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(1) Synthesis of the ex-post evaluation of the European Road Safety Action Program 2001 – 2010

(2) Public consultation on the policy orientations on road safety 2011-2020

Accompanying document to the

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

Towards a European road safety area: policy orientations on road safety 2011-2020

{COM(2010) 389 final}

Foreword

In assessing future possible orientations of the common road transport safety policy, the Commission has taken two main elements into consideration:

1) The results of the road safety action programme 2001-2010, which included a list of 62 concrete measures, reflected in of this document

2) The outcome of a wide stakeholder consultation process, aimed at identifying the challenges for road safety in the years to come and the best way to address them, contained in Chapter 2 of this document.

The present document is composed of two parts.

Chapter 1 provides an assessment of the results of each of the 62 measures described in the European road safety action programme 2001-2010, giving information on the following aspects for each measure:

– the specific topic of the measure

– the type of impact: direct or indirect

– the contribution of the measure to road safety: high, medium or low results

– the consistency of the measure with other measures

– a description of what remains to be done in the new programme.

Chapter 2 of the document is related to the outcome of the stakeholders' consultation. This important step enabled the Commission to identify the problems or issues to be addressed in the next decade, some of which corresponding to new or expected future developments not known at the time of drafting the road safety action programme 2001-2010.

Finally, an Annex provides detailed figures, extracted from the CARE European Database on accidents, which illustrates the quantitative results obtained by Member States and their comparison with the target of reducing by half the number of road fatalities given in the action programme 2001-2010.

1. SYNTHESIS OF THE EX-POST EVALUATION OF THE EUROPEAN ROAD SAFETY ACTION PROGRAM 2001 – 2010

1.1. Sixty-two measures in the field of road safety[1]

The European Road Safety Action Programme 2001-2010 (hereafter: RSAP) contained 62 concrete measures beneficial for road safety which needed to be implemented. This Action Programme has been launched by the European Commission in 2003 through the adoption of the Communication "European Road Safety Action Programme. Halving the number of road accident victims in the European Union by 2010 (from 2001): a shared responsibility"[2]. The RSAP covered three fields of action:

Road users behaviour, dealing with a combination of training, campaigns, and law-enforcement measures
Passive and active safety of vehicles
Management of road infrastructure safety

An ex-post evaluation has been undertaken in order to analyse the level of implementation and the impacts of each of the 62 measures across the EU Member States.[3] Criteria applied for measuring the impacts of the measures were: effectiveness, efficiency, sustainability, consistency and the effects from non-implementation. The expected reduction of the number of fatalities resulting from individual measures has been given where possible, thus relating them directly with the objective of the RSAP, consisting in halving the number of road victims by 2010. The ex-post evaluation wants to provide a good understanding of the effects of the measures covered by the current RSAP. Taking into account whether measures from the RSAP have been implemented fully, partially or not at all, and what their impacts on road safety have been so far, is necessary for correctly dealing with road safety issues in the future. Therefore, the results of this evaluation have been taken into account in the preparation of the Commission Communication "Towards a European road safety area: policy orientations on road safety 2011-2020".

1.2. Main characteristics of road fatalities in the EU

It is useful to have an overview of the main risk areas in road traffic. The distribution of fatalities in terms of type of road users, gender, age group, transport mode and type of road looks as follows[4]:

People involved: 80% vehicle occupants (60% drivers and 20% passengers); and 20% pedestrians. → this suggest the importance of implementing passive safety measures;
Gender: men represent 76%, while women only 24%;
Age category affected: most affected group (56%) is between 25 and 64 years old (this age group represents 55% of the total population); the group with the highest risk consists of young people between 15 and 24 years old, which represent 13% of the total population, but the fatality rate in this group is 21%.

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1 See list with the 62 measures in Annex.
2 COM(2003) 311.
3 The report "Ex-post Evaluation of the RSAP" has been prepared for the Commission by the consultant TRT (Trasporti e Territorio).
4 Most of these data are from 2007; some sub-elements of these data refer to earlier years.

Transport mode: passengers cars and taxis represent 49%, whereas pedestrians and cyclists (the so-called vulnerable road users) represent 25% and powered-two- wheelers (hereafter: PTWs), namely motorcycles and mopeds, represent 19%.
Type of road: rural roads 55%, urban roads 36%, and motorways 6%.

It should be noted that an exhaustive quantitative ex-post evaluation is not always possible for each measure for different reasons. Firstly because the impact of measures could be indirect and therefore not computable in terms of road fatalities (e.g. for research activities); secondly, since some of the measures have effects only after the period 2001-2010 covered by the analysis and thirdly because there could be significant data limitations that make an evaluation impossible although the measure has direct impact on road safety.

Measures have been evaluated not only individually, but also at aggregate level. The measures that share the same specific objective were grouped in order to avoid any duplication of the analysis and to take into account synergies and combined impacts of the different actions.

1.3. Ex-post evaluation of the sixty-two measures of the RSAP

Measures 1-62:[5] the 62 measures cover the three fields of actions: ***road users' behaviour, vehicle safety, and road infrastructure***, and are grouped into the following main domains:

Generals (measures 1-7)[6];
Users' Behaviour (measures 8-13), divided in *Enforcement* (measures 8, 9, 13) and *Awareness Campaigns* (measures 10, 11);
Driving Licence and Training (measures 14-17);
Passive Vehicle Safety (measures 18-28);
Active Safety of Vehicles (measures 29-40);
Infrastructure (measures 41-47);
Professional Drivers (measures 48-56);
Accidentology (measures 57-62).

Different measures dealing with ***the same specific subject,*** which sometimes belongs to different 'main domains', are:
measures 1, 2, 3, 5 and 7, dealing with *Monitoring and Evaluation*
measures 4, 6 and 20 dealing with *Building Stakeholders' Commitment*
measures 12, 33 and 49, dealing with *Impaired Driving*
measures 18 and 35, dealing with *Power-two wheels*
measures 19 and 23, dealing with *Vulnerable Road Users*
measures 21, 22, 24, 25 and 55, dealing with *Vehicle Occupants' Protection*
measures 26, 27 and 28, dealing with *Vehicle Crash Compatibility*
measures 48, 50, 51, 52-54 and 56, dealing with *Professional drivers*
measures 57 and 58, dealing with *Post-crash medical care*
measures 59, 60, 61 and 62, dealing with *Statistical Data*.

State of implementation of the measures

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5 Each measure is referred to by the number it has on the list in annex. Relevant information on each measure is given in the other columns of this list.

6 Although these measures are of great importance with a view to improving road safety, their impact is indirect and of a general nature, and therefore it is not possible to give a quantification of the number of lives that can be saved by each of these measures.

During the period of the current RSAP, 17 measures out of 62 will have been completed, which is 27.5% of all the measures[7]. In terms of state of implementation, 23% of the measures are evaluated as 'high', 65% as 'medium' and the remaining 12% as 'low'. The largest number of completed measures can be found in the category "professional drivers", whereas none of the measures in the field of passive vehicle safety has been completed so far.

It is important to underline that each measure, even if it is completed, has to be monitored. Its effects and usefulness, also in combination with other relevant measures, will have to be assessed through an ex-post analysis[8].

It has to be noted that the impact of the measures in the main domain ***Generals***, which are divided into the domains: monitoring and evaluation, and building stakeholders' commitment, is indirect and of a general nature, and therefore it is not possible to give a quantification of the number of lives that can be saved by each of these measures. However, they are important instruments with a view to improving road safety.

As a last general remark, it has to be assured that, to the extent that measures will involve the processing of personal data, the provisions of either Regulation 45/2001 or Directive 95/46/EC will apply, depending on the data controller.

Measure 1

Halving the number of road deaths by 2010 is the overall objective of the RSAP. The number of road fatalities in 2001 was about 54.000, and the target was to reach the number of 27.000 fatalities in 2010. The actual number of road fatalities in 2009 is about 35.500, which is a reduction of 35% since 2001; the expectation is that in 2010, the reduction in fatalities will reach – 41%. This means that the target of a reduction of 50% will not be achieved and that there may be about 8.500 more fatalities in 2010 than the target number. However, the RSAP did have a positive impact on road safety and resulted in a decrease of road fatalities. The following factors also have to be taken into account in this context. In the first place, mobility has considerably grown in the period covered by the action plan. Secondly, the scope of the RSAP has become much wider with the accession of new Member States (EU12) later on, and these Member States had – and still have – in general worse road safety results than the existing Member States (EU15): whereas the average reduction in road fatalities in 2008 was -36.8% in the EU15, it was - 4.2% in the EU12. Fortunately, the performance of the EU12 is rapidly improving: average reduction expected in 2009 is: - 40.8% for EU15 and - 6.8% for EU12. Thirdly, the reduction in road deaths (↓ 28%) has been higher than the reduction in road accidents and injuries (↓ 14.6% and ↓ 17.6%), which shows that the consequences of accidents have in general become less serious.

The total social cost due to road crashes is estimated to be around 140.8 billion Euro over 2008 (59.4 billion Euro for road fatalities and 81.4 billion Euro for road injuries and accidents)[9].

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7 The completed measures are: n° 3, 7, 9, 14, 15, 30, 31, 41, 48, 50, 52, 53, 54, 56, 57, 58 and 62.

8 Relevant combinations of measures are for instance measures 14 and 15, 30 and 31; 41 and 42; 48, 49 and 50; 53 and 54).

9 The social cost has been calculated accordantly to the HEATCO study (2006) based on the value of statistical life. Weighting at population share the HEATCO values of casualties for the different EU27 countries, the value for statistical life equals to 1.525.112 Euro in 2008. With regard to a serious injury the value is 204.465 Euro.

The evaluation of the impacts of the RSAP does not explicitly take into account autonomous national initiatives. Considering the overall reduction of deaths recorded in the period 2001-2008, the contribution of the RSAP is about 30% of the difference between the situation at the beginning of the period concerned and the actual number of road fatalities at the end of the period. The remaining about 70% of lives saved has to be attributed to other impacts, for example, technical developments and actions undertaken by Member States during this period. With regard to the performance by the Member States, most old Member States are in general almost in line with the RSAP target, whereas the new Member States are in a more critical situation which requires special attention in the coming years. Estimations show a converging process in performances between the new Member States, and after their accession to the European Union and the subsequent application of the RSAP measures by them, road safety has been improving at a faster pace in these Member States. Over the year 2009, several new Member States have achieved large reductions in fatalities. For instance, the Baltic countries have approximately halved the number of fatalities. Looking at trends of fatalities, injuries, accidents, vehicles and density of traffic per km, it appears that despite a growth in mobility, the impact of road accidents on human lives has been decreasing over the last years. However, the reduction in the numbers of accidents and injuries is less than the reduction in fatalities and there is a strong and steady correlation between these two. Therefore, more attention will have to be paid to this issue in future. In the first place, a common and generally accepted definition of 'serious injury', which does currently not exist, will have to be applied by all the Member States as a matter of priority.

Specific topic*: Monitoring and evaluation*

Type of impact: *indirect*

Contribution to road safety: *high results*

Measure 2

Evaluate the progress made, compared with the target, by means of appropriate performance indicators at Community and national levels.

The research and the analysis carried out in the framework of the SafetyNet project have been the basis not only for the development of the European Road Safety Observatory, aimed at the gathering of data and knowledge to inform future safety policies and enabling to monitor progress, identify best practices and ensure evaluation, but also for the establishment of a set of European indicators. Without indicators, policy development, implementation and assessment is not possible.

Specific topic*: monitoring and evaluation*

Type of impact: *indirect*

Contribution to road safety: *high results*.

What remains to be done (ERSAP 2011-2020): the evaluation exercise needs to be continued. Member States should be encouraged to improve their data collection.

Measure 3

Provide a report in 2005 on monitoring of the target, action carried out and modifications needed as a result of enlargement and, where appropriate, propose new measures.

Two EC official documents have been published on 22 February 2006:

- a mid-term review, as announced in the RSAP 2001-2010 (Communication COM(2006)74 final);
- a document supporting the Communication, which includes relevant statistics, an overview of the legislation, projects and studies implemented and the commitments taken in the framework of the European road safety Charter.

Specific topic*: monitoring and evaluation.*

Type of impact: *indirect*
Description of the impact: support action for policy assessment and development.
Contribution to road safety: *medium results*.
What remains to be done (ERSAP 2011-2020): the new ERSAP should contain an analogous mid-term evaluation.

Measure 4

Invite all parties concerned to sign a European Road Safety Charter
This measure is a good example of the application of the principle of 'shared responsibility'. So far, there are 1796 Charter signatories' commitments for carrying out concrete actions to contribute to improving road safety.
Specific topic: *Building stakeholders' commitment*
Type of impact: *indirect*
Contribution to road safety: *medium results*.
What remains to be done (ERSAP 2011-2020): the Commission should continue to support the European Road Safety Charter to enable future progress to be made, encouraging the self-evaluation of the single commitments undertaken by the part of the private actors according to harmonised criteria. Moreover the signatories of the Charter should be organised in permanent forums as to, e.g., exchange good practices.

Measure 5

Propose the introduction of harmonised road safety criteria in public service contracts.
The purpose of this measure is to incorporate road safety requirements and in particular harmonised road safety criteria in the public procurement process. This would apply, for instance, to the purchase of vehicles by public authorities or to the provision of transport services. Examples of such scheme could be: making the purchase of EuroNCAP 5-star vehicles mandatory; purchasing collective transport means with specific active safety devices (for example school buses provided with eCall, alcoholocks, etc.).

This concept is applied by Annex II of the Directive 2008/96/EC on Road Infrastructure Safety Management, which defines the criteria to be met by Member States when carrying out a road safety impact assessment (article 3.2) or a road safety audit (article 4.2). This directive enters into force by December 2010. By 19 December 2011, Member States have to adopt guidelines for applying the safety procedures set out in the Directive. The Directive is applicable to projects of the trans-European road network and projects carried out by the European Investment Bank (EIB) and the European Regional Development Fund (ERDF).
Specific topic: *Monitoring and evaluation*
Type of impact: *indirect*
Contribution to road safety: *medium results*
Consistency with other measures: this measure is closely linked with all the actions relating to road infrastructure safety management. In particular, it is linked with the aim of Measure 44 on assessing the safety impact of projects receiving Community funding.
What remains to be done (ERSAP 2011-2020): an evaluation of the impacts should be carried out once the Directive on Road Infrastructure Safety Management is regularly implemented.

Measure 6:

Study, together with the European haulage industry, on possible additional measures which insurers could take to pass the cost of accident risks on more directly.
Internalising costs involved in accidents, for instance by the application of the "bonus-malus" system in insurance, contributes to motivating professional drivers to drive carefully. In support of the preparation of the European Road Safety Action Programme 2011-2020, a seminar on the internalisation of social costs was held in Bruxelles on the 7th of September

2009. The title of the workshop was "Road safety economics: internalising external costs; promoting economic incentives, building cases for investment".
Specific topic: *Building stakeholders' commitment*
Type of impact: *indirect*
Contribution to road safety: *medium results*
Consistency with other measures: with all other measures aiming at improving road user's behaviour.
What remains to be done (ERSAP 2011-2020): further studies should be made, together with insurance companies, to understand whether it is worthwhile to switch to pay as-you-drive schemes, providing optimal incentives at the margin, or if the costs of introducing such schemes do not weigh up against averaging. A research on the best practices in the insurance system and their impacts on road safety could be carried out.

Measure 7

Set up a European Road Safety Observatorium within the Commission.

The European Road Safety Observatory (ERSO) was set up in the framework of the SafetyNet project. (see Measure 2). It aims to support the actions of policy makers, researchers and road safety advisors.
Specific topic: *Monitoring and evaluation*
Type of impact: *indirect*
Contribution to road safety: *medium results*
Consistency with other measures: relevant for the other measures, since it provides a means of gathering information which is relevant for the accomplishment of concrete road safety measures.
What remains to be done (ERSAP 2011-2020): further developing of the European Road Safety Observatory.

Measure 8

Propose measures to strengthen checks and ensure the proper enforcement of the most important safety rules.

After analysing the results of the FWP4 research project ESCAPE (2002) and carrying out an extensive legal study on the traffic rules and enforcement practices in the fields of speeding, drink-driving and seat belt use in the EU15 Member States and an economic study on costs and benefits of improvements in enforcement, the European Commission published the Recommendation 2004/345/EC on enforcement in the field of road safety, which invites Member States to set up a national enforcement plan in road safety, ensure the use of automated speed enforcement equipment and the application of random breath testing for the surveillance of drink-driving and to carry out intensive enforcement actions on the non-use of seat belts; to combine the enforcement actions with publicity campaigns and to apply effective, proportionate and dissuasive sanctions and/or remedial measures for speeding, drink-driving and non-use of seat belts, and to designate an enforcement coordination point for the exchange of best enforcement practices.
The issue of ***cross-border enforcement*** has also been addressed. Enforcement technologies and procedures vary among Member States and make mutual recognition of enforcement actions and cooperation between Members difficult. For example, sanctions for traffic offences can be either criminal or administrative in different Member States, which results also in considerable differences in drivers' perceptions. The Commission examined the legal basis for cross-border enforcement through the project VERA 2 (Cross-border enforcement of road traffic violations). The project CAPTIVE (Common Application of Traffic Violations Enforcement) identified the steps to implement a European approach to cross-border enforcement. The results of these projects provided the basis for the Proposal for Directive on cross-border enforcement COM(2008) 151, adopted on 19 March 2008. The document sets out proposals aimed at securing more efficient and more effective enforcement of traffic

offences committed in another Member State than where the offenders' car is registered. Considering that non-resident drivers are relatively more involved in offences than resident drivers (for example, non-resident drivers represent around 15% of all speeding offenders, whereas they represent only the 5% of the road traffic), the proposal contains provisions of an administrative nature for putting in place an effective system of cross-border enforcement of the main road traffic offences: speeding, drink-driving, non-use of seat belts and failing to stop at a red traffic light. According to the proposal, Member States will have two years to set up the data exchange system and start operating it. No harmonisation of traffic rules or penalties is included. The proposal is currently being discussed in the European Parliament and the Council. Stakeholders acknowledge that enforcement is a key factor for a considerable reduction in deaths and injuries, especially when intensively applied and widely published. Therefore, measures on enforcement will also be included in the new ERSAP, particularly with respect to cross-border enforcement of traffic offences.

Specific topic: *Enforcement*

Type of impact: *indirect*

Contribution to road safety: *high results*

Consistency with other measures: an effective and efficient enforcement is crucial for the implementation of the legislative framework for road safety and for having a positive impact on road users' behaviour.

What remains to be done (ERSAP 2011-2020): cross-border enforcement needs to be effectively implemented. Checks need to be further strengthened.

Measure 9

Develop best practice guidelines as regards police checks

The FWP6 project PEPPER (Police Enforcement Policy and Programmes on European Roads) was carried out from 2006 – 2008. The objective of the project was to enhance the effectiveness and efficiency of police enforcement of road traffic. The project looked critically at all relevant aspects of enforcement, such as target behaviours, the detection of infringements, administrative and legal handling after infringement, decisions concerning the volume, location and timing of enforcement, effects of enforcement on road user behaviour and accidents, enforcement methods and tools, collection of enforcement data, and enforcement in the social context. Speeding, drink driving and use of seat belts were especially targeted. In addition, the need for improved enforcement data and better understanding of the impacts was recognised, and the potential of innovative technologies in the different links of the enforcement chain was studied.

Specific topic: *Enforcement*

Type of impact: *indirect*

Contribution to road safety: *medium results*

Consistency with other measures: the scope of the measure is consistent with the enforcement of road traffic offences (Measure 8) in order to discipline users' behaviour.

What remains to be done (ERSAP 2011-2020): encouraging the dissemination of the good practices provided by PEPPER project among Member States.

Measure 10: Collect, compare and publish information on national highway codes, and on infringements established and penalties imposed in the various countries

- - The European Road Safety Observatory (ERSO) provides on its website a section with a brief overview of the different traffic rules applied in the Member States. For each country, traffic rules are available for speed, alcohol, day time running lights, winter tyres and safety equipment for cars and bicycles. The information has been collected informally with the help of the CARE correspondents. A more extensive document on national traffic rules is available only for France on the same webpage. The Road Traffic Rules comparative

study (RTR, 2004) provided background information on the legislation and enforcement actions of road traffic rules in the EU15. The aim was contributing to harmonisation, providing information on best results achieved in the field of issuing legislation and enforcement strategies to decision makers, and informing the general public.

- The European Traffic Police organization (TISPOL) has a public database called CLEOPATRA (Collection of Law Enforcement Operations and Police Activities To Reduce Traffic Accidents) which presents detailed information from six EU Member States (Sweden, Finland, Germany, France, Netherlands, United Kingdom) related to traffic safety, road safety programmes and rules as well as data related to alcohol and drugs, speeding and seatbelts. Other Member States are invited to provide similar information. Apart from these six Member States, general information from an EU perspective is included as well. The information in this database is police-oriented, it does not lend itself to an easy consultation by the general public. This database is a part of the project PEPPER (Police Enforcement Policy and Programmes on European Roads, see Measure 9).

Specific topic: *Road safety awareness*

Type of impact: *indirect*

Contribution to road safety: *medium results*

Consistency with other measures: increasing knowledge on traffic rules among the general public supports the other measures to improve road safety.

What remains to be done (ERSAP 2011-2020): the collected information should be regularly updated. The European Commission could investigate improving information on road laws in all Member States, which could be promoted by ferry, tunnel and travel companies, and that car hire companies, insurers, motoring groups and others.

Measure 11

Participate in awareness campaigns about drinking and driving, seat belts, speed and fatigue, if possible combined with national police activities.

The European Commission co-financed numerous campaigns on road safety across Member States between 2001 and 2010. Concerning drinking and driving, several campaigns have been carried out in the framework of the project EURO-BOB[10] (Pan-European Designated Driver Campaign Project), namely EURO-BOB 2001-2002; 2002-2003; 2003-2004; 2004-2005; and 2005-2007.

Campaigns addressing the issue of driving under the effects of alcohol and drugs were:

- ENWA 2007-2010 (European night without accidents),
- NESA 2004-2006 (Nuit européenne sans accidents), and
- VCO 2007-2010 (Opération soirées clean).

With regard to seat belts and restraint systems, different campaigns have been carried out in the framework of the project EUCHIRES (European public awareness campaign on the use of seat belts and child restraint systems): EUCHIRES 2005 and EUCHIRES 2007.

The following campaigns concerned more general issues of road safety:

- RED-CROSS 2004-2005 (The European Red Cross road safety campaign);
- VAMOS 2006-2009 (Volunteers always).

Moreover the Commission supported the campaigning activities carried out by two projects:

With the project EURO RS WEB, a website centralising data on awareness campaigns on road safety was created. The aim is exchanging information, knowledge and experience concerning the campaigns carried out in the different Member States.

[10] The person who does not drink alcohol when he has to drive and who drives the rest of the party home safely

The FWP6 research project CAST (Campaigns and Awareness-Raising Strategies in Traffic Safety) aimed to fulfil the need for tools among campaign practitioners. This project studied the direct impact of mass media campaigns on road safety.
Specific topic: *Road safety awareness*
Type of impact: *indirect*
Contribution to road safety: *high results*
Consistency with other measures: this measure is consistent with the actions aimed at influencing road users' behaviour. There is a strong link especially with the actions in the field of enforcement (Measure 8), since the combination of enforcement and campaigns increase the effect on the changing of road users' behaviour.
What remains to be done (ERSAP 2011-2020): encouraging Member States and other stakeholders (e.g. regional authorities) to continue implementing awareness campaigns, using the manuals provided by the CAST (RTD-FP6) project.

Measure 12

Encourage the application of the recommendation on the blood alcohol limit; continue work on the effects of drugs and medicines; establish appropriate classification and labelling of medicines which affect driving ability.

The maximum permitted blood alcohol content for drivers is defined by Commission Recommendation 2001/116/CE. In 2006, the European Commission adopted a Communication (2006) 625), setting out the EU strategy to support Member States in reducing alcohol related harm, with a view to encouraging them to apply this recommendation. The Communication addresses the adverse health effects of harmful and hazardous alcohol consumption in Europe, which is estimated to cause the deaths of 195.000 people a year in the EU. The identified priorities are: to protect young people and children; reduce injuries and deaths from alcohol-related road accidents; prevent harm among adults and reduce the negative impact on the economy; raise awareness of the impact on health of harmful alcohol consumption; and help gather reliable statistics. In June 2007, the "Alcohol and Health Forum" has been put in place to support, provide input and monitor the implementation of the strategy outlined in the Communication, focusing on topics such as research, information and data collection, and education. Concerning drugs and medicines, the importance of promoting and widening research on the influence of psychoactive substances on driving ability is stated in the Council Resolution of 27 November 2003 on combating the impact of psychoactive substances use on road accidents, so that prevention and law enforcement measures can be based on sound scientific evidence.
The Commission is considering the advisability of the introduction of appropriate and harmonised pictograms on medical packaging, based on the European classification of drugs, according to their effects on driving ability. To this end, impaired driving has been addressed, with different approaches and specific aims, by several projects.
The project IMMORTAL (Impaired motorists, methods of roadside testing and assessment for licensing) aimed at researching the accident risk associated with different forms of driver impairment and studying the effects of medicines and drugs on driving performance.
The project ROSITA 2 (Evaluation of roadside oral fluid drug tests for the detection of drivers under the influence of drugs), conducted an international study to assess the performance of on-site drug tests to detect illegal drug use among drivers. The project DRUID (Driving under influence, drugs, alcohol and medicines) aims at analysing the effect of psychoactive substance and at establishing guidelines and measures to combat impaired driving, in order to provide a solid base for harmonised regulations on driving under the influence of alcohol, drugs and medicine. The project is also expected to establish an appropriate classification system of medicines affecting driving ability, creating a framework for medicines according to a labelling system. Several large scale studies will be conducted on the road in different member countries, involving police and hospitals: several thousands of drivers will be tested

for psychoactive substances. The project involves 37 partners from 20 States (18 EC Members, Norway and Switzerland), bringing together academics, researchers, medical institutions and governmental bodies. Action for the labelling of medicines is also in progress within the European Medicines Agency (EMEA), which is responsible for the evaluation and supervision of medicines for human and veterinary use in Europe. The importance of providing adequate information on the benefits and risks of medicines was already emphasised in the EMEA Road Map 2005. To this end, the Agency carried out a survey involving patients' and consumers' organisations, healthcare professionals' organisations and representatives of the Agency itself. The survey addressed the communication on benefits and risks of medicines in the light of the need for transparent information, focusing on the summary of product characteristics, labelling, the package leaflet, public assessment report and product safety announcements. According to the main findings of the survey (EMEA, 2009), alongside more comprehensive scientific data, there should be a clear description and a concise easy-to-read summaries of benefits and risks of medicines. It is broadly agreed that complete and transparent information must be ensured about any potential harm which could result from the intake of the medicine, including any negative impact on the patients' quality of life (e.g. interference with daily activities, such as driving). The EMEA believes that improved package design and labelling should be put in place and intends to further explore how best to communicate on safety issues. The final aim would be submitting a proposal for a regulatory project on product characteristics, the labelling and the package leaflet for better communicating of benefits and risks of medicines.

Duration of the project IMMORTAL: from 1 January 2002 to 30 June 2005.

Duration of the project ROSITA 2: from 1 December 2002 to 1 January 2005.

Duration of the project DRUID: from October 2006 to September 2010.

Duration of the EMEA survey: from March to April 2008.

Specific topic: *Impaired driving*

Type of impact: *Direct*: application of blood alcohol limits. *Indirect*: research on effects of drug and medicines supporting policy-making.

Contribution to road safety: *high results*

Consistency with other measures: the result of the research on drivers' impairment should be followed-up by enforcement measures and awareness initiatives.

Outcomes

Communication (2006) 625 has identified areas where the EU can support the actions of Member States to reduce alcohol related harm, such as financing projects through the Public Health and Research Programmes, exchanging good practice on issues such as curbing under-age drinking, exploring cooperation on information campaigns or tackling drink-driving and other Community initiatives. The Communication also maps out actions which Member States are taking, with a view to promoting good practice, proposes an Alcohol and Health Forum of interested parties and sets out areas where industry can make a contribution, notably in the area of responsible advertising and marketing. The members of the European Alcohol and Health Forum have made a series of commitments aimed at reducing alcohol-related harm. So far, 108 commitments have been taken. The vast majority of commitments relates to information and education programmes (46% of commitments); then there are the actions on responsible commercial communication and sales (22% of commitments).

What remains to be done (ERSAP 2011-2020): disseminating the results of relevant projects and evaluate the feasibility of a European legislation introducing (i) a maximum blood alcohol content; (ii) harmonised methods for checking illegal drugs; and (iii) follow-up to be given, including an appropriate classification and labelling of medicines which affect driving ability.

Measure 13

Harmonising, over time, the penalties for the main infringements of the rules for international hauliers.

In order to facilitate the free movement of goods and services and to ensure a high level of safety for national and international transport operations, uniform rules for international transport at the European level are desirable. Council Directive 94/55/EC of 21 November 1994 was realised to lay down uniform safety rules for transporting dangerous goods by road within the European Community. This directive was amended first by the Directive 2000/61/EC of the European Parliament and the Council of the European Union of 10 October 2000, and then by Commission Directives 2003/28/EC of 7 April 2003 and 2006/89/EC of 3 November 2006. The Regulation (EC) No 561/2006 of the European Parliament and of the Council of 15 March 2006 concerned the harmonisation of certain social legislation relating to road transport, amended Council Regulations (EEC) No 3821/85 and (EC) No 2135/98 and repealed Council Regulation (EEC) No 3820/85.

Specific topic: *Enforcement.*

Type of impact: *indirect*

Contribution to road safety: *low results*

Consistency with other measures: the measure is consistent with the objective of enforcing safety rules (Measure 8).

What remains to be done (ERSAP 2011-2020): examine the possibilities for establishing a proper regulatory framework for the process of harmonisation of penalties for international hauliers.

Measure 14

Amend Directive 91/439/EEC on driving licences in order to introduce in particular minimum standards for car driving examiners and a staged driving licensing system for motorcyclists, trucks- and bus drivers to reduce accident risks among inexperienced drivers.

The new rules introduced by Directive 2006/126/EC aim at reinforcing safety on European roads, at reducing the possibilities of fraud, and at guaranteeing a true freedom of movement for EU drivers through further harmonisation of licences categories. This Directive defines the indicative minimum age for each type of vehicle (article 4), a staging system for drivers between vehicles categories and the equivalences that Member States may grant for driving on their territory (article 7). With regard to mopeds, today no licence is needed in most of the Member States. However, accident figures show a highly increased risk of accident involvement of young road users. The Directive introduces a new harmonised licence category AM and a mandatory theory driving test. The age limit for category AM should be 16 years, but Member States may authorise access from the age of 14 with effect on national territory only. Light motorcycles are limited today to 125 cc and 11 kW. No power to weight ratio is imposed. This could lead to ever lighter vehicles, thus achieving steadily increasing acceleration and top speed possibilities. The Directive introduces a power/weight ratio not exceeding 0.1 kW/kg. All Member States will have to introduce this category of licences which existed in some Member States only. The current category A will be split into two distinct categories: A2 (motorcycles of a power not exceeding 35 kW, a power/weight ratio not exceeding 0.2 kW/kg and not derived from a vehicle of more than double its power) and "A" (other motorcycles). For category A, the Directive increases the progressive access from the age of 21, raising from two to three years the experience which the applicant must have acquired on a motorcycle A2. The driver will also have to pass a specific practical test limited to driving in traffic, with a special focus on driving outside urban areas and on high-speed road infrastructure. For direct access, the minimum age limit is raised from the present 21 years to 24 years. Concerning trailers with B licence, the Directive introduces a clear weight limit rather than a tractor vehicle/trailer ratio. The Directive also amends trucks and buses categories to:

- refer to the number of passengers and not the number of seats (to avoid that a vehicle such as a bus with mainly standing passengers may be driven by a category B or D1 licence holder, instead of a category D licence holder);
- bring the technical requirements for smaller trucks and buses in line with that of the market's vehicles.

All Member States will need to introduce the categories C1 and D1 for motor vehicles with a maximum authorised mass not exceeding 6,000 kg and for motor vehicles with a capacity to transport not more than 16 passengers, allowing for a better distinction between the biggest trucks and buses mostly used for commercial transport (fitted with air break/suspension systems and thus more like smaller lorries) and the smaller ones used for different purposes (generally built on an extended chassis for B vehicles). Categories C1 and D1 are equivalent: they only differ in purposes (transport of goods or transport of passengers) but not in the skills and knowledge needed for driving them. Finally, the Directive sets out the minimum standards which driving examiners have to meet, (article 10 and annex IV), and the minimum requirements for driving test (annex II). Standards on the training and education of driving examiners currently vary widely throughout the Union. In some Member States examiners have almost no specific education or do not even hold the driving licence for the category they are examining. According to the new legislation, driving examiners should:
- have a valid licence for the category they are examining;
- have obtained an initial qualification;
- be obliged to participate in periodic training;
- follow a progressive access in the testing of different vehicles categories.

Specific topic: *Driving education and training.*

Type of impact: *indirect*

Contribution to road safety: *high results*

Consistency with other measures: this measure is consistent with other measures to increase the safety of novice drivers.

What remains to be done (ERSAP 2011-2020): a verification of the implementation at national level and its impact should be carried out after 2013.

Measure 15

Continue work on reviewing, in the light of scientific progress, minimum standards for physical and mental fitness to drive and study the impact of medical examinations on road safety.

Objective: improving road safety by assuring minimum physical and mental standards to drive. The European Commission produced Directive 2009/112/EC of 25 August 2009, amending Council Directive 91/439/EEC on driving licences, in order to harmonise the minimum requirements for fitness to drive at Community level (notably in Annex III of the Directive). The resulting legislation has been prepared by several working groups dealing with the issues concerned, in particular: minimum standards of physical and mental fitness for driving power-driven vehicles; a possible revision of the standards on vision for driving; diabetes and driving, epilepsy and driving; development of an instrument to measure glare sensitivity for driving licence application and the establishment of the relation between glare sensitivity and the degree of visual impairment in a driving situation. Several reports and projects have been produced for these purposes, for instance the report "New standards for the visual functions of drivers", comprising the advice of the Eyesight Working Group to the European Driving Licence Committee for a possible revision of the standards on vision for driving, and the project MEDRIL which had as objective to assess the medical examination for driving licence holders in four EU Member States in order to consider the different models used in Europe.

Duration of the project GLARE: from 1 January 2003 to 21 December 2004.

Duration of the project MEDRIL: from 1 March 2004 to 1 March 2006.

The study regarding diabetes and driving has been carried out in 2006, and the studies regarding epilepsy and visual functions in 2005.
Specific topic: *Driving education and training.*
Type of impact: *indirect*
Contribution to road safety: *low results*
Consistency with other measures: the measure is consistent with the general objective of increasing road safety through a proper revision of the physical and mental requirements for driving and their monitoring over time.
What remains to be done (ERSAP 2011-2020): monitoring the implementation of the Directive 2009/112/EC at national level and continuing the study of the impact on road safety of medical examinations for driving licence holders.

Measure 16

Work towards establishing a scientific approach to learning how to drive and to road safety training, from school age.

Objective: increasing the effectiveness of education for children and teenagers and therefore improving the safety of young drivers.
Description: Numerous studies have shown that a good percentage of accidents may be attributed to insufficient or inappropriate training (TRAIN ALL website).
This issue has been addressed by several projects: the project ROSE-25 (Inventory and Compiling of an European Good Practice guide on road safety education targeted at young people), investigated the situation of road safety education in the EU25. The project TRAIN-ALL (Integrated System for driver Training and Assessment using Interactive education tools and New training curricula for ALL modes of road transport) aims to develop a computer-based training system that integrates multimedia soft ware, virtual driving simulator and on-board vehicle sensors into a single modular platform. The developed tools are being tested and optimised in 11 pilot projects, aiming at products, guidelines, standards, certification and accreditation at pan-European level.The project ROSACE (Road Safety in cities: change road safety education in Europe) aims at creating a new educative approach based on the concept of "street safety education", providing the guidelines and material for specific health-promoting actions in and outside schools. So far, the educational approach of ROSACE has been applied in six pilot projects launched in the schools of six European cities: Athens, Madrid, Rome, Tarragona, Vilnius and Warsaw. The main project partners are experts in child participation and road safety education. Local communities as well are invited to produce their own material to make ROSACE a reality in each of the participating cities. Finally, the project HERMES (High Impact approach for Enhancing Road safety through More Effective communication Skills for driving instructors) has the objective of creating an easy-to-use training package on teacher-trainee communication in classrooms, in cars and on dedicated tracks. A multi-national team of experienced driving teachers, psychologists, educational and coaching experts has been created for this purpose. The project focuses on the importance for driver training programs of developing self-evaluation skills, addressing how factors such as journey contexts and motivations can impact on driving. Drawing on existing experience of coaching and other active learning methods in driver training and on expert advice on coaching, HERMES is expected to produce a training package for driving teachers. The complete package will be tested and evaluated in a pilot project. The project CLOSE TO aims at establishing innovative methods for driving school education. In particular, it studies the applications of the "peer education method", in which "equals relate to equals", and the ways of integrating it into driving education programmes. The objective is confronting young novice drivers with young drivers who have caused traffic accidents: selected young traffic accident offenders will be trained so as to be able to effectively confront beginning drivers with their personal experience as Ambassadors for Traffic Safety.
Duration of the project ROSE 25: from 29 December 2003 to 29 March 2005.

Duration of the project TRAIN-ALL: from 1 November 2006 to 31 December 2009.
Duration of the project ROSACE: from 1 April 2007 to 31 March 2009.
Duration of the project HERMES: from 1 March 2007 to 28 February 2010.
Duration of the project CLOSE TO: from January 2008 to December 2010.
Specific topic: *Driving education and training.*
Type of impact: *indirect*
Contribution to road safety: *high results*
Consistency with other measures: the measure is closely linked with the initiatives related to drivers' behaviour and driving licence, in particular with those addressed to young drivers.
What remains to be done (ERSAP 2011-2020): action on driving education needs to be continued and the results need to be widely applied.

Measure 17

Continue specific work on young drivers and rehabilitation methods to reduce re-offending

Objective: improving the safety of young drivers.

Description: Road accidents are the main cause of violent mortality among young people. Young people between 15 and 24 years are especially vulnerable and account for about 21% of the total number of road fatalities in the EU. In order to reduce the accident risk of young drivers, the Commission acted at different levels. At the legislative level, the EC issued the Directive 2006/126/EC on driving licences in December 2006, which, among others, defines the indicative minimum age for each type of vehicle and a staging system for drivers between vehicles categories aiming at reinforcing safety on European roads (see Measure 14 for more details). At the same time, the Commission promoted several initiatives in the domains of training, education and campaigns. It funded the project YOUTH ON THE ROAD, backed three European Youth Fora for Road Safety. The project YOUTH ON THE ROAD aimed at promoting the participation of young people (up to the age of 24) in road safety actions by creating a platform to promote different initiatives at the local level in 100 European cities. A youth and road safety network involving cultural, social and educational communities directly related to children and young adults was built and a internet website was created to involve young people's associations, parents' associations, cultural or health prevention associations, at local, regional, national and European level. The first European Road Safety Day was held on 27 April 2007 and presented the theme "Young Drivers". During this event, the European Commission took the commitment to host a follow-up meeting dealing with the topic of young people's safety on the roads. More than 400 participants from more than 30 countries attended the Conference to discuss safety issues with regard to young people, focusing on the themes of alcohol and drugs in traffic, and training and education. The European Youth Fora for Road Safety were held in Brussels in July 2007, July 2008 and July 2009. With the 2008 Forum, a network was set up to work together in order to reduce the number of young people killed every year on European roads. Also, six youth associations were given the opportunity to sign the European Road Safety Charter (see measure 4). The second European Youth Forum for Road Safety, held the 9th and 10th of July 2009, brought together young Europeans from 29 countries, specialists, institutions and public and private organisations. Three workshops discussed the issues of two-wheels, youth behaviour and sustainable mobility, and prepared several proposals that will to be sent to institutional representatives. In order to promote these recommendations, a representative from the Forum participated to the Road Safety Conference in October 2009 in Goteborg, and presented them in front of the EU Transportation Ministers. The third European Youth Forum has been held the first of July 2010. Finally, it is worth remembering the project CLOSE TO (see Measure 16), which involves young drivers who caused an accident in an educational process where young people are confronted with coetaneous. Teaching to others ones own mistakes, is likely to help offenders to learn and improve.

Duration of the project YOUTH ON THE ROAD: from 22 December 2003 to 22 December 2005. The European Youth Forum for Road Safety is going to take place every year.
Specific topic: *Driving education and training.*
Type of impact: *indirect*
Contribution to road safety: *medium results*
Consistency with other measures: the measure is consistent with the actions addressed to young drivers, in particular measures 14 and 16.
What remains to be done (ERSAP 2011-2020): a specific focus on young drivers needs to be maintained.

Measure 18

Encourage the general use of crash helmets by all two-wheel motor vehicle users

Objective: increase the safety of the two-wheel motor vehicle drivers.
Description: The main purpose of helmets is to make riding a motorbike safer by reducing the peak and the duration of acceleration of the head by absorbing the energy of a collision.
A legislation project mandating the use of crash helmets was abandoned. Since specific norms already existed in all Member States, there was no need of intervention at the European level, also according to the subsidiarity principle. At present, the implementation of this measure is carried out in the framework of the European Road Safety Charter, with the voluntary agreements undertaken by the signatories. The Motorcycle Industry Association (ACEM) has recently signed a new commitment to the European Road Safety Charter: the "ACEM Promotion and Advertising Guidelines" (ACEM, 2006). The general aim of the commitment is to ensure that all promotion and advertisements show the powered two-wheelers used in a safe and responsible manner, in order to positively influence the attitude of the user. In particular, the manufacturers' advertisement will feature a logo or message recommending that users wear approved helmets, to encourage a responsible behaviour. A review of the available studies on helmets concludes that helmets are effective at preventing or reducing the severity of head injury to motorcyclists who crash by between 69% (MAIDS, 2009) and 72% (TRL, 2007). Moreover, according to a study carried out in Greece (Petridou, Skalkidou, Ioannou, Trichopoulos, 1998), the fatality rate of riders with helmet is 44% lower than for riders without a helmet. The helmet wearing rate for drivers is in most countries well above 90%. Only Greece, Italy and Cyprus, among the countries with available data, present wearing rate for drivers far from the average. More disappointing is the wearing rate for PTW passengers.
Specific topic: power-two wheel.
Type of impact: *direct*
Contribution to road safety: *high results*
Consistency with other measures: the action foreseen by this measure is tightly linked with the actions carried out in the domain of road safety education (Measures 16 and 17). The scope is strongly consistent with Measure 35 (motorcycles' active safety).
What remains to be done (ERSAP 2011-2020): support for the general use of crash helmets needs to be continued in the framework of the European Road Safety Charter and through ad hoc campaigns. The initiatives should target in particular those regions presenting the lowest wearing rates and should take into account the characteristics of the targeted population.

Measure 19

Study the effectiveness of crash helmet use by cyclists in different age groups, as well as the impact on bicycle use and the measures to be taken, where appropriate, at EU level

Objective: improving cyclist safety.
Description: From a number of studies, contradictory evidence emerged about the effectiveness of cycle helmets. Most of the evidence in favour of helmet effectiveness has come from "case control studies", where a group of cyclists with head injuries is compared with one or more groups without. This approach is, however, less reliable than randomized

controlled studies or cohort studies, but the latter have not been used in helmet research for practical reasons, since injuries to cyclists are rare, overall. Sometimes helmets have been found to protect from injuries to the face, sometimes to offer no protection against facial injuries. Some studies found that casualty trends from countries where helmet use has become significant show no reductions in serious or fatal injuries attributable to helmets. In England, an analysis of road traffic injuries found no association between differing patterns of helmet wearing rates and casualty rates for adults or children (Hewson, 2005). A study based in the Lothians in Scotland (Scottish Executive Social Research, 2005) found that although 39% of injured cyclists wore helmets, a much lower proportion (18% in 2001) of Scottish cyclists said they always wore a helmet, suggesting that helmet wearing is associated with a higher risk of injury. A prominent helmet test expert (Walker, 2005) has stated that most helmets are physically incapable of sustaining impacts of the type associated with serious crashes; helmets provide protection only in low impact crashes under favourable circumstances. Helmeted cyclists have been shown to be more likely to hit their heads if they crash and may be more likely to crash in the first place. Thus, helmet use might adversely affect crash involvement or outcome. Risk compensation by cyclists who wear helmets has been confirmed in research (TRL, 1996). In conclusion, cycle helmets are likely to prevent minor wounds to the head, but not serious, life threatening injuries. Moreover, helmet promotion has also been shown to decrease cycle use (TRL, 1997): in all countries where helmet laws have been introduced and enforced, there has been a substantial reduction in cycling. Instead, it seems that the greatest influence on cycling safety is the number of people who cycle (Jacobsen, 2003; Robinson, 2005; Turner, Roozenburg, Francis, 2006): cycling gets safer the more people do it. Conversely, any reduction in cycle use, due to helmets or any other factor, results in reduced safety for cyclists as a whole, including those who decide to wear helmets.
Considering the numerous studies for and against helmets, it seems that the evidence is too ambiguous to take a stand one way or another. It also needs to be considered that, where helmet use is voluntary, the levels of helmet wearing by cyclists are much higher (TRL, 2005).

Specific topic: *Vulnerable road users*

Type of impact: *indirect*

Contribution to road safety: *no results*

Consistency with other measures: in order to finalise this measure, statistics on cyclists accidents need to be improved (in the framework of Measure 59).

Contribution to road safety: *no results.*

What remains to be done (ERSAP 2011-2020): a comprehensive review of the evidence would need to be undertaken on a wider base, improving data collection about cyclists' road accidents. The research should be extended to assess other measures to improve cyclist safety (for example, construction of bike lanes, improving bikers' visibility, etc.). Cyclist associations need to be involved in the policy processes regarding cycling policies and infrastructure management.

Measure 20

The Commission will continue to support EuroNCAP to enable further progress to be made, to raise awareness among and inform consumers and to strengthen the representation of the Member States

Objective: encourage and improve the safety of cars.

Description: The European New Car Assessment Programme (EuroNCAP) is an international association which tests vehicles in order to provide with an accurate and independent assessment of the safety performance of some of the most popular cars sold in Europe. Its main objectives are:

- encouraging significant safety improvements to new car design;
- reactively and proactively encourage the development of new technologies;

- support the safety departments within car manufacturers;
- reducing the number of crash fatalities and accidents on European roads;
- carrying out independent and accurate crash-testing;
- stimulating discussion on safety issues.

Since 2009, EuroNCAP releases an overall rating for each tested vehicle, with assessments in adult occupant protection, child protection, pedestrian protection and safety assist. It also releases information on electronic stability control fitment and results of seats put through rear impact (whiplash) testing. The programme involves legislators, industry, research, consumer organisations and insurers. The European Commission is an observing member of EuroNCAP's board and provides political support. Moreover, DG Research funded several scientific projects for enhancing vehicle testing methods and improving their reliability: the projects ADVANCE, CHILD, HUMOS2, SIBER, ISI-PADAS, THOMO and THORAX.

Established in December 1996, the programme is now backed by seven European Governments (France, Germany, Sweden, United Kingdom, Luxembourg, The Netherlands and the Catalonian part of Spain), the European Commission and motoring and consumer organisations. In February 2009 a new rating scheme was launched. The new overall rating reflects the protection offered to adult and child occupants as well as pedestrians and, for the first time, considers the safety potential of advanced driver assistance technologies such as electronic stability control. Up to September 2009, 245 car models have been tested.

Specific topic: *building stakeholder commitment*

Type of impact: *indirect*

Contribution to road safety: *high results*

Consistency with other measures: the activity of EuroNCAP is consistent with all the measures aiming at increasing passive vehicle safety.

What remains to be done (ERSAP 2011-2020): EuroNCAP - now a sustainable activity - is no longer supported by the Commission. Beyond the standard information on passive safety, the Euro-NCAP scheme should be encouraged to address more and more additional features.

Measure21

Develop a harmonised specification for the installation of audible or visual seat belt reminder systems and promote their universal use by voluntary agreement

Objective: increase the safety of car occupants.

Description: UNECE made a first step in regulating and harmonising the specifications regarding seat belt reminders (UNECE, 2009), but only with regard to the driver's position.

Within the EU, the installation of safety belt reminder systems is being implemented and encouraged by voluntary agreements, notably through the project CARS 21, the commitments taken in the framework of the European Road Safety Charter and the incentive given by the EuroNCAP's assessment of cars safety performance. The research project CARS 21 (A Competitive Automotive Regulatory System for the 21st century) aimed at making recommendations for the short, medium, and long term public policy and regulatory framework for the European automotive industry to enhance global competitiveness and employment while sustaining safety and environmental performance. One of the key aims of the project was to provide regulatory stability and planning certainty for the industry. It examined the major policy areas which impact the competitiveness of the European automotive industry, assessing the possible contribution of the European vehicle industry to the road safety objectives. The Final Report of the project (CARS 21, 2005) affirms that the best means of improving road safety would be to adopt a holistic, integrated approach involving vehicle technology, infrastructure and the driver. Concerning seat belt reminders, it encourages the adoption of this vehicle technology measure in all new vehicles.

Duration of the project CARS 21: from 13 January to 12 December 2005.

In June 2008, the EU Commission launched the CARS 21 mid-term review process (CARS21, 2008) to evaluate the progress made, assess the state of play, and consider whether any changes are necessary to the existing regulatory framework in the light of the experience. In May 2009, the UNECE Regulation 16 adopted uniform technical prescriptions for wheeled vehicles, providing uniform provisions concerning the approval of seat belt reminders.

Specific topic: *Vehicle occupants protection*

Type of impact: *direct*

Contribution to road safety: *high results*

Consistency with other measures:

Consistency with other measures: the scope of this measure is consistent with the actions carried out in the framework of Euro NCAP (Measure 20) and of the European Safety Charter (Measure 4).

What remains to be done (ERSAP 2011-2020): UNECE recently made a first step in defining the approval of a seat belt reminder system, but only for the driver. From a European perspective, a higher level standard could be justified. The seat belt reminder provisions of this regulation could be used as a basis for a European regulation that includes the front passenger seat and, in a second phase, the rear seating positions.

Measure22

Introduce universal anchorage systems for child restraint devices

Objective: increase the safety of children in the car.

Description: The legislative framework for a definition of the anchorage systems for adult passengers is set by the following three Directives:

- Directive 2005/39/EC relates to motor vehicles with regard to the seats, their anchorages and head restraints. It bans the use of side-facing seats in passenger vehicles.
- Directive 2005/40/EC relates to seat belts and restraint systems.
- Directive 2005/41/EC relates to anchorages for safety belts.

However, there is no legislation relating specifically to universal anchorage systems for child restraint devices. Many child restraint users fail to attach the child restraint securely to the car and this compromises the protection afforded to the children. This is why there is the need for a definition of universal systems for the anchorage of children. The Euro NCAP has encouraged improved designs and the fitment of ISOFIX mounts and child restraints, which provide a much more secure method of attaching the child restraint to the car, since additional provision is made to prevent rotation of the child restraint. As a consequence, Euro NCAP has seen improved designs, where the child is less likely to strike the car's interior, whilst at the same time experiencing reduced forces from the restraint system. The improvement of child restraint devices is also supported by voluntary agreements promoted through the European Road Safety Charter. The general installation of universal anchorage systems for child restraint devices is to be made compulsory by a Directive, but at present there is not any proposal in this respect.

Specific topic: *vehicle occupant protection*

Type of impact: *direct.*

Contribution to road safety: *medium results*

Consistency with other measures: the scope of this measure is tightly linked with the implementation of Measure 55.

Measure 23

Improve cars to reduce the severity of accidents involving pedestrians and cyclists

Objective: increase the safety of pedestrians and cyclists.

Description: The EC Directive 2003/102/EC introduced pedestrian protection requirements for the construction of motor vehicles, in order to reduce the number and severity of injuries to pedestrians and other vulnerable road users. It sets the procedure for type-approval of vehicles in two stages, with the injury limits for stage 2 more stringent than those of stage 1.

Since many vehicle manufacturers were of the opinion that compliance with the stage 2 limits was not feasible, a review clause was concluded in 2007, proposing a number of relaxations to the stage 2 limits. To offset these relaxations and to ensure that the reductions in pedestrian fatalities and injuries were still achieved, the European Commission proposed mandating the fitment of Brake Assist systems (systems designed to sense an emergency braking situation and assist the driver in achieving the maximum achievable deceleration in the prevailing conditions), which have been shown to have significant benefits in terms of pedestrian protection. The EC Directive 2005/66/EC laid down technical requirements for the type-approval of motor vehicles as regards frontal protection systems. The Directives 2003/102/EEC on pedestrian protection and 2005/66/EC on frontal protection systems were replaced by the new EC Regulation 78/2009 on pedestrian protection, adopted on 14 January 2009. In the new Regulation:

- The scope is extended to cover vehicles exceeding 2.500 kg.
- Requirements for the mandatory fitment of brake assist systems are introduced.
- The limits for stage 2 tests are reduced.

Uniform technical requirements for wheeled vehicles are also prescribed, for certain vehicle categories, by the UNECE Regulation 13, which, among others, defines the key concepts relating to the braking systems. At present, it is being revised to include a norm about assisted emergency braking systems. Besides the legislative actions, two research projects have been funded by the Commission in this domain within the framework of the IST programme:

- The project SAVE-U (Sensors and system architecture for vulnerable road users protection), which developed an innovative sensor platform for an optimised vulnerable road user detection implementing driver warning and vehicle control strategies to avoid, or at least minimise, the impact of a crash.
- The project WATCH-OVER, whose goal was the design and development of a cooperative system for the prevention of accidents involving vulnerable road users in urban and extra-urban areas based on short range communication and vision sensors. Finally, pedestrian protection has received additional weight within the new Euro NCAP rating scheme (see Measure 20), which provides a strong incentive for the voluntary implementation of vehicle safety measures. The new overall rating, which includes pedestrian protection, forces car-makers to improve pedestrian protection if they want to receive 4 or 5 star ratings in the future. Duration of the SAVE-U project: from 1 March 2002 to 30 September 2005.

Duration of the WATCH-OVER project: from January 2006 to December 2008.

Regarding the application of the Regulation 78/2009, the timetable for varies in function of the vehicles type from 24 November 2009 to 24 August 2019. By 24 February 2014, the Commission shall review the feasibility and application of these enhanced passive safety requirements and the functioning of this Regulation with regard to the use and effectiveness of brake assist and other active safety technologies.

Specific topic: *vulnerable road users*

Type of impact: *direct*

Contribution to road safety: *high results*

Consistency with other measures: the scope of this measure is consistent with the actions carried out in the framework of Euro NCAP (Measure 20) and with the research in the domain of the eSafety initiative.

What remains to be done (ERSAP 2011-2020): the research on new technologies and on a more effective car design to reduce the severity of accidents involving pedestrians and cyclists needs to be deepened.

Measure 24

Study the causes of and ways of preventing whiplash injuries

Objective: reducing the severity of car accidents.

Description: Neck injuries resulting from car crashes, or whiplash associated disorders, are a serious traffic safety issue with huge costs for the individual as well as for society. It is recognised that important progress in neck injury mitigation could be achieved by improving the use, design and efficiency of seats and head restraints in vehicles. To this aim, the European Enhanced Vehicle-safety Committee (EEVC) carried out several studies concerning whiplash injuries in order to support the development and enhancement of European safety standards and legislation. A dedicated working group (WG20) was formed with the aim of developing test procedures for rear-end collisions, with a prime focus on neck injury reduction. The specific activities to be carried out by WG20 are:
1) developing a static test of head restraint geometry;
2) developing a dynamic test of head restraint geometry;
3) developing a dynamic injury prediction test procedure;
4) contribute to the Global Technical Regulation Informal Working Group on head restraints.
Moreover, there are studies funded in the framework of other research projects, such as the project Whiplash I & II and the project ADSEAT (adaptive seat to reduce neck injuries for female and male occupants). The Whiplash I project (reduction of neck injuries and their societal costs in rear end collisions) developed a test and design method for whiplash protection. However, this method considers the loading phase of rear-end collisions only. The project was followed by Whiplash II (Development of new design and test methods for whiplash protection in vehicle collisions), aiming at minimising the incidence and risk of neck injuries in frontal and oblique impacts as well as in the rebound phase of a rear-end collision, and at integrating this with the recently developed methods for the loading phase of rear-impact collisions. The objective was reducing the risk and costs of low-severity neck injuries in car collisions by at least 40% by means of the introduction of safer vehicle designs.
The study Multi-disciplinary Design Optimization of Adaptive Vehicle Safety Systems for Whiplash Associated Disorders (MDO-WAD), funded under the Sixth Framework Programme, proposed to develop a design methodology incorporating the contribution of vehicle design factors (such as vehicle structural characteristics, seat geometry and material, etc.) to all four phases (retraction, extension, rebound and protraction) of whiplash, and to optimise vehicle safety, minimizing injury potential. Also, the adaptability of the safety system to occupant size and gender is one of the major project undertakings. The project ADSEAT, funded under the Seventh Framework Programme, aims at evaluating adaptive anti-whiplash systems in particular for females. In fact it emerged that this part of the population is at higher risk than males for these injuries (the difference in risk is between 40-100%), but when assessing the vehicle safety the only available occupant model for these impact scenarios is an average male. Its objective is to establish the properties for a model of an average female and to implement those in a computational model for low severity testing, in addition to the male model that already exists. Finally, since January 2009, rear impact tests and whiplash rating have been introduced in the new EuroNCAP rating system in the Adult Protection score.
Up to now, the EEVC working group has been working on the first assignment.
Duration of the project Whiplash II: from 1 March 2001 to 31 August 2004.
Duration of the project MDO-WAD: from 1 April 2007 to 31 March 2009.
Duration of the project ADSEAT: from 1 October 2009 to 31 March 2013.
Specific topic: *vehicle occupants' protection*
Type of impact: *indirect.*
Contribution to road safety: *medium results*
Consistency with other measures: the results of the research on whiplash injuries will enable further progress in vehicle design and in the testing activity of Euro NCAP (see Measure 20).

What remains to be done (ERSAP 2011-2020): EuroNCAP has introduced an evaluation of the efficiency of whiplash protection systems. The automotive industry should translate into action the outcomes of research, once finalised.

Measure 25

Support the development of smart restraint systems.

Objective: improving safety of car occupants.

Description: Traditional safety belts and air bags are set up to provide protection by deploying in a fixed manner. Advanced restraint systems, on the contrary, consider variables such as occupant weight, seating position, safety-belt usage and vehicle deceleration to control belt forces and deploy the air bag optimally. For example, many new air-bag systems are designed to not deploy into unoccupied seating positions or when an occupant is out of the normal seating position and to fill at different speeds and to different volumes. The PRISM project (Proposed Reduction of car crash Injuries through improved SMart restraint development technologies) was designed to facilitate the efficient and effective development of smart restraint systems for Europe. The project, funded under the Fifth Framework Programme and involving industrial and academic partners from five European countries, was set up to assess the potential benefits of smart systems in real world situations and to develop guidelines for the future testing of such systems. The testing and evaluation of smart restraint systems is not taken into account by the Euro NCAP rating system yet.

Duration of the project PRISM: from 12 January 2002 to 3 September 2005.

Specific topic: *vehicle occupants' protection.*

Type of impact: *indirect.*

Contribution to road safety: *medium results*

Consistency with other measures: the results of the research on smart restraint systems will enable further progress in vehicle design. The aim is consistent with the general objective of increasing the car occupants' safety.

What remains to be done (ERSAP 2011-2020): research should be deepened and the application of the results should be supported in collaboration with the automotive industry. The testing of smart restraint systems, once installed in the majority of vehicles, could be included in the EuroNCAP rating system

Measure 26

Adapt to technical progress the front, side and rear-end impact directives for lorries to limit vehicle under-run, and introduce energy absorption criteria.

Objective: reducing the severity of truck accidents. Due to the size and mass of heavy good vehicles, the problem of compatibility with occupants of other vehicles and vulnerable road users is a main issue. EU requirements have been introduced in the past mandating front, rear and side under-run protection for trucks with a gross weight over 3.5 tonnes (Directives 2000/40, 70/221 and 89/297 respectively). The intention of amending those Directives in the light of the reached technical progress and to introduce the concept of energy absorption criteria has seen a stop because of the success of voluntary industry implementations in the framework of Euro NCAP. Of particular interest is the development of the "soft nose" concept for heavy goods vehicles that is being studied by the Commission. The "soft nose" is a safety measure designed to absorb the energy of the impact in case of trucks collisions.

Suggestions for improving rear and side under-run safety were also developed in the framework of the project VC Compat (see Measure 27 for details), which studied test procedures regarding car-to-truck impact to assess and control truck frontal structures for frontal impact compatibility with cars. The project APROSYS (Advanced Protection Systems) contributed also to the development of protection systems for front and side impacts involving heavy trucks.

Duration of the project APROSYS: from 1 January 2004 to 1 December 2009.

Specific topic: *vehicle crash compatibility*

Type of impact: *direct*
Contribution to road safety: *medium results*
Consistency with other measures: the aim is consistent with the general objective of reducing the severity of the consequences of accidents involving trucks.
What remains to be done (ERSAP 2011-2020): the existing legislative framework for front, side and rear-end protection should be adapted in light of the results achieved by the research.

Measure 27

Make vehicles more compatible

Objective: improving car occupant safety.
Description: Traffic related accidents are still a major issue: in 2007, more than 42.000 people died on the roads and over 1.2 million of accidents caused personal injuries (CARE data). Of those fatalities, about 80% are car occupants fatalities, with small deviations per country[11], and 50-60% of those (i.e. 15.000 people) die in car-to-car or car-to-truck collisions. Therefore, there remains much potential benefit for improving vehicle crash compatibility (described by the self protection level and the structural interaction) and car occupant safety.
Two research projects funded by the Commission have specifically addressed the issue of vehicle compatibility. The project VC-COMPAT (Improvement of Vehicle Crash Compatibility through the Development of Crash Test procedures), funded under the Fifth Framework Programme, aimed at developing crash test procedures regarding car-to-car and car-to-truck impact, in order to lead to an improvement in vehicle crash compatibility.
It accomplished the following specific tasks:
- drawing up a suite of draft test procedures and associated performance criteria;
- building a framework for a crash compatibility rating system;
- improving the understanding for vehicle crash compatibility with general recommendations for the design of compatible cars;
- identifying the benefits and costs of improved compatibility for both cars and trucks.

Taking into account the VC-COMPAT project activities, the project FIMCAR deepened the research, testing different approaches for the assessment of compatibility. Both are composed of an off-set and a full overlap test procedure. In addition another approach (tests with a moving deformable barrier) is getting more and more in the focus of present research programmes. Within this project different off-set, full overlap and MDB test procedures are analysed in order to propose a compatibility assessment approach which will be accepted and shared by the involved industry and research organisations. The development work will be accompanied by harmonisation activities to include research results from outside the consortium and to early disseminate the project outcomes. Beside the research carried out in the projects mentioned above, an important incentive for implementing technical measures aimed at vehicles compatibility comes from EuroNCAP, which tests each vehicle simulating car-to-car frontal and side impacts. A test to assess car-to-truck impacts has not been developed in the framework of Euro NCAP yet. Calculated on EU27 CARE data, excluding BG, LT, RO, SI, SK (not available).
Duration of the project VC-COMPAT: from 1 March 2003 to 1 March 2006.
Duration of the project FIMCAR: from 1 October 2009 to 30 September 2012.
Specific topic: *vehicle crash compatibility*
Type of impact: *direct*
Contribution to road safety: *high results* - Concerning car to car impact, it is estimated (VC-COMPAT, 2007) that improved frontal compatibility could save between 721 and 1.332 lives

[11] Calculated on EU27 CARE data, excluding BG, LT, RO, SI, SK (not available).

and could reduce seriously injured casualties between 5.128 and 15.383 per year in the EU15[12].

Consistency with other measures: the scope of this measure is consistent with the action carried out by EuroNCAP.

What remains to be done (ERSAP 2011-2020): de measure should be continued.

Measure 28

Examine the impact on road safety of the proliferation of 4x4s, sports utility vehicles and multi-purpose vehicles

Objective: support policy-making.

Description: The number of 4x4s, multi-purpose vehicles (MPV) and sport utility vehicles (SUV) is growing. For example, in western Europe (EU15 and EFTA countries) the share of 4x4 in new car registrations has been significantly growing since the end of the Nineties, from about 3% of all the cars registered in 1997 to about 10% in 2007 (ACEA statistics[13]). Between 2008 and 2009 this share showed a reduction to 8% reasonably attributable to economic slowdown, but it can be expected to increase again once consumers' confidence recovers. The issue is that the safety and environmental performance of these vehicles are not in line with modern European passenger cars. According to a recent study conducted in the US (Insurance Institute for highway safety, 2007), cars almost always have lower death rates than pickups or SUVs. A first contribution to the analysis of the impact on road safety of 4x4s, sports utility vehicles and multi-purpose vehicles was developed in the framework of the project ROLLOVER (Improvement of rollover safety for passenger vehicles), funded under the Fifth Framework Programme. The project aimed to develop effective rollover systems in a cost efficient manner in order to provide increased occupant safety. It covered various types of rollover accidents, including injury mechanisms and protection methods, targeting passenger cars, SUV, MPV and Minivans. The main results have been an electronically rollover database and the categorization on rollover scenarios, best practice instruction for numerical and experimental test methods and a physical demonstrator on rollover occupant safety. Later on, the Commission funded a research project specifically addressed to the aim of this measure. The project IMPROVER (Impact Assessment of Road Safety Measures for Vehicles and Road Equipment), and in particular the Subproject 1, examined the impact on road safety (and the environmental issues) due to the increasing use of sports utility and multi-purpose vehicles.

Duration of the project ROLLOVER: from 1 July 2002 to 30 June 2005.

Duration of the project IMPROVER: from 23 November 2004 to 23 May 2006.

Specific topic: *vehicle crash compatibility*

Type of impact: *indirect*

Contribution to road safety: *low results*

Consistency with other measures: the scope of this measure is strictly linked with the enhancement of vehicle compatibility (see Measure 27). The research implementation is closely connected with the studies carried out in the framework of Measure 56 (examine the impact of the growing use of small commercial vehicles and company vehicles).

Outcomes

The research carried out within the project IMPROVER (IMPROVER, 2006) showed that there is a higher safety risk with SUVs in collisions with other road users as compared to collisions between other passenger cars and other road users. Instead, there are no distinctive trends observable for the MPV car category. The source of this higher safety risk in road accidents is the misalignment of crashworthy structures, significant mass differences between

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12 Analysis based on UK and German accident data only.

13 ACEA does not provide specific data for SUVs and MPVs categories.

the SUV and the other vehicles, and incompatible structural stiffness. Besides the safety aspects, there is concern that SUVs and MPVs might have a poorer environmental performance than other cars.

What remains to be done (ERSAP 2011-2020): the increase of SUVs and MPVs in the EU countries should be further monitored and investigated. To this end, a clear distinction between passenger cars and SUVs in sales numbers would be helpful.

Measure 29

Examine the wide-scale use of daytime running lights on all vehicles

Objective: assessing the use of daytime running lights on vehicles in Member States.

Description: In 2006 there were fourteen European countries with mandatory use of daytime running lights (DRL). Some Member States recommend the use of DRL and are waiting for harmonised European legislation. The consultation paper "Saving Lives with Daytime Running Lights" (EC, Directorate General for Energy and Transport, 2006) sought views on the mandatory use and the installation of automatic dedicated DRL on all motor vehicles (also trucks and busses, mobile machinery, small four-wheeled vehicles, tractors, etc.) in circulation on EU roads. The report "Road Safety Performance Indicators: Theory" (Hakkert et al, 2007) provided details about the theory behind the development of safety performance indicators (SPIs) in seven predefined road safety domains, including daytime running lights (DRL). The report "Safety Performance Indicators for Daytime Running Lights: Theory Update" (Hollo P., Gitelman V., 2008) presented an update to the basic SPIs theory report, in part concerning the development of the DRL SPIs. This report summed up the general theory behind the development of the DRL SPIs, including a more detailed insight into the reported effects of DRL on vulnerable road users (pedestrians, two-wheelers). It is noteworthy to mention the European Commission Directive 2008/89 which amended, for the purposes of its adaptation to technical progress, the Council Directive 76/756/EEC concerning the installation of lighting and light-signalling devices on motor vehicles and their trailers. At the basis for Directive 2008/89 there were the results of the project DRL, funded by DG TREN and carried out from 1 January 2003 to 1 January 2004.

State of implementation

The EC consultation paper was carried out in 2006, the report "Safety Performance Indicators for Daytime Running Lights: Theory Update" in 2008. Directive 2008/89[14] has been emanated on the 24 September 2008 with effect from 7 February 2011.

Specific topic: *Active safety of vehicles*

Type of impact: *indirect.*

Contribution to road safety: *medium results*

Consistency with other measures: this measure is connected with Measure 30 and 31 aimed at improving the visibility of the vehicles.

Outcomes

The conclusions of the EC consultation paper can be summarised as follows:

- Research indicates that DRL could help saving between 1.200 and 2.000 lives per year on EU roads. From an environmental and technical as well as from a road safety point of view, there is a strong case for moving forward with a technical requirement to equip all vehicles with automatic dedicated daytime running lights.
- In order to deploy the positive effects of DRL as quickly and thoroughly as possible, consideration should also be given to a user requirement to use dipped-beam headlights or retrofitted dedicated DRL even without an automatic switch and light sensors.
- In order to provide for necessary flexibility, a legislative initiative on DRL could foresee a fixed date for the transposition of the technical requirement to install automatic dedicated

[14] OJ L 257, 25.9.2008, p. 14–15.

DRL on new vehicles and an appropriate period of time to transpose the user requirement for existing vehicles. The conclusions of the report "Safety Performance Indicators for Daytime Running Lights: Theory Update" are:
- Based on the literature review and recent experiences of several European countries, it can be stated that DRL can contribute to the improvement of road safety. There is no scientific evidence for the frequently mentioned negative effects for vulnerable road users (pedestrians, cyclists or motorcyclists).
- The widespread introduction of DRL could be optimal if the behavioural measures for older vehicles are coincided with the installation of an advanced DRL unit on new cars. This would result in a combination of accident casualty reduction and reduced vehicle emission, especially when LED lamps are used. However, vehicle requirements can only be introduced at the EU level.
- The DRL SPIs are defined as the percentage of vehicles using daytime running lights, where the value is estimated for different road categories and for different vehicle types. The background information on the DRL legislation is essential for a correct interpretation and comparison of the results. For example, comparing the countries' DRL usage rates it is reasonable to take into account whether the countries have a law/ regulation on obligatory use of DRL and if they do, when and where.
- Besides, in countries where automatic DRL was introduced a long time ago (e.g. Sweden, Norway) current DRL usage rate is close to 100%, thus the DRL usage rate as a behavioural safety performance indicator does not have practical implications any more. In general, once the option of automatic DRL is introduced Europe-wide, the DRL indicators will lose their importance as an indicator of safety performance. Directive 2008/89 introduces the obligation for fitting dedicated daytime running lights on motor vehicles in order to increase road safety by improving the conspicuity of these vehicles. As the Directive 2008/89 addresses only the new vehicles, the impact of this measure depends on the renewal of the EU vehicle fleet.

What remains to be done (ERSAP 2011-2020): possible solutions regarding the conspicuity of older vehicles could be investigated.

Measure 30

Improve the visibility of heavy duty vehicles

Objective: increasing safety performances of HGVs.

Description: Crash investigations show that nearly 5% of severe truck accidents can be traced back to poor conspicuity of the truck or its trailer at night. These accidents can be characterised by the fact that car drivers often fail to recognise trucks or truck combinations driving ahead of them. In most cases trucks are in slow motion, are entering the road or are turning off the road. Different studies showed that trucks can be rendered much more conspicuous by marking their sides and rear using retro reflective marking tape. Conspicuity marking tape is a high performance retro reflective tape which reflects most of the light falling onto it back towards the light source. The study "Conspicuity of Heavy Goods Vehicles" recommends equipping the side and rear of vehicles heavier than 3.5 tons with a contour marking covering at least 80% of each side and with a line marking when contour marking is impossible. The study also recommends equipping all new vehicles with contour markings and, for the existing vehicle fleet, a transition period for retrofitting of at least six years. According to the study, this would save 165 lives, 857 serious injuries and 1.836 light injuries per year in the EU-15, which would represent a saving of 390 millions euro.

In order to increase road safety by improving the conspicuity of large trucks and their trailers, the European Commission emanated the Directive 2007/35[15] which amended, for the

[15] OJ L 157, 19.6.2007, p. 14–16.

purposes of its adaptation to technical progress, Council Directive 76/756/EEC concerning the installation of lighting and light-signalling devices on motor vehicles and their trailers.
The results of project CONSPICUITY, funded by DG TREN and regarding the conspicuity of heavy good vehicles, have been the basis for the Directive 2007/35. It is worth to mention also the project CLARESCO, funded by DG RTD, aimed at improving traffic safety and truck and car drivers' comfort during night time driving.
Directive 2007/35 was emanated on the 18 June 2007 with effect from 10 July 2011.
Duration of the project CLARESCO: from 1 June 2002 to 31 May 2005.
Duration of the project CONSPICUITY: from 1 December 2003 to 1 December 2004.
Specific topic: *accident prevention*
Type of impact: *direct*
Contribution to road safety: *medium results*
Consistency with other measures: the measure is consistent with Measure 29 as it aims to improving the visibility of vehicles, in particular of heavy duty vehicles.
Outcomes
The Directive 2007/35 introduced the obligation for fitting retro reflective marking on large trucks and their trailers vehicles. Project CLARESCO provided for safety, ergonomics and comfort recommendations concerning new lighting technologies for truck and car.
In 2004, the European Commission has commissioned a study (TÜV Rheinland, Conspicuity of Heavy Goods Vehicles) which indicates a positive benefit-cost ratio (between 2 and 4) when the tape is applied to new goods vehicles with a gross vehicle weight exceeding 3.5 tons. The highest benefit-cost ratio was achieved for vehicles exceeding 12 tons. This is due to the fact that larger goods vehicles are above-average involved in accidents compared to their share in the vehicle stock.
What remains to be done (ERSAP 2011-2020): monitoring the implementation of Commission Directive 2007/35 at national level.

Measure 31

Eliminate blind spots towards the rear for drivers of heavy duty vehicles
Objective: increasing safety performances of HGVs.
Description: A number of accidents are caused by drivers of heavy goods vehicles who are not aware that other road users are very close to or beside their vehicle. These accidents are often related to a change of direction at crossings, junctions or roundabouts when drivers fail to detect other road users in the blind spots which exist in the area immediately around their vehicles. It is estimated that every year about 400 people in Europe are killed in such circumstances, most of them being vulnerable road users such as cyclists, motorcyclists and pedestrians. Directive 2003/97/EC[16] 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, whilst having great potential for reducing the number of casualties, affects only newly registered vehicles. In particular according to this Directive since 2006 new vehicle types and respectively since 2007 new vehicles can only be granted approval by the Member States' authorities if they are equipped with a set of mirrors and other systems of indirect fulfilling certain requirements in order to reduce their blind spots. For purposes of adaptation to technical progress, Directive 2003/97/EC was amended by Commission Directive 2005/27/EC of 29 March 2005. Directive 2007/38/EC[17] of the European Parliament and of the Council regards vehicles which were already in circulation and are therefore not subject to the obligations set out in Directive 2003/97/EC. The project MIRRORS constituted the basis for

[16] OJ L 25, 29.1.2004, p. 1–45.
[17] OJ L 184, 14.7.2007, p. 25–28.

Directive 2007/38/EC. In fact the objective of the study was to assess the consequences of extending the legislation regarding blind spot mirrors not only to new vehicles, but also to the existing ones.

State of implementation

Directive 2007/38/EC was emanated on 11 July 2007 with effect from 6 August 2007 and not later than 31 March 2009.

Duration of project MIRRORS: from 1 December 2003 to 1 June 2004.

Specific topic: *accident prevention*

Type of impact: *direct.*

Contribution to road safety: *medium results*

Consistency with other measures: this measure is consistent with all the active safety actions aimed at making easier the driving task and helping drivers to face dangerous road situations.

Outcomes

In the framework of project MIRRORS a cost-benefit analysis of blind spot mirrors was carried out. The main recommendation of the analysis was to introduce a legislation for the retrofitting of mirrors for both new and existing heavy good vehicles as soon as possible in order to obtain the maximum benefit. Directives 2003/97/EC and 2007/38/EC introduced the obligation for the retrofitting of mirrors to heavy good vehicles registered in the European Community. In the EC consultation paper "Fitting blind-spot mirrors on existing trucks" of 2006 it was estimated that if a legal retrofitting obligation had entered into force by 2008 for the relevant heavy goods vehicle population in operation since 1998, an extra 1.300 lives on European roads would have been saved until 2020.

What remains to be done (ERSAP 2011-2020): monitoring of the correct implementation of Directives 2003/97/EC and 2007/38/EC. Ensuring that the roadworthiness tests check the correct positioning of mirrors. Investigating the possible difficulties of drivers to use the mirrors.

Measure 32

Assess measures to reduce tyre-related accidents

Objective: increasing safety performances of vehicles.

Description: During last year EC proposals regarding issues related to tyres were carried out. In particular the EC proposal COM (2008)316 concerns type-approval requirements for the general safety of motor vehicles. The general objective of such a proposal is to lay down harmonised rules on the construction of motor vehicles with a view to ensuring the functioning of the internal market while at the same time providing a high level of safety and environmental protection. The proposal aims at enhancing the safety of vehicles by requiring the mandatory fitting of some advanced safety features. In addition, the EC proposed a legislative measure on consumer information concerning the labelling of tyres with respect to fuel efficiency and other essential parameters. This has resulted in Regulation (EC) 1222/2009 of the European Parliament and the Council on the labelling of tyres with respect to fuel efficiency and other essential parameters[18]. Such a labelling scheme for tyres at EU level aims to respond to the suboptimal market transformation towards fuel efficient tyres arising from lack of information. It would allow consumers to make an informed choice, give incentives to tyre manufacturers to upgrade their products and contribute to awareness-raising. It is also noteworthy to mention the project APOLLO whose goal was to create an intelligent tyre for improving road traffic safety. The objectives were met by integrating innovative sensors into tyres for monitoring tyre condition, road condition and tyre-road condition, developing new solutions for wireless communication between tyre and vehicle and a battery-less power

[18] OJ L 342/46.

supply, constructing an "intelligent" system by integrating all electronic components. Other projects to be mentioned are the project TYROSAFE (TYre and Road surface Optimisation for Skid resistance And Further Effects) and the project ITARI (Integrated Tyre and Road Interaction), regarding the implementation of new road surfaces.
The proposed EC measures are scheduled to take effect by year 2012.
Duration of the project APOLLO: from 1 March 2002 to 31 May 2005.
Duration of the project ITARI: from 1 February 2004 to 31 January 2007.
Duration of the project TYROSAFE: from 1 July 2008 to 30 June 2010.
Specific topic: *accident prevention*
Type of impact: *indirect*
Contribution to road safety: *no results*
Consistency with other measures: This measure is consistent with the general aim of increasing road safety through the improvement of the driving conditions of the vehicles.
Outcomes
The minimum requirements governing rolling resistance, wet grip and external rolling noise provided in the EC Regulation 1222/2009, in force as of November 2012, would guarantee standard levels of tyre quality, while further improvements above these levels would be driven by the labelling scheme present in the other mentioned EC proposal.
The main outcome of the project APOLLO is a novel, innovative and verified prototype of an intelligent tyre system consisting of a tyre, an integrated sensor system, a wireless communication interface and a battery-free power supply.
Contribution to road safety: *no results.*
Description of the impact: if directives based on the described proposal were carried out and "intelligent" tyres were used, the impact on road safety could become relevant.
What remains to be done (ERSAP 2011-2020): the measure could be continued, monitoring the way in which the information is provided to car users.

Measure 33

Examine driver impairment detection devices, e.g. alcohol ignition interlocks ('alcolocks') and driver fatigue detectors

Objective: increasing road safety by avoiding impaired people to drive.
Description: The Project ALCOLOCK - Alcolock implementation in the European Union had the aim to assess the practical, psychological, social and behavioural impact of alcolocks (alcohol activated vehicle immobilizer) by interviewing the drivers about their experience.
The ALCOLOCK project started in 2004 and ended in 2006. Nowadays the technology for driver impairment detection devices is to be considered not sufficiently mature.
Outcomes: Regarding the project ALCOLOCK, the European trials showed that it is feasible to implement alcolocks in different commercial and non-commercial contexts, but that a careful preparation of the inclusion process and the follow-up procedures is necessary. Due to the limited number of participants and contexts in which the devices were presently tested, these results and conclusions obviously need further confirmation in future research. The most important conclusions regarding the impact of the alcolock on the various dimensions studied are that:
- Alcolocks appear to be relatively practicable in both commercial and non-commercial contexts. Within the study very few technical problems were encountered in any of the three commercial trials, whereas technical malfunctions of the devices occurred relatively frequently in the non-commercial trials. The most important conclusion regarding the practical impact of the devices is that the majority of the drivers found it easy or very easy to use the alcolock and experienced little or no hindrance from the device. In this respect, it needs to be underscored, however, that the programme requirements were less strict in the non-commercial trials. It still needs to be tested whether the use of alcolocks with optimal

circumvention prevention features would still be experienced as equally usable by professional drivers.
- The general acceptance of alcolocks was good or very good in both commercial and non-commercial trials and remained high throughout the entire twelve months of the trial. The impact of the alcolocks on psychological aspects such as drinking habits or drink-driving attitudes was very difficult to assess with the present methodology. From the non-commercial trials there were indications that the alcolock programme had a positive impact on the drivers intentions, but no clear indications that the alcolock had a decisive impact on the driver's actual behaviour.
- Regarding the behavioural impact of the alcolock, the most striking difference between the commercial and non-commercial trials was the incidence of positive breath tests. In the commercial trials relatively few positive tests were recorded and almost all these tests seem to be due to deliberate tests of the device. All together the differences in the occurrence of positive tests seem mainly due to the procedures used to assure the follow-up of the results.
- Regarding the social or sociological impact of the alcolocks, the truck drivers' clientele appeared in general rather indifferent towards the alcolock, whereas bus passengers had a generally positive attitude towards the devices. This confirmed the hypothesis that alcolocks may be marketed as an element of quality improvement. Contrary to the commercial trials, the privacy infringing aspect of the alcolock is perceived as a crucial disadvantage of the alcolock by offenders and alcohol dependent participants.
- An additional review of the literature revealed the most important factors influencing acceptance, implementation, participation and compliance. These factors should also be taken into account when implementing large-scale alcolock programmes in Europe. From the similarities and differences between commercial and non-commercial contexts for alcolock implementation, it became clear that the impact of the alcolocks depends on the specific circumstances in which the alcolock is used. With respect to these circumstances, the commercial or non-commercial character is only one element. The specific programme conditions that are defined for the alcolock users, the specific procedures used to follow-up the test-results and the possible circumventions, the specific consequences of all the possible events and the specific social or commercial environment and society in which the alcolock is used, are equally important factors determining the impact of the alcolock. All these factors will have to be taken into account in future commercial and non-commercial alcolock applications in Europe.

Effectiveness: *low.*

According to FIA, systems currently developed can easily be circumvented.

Specific topic: ***impaired driving***

Type of impact: *indirect*

Contribution to road safety: *no results*

Consistency with other measures: this measure is consistent with the other measures addressing the issue of impaired driving (Measures 12 and 49).

What remains to be done (ERSAP 2011-2020): the measure should be continued. Alcolocks could be used for very specific targets, as in commercial transport or for young novice drivers.

Measure 34

Examine national trials of intelligent speed adaptation devices and assess their acceptability to the public

Objective: researching to increase active vehicle safety.

Description: In-vehicle speed information and warning system can contribute to improved road safety by:
- increasing drivers' awareness of speed limits and speed recommendations, both static and variable (according to dynamic environmental conditions such as weather, traffic, road conditions, etc.);

- reducing the number of vehicles with non-adapted speed and consequently reduce the number of speed-related accidents, especially in speed-sensitive locations with vulnerable users, as urban areas;
- providing system solutions to support the implementation of intelligent speed limits that will contribute to maximising traffic flows on existing infrastructure by dynamically adapting speed limits. In order to investigate the first priority issues to be addressed at the European level in the domain of intelligent speed adaptation devices, the European Commission launched the project SpeedAlert (Harmonising the in-vehicle speed alert concept definition).
The specific objectives of the study on speed warning systems were:
- establishing a common classification of speed limits in Europe relevant to system;
- defining the system and service requirements of in-vehicle speed alert system;
- defining functional specification;
- harmonising definition of speed alert concepts;
- identifying requirement for standardisation.
The project saw the participation of key stakeholders from public and private sectors.
With regard to the assessment of the public acceptance of intelligent speed adaptation (ISA) systems, the SARTRE survey (SARTRE, 2004) illustrated that around a quarter of the European drivers believes that it is "very useful" to have a device that restrains you from exceeding speed limits, just a bit lower than for devices preventing drink-driving and driving when fatigued. Moreover, to assess the political acceptance of ISA systems, the EU-funded PROSPER project (project for research on speed adaptation policies on European roads) performed a survey among different stakeholders (politicians, governmental institutes, research institutes, pressure groups and commercial groups) in eight EU countries. It is reported that ISA is generally seen as an effective safety measure. Finally, it has to be noted that practical experiments in Sweden and the Netherlands have shown that the acceptance of ISA increases if concrete experience with it has been gained (ERSO).
Duration of the project SpeedAlert: from 1 May 2004 to 1 April 2005.
Duration of the project PROSPER: from 1 January 2003 to 1 December 2005.
Speed alert applications are entering into deployment.
The measure aims to study the possible implementation of intelligent speed adaptation devices, with the final objective of increasing drivers awareness of speed limits, therefore reducing the number of vehicles with non-adapted speed and consequently the number of speed related accidents.
Specific topic: *accident prevention*
Type of impact: *indirect*
Contribution to road safety: *high results; see table:*
Table A. 4: Safety benefits by application type of SpeedAlert

Table A. 4: Safety benefits by application type of SpeedAlert

Application type	Speed limit type	Best estimate of fatal and serious accident reduction (%)	Number of fatal accidents saved	Benefits (billion euro 2002)
Informative	Fixed	14	5,460	23
	Variable	14	5,460	23
	Dynamic	18	7,020	30
Supportive	Fixed	15	5,850	25
	Variable	16	6,240	26
	Dynamic	26	10,140	43

Source: SWOV, 2005

Consistency with other measures: in general, this measure is connected with the on-going RTD activities related to infrastructure-vehicle Communication (for example, the projects FRICTION and TRACKSS), intelligent roads (Measure 46) and incremental map updating (for example, the project FEEDMAP). SpeedAlert's outcome is closely linked with the scope of the eSafety initiative (Measure 37), which aims to accelerate the development, deployment and use of Intelligent Vehicle Safety Systems which use information and communication technologies to increase road safety and reduce the number of accidents on Europe's roads, and in particular with the Digital Maps Working Group. Also, the application of ISA systems is linked to the implementation of the MAPS&ADAS subproject, within the PReVENT Integrated Project, which is developing, testing and validating appropriate methods with regard to the use of digital maps.

Outcomes

The SpeedAlert project produced 16 deliverables, available on the website, and a SpeedAlert Forum was organised after the project's completion. The main results of SpeedAlert are:

1. Classification of speed limit categories relevant to speed alert applications: a common set of speed limits categories have been developed, considering both general and specific speed limits (the latter being fixed or variables). These categories were classified over the different type of roads and compared across different EU countries. The survey showed that throughout Europe an extensive array of speed limits are used.
2. End-user system and service requirements for speed alert applications.
3. Functional architecture and associated technical building blocks.
4. List of recommendations to support successful implementation of speed alert applications.
5. Roadmap for deployment taking into account user needs, technical feasibility and available solutions.
6. General business aspects for different actors and benefits.
7. Requirements for standardisation.
8. Consolidation of broad consensus through the Consultation Group and its dedicated workshops.

Regarding public acceptability, different national trials have shown that users are in favour of ISA applications as they support their driving and prevent involuntary speeding and possible fines. However, to realize a broad market take-up, further work still needs to be done.

According to PROSPER's survey (PROSPER, 2004), the introduction of ISA devices is generally preferred to be implemented among all driver groups, on all road types and on a mandatory basis. Barriers to the implementation of ISA that were identified included technical functioning, applicability to the whole road network and liability issues.

Description of the impact: speed alert applications can be beneficial for road safety because they lead to a lower average speed and to reduced speed variance and they reduce amount of maximum speed violations. Moreover, drivers can get a better insight into risk perception in relation to speed.

What remains to be done (ERSAP 2011-2020): there are still remaining issues that need to be resolved before a general European deployment can be realised:

- ensure the speed limit data collection, access and maintenance at a European level by means of appropriate cooperation between public authorities and service providers. Motorways and main roads are currently generally integrated in digital maps, but speed limits for the complete road networks still need to be procured;
- provide a European harmonised set of variable speed limits enabling drivers to adapt their speed according to the prevailing traffic conditions;
- develop and implement a harmonised infrastructure-vehicle communication that will enable a large range of safety and mobility related applications. Analyse the Human Machine Interface and evaluate how to interact with the driver and other on-board applications;

- promote tax or insurance incentives to strengthen end-user interest in speed alert applications;
- promote, together with the automotive industry, the ISA system application as standard option in all new cars;
- examine the acceptability, feasibility and impacts of a mandatory fitting of intelligent speed adaptation systems to ensure cars do not go faster than 150 km/h, that is 15% faster than the highest enforceable or recommended speed limit in any EU Member State, also in the light of environmental objectives (European Federation for Transport and Environment, 2007).

Measure 35

Improved motorcycle safety through legislation or voluntary agreements with the industry

Objective: making motorcycles safer.

Description: Two meetings of the Motorcycle Working Group MCWG/ MVEG on Motorcycles have been held, respectively on 27 February 2009 and on 29 June 2009. A public consultation was launched in December 2008 on the Commission's website and ended on 28 February 2009. Its purpose was to gather information and views from all relevant stakeholders, including public bodies, the general public, industry and business associations, on the specific elements to be assessed for the future legislative framework on two-, three- and four wheel vehicles of the L category, envisaged by the Commission services. These key issues concerning 2-, 3- and 4-wheel vehicles of the L-category are in general linked with:
- Complexity of the current legislation for L-category vehicles. The current legislative text consists of a framework directive (Directive 2002/24/EC) and 14 associated implementing directives, all of which have been amended over time.
- High level of emissions. It is estimated that, apart from other aspects, the contribution of L-category vehicles to hydrocarbon emissions will rise to approximately 55% of total hydrocarbons emitted by all road transport vehicles in 2020, if no additional measures will be introduced. This is mainly due to the significant reduction in emissions from other road transport categories like passenger cars and trucks.
- Road safety, high number of fatalities and seriously injured riders.

In 2006, L-category vehicles accounted for 2% of distance travelled, but for 16% of road deaths. The fatality rate per million kilometres travelled is, on average, 18 times greater than for passenger cars. Furthermore, while other vehicle modes have shown significant decreases in fatalities and serious injuries over time, the figures for L-category vehicles have fallen much less, or have remained static. The public consultation was based on one questionnaire structured around three main objectives of the legislative proposal: simplification of the legislation (better regulation) to reduce the current complexity, addressing the high level of emissions and introducing safety measures. With regard to motorcycles safety, the projects PISA (Powered two- wheeler Integrated Safety) and SIM (Safety in Motion), funded by DG RTD, are relevant. The project PISA concerns the safety improvements for drivers and passengers of powered two-wheelers (PTWs) motorcycles and mopeds. The project SIM deals with the development of an innovative concept of PTW vehicle with new safety devices. It is also noteworthy to mention Directive 2009/67/EC of the European Parliament and of the Council on the installation of lighting and light-signalling devices on two or three-wheel motor vehicles, which is in force since 1.01.2010. It aims to increase motorcycles' safety by improving their conspicuity.

Duration of the project PISA: from 1 June 2006 to 31 November 2009.

Duration of the project SIM: from 1 September 2006 to 31 August 2009.

Specific topic: *power-two wheel*

Type of impact: *direct*

Contribution to road safety: *low result; however, improving the safety for one of the most vulnerable groups of road users, i.e. the motorcyclists, is expected to have a considerable impact on road safety.*

Consistency with other measures: the measure aims to improve the safety of motorcyclists and it is consistent with the passive safety measure regarding the use of crash helmets (Measure 18).

Outcomes

Directive 2009/67/EC provides for technical prescriptions regarding the visibility of two or three-wheel motor vehicles. The main outcome of the meetings and the public consultation was a exchange of views regarding: a new regulatory framework on two and three-wheel motor vehicles; new emission measures, and possible new safety measures such as the mandatory fitting of the anti-lock Braking Systems (ABS), anti-tampering measures and the use of hydrogen vehicles.

What remains to be done (ERSAP 2011-2020): this measure should be continued, both through legislation and on a voluntary basis.

Measure 36

Examine the benefits of harmonising the approval of adaptations to vehicles for persons with reduced mobility

Objective: increasing active vehicle safety.

Description : The project QUAVADIS was a pan-European initiative to improve the Quality and Use Aspects of Vehicle Adaptations for DISabled. The overall objectives of the project were:

- to stimulate knowledge exchange in the field of physically disabled drivers and their need for car adaptations;
- to establish statistics on the use of codes and the disabled drivers population in Europe;
- to draw up criteria for safety and performance of car-adaptations that are suitable to compensate for the driver's disability according to the restrictive conditions (codes) on the driving licence. The project PORTARE is a voluntary cooperation between a group of European experts and its main objective is to ease mobility for disabled drivers. In particular the project aims to make the existing knowledge on assessment available by describing:
- the consequences related to fitness to drive for different illness categories
- the criteria for assessment in relation to these consequences
- the criteria for on-road testing in relation to the consequences
- methods to enable assessors to supply the relevant information to decision makers

Furthermore, the project PORTARE aims to stimulate implementation in all EU countries by means of:

- describing the knowledge and skills needed by assessors to assess the driver / applicant and to supply the relevant information for a decision to the authorities;
- train-the-trainer workshops for information exchange amongst experts in the EU;
- establishment of an EU organisation for assessment and on-road testing of drivers / applicants with physical and/or cognitive limitations

The QUAVADIS project started in January 2001 and was completed by June 2003.

Specific topic: *accident prevention*

Type of impact: *indirect.*

Contribution to road safety: *low results*

Consistency with other measures: the measure is consistent with the general aim of improving the driving conditions of the vehicles.

Outcomes

The main results of QUAVADIS project were a description of the procedures for obtaining or renewing a driving licence for citizens with a (physical) disability in the different Member States of the European Community, and an extensive Code of Practice for car adaptations structured in line with the list of harmonised Community codes on the driving licence.

Description of the impact: the introduction of proper car-adaptations is expected to make easier the driving task of persons with reduced mobility, thus increasing road safety.

What remains to be done (ERSAP 2011-2020): studies should be deepened.

Measure 37

Adopt a long-term plan concerning information and communication systems in the field of road safety and establish the necessary regulatory framework for implementing such systems

Objective: improving vehicles safety through the adoption of information and communication systems.

Description: Advanced information and communication technologies (ICTs) can be incorporated into onboard "Intelligent Vehicle Systems", offering new solutions to today's transport problems. These high-tech systems have great potential to:

- help drivers prevent or avoid traffic accidents;
- mitigate the consequences of accidents that do occur;
- provide drivers with real time information about traffic on road networks, thereby avoiding congestion;
- find the most efficient routes for any journey;
- optimise engine performance, thus improving overall energy efficiency.

In February 2006 the European Commission launched the "Intelligent Car Initiative", to remove bottlenecks in rolling out intelligent systems and to speed the development of smarter, safer and cleaner transport for Europe. This will be done by:

- building consensus among all the key players involved: citizens, Member States, service providers and the car industry;
- removing legal and institutional barriers;
- stimulating consumer demand for the new onboard technologies.

The Intelligent Car Initiative will accelerate the deployment of intelligent vehicle systems on European and international markets, using a mix of policy, research and communications instruments to:

- ensure interoperability across different EU countries and harmonise technical solutions through a comprehensive European approach;
- support ICT-based research and development in the area of transport and facilitate the take-up and use of research results;
- raise awareness among consumers and decision-makers of the potential benefits of ICT-based solutions.

The eSafety initiative is the first pillar of the Intelligent Car Initiative. It is a joint initiative of the European Commission, industry and other stakeholders. It aims to accelerate the development, deployment and use of intelligent vehicle safety systems that use information & communication technologies to increase road safety and reduce the number of accidents on Europe's roads. In the framework of the Programme Creating a User-friendly information society (IST), several projects have been carried out regarding information and communication systems. Worth mentioning are the projects: CIBERCARS2, eIMPACT, eSAFETYSUPPORT, ESCOPE (that strengthened the activities of the eSafety initiative), HIGHWAY, HUMANIST, PREVENT. In addition, the projects ASSESS and SAFETRIP are being carried out in the framework of Road safety researches FP7 – DG RTD. Finally, the project BE SAFETY AWARE (Bringing eSafety to the market through awareness) aimed at organising information campaigns to raise awareness among policy-makers and the general public on the benefits of e-safety systems, in order to accelerate the introduction of these electronic life-saving technologies in the market, while the project EVI (Electronic vehicle identification) investigated the feasibility of a Europe-wide electronic vehicle identification system. At the legislative side, EC proposal COM (2008) 887, which is a proposal for a directive of the European Parliament and of the Council, lays down the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces

with other transport modes. The Intelligent Car Initiative was launched in February 2006, while projects of the IST Programme have been carried out in the years 2003-2008.
Specific topic: *accident prevention*
Type of impact: *indirect.*
Contribution to road safety: *high results.* The Intelligent Car Initiative and the information gathered with the projects can contribute to the improvement of road safety for a long time. Active safety systems could give a considerable positive contribution to road safety by decreasing the number of crashes.
Consistency with other measures: the measure is linked with all the active safety actions aimed at helping drivers to avoid accidents.
Outcomes
The eSafety initiative and the projects carried out have to be considered as a step forward the adoption of information and communication systems for improving road safety. However, a proper regulatory framework for implementing the proposed measures has not yet been established.
What remains to be done (ERSAP 2011-2020): this measure should be continued.
Measure 38
Identify priority areas for the development and implementation of performance standards to optimise the man-machine interface and the road safety potential of telematics applications. Ensure compliance with the declaration of principles concerning the human-machine interface
Objective: developing intelligent vehicles.
Description: With the advent of sophisticated technology (mobile and portable) and the increase in the amount of time spent on the road, the car has become a potential home to many different types of systems. Such systems range from those which convey simple information to the driver (for example incident warnings) to those that require the driver to interact with a system in order to extract the required function (for example a route guidance system). The project HASTE (Human Machine Interface And the Safety of Traffic in Europe) had the goal of developing methodologies and guidelines for the assessment of In-Vehicle Information Systems (IVIS). There is an urgent need to develop thorough testing and diagnostic procedures for such systems in order to regulate their inclusion in the vehicle. If no such procedures are set up, the driving task may become of secondary importance to tasks relating to interaction with the system. If such distraction occurs, there is evidence that traffic safety will be compromised. Another relevant project is EUCLIDE (Enhanced Human-Machine Interface for On-Vehicle Integrated Driving Support System) which aimed to developing an reliable integrated driver assistance support system. The EC funded also other projects for enhancing vehicle safety: the projects ROADSENSE, ADASE II, VEESA, AIDE, ATESST, EASIS, ASSET-ROAD, INTERACTION, ITERATE.
Duration of the HASTE project: from 1 January 2002 until 31 December 2004.
Duration of the EUCLIDE project: from 1 March 2001 until 31 May 2004.
The projects ASSET-ROAD, INTERACTION, ITERATE are expected to be completed in the years 2011-2012. The other projects mentioned were completed during the years 2001-2008.
Specific topic: *accident prevention*
Type of impact: *indirect*
Contribution to road safety: *medium results*
Consistency with other measures: this measure is consistent with all the actions aimed at assisting drivers in order to prevent accidents from occurring.
Outcomes
In general the projects carried out provided useful results. The project HASTE contributed to the development of a valid, reliable and efficient tool that will aid testing authorities in their safety evaluation of IVIS. The project EUCLIDE developed a driving support system to

monitor the area ahead of the driver and provide an effective support especially in cases of night and adverse weather conditions. This system integrates the functionalities of radar and far infrared sensors resulting into a highly reliable and efficient system.
What remains to be done (ERSAP 2011-2020): the measure needs to be continued.

Measure 39

Examine, together with the Member States, the need to include new onboard electronics systems in roadworthiness testing

Objective: improving and maintaining vehicle safety performance.
Description: Electronically controlling systems are being fitted in a growing numbers of vehicles. Vehicle safety (as well as environmental performance) is thus increasingly dependent on the correct functioning of these systems. Despite that, at present these systems are not part of the mandatory periodical technical inspection of vehicles. Also, there is little available data relating to the reliability of the electronic systems and to how they should be tested for correct function. The research programme CITA1 (Research Study Programme on Electronically Controlled Systems on Vehicles) aimed at examining the performance of some current systems and at developing test procedures for the periodic inspections. It included a review of post, present and future electronic systems on vehicles. The work of CITA1 was followed by the project IDELSY (Initiative for Diagnosis of Electronic Systems in Motor Vehicles), which aimed to develop test procedures and to test them in order to ensure their efficiency and effectiveness. The general target of the project IDELSY was producing recommendations to improve the existing Directive 96/96/EC for involving the new vehicle technology, which is more and more electronically controlled and relevant for the road safety.
The study has been carried out by seven technical inspection agencies of three different countries. The results of the research project IDELSY provided an important input for the project AUTOFORE (Study on the future Options for Roadworthiness Enforcement in the European Union) which aimed at analysing future strategies of road worthiness actions in Europe. The specific purpose of AUTOFORE was making proposals and recommendations to improve roadworthiness enforcement, in order to ensure that the benefits accruing from the original design and manufacture of vehicles are retained throughout the life of those vehicles.
In 2007, the European Commission invited tenders for a service contract regarding the feasibility and impact assessment study on the future evolution of roadworthiness tests for motor vehicles, in order to evaluate a review of Directive 96/96/EC. Unfortunately, this call for tender failed and had no follow-up. Despite that, in May 2009, Directive 2009/40/EC on roadworthiness tests for motor vehicles and their trailers repealing Directive 96/96/EC was approved. According to the new norm, the anti-lock braking systems have been included among the items to be compulsory tested. However, Electronic Stability Control systems (ESC) and airbags were not. The need for roadworthiness enforcement is greater than ever because road safety (as well as environmental protection) is now more and more reliant on the correct functioning of the new electronic technologies, which are increasingly taking over aspects of the driver's tasks as a means of eliminating or mitigating the effects of human error. With this increased reliance on advanced technology, the role of vehicle roadworthiness needs to change.
Duration of the project CITA1: from 5 July 1999 to 4 July 2002.
Duration of the project IDELSY: from 1 January 2004 to 1 December 2005.
Duration of the project AUTOFORE: from 1 February 2005 to 31 January 2007.
Specific topic: *accident prevention*
Type of impact: *indirect*
Contribution to road safety: *low results*
Consistency with other measures: this measure is tightly connected with Measure 40, which aims at determining and encouraging best practices to improve the efficiency of periodic compulsory inspections.

Outcomes
According to the CITA1 Report (CITA1, 2001), even if electronic components tend to fail less frequently than mechanical components in the same system, the failure rate of certain systems is important enough to include them into the annual inspection regime. The study concludes that vehicle electronic systems should be tested as part of the periodic inspection. In fact, it is important that all safety critical systems are tested regularly. The final report (CITA1, 2002) presents a cost benefit analysis to assess the value of inspecting electronically controlled systems for roadworthiness. Also the outputs of IDELSY's research provided support to improve the existing regulations for including the new generation of motor vehicles technologies: road safety is strongly influenced by modern vehicle systems, therefore the safe function of those systems should be part of the European PTI procedure. The key result of the AUTOFORE study is a set of proposals for the future direction of roadworthiness enforcement in the European Union.
Description of the impact: the growing sophistication of onboard electronic systems could lead to increasing problems with the reliability of these devices. According to available statistics (CITA1, 2001), it is quite rare that a failure of the electronic systems cause as injury accident. However, it is clear that they have the potential to do so and when it happens, consequences can be very severe. This is why there is a need for identifying systems that would potentially benefit from inclusion in periodic inspections.
What remains to be done (ERSAP 2011-2020): given that the need to include new onboard electronic systems in roadworthiness testing has now reached a broad consensus, the coming ERSAP 2011-2020 should address the evaluation of possible modification of the existing legislative framework. In particular, the new Directive 2009/40/EC could be amended to include the compulsory testing of safety relevant electronic systems that are already widely fitted, such as airbags and ESC.

Measure 40

Determine and encourage best practices so as to improve the efficiency of periodic compulsory inspections at the lowest cost.

Objective: improving and maintaining vehicle safety performance.
Description Making the periodic compulsory inspections more efficient is a theme addressed by several EC funded projects. Within the framework of the project CITA1 (see Measure 39), a specific working group, the Working Group VII, was set up to study specifically the testing of electronically controlled systems, and to examine available reliability data and failure rates of electronically controlled systems. Possible test procedures have been proposed. The research carried out within the project IDELSY (see Measure 39) examined the possible options for testing procedures for electronic systems in the periodic vehicle inspections, in order to increase the reliability and safety of such systems and therefore the safety of European road transports systems as a whole. The general target of this project was to verify the technical feasibility for the use of generic scan tools within the periodic technical inspection for passenger vehicles and in future for commercial vehicles. Finally, the project AUTOFORE (see also Measure 39) produced several proposals and recommendations to improve roadworthiness enforcement after reviewing the strategies and the potential for improvement of the current roadworthiness enforcement measures. The introduction of higher roadworthiness standards was proposed. The legislative framework for roadworthiness testing has been recently amended with the Directive 2009/40/EC (published in the Official Journal on the 6 June 2009), which replaces the current roadworthiness Directive 96/96/EC. The new Directive includes periodic inspection requirements for CO2 emissions, including testing frequency.
Specific topic: *accident prevention*
Type of impact: *indirect.*
Contribution to road safety: *medium results.*

Consistency with other measures: this measure is tightly connected with Measure 39, which aims at examining the opportunity of including the new vehicle electronic system in the roadworthiness testing.

Outcomes

The project CITA1 (CITA1, 2001) provided the basis for the development of test procedures for the electronically controlled systems. This enables research efforts to be prioritised for those systems which appear to be less reliable and provides a benchmark for measuring the effectiveness of periodic test procedures and inspections. The project IDELSY examined different possible test procedures, with the aim of improving and optimising them. It also carried out field trials to corroborate the results of the research. Scan tools and test procedures to be used in the course of periodic vehicle inspections have been developed and the functionality and safety of electronic control units have been verified. The options for improving roadworthiness enforcement identified and analysed by AUTOFORE are:

1. Improve roadworthiness Directives.
2. Improve type approval requirements and legislative process.
3. Develop the infrastructure required to inspect electronically controlled systems.
4. Promote improved compliance.
5. Develop supporting roadworthiness inspection databases and related items.
6. Improve linkages between forms of roadworthiness enforcement.
7. Support research and development.

The objective, according to the research group, would be to implement them by 2020. One of the recommendations resulting from the AUTOFORE research is increasing the frequency of inspection for older light goods vehicles and for small passengers vehicles (up to eight seats, excluding the driver). The economic benefit of increased frequency of inspection of older light vehicles would be over 2 billion Euro if vehicles of 8 years and over are inspected annually, with a benefit-to-cost ratio larger than 2 (AUTOFORE, 2007).

What remains to be done (ERSAP 2011-2020): amendments to the current legislative framework should be studied and evaluated in order to:

- increase the frequency of inspection for older vehicles of categories 5 and 6, as defined in the Directive 2009/40/EC (Annex I);
- include two-wheeled motor vehicles (international categories L1 and L3) in the scope of the legislation;
- introduce test procedures for new electronic components with a view to improve the roadworthiness of vehicles.

A regulatory impact statement should be carried out in these regards. Moreover, new thematic studies should be initiated to deepen past studies and to further research, in particular:

- the magnitude of the contribution of vehicle defects to accidents and to trial new inspection systems suitable for inspecting the functionality of electronically based technologies;
- methods of improving compliance, effectiveness and efficiency of vehicle inspection.

Finally, further work should be undertaken to develop proposals for increasing harmonisation of European roadworthiness standards.

Measure 41

Submit a proposal for a framework directive on road infrastructure safety with a view to introducing a system for the harmonised management of black spots and road safety audits for roads on the trans-European network

Objective: improving the safety of road infrastructures within the trans-European road network.

Description: On 19 November 2008 the European Parliament and the Council of the European Union emanated Directive 2008/96/EC[19] in order to establish procedures to ensure a consistently high level of road safety throughout the trans-European road network. The Directive requires the establishment and implementation of procedures relating to
road safety impact assessments, road safety audits, the management of road network safety and safety inspections by the Member States. It shall apply to roads which are part of the trans-European road network, whether they are at the design stage, under construction or in operation. The Directive will enter into force 19 December 2010.
Specific topic: *infrastructure*
Type of impact: *indirect*
Contribution to road safety: *high results*
Consistency with other measures: the measure is consistent with the general scope of increasing road safety through a proper management of the infrastructures. Therefore this measure is closely linked with all the actions relating to road infrastructure safety management (see Measure 5 and 44).
Outcomes
Directive 2008/96/EC requires the establishment and implementation of procedures relating to road safety impact assessments, road safety audits, the management of road network safety and safety inspections by the Member States. It shall apply to roads which are part of the trans-European road network, whether they are at the design stage, under construction or in operation.
What remains to be done (ERSAP 2011-2020): monitoring the implementation in Member States of Directive 2008/96/EC. A possible application of this measure to other road networks should be evaluated (rural and urban roads).
Measure 42
Draw up technical guidelines concerning infrastructure, notably for low cost measures, audit methods, urban safety management, speed moderation techniques and forgiving roadsides
Objective: improving road safety through the management of road infrastructures.
Description: Road infrastructure related safety measures offer a large potential that could be exploited for a significant reduction of road accidents and their consequences.
Considering that most casualties occur on single carriageway rural roads, the project RIPCORD-ISEREST was focused on road infrastructure measures for this type of roads. Researchers and practitioners in the Member States of the European Union have made great efforts to improve traffic safety. Many of these approaches have already led to a significant reduction in fatalities. The objective of this project was to collect and to evaluate these approaches in order to make them accessible throughout Europe and to develop tools, which could be used to improve traffic safety. With these tools RIPCORD-ISEREST intended to give scientific support to practitioners concerned with road design and traffic safety in Europe. The project SUPREME, commissioned by DG TREN of the European Commission, had the goal to collect, analyse, summarise and publish best practices in road safety in the Member States of the European Union, as well as in Switzerland and Norway. In particular a document was produced containing a collection of best practices at national scale and aiming to present the project's results to national/regional policy and decision makers across Europe, thereby encouraging the adoption of successful road safety strategies and measures. The project ROSEBUD is a thematic network funded by the European Commission to support users at all levels of government (European Union, national, regional, local) with road safety

[19] OJ 319, 29.11.2008, p. 59.

related efficiency assessment solutions for the widest possible range of measures. ROSEBUD will bring together e.g. users, researchers, decision makers, policy makers and other relevant stakeholders dealing with efficiency assessment of road safety measures. It was designed to facilitate networking of organisations, co-ordination of activities, exchange and dissemination of knowledge. Other projects to be mentioned are NR2C (New Road Construction Concept), EURO-AUDITS (European Road Safety Auditor Training Syllabus), EURORAP I and II (European Roads Assessment Programme), IASP (Identification of Hazard Location and Ranking of Measures to Improve Safety), RISER (Roadside Infrastructure for Safer European Roads), RANKERS (Ranking for European Road Safety), EURAMP (European Ramp Metering Project), FORMAT (Fully optimised road maintenance), SAMARIS (Sustainable and advanced materials for road infrastructures), SENSOR (Secondary road network traffic management strategies) and SILVIA (Sustainable road surfaces for traffic noise control).
Duration of the SUPREME project: from 1 December 2005 to 1 June 2007.
Duration of the ROSEBUD project: from 1 October 2002 until 1 September 2005.
Duration of the RIPCORD-ISEREST project: from 1 January 2005 until 31 December 2007
The other mentioned projects were completed between years 2002 and 2008.
Specific topic: *infrastructure*
Type of impact: *indirect.*
Contribution to road safety: *medium results.*
Consistency with other measures: this measure is linked with Measure 45, aimed at improving the equipment of the road infrastructures.
Outcomes
The main outcomes of RIPCORD-ISEREST can be summarised as follows:
- The development of best practice tools and guidelines for road infrastructure safety measures concerning accident prediction models, road safety inspections, and black-spot management;
- The development of tools for cost efficiency assessment of different safety measures;
- The development, with regard to secondary roads, of specific software tools and a handbook for local road authorities.
The final report of SUPREME project consists of 14 parts, among which handbooks of best practices in road safety for measures at the country and European level and a thematic report regarding road infrastructures. Regarding ROSEBUD, the results of this structured approach towards improving the process of decision making about road safety measures are documented in five scientific reports. Conclusions and recommendations are summarised in three publications, which are considered the main output of ROSEBUD:
- A handbook of evaluated road safety measures
- A framework of best practices for conducting efficiency assessment studies
- A "demonstration course" to make decision makers familiar with the proposed efficiency assessment tools. The other considered projects provided useful indications and recommendations too.
Description of the impact: the introduction of technical guidelines for road infrastructures could allow a safer circulation of the vehicles resulting in both less crashes and less dangerous consequences for road users in the event of an accident.
What remains to be done (ERSAP 2011-2020): the guidelines have been developed, but their implementation has yet to come. Action needs to be taken at national level.
Measure 43
Draw up good practice guidelines for level-crossing safety
Objective: improving road safety through the management of road infrastructures.
Description: Every year, more than 330 people are killed in more than 1200 accidents at road-rail level crossings in the European Union. Together with tunnels and specific road black spots, level crossings have been identified as being a particular weak point in road

infrastructure, seriously affecting road safety. The High Level Group on Road Safety from European Commission DG Energy and Transport decided in 1999 to set up a working group on safety at rail-road level crossings. Apart from informing the Commission on the current state of practice as well as state of the art, the group was also meant to produce advice and foster the exchange of information between Member States in its domain of work. The group finalised a first report in March 2000. It contained a typology of level crossings, which is an important prerequisite for risk analysis and development of a remedial programme, traffic rules and signing and signalling (optical and acoustical). A second report of the group was finalised in December 2003. This report was addressed to the European, the national and the regional legislators and executives in ministries, road institutes, road authorities and academia. In addition, the project SELCAT (Safer European Level Crossing Appraisal and Technology), a coordination action under the European Commission's 6th Framework Programme involving partners from European countries as well as from Asia and Africa, was launched on 1 September 2006. Its main objective was to collect and disseminate knowledge related to level crossing risk appraisal, technology and methodology.
Duration of the SELCAT project: from September 2006 to September 2008.
Specific topic: *infrastructure*
Type of impact: *indirect*
Contribution to road safety: *medium results*
Consistency with other measures: this measure is consistent with the general scope of improving the safety of road infrastructures.
Outcomes
In the 2nd Report of the Working Group on Level Crossings a set of conclusions and recommendations regarding the level-crossing safety was drawn. The report could serve as input for strategic road safety planning, the implementation of measures, the adoption of guidelines and their implementation. At the same time, the level of detail of this report is not sufficient to function as a guideline for direct use by practitioners. The project SELCAT provided useful recommendations about the appraisal, technologies and methodologies regarding level crossing as well as campaigns for road vehicle drivers.
What remains to be done (ERSAP 2011-2020): studies should be continued, improving the monitoring of such accidents and finding solutions in collaboration with the rail operators and a possible revision of road signs (UN-ECE).

Measure 44

Assess the safety impact of projects receiving Community funding and concerning an entire area

Objective: taking into consideration the safety impact of the European projects.
Description: The setting up of appropriate assessment procedures is an essential tool for improving the safety of road infrastructure. The safety impact assessments aims at illustrating, at a strategic level, the implications on road safety of different planning alternatives of a project, playing an important role when those are being selected. Directive 2008/96/EC[20] on Road Infrastructure Safety Management requires the establishment and implementation of procedures relating to road safety impact assessments, road safety audits, the management of road network safety and safety inspections by the Member States. The specific objective of this Directive is to ensure a consistently high level of road safety throughout the trans-European road network. Member States may also apply the provisions of this Directive to national road transport infrastructure constructed using Community funding in whole or in part, but not included in the trans-European road network. However, this is not a requirement, but only a possibility. Annex II of the Directive 2008/96/EC on Road Infrastructure Safety

[20] OJ 319, 29.11.2008, p. 59.

Management defines the criteria to be met by Member States when carrying out a road safety impact assessment (article 3.2). Road tunnels are excluded from the scope of the Directive and are covered by Directive 2004/54/EC (see Measure 47.)
This objective has seen only a partial realisation. Action has been taken only with respect to the infrastructure safety management of the trans-European road network. Directive 2008/96 will be also applied to the implementation of the European Investment Bank (EIB) and the FEDER (European regional development fund) projects, while the application of safety impact assessment to other Community funded projects remains optional. Member States shall bring into force the legislation necessary to comply with this Directive by 19 December 2010. By 19 December 2011, Member States should adopt the guidelines for applying the safety procedures set out in the Directive.
Specific topic: *infrastructure*
Type of impact: *indirect*
Contribution to road safety: *medium results.*
Consistency with other measures: this measure is closely linked with all the actions relating to road infrastructure safety management. In particular, it is linked with the aim of Measure 5 relating to harmonised road safety criteria in public service contracts.
Description of the impact: road infrastructure safety management contributes to take into account the impact on road safety in project definition, planning and implementation, allowing an increase in safety awareness by decision-makers and in safety performance of the infrastructure.
What remains to be done (ERSAP 2011-2020): beyond the mandatory implementation of the procedure to the TEN-network (Directive 2008/96), the requirement of appropriate assessment procedures should be extended to all the projects funded by the European Union.
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Measure 45

Adapt to technical progress the Community standards applicable to road equipment and ensure a high level of protection, notably by making road sides less hazardous in the event of an accident

Objective: increasing road safety by improving the equipment of road infrastructures.
Description: In November 2008 the project Smart RRS started with the objective of reducing the number of injuries and deaths caused by road traffic accidents to vulnerable road users such as motorcyclists, cyclists and passengers through the development of a smart road restraint system. The project started 3 November 2008 and is expected to be completed by 31 October 2011.
Specific topic: *infrastructure*
Type of impact: *indirect*
Contribution to road safety: *medium results.*
Consistency with other measures: this measure is linked with all the actions aiming at making the circulation of vehicles on road infrastructures safer. In particular, it is consistent with Measure 42 regarding the development of technical guidelines for improving the safety of road infrastructures.
Outcomes
The project Smart RRS will develop a new smart road restraint system that will reduce the number of deaths and injuries caused in road traffic accidents by integrating primary and tertiary sensor systems in a new RRS system, providing greater protection to all road users, alerting motorists and emergency services of danger so as to prevent accidents happening, and alerting them of accidents as they happen to maximise response time to the exact location of the incident.
What remains to be done (ERSAP 2011-2020): this measure should be continued, since it has a high potential in increasing road safety.

Measure 46

Carry out research and demonstration projects on 'intelligent roads'

Objective: increasing road safety through the development of "intelligent roads".

Description: By using new approaches in order to add intelligence to road infrastructures, it could be possible to reduce the number of road accidents as well as the infrastructures maintenance costs (which are constantly increasing in Europe) and optimise the capacity of existing infrastructures. During the years projects on "intelligent roads" have been carried out: some of these have been completed, while some are still in progress. In particular it's worth to mention the following projects:

- INTRO (Intelligent Roads);
- CVIS (Co-operative vehicle-infrastructure systems);
- SAFESPOT (Cooperative systems for road safety "Smart Vehicles on Smart Roads");
- INTERSAFE 2 (Cooperative Intersection Safety);
- IN SAFETY (Infrastructure and safety);
- MISS (Monitor Integrated Safety Systems);
- REACT (Realising Enhanced Safety and Efficiency in European Road Transport);
- COM2REACT (Cooperative communication system to realise enhanced safety and efficiency in European road transport);
- COMeSafety (Communications for eSafety);
- COOPERS (Co-operative Systems for Intelligent Road Safety);
- COVER (Semantic driven cooperative vehicle infrastructure systems for advanced eSafety applications);
- TRACKSS (Technologies for Road Advanced Cooperative Knowledge Sharing Sensors).

Duration of the INTRO project: from 1 March 2005 until 29 February 2008.
Duration of the CVIS project: from 1 March 2006 until 31 January 2010.
Duration of the SAFESPOT project: from 1 February 2006 until 31 January 2010.
Duration of the INTERSAFE 2 project: from 1 January 2008 until 31 December 2010.
Duration of the IN SAFETY project: from 1 January 2005 until 31 December 2007.
Duration of the MISS project: from 1 January 2005 until 31 December 2006.
Duration of the REACT project: from 1 January 2005 until 31 December 2006.
Duration of the COM2REACT project: from 1 January 2006 until 31 December 2007.
Duration of the COMeSafety project: from 1 January 2006 until 31 December 2009.
Duration of the COOPERS project: from 1 February 2006 until 31 January 2010.
Duration of the COVER project: from 1 March 2006 until 28 February 2008.
Duration of the TRACKSS project: from 1 January 2006 until 31 December 2008.

Specific topic: *infrastructure*

Type of impact: *indirect.*

Timing of the effects: *long term.*

Contribution to road safety: *high results. The positive results could be even more considerable if the synergies with the active safety domain are exploited.*

Consistency with other measures: The development of "intelligent roads" are closely connected with active safety actions such as the ones considered in Measures 37 and 38.

Outcomes: The number and contents of the mentioned projects provide large and various indications, measures and approaches for the development of intelligent roads infrastructures.

What remains to be done (ERSAP 2011-2020): studies should be deepened.

Measure 47

Achieve a high level of safety in tunnels, notably through standards and user information

Objective: improving road infrastructures safety.

Description: The European Council has on several occasions, and notably at its meeting on 14 and 15 December 2001 in Laeken, underlined the urgency of taking measures to improve tunnel safety. On 30 November 2001, the Transport Ministers of Austria, France, Germany,

Italy and Switzerland met in Zurich and adopted a Common Declaration recommending the alignment of national legislations on the most recent harmonised requirements for improving safety in long tunnels. On 29 April 2004 the European Parliament and the Council of the European Union emanated Directive 2004/54/EC[21] with the aim to ensuring a minimum level of safety for road users in tunnels in the Trans-European Road Network by the prevention of critical events that may endanger human life, the environment and tunnel installations, as well as by the provision of protection in case of accidents. Transposition by Member States was due by 30 April 2006. The directive applies to all tunnels in the Trans-European Road Network with lengths of over 500 m, whether they are in operation, under construction or at the design stage. In addition, projects regarding tunnels safety have been carried out. In the framework of the project EUROTAP (European Tunnels Assessment Programme) tunnels located on the Trans-European Road Network have been assessed for their level of road safety. It is worth mentioning other projects such as the project UPTUN (cost-effective, sustainable and innovative upgrading methods for fire safety in existing tunnels), the project Safe Tunnel (innovative systems and frameworks for enhancing of traffic safety in road tunnels), the project Safe-T (Safety in Tunnels Thematic Network) and the project SIRTAKI (Safety Improvement in Road & rail Tunnels using Advanced ICT and Knowledge Intensive DSS). The project EUROTAP started on 1 January 2005. The other projects mentioned were carried out in the years from 2001 to 2006.

Specific topic: *infrastructure*

Type of impact: *indirect.*

Contribution to road safety: *high results.*

Consistency with other measures: increasing the safety in tunnels is consistent with the general aim of improving the road infrastructures safety management.

Outcomes

Directive 2004/54/EC provided for a set of safety measure as well as procedures for the management of tunnels. Regarding project EUROTAP, the results of the tunnels that have been tested are published every year in media all across Europe. Tunnels users are able to access via the internet safety relevant information about individual tunnels in seven different languages. A European Tunnel Audit Report was produced, covering nine years of tunnel tests, and highlighting what has been achieved and what still needs to be done. Information leaflets were targeted at motorists giving information on how to behave correctly in tunnels.

Numerous European road tunnels have been refurbished and modernised following the requirements of Directive 2004/54/EC.

Description of the impact: a better management of tunnels and a proper road users information in order to improve their behaviour contribute to reduce the accidents, therefore increasing road safety.

What remains to be done (ERSAP 2011-2020): monitoring the implementation of Directive 2004/54. Stimulating the exchange of best practices among Member States and tunnel operators, in particular with respect to the newly created "safety officer" activity. A possible application of such actions not only to the Trans-European Road Network, but also to other roads should be considered.

Measure 48

Adoption and incorporation in national legislation of a European Parliament and Council directive on the training of commercial drivers

Objective: improving road safety through the training of commercial drivers.

Description: The EU has encouraged its members to provide better training for professional drivers. Many professional drivers in the EU are working without the benefit of training or the

[21] OJ L 204, 4.8.2007, p. 30.

opportunity to regularly refresh their skills. In 2003 EU introduced Directive 2003/59/EC[22] of 15 July 2003 of the European Parliament and of the Council on the initial qualification and periodic training of drivers of certain road vehicles for the carriage of goods or passengers, amending Council Regulation (EEC) No 3820/85 and Council Directive 91/439/EEC and repealing Council Directive 76/914/EEC, with effect from 10 September 2008. The overall aim of the directive is to promote the professional competence of the drivers, with positive implications in terms of: increased road safety; reduced emissions and fuel consumption; enhanced profile of the industry; and harmonised training of drivers which may ease worker mobility in the EU market. Moreover, the directive also lowered the minimum age for driving a truck to 18 years in order to ease the problem of shortage of drivers in Europe.

Specific topic: *professional drivers*

Type of impact: *indirect.*

Contribution to road safety: *medium results.*

Consistency with other measures: this measure is consistent with the general scope of improving the behaviour of the professional drivers.

Outcomes

Directive 2003/59/EC made compulsory for European member states to have a Driver Certificate of Professional Competence (CPC) across the EU for all professional bus and truck drivers. The introduction of Driver CPC required more rigorous testing and continuous training for professional bus drivers from 10 September 2008 and truck drivers from 10 September 2009. According to the provisions of the Directive, two types of CPCs have been foreseen:

- the CPC certifying initial qualification, which is issued to drivers that apply for the first time for a CPC. It is required that drivers need to successfully pass an official practical and theoretical test organised under the supervision of the Member State of their residence. Each Member State can also decide to render mandatory a previous training;
- the CPC certifying periodic training, which is issued to drivers already holding a CPC certifying initial qualification or are exempted from the requirement to obtain it, after completion of a periodic training on road safety and rationalised fuel consumption. The first of the periodic trainings must be completed within five years (in some cases, Member States were allowed to shorten this period to three years or extend it to seven) after the CPC certifying initial qualification has been issued (or five years after 10 September 2009 for the drivers exempted from the obligation to certify initial qualification). A periodic training must then be completed every five years. As an exception to the general rule, young drivers can work for a maximum period of three years without holding a CPC, under the condition that they are involved in a national vocational training lasting at least six months.

Description of the impact: improving driving skills of the professional drivers could increase not only their safety, but also the safety of all road users.

What remains to be done (ERSAP 2011-2020): monitoring the implementation at national level of Directive 2003/59/EC; stimulating the exchange of best practices.

Measure 49

Tighter legislation (and enforcement) of driving and rest periods for commercial road haulage

Objective: increasing road safety by improving drivers' working conditions for the commercial road haulage.

Description: On 15 July 1997 the European Commission adopted a White Paper on sectors and activities excluded from the working time directive [COM(97) 334 final], in which it proposed several approaches designed to protect the health and safety of workers in the

[22] OJ L 226, 10.9.2003, p. 4–17.

sectors excluded from the basic Directive. Following consultations with the social partners, the Commission concluded, in its Communication of 31 March 1998 [SEC(1998) 537 final] that nothing justified treating "mobile" workers and "non-mobile workers" in a different way and that therefore the basic principles of the working time directive should apply to all workers. Directive 2002/15/EC of the European Parliament and of the Council of the European Union, regarding the organisation of working time of persons performing mobile road transport activities, was adopted 11 March 2002 and entered into force in March 2005. This directive was a lex specialis to the general Working Time Directive 2003/88/EC and it supplements Regulation (EC)561/2006 of 15 March 2006 laying down common rules on driving times and rest periods for drivers. The main objective the Directive 2002/15/EC was the introduction of minimum standards to protect the health and safety of road workers, avoid distortions to competition within the Community and improve road safety. On 15 October 2008 a proposal of a directive (COM (2008)650) was adopted in order to amend Directive 2002/15.

Specific topic: *professional drivers*

Contribution to road safety: *high results.*

Type of impact: *indirect.*

Consistency with other measures: this measure is consistent with the actions aimed at improving the working conditions of professional drivers.

Outcomes

Directive 2002/15/EC provided for common rules that ensure minimum social protection standards for mobile workers in the road transport sector and are perceived as an important step towards improving the health and safety protection of mobile workers in the sector, enhancing road safety and ensuring fair competition. The proposal for a directive amending Directive 2002/15/EC has the objective to enhance clarity, readability and enforceability of the current rules by providing a more precise definition of mobile workers including so called "false"self-employed drivers under this category of workers and therefore subject to the directive.

Description of the impact: mandating rest periods for professional hauliers reduce the risks of impaired driving due to fatigue.

What remains to be done (ERSAP 2011-2020): this measure should be continued.

Measure 50

Installation of digital tachographs in commercial vehicles

Objective: increasing road safety by monitoring the details of the driver's behaviour and of the journeys.

Description: Road safety is improved by the automatic recording and regular monitoring, both by the undertaking and by the competent authorities, of details of the driver's performance and behaviour and of the vehicle's journey, such as speed and distance covered. Council Regulation (EEC) No 3821/85 of 20 December 1985 on recording equipment in road transport, Council Regulation (EC) No 2135/98 of 24 September 1998 and Directive 2006/22/EC[23] of the European Parliament and of the Council of 15 March 2006 on minimum conditions for the implementation of Council Regulations (EEC) No 3820/85 and (EEC) No 3821/85 concerning social legislation relating to road transport activities are dealing with this and have introduced the digital tachograph and tightened the minimum controls. Regulation (EC) No 561/2006 of the European Parliament and of the Council of 15 March 2006 on the harmonisation of certain social legislation relating to road transport and amending Council Regulations (EEC) No 3821/85 and (EC) No 2135/98 and repealing Council Regulation (EEC) No 3820/85 has been adopted in order to introduce clearer and simpler rules about

[23] OJ L 102, 11.4.2006, p. 35–44.

driving times, breaks and rest periods for professional drivers operating both in national and international transport. Indeed, this Regulation has tried to bring effective solutions to the problems that have been experienced in interpreting, applying, enforcing and monitoring the provisions included in the Regulation (EEC) 3820/85. Moreover, there are regulations regarding the adaptation to technical progress of recording equipment in road transport, such as the Commission Regulation (EC)1360/2002 of 13 June 2002, Commission Regulation (EC) 432/2004 of 5 March 2004 and Commission Regulation (EC) 68/2009 of 23 January 2009.
Specific topic: *professional drivers*
Type of impact: *indirect*
Contribution to road safety: *medium results.*
Consistency with other measures: the measure is consistent with the general aim of improving the working and safety conditions for the drivers of commercial vehicles.
Concerns about the application of the legislation: digital tachographs are used to control drivers' hours, and for secondary purposes such as for instance accident investigation. Concerns on their effectiveness are mainly tied to the threat of manipulation and misuse, thus hampering the quality and level of enforcement and consequently the potential benefits for road safety. A full deployment of the digital tachograph may provide transport companies with a tool for an easier and improved management of transport operations, and enforcers with a more efficient instrument for controlling the compliance of the Regulation. This may result in an increase in road safety, since the digital tachograph makes possible a more efficient enforcement of European rules on rest and driving times, by: (i) improving road security and working conditions of drivers, and (ii) guarantee a fairer competition. However, continuous training and adequate equipment (onboard and for checks) are also key. In the long term, the deployment of the tachograph may pose concerns related to the technical development and maintenance of such tool. In addition, concerns may rise on the capability of national enforcement authorities to implement sound controls.
Description of the impact: monitoring the behaviour of the professional drivers constitute for them an incentive to perform correctly, therefore it increases road safety.
What remains to be done (ERSAP 2011-2020): this measure has been completed.

Measure 51

Best practice guidelines concerning company policies

Objective: improving road safety involving road transport companies.
Description: The project TRANSPORT COMPANIES (Application of road safety related Community legislation in transport companies), funded by DG TREN, aimed at the assessment of how road transport companies can be better involved for the improvement of road safety. The safety situation in the road haulage companies has been investigated by a combination of questionnaires and expert interviews. Potential measures to improve safety performance, especially outside Europe, have also been investigated to determine best practice. The duration of the project was from 1 December 2003 until 1 February 2005. Final Report, October 2004.
Specific topic: *professional drivers*
Type of impact: *indirect*
Contribution to road safety: *low results.*
Consistency with other measures: the measure is consistent with the general aim of increasing the safety in the road professional transport, in particular with Measures 52 and 53.
Outcomes
The final report of the project provided a set of conclusions and recommendations as well as an action package, in which the most "promising" actions have been listed. In particular, such actions have been grouped under four headings: vehicle technology and its usage, the driver, safety culture and compliance. However, the research in this domain, despite the results of the TRANSPORT COMPANIES project, has not yet received any follow-up.

The exchange of best practices at European level supports improvements and enhancements in the actions taken in the field of company policies at national or local level. Involving transport companies for a safer road professional transport could increase the safety of all road users.

What remains to be done (ERSAP 2011-2020): the measure should be continued.

Measure 52

Best practice guidelines concerning the securing of loads and the carriage of exceptional loads

Objective: improving road safety through a better management of loads carriage.

Description: As a practical step towards more road safety and transport efficiency throughout the European Union, the European Commission Directorate-General for Energy and Transport has asked experts from Member States and industry to develop guidelines reflecting best practice on cargo securing and abnormal transports. An expert group prepared a report regarding best practice guidelines for abnormal road transports. The document, which was finished in 2006, was presented to the Road Safety High Level Group, which gave a positive opinion concerning its contents and scope. These best practice guidelines can be a reference for all parties directly or indirectly concerned by abnormal road transports, but are primarily addressed to the relevant authorities in the Member States. The document was developed with and received the agreement of Member States' government experts and other parties concerned. The best practice guidelines are intended to pave the way towards simplification and, if possible harmonisation of the rules and procedures to obtain abnormal road transport permits as well as define the conditions under which procedures could be simplified. In addition, best practice guidelines on cargo securing for road transport have been prepared. Rules on cargo securing exist in several Member States, but they often differ in content and scope, making it very difficult for international transporters to know what the minimum cargo securing requirements are for a given cross-border transport operation. The purpose of the guidelines is to provide basic practical advice and instructions to all persons involved in loading/unloading and securing a cargo on vehicles, including carriers and shippers. They should also be useful for enforcement bodies and courts, and they could serve as a basis for Member States when taking the necessary steps for putting into practice the training of drivers in accordance with Directive 2003/59/EC on the initial qualification and periodic training of drivers of certain road vehicles for the carriage of goods or passengers. The guidelines aim to provide a guide for adequate cargo securing for all situations that may occur in normal traffic conditions. The guidelines should also serve as a common basis for both practical application and enforcement of cargo securing. The project GOODROUTE (Dangerous GOODs Transportation ROUTing, Monitoring and Enforcement) started in 2006 with the objective to develop a proper system for the routing of dangerous goods vehicles in order to minimise the risks related to the movements of this kind of vehicles.

The project GOODROUTE started on 1 January 2006 and was completed on 31 December 2009.

Specific topic: *professional drivers*

Type of impact: *indirect*

Contribution to road safety: *medium results.* It has been estimated that up to 25% of accidents involving trucks can be attributable to inadequate cargo securing.

Consistency with other measures: this measure is consistent with all the actions aimed at improving road transport safety, and in particular with Measures 51 and 53.

Outcomes

With respect to abnormal roads transports, the document:

- exposes the conditions and concepts which could greatly simplify the procedures and improve the conditions under which important segments of the European economy, especially

the building and production sectors, have to operate, leading to more timely and predictable abnormal road transports;
- proposes a single vehicle registration document adapted to abnormal road transports requirements, which takes into account current practice in certain Member States;
- presents the principles under which European abnormal road transports corridors could be developed in order to facilitate cross-border abnormal road transport operations;
- with regard to marking and signalling, proposes a relatively simple system achieving optimal effectiveness, according to the expert group;
- provides indications about escorts and self-propelled machinery, a particular group of abnormal road transport where it is the vehicle itself that does not comply with the European legislation on maximum authorised weights and dimensions for road vehicles.
The report on cargo securing provides best practice guidelines and recommendations regarding:
- vehicle body structure and equipment suitable for blocking on vehicles;
- restraining methods;
- calculating the number of lashings;
- inspection during drive / multidrop operations;
- standardised or semi-standardised cargo (geometrical forms);
- requirements for some specific loads.
What remains to be done (ERSAP 2011-2020): action should be taken to encourage the adoption of the developed best practices guidelines.

Measure 53

Adapting to technical progress the Community legislation concerning the carriage of hazardous goods

Objective: making European roads safer.

Description: Directive 2008/68/EC[24] establishes a common regime for all aspects of the inland transport of dangerous goods, by road, rail and inland waterways within Member States or between several Member States, including the activities of loading and unloading, the transfer to another mode of transport and the stops necessitated by the circumstances of the transport. It repeals and replaces Directives 94/55/EC, 96/49/EC and 96/35/EC with the objective of minimising the risks in transporting dangerous goods and ensuring that these goods are packaged and carried in a way that prevents leakage and protects the population, environment and economy. The Directive refers to the texts of the international agreements on transport of dangerous goods ADR (the European Agreement concerning the International Carriage of Dangerous Goods by Road of the 30 September 1957), RID (the Regulations concerning the International Carriage of Dangerous Goods by Rail of 3 June 1999) and AND (the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways of 26 May 2000). These agreements have drawn up a list of dangerous goods, defining the requirements for their transport. Directive 2008/68/EC extends their rules to national transport in order to harmonise across the Community the conditions under which dangerous goods are transported and to ensure the proper functioning of the common transport market.
The Commission Decision 2009/240/EC of 4 March 2009 transfers certain derogations previously granted under the ADR and RID Framework Directives to the new Inland Transport of Dangerous Goods Directive 2008/68/EC, which entered into force 20 October 2008. Member States must comply with it by 30 June 2009. Concerning controls, Commission Directive 2004/112/EC adapted the procedures for checks on the transport of dangerous goods by road of Directive 2001/26/EC. Member States have a transitional period

[24] OJ L 260, 30.9.2008, p. 13–59.

of up to two years (until 30 June 2011) for the application of the Directive to the transport of dangerous goods by inland waterway, so as to allow sufficient time for the adaptation of national provisions, the establishment of legal frameworks and the training of personnel.
Specific topic: *professional drivers*
Type of impact: *indirect.*
Contribution to road safety: *medium results.* The rules concerning transport of hazardous goods are expected to secure a higher level of road safety in the long run.
Consistency with other measures: the scope of this measure is consistent with the aim of increasing road transport safety, and in particular with Measures 51 and 52.
Outcomes
Defining clear, harmonised and effective rules for the transport of hazardous goods contributes to minimising the risk associated with the transport of dangerous goods, at the same time improving working and safety conditions in road professional transport.
What remains to be done (ERSAP 2011-2020): monitoring the implementation at national level.

Measure 54

Making the wearing of seatbelts mandatory in coaches and heavy goods vehicles
Objective: reduction of injuries for bus and coach passengers in case of accident.
Description: Directive 2003/20/EC[25], amending Directive 91/671/EEC on the approximation of the laws of the Member States relating to compulsory use of safety belts in vehicles of less than 3,5 tonnes, requires all bus and coach passengers to use seat belts (or child restraints, where appropriate and available) where they are installed. It amends the earlier Directive 91/671/EEC on the approximation of the laws of Member States relating to compulsory use of seat belts. In particular, it introduces the requirement that all occupants aged three and over of M2 (buses and coaches having a maximum gross weight not exceeding 5,000 kg) and M3 vehicles (buses and coaches over 5,000 kg) in use shall wear the safety systems provided while they are seated.
Specific topic: vehicle occupants' protection
Type of impact: *direct.*
Contribution to road safety: *medium results.*
Consistency with other measures: this measure is consistent with the aim of increasing the safety of vehicle occupants; in particular, it is linked with Measures 21, 25 and 55.
Outcomes
There are no separate figures for vehicles fitted and not-fitted with seat belts and available statistics do not identify if passengers were, or were not, wearing available seat belts at the time of accident. Therefore, a scientific quantification of the impact on road safety is not feasible. The efficiency is rated as medium, and not as high, since the mandatory use of seat belts is applied only for vehicles provided with those, while the installation itself is not mandatory.
Description of the impact: wearing seatbelts reduce the risk of personal damage and the potential severity of injury in case of accident.
What remains to be done (ERSAP 2011-2020): monitoring the implementation at national level while supporting the installation of seat belts in all coaches and HGVs.

Measure 55

Introducing protection rules for vehicles regularly used for the carriage of children
Objective: improving child safety in road transport.
Description: Road traffic accidents are the main cause of mortality for children up to 15 years old. Crashes involving school buses and crashes involving children travelling to school

[25] OJL 115, 9.5.2003, p. 63.

require a focused effort to be drastically reduced. To address this problem and improve children road safety, the EC has carried out several actions. In terms of legislation, the EU Directive 2003/20/EC covering seat belt wearing requires children up to the age of 12 years or less than 150cm tall (where there is an exemption, 135cm) travelling in cars, vans and goods vehicles to use an appropriate child restraint. According to this Directive, child restraints systems for child occupants of power-driven vehicles sold in the EU must conform to the UNECE Regulation 44. This regulation needs to be updated in order to take into account restraint systems for children up to 150 cm. To this aim, several EC projects have been working on the development and improvement of child protection systems. Moreover, several research projects in the domain of child safety have been funded. The CHILD project carried out the investigation of injury mechanisms and tolerances specifically regarding children in order to contribute to revised or improved standards and more efficient design of child restraint systems. The main objective of the project was to increase the level of knowledge of the injury mechanisms experienced by children of different ages in road accidents. In addition, CHILD complimented the activities of Euro NCAP with regard to child occupant protection assessment, establishing protection reference values for body regions such as the neck. The project School Transport (Road Safety in school transport) studied the key issues relating to school transport and made recommendations in the light of the existing and upcoming legislation in this domain. The final objective was evaluating the need for further legislation or action at Community or Member State level. The NPACS project (New programme for the assessment of child seats) aimed at providing independent published guidance to consumers on the relative protection afforded by child restraint systems. Through reliable methods of dynamic testing in collaboration with EU research and testing organisations, it developed an harmonised testing procedure with the objective of establishing an EuroNCAP type body. Compared to Euro NCAP, which rates the combination of a particular car model and a child restraint system, NPACS tests separately the child restraint system safety performance across most vehicle models. The EPOCH project (Enabling protection for older children), funded under the Seventh Framework Programme, aims to extend the NPACS testing and rating protocols to include child restraints for older children (developing a prototype 10/12 year old dummy). The final objective is to make proposals for the assessment of child restraints in the UNECE Regulation 44. Finally, the project SAFEWAY2SCHOOL (Integrated system for the safe transportation of children to school) aims to design, develop, integrate and evaluate technologies for providing a holistic and safe transportation service for children, encompassing tools, services and training for all key actors in the relevant transportation chain. These include optimal route planning for school buses to maximize safety, on-board safety applications (i.e. for speed control and seat belts), intelligent bus stops, effective warning and information systems for bus drivers, children, parents and the surrounding traffic, as well as training schemes for all actors. The project's innovative systems, services and training schemes will be tested in Sweden, Austria, Italy and Poland to evaluate their usability, efficiency, user acceptance and market viability.
Duration of the CHILD project: from 1 September 2002 to 31 August 2005.
Duration of the School Transport project: from 1 December 2003 to 1 October 2004.
Duration of the NPACS project: from 1 January 2004 to 1 January 2006.
Duration of the EPOCH project: from 1 January 2009 to 31 December 2011.
Duration of the SAFEWAY2SCHOOL project: from 1 September 2009 to 31 August 2012.
Specific topic: *vehicle occupants protection*
Type of impact: *direct.*
Contribution to road safety: *medium results*
Consistency with other measures: this measure is tightly linked with the implementation of Measure 22 (introduction of universal anchorage systems for child restraint devices).

Description of the impact: introducing protection rules for the carriage of children is a measure which not only directly improve child safety in vehicles by providing a more and more appropriate restraint systems, but also helps increasing the attention level of the driver. In fact, according to a research carried out in the UK, the Netherlands, Belgium and Germany (EPOCH, 2009), for 30% of the parents children distracting them in the back of the car is the cause of a (near) accident.

What remains to be done (ERSAP 2011-2020): the results of the thematic researches will need to be integrated and applied. Relative statistics need to be improved.

Measure 56

Examining the impact on road safety of the growing use of small commercial vehicles and company vehicles.

Objective: supporting policy making.

Description: The increasing participation of light goods vehicles (LGVs) in road traffic, especially considering the raise of courier and express services, is of growing concern for road safety; in fact, both the number of LGVs and their participation in accidents increased. The project IMPROVER (Impact Assessment of Road Safety Measures for Vehicles and Road Equipment), and in particular the Subproject 2, examined the impact of the measures improving the road safety of light vans (vehicles for the carriage of goods with a weight of more than 1 and less than 3.5 t). The research carried out by the project estimated that each year (considering as reference period from 1995 to 2005) more than 4.000 people die in the EU25 in accidents with light goods vehicles and more than 20.000 are severely injured. Moreover, between 1995 and 2005, the number of LGVaccidents with fatally injured road users increased on all road types: by 6% on urban roads, 8% on rural roads and 32% on motorways (IMPROVER, 2006).

Duration of the project IMPROVER: from 23 November 2004 to 23 May 2006.

Specific topic: *professional drivers*

Type of impact: *indirect.*

Timing of the effects: *long term.*

Contribution to road safety: *medium results.*

Consistency with other measures: the research development is closely connected with the studies carried out in the framework of the Measure 28 (examine the impact of the proliferation of 4x4s, SUVs and MPVs).

Outcomes

The IMPROVER Subproject 2:

- analysed the scope of the problem in the EU25;
- identified and defined road safety measures for LGV;
- carried out cost-benefit-analyses for each measure;
- proposed recommendations on the implementation of road safety measures dedicated to LGV.

Description of the impact: understanding the effects on road safety of the proliferation of small commercial vehicles is crucial to define the intervention strategy that needs to be adopted in order to increase road safety.

What remains to be done (ERSAP 2011-2020): the research is completed. Action needs to be taken in the framework of the measures addressing the safety of professional drivers (namely, Measures 48, 49 and 51).

Measure 57

Examine best practice with regard to post-accident medical care.

Objective: improving post-accident care by providing information on outstanding safety measures.

Description: The post-accident medical care consists of first aid measures, emergency call, response of emergency systems, safeguarding of accident sites, transportation and medical

treatment for the victims, further medical treatment and psychological support. The project SUPREME (Summary and publication of best Practices in Road safety in the EU Member States) had the goal to collect, analyse, summarise and publish best practices in road safety in the European Union as well as in Switzerland and Norway. The analysis was carried out along nine categories of measures, one of them being post accident care.
Duration of the project SUPREME: from 1 December 2005 to 1 June 2007.
Specific topic: *post crash medical care*
Type of impact: *indirect.*
Contribution to road safety: *high results*
Consistency with other measures: this measure shares the scope of Measure 58, which is improving post-accident care.
Outcomes
A specific Thematic Report on the best practices related to post accident care was published. It describes the best available practices, featuring basic characteristics such as target groups, quantitative and qualitative goals, key issues, duration of implementation and effects, coverage, costs, actors involved, implementation procedures as well as key success factors and potential implementation barriers in other countries.
What remains to be done (ERSAP 2011-2020): the thematic research is completed. Action needs to be taken to integrate the results of the study in the European systems of post-accident medical care.
Measure 58
Draw up specifications for satellite-positioning accident-warning systems and carry out demonstration projects involving the whole chain of emergency service provision.
Objective: promoting the use of ICTs to improve post-accident care and achieve safer roads.
Description: The European Commission supported several projects with the aim of reducing the consequences of road traffic accidents by deploying a system to immediately alert the emergency services. Such a system was first conceived and developed under the project AIDER, funded under the fifth Framework Programme. The aim of the AIDER project was to develop a kind of automotive "black box", similar to the devices in airplanes, which continually assesses the car's environment and, in case of an accident, alerts a call centre with essential details about the nature of the crash. The emergency services would be contacted immediately and, knowing the details of the accident, they would arrive both more quickly and prepared for specific injuries. The eCall programme received the task of optimising the in-car automatic emergency call system developed within the framework of the projects AIDER, E-MERGE and GST-Rescue and to make the technology work across borders. ECall is a system that automatically dials 112, Europe's single emergency number, when a car has a serious accident and sends its location to the nearest emergency service – even when passengers do not know or cannot say where they are. The Commission has further supported work on eCall through industry cooperation via the eSafety initiative, which seeks to improve road safety by fitting "intelligent" safety systems based on advanced electronic technologies into road vehicles (see Measure 37).
Duration of the project AIDER: from 1 September 2001 to 31 August 2004.
Duration of the project E-MERGE: from 1 April 2002 to 31 March 2004.
Duration of the project GST-Rescue: from 1 March 2004 to 31 March 2007.
The eCall technology is ready and common pan-EU standards have been agreed by the phone and car industry and by the emergency services. Since 2004, 79 representatives of the industry and 18 national Authorities have signed the EU's Memorandum of Understanding to implement the system across Europe. 15 EU countries (Austria, Cyprus, Czech Republic, Estonia, Finland, Germany, Greece, Italy, Lithuania, Portugal, Slovakia, Slovenia, Spain, the Netherlands and Sweden) as well as 3 EEA countries (Iceland, Norway and Switzerland) have agreed common arrangements for implementing eCall. Another 6 (Belgium, Bulgaria,

Hungary, Luxembourg, Romania and Poland) support the programme and are willing to sign the agreement. Instead, Denmark, France, Ireland, Latvia, Malta and the UK are still not ready to commit, mainly for cost concerns, and have not signed the Memorandum. In April 2006, the European Parliament voted by a large majority to adopt the eCall safety system for all new cars from 2009. By the end of 2010, eCall should become a standard option in all new type-approved vehicles. But to fully deploy it, Europe's car and telecoms industries and national administrations must ensure that their emergency services (i.e. call centres) are equipped to handle the system.

Specific topic: *post crash medical care*

Type of impact: *indirect.*

Contribution to road safety: *high results*

Consistency with other measures: this measure shares the scope of Measure 57, which is improving post-accident care.

Outcomes The Memorandum of Understanding for Realisation of Interoperable In-Vehicle eCall was adopted on the 28 May 2004.

Description of the impact: the eCall system will help to reduce the number of fatalities and the severity of the injuries by enabling a more immediate intervention of the emergency services. The system will also support the development of the technologies to manage road traffic congestion and to install services like satellite navigation in cars.

What remains to be done (ERSAP 2011-2020): several Member States have still not signed the eCall Memorandum of Understanding. The Telecoms Commissioner, Vivian Reding, invited them to take action and commit to the introduction of a system that can save lives. Otherwise, the Commission will need to propose legislation next year (EU Commission Press Release, 9 September 2009).

Measure 59

Develop the CARE database and widen access to it, in the interest of achieving greater transparency and encouraging its use; expand CARE to include hazard exposure variables and the causes of accidents

Objective: build a statistical and scientific basis contributing to the improvement of road safety.

Description: Several research projects have been carried out in order to expand the CARE database, developed in the framework of the SafetyNet project (see Measure 2), to increase the number of variables and to improve their quality.

The PENDANT project (Pan-European Coordinated Accident and Injury Database) was established to develop a new in-depth crash-injury database. It focuses on accident causation data, a linked police-hospital injury database and on accident investigation tools to support development of databases, harmonisation of collision severity assessment methods, impairment scales and injury severity scaling methods for casualty reduction. In 2006 a second phase of the project was launched. The project PROLOGUE (Promoting real life Observations for Gaining Understanding of road behaviour in Europe) aims at developing techniques for naturalistic observations, where road user behaviour is observed unobtrusively in a natural setting for a longer period of time. The main objective is to prove the feasibility and usefulness of a large-scale European naturalistic observation study. The project TRACE (Traffic Accident Causation in Europe) had the objective of providing with an overview of the road accident causation issues in Europe based on the analysis of all current available databases which include accident, injury, insurance, medical and exposure data (including driver behaviour in normal driving conditions). The idea was to identify and quantify the nature of risk factors, in order to estimate the safety benefits of a selection of technology-based safety functions. With regard to motorcycles, the Motorcycle Accidents In Depth Study (MAIDS) resulted in the most comprehensive in-depth database currently available for powered two wheelers accidents in Europe. The investigation was conducted during 3 years

on 921 accidents from 5 countries using a common research methodology. Then, in order to identify the main causes of accidents involving trucks, the European Commission and the International Road Transport Union (IRU) launched a scientific study on European Truck Accident Causation (ETAC). The experts team has investigated altogether 624 accidents involving trucks. The project SAU (Urban accident analysis system) focused on urban zones, developing a guide of "best practices" for the data collection, analysis and monitoring of traffic accidents. The project SARAC II (Quality Criteria for the Safety Assessment of Cars based on Real-World Crashes) aimed at developing advanced method of safety ratings, improving classification of injury severity, impact severity and vehicle damage. Finally, DaCoTa (Road safety data collection, transfer and analysis) is a project funded under the Seventh Framework Programme aimed at further improving the European Road Safety Observatory (ERSO) by enhancing, structuring and applying the data and knowledge it contains. It represents the follow-up of the projects SafetyNet and SUNflower and involves 17 partners from 13 countries. It covers subjects such as accident data, measure evaluation and policy benchmarking with the aim of developing innovative mechanisms for exploiting existing data sources, to facilitate the analysis and to explore potential road safety improvements. It started in May 2009.
Duration of the SafetyNet project: from 1 December 2004 to 1 December 2008.
Duration of the MAIDS project: from 1 December 2001 to 1 December 2002.
Duration of the PENDANT project: - from 1 January 2003 to 1 December 2005;
- from 16 January 2006 to 15 July 2016.
Duration of the ETAC project: from 1 May 2004 to 30 September 2006.
Duration of the SARAC II project: from 1 March 2003 to 1 April 2006.
Duration of the SAU project: from 1 April 2004 to 31 March 2007.
Duration of the TRACE project: from 1 January 2006 to 30 June 2008.
Duration of the DaCoTa project: from 1 May 2009 to 31 October 2011.
Duration of the PROLOGUE project: from 1 August 2009 to 31 July 2011.
Specific topic: *statistical data*
Type of impact: *indirect.*
Contribution to road safety: *high results.*
Consistency with other measures: data collection is functional to all other measures concerning research and thematic analyses. Moreover, this measure has a strong link with Measure 60 (linking hospital data and accident statistics).
Outcomes
The CARE database has been enhanced to include, from 15 Member States, a total of 27 Member States as well as Norway, Switzerland and Iceland. A range of standard statistical outputs from CARE (reports and factsheets) has been developed. New fatal and in-depth accident causation databases have been established, in particular concerning motorcycles (MAIDS) and trucks (ETAC). The MAIDS study resulted in a report that has recently been updated (MAIDS, 2009) with a new presentation of the data, including a split between mopeds (L1) and motorcycle (L3), and a multivariate analysis on fatal accidents describing the results achieved by the project. The ETAC study enabled the creation of a database to record all accident causes with around 3,000 parameters per accident. The results have been made available to the research community and other relevant parties with the final report (ETAC, 2006). The PENDANT research resulted in the definition of methods to assess collision severity and in the review of the traffic injury output scales; it also produced crash modelling methods for estimating casualty and injury reductions. Over 1,100 crashes have been investigated and the data were organised in a new database. DaCoTA is expected to become one of ERSO major deliverers of knowledge and data in the coming years. Within DaCoTA, the harmonising data methods will be further applied, resulting in more and more standardised data products on a European level.

Description of the impact: data collection and analysis provide a fundamental support to the definition of policy priorities and to the assessment of road safety initiatives and actions. The outcomes of the research will lead to a better understanding of road safety and will help to realise a safer road transport system..

What remains to be done (ERSAP 2011-2020): reported statistics need to be constantly improved. Moreover, they could be more detailed in order to facilitate a deeper background analysis. Member States should be supported and encouraged to provide a complete set of data in line with the European criteria and requirements.

Measure 60

Assess and improve systems for linking hospital data and national road accident statistics

Objective: build a statistical and scientific basis contributing to the improvement of road safety.

Description: The goal of collecting data by medical institutions is twofold, namely estimating the real number of non-fatal casualties and obtaining more information about injury severity and long term impact of traffic crashes. The objective was firstly addressed in the framework of the PENDANT project (see Measure 59), which, among others, aimed at analysing both in-depth database and hospital-based data systems, in order to develop a new hospital-based data system linked with police data. Besides, the project SUPREME aimed at collecting and publishing best practices in road safety in nine different categories of measures (see Measure 57), carried out a specific study on the methods of collecting data within the category "statistics and in depth analysis". The project refers to the results identified by the project SafetyNet. This project (see Measure 2) had the goal of developing the framework for the European Road Safety Observatory (ERSO), which assembles a coordinated set of data resources to support policy development. In particular, Work package 5 on statistics and in-depth analysis reported on the practices for the collection of crash data and for linking medical files with crash data. The projects SUPREME and SafetyNet identified the best practice in data collection and produced several recommendations regarding systems for linking hospital data and national road accident statistics. In particular, countries should:

- try to monitor the level of reporting in official crash statistics by setting up reporting systems at hospitals;
- encourage electronic linkages between sources of injury data or, even better, promote a system for electronically merging injury records kept by hospitals and police reported injury crashes;
- check the completeness of fatality records by comparing as many sources of data as possible (namely, crash registration by the police, court files with unnatural deaths, death causes file from the municipal records about population, car insurance and hospitals).

Duration of the SafetyNet project: from 1 December 2004 to 1 December 2008.

Duration of the PENDANT project: from 1 January 2003 to 1 December 2005;

- from 16 January 2006 to 15 July 2016.

Duration of the SUPREME project: from 1 December 2005 to 1 June 2007.

Specific topic: *statistical data*

Type of impact: *indirect.*

Contribution to road safety: *medium results.*

Consistency with other measures: data collection is functional to all other measures concerning research and thematic analyses. Moreover, this measure has a strong link with Measure 59 (developing CARE database).

Outcomes

The project PENDANT, addressing the shortfall in injury-crash data (see Measure 59), carried out an analysis of hospital based data systems. A specific Thematic Report on the best practices related to the linkage hospital data and national road accident statistics was published within the framework of SUPREME (SUPREME, 2007). The SafetyNet project

produced two deliverables relevant to this specific measure: the Final Report of task 1.5, analysing methods to estimate the real number of road accident casualties and a research dealing with the further enhancement and exploitation of the CARE system.

What remains to be done (ERSAP 2011-2020):

- studies designed to assess the level and accuracy of reporting in official road crash statistics should be performed regularly;
- studies should be made to determine the extent to which injuries recorded by medical institutions can be geographically located correctly;
- studies should be made to determine the possibility of electronically merging police records and hospital records of traffic injury in ways that will not violate the protection of the privacy;
- a simple injury scale according to severity should be developed by medical professionals for use by the police and the health emergency services.

Measure 61

Develop specifications for on-board accident recording devices, and examine the consequences of various alternatives for certain categories of vehicles

Objective: supporting collision investigation and safety research.

Description: Accident recording devices (ARDs) are instruments to record the data a couple of seconds prior and after a crash (therefore not involving behaviour monitoring). The aim is enhancing the understanding of how accidents and collisions happen, but also recognising the potential benefits for prevention and road safety. Moreover, their application can lead to improvements in different domain, namely in legal trials, in the application of victims' rights and in fighting vehicle thefts, insurance frauds and other crimes. The data collected can be used not only for improving accident investigation and speeding-up of court procedures, but also for enhanced research in in-depth databases of real-life information, which allow for better evaluation of road safety measures in all fields (active and passive vehicle safety, infrastructure, training, regulation and enforcement). In order to understand the feasibility of implementing accident data recording technology in Europe, the European Commission launched the project VERONICA (Vehicle Event Recording based on Intelligent Crash Assessment). This study examined the relevant information related to accident recording devices: technical specifications, application on different vehicle classes, harmonisation issues and medical and legal aspects, including privacy issues. It also analysed the impacts on accident prevention and traffic safety and calculated the cost-benefit ratio. The project produced recommendation about the suitable legal framework for on-board accident recording devices, in particular to improve the European accident databases with real-life collision data. The follow-up project, VERONICA II, further specified the technical and legal requirements for a possible implementation of accident data recorders in European vehicles. In particular, it has been studied how to capture not only hard crash data, but also data from soft collisions, i.e. with vulnerable road users, who represent a relevant part of road users and victims in accidents. A special focus was given to commercial and professional used vehicles. Besides these research activities, the Commission co-funded the DRIVE II programme, a field test in the UK, Netherlands and Belgium (SAMOVAR-DRIVE project). The project focuses on low cost in-vehicle electronic systems for recording data related to vehicle and its communications to other systems and databases. A total of 341 vehicles equipped with different data recording technologies have been tested. The synthesis of the results shows that the accident rate was reduced by 28% and the accident costs by 40%.

Duration of the VERONICA project: from 1 January 2005 to 31 December 2006.

Duration of the VERONICA II project: from 1 May 2007 to 30 April 2009.

Specific topic: *statistical data*

Type of impact: *indirect.*

Timing of the effects: *medium term.*

Contribution to road safety: *medium results.*

Consistency with other measures: the work carried out in the framework of the two VERONICA projects is very much in line with the EC e-safety R&D initiatives, which provide for better accident data to enhance the research for vehicle and infrastructure safety and for accident mitigation. In particular, it has a strong connection with the Measures 58, 59 and 60.

Outcomes

The Final Report (VERONICA, 2006) incorporates the emerging finding from of the research carried out within the project. In particular, it presents a list of key information to be collected during a collision. Proposals are also made for recording frequencies. A number of target group characterised by an elevated accident or damage risk have been identified as priority for collision data collection: hazardous goods vehicles, coaches, buses, emergency vehicles, other commercial vehicles, motorcycles and young drivers. Concerning passengers cars, instead, the implementation of these devices is presently not indicated, but it can be considered in the future.

Description of the impact: Accident recording devices support an improved collision investigation, the collection of real-life data for research, rescue advancements, infrastructure and vehicle design improvements, all acknowledged means to improve road safety. Moreover, besides the indirect impacts on road safety, the use of accident data recorders in fleets shows that a considerable preventive effect can be achieved.

What remains to be done (ERSAP 2011-2020): the results of the research need to be applied. According to the recommendation contained in the VERONICA II Final Report, a Directive based on the purpose of road safety would provide the best way to achieve the implementation of accident data recorders in the European Union. Meanwhile, the acceptability of these devices to the public should be assessed.

Measure 62

Establish a European methodology for independent road accident investigations and set up a group of independent experts meeting within the Commission.

Objective: developing a common methodology in transport accident investigations.

Description: Accident investigations aim at identifying the circumstances and the causes of accidents and drawing conclusions thereof so that appropriate measures can be taken to prevent them from happening again. Currently, across Europe there is a wide range of accident investigation procedures and protocols in place applied by the police, insurance companies, researchers and other accident investigators. In 2004 the European Commission set up a group of twelve experts to assist it in defining a shared strategy in transport accident investigations (ROSAT working group, Road Accident Independent Investigations). The ROSAT group aimed at defining a reference methodology for European and national authorities in order to allow independent, effective and competent safety investigations. It has issued recommendations on methodology issues applicable to all modes of transport and recommendations on road accident investigations. Meanwhile, the project QUERY (Developing guidelines for a best practice qualification of accident analysts) was initiated to investigate how the professional profile of specialists in accident reconstruction is integrated into the different legal systems of the EU Member States. At the same time, the SafetyNet project was launched. Within the project framework, the 4th Work Package brought together 20 road safety researchers with the aim of establishing the requirements for the creation of transparent and independent road accident investigations in all Member States according to a common European investigation methodology. The final objective is addressing the need to have detailed, public, transparent and independent road accident data at European level. The research carried out an investigation of a sample of routine accidents as well as of major accidents and resulted in a set of recommendation whose primary focus is on safety oriented investigation.

Duration of the ROSAT project: from 1 July 2004 to 31 July 2006.

Duration of the SafetyNet project: from 1 May 2004 to 31 October 2008.
Duration of the QUERY project: from 15 July 2004 to 14 July 2006.
Specific topic: *statistical data*
Type of impact: *indirect.*
Contribution to road safety: *low results.*
Consistency with other measures: enhancing road accident investigation is consistent with the objective of expanding the scope of CARE database to include the causes of accidents (see Measure 59). Already, specialist teams conducted safety oriented road accident investigations to gather data for the accident causation database developed in the framework of the SafetyNet Work Package 5. Moreover, there is a clear link with measures regarding vehicle safety; in fact, in order to assess the efficiency of new vehicle safety systems there is the need to collect a great number of real-life accident data before gathering enough evidence to issue a general recommendation to incorporate a certain system to all new vehicles. This evaluation process could be significantly enhanced if accident data from different countries could be combined thanks to a shared accident investigation strategy. In this regard is relevant the subsidiary action with the objectives of the eSAFETY Forum Working Group on Accident Causation Data, that has been working for improved accident analysis methodologies (see Measure 37), and of the CARS 21 initiative, whose aim is making recommendations for the public policy and regulatory framework for the European automotive industry (see Measure 21). There is also a clear link with measures regarding infrastructure safety, since a prerequisite to help formulating road safety policies is that a critical number of cases are investigated. In addition, independent investigations that systematically address the identification of potentially dangerous behaviour and recurrent human mistakes support the definition of possible measures to deal with them. Finally, this measure is complementary with the aim of developing specifications for on-board accident recording devices (Measure 61). In fact, accident recorders complete the information collected by police or other staff in order to obtain detailed information on accident circumstances in a very useful manner for traffic safety research.
Outcomes
One of the ROSAT working group's most important achievement was to develop a common European methodology for safety investigation of accidents in the transport sector designed to produce a harmonised and consistent approach across the European Union. The final result is a 90 pages document and a list of 34 remarks, conclusions and recommendations issued both at national and at EU level. The methodology adopted establishes the principles, standards and powers to pursue safety investigations in an independent, effective and competent way. The QUERY project produced 25 Country Status Reports with an overview of the various legal systems and the required professional qualifications of the experts in accident reconstruction. Through consultations with the participant countries, the professional profile of the expert in accident reconstruction was analysed, and guidelines for a "Best Practice Qualification" were developed. The final result was the adoption of the Proposal for European Guidelines in Accident Reconstruction. Finally, the 4th Work Package of the SafetyNet project produced 21 recommendations (SafetyNet, 2008). According to the document, these recommendations should be viewed as the starting point for future projects aiming to implement a European safety oriented road accident investigation programme and working towards a common European accident investigation methodology.
Description of the impact: proper accident investigations methodology can lead to significant improvement of knowledge concerning safety approaches in technical, infrastructural and driver behaviour terms.
What remains to be done (ERSAP 2011-2020): a comprehensive set of tools for a suitable pan-European in-depth accident data collection and analysis has been developed and

successfully tested. The concrete Europe-wide implementation is still missing. The development of a European framework on casualty investigation should be further explored.

2. PUBLIC CONSULTATION ON THE POLICY ORIENTATIONS ONROAD SAFETY 2011-2020

The stakeholder consultation process

Stakeholder consultation towards the development of the next EU Road Safety policy orientations 2011-2020 was carried out by the European Commission between July and December 2009. The consultation process comprised a series of six thematic workshops, an internet consultation and a stakeholder conference, which took place on 2 December 2009[26].

The consultation process produced proposals with respect to the key road safety problems which should be addressed at European Union (EU), national and local level and recommendations for the development of the next road safety action programme. These proposals take into account that actions need not only achieve a positive impact on road safety as such but also in connected fields such as public health, mobility, energy, the environment and the economy.

Results of the stakeholder consultation process

Problem analysis

Road safety problems occur in terms of results (level of deaths, serious injuries, costs, levels of drinking and driving, speeding, seat belt use etc.), in terms of measures to be taken for achieving improvement (e.g. improving user's behaviour, improving the safety of infrastructure and of vehicles) and in terms of the quality of institutional measures such as target-setting, legislation, funding, monitoring and evaluation, R&D etc.

Current situation

Involvement in a road traffic crash is the leading cause of death and hospital admission for citizens of the EU under 45 years. In 2008, there were 39,000 road traffic deaths and around 300,000 casualties with seriously injured. For every death, there are an estimated 4 permanently disabling injuries (such as to the brain or spinal cord), 10 serious injuries and 40 minor injuries. The estimated socio-economic costs are around €180 billion comprising 2% of GDP.

The gap between the best and worst performing Member States is large with the best performing 3.5-4 times (in per capita rate) better than the worst.

The consultation identified current levels of road death, serious injury and socio-economic cost as the overarching problems for road safety in EU countries. Around two thirds of all fatal and serious injuries to road users occur outside urban areas, while most serious and fatal injuries to vulnerable road users such as pedestrians and children take place in urban areas**.**

Number of death: The casualty groups which determine the priorities for reductions in total deaths in EU countries are ***car occupants*** who comprised 50% of total deaths, ***powered two-wheeler users*** (motorcyclist deaths are increasing) and ***pedestrians*** who comprised 18% and 20% of deaths respectively in 2008. Road assessment data indicates that in middle-income

[26] Technical assistance for the consultation process was provided by the COWI Consortium in partnership with Jeanne Breen Consulting and the University of Loughborough, UK.

countries the key target for action is the national road network and in high-income countries the target for action is the busy regional road network. The main crash types which need to be addressed are pedestrian and other vulnerable road user crashes, crashes at intersections, run-off-road crashes and head-on crashes. For the EU as a whole, around two-thirds of pedestrian deaths occur in built-up areas.

Risk of death: The casualty groups which determine the priorities for reductions in numbers of deaths and serious injuries amongst highest risk (number of deaths per 100,000 of population) groups in EU countries are ***young novice drivers, powered two-wheeler users, pedestrians and cyclists.*** The consultation highlighted the problems of an ageing society. In particular, the physical vulnerability of older road users contributing to severe outcomes in road crashes will be an issue of increasing importance in the design and operation of the road traffic system.

- What are the problems and how to deal with them

Problems in dealing effectively with the problems relate to insufficient scope of road safety strategies, insufficient attention to the evidence base and to addressing the needs and vulnerabilities of all road users. Stakeholders acknowledged that fatal and serious injuries in road crashes are preventable and need to be addressed by measures in the field of planning, design, layout and operation of the road infrastructure network, improvement in vehicle safety, improved post-impact care as well as by securing better user compliance with important road safety rules through education, licensing, testing, training and enforcement.

EU, national and local policies need to focus on the ***implementation of evidence-based approaches*** to reduce exposure to the risk of death and serious injury; to prevent death and serious injury; to mitigate the severity of injury when a crash occurs and to reduce the consequences of injury. Measures need to better address the safety of all road users and take account of future demographics, notably the physical vulnerability of the elderly. The need to address and reduce ***excessive and inappropriate speed, insufficient seat belt wearing and crash helmet use, impaired driving, high novice driver - and high PTW-rider risk*** were cited throughout the consultation, as were the need for ***improved safety quality of vehicles and road infrastructure for all users*** and ***improved emergency medical response***.

- Institutional management issues

The internet consultation responses highlighted the lack of political willingness to prioritize road safety, insufficient integration and coordination of activity and lack of high-level review of safety management performance as the key problems in institutional leadership and coordination in EU countries.

Stakeholders, in general, believed that there was ***insufficient harmonization*** of road safety rules and standards and mechanisms for their compliance. Legislation to improve road safety needed to be underpinned by research and development, cost-benefit analysis and systematic monitoring and evaluation. ***Problems of obtaining resources*** *commensurate with the size of the road traffic injury problem* are perennial for road safety and are identified as an important obstacle by stakeholders throughout the consultation. ***Insufficient promotion and communication*** on road safety were also perceived as key problems.

Respondents to the internet consultation rated the lack of periodic, independent review of road safety performance, the lack of health sector monitoring to establish under-reporting of

injuries and the lack of harmonised definition of serious injury as the main problems in monitoring and evaluation.

A key problem for road safety highlighted in the consultation is the ***need to continue to apply research-based measures at EU, national and local levels,*** to achieve interim results and to identify future solutions. Improving performance of all EU countries relied upon *more effective knowledge transfer*. Strengthened institutional management capacity to address the problems mentioned above was highlighted as the major necessary step in making a difference to the road safety situation in the next decade in Europe.

Recommendations for action at EU, national and local levels

The consultation outlined the need for the EU and Member States to address levels of death and serious injury throughout the road network – both in built-up and non built-up areas; to reduce levels of socio-economic cost; to adopt and promote a long-term vision to eradicate death and serious injury and to set challenging but achievable quantitative interim targets.

A long-term shared vision and interim targets

At EU level:

Adopt a long-term shared vision across the road safety partnership for the future safety of the road traffic system (Safe System) for the ERSAP, the European Road Safety Charter and the European Road Safety Observatory in line with internationally recommended good practice.

Identify and adopt a shared interim target to reduce the number of deaths by a challenging but achievable percentage within the period 2011 – 2020 as the focus for road safety action. Set up small sub-group of experts and officials to consider existing proposals and related analysis on specific targeted levels of deaths. Identify and adopt a separate shared interim target to reduce the number of serious injuries in EU countries based on Member States definitions of serious injury. Consider the adoption of quantitative targets to reduce the risk of death for key vulnerable and unprotected road user groups e.g. for children. Ensure visions, targets and strategies are adopted as a condition of new EU membership.

At national and local levels:

Adopt a long-term vision (Safe System), interim outcome targets and also target intermediate outcomes (e.g. levels of seat belt use, reductions in mean speeds) and institutional outputs(e.g. numbers of breath tests, % of vehicle fleet with 4+) in new national and local road safety strategies*

Leadership role and capacity

Road safety takes place in a complex multi-sectoral context and requires careful governmental leadership. Effective lead agencies can take many forms and, in good practice, carry out a range of specific functions. In the internet consultation, stakeholder meetings and in additional written contributions, several organisations highlighted the need for the establishment of a European Road Safety Agency.

At EU, national and local levels

Review governmental lead agency arrangements, capacity and support for developing, agreeing and implementing new road safety visions, targets, and strategies.

Consider the establishment of a European Road Safety Agency at EU level.

Integration of policies and coordination arrangements to achieve road safety results

The scope for improvement in coordination of road safety between different sectors with road safety responsibilities as well as between EU, national, regional and local levels was a general observation in the public consultation. The ***health sector*** need to take up road safety as a core responsibility and the 'win-wins' of speed management for the transport, health and environment sectors were emphasised in particular. The value of engaging employers to introduce work-related road safety policies was also highlighted, as was the value of engaging cities in effective EU-funded municipal road safety initiatives. The need to support effective activity by the non-governmental sector was highlighted as well.

At EU and national levels:

Review coordination arrangements across government and in view of international best practice for the establishment and implementation of the action programme to achieve results. Transport, health, justice and police, work, environment, industry, finance and municipalities form the key partnerships which can help to deliver results.

Engage Parliament, business and civil society in the consultative process preceding decision making.

Legislation and harmonisation to achieve road safety results

Most stakeholders believed that EU and national legislation to set minimum standards of safety but offering a high level of protection for the road network, vehicles and users continues to be necessary and appropriate. Harmonisation to produce road safety results needs to be underpinned by research and development, systematic monitoring and evaluation, cost-benefit assessment and large-scale demonstration projects in the case of new technologies.

At EU and national levels:

Recognise that a legislative framework for road safety at EU and national levels continues to be essential.
Expand harmonisation on road safety where EU action can add road safety value to cover standards/ type approval , technical inspection, audit in the fields of infrastructure and vehicles as well as improved user standards (e.g. harmonised maximum blood alcohol limits and speed limits); cross border enforcement; public procurement policy etc .
Carry out cost-benefit analyses of proposed legislative measures to ensure that the Commission's requirement of achieving a positive impact on road safety and public health while also improving mobility, energy, the environment and the economy is met.

Funding and resource allocation to achieve road safety results

Funding problems were identified as a key obstacle to achieving results by stakeholders in the internet consultation and thematic workshops. The EU was urged to establish an EU Road Safety Fund; to provide further support for the EU twinning programme to enable best practice and with emphasis on road safety management capacity development; to apply specific safety criteria in transport and TEN-T projects and to continue to fund research and development and demonstration projects.

At EU and national levels:

Review resource levels needed for the implementation of new programmes.

Establish an EU Road Safety Fund for the Road Safety Action Programme.

Provide financial incentives and premium discounts for the take-up of demonstrably effective road safety equipment and promote clear incentives for safe driving.

Fund twinning and demonstration projects to develop good practice road safety management capacity and to support effective RSAP measures in EU and neighbouring countries with lower levels of safety performance.

Specify safety criteria in structural funds, public procurement, transport and TEN-T projects.

Support road safety research as well as demonstration projects.

Support EU umbrella NGOs and the extension of networks of NGOs active in road safety.

Establish any benefits for road safety of the internalisation of road crash costs and set out an EU route map for the internalisation of external road crash costs.

Promote cost-benefit analysis in resource allocation, use of 'willingness to pay' and update values.

Promotion of shared responsibility to achieve results

The consultation results emphasised that road safety requires promotion at a high level both inside and outside government aided by a shared vision and targets for the future safety of the traffic system. In-house safe travel policies, public procurement of safety equipment and best practice communication policies were also highlighted.

At EU, national and local levels:

Promote a shared EU road safety vision and EU and national targets at the highest levels of government, business and civil society in communications policies, through the European Road Safety Charter and European Road Safety Observatory as well as in action programmes.

Show organisational leadership at EU, national and local levels in public and private sectors by introducing in-house safe travel policies.

Amend EU legislation to include the promotion of clean, safe and energy-efficient road transport vehicles in public procurements.

Promote best practice in road safety communication policies and proven measures which reduce deaths and serious injuries in the context of the European Road Safety Charter, the European Road Safety Observatory and in national and local frameworks.

Monitoring and evaluation of results

The need for EU and national actions to improve monitoring and evaluation came out very strongly from the consultation and a wide range of actions were recommended.

At EU level:

Monitor the effects of road safety targets, strategies, individual measures, including European Road Safety Charter - inspired measures and establish a high-level review team to report on progress and to make further recommendations based on evaluation.

Develop, promote and establish a single EU-reporting system for crash injury, exposure and other data. Adopt a standard EU definition for 'severe' and 'minor' injury and apply it across databases.

Ensure computerized health sector monitoring of death and serious injury in road crashes in every Member State and conduct studies to ascertain levels of under-reporting in the CARE system data.

Stimulate detailed in-depth investigations based on established protocols.

Promote and support independent review of road safety management across the EU and elsewhere.

Establish regular public opinion surveys on road safety.

At national and local levels:

Establish/improve the quality of crash injury databases and data sharing arrangements between police, roads- and health authorities and establish levels of under-reporting.

Carry out annual surveys and analyses to collect key exposure data and safety performance data and establish national databases on intermediate outcome data (.e.g. speed, seat belt use in normal traffic) and institutional output data (e.g. numbers of breath tests, speed checks etc.) in line with best practice for national strategies on speed management, increasing seat belt use, reducing drinking and driving and improving roads and vehicle fleet quality.

Submit national road safety performance to independent peer review in line with ITF/OECD recommendations.

Research, development and knowledge transfer

Many respondents and written contributions highlighted stakeholder support for continuing research and knowledge transfer which is seen as key to past successes in reducing casualties, a pre-requisite for further improvement and a means by which Europe can continue to be the global leader in road safety. The value of the European Road Safety Observatory, the Framework Research Programme and road safety twinning activities were highlighted regularly. The need to build and transfer knowledge on *Safe System* approaches was mentioned several times at the Stakeholder Conference and in the thematic workshops.

At EU level:

Establish the European Road Safety Observatory as a permanent EU-funded structure as a source of information and knowledge for all with appropriate human and financial resources and preserving and strengthening the original aims of ERSO as an established and valuable source of knowledge and data for safety decision-making.

Establish authoritative EU best practice guidelines agreed by Member States to be applied across the road safety management systems.

Promote the development of more'best practice' resources/ tools for implementation e.g. road safety management capacity review and target-setting tools.

Support capacity building demonstration projects in countries with poor safety results.

At national and local levels:

Establish capacity in-house and with external partners of road safety research and establish a national research strategy.

Build and transfer knowledge based on Safe System approaches.

Develop and promote best practice guidelines particularly in enforcement & engineering.

Embark on 'peer to peer' twinning activity and professional training at decision-making and practitioner levels for knowledge transfer on effective and innovative activity.

Towards a safe system

Stakeholders acknowledged that serious and fatal injury in road crashes is preventable and that existing knowledge identifies the opportunity towards safer road networks, safer vehicle fleets, safer emergency medical systems as well as safer drivers, passengers, riders, cyclists and pedestrians.

Planning, design and operation of road infrastructure

Consultation results indicate that road safety engineering and network management should be actively promoted and supported at EU, national and local levels. Safety engineering measures represent a sound investment and a higher benefit/cost ratio, in general, than for other road engineering measures. Action is needed to improve road safety on non-urban, non-motorway roads as they account for around 60% of deaths, nearly 50% of cyclist deaths and around 30% pedestrians. Urban safety management and lowering urban speeds are also essential measures bearing in mind the lower human tolerance thresholds of pedestrians, children, older users and two wheeler users.

At EU level:

Apply the Infrastructure Safety Directive providing for safety impact assessment, safety audit, safety inspection and network safety management on TEN-T roads to all roads.

Develop authoritative EU guidance/best practice guidelines covering a range of safety engineering issues and establish a process of obtaining agreement on EU level guidelines, e.g. land use planning, urban safety management; speed management, self-explaining, crash–protective roads and innovative approaches which contribute to the Safe System approach.

Expand the Cross Border Green Corridor concept to Cross Border Green and Safe Corridor to include road safety criteria.

Set minimum standards based on 4 star EuroRAP levels for the TEN-T network.

Establish road safety engineering criteria for inclusion in EU project investment.

Play a role in the harmonisation of technical standards (skid resistance, barriers, markings, proven new technologies etc) to ensure minimum standards.

Promote, standardise and provide for deployment of ISA (Intelligent Speed Adaptation) and other demonstrably effective technologies.

Promote consumer information (EuroRAP/iRAP) on the risk of specific roads particularly in countries of the last EU enlargement and in neighbouring countries.

Promote better crash injury and survey data on road network risks.

Fund demonstration projects and research evaluation for innovative safety engineering, promising new technologies as well as co-operative efforts between vehicle and infrastructure providers to achieve safe travel on the network.

At national, regional and local levels:

When revising road functional classifications and hierarchies, ensure that an appropriate match between function, speed limit, design and layout is achieved which takes better account of non-motorised as well as motorised use.

Adopt Safe System approaches to road safety engineering and periodically review national standards, guidelines and processes against international good practice.
Implement 30km/h zones in residential areas to improve vulnerable road user safety.
Support and join EuroRAP/iRAP and conduct EuroRAP/iRAP risk mapping and protection scores to help assess the safety quality of roads.

Apply safety impact assessment, audit, inspection and network safety management procedures to new road and improvement projects.

Vehicle safety

The consultation process demonstrated that the potential substantial opportunities for further casualty reduction resulting from improved vehicle safety and new technologies are well-appreciated. The vehicle safety workshop concluded that linking preventative, active and passive safety, cooperative systems for motor vehicle occupants and vulnerable road users are necessary. The need to provide vehicles with facilities to simplify the driving task and to ensure their design and equipment to protect the vulnerable human being as effectively as possible, both inside and outside the vehicle, were seen as key casualty reduction issues. The consultation process noted the importance of EU action on vehicle safety in particular, and recommended a range of actions to promote the use of vehicle safety rating and fast-tracking

of provision of proven safety equipment through safety ratings and public procurement; further harmonisation of vehicle standards and a range of research and development needs.

At EU level:

Amend current EU legislation to include the promotion of clean, safe and energy-efficient road transport vehicles in public procurement.

Promote effective technologies such as ISA, alcolocks, seat belt reminders in procurement policies to encourage consumer uptake.

Promote consumer information on the comparative safety of vehicles to encourage rapid changes to vehicle design before 2020.

Provide a route map for the implementation of Intelligent Speed Adaptation and Event Data Recorder systems

Extend current legislation on seat belt reminders to include fitment in rear seats as well as front seats.

Remove the exemption for use of seat belts by taxi drivers.

Develop and propose standardized test methods for car to car compatibility; truck to car compatibility and improved methods for front, side and rear impacts.

Legislate for whole vehicle type approval for powered two wheelers such as effective anti-tampering devices, the fitment of front number plates to aid speed enforcement and mandatory ABS for all two wheeled motor vehicles.

Increase focus on the needs of vulnerable road users in new vehicle safety technologies including pedestrian detection and collision avoidance devices, motorcycle design and equipment.

Legislate for the construction and use of vans and small lorries (< 3.5 ton) as for heavy good vehicles.

Require the fitment of alcolocks in heavy goods vehicles and public transport vehicles and promote their use.

Study the road safety value of a system of continuous compliance to be installed and/or a system for providing technical information for every vehicle

Study the road safety value of legislating for a PTW roadworthiness test.

Implement an EC task force to focus Commission work on new vehicle safety technologies in order to identify the systems with expected most effective casualty reduction.

Develop safety assessment procedures for intelligent systems, human machine interface (HMI) evaluations, identification of systems with greatest casualty potential.

Develop and implement a systematic programme of evaluation of EU legislation and vehicle technologies including cost-benefit analyses.

Carry out research into the safety aspects of electric vehicles.

At national and local levels:

Engage fully in international legislative development work.

Carry out national research and monitoring of vehicle safety measures.

Support and join the European New Car Assessment Programme.

Encourage financial incentives for the use of protective equipment.

Encourage national car industry to fast- track key safety measures recommended by EuroNCAP through in-house travel policies and public procurement.

Road users - licensing, testing, training, information and enforcement

The main road user strategy recommended in the consultation was to aim for users who are adequately educated and informed about key safety behaviours and their fitness to use the roads; restricted against action which may lead to death and serious injury through a variety of means (including self-enforcing vehicle and road engineering measures) and deterred through police and automatic enforcement. A range of recommendations were made during the consultation in relation to further EU harmonisation of licensing, testing and training. The most important of these recommendations for casualty reduction are graduated licensing for novice drivers and riders to reduce exposure to high risk. The most important countermeasures relating to enforcement were assessed to be combined publicity and high visibility police enforcement of important safety rules, deterrence of drinking and driving/riding, enforcement of speed limits, seat belt and crash helmet use and cross-border enforcement. The important role of the vehicle and the EU in helping to achieve compliance through seat belt reminders, ISA, alcolocks etc. was acknowledged.

At EU level:

Harmonise further licensing, testing and training for all motor vehicle drivers and improve the safety quality of the whole package based on evidence and best practice.

Harmonise graduated licensing for novice drivers and riders to include accompanied driving; probationary periods (not driving alone at night time, zero blood alcohol content, and stricter demerit point system).

Harmonise cross-border enforcement

Review age of access to riding/driving different motor vehicles based on international best safety practice.

Harmonise further qualifications of motor vehicle driving examiners and vehicle inspectors.

Develop authoritative best practice guidelines/protocols in support of key areas of enforcement.

At national level and local levels:

Carry out social marketing campaigns and combined enforcement and publicity to encourage compliance with key safety rules.

Introduce owner liability for automated enforcement offences.

Introduce rehabilitation programs for offenders

Post-impact care

While the Internet consultation process did not expressly seek opinions concerning problems and priorities in this field, research shows that the quality of the emergency medical system can have an important bearing on the survivability after crashes and the prevention of disability. For major injuries, clinical experts define the post-impact care needed in EU countries as the chain of help starting with action taken by the victims themselves or more commonly by lay bystanders at the scene of the crash, emergency rescue, access to the pre-hospital medical care system, and trauma care and helping road crash victims who have suffered debilitating injury re-integrate into work and family life. The importance of post-crash care was highlighted both in the thematic workshops and written contributions.

At EU, national and local levels:

Acknowledge that the quality of the emergency medical system is key to achieving a safe traffic system.

Review the potential contribution of improved emergency medical response to targets and strategies.

Measure emergency medical response times between the crash scene and arrival at a medical centre against international best practice.

Promote first responder schemes and in-service training for professional and commercial drivers.

Promote eCall.

* * *

ANNEX

List of the sixty-two measures in the European Road Safety Action Program 2001 – 2010

N°	MEASURE	MAIN DOMAIN	SPECIFIC TOPIC	STATE OF IMPLEMENTATION
1	Reduce the number of road deaths by 50 % by 2010.	GENERALS	monitoring & evaluation	medium
2	Evaluate the progress made, compared with the target, by Means of appropriate performance indicators at Community and national levels.	GENERALS	monitoring & evaluation	medium
3	Provide a report in 2005 on monitoring of the target, action carried out and modifications needed as a result of enlargement and, where appropriate, propose new measures.	GENERALS	monitoring & evaluation	complete
4	Invite all parties concerned to sign a European Road Safety Charter.	GENERALS	building stakeholder commitment	medium
5	Propose the introduction of harmonised road safety criteria in public service contracts.	GENERALS	monitoring & evaluation	low
6	Study, together with the European haulage industry, additional measures which insurers could take to pass the cost of accident risks on more directly.	GENERALS	building stakeholder commitment	medium
7	Set up a European Road Safety Observatory within the Commission.	GENERALS	monitoring & evaluation	complete
8	Propose measures to strengthen checks and ensure the proper enforcement of the most important safety rules.	USERS' BEHAVIOUR	enforcement	medium
9	Develop best practice guidelines as regards police checks.	USERS' BEHAVIOUR	enforcement	complete

10	Collect, compare and publish information on national highway codes, and on infringements established and penalties imposed in the various countries.	USERS' BEHAVIOUR	road safety awareness	high
11	Participate in awareness campaigns about drinking and driving, seat belts, speed and fatigue, if possible combined with national police activities.	USERS' BEHAVIOUR	road safety awareness	high
12	Encourage the application of the recommendation on the blood alcohol limit; continue work on the effects of drugs and medicines; establish appropriate classification and labelling of medicines which affect driving ability.	USERS' BEHAVIOUR	impaired driving	low
13	Harmonise, over time, the penalties for the main infringements of the rules of the road for international hauliers.	USERS' BEHAVIOUR	enforcement	low
14	Amend Directive 91/439/EEC on driving licences in order to introduce in particular minimum standards for car driving examiners and a staged driving licensing system for motorcyclists, trucks and bus drivers to reduce accident risks among inexperienced drivers.	DRIVING LICENCE	driving education & training	complete
15	Continue work on reviewing, in the light of scientific progress, minimum standards for physical and mental fitness to drive and study the impact of medical examinations on road safety.	DRIVING LICENCE	driving education & training	complete
16	Work towards establishing a scientific approach to learning how to drive and to road safety training, from school age.	DRIVING LICENCE	driving education & training	high

17	Continue specific work on young drivers and rehabilitation methods to reduce re-offending.	DRIVING LICENCE	driving education & training	medium
18	Encourage the general use of crash helmets by all two-wheel motor vehicle users.	PASSIVE VEHICLE SAFETY	power-two wheel	medium
19	Study the effectiveness of crash helmet use by cyclists in different age groups, as well as the impact on bicycle use and the measures to be taken, where appropriate, at EU level.	PASSIVE VEHICLE SAFETY	vulnerable road users	suspended
20	The Commission will continue to support EuroNCAP to enable further progress to be made, to raise awareness among and inform consumers and to strengthen the representation of the Member States.	PASSIVE VEHICLE SAFETY	building stakeholder commitment	high
21	Develop a harmonised specification for the installation of audible or visual seat belt reminder systems and promote their universal use by voluntary agreement.	PASSIVE VEHICLE SAFETY	vehicle occupants protection	medium
22	Introduce universal anchorage systems for child restraint devices.	PASSIVE VEHICLE SAFETY	vehicle occupants protection	low
23	Improve cars to reduce the severity of accidents involving pedestrians and cyclists.	PASSIVE VEHICLE SAFETY	vulnerable road users	medium
24	Study the causes of and ways of preventing whiplash injuries.	PASSIVE VEHICLE SAFETY	vehicle occupants protection	medium
25	Support the development of smart restraint systems.	PASSIVE VEHICLE SAFETY	vehicle occupants protection	medium

26	Adapt to technical progress the front, side and rear-end impact directives for lorries to limit vehicle under-run, and introduce energy absorption criteria.	PASSIVE VEHICLE SAFETY	vehicle crash compatibility	low
27	Make vehicles more compatible.	PASSIVE VEHICLE SAFETY	vehicle crash compatibility	low
28	Examine the impact on road safety of the proliferation of 4 x 4s, sports utility vehicles and multi-purpose vehicles.	PASSIVE VEHICLE SAFETY	vehicle crash compatibility	high
29	Examine the wide-scale use of daytime running lights on all vehicles.	ACTIVE SAFETY OF VEHICLES	accident prevention	high
30	Improve the visibility of heavy duty vehicles.	ACTIVE SAFETY OF VEHICLES	accident prevention	complete
31	Eliminate blind spots towards the rear for drivers of heavy duty vehicles.	ACTIVE SAFETY OF VEHICLES	accident prevention	complete
32	Assess measures to reduce tyre-related accidents.	ACTIVE SAFETY OF VEHICLES	accident prevention	medium
33	Examine driver impairment detection devices, e.g. alcohol ignition interlocks ('alcolocks') and driver fatigue detectors.	ACTIVE SAFETY OF VEHICLES	impaired driving	low
34	Examine national trials of intelligent speed adaptation devices and assess their acceptability to the public.	ACTIVE SAFETY OF VEHICLES	accident prevention	high
35	Improved motorcycle safety through legislation or voluntary agreements with the industry.	ACTIVE SAFETY OF VEHICLES	power-two wheel	medium
36	Examine the benefits of harmonising the approval of adaptations to vehicles for persons with reduced mobility.	ACTIVE SAFETY OF VEHICLES	accident prevention	low
37	Adopt a long-term plan concerning information and communication systems in the field of road safety and establish the necessary regulatory framework for	ACTIVE SAFETY OF VEHICLES	accident prevention	medium

	implementing such systems.			
38	Identify priority areas for the development and implementation of performance standards to optimise the man-machine interface and the road safety potential of telematic applications. Ensure compliance with the declaration of principles concerning the human-machine interface.	ACTIVE SAFETY OF VEHICLES	accident prevention	medium
39	Examine, together with the Member States, the need to include new onboard electronics systems in roadworthiness testing.	ACTIVE SAFETY OF VEHICLES	accident prevention	medium
40	Determine and encourage best practices so as to improve the efficiency of periodic compulsory inspections at the lowest cost.	ACTIVE SAFETY OF VEHICLES	accident prevention	medium
41	Submit a proposal for a framework directive on road infrastructure safety with a view to introducing a system for the harmonised management of black spots and road safety audits for roads on the trans-European network.	INFRASTRUCTURE	infrastructure	complete
42	Draw up technical guidelines concerning infrastructure, notably for low cost measures, audit methods, urban safety management, speed moderation techniques and forgiving roadsides.	INFRASTRUCTURE	infrastructure	medium
43	Draw up good practice guidelines for level-crossing safety.	INFRASTRUCTURE	infrastructure	low
44	Assess the safety impact of projects receiving Community funding and concerning an entire area.	INFRASTRUCTURE	infrastructure	low

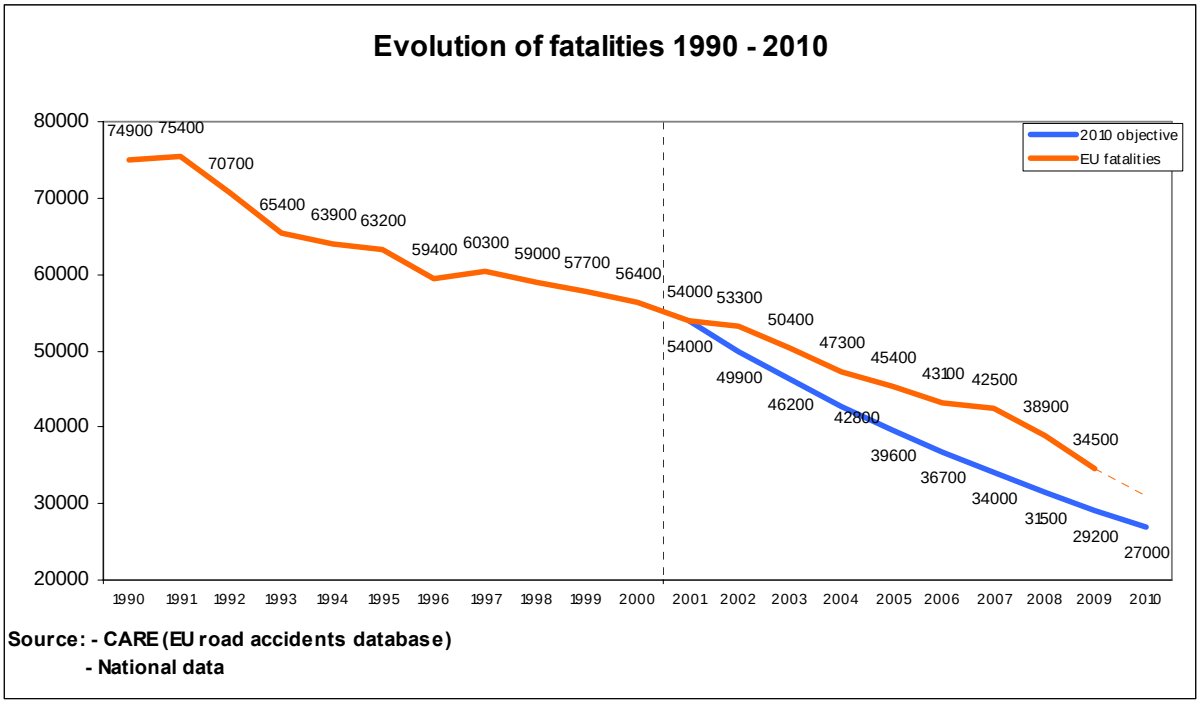
45	Adapt to technical progress the Community standards applicable to road equipment and ensure a high level of protection, notably by making road sides less hazardous in the event of an accident.	INFRASTRUCTURE	infrastructure	low
46	Carry out research and demonstration projects on 'intelligent roads'.	INFRASTRUCTURE	infrastructure	medium
47	Achieve a high level of safety in tunnels, notably through standards and user information.	INFRASTRUCTURE	infrastructure	high
48	Adoption and incorporation in national legislation of a European Parliament and Council directive on the training of commercial drivers.	PROFESSIONAL DRIVERS	professional drivers	complete
49	Tighter legislation (and enforcement) of driving and rest periods for commercial road haulage.	PROFESSIONAL DRIVERS	impaired driving	medium
50	Installation of digital tachographs in commercial vehicles.	PROFESSIONAL DRIVERS	professional drivers	complete
51	Best practice guidelines concerning company policies.	PROFESSIONAL DRIVERS	professional drivers	low
52	Best practice guidelines concerning the securing of loads and the carriage of exceptional loads.	PROFESSIONAL DRIVERS	professional drivers	complete
53	Adapting to technical progress the Community legislation concerning the carriage of hazardous goods.	PROFESSIONAL DRIVERS	professional drivers	complete
54	Making the wearing of seatbelts mandatory in coaches and heavy goods vehicles.	PROFESSIONAL DRIVERS	professional drivers	complete

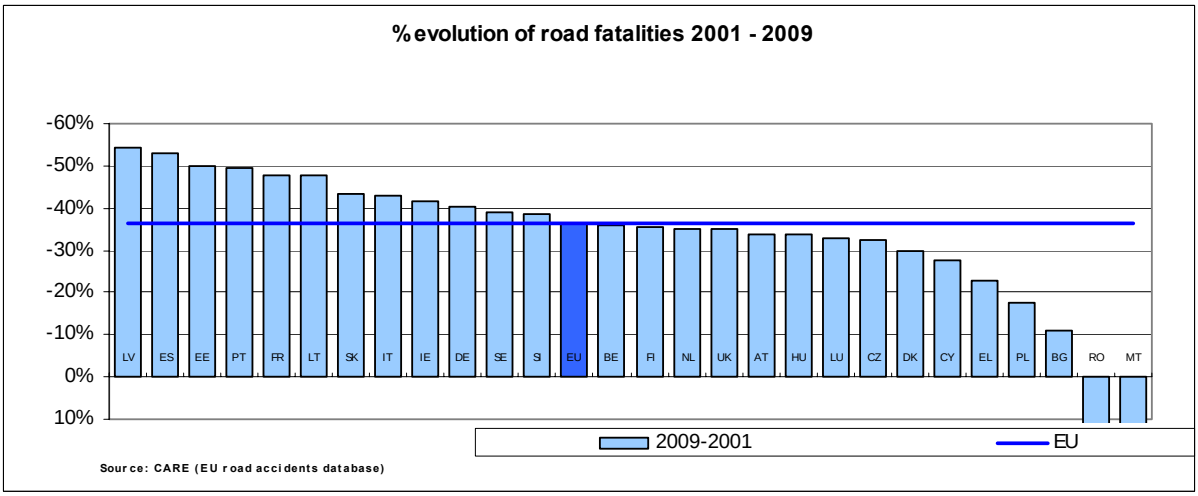
55	Introducing protection rules for vehicles regularly used for the carriage of children	PROFESSIONAL DRIVERS	vehicle occupants protection	medium
56	Examining the impact on road safety of the growing use of small commercial vehicles and company vehicles.	PROFESSIONAL DRIVERS	professional drivers	complete
57	Examine best practice with regard to post-accident medical care.	ACCIDENTOLOGY	post crash medical care	complete
58	Draw up specifications for satellite-positioning accident-warning systems and carry out demonstration projects involving the whole chain of emergency service provision.	ACCIDENTOLOGY	post crash medical care	complete
59	Develop the CARE database and widen access to it, in the interest of achieving greater transparency and encouraging its use; expand CARE to include hazard exposure variables and the causes of accidents.	ACCIDENTOLOGY	statistical data	medium
60	Assess and improve systems for linking hospital data and national road accident statistics.	ACCIDENTOLOGY	statistical data	medium
61	Develop specifications for on-board accident recording devices, and examine the consequences of various alternatives for certain categories of vehicles.	ACCIDENTOLOGY	statistical data	medium
62	Establish a European methodology for independent road accident investigations and set up a group of independent experts meeting within the Commission.	ACCIDENTOLOGY	statistical data	complete

Statistical annex

Road fatalities by country

	Fatalities by population		Evolution of fatalities 2001 - 2009
	2001	2009	2009 - 2001
Belgique/België	145	90	-36%
България (Bulgaria)	128	118	-11%
Česká republika	130	87	-32%
Danmark	81	55	-30%
Deutschland	85	51	-40%
Eesti	146	75	-50%
Éire/Ireland	107	54	-42%
Ελλάδα (Elláda)	172	130	-23%
España	136	58	-53%
France	138	67	-48%
Italia	125	68	-43%
Κύπρος (Kypros)/Kibris	140	89	-28%
Latvija	236	112	-54%
Lietuva	202	110	-48%
Luxembourg	159	97	-33%
Magyarország	121	82	-34%
Malta	41	51	31%
Nederland	62	39	-35%
Österreich	119	76	-34%
Polska	145	120	-17%
Portugal	163	79	-50%
România	112	130	14%
Slovenija	140	84	-38%
Slovensko	114	64	-43%
Suomi/Finland	84	53	-36%
Sverige	66	39	-39%
United Kingdom	61	38	-35%
EU	**113**	**69**	**-36%**


Evolution of fatalities 1990 - 2010
80000
70000
60000
50000
40000
30000
20000
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010
74900 75400 70700 65400 63900 63200 59400 60300 59000 57700 56400 54000 53300 50400 47300 45400 43100 42500 38900 34500
54000 49900 46200 42800 39600 36700 34000 31500 29200 27000
2010 objective
EU fatalities
Source: - CARE (EU road accidents database)
- National data


% evolution of road fatalities 2001 - 2009
-60%
-50%
-40%
-30%
-20%
-10%
0%
10%
LV ES EE PT FR LT SK IT IE DE SE SI EU BE FI NL UK AT HU LU CZ DK CY EL PL BG RO MT
2009-2001
EU
Source: CARE (EU road accidents database)

Road Accidents by area (*)

		2008	%	2001	%	2008 - 2001
EU road accidents	**total**	1.233.923		1463.107		-16%
	urban area	850.098	69%	986.602	67%	-14%
	motorway	58.229	5%	75.535	5%	-23%
	rural	324.738	26%	400.794	27%	-19%

		2008	%	2001	%	2008 - 2001
EU road fatalities	**total**	38.874		54.298		-28%
	urban area	14.999	39%	19.793	37%	-24%
	motorway	2.219	6%	3.557	7%	-38%
	rural	21.650	56%	30.815	57%	-30%

		2008	2001	2008 - 2001
Severity (killed by 100 accidents)	**total**	3	4	-15%
	inside	2	2	-12%
	motorway	4	5	-19%
	rural	7	8	-13%

Road fatalities by transport mode

	2008	%	2001	%	2008 - 2001
pedestrian	8.147	21%	10.491	19%	-22%
car	18.947	49%	28.978	53%	-35%
motorcycle	5.247	13%	5.440	10%	-4%
moped	1.476	4%	2.306	4%	-36%
bus	128	0%	322	1%	-60%
bicycle	2.521	6%	3.510	6%	-28%
agricultural veh.	208	1%	306	1%	-32%
heavy goods veh.	830	2%	1121	2%	-26%
lorry	847	2%	1152	2%	-26%
other	615	2%	658	1%	-7%
					-7%

Road fatalities by age

	2008	%	2001	%	2008 - 2001
<15	1.077	3%	2.034	4%	-47%
15-17	1.315	3%	1983	4%	-34%
18-24	6.758	17%	10.039	18%	-33%
25-49	15.103	39%	21555	40%	-30%
50-64	6.647	17%	7.989	15%	-17%
>=65	7.732	20%	9.692	18%	-20%

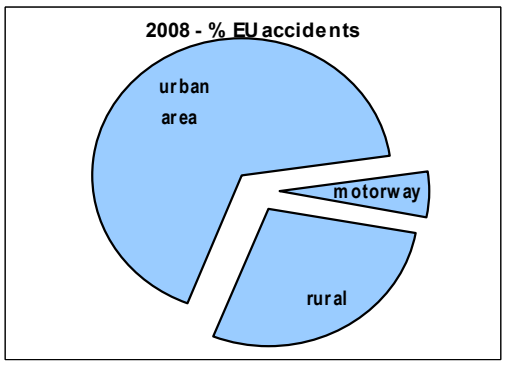
Road fatalities by driver age

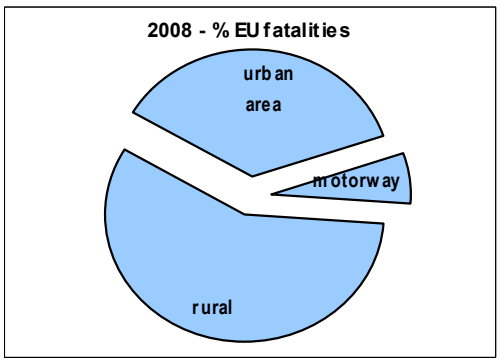
		2008	%	2001	%	2008 - 2001
car						
	18-24	2.843	23%	4.448	23%	-36%
	25-49	5.602	45%	9.198	48%	-39%
	50-64	2.048	16%	2.779	15%	-26%
	>=65	1.901	15%	2.333	12%	-19%

		2008	%	2001	%	2008 - 2001
motorcycle						
	15-17	147	3%	170	3%	-14%
	18-24	963	19%	1136	21%	-15%
	25-49	3.153	63%	3.168	58%	0%
	50-64	520	10%	311	6%	67%
	>=65	140	3%	87	2%	60%

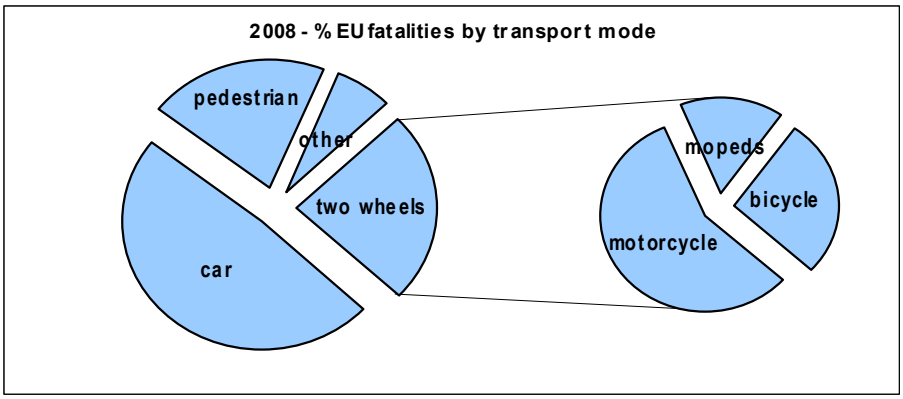
(*) Detailled information (last year available 2008)

% Road accidents and fatalities by area

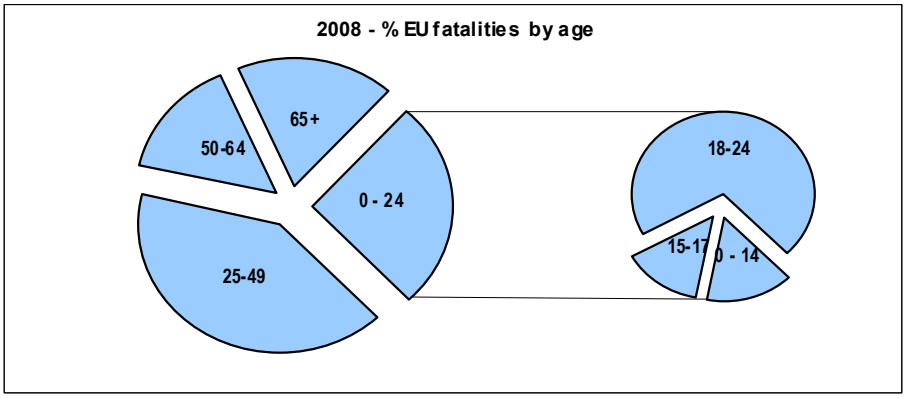




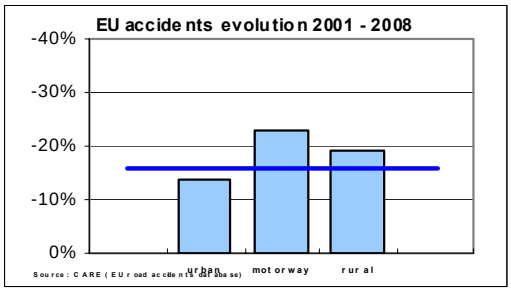
% Road fatalities by transport mode

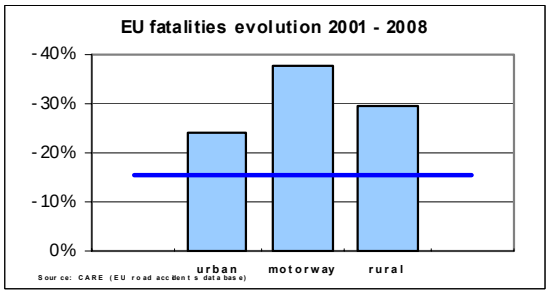


% Road fatalities by age

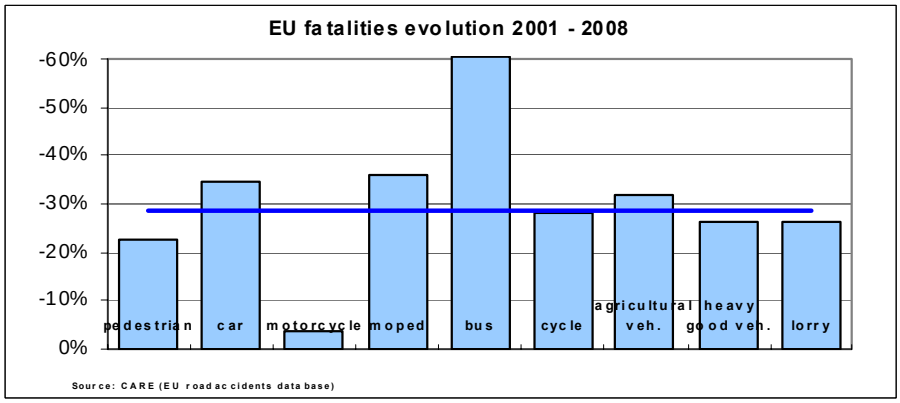


% evolution of road accidents and fatalities by area





% evolution of fatalities by transport mode



% Road fatalities by age