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The Knowledge Network

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PUBLIC CONSULTATION ON THE EUROPEAN ROAD SAFETY ACTION PROGRAMME 2011-2020

The Institution of Engineering and Technology (The IET) is one of the world's leading professional bodies for the engineering and technology community. The IET has more than 150,000 members in 127 countries and has offices in Europe, North America and Asia-Pacific. The Institution provides a global knowledge network to facilitate the exchange of knowledge and to promote the positive role of science, engineering and technology in the world.

This evidence has been prepared on behalf of the IET Trustees by the Transport Sector Panel. In compiling this submission account was taken of inputs from relevant IET Technical and Professional Networks and from individual professionals within the IET membership. Individual IET members are invited to submit input by means of publication of the consultation on the IET's website. Email alerts are sent to those who have previously registered an interest in policy.

The IET would be pleased to offer technical assistance to suggested follow up studies.

Yours sincerely,

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IET Response

1. GENERAL INFORMATION

Title

Mr	Mrs	Miss
X		

First name (optional) Paul
Last name (optional) Davies
Email address (optional) pdavies@theiet.org

I speak on behalf of: (compulsory)

myself (as citizen)	an organisation or a public authority
	X

Organisation type - select one (compulsory)

	Private individual		National government		Regional government
	Local government		Private company		Associations/non-governmental organisations
	Academic institution	X	Other		

Sector of activity - select one (compulsory)

	Infrastructure		Transport planning		Road safety
	Public transport		Police		Justice
	Research		Health		Freight
	Vehicles		Environment		Education
	Finance		Insurance		Fuels
	External Relations	x	Other		

Region - select one (compulsory)

European Union countries	Europe outside EU	Other
X		

Select EU country
United Kingdom

Most frequently used mode of transportation - select one (compulsory)

	Car		Motorcycle		Moped

	Public transport		Walking		Cycling
	Taxi		Light commercial vehicle		Heavy commercial vehicle
	Other	x	Not applicable		

Holder of a motor vehicle driving licence - more than one option possible (compulsory)

	Car		Bus		Truck
	Motorcycle or moped		Other		I do not hold a vehicle driving licence
x	Not applicable				

Personal perception of the situation on the roads in your country

	Safer	Less safe	Don't know
Do you think that, in general, traffic in your country has become safer or less safe than 10 years ago for/on?	X		
Car drivers	X		
Car occupants	X		
Motorcyclists		X	
Moped riders			X
Cyclists	X		
Pedestrians	X		
Motorways	X		
Rural roads	X		
Urban roads	X		

Why?

The following table summarises the reported accidents and casualties by road user type and severity. These data are an abstract from the Department for Transport annual national accident statistics report for 2009[1].

Category	1998	2008	Change in %
Accidents	239,000	171,000	-28%
All killed	3,421	2,538	-26%
Injured	322,000	325,000	+1%
All severities	325,000	231,000	-29%

The number of accidents, number of killed and the number of casualties from road accidents has dropped significantly in the UK over the past 10 years. As shown in the following table, the number of fatalities decreased for almost all types of road users.

1 Department for Transport (2009) Reported Road Casualties Great Britain: 2008, Annual Report http://www.dft.gov.uk/adobepdf/162469/221412/221549/227755/rrcgb2008.pdf

	Pedestrians			Pedal cyclists		
	1994-1998 Average	2008	% change	1994-1998 average	2008	% change
Killed	1008	572	-43%	186	115	-38%
Killed or seriously injured	11669	6642	-43%	3732	2565	-31%
All severities	46543	28482	-39	24385	16297	-33%

	Motorcycle riders			Motorcycle passengers		
	1994-1998 average	2008	% change	1994-1998 average	2008	% change
Killed	434	473	+9%	33	20	-39%
Killed or seriously injured	5988	5767	-4%	487	282	-42%
All severities	22251	20528	-8	1772	1022	-42%

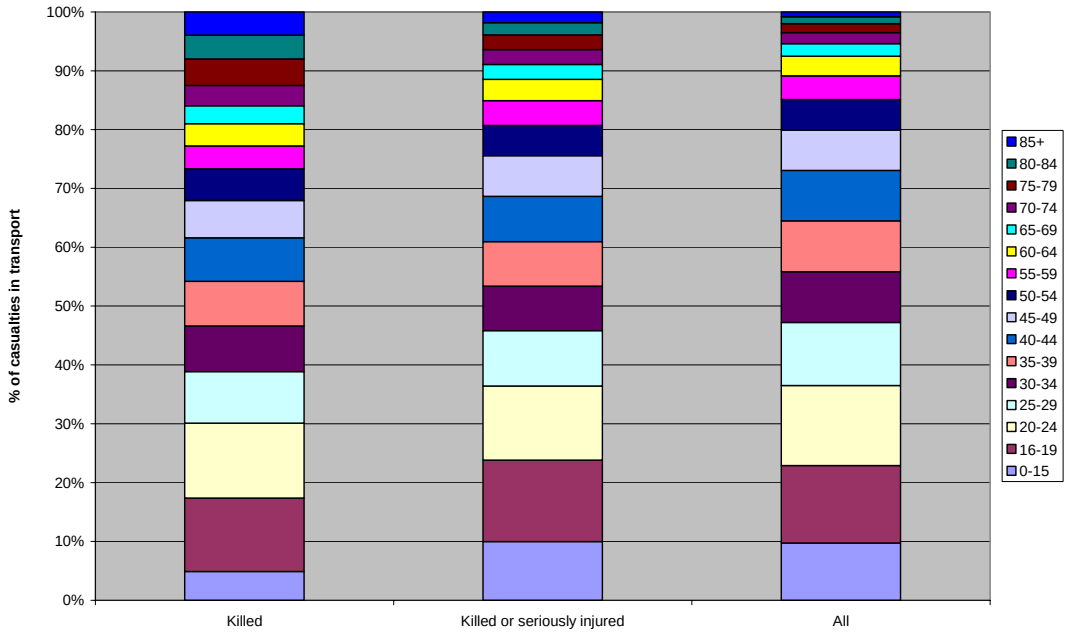
	Car drivers			Car passengers		
	1994-1998 average	2008	% change	1994-1998 average	2008	% change
Killed	1128	861	-24%	634	396	-38%
Killed or seriously injured	14634	7967	-46%	8619	4001	-54%
All severities	127958	100952	-21%	75329	48236	-36%

The following table summarises the reported number of accidents by road class. Data are published by the Department for Transport.[1] With 107,561 reported accidents, urban roads are still most accident-prone areas. However, the largest number of fatal accidents has been reported on rural roads.

Category	1994-1998 average	2008	Change in %
Motorways	7,989	7,249	-9%
Rural roads	72,587	55,771	-23%
Urban roads	155,032	107,561	-31%

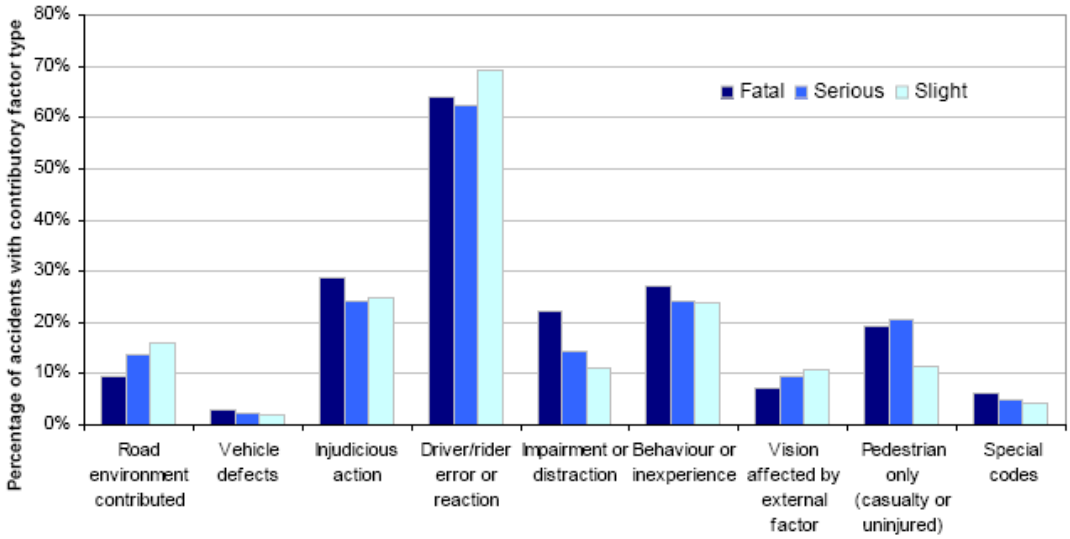
Age of casualty	Killed	Killed or seriously injured	All
0-15	124	2807	21996
16-19	317	3888	29649
20-24	323	3551	30648
25-29	222	2643	24213
30-34	197	2118	19485
35-39	192	2136	19465
40-44	188	2162	19332
45-49	161	1939	15508
50-54	137	1454	11658
55-59	98	1184	9140

60-64	96	1015	7539
65-69	77	717	4782
70-74	88	702	4202
75-79	115	709	3441
80-84	102	584	2655
85+	100	509	1865



Young road users between the ages 16 and 24 make up 26% of all casualties in road transport. Drivers or riders aged 17 to 24 are most likely to have been involved in a reported accident. However, the number of accidents caused by those drivers has decreased by 30% in 2008 compared to the average from 1994-1998.

The following graph shows the contributing factors in reported accidents in Great Britain in 2008:



2. THE SCOPE OF THE NEXT EUROPEAN ROAD SAFETY ACTION PROGRAMME

Citizens and businesses expect safe, sustainable mobility across the European Union. Improvements in road safety are an essential element in public policy to produce improvement in the health and well-being of citizens and reductions in the high socio-economic costs of road traffic injuries.

What are the main problems and issues at stake in road safety performance and societal costs involved - max 2 options

X	Numbers of death and serious injury
	Level of societal impact of death and long-term injury
X	Level of socio-economic cost of road crash injury for society

Comment

The Department for Transport has issued the Accidents Sub-Objective Transport Analysis Guidance Unit 3.4.1 which covers the benefits to society arising from the prevention of road accidents and casualties.[2] It shows the average value of prevention per casualty by severity and element of cost:

Table 3: **Average value of prevention of road accidents by severity and element of cost**

2007							£ June 2007
	Cost Element						
	Casualty related costs			Accident related costs			
Accident severity	Lost output	Medical and ambulance	Human costs	Police cost	Insurance and admin	Damage to property	TOTAL
Fatal	624,190	6,310	1,232,800	1,920	300	11,320	1,876,830
Serious	24,940	14,940	169,700	250	190	5,130	215,170
Slight	3,070	1,300	14,620	60	110	3,060	22,230
All injury	15,240	3,200	53,470	110	130	3,460	75,610
Damage only	-	-	-	4	50	1,910	1,970

Metrics should also include near miss incidents, not just the number of deaths.

What are the main problems and issues at stake in road safety problems linked with category of road users - max 2 options

X	Young novice drivers
X	Powered two-wheeler users
	Pedestrians
	Cyclists
	Car users
	Elderly road users

2 Department for Transport (2009) The Accidents Sub-Objective TAG Unit 3.4.1 http://www.dft.gov.uk/webtag/docs/expert/safety-objective/3.4.1.pdf

	Children

Comment

Overall, the KSI data presented in the question above show that young novice drivers are most likely to be involved in a KSI whether in a car or on a motorbike.

Motorcyclists have an especially poor safety record when compared to other road user groups. Their killed and serious injury (KSI) rate in the UK, per million vehicle kilometres, is approximately twice that of pedal cyclists and over 50 times that of car drivers. Of all motor vehicles involved in reported accidents, motorcycle riders suffer about 16% of total deaths and serious injuries on Britain's roads[1] even though motorbikes make up only 1% of traffic on the roads.

The Department for Transport has found that elderly drivers between the ages 60–64 years and 65–69 years appeared no more likely to have caused a crash than they were to have been innocently involved in such a crash. Drivers in the age band 85–89 years appeared to be over four times more likely to have caused a crash than they were to have been innocently involved.[3]

David D. Clarke et al. found that driving at excessive speed, driver intoxication, driver/passenger failure to wear seat-belts, and unlicensed/uninsured driving were most prevalent in fatal collisions in the most deprived Index of Multiple Deprivation (IMD) quintiles. Young drivers (under 24 years) form high proportions of fatal casualties across all IMD quintiles. Older drivers and passenger fatalities are more concentrated in the least deprived IMD quintiles.[4]

What are the main problems and issues at stake in the impact of societal changes - max 2 options

	Ageing of society
X	Change of transport mode
X	Lifestyle change

Comment

Transport not only underpins our daily lives, but according to the Eddington Transport Study[5] it is also important in sustaining economic success in modern economies. However, transport accounts for about 20% of greenhouse gas emissions in the EU[6] and according to the Stern review[7] those emissions will impact on long-term economic growth by contributing to global climate change. In other words, the Eddington study suggests that traffic capacity needs to be increased while the Stern review encourages a decrease in traffic capacity. Although Stern does argue that countries can be rich and 'green' rather than poor and 'green' suggesting that if we get the balance right economies can still grow, but in a more sustainable way. It is important to point out that making transport and transport modes more sustainable and less contributing to Green House Gases is only one of the two twin-challenges for transport – the other being

3 Department for Transport (2009) Road Safety Research Report 109, Collisions Involving Older Drivers: An In-depth Study
http://www.dft.gov.uk/pgr/roadsafety/research/rsrr/theme5/rsrrno109.pdf
4 David D. Clarke, Pat Ward, Wendy Truman and Craig Bartle (2009)A poor way to die: social deprivation and road traffic fatalities
http://www.dft.gov.uk/pgr/roadsafety/research/rsrr/theme5/poorwaytodie.pdf
5 Sir Rod Eddington (2006) The Eddington Transport Study
http://www.dft.gov.uk/about/strategy/transportstrategy/eddingtonstudy
6 Eurostat data for 2007
7 Sir Nicholas Stern (2006) Stern Review: The Economics of Climate Change
http://www.hm-treasury.gov.uk/sternreview_index.htm

congestion across all modes and the more efficient and effective use of the Nations transport networks.

Reducing greenhouse gas emissions, whilst maintaining and developing our quality of life has to be the most important and greatest challenge, at all levels of transport infrastructure when devising a new transport strategy. In order to meet those two objectives, progress has to be made in implementing new technologies and innovative transport schemes, as well as encouraging a change in consumer behaviour and modal shift. If we act now the necessary cost of mitigating climate change and delivering a more sustainable society could cost within the region of 5% of Global GDP – however if we leave this too late and the effects of climate change have significantly 'kicked in' then the cost of mitigation and repair may be as high at 20% of GGDP.[7] How those technologies impact on road safety is not yet clear and needs to be closely monitored.

The IET believes that it is prudent to think of safety implications of extensive use of electric vehicles. At present the design of the power system for almost all road vehicles is remarkably consistent i.e. there is a tank of liquid fuel which supplies an internal combustion engine. However, that consistency of design began to erode in the early years of this century with the introduction of hybrid vehicles, such as the Toyota Prius, and that trend is likely to continue, with a particular focus on the use of electric vehicles.

The drivers which will lead to change are:

- targets to cut the emissions of CO2;
- potential shortages of fossil fuels, either transient due to political instability in supply countries or permanent, as the "peak oil" point approaches; the UK Energy Research Centre review concludes that this is likely to occur by 2030, and possible even before 2020.
- The fact that EVs do not necessarily depend on fossil fuels – potentially the electricity they use might be generated by renewable sources, such as wind or tidal power, or by nuclear stations.
- the "wheel to well" efficiency of electric vehicles charged from electricity generated by a fossil fuel power station is now better, in some circumstances, than burning the fuel directly in the vehicle.

As described above, the IET believes that EV will be only one technology in a mix of sustainable transport systems in the future. All of these different drive systems have their own characteristics, potentially affecting the range of vehicles, the dynamic performance and the support system requirements.

There is a range of scenarios for the composition of the national vehicle fleet, depending on the relative proportions of the various categories of vehicle. This response concentrates on a scenario with a significant proportion of electric vehicles, because that seems the most likely development path. It will be important, however, to examine the consequences of other scenarios, if the study suggests they are possible. In any case the "performance envelopes" of the vehicles – the size, weight, acceleration and potential range of vehicles with a given carrying capacity will also become more diverse as the composition of the fleet changes.

Much of the research on electric vehicles is concerned with the design of the drive train, i.e. the motor and battery technology, and the recharging requirements. However, the widespread use of electric vehicles will affect many aspects of road transport. It will be important to study those to identify potential barriers to take up and unforeseen consequences if they come into widespread use.

The following sections consider some of the potential traffic, transport and safety implications of the widespread use of electric vehicles. There may be more. It would be prudent to examine as many of these as possible to ensure that any introduction proceeded smoothly.

Electric vehicles are usually quieter than Internal Combustion engine (IC) vehicles. There is some evidence that this reduces pedestrian awareness of them. Should this be compensated by addition of a noise source? What type of source is most effective – for example engine noise at present includes affair amount of infrasound. Would it be possible to produce a sound pattern which alerts road users effectively, particularly pedestrians, without annoying local residents or other drivers?

EVs tend to be heavier for a given size of vehicle than IC powered vehicles. Does this have implications for the stopping distance and hence accident risk? What are the implications in terms of the damage caused in an impact?

EVs may have faster standing start acceleration figures than IC powered vehicles – does this affect traffic safety measures e.g. could this make advanced stop lines for bicycles more hazardous? Electric vehicles may have faster standing start acceleration from a stop line figures than IC powered vehicles. Does this have implications for the design of urban traffic signal control systems, such as SCOOT and MOVA?

Which, in your view, are the most important countermeasures amongst infrastructure, road user (training, education, rehabilitation, enforcement) vehicle safety measures?

Infrastructure - more than one option possible

x	Road classification - appropriate match between function, speed limit, design, layout
	Safety impact assessment of land use planning and road infrastructure
	Implementation of safety audit and safety inspection
x	Facilities for pedestrians and cyclists
	Facilities for powered two wheelers
	Design of roadsides and roadside furniture
	Speed management in rural areas
	Speed management in urban areas

Comment

Road segregation might entice more people to use cycles, which provide a green alternative to using the car. Certain routes should be re-classified as (motor) cycle only.

Road user measures: licensing, testing, training, information - more than one option possible

	Safety quality of driver licensing and testing standards
	Safety quality of powered two-wheeler licensing and testing standards
	Safety quality of driver training
	Safety quality of rider training
	Rehabilitation courses for repeat offenders
X	Social marketing/ campaigns/ safety education to encourage compliance with rules on safe behaviour

Comment

The awareness of vulnerable road users needs to be addressed through education. However there is a range of infrastructure and technological interventions that can be considered to mitigate against deaths and serious injuries to these road users. Infrastructure segregation is one example for this, but there are issues around funding and space for such measures. It is important that urban and town landscapes are re-considered.

There are a range of agencies which specialise in the generic area of road user education and are better placed to comment. Consideration should be given to the technological and policy solutions that are available. We also need more effective systems to persuade people not to speed and the Member States need to recognise that many tools are only effective for a while. The right incentives should be put in place to encourage good behaviour.

Procedures should be put in place to allow 'near miss' reporting together with the provision of evidence gathering technology.

Road user measures enforcement - more than one option possible

X	Combined publicity and police enforcement of important safety rules
X	Automated enforcement
X	Deterrence of drinking and driving/riding
X	Enforcement of use of occupant restraints
X	Enforcement of crash helmets by powered two-wheeler users
X	Enforcement of speed limits
X	Administration of penalties e.g. penalty points system
X	Administration of penalties across EU internal borders (in case of traffic offences commit-ted by non residents)
X	Justice sector problems which impede efficient enforcement

Comment

It is important to recognise that it can be difficult to separate policy from delivery in road safety terms. Both may be critical. For example, recent research indicates that mobile telephone use, whether hand held or hands free, is a major distraction for drivers and may be a significant cause of accidents. It is essential that the Member States continues this research theme, to quantify the impact of that distraction. If it is confirmed that it is a major risk factor two initiatives will be needed:

- The first issue is that the existing legislation on the use of hand held mobiles appears to be widely disregarded. So in that case better delivery is important. One approach may be that the EU Commission could study a technical means of identifying when a mobile phone is in use on a passing vehicle and recording the information for enforcement.

- The second issue is that current legislation allows hands free calls. However, if research confirms that these lead to accidents the EU Commission should consider changing the policy and introduce new legislation.

Hence we recommend that both policy and delivery are retained in the toolbox to address the road safety challenge.

Vehicle safety - more than one option possible

X	Need for improved safety quality of vehicle standards and equipment for cars (incl. electric cars)
	Need for improved safety quality of vehicle standards and equipment for light commercial vehicles (incl. electric vehicles)
	Need for improved safety quality of vehicle standards and equipment for heavy commercial vehicles (incl. electric vehicles)
	Need for improved safety quality of vehicle standards and equipment for buses (incl. electric buses)
	Need for improved safety quality of vehicle standards and equipment for powered two wheelers
X	Need for improved safety quality of vehicle standards and equipment for pedal cyclists
	Need for improved safety quality of vehicle standards and equipment for crash helmets
X	Preventing injuries through better occupant protection e.g. seat belts, airbags and vehicle design and better protection of vulnerable road users
	Preventing crashes through better brakes, lighting, intelligent systems
X	Poor compliance regimes - vehicle inspection
X	Problems associated with new technological equipment
	Other

Comment

It is clear that the UK is entering a period of change in road use, which is likely to impact on accident rates. For example the UK has set ambitious overall CO2 targets and the EU has also legislated on the output from vehicles. This is likely to create pressures which will encourage the use of smaller, lighter vehicles and speed limits might be lowered to improve the efficiency of vehicles. Those regulations and innovations such as road pricing may also influence the total amount of driving in the country, and might feed through to land use modifications.

It is difficult to predict the impact of all of these changes on casualty rates. However, one key conclusion is that it is essential that EU countries maintain an ongoing research programme over the period of the strategy, constantly analysing the causes of accidents and developing and testing interventions which seem likely to reduce casualties in this changing environment.

Intelligent Transport Systems (ITS) can help to reduce accidents by assisting the driver and the road operator in difficult situations. The key challenge for system designers however is to develop a framework which allows the benefits of the systems to be calculated and the performance, in terms of accident reduction, to be optimised. The main difficulty in estimating the benefits of ITS is that they are not merely a technical system. They are designed to inform drivers and modify actions or behaviour. It is essential to examine the human factors impact of the system, for example in simulators and by using a range of established techniques, to determine how they will operate in the real world and hence, what the regulatory requirements should be. A framework has to be developed that allows the public and private sector to operate together at all levels from policy decision making through to the implementation.

ITS and its implementation cuts across not only many technology boundaries such as telecoms, automotive systems and information technology it also cuts across many policy boundaries both at regional, national and sometimes international levels. In order to make the optimal combination of policy and technology decisions across public and private partners approaches

such as systems thinking through need to be applied. The IET recommends that so called soft systems methodologies and systems dynamics through more parameterised models are considered to ensure that cause and effects are properly evaluated.

Furthermore both the infrastructure and users of the systems need to be able to adapt behaviour and choices dependant on both the current state of the system and the forecasted future state of the system over both short and medium term timescales. This agility in the infrastructure configuration or supply of services requires both increased use of information about the system and the demands being placed on it and an intelligent layer of decision making to collate the disparate sources of data and take decisions on it.

Road safety is a shared responsibility at EU, national, regional and local levels with national authorities usually taking the lead. National action typically involves the development and implementation of multi-sectoral strategies and action programmes which address key problems and are focussed on achieving results. Programmes are coordinated across national government and with regional and local authorities, business and civil society.

What do you see as the key problems or issues for institutional management of road safety? Give a number from 1 to 5 (1 is most important) for the 3 categories below

Institutional leadership and coordination

	1	2	3	4	5
Lack of high-level review of safety management performance					X
Lack of political willingness to prioritise road safety			x		
Lack of definition of road safety objectives				X	
No lead office/department/agency for road safety	X				
Insufficient integration and coordination of activity		X			

Comment

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Legislation, funding and resource allocation, promotion

	1	2	3	4	5
Insufficient harmonisation of road safety rules and standards					
Inefficient funding mechanisms					
Limited resources dedicated to road safety					
Limited resources dedicated to road safety functions in the main governmental sectors with responsibilities					

Insufficient promotion and communication on road safety					

Comment

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Monitoring and evaluation, knowledge transfer, research

	1	2	3	4	5
Lack of harmonised definition of serious injury				X	
Problems with crash injury classification (serious, light injuries)			X		
Lack of health sector monitoring to establish under-reporting on injuries					X
Lack of data on distance travelled (vehicle kms)		X			
Lack of periodic, independent review of road safety performance	X				

Comment

Near miss reporting needs to be introduced. Post event analysis alone is not sufficient.

3. THE ROLE OF THE EU

Besides considering road safety as an integral element of European transport policy, the EU also contributes to improving road safety by integrating road safety concerns into other EU policies, and by removing obstacles to effective road safety policies that might exist at the EU level.

Is the integration of road safety into other areas of EU policy effective?

	Yes	X	Partial		No

If not, in which sectors of policy should this integration be improved? - more than one option possible

X	Environment policy	X	Energy policy		Health policy
X	Research policy		State aid, financing, loans		Social policy
X	Taxation policy		Internal market policy		Information and communications technology policy
X	Education policy		Other		

Comment

Road safety has to be balanced with mobility and personal freedom. One nation's choice on this balance should not be imposed on another, however, drivers need to be enforced to respect the national (local) restrictions. An example might be the requirements for large goods vehicles in Eastern Europe which may not be compatible with Scandinavian residential areas.

Does existing European policies/legislation create obstacles to prevent effective road safety policies at national, regional and local levels?

X	Yes		No

The EU carries out a range of activity to improve road safety in support of activity carried out nationally, regionally and locally.

What should be the priority areas for action in the next programme 2011-2020, Give a number (from 1 to 5) for the 5 most important actions (1 is most important)

	1	2	3	4	5
Proposing a European road safety objective to 2020					X
Funding effective road safety activities				X	
Supporting road safety re-search	X				
Legislation and recommendations where the EU has competence					

Launching public awareness campaigns					
Providing information and benchmarking tools for decision makers					
Developing harmonised specifications for road and vehicle safety					
Cross-border enforcement of traffic offences		X			
Applying road safety standards to all roads					
Facilitating networking, ex-change visits and 'twinning' between countries to strengthen institutional management capacity			X		
Other					

Comment

Accident and near miss research needs to be conducted at a European level. Research and development needs to be conducted to provide the technology to support this. Standardisation of enforcement procedures and policies needs to be established.

New technologies, innovative and intelligent transport solutions can improve safety, increase efficiency, protect the environment and offer new customer-oriented services to citizens.
Is there a need for EU action to increase the market acceptance of new technologies, innovative and intelligent transport solutions?

X	Yes		No

Comment

Without compromising mobility, restrictions need to be placed on vehicles travelling throughout Europe so that they meet the local requirements and aspirations for road safety.