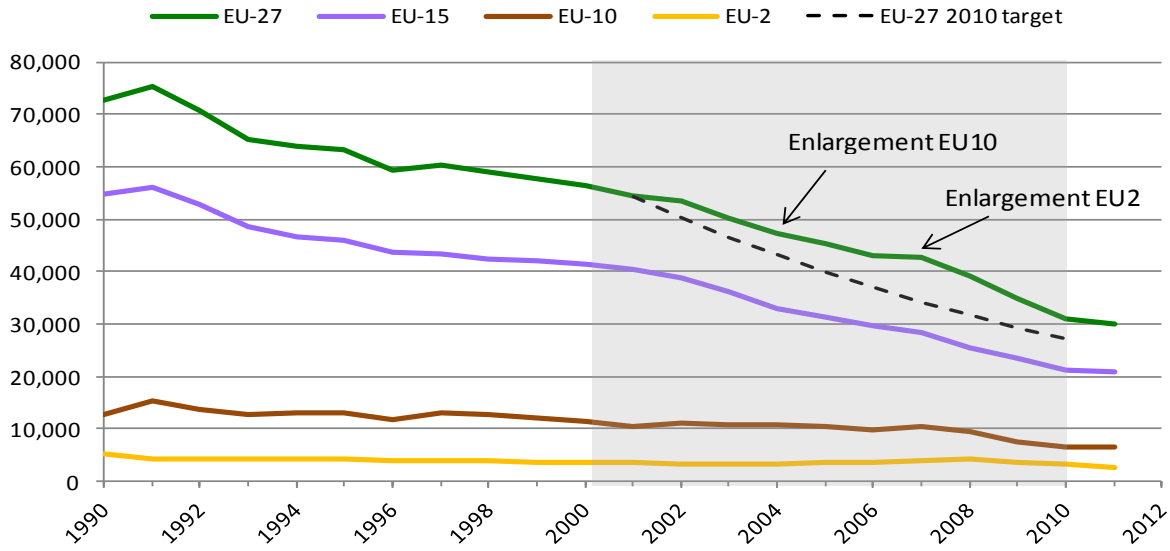

Fig.2: Reduction in road deaths since 1990 in the EU27 (green line), the EU15 (purple line), the EU10 (brown line) and the EU2 (Bulgaria and Romania, yellow line).
Source: CARE database 1990-2000 and PIN Panellists 2001-2011.

Recommendations to the EU

- Adopt a target to reduce by 35% serious injuries from 2014 to 2020.

2.4 Sub-targets

The European Commission also invites Member States to adopt a target for serious injuries at national level and suggests that EU Member States could set sub-targets for specific road user groups, regions or traffic situations. In addition to the overall target of reducing deaths by 50% between by 2020 and the upcoming target on reducing serious injury, EU Member States should look to adopt specific sub-targets for pedestrians and cyclists seriously injured in road collisions.

Recommendations to Member States

- Each Member State should work towards adopting the MAIS3+ definition by 2015 at the latest and set their own national reduction targets for seriously injured based on MAIS3+ alongside the reduction of deaths.

Part III Measures to Tackle Serious Injuries

In line with the integrated approach (vehicle, user behaviour and infrastructure) advocated by ETSC, there are a whole range of measures that can be taken to reduce serious injury. To a certain extent tackling serious injury requires the same set of measures that are needed to reduce deaths on the roads with some important additions that are specifically targeted at reducing injury severity. ETSC supports the view of the European Commission that 'a focus on serious injuries does not compete with a focus on fatalities – the objectives complement each other'[24]. The European Commission also rightly recognises that 'there might well be other tools and instruments which, though less obviously life-saving, can still be of great assistance in reducing certain types of serious injury. And that this is an important area for further research and analysis'[25].

3.1 General measures

ETSC argues that the starting point for tackling both death and serious injury should be to create a road safety system that recognises the vulnerability of the human body. The EU should focus its efforts on reducing the main sources of death and serious injury on the roads. ETSC welcomes that the European Commission has recognised speed as 'a primary factor determining the severity of an injury'[26].

Recommendations to the EU

- Curb illegal and inappropriate speed, which will reduce injury severity in all kinds of collisions.
- Contribute to the development of harmonised standards for Intelligent Speed Assistance (ISA) systems towards eventual universal fitment.
- Aim for a 100% use of seat belts on front and rear seats, of helmets for Powered Two Wheelers (PTWs) and child restraint systems.
- Adopt legislation to ensure that every new vehicle has for all occupants as standard equipment an enhanced seat belt reminder system with audible and visual warnings.
- Fight drink driving and drug driving.
- Provide a common framework for the assessment and rehabilitation of traffic offenders as a recognised collision prevention measure.
- Introduce uniform standards for alcohol interlocks programmes in Europe, and provide assistance to reduce the workload for those countries that wish to introduce the technology without having the appropriate legal framework.
- Support police enforcement of laws governing speed, drink and drug driving and the wearing of helmets for PTWs.
- Improve vehicle passive and active safety.

[24] European Commission (2013) Commission Staff Working Document: On the Implementation of Objective 6 of the European Commission's Policy Orientations on Road Safety 2011-2020 – First Milestone Towards an Injury Strategy.
[25] ibid
[26] ibid

- Make roads and roadsides more protective and forgiving and introduce guidelines on traffic calming.
- Introduce Graduated Driver Licensing systems or otherwise address the high risks faced by new drivers thus allowing them to gain initial driving experience under lower-risk conditions between gaining the learner permit and full licence status.

3.2 Targeted measures

In this next section, ETSC will look at the main areas of action proposed by the European Commission. Here ETSC focuses on some priorities strongly linked to the European Commission's own mandate and responds to those presented by the EC.

3.2.1 Collision Impact: Vehicle Safety

One of the single most effective ways of achieving the reduction of the risk of injury on collision impact is by improving the safety of cars[27]. The advent of new EU legislation and the introduction of EuroNCAP have led to unprecedented improvements in occupant safety. The EU has exclusive competence on vehicle safety and vehicle type approval, yet EU legislation on passive safety has not changed to a great extent over the last decade. There is an urgent need to align it with high performing EuroNCAP crash tests.

There is a wealth of action that needs to be taken to improve vehicle safety design[28]. Occupant protection has improved considerably over the past decade mostly because of car manufacturers' efforts to meet consumer demands for safer cars driven by EuroNCAP for safer cars, but improvements for those outside the vehicle have been slower. The 2009 EuroNCAP protocol is challenging car makers by increasing the emphasis on all-round safety performance and demanding higher levels of achievements in pedestrian protection. The Regulation 78/2009 lays down type approval requirements with respect to the protection of pedestrians and other vulnerable road users. It provides for the mandatory installation of Brake Assist Systems on new vehicles in an attempt to compensate for the relaxation of certain parameters on passive safety performance tests. ETSC fought hard against the relaxation of the tests arguing that benefits accident avoidance technologies offer should have been additional rather than substitutive[29].

3.2.2 HGV

Latest figures show that in the European Union 4,254 people lost their lives in collisions involving heavy goods vehicles (HGVs) in 2011[30]. The relatively large masses of the HGVs translates into higher momentum when the vehicle enters a traffic collision with another

[27] ETSC (2001) Priorities for Motor Vehicle Design.
[28] To read a more comprehensive view on improving Vehicle Safety see ETSC (2012) Contribution to CARS 21.
[29] ETSC Position on the EC's proposal for a Regulation on the protection of pedestrians and other vulnerable road users (2008). http://etsc.eu/documents/ETSC%202008%20Position%20Paper.pdf
[30] PIN Flash HGV http://www.etsc.eu/documents/ETSC_PIN_Flash_24.pdf

road vehicle or user, which in turn increases the severity for the occupants of the other vehicle involved in the collision. The generally raised cabs of HGVs afford their occupants a relatively higher level of protection than for other vehicle occupants. Improvements in the requirements of the Regulation 2009/661/EC for underrun protection systems in HGVs would be beneficial in reducing the severity of the collisions between HGVs and other vehicles. Rigid front underrun protection is mandated for all HGVs in the EU. However, as frontal car-to-truck collisions normally occur at high relative speeds, an energy-absorbing front underrun protection system would improve the survivability of frontal collisions, even up to relative speeds of 75km/h.[31] Side underrun protection systems fill the empty space between the wheels of the HGVs thus preventing unprotected road users from being caught under the HGV, especially in cases when the latter is making a turning manoeuvre. However, the legislation currently in force permits the use of an 'open' frame, i.e. two side planks with a maximum distance between them of 30cm. In some circumstances road users can be caught between these two planks and research has shown that deaths in such situations among pedestrians and cyclists could be reduced by approximately 45%.[32]

3.2.3 Protective Gear for Unprotected Users

ETSC supports the emphasis placed by the European Commission on the need for wearing of protective gear by PTWs. Although the use of helmet is mandatory for motorcycle and moped riders and passengers in the EU, wearing rates are still well under 100% in most of the countries that are collecting data on helmet use[33].

3.2.4 Whiplash

Countermeasures should also include injuries leading to permanent impairment such as whiplash. ETSC supports the need identified by the European Commission to improve anti-whiplash systems ETSC (2008) Reining in Whiplash[34]. ETSC also support the implementation of autonomous emergency braking targeted for reducing whiplash injuries in low speed crashes. Studies have shown that such emergency braking technology reduces crashes with 20-25% and injuries with more than 60% at speed limits below 50 km/h. Yearly more than a million European citizens report whiplash symptoms from rear-end collisions making up 65% of all injuries in road traffic. For example, in modern cars on the Swedish market, whiplash injuries account for approximately 50% of all injuries leading to permanent impairment. Usually, whiplash symptoms are of short duration, however, up to 10% of car occupants reporting whiplash symptoms will be saddled with life-long problems. Thus tackling whiplash is a clear priority within the response to the serious injury. Including whiplash means that focus should be wider than the definition of serious injury MAIS3+.

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[31] ETSC (2012) ETSC Contribution to the CARS 21 WP1 on Road Safety http://www.etsc.eu/documents/CARS%2021_WP%201_ETSC%20Contribution%2015%20Feb%202012.pdf

[32] ETSC (2001) Priorities for EU Motor Vehicle Design http://etsc.eu/documents/mvdesign.pdf

[33] ETSC (2011) 5th PIN Report.

[34] http://etsc.eu/documents/ETS%20008-071.pdf

In Sweden whiplash prevention is a priority. This is due to the change in definition of serious injury introduced in 2009, where it is defined as an injury leading to permanent impairment. This means that more focus will be on low-speed crashes, partly because whiplash injuries account for half of all injuries leading to permanent impairment. The Swedish definition sets a wider scope on injury prevention than in other countries. The majority of injuries leading to permanent impairment are classified as minor or AIS1.

3.2.5 Elderly Occupant Protection

While older people account for one sixth of the European population, every fifth person killed in road traffic is aged 65 or over[35]. Moreover, due to population ageing, older people will represent an increasing share of the total population, making more serious the over-representation of the elderly in road casualty statistics. If the risk rates of older people and others decline at the same pace, by 2050 one death out of three is likely to be an elderly person. Vehicles and the safety systems that they use should adapt to this trend and re-assess how their protective systems work for an ageing population.

3.2.6 Infrastructure Safety

Infrastructure can also play a key role in reducing the severity of injury when collisions occur. Building on its 'Policy Orientations on Road Safety 2011-2020' the European Commission's new document[36] proposes application of the instruments included in the Infrastructure Safety Directive to the secondary road network and, for the first time, extending them also to the urban environment. ETSC welcomes this initiative and would also like to see the development of guidelines on traffic calming which would also benefit road users in urban areas, especially the unprotected ones.

Recommendations to the EU

- Regularly monitor developments in passive and active safety technologies for the protection of both car occupants and unprotected road users and ensure that robust in-vehicle safety technologies are mandated in new legislation.
- Update the EU type approval crash tests to align with high performing EuroNCAP crash tests.
- Mandate through EU Type Approval legislation Advanced Emergency Braking for all new vehicles.
- Support the development of restraint systems that adapt to the needs of the user, their individual bio-mechanics and the severity of the specific collision.
- Promote and ensure high standards for whiplash protection systems.
- Stimulate the development of safer vehicles for older people by encouraging elderly-friendly design.

[35] ETSC (2008), 2nd PIN Report, Chapter 4.
[36] European Commission (2013) Commission Staff Working Document: On the Implementation of Objective 6 of the European Commission's Policy Orientations on Road Safety 2011-2020 – First Milestone Towards an Injury Strategy.

- Encourage Member States to enforce the compulsory wearing of helmets for PTWs and proper use of child restraint systems.
- Draft guidelines and promote their implementation by Member States on best practice in traffic calming measures.
- Tackle Heavy Goods Vehicle collisions including those caused by blind spots e.g. by improving the design and equipment of HGVs including retrofitting with front-view mirrors (2007 Directive), improved cabin design, installation of cameras and active warning systems and front, underrun and side protection.

3.3 Trauma Management

To reduce severity of injury, the EU should improve post-crash care. Research shows that at least 50% of deaths from road traffic crashes occur within minutes, either at the scene or while in transit to hospital[37]. Of the remainder, most die within 24 hours despite medical care. Therefore both the response time of emergency services and the quality of the care play important roles in survivability of collisions.

A safe, effective and affordable pre-hospital and hospital care should be the goal. Trauma systems focussing on pre-hospital care, transportation and hospital care have already been established in defined geographic areas in many countries and are integrated in public health. There is diversity and also still debate about the required level of training for pre-hospital care givers and which interventions can safely be carried out without undue delay[38]. The EU should stimulate the evaluation of the different types of pre-hospital care.

In-hospital treatment for severely injured patients depends on a well organised and coordinated care delivered by a multi-specialty hospital team in a dedicated trauma centre[39]. This team should take care of the initial assessment and management of the injured. Adequate management largely depends on professional and systematic training of the team with regard to knowledge and skills. The hospital team should work with evidence based guidelines as instructed during certified trauma courses[40]. The objective of the EU should be that trauma centres with qualified trauma teams and hospitals cover all geographic areas.

Furthermore, measurement of quality of trauma care and outcome via audits is much needed[41] and should allow monitoring of the progress of the care for the injured victim.

[37] ETSC (1999) Reducing the Severity of Injury Through Post Impact Care.
[38] R. Norton and O. Kobusingye. Injuries. New Engl J Med 368,1723-1730 (2013).
[39] E.Mackenzie et al. A national evaluation of the effect of trauma-centre care on mortality. New Engl J Med 354,366-378 (2006).
[40] C. Lott et al. The European Trauma Course (ETC) approach : past, present and future. Resuscitation 80,1192-1196 (2009).
[41] C. Evans. Audit filters for improving processes of care and clinical outkomes in trauma systems (Review). The Cochrane library, 2009 issue 4.

There is a need to set up a common 'casualty-centred' approach to ensure a rapid and safe rescue. A broad outline developed by the World Rescue Organisation is set out in the ETSC Blueprint for a 4th Road Safety Action Programme.

3.3.2 Access to the Emergency Medical System

The link between the patients or witnesses and the emergency services is vital for trauma care following injury in crashes[42]. Access to the Emergency Medical System (EMS) is almost always made by telephone. This is where eCall can also help to speed up one of the links in the response chain. eCall technology, once in operation, will allow for an emergency call to be generated, either manually or automatically, from a crashed vehicle immediately after a road collision has occurred. ETSC welcomes the inclusion of the deployment of eCall in the EC document.

3.3.5 Long-Term Rehabilitation

As important as pre-hospital care, good longer-term hospital and post-hospital care and rehabilitation are essential to mitigate the injury sustained and improve the quality of life of severely injured survivors. The European Commission recognises this but does not yet come forward with any concrete action in this area. They list the levels of long-term rehabilitation and state that a better understanding of the long-term consequences of car accidents is needed leaving the way open for action. Guidelines need to be formulated at a national and European level on hospital trauma care centres. There is also a need to randomised studies in this area[43].

3.3.6 Need for Research and Development

The European Commission has also identified the importance of research and in-depth studies to further extend the evidence base for taking action and monitoring impact of policies to reduce serious injuries. It recognises the importance of complementing basic data reporting with in-depth crash injury research to develop new safety measures and better understand the causation of serious injury and its impacts in the long-term. They suggest looking at applying a common taxonomy for classifying contributory factors to enable analysis, as is already used in the aviation, maritime and railway sectors.

According to the recent IRTAD Report on 'Reporting on Serious Road Traffic Casualties' a number of countries conduct in-depth crash investigation studies which typically include more detail than is contained in police, hospital and other records. These studies provide a fuller understanding of the factors that contribute to collisions, their severity and their impacts, including the interaction of vehicle design (primary and secondary safety features), highway and environmental factors and human factors. These studies are usually conducted using a multi-disciplinary approach and can inform assessments of primary and

[42]ETSC (1999) Reducing the Severity of Injury Through Post Impact Care.
[43] R. Norton and O. Kobusingye. Injuries. New Engl J Med 368,1723-1730 (2013)

secondary safety measures, encouraging developments in vehicle design and informing the legislation for new safety technologies[44].

With the EU's competency for vehicle design through Whole Vehicle Type Approval a more systematic and common approach for independent road accident investigation in Europe would add value[45]. ETSC strongly agrees that information on existing aspects of real-world safety problems is needed to direct new safety policy as well as to evaluate the effectiveness of recent safety countermeasures. New safety possibilities offered by technology improvements can be substantial under laboratory conditions but it is essential to investigate to what extent they result in true safety improvements in real-world crashes. ETSC recommends a co-ordinated independent European road accident investigation strategy, as can be found in other modes[46]. The strategy should include accident and injury causation, and the main focus should be on those areas of safety for which the European Union has the main responsibility. This includes vehicle design and injury causation, but data on accident causation are also required, particularly for high risk or vulnerable road user protection.

The previous section on trauma management has also outlined a number of areas for research and study.

Recommendations to the EU

- Recognise that effective accident and incident investigation makes a positive, and long lasting, contribution to the improvement of transport safety.
- In view of the large numbers of road deaths and serious injuries across the EU, apply independent and high-quality accident investigation techniques to representative samples of road collisions. A co-ordinated independent European road accident investigation strategy should be implemented with new systematic in-depth injury and accident causation data systems.
- Provide adequate financial resources to suitably experienced, accredited accident investigators to ensure they can carry out their work effectively.
- Shared freely between Member States, through centralised European databases, the lessons learned from accident investigations and the safety recommendations which follow.
- Encourage further co-operation in accident investigation between different Member States.
- Improve knowledge of the impact of serious injuries by developing a closer link with other measures of social impact such as levels of impairment, disability and functional incapacity
- Ensure that all EU funded safety research outcomes are made available in sufficient detail within the European Road Safety Observatory for future access.

[44] IRTAD (2011) Reporting on Serious Road Traffic Casualties.
[45] ETSC (2001) Transport Accident and Incident Investigation in the European Union.
[46] A good example of such a national database collection can be found in Spain:

- Improve the use of statistics of natural deaths in road traffic and identify drivers who may suffer from acute disease attacks[47]
- Promote Emergency Number 112.
- Encourage EU Member States to develop effective emergency notification and collaboration between dispatch centers, fast transport of qualified medical and fire/rescue staff, liaison between services on scene, treatment and stabilisation of the casualty, and prompt rescue and removal to an appropriate health care facility.
- Promote the widely accepted standard of a 'casualty centred' methodology which ensures a multi service, unified approach that promotes optimum casualty care coupled with specific steps to ensure a rapid but safe rescue.
- Encourage in the development of new vehicle technology greater collaboration between vehicle designers, manufacturers and the emergency services to ensure effective intervention and the safety of all involved, casualty and rescuer.
- Include eCall in vehicle type approval.
- Consider extending eCall to other vehicle types such as PTWs.
- Formulate guidelines at a national and European level in consultation with national scientific medical societies on hospital trauma centres and their organisation and co- ordination.
- Support exchange of best practice in setting up trauma systems and auditing them with the input of medical experts.
- Support the creation of free assistance centres for victims, where they would receive assistance and advice.
- Promote training in all European countries, for comprehensive, interdisciplinary rehabilitation after brain injury as well as physical injury in all European countries.

Part IV

This final part outlines some special areas of priority that have not been touched upon in great detail by the European Commission and that ETSC believes deserve more attention.

4.1 Engaging the Public Health Sector

In a number of countries medical and public health professionals have been particularly instrumental in convincing decision makers about the merits of seat belts, child restraints and helmets for PTWs, as well as lowering the BAC limit or driving speeds[48]. Medical organisations have been helpful in educating the public about the benefits of these safety measures in particular supporting anti-drink driving and anti-speeding legislation. Cross-sectorial collaboration is essential for the introduction of science based countermeasures, and this is something the public health sector is in a good position to promote. The WHO has proposed that the health sector takes on a more proactive role and brings road traffic injuries back into its core business.

[47] Tervo et al "Sudden Death at the Wheel Due to a Disease Attack", Traffic Injury Prevention (2013) 14, 138–144

[48] ETSC (2008) A Blueprint for the EU's 4th Road Safety Action Programme.

The EU health policy makers should take a similar approach. There is a need for the EU to communicate the benefits of countermeasures in reducing road risk of death and serious injury on the roads in terms of public health and cost savings to the European citizens in the next EU Health Strategy[49]. Equally all public health implications of road safety measures must be considered.

Recommendations to the EU and Member States

Involve health professionals more effectively in road safety issues

- in developing good practices and guidelines on essential trauma care and emergency services;
- in estimating the real social costs of road traffic injuries;
- to serve as opinion leaders to encourage decision makers to promote road safety legislation and to help educate the public.

4.1 Pedestrians and Cyclists in Urban Areas

More than half of the people seriously injured are pedestrians or other vulnerable road users involved in a collision in an urban area. ETSC therefore welcomes that the European Commission prioritises reducing injuries among these groups and in urban areas. There are a whole range of measures that can be taken to improve vulnerable road user safety and address other elements of the integrated approach (user behaviour and infrastructure) some of which are included in the recommendations below and are covered in more detail in ETSC's Review on Vulnerable Road Users and in ETSC's recent Review of Cycling Safety Policy[50,51].

Non-motorised means of transport, notably cycling and walking, account for only a small share of distance travelled by road while accounting for much larger proportions of journeys made and time spent using the roads. Yet the advantages of walking and cycling for public health (a healthy life through regular exercise) outweigh their disadvantages (the risk of death or injury). The SQW report, for example, states that the positive effects of normal bicycle use outweigh the loss of life due to collisions by a factor of 20:1[52].Walking and cycling should be encouraged as travel modes for citizens across the EU, and safety of walking and cycling should be one of the principle objectives of safety management. Road safety engineering, should also promote, the use of sustainable transport modes. 'The active transport modes deserve closer analysis in terms of how they can become part of road safety strategies, how their uptake can be facilitated, and what limitations typically apply[53]'.

[49] Townsend, E. (2013) Integration of Road Safety into other Policy Areas.
[50] ETSC (2005) The Safety of Vulnerable Road Users.
[51] ETSC (2012) Raising the Bar – Review of Cycling Safety Policies in the European Union.
[52] SQW (2007) Valuing the benefits of cycling. A report to Cycling England
[53] Murray, M., et al (2011) *Progressing road safety through deep change and transformational leadership*, Journal of Transport Geography 19.

Safety of pedestrians and cyclists is an essential components of sustainable urban mobility and should be firmly integrated into mobility planning. Real and perceived safety can have a profound effect on modal choice especially in terms of the most sustainable modes of travel - walking and cycling and ability to access public transport. At the European level the EC White Paper[54] includes Urban Mobility Plans within its list of initiatives and the European Commission's new Serious Injury Document also includes them as a 'possible action'. This is another action supported strongly by ETSC. Safety should be integrated not only into the development of Urban Mobility Plans but also into proposed Urban Mobility Audits and Guidelines and be reflected in common targets[55].

Recommendations to the EU

- Encourage Member States to increase enforcement of speed limits in areas where there are high numbers of pedestrians and cyclists.
- Support and promote research into effective and innovative methods of enforcing traffic rules for pedestrians and cyclists.
- Encourage the uptake by EU Member States of zero tolerance to alcohol and drugs on the road and extend these principles also to cover cyclists.
- Draft guidelines for promoting best practice in traffic calming measures, based upon physical measures such as roundabouts, road narrowing, chicanes, road humps and techniques of space-sharing. These measures should be introduced as an integral part of setting up speed limit zones of 30km/h in residential areas.
- Develop a policy of modal priority for road users, particularly in urban environments: the hierarchy being based on safety, vulnerability, and sustainability. Pedestrians should be at the top of the hierarchy, followed by cycling and public transport.
- Encourage Member States to adopt maximum 30km/h in residential areas and areas with high levels of pedestrians and cyclists and maximum 50km/h in urban areas.
- Support the introduction of Intelligent Speed Assistance (ISA) which, in restricting speed, has the potential to reduce risks to pedestrians and cyclists.
- Support the development of car windshield airbags as a viable safety measure to improve the protection of pedestrians and other vulnerable users struck by cars.
- Support further research into the effectiveness of measures to reduce blind spot-areas around HGVs and to alert road users to impending near-side turning collisions, with the goal of achieving the highest safety levels for cyclists and pedestrians.
- Extend the requirement for side Underrun guards to large vehicles that are currently exempt
- Develop side guards to improve the protection of pedestrians and cyclists in collision with large vehicles.

[54] European Commission (2011) Transport White Paper Towards a Single European Transport Area.
[55] ETSC (2011) Response to the Transport White Paper.

- Legislate for the introduction of rigid full-panel side underrun protection systems and ensure that the strength of such systems be increased to also increase their efficiency in collisions with powered two-wheel vehicles.
- Introduce minimum requirements for cycle lighting and reflective elements.
- Integrate road safety into the development of Urban Mobility Plans and Urban Mobility Audits and Guidelines.
- Include Road Safety targets in the European Urban Mobility Scoreboard based on common targets.
- Encourage the integration of road safety into land use and transport planning.
- To foster the support and the resources to strengthen the collision police records also in urban areas[1].

Conclusions

For a long time, serious injuries have been given too little emphasis in the mainstream road safety picture. Analysis and resources have concentrated on deaths and neglected the survivors of collisions. EU road safety targets 2001-2010 and 2011-2020 focus only on the number of deaths. Now there is a welcome change to put this issue high on the agenda. ETSC fully supports the European Commission's initiative to give high priority to serious injury in road safety work and eagerly looks forward to the next steps of setting up a full Serious Injury Strategy and an EU target for reduction of serious injuries by 2020.

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