



**SUMMARY AND PUBLICATION OF BEST PRACTICES  
IN ROAD SAFETY IN THE MEMBER STATES**

# REVIEW OF IMPLEMENTATION AT THE COUNTRY LEVEL


















**THE FINAL REPORT OF SUPREME CONSISTS OF 14 PARTS:**

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<b>PART B</b>	LIST OF MEASURES COLLECTED AND ANALYSED
<b>PART C</b>	BEST PRACTICES IN ROAD SAFETY HANDBOOK FOR MEASURES AT THE COUNTRY LEVEL
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<b>PART F9</b>	THEMATIC REPORT: POST ACCIDENT CARE

<b>Tender No:</b>	<b>Contract No:</b>	
TREN/E3/27-2005	SER-TREN/E3-2005-SUPREME-S07.53754	
<b>Project Start:</b>	<b>Project End:</b>	<b>Date of issue of this report:</b>
18th of December 2005	17th of June 2007	17th of June 2007



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	IBSR-BIVV Institut Belge Pour La Sécurité Routière	BE		TNO Business Unit Mobility & Logistics	NL
	CDV Transport Research Centre	CZ		DHV Group	NL
	DTF Danish Transport Research Institute	DK		TØI Institute of Transport Economics	NO
	DVR Deutscher Verkehrssicherheitsrat e.V.	DE		IBDIM Road and Bridge Research Institute	PL
	CERTH/HIT Hellenic Institute of Transport	EL		PRP Prevenção Rodoviária Portuguesa	PT
	FITSA Foundation Technological Institute for Automobile Safety	ES		SPV Slovene Road Safety Council	SI
	INRETS Institut National de Recherche sur les Transports et leur Sécurité	FR		VÚD Transport Research Institute Inc.	SK
	NRA National Roads Authority	IE		bfu Schweizerische Beratungsstelle für Unfallverhütung	CH
	SIPSiVi Italian Society of Road Safety Psychology	IT		VTT Technical Research Centre of Finland	FI
	ETEK Cyprus Scientific and Technical Chamber	CY		VTI Swedish National Road and Transport Research Institute	SE
	Celu satiksmes izpete, SIA (Road Traffic Research Ltd)	LV		TRL Limited	UK
	TRRI Transport and Road Research Institute	LT		CIECA Commission Internationale des Examens de Conduite Automobile	INT
	KTI Institute for Transport Sciences	HU		ETSC European Transport Safety Council	INT
	WHO Europe World Health Organization - Regional Office for Europe	INT			

# Foreword

The goal of SUPREME was 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. This document aims 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. As such, the intention of this project is to contribute to reaching the EU target of a 50% reduction in road fatalities in 2010<sup>1</sup>.

The project was commissioned by DG TREN of the European Commission. It began in December 2005 and ended in June 2007. A total of 31 national and international road safety organisations were involved. More information about the project and its result can be found at: [http://ec.europa.eu/transport/supreme/index\\_en.htm](http://ec.europa.eu/transport/supreme/index_en.htm).

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<sup>1</sup> White Paper European Transport Policy for 2010: Time to decide. COM (2001)  
[http://ec.europa.eu/transport/white\\_paper/index\\_en.htm](http://ec.europa.eu/transport/white_paper/index_en.htm)

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# Introduction

This report summarizes the country surveys of the SUPREME project. These surveys have been conducted in order to collect information about the status of implementation of road safety measures that have been proposed as Best Practice (BP) measures in the SUPREME project. For each of the nine categories of measures, tables are presented on which countries have implemented measures that have been rated as Best Practice (BP), and on countries which have implemented similar measures with the same focus but with a more or less different approach. Measures that are not identical but similar to the SUPREME-BP measures are regarded as important, because the BP measures are not always directly transferable to other countries, and because existing measures might in some cases limit or even impair the success of the SUPREME BP measures. Additionally, historical facts, the cultural background or the general political and administrative framework contribute to the effectiveness of Road Safety (RS) measures. If these conditions do not have an adequate background for a specific BP measure, this measure may not be implemented or, if implemented, may not be as effective as it might under other conditions.

Subsequently, experiences are summarized that have been reported from countries which have implemented BP measures, from countries which have implemented similar measures, and from countries which have not implemented BP or similar measures in the respective category. The aim of these summaries is to provide an overview of the status of the implementation of BP and to show where there is room for improvements. The aim is not to provide comprehensive information about single countries. But it is also important to note that all information that is provided in this summary report has been gathered solely from the country surveys. There are considerable differences between countries as regards the generosity with which existing measures are interpreted as equal or similar to the BP measures. While some countries have been rather strict, only reporting measures that are practically identical to the BP measures, other countries have also reported measures that are in some, but not all, aspects similar to the BP measures. Consequently, the tables in this report should not be interpreted as exhaustive. A country that does not appear on the "BP implemented" or "Similar to BP implemented" may still have successfully implemented measures with the same focus and the same effectiveness as the selected BP measures.

# 1 Road Safety Education and Campaigns

RS education aims to improve knowledge, skills, and attitudes related to RS through training and experience. Education is mostly directed at groups of pupils and normally in a school setting (as opposed to driver training). RS campaigns aim at improving behaviour, mostly via changes of attitudes towards safety relevant behaviour. Campaigns address specific groups of road users and use mostly indirect forms of contact (e.g. advertising) than education. Education measures that have been selected as BP measures are:

- ◆ **Educative Continuum (France):** This concept aims at providing RS education for all age groups. It includes a systematic integration of RS in school curricula.
- ◆ **Road Safety Education Label for schools (Netherlands):** The award aims at providing incentives to primary schools for offering RS education. The programme also includes an organisational structure and professional support for RS education at schools.
- ◆ **Flits! (Belgium):** Flits! (Flash!) is a multimedia monologue with life performances for young people and adults (16+). It aims at improving attitudes towards RS,
- ◆ **The Young Bicyclist's Event (Latvia):** This measure is a competition that is regularly held countrywide. It aims at improving knowledge and cycling skills among school children.

Countries in which BP or similar education measures are implemented are shown in Table 1.

Subcategories and Measure	Implemented	Similar measures with same focus
<b>Educative Continuum</b> (RS education in schools at all levels)	BE, DE, DK, FR, HU, NL	AT, CH, CY, EE, FI, IE, IT, MT, NO, PL, SL
<b>Road Safety Education Label for schools</b> (Incentives for RS education in schools)	BE, FR, NL	FI, IT
<b>Flits!</b> (Improving attitudes of young people)	BE	AT, CZ, FI, IE, LV, NL
<b>The Young Bicyclist's Event</b> (Cycling skills, school children)	BE, DE, EE, FI, HU, LU, LV, SK, SL	AT, CZ, DK, IE, NL, NO

Table 1: Countries in which BP educational measures or similar measures are implemented

Campaigns that have been selected as BP measures are:

- ◆ **Speak out! (Norway):** A campaign directed at young people travelling as passengers who are encouraged to speak out if the driver is driving too fast or recklessly.

- ◆ **Goochen, the Armadillo (Netherlands):** A campaign especially directed directly at children. The aim is to increase the use of seat-belts and child restraints.
- ◆ **Bob (Belgium):** A campaign to convince people not to combine drinking and driving and to make driving under the influence of alcohol socially unacceptable. The Bob campaigns are always combined with enhanced enforcement.
- ◆ **The Sign of Light (Latvia):** A campaign to increase the use of reflective materials among pedestrians.

Countries in which BP or similar campaigns are implemented are shown in Table 2.

Subcategories and Measure	Implemented	Similar measures with same focus
<b>Speak out!</b> (Encourage young passengers)	NO	DK, FR, IE, UK
<b>Goochen, the Armadillo</b> (Use of seat-belts and child restraints)	CZ (European level camp.) FI (European level camp., incl. enforcement) IE (only other figure, successful) LU LV (European level camp.) NL (national & local level) SE	AT, CH, DE, EE, FR, MT, UK
<b>Bob</b> (Drink driving)	BE CZ EL (Greece, adapted) IE NL (national & local level) LU	DE, DK, EE, FI, FR, LV, UK
<b>The Sign of Light</b> (Use of reflective materials for pedestrians)	CH (more broadly, e.g. reflective clothes for children in stores) LV	AT, CH, EE, HU, IE, NL, NO, SE, SK, UK

Table 2: Countries in which BP campaigns or similar measures are implemented

## 1.1 Countries in which BP measures are implemented

### 1.1.1 Education

The **educative continuum** (BP in France) is implemented in several other countries (Belgium, Germany, Netherlands, Denmark, Hungary). In these countries the aims and concepts are very similar in structure, though the details may vary. In Hungary, for example, RS Education as an integral part of teacher training, the police are regularly involved in education activities, and RS themes are incorporated into the most popular soap operas. A **RS education label for schools** which aims at providing nationwide incentives to schools exists only in the Netherlands and in France. In Belgium and the Netherlands it is only practiced at a regional level. This may reflect the fact that many countries have reported difficulties with the implementation of RS education in schools because of a lack of time and incentives. An event for **young bicyclists** has also been set up in several countries other than Latvia, which has proposed this type of competition as BP. In Belgium regional competitions between schools are regularly carried out.

### 1.1.2 Campaigns

The BP **campaigns** that are carried out in other countries than the ones that have proposed them as BP are mostly slight variations of the original campaigns. The Goochen the Armadillo campaign in the other countries is the European level version of the Dutch campaign. The Swiss campaign that corresponds to the Latvian Sign of Light campaign is even more comprehensive. Advertising is combined with target group specific support of marketing activities, e.g. distribution of clothes with reflective materials at schools.

There are great differences between countries regarding the level of public acceptance and public funding of RS education and campaigns. In most countries where BP measures are implemented, the measures are funded by the government. In Latvia and Finland, RS education is even defined as an issue of public interest, hence funding by private organizations is not usually considered an option. In other countries, on the other hand, business companies (e.g. in Cyprus and Poland), non-governmental RS organizations / associations (e.g. in the UK), or even football and rugby leagues (UK) contribute to RS campaigns or donate education material. The willingness to use public funds on RS education and campaigns alone does not seem to be a criterion of success. Countries which report successful campaigns are those where the campaigns are not seen as stand-alone measures, but as a necessary part of enforcement and infrastructure measures, e.g. in Ireland, Finland, Norway, Germany, and Switzerland.

Evaluations are also considered necessary in the field of education and campaigns, e.g. in Switzerland and Norway, but in most countries there seems to be lots of room for improvement. A barrier against evaluations might be a lack of acceptance and consequently a lack of willingness to provide funds. Although evaluations may provide valuable information on how measures can be improved, evaluation studies, especially when they are methodologically sound, also involve the possibility of uncovering undesired results. This may also reduce the motivation to carry out evaluations. In Norway, not all evaluations of the Speak out!-campaign yielded positive results, but

the study that failed to show the desired results actually led to significant improvements in the campaign.

Another challenge is implementing measures in the area of education and campaign coordination. This mainly concerns central planning and coordination between different authorities as has been observed in Malta. In the UK, this issue has been solved by systematic procedures for planning and monitoring how much money is spent by which authorities on what measures. Education measures at schools may suffer from a lack of integration in the regular curriculum and of a lack of incentives. RS is only one of many topics to be addressed in school. Voluntary measures are therefore difficult to implement at schools as reported by Switzerland and the Netherlands.

## 1.2 Countries in which measures similar to the BP measures are implemented

Most BP measures in the area of education and campaigns are implemented in only a few countries other than those where they have been proposed as BP. This is probably not a sign of general lack of interest in RS educations and campaigns, but rather due to the vast amount of different measures in this area. Many other countries have implemented measures that are similar but not identical to the proposed BP measures. This is partly a result of adaptation to different conditions in the respective countries, e.g. considering cultural factors or the organizational form of the school system. In the Netherlands for example, the campaign to increase the use of reflective materials focuses more on cyclists than on pedestrians, because the poor visibility of cyclists is much more relevant, cycling being an important part of Dutch culture.

### 1.2.1 Education

The **Educative Continuum** is implicitly existent in many countries, even if it is not labelled as a RS measure. In these countries RS is mostly integrated into the regular curriculum, and there are no separate RS lessons. An obvious challenge is therefore a systematic coordination of RS-related activities at schools, as has been remarked by Norway, Germany, Austria, Malta, and Switzerland. In Latvia, RS education is not yet consequently a part of school education, but there is progress in this direction. In Ireland RS education at school is not compulsory, but efforts are underway to change this. In Cyprus, RS education is part of the regular curriculum, teacher are specially trained in RS.

The **RS Education Label** that has been proposed as BP by the Netherlands is another way of improving RS education at schools. Only a few countries make use of this. This may be because RS education at school is obligatory (as in the countries which have an Educative Continuum or similar concept,) or because voluntary measures at schools are not seen as promising. Finland and Italy do not provide awards, but monetary incentives to schools. In cases where a lack of resources is a reason for a lack of RS education in schools an Education Label may even be more effective than an award.

Flits!, a **multimedia theatre show** which aims at improving attitudes of young people, seems to be an exclusively Belgian measure. However, similar concepts have been reported from other countries. The Czech Republic, for example, has a similar multimedia show that targets a younger audience.

Other countries have implemented similar measures using different plots/scenarios. In Latvia TV-spots are used, and in the Netherlands the show is accompanied by emotionally disturbing film sequences and presentations of road accident victims suffering permanent injuries.

The **Young Bicyclist's Event**, a competition geared at improving cycling skills among school children seems to be a popular measure. In Austria, Denmark, and the Netherlands cycle tests are conducted, but no competition is held. In the Czech Republic, the competitions are more like sports events, but also focus on cycling skills improvements. In Norway, smaller cyclist events are held at a regional, not a national level.

### 1.2.2 *Campaigns*

Many countries have reported campaigns that have the same focus as the BP campaigns but use different approaches. For example, **Speak out!** is present only in Norway, but several countries conduct campaigns that also address passengers and encourage them to exert influence on the driver to drive safely. The Irish campaign encourages children to address their parents' driving behaviour in contrary to the other countries, which encourage passengers in general. In France there is a special focus on drink-driving, in the other countries the focus is on unsafe driver behaviour in general. A number of countries have conducted campaigns that are similar to **Goochen** in addressing the use of safety belts and child restraints (campaigns addressing only seat belts have not been included in the "similar" measures). In contrast to Goochen however, these campaigns address adults and parents, not children. In Hungary, a plush Teddy is used to encourage safer traffic behaviour among children. Several countries also have reported measures that are similar to the Belgian **Bob** campaign and to the Latvian **Sign of Light** campaign.

### 1.3 Barriers to implementation

The lack of implementation of BP measures in several countries is mainly due to one of two reasons: a general lack of acceptance and/or funds, or reasonable assumption that the measures would not be effective.

Countries reporting a lack of acceptance and funds as reasons for not implementing BP measures report different contributing factors. Among these are general disinterest (CZ, SK, LT), priority given to other types of measures showing immediate effects (PL, LT), expectations that private organizations would pay the costs (MT, CY), unclear responsibilities (LT), or the failure to make educational measures obligatory (LU). RS education at schools is less advanced in many countries than might be desirable because of difficulties with a central coordination. In Austria, for example, the school system is highly diversified, which means that many different curricula would have to be implemented. A high-level institution would therefore have to implement and coordinate this, but currently there is no such body. In Denmark, difficulties have been reported as regards the coordination between the RS council and schools, which makes the Educative Continuum difficult to implement. In some cases, public resistance against safety measures is expected. In Austria, for example, there is a strong lobby against campaigns addressing drink-driving. In Austria, drinking wine is a cultural tradition and also a major source of economic revenue, therefore some consider it a more important facet of life, that the “mere inconvenience” of avoiding alcohol-related road accidents. Malta reported that RS education measures focusing on adults would meet resistance because most drivers regard their experience as sufficient. In Sweden, it is assumed that children up to the age of 12 cannot be educated in RS. Furthermore is RS education at schools not centrally coordinated, therefore there are only some local measures.

The following reasons for not implementing BP measures are not likely to be a threat to effective RS work. Some countries have not implemented BP measures because the same focus is covered by other measures, or because the measures might even impair the success of other measures. In France no young bicyclists’ events are arranged because the same learning goals are covered by the Educative Continuum at schools. Likewise, France has no campaign that encourages, as the BP campaign *Speak out!*, passengers to protest if drivers are driving unsafely. Campaigns are conducted that address young drivers and encourage them to refrain from driving unsafely. In France it is assumed that once drivers are encouraged to drive safely, additional social influence by passengers would be detrimental. In Germany, a multimedia show such as *Flits!* is not conducted because the approach is assumed to be too impersonal for a German audience, and measures are preferred that focus on more direct contact targeting young people. In the UK most campaigns that are conducted are subsumed under the *THINK!*-campaign which focuses broadly on RS attitudes and supports the implementation of infrastructure and enforcement measures with targeted projects. Similarly, Slovakia conducts campaigns mainly in order to accompany ongoing changes of RS legislation. It has also been reported from some countries (e.g. France, Norway) that campaigns, especially when they have a similar focus, are more likely to be effective when there is a concentrated focus on one topic instead of trying to cover too much and diverting attention from the main issues.

## 2 Driver Training, Testing & Licensing

On the field of driver training, testing & licensing no BP measures have been identified. None of the measures that had been proposed as BP fulfils all necessary criteria. However, some good practice measures and some promising measures have been identified. Good practice measures fulfil most criteria, but are lacking some aspects, especially high-quality evaluation studies of the effects on accidents. Promising practice measures are new measures which possess properties that make them seem promising for (future) accident reductions. Some poor practice measures also have been identified. These measures have been found to increase accident risk instead of reducing it.

Driver training, testing, and licensing systems are in most countries quite complex and have developed over long times. The measures that have been selected as Good Practice or as Promising Practice are implemented only in the countries where they have been proposed as BP, not in other countries. Table 3 summarizes in which countries good, promising and poor practice measures have been implemented.

Evaluation result	Country	Measure
<b>Good practice</b>	Sweden	lowering minimum age for learning to 16
	Denmark	initial driver training programme
	Sweden	Safety Hall (mini-measure)
<b>Promising practice</b>	Norway	driver training curriculum
	Switzerland	obligatory 2 <sup>nd</sup> phase training for novice drivers
	Germany	voluntary F17 driving school and accompanied driving programme
	Netherlands	driver training stepwise
	Austria	multi-phase driver training programme
<b>Poor practice</b>	Norway	2 <sup>nd</sup> phase slippery driving track training course for novice drivers (1979-1988)
	Belgium	driver training reform which allows certain learners to drive for up to 18 months alone before taking the driving test

Table 3: Countries in which BP measures or similar measures are implemented

In order to assess the quality of driver training, testing and licensing procedures, a list of criteria has been developed that contains descriptions of several aspects of these procedures. These criteria have been assessed for each country in the country surveys. The criteria are the following:

- ◆ **Duration of initial training:** Measures to ensure that the driving test cannot be taken in a matter of days, once licensing age is reached

- ◆ **Quantity of initial training:** Measures to encourage as much mileage as possible, in safe circumstances, in the initial training phase
- ◆ **Accompanied practice:** Training with a parent allowed / encouraged (if not, there is a scientific reason for this)
- ◆ **Quality of initial training:** Measures to ensure that as many driving scenarios as possible are covered in initial training (traffic densities, weather conditions, driving purposes, road types, day/night driving)
- ◆ **Coverage of additional factors:** Initial training covers not only the physical driving task but also high-risk factors linked to (young)novice drivers: lifestyle, attitudes, specific risky driving situations
- ◆ **Practical driving test:** Minimum duration defined by law, several specific tasks that have to be covered, definition and assessment of necessary competencies required for safe driving
- ◆ **Range of the test:** Full range of competencies required for safe driving is assessed, standardized test (i.e. different examiners would gain the same results for the same cases.)
- ◆ **Post-licensing measures:** Measures to delay full licensing rights of novice drivers such as probationary periods, stricter penalties for traffic offences, lower BAC levels, obligatory second phase training, other restrictions
- ◆ **Track-training:** Learner/novice driver training programme includes track-based training<sup>2</sup>. The training has been evaluated and checked for overconfidence (= the driver's perception that his/her skills are greater than they actually are, as a result of the training)

Criterion	Country
<b>Initial training, minimum duration</b>	AT, BE, CH, CY, DK, EE, FI, FR, NO, SK, SL
<b>Quantity of initial training, encourage mileage</b>	AT, BE, DK, FI, FR, HU, NO, SK, SL
<b>Accompanied practice</b>	AT, BE, CH, CY, FR, IE, LV, MT, NO, SE, SL, UK
<b>Quality of initial training, many driving scenarios</b>	AT, CH, CZ, DE, DK, FI, FR, NO, SE, SK, SL, UK
<b>Coverage of additional high-risk factors</b>	AT, CH, DK, FI, FR, IE, LU, NO, SE, SL

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<sup>2</sup> The track training (conducted in driving safety centres or track training areas) focuses on driving dynamics theory and first-hand experience. Emphasis is placed on defensive driving and avoiding self-overconfidence. Through the training the participant should gain knowledge and skills in order to be a better and safer driver. Also, a more aware and safer driving behaviour should be attained as well as anticipation and observation skills in order to recognize risky situations early.

Criterion	Country
<b>Practical driving test, minimum duration, specific tasks</b>	AT, CH, CY, DE, DK, FR, HU, IE, IT, LV, MT, NO, SE, SK, SL, UK
<b>Range of the test, competencies for safe driving, standardized test</b>	AT, BE, CH, CY, DE, DK, FI, FR, HU, NO, SK
<b>Post-licensing measures, delay full licensing rights of novice drivers</b>	AT (several restrictions, 2 <sup>nd</sup> phase training) CH (stricter sanctions) DE (limited penalty points) FI (intensified enforcement) HU (limited traffic offences) IT (lowered speed limits) LT (lowered speed limits) LU MT (limited penalty points) SE (limited traffic offences) SK (limited traffic offences) SL (limited penalty points, BAC) UK (limited penalty points)
<b>Track-training, evaluated, no overconfidence</b>	AT CH FI FR IT (but supporting overconfidence and dangerous driving style) LV NO (renewed version) SE SK

Table 4: Countries in which BP measures or similar measures are implemented

As can be seen in the table above, there are large discrepancies between countries. In some countries, the system of driver testing and licensing fulfils all or almost all BP criteria. In several of the countries where only a few or none of the BP criteria are met: the systems are currently under revision and the new systems will largely be designed according to the criteria. These countries are Ireland, Poland, Malta, and Slovakia (where the current system already fulfils most criteria). Only in one country, France is the system for driver testing and licensing connected with the Educative continuum (see the Chapter on Education and campaigns).



Countries where BP criteria are not fulfilled, seldom reported the reasons for this. In Hungary, a good argument against accompanied driving is the low number of vehicles per inhabitant, compared to other European countries. This would make attaining a driving licence a social privilege which is not a desired goal of this measure. As regards the track training course which may be a poor practice measure if over-confidence is not avoided, most countries did not provide information on the design of the trainings and whether or not overconfidence is systematically counteracted. Only in Switzerland and Norway was this aspect taken into account, e.g. by selection of tasks and by emphasising self-reflection. Sweden reports that no systematic evaluation has been made regarding overconfidence. The Italian track training for mopeds seems to systematically provoke not only exaggerated confidence in the driver's own abilities but also promoted dangerous driver behaviour and a trust in the legal system supporting moped drivers rather than emphasising the dangers of pedestrians getting injured by mopeds.

In countries where (most of the) criteria are fulfilled, the systems still differ when it comes to quality. The most extreme example is Italy, where it is theoretically possible to drive a lifetime without taking a driving test or having a licence, by regularly renewing the preliminary licence which permits driving for trainings purposed before the test. In Belgium it is possible to obtain a temporary licence without guidance requirement, but this licence can not be renewed life-long.

### 3 Rehabilitation and Diagnostics

In the field of Rehabilitation and Diagnostics, only a few measures were proposed, and none of these was approved as BP in the Thematic Report on Rehabilitation and Diagnostics. Instead, a number of criteria were identified, which measures in this area had to fulfil in order to be BP. The criteria are:

#### Rehabilitation:

- ◆ **Existence of rehabilitation measures:** Driver improvement courses or other rehabilitation measures, driver education and driving test for offenders
- ◆ **Mandatory measures:** Rehabilitation measures are mandatory or applied as alternative punishment (reduced sentence or reduced penalty points)
- ◆ **Criteria for assignment to intervention:** Specific medical / psychological test procedures are applied, and the intervention is dependent on the type of offence; BAC levels are used as criteria for assignment to DUI programme; the intervention is not dependent on type of offence (in which case it is not regarded as BP); the measure may be proposed by a judge / prosecutor
- ◆ **Contents of the course:** Psychological, therapeutic, educational techniques are applied; the intervention is based on psychological background; alternatively, the courses may provide only general information or repeat parts of the general driver education programme (in which case it is not regarded as BP)
- ◆ **Qualified course leaders :** Criteria for qualification of course leaders are defined and assessed
- ◆ **Groups, participants:** A maximum group size is defined and the ethnical background of the participants is taken into account

#### Diagnostics:

- ◆ **Quality assurance and evaluation:** Quality assurance is obligatory for institutions offering courses; evaluation studies have been / are regularly conducted
- ◆ **Criteria for application of diagnostics:** Medical examinations when special criteria are fulfilled, on demand by police, for all new drivers, for all older drivers, or for drivers operating heavy vehicles / professional drivers
- ◆ **Test procedures:** Valid procedures, assessment by family doctors possible; use of community notification sources (doctors, health professionals, social workers, police, etc.)

There are mainly two problems rehabilitation and diagnostic measures have to cope with. Firstly, methodologically sound evaluation studies regularly fail to detect effects of driver rehabilitation measures on accidents and injuries. Secondly, diagnostic measures which involve screening of the whole population also fail to produce significant safety effects, and they are likely to have negative side effects (e.g. false positives), in addition to high costs. Positive effects of rehabilitation and diagnostics measures are expected all the same, because successful behaviour modification is likely to have general positive effects, i.e. not only on RS, and because a meaningful combination of rehabilitation and repression (enforcement) is likely to be more effective and to receive more acceptance than enforcement alone. Table 5 and 6 show the countries where rehabilitation and diagnostics measures are in place, and in where the BP criteria are fulfilled. Table 6 is limited to

diagnostic measures not covered by Table 5 Rehabilitation measures. Both tables also give additional information on the measures.

BP criteria	Fulfilled in country
<b>Rehabilitation measure</b>	
<b>Driver improvement courses or other rehabilitation measures</b>	AT (offenders, DUI-offenders, penalty points) BE (offenders) CH (offenders, DUI-offenders) CY (offenders, DUI-offenders, penalty points) DE (offenders, DUI-offenders, penalty points) EE (offenders) EL (offenders, physically impaired) FR (offenders, penalty points) HU (offenders) IT (offenders, penalty points) LT (offenders, DUI-offenders, penalty points) LU (offenders, penalty points) NL (DUI-offenders, additionally psychiatric examination above BAC 1.8) NO (DUI-offenders) PL (offenders, penalty points) SE (DUI offenders) SK (offenders) SL (offenders, DUI-offenders, penalty points) UK (DUI offenders)
<b>Driver education and driving test for offenders</b>	DK (novice offenders, DUI offenders) EL (offenders, penalty points) LV (offenders, penalty points)
<b>Mandatory measure</b>	
<b>Mandatory</b>	AT DE (additionally reduced penalty points) DK EL FR (only for novice drivers) HU LT LV NL SL (additionally reduced penalty points)

BP criteria	Fulfilled in country
Alternative punishment (reduced sentence or reduced penalty points)	BE (reduced sentence) DK (alcohol treatment instead of jail / licence suspension possible) FR (reduced penalty points for non-novice drivers) IT (reduced penalty points) NO (instead of jail) PL (reduced penalty points) UK (reduced licence suspension period)
<b>Criteria for assignment to intervention</b>	
Specific medical / psychological test procedures, intervention dependent on type of offence	AT CH DE (in addition to penalty points) HU
Type of offence (may include DUI), intervention dependent on type of offence	AT, BE, DE, DK, EE, EL, HU
BAC levels as criteria for assignment to DUI programme	AT, DE, NL
Offence / penalty points, intervention dependent on type of offence	DE, FR, HU, IT, LT, LV, PL, SL
Proposal by judge / prosecutor	BE, NO, UK
<b>Contents of the course</b>	
Psychological, therapeutic, educational techniques applied	AT, CH, DE, HU,
Psychological background, but no therapeutic intervention	BE (DUI offenders may be referred to regular health care), DK, FR, NO
General information	EE, IT, LT, SL, UK
Driver education	DK, EL, LV
<b>Qualified course leaders</b>	
Criteria for qualification of course leaders are defined and assessed	AT, BE, CH, DE, FR
<b>Quality assurance and evaluation</b>	
Quality assurance is obligatory for institutions offering courses	AT, DE
Evaluation studies have been / are regularly conducted	BE, FI, NL, DE

Table 5: Rehabilitation - Countries in which measures fulfilling BP criteria are implemented

BP criteria	Fulfilled in country
<b>Criteria for application of diagnostics</b>	
<b>Medical examinations when special criteria are fulfilled</b>	AT (specially defined offences) DE (specially defined offences, penalty points) FI (alcohol addiction) NL (health changes which may affect driving fitness; BAC level above 1.8) SL (3 or more DUI offences, caused 3 or more accidents, signs of illness)
<b>Medical examinations on demand by police</b>	EE SK
<b>Medical examinations for all new drivers</b>	AT EE HU (regular examinations at all ages) LV (renewal every 10 years) MT
<b>Medical examinations for all older drivers</b>	CH (>70 every 2 years) DK (>70, additionally test of cognitive functions) EE (>65 every 5 years) HU ( <40 every 10 years; >40 every 5 years; >60 every 3 years, >70 every 2 years) LV (>60 every 10 years) MT (>70 every 5 years) NL (>70 every 5 years) NO (>70 every 5 years) SL (>80 every 5 years)
<b>Medical examinations for drivers of heavy vehicles / professional drivers</b>	AT (professional drivers, every 5 years) DE (heavy vehicles, every 5 years) LV (heavy vehicles, every 10 years) NO (heavy vehicles, every 10 years)
Other	NL: voluntary assessment of driving ability for all dr. > 50
<b>Test procedures</b>	
<b>Valid procedures</b>	AT, CH, DE (see Table 5 rehabilitation) FI (addiction assessed by competent medical institution)
<b>Assessment by family doctors possible</b>	CH EE (special med. commissions for heavy vehicles lic.) LV NO
<b>Community notification sources (doctors, health professionals, social workers, police, ...)</b>	DK (health professionals may report to licensing authorities) IT (physicians are required to report drivers who may pose risk to others, no formally defined criteria) NO (cooperation between health sector and police, no formally defined procedures or criteria)

Table 6: Diagnostics - Countries in which measures fulfilling BP criteria are implemented

### **3.1 Countries in which measures are implemented that fulfil BP criteria**

#### *3.1.1 Rehabilitation*

Most countries have implemented driver improvement courses, other rehabilitation measures or repetitions of driver education as accompanying measures for licence suspension following convictions for traffic offences.

Table 5 shows which countries offer measures for what type of convictions (offences in general, DUI offences). In Denmark, Greece and Latvia the whole licensing process has to be repeated, in addition to DUI courses for DUI offenders in Denmark and Greece, and special skill improvement courses in Latvia. In most countries where penalty point systems exist, these measures are applied as a consequence of a specified number of penalty points. The application of the measures is either mandatory or an alternative punishment, i.e. the number of penalty points or the severity of sentences can be reduced.

Only Germany, Austria, and Switzerland employ specific medical/ psychological test procedures in order to identify the type of rehabilitation measure to be applied. Switzerland has reported that these procedures are not always followed, and rehabilitation measures are mostly only applied to those who are likely to benefit from them. In Austria, Belgium, Denmark, Estonia, and Greece, the type of rehabilitation measure that is applied depends on the type of offence, but no systematic tests are conducted in order to improve the match between offenders and measures.

The measures that are applied include the application of psychological, therapeutic, and educational techniques only in Austria, Germany, and Switzerland. In Belgium, Denmark, France, and Norway, they are based on a psychological concept of behaviour modification, but do not contain therapeutic elements.

Criteria for the qualification of course leaders are defined and assessed only in Austria, Belgium, France, Germany, and Switzerland. In Austria, there is, however, a trend towards lower quality because of the competitive situation on the market of institutions that offer courses. Quality assurance is obligatory for institutions offering courses in Austria and Germany. In Germany data collection and quality assurance are even prerequisites for the accreditation of institutions offering courses.

Evaluation studies generated from Belgium, Finland, and the Netherlands (assessment of future drink driving in Finland, DUI course in the Netherlands.) have all failed to find any positive effects. In Germany, several courses have been evaluated, showing positive effects with regard to the decrease of the recidivism rate.

As to the other BP criteria, a maximum group size in driver improvement courses has only been reported in Austria, Hungary and Switzerland, where the group size is limited and where individual measures for severe cases are offered additionally. Whether or not the ethnical background of the participants is taken into account in the courses has not been reported.

In summary, most BP criteria are fulfilled in the German-speaking countries and in Belgium, with the most differentiated systems being the ones from Austria and Germany. Only a few other countries have implemented rehabilitation measures which fulfil at least some of the BP criteria. These are Denmark, Estonia, Greece, France, Norway, and the Netherlands.

### 3.1.2 *Diagnostics*

Diagnostic measures in addition to those that already have been described in the previous section on rehabilitation exist in many countries. The diagnostic measures that are applied are mostly medical examinations, partly also psychological tests. The BP criterion that diagnostics should be limited to target groups which have a priori high crash risk is only seldom fulfilled. Special criteria for the application of diagnostic measures are defined only in a few countries. In Austria, Germany, and Slovenia, medical or psychological examinations are being prescribed after specially defined offences (Austria, Germany, and Hungary) or after a defined number of severe offences (Slovenia). In Finland medical examinations are obligatory in cases where alcohol addiction has been diagnosed and after a prescribed period of abstinence with license suspension in order to regain the license. In the Netherlands they are mandatory when BAC levels above 1.8 have been detected in a driver. In the Netherlands, information about health changes which may affect driving fitness may be sent to licensing authorities voluntarily or by the police for drivers who have attracted attention. Additionally, all drivers over 50 years of age may have their driving abilities assessed voluntarily in the Netherlands.

The diagnostic test procedures in Austria, Germany, and Switzerland are standardized and have been validated (see section above on rehabilitation). In Finland, the assessment of drug addiction is made by medical institutions which possess relevant competence.

In order to achieve a more targeted application of diagnostics, a recommended BP is the establishment of a community notification system, i.e. notification to the licensing authorities by doctors, other health professionals, social workers, the police, and other people who may have access to information that is relevant for the identification of potentially dangerous drivers. Such a system does not currently exist in any of the European countries. However, several countries are making attempts to use such information sources as shown in Table 6. Mostly, the notification is voluntary. In Italy physicians are required to report drivers who may pose a risk to others, but there are no formally defined criteria for who has to be reported. This may cause large problems seen from a data privacy point of view.

## 3.2 Countries in which measures are implemented that do not fulfil BP criteria

### 3.2.1 *Rehabilitation*

Although many countries have implemented rehabilitation measures, not many of them fulfil BP criteria for this type of measure. The weakest points are the assignment of measures to offenders and the contents of the courses. In several countries the type of course is the same for all offenders, irrespective of the type of offence or offender (France, Italy, Latvia, Lithuania, Poland, Slovenia). In Belgium, Norway, and the UK, the measures are proposed (or not proposed) by judges or prosecutors, without any specific criteria for who is offered a course or what type of course. The contents of the courses are, in many countries, not based on any psychological background but consist of mere provision of information. These countries are Estonia, Italy (except Bolzano which is German-speaking and which has adopted several measures from Germany or Austria), Lithuania, Slovenia, and the UK. In other countries, the measures consist mainly of a repetition of the same driver education courses that are obligatory for obtaining a licence (Denmark, Greece, and Latvia.) A short time lag between offence and measure and any systematic efforts to adjust courses to the ethical background or language of participants has not been reported from any country.

Since so far, there is so little evidence of the positive safety effects of driver rehabilitation, and a nearly total absence of evaluation studies, it can not be determined whether or not there is room for improvement (from a safety point of view) in the countries that have implemented measures that do not fulfil BP criteria. As regards the effective use of resources for RS, there seems to be room for improvement, and evaluations should be conducted in order to find out whether or not rehabilitation measures are a field where more efforts should be made in the respective countries, or if money is more effectively spent on other aspects of RS.

### 3.2.2 *Diagnostics*

**Medical examinations** of all new drivers are carried out in Austria, Estonia, Latvia, and Malta. In Latvia, upon renewal of a licence, every 10 years, drivers are obliged to have a new medical examination. Medical examinations for all older drivers and for all drivers of heavy vehicles or professional drivers are mandatory in a number of countries. These are quite large target groups, and so far, there is insufficient empirical evidence to prove that all drivers in these groups pose a serious risk to other road users. In Estonia and Slovakia medical examinations can be required by the police, in Estonia additionally by employers. In both countries, there are no specific criteria defined according to which examinations have to be made. The potential effect on safety is therefore questionable, and the negative effects (personal integrity, data privacy) likely to be much greater.

There is not much information available on the validity of the diagnostic test procedures. An assessment by family doctors which does not follow any specific criteria can not be regarded as reliable or valid. This is, however, possible in several countries (Estonia, Latvia, Norway, and



Switzerland). Evaluation studies are only seldom conducted, only Austria and Finland have reported evaluation studies.

In the Thematic Report on Rehabilitation and Diagnostics more BP are described, but none of them has been reported from any country. These criteria include a definition of “high crash risk” which is accepted internationally, a multi-tiered assessment with more elaborate and expensive tests reserved for the most serious cases, regular quality assurance, the development of methods for the target group of drivers with functional impairments, and an expansion of the role of the licensing authorities (e.g. advice on different matters, such as car adaptations or mobility alternatives).

### **3.3 Barriers to implementation**

In several countries, there have been no rehabilitation and / or no diagnostic measures implemented. Based on the information that is provided in the country surveys it is not possible to identify reasons for this. Partly, it may be because deliberate decisions have been made to prioritize more effective safety measures.

## 4 Vehicles

Vehicles can play a significant role in further improving traffic safety. Changes in legislation, vehicle construction, and vehicle equipment are important measures since they generate a sustainable effect. Vehicles become increasingly equipped with devices that support and simplify the various tasks of the traveller and at the same time protect the vulnerable traveller against injuries. In the SUPREME project the focus is on measures that have already proven their worth, i.e. measures that have been tested or even evaluated thus demonstrating a substantial effect. However, as the following list of the selected best practice measures show, also rather experimental devices have been listed since they have met a significant interest in the policy debates in some countries.

The following set of measures has been selected:

- ◆ **Intelligent Speed Adaptation (ISA)** is the label for a group of systems that supports the driver on a road in maintaining road speeds compliant with local speed limits
- ◆ **Daytime Running Lights (DRL)**, i.e. the headlights and rear lights remain switched on whenever driving – this measure has become mandatory in several countries
- ◆ **Electronic Stability Control (ESC)** is an extension of antilock brake technology which has speed sensors and independent braking for each wheel
- ◆ **Seat Belt Reminders** are a device that gives a warning whenever a seat is occupied but the seat belt is not fastened
- ◆ **Alcolock** shuts down the start engine when the attempt to start is not preceded by a negative breath test
- ◆ **European New Car Assessment Programme (EuroNCAP)** initiated by the Transport Research Laboratory (UK) is a consortium of countries and associations which provide consumers with independent information about a car's safety
- ◆ **Blind Spot Mirrors** and cameras reduce the blind spot of trucks thus making other road users better visible
- ◆ **Event Data Recorders** can monitor the driving behaviour of the driver in terms of journey data in order to prevent exaggerated working periods but also as accident data recorders, including data on vehicle speed etc.
- ◆ **Contour marking** can increase the perceptibility of trucks
- ◆ **Antilock Brake System (ABS)** on motorcycles as an effective countermeasure against frequent driver misbehaviour in emergency situations
- ◆ **Mandatory bicycle helmet wearing** reduces the number of head injuries in case of accident
- ◆ **Reflective garment and side reflectors** for cyclists in order to increase visibility under bad weather conditions and during evening and night time

The following table shows which countries have implemented the BP measures, similar measures or pilot tests.

Subcategories and Measures	Implemented	Similar measure implemented	Pilot Test
Intelligent Speed Adaptation (ISA)			AT, BE, DK, ES, FI, IE, NL, NO, SE
Daytime Running Lights	AT, CZ, DK, EE, FI, HU, LV, NO, PL, SE, SI	IT, LT	FR
Electronic Stability Control (ESC)	DK		
Seat Belt Reminders			
Alcolock			BE, DK, FI, NO, SE
Euro NCAP	Europe wide initiative Consortium member countries are UK, ES (Catalonia), FR, DE, NL, SE		
Blind Spot Mirrors (EU legislation)	Subject of EU Directive		
Event Data Recorders for Trucks (Journey Data Recorders)	AT, BE, CH, FR		DK, NO
Event Data Recorders for Trucks (Accident Data Recorders)	FR		CH, DK, NO
Contour Marking	LU		NL
Underrun protection (EU-Legislation)	Subject of EU Directive		
ABS on Motorcycles			
Obligatory bicycle helmet wearing	CZ, EE, FI	ES, SI, SK	
Bicycle Side Reflection and Reflective Garments	AT, DE, DK, IT, LT, LU, SE	ES, HU, LV, SE	BE

Table 7: Countries in which BP measures or similar measures are implemented

## 4.1 Countries in which BP measures are implemented

The above table reveals that only a small part of the proposed best practices are currently being implemented in the EU. A significant number of countries, however, have implemented:

- ◆ Daytime Running Lights
- ◆ Bicycle Side Reflection
- ◆ Journey Data Recorders for Lorries

Blind Spot Mirrors and Underrun Protection for Lorries will be fostered due to the fact that these measures are subject to EU Directives which have to be translated into national legislation. Interesting additional information has been provided on Electronic Stability Control, Blind Spot Mirrors and the EuroNCAP.

According to the information available, Denmark is the only country where **Electronic Stability Control (ESC)** is mandatory for a specific type of vehicles, i.e. for busses above 12 tonnes. Moreover, when you buy a passenger car with ESC you get a reduction in the vehicle registration fee.

An EU-Directive on the equipment of lorries/trucks with **Blind Spot Mirrors** has been issued. As already mentioned in the introductory section, the information on the translation of the Directive in national legislation has not been provided in all reports. Recommendations and public awareness on retro-fitting of elder vehicles has been stressed in several reports as important additional strategy. A particularly critical assessment of this measure has been provided for Denmark: Blind spot mirrors have been mandatory in Denmark since October 1<sup>st</sup>, 2004. However, accident rates do not indicate any positive effect of the mirrors. In addition, an in-depth analysis of accidents involving trucks turning right and bicycles, published in 2006, revealed that the blind spot mirrors are often not adjusted or installed correctly.

The **European New Car Assessment Programme (EuroNCAP)** was initiated by Transport Research Laboratory in UK. Hence, the UK is taking a leading role in this activity and has commissioned the development of new test procedures for braking and braking stability; visibility; lighting quality handling behaviour and ergonomics. Current member countries include the Catalonian region of Spain, France, Germany, the Netherlands, Sweden and the UK. The European Commission is an observing member of Euro NCAP's board and provides additional support. In particular Poland and Slovenia – although these countries are not members of the consortium - have pointed out the role of EuroNCAP ratings as an important selling argument on the market.

Besides Czech Republic and Estonia, Finland also has reported that **use of bicycle helmets is obligatory** for cyclists. However, in the Finnish case the assessment reveals significant weaknesses in regard to implementation: helmets should normally be used by all bicyclists according to the Finnish road traffic law. However, there is no penalty for non-use of helmet. In recent years the helmet wearing rate has been 25-30%.<sup>3</sup> It does not seem likely that non-wearing will become punishable as long as the wearing rate stays below 50%.

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3 <http://www.liikenneturva.fi/en/liitetiedostot/trafficbehaviour2005.pdf>

## 4.2 Implementation of measures similar to BP measures

Some countries have reported measures which are quite similar to the best practices but – in most cases – are restricted to specific periods or user groups.

The use of **Daytime Running Lights (DRL)** is subject to specific limitations in the following countries:

- ◆ In Italy DRL are compulsory only outside urban areas
- ◆ In Lithuania DRL are obligatory for cars from the 1st of September till the 1st of April

**Use of bicycle helmets:** Three countries have reported an obligation restricted to younger age groups. In Slovenia, helmets are obligatory under the age of 14. From 2008 on, in Slovakia the use of helmets will be obligatory for children under 10 years-old. In 2005, Sweden introduced a law requiring children less than 15 years of age to wear bicycle helmets. In Spain, the use is obligatory outside urban areas but not inside cities (outside urban areas it is also not compulsory when cycling uphill).

**Reflective garments for cyclists:** such garments are obligatory in Spain outside urban areas under low visibility conditions but not inside cities or during the day.

## 4.3 Pilot trials

In several cases, pilot trials for proposed best practices have been reported. This section briefly highlights the most important information on these trials.

### Pilot ISA

- ◆ Currently, the Netherlands appear as one of the leading countries: the Ministry of Transportation is investing time and money in the production of a digital speed limit information road map of the Dutch road network. The intention is to make this speed limit roadmap available to producers of navigation systems (like TOMTOM) so that speed limit information can be integrated in navigation systems. In 2007, the Ministry also started its own pilot project with ISA in light vans. Besides making available speed limit data, the Ministry facilitates the implementation process by setting a good example (equipping its own vehicle fleet) and supporting regional and local initiatives, like ISA around school zones, which are being tested at local and Province level
- ◆ The second country which has done extensive tests (1999-2002) is Sweden. The ISA system was widely accepted by the users. In 2004, the Swedish Road Administration (SRA) made a procurement of a large amount of systems to be mounted in the administrations own vehicle fleet. This was to encourage the use of ISA on voluntary grounds by users and companies. There are two systems available. One simply informs the driver about exceeding the speed limit. The other system actively keeps driving speed below the limit. With the later speeding is almost 0% and with the former speeding is reduced from 30% to 20%.The aim is to make the ISA systems even more intelligent and e.g. consider weather information as well.

- ◆ Denmark has reported that a digital speed limit map should be implemented during the next few years.
- ◆ In Ireland one of the insurances companies ran a programme whereby they put 'black boxes' into the cars of young drivers which logged their speed and they got reduced premiums if they stayed below the speed limit.

#### **Pilot Alcolock**

- ◆ Alcolock are in extensive use in Sweden. Drivers convicted of drunk driving can, on a voluntary basis, install Alcolock in their cars and retain their permission to drive. A directive from the government states that all governmental bodies should install Alcolock in their fleet of new cars. The Swedish Road Administration wants Sweden to be the leading country to demand Alcolocks, starting in the year 2012 for cars and 2010 for buses and heavy vehicles.
- ◆ In Finland, Alcolocks are being tested in a small-scale experiment, which started in 2006. Drivers convicted of drunk-driving can maintain their permission to drive provided they have Alcolock installed in their vehicle. Further plans for the promotion of Alcolocks also depend on the results of this experiment.
- ◆ In Norway, some companies (e.g. bus and taxi companies) have conducted trials with alcohol ignition interlock.
- ◆ Ireland has reported that there will be reference to Alcolocks in the next road safety strategy, which is currently being written.

#### **Pilot Contour Marking**

- ◆ In a 2006, a trial with long and heavy lorries (LHLs – longer than the legally allowed length of 18.75 metres and heavier than the legally allowed weight of 50 metric tons) was carried out in the Netherlands. Contour marking was a legal requirement for all LHLs that participated in the trial. The Ministry of Transportation is considering whether contour marking should again be a requirement for LHLs for the new trial with LHLs that is planned to start in November 2007.

## **4.4 Barriers to implementation**

Generally speaking, the majority of countries have reported that the prevalence of in-vehicle safety devices depends primarily on EU legislation, which determines obligatory equipment of vehicles. *It is not feasible to impose national regulations, which require vehicles to be equipped with some device that is not obligatory according to the EU regulations.* In practice, the best way to promote the introduction of new safety devices or structures, which would be important from a national viewpoint, is to participate and contribute actively to the preparation of EU regulations. The absence of an agreed methodology to assess the cost-effectiveness of in-car safety systems might also represent a barrier that could be tackled at European level (several EU-funded projects have already assessed this matter, although methodologies and results still differ from one case to another).

An interesting general barrier has been reported from Finland: The implementation of safety devices in vehicles, which are optional but not obligatory, is hampered by the Finnish vehicle tax system, where the tax included in the price of a new vehicle is calculated as a percentage from its taxation

value. Consequently, taxes increase the price of all extras by a factor of at least 1.5. Denmark has shown that tax incentives for safety devices (e.g. ESC) might be an interesting policy option.

France – a country where automotive industries play a significant role in economic and thus also in policy-making terms – has emphasised the cost argument. The costs of some in-car safety devices are often deemed by car manufacturers as a significant cost element, thus usually restricting their application to the most expensive vehicle models. Car manufacturers are also reluctant to implement restrictive measures (black boxes, speed limiters) that may be unpopular for fear of reducing their share of the market, as long as the measures are not made mandatory for all manufacturers at least in Europe.

Italy points out the importance of public acceptance: especially for those best practices that are very restrictive to personal freedom such as: Alcolock, ISA or Event Data Recorders for trucks and delivery vans. In such cases politicians are strongly inclined not to promote these measures, because a strong opposition by the road users can be expected.

An interesting policy argument has been mentioned in the report from Spain: In some cases the road traffic safety administration has expressed its reluctance to support vehicle systems with the argument that increasing vehicle safety encourages drivers to drive faster or more recklessly and this - in turn - leads to a higher number of accidents of higher severity. This view is often underlined with the case of ABS where the high initial expectations were not matched by its actual effectiveness.

As regards the implementation of **Intelligent Speed Adaptation (ISA)**, several countries have reported serious arguments which need to be discussed prior to the implementation of such systems. In Austria and Germany, the implementation of a pilot has revealed a considerable list of open issues as regards technical, economic and legal feasibility (financing, liability issues, legal clarification of speed limits etc.). From the Latvian perspective the investment costs are considered to be a significant barrier.

In several countries such as the UK, Germany, France the move towards **Daytime Running Lights (DRLs)** is opposed due to safety and environmental concerns. The main concern is that through the use of DRL the conspicuousness of other road type users will be reduced i.e. motorcyclists, cyclists and pedestrians. Also the additional fuel consumption is an argument in the political debate. Greece has pointed out that due to the weather conditions DRLs are generally deemed unnecessary.

Barriers against the implementation of **Electronic Stability Control** that have been mentioned by Austria and Germany referred to the costs of introduction for smaller cars; this has to be seen against the background that 70% of new cars in Germany are equipped with ESC. The United Kingdom will launch an investigation into the potential accident reduction of ESC in early 2007. However, there is some concern that the issue of risk compensation should be taken into consideration before widely promoting ESC.

Specific barriers to the implementation of **Alcolock** are as follows: Denmark seems to have a leading role in testing Alcolock. Tests have compared the effectiveness of Alcolock compared to the suspension of the driving licence: the Ministry of Justice has come to the conclusion that it is premature to implement the Alcolock as an alternative to suspension of the driving licence as the long term effect on relapse rate has not yet been documented. Germany points out serious legal

implications – the restriction of the basic ownership right according to the Constitution in case of as well as infringements of the freedom of occupation regarding cars for professional use. From the Norwegian perspective the positive cost-benefit ratio is not evident.

As one of the most important barriers against the implementation of **obligatory use of bicycle helmets**, several countries (Austria, Germany and the Netherlands) have stated that the introduction of the measure might lead to a decreasing use of the bicycle. From the Dutch perspective stimulating the use of the bicycle helmet is at odds with the present government policies aimed at preventing crashes (primary prevention rather than secondary prevention) and at stimulating the use of the bicycle as a general health measure. In Greece, the number of cyclists is not significant enough to launch a serious debate on this issue.

Several countries have given an indication of which **selection criteria** might be applied in terms of a priority ranking for the proposed best practice measures:

- ◆ In Austria the comprehensive Road Safety Programme forms the basis for the selection of measures in this field
- ◆ In Greece, the cost of the measure as well as public acceptance are crucial for decision-makers
- ◆ In France key criteria are technical reliability, the expected effects on road safety, and acceptance by the road users in real traffic situations. Electronic compatibility between devices being fit to cars and potential side effects on drivers' attention and behaviour are also examined, as well as some legal aspects such as allocation of responsibilities in case of failure of such a device (or of unanticipated side-effects) leading to an accident
- ◆ For Malta, the following arguments are stressed: proven effectiveness in all geographic areas and local conditions, minimisation of the socio-economic impact on the existing fleet (with a particular view to small entrepreneurs and their car fleet)

## 5 Infrastructure

Here infrastructure is defined as the basic facilities, services and installations needed for the functioning of transport on roads, highways and streets. Generally speaking the overwhelming majority of transport infrastructure in the EU has to be considered as public infrastructure – despite some rare cases of highways which have been built or are currently being built in Public-Private Partnership models. Thus the various administrative levels – from local over regional to national levels – are in charge of legislation, investment and maintenance of transport infrastructure. Four best practice measures have been selected:

- ◆ **Road Safety Audit** is a systematic and independent road safety assessment of new traffic and road projects including major maintenance projects on existing roads or road safety improvement schemes
- ◆ **Home zones** refer to road sections which let different road users, including pedestrians share the same areas – thus motor vehicle speed must be low, as a rule about 10 to 15 km/h, low speeds are maintained by physical measures such as humps and with special road design
- ◆ **30 km/h zones:** such zones have been installed in residential areas, roads passing schools or shopping malls, a 30 km/h zone is indicated by boundary signing and physical speed reduction measures – it aims primarily at reducing accident numbers and accident severity of vulnerable road users such as cyclists and pedestrians
- ◆ **Roundabouts** are marked by circular design and a narrow carriageway and functions as speed breaker as well as a preventive measure against right angle and head-on collisions; priority is given to all traffic on the roundabout

The following table lists the countries (as acronyms – for a list of the acronyms please see Annex 1)

- ◆ Which have implemented the measure
- ◆ Which have implemented a similar respectively a comparable measure
- ◆ Which have run pilot tests of the measure

Subcategories and Measure	Implemented	Similar measure implemented	Pilot Test
<b>Road Safety Audits</b>	AT, DE, DK, EE, FI, FR, (LT)*, LV, NL, NO, UK	BE, ES, LU	CH, PL
<b>Home zones</b>	AT, BE, CH, DE, EE, GR, ES, (FI)*, FR, IE, (IT)*, (LT)*, LU, MT, NL, SE, (SI)*, UK	LV	PL
<b>30 km/h zones</b>	AT, BE, CH, CZ, DE, EE, ES, FI, FR, HU, (IE)*, (LT)*, LU, LV, MT, NL, NO, SE, SI, UK	CZ	PL
<b>Roundabouts</b>	AT, BE, CH, CY, CZ, DE, EE, GR, ES, FI, HU, IE, IT, LT, LU, LV, MT, NL, NO, PL, SE, SI, SK	CZ	

\* Feasible in legal terms but rarely implemented

Table 8: Countries in which BP measures or similar measures are implemented

## 5.1 Countries in which BP measures are implemented

As can be seen in the table above, 30 km/h zones and roundabouts, in particular, are widely implemented throughout the EU. The following sections briefly reviews several interesting statements from the country surveys which indicate the diverse contexts of implementation for such measures or which point out important practical experiences.

**Road Safety Audits (RSA):** It is important to note that most of the countries do not carry out the RSA in five stages (such as in Denmark) including opening and operation stages, with the operation stage being carried out about one year after completion of the project. The practice in most countries is restricted to the planning stage. However, all countries which have introduced RSAs for major road construction projects have been listed as countries where RSAs are implemented. In Austria, a Guideline (RVS<sup>4</sup>) on RSAs has been elaborated– although the RVS for RSAs is widely respected, it was not adopted as a binding document. The Austrian ASFINAG<sup>5</sup> is the only body in Austria who can order an RSA in the case of new roads or significant modifications to existing roads. The key point in practice is the timely input from the RSA since planning procedures tend to be squeezed to the extent possible. On average the auditors have two weeks for inputs at each level of planning. Germany and Finland have reported the lack of uniform standards – standards vary across the

4 RVS is the acronym for “Richtlinien und Vorschriften für den Straßenverkehr.”

5 ASFINAF is the acronym for “Autobahn- und Schnellstraßen-Finanzierungs AG” – which is the state-owned shareholder company for financing of express- and motorways.

German-speaking countries, in Finland there are no binding regulations for RSAs in particular as far as minor road plans are concerned.

In terms of incentives the Netherlands have reported that one province grants subsidies for those road authorities which use the safety audit in the design of new road infrastructure. In addition, a special website has been launched to disseminate knowledge about RSA.

A major point is that some countries have undertaken comprehensive efforts to implement **RSAs also for existing roads**. In France an ambitious project has been introduced to audit *existing infrastructure* in rural areas. The approach, called SURE (“SAFE”) includes a double diagnosis based on accident analysis and the recognition of road characteristics known to be accident-prone, and involves a cooperation between road agencies at different levels (region, “département”) and other local actors (elected representatives, law enforcement officers, NGOs). Measures to implement each priority route or site are selected according to the accident analysis and cost-efficiency estimate. In Norway there is a road safety inspection procedure for the systematic assessment of existing roads, and formalized procedures which have to be followed in decision and planning processes for construction projects. These procedures include safety concerns, e.g. cost-benefit analysis are conducted for evaluating potential safety effects.

**Home Zones:** In the United Kingdom, Home Zones are a widespread phenomena. A number of local authorities suggested that house prices in Home Zones had increased more than in other areas with Estate agents also using Home Zones as marketing features – if proven this might be a valid argument to support the introduction of such zones. Estonia and Slovenia have reported that currently efforts are being undertaken to promote the introduction of such zones. In Estonia, organized special courses for local municipality professionals (engineers and architects) are organized in order to increase the number of such areas in residential areas, near schools and kindergartens. To promote this measure in Slovenia, the Ulice otrokom (Streets to the kids) campaign will be organised as part of the First Global UN Road Safety. Austria has pointed out that the ubiquitous use of such zones tends to lower public acceptance. In Austria, home zones are the responsibility of the local level. According to experts, the location of such zones should be restricted to locations which clearly justify the need for these restrictions, e.g. in front of kindergartens and primary schools. Furthermore, an adequate street design for such zones requires a considerable budget.

**30 km/h zones:** These zones rank among the most popular measures in the EU. Some countries consider the general introduction of such speed limits in residential areas, e.g. Finland. In Sweden the debate on Vision Zero was launched with a strong focus on speed limits. The intention is to use the speed limit of 40 km/h on main streets which have a high accident exposure, and in which speed limits are at present 50 km/h. Trials with this speed limit will be carried out in about 30 municipalities beginning in 2007. In France, the 30 km/h zone concept has become much more popular than Home zones: it is more flexible, better adapted to urban design and the traffic conditions in French urban areas, and cheaper designs are often efficient. The Netherlands have become a leading country in this respect. By late 2002, the Start-up Programme Sustainable Safety had in a short time increased the total length of residential streets in Zones 30 from 15% (1997) to

50%. However, the layout of the new 30 km/hour zones is low cost (Infopunt DV, 2000); there were only speed reducing measures at 'dangerous' locations. Anyway, the sober layout is not the intended final situation but an interim solution. The underlying strategy is to quickly install many 30 km/hour zones at relatively low costs in order to speed up making the urban road categorizing visible. In Belgium, such zones are mandatory in school surroundings.

**Roundabouts:** It is clear that roundabouts are popular in the majority of EU countries. The beneficial impacts of roundabouts in terms of reducing accident severity and speed reduction have been acknowledged in a number of reports. However, several countries (Belgium, Switzerland and Hungary) have reported that particular urban roundabouts tend to increase the number of accidents with cyclists. In the Netherlands, this has also been a major concern in the implementation of roundabouts: the priority for cyclists on separate bike paths is an important issue. Currently, there is no mandatory requirement for this. National guidelines have been published that recommend that cyclists on separate cycle paths at roundabouts in urban areas have priority (i.e. traffic entering/exiting the roundabout must yield to cyclists) but in rural areas this is not the case (i.e. they must yield to approaching traffic). Since this is only a recommendation, road authorities have the freedom to follow or ignore this recommendation. This lack of uniformity is currently a topic of discussion amongst local, provincial, and national road authorities

## 5.2 Implementation of measures similar to BP measures

Some countries have introduced instruments which are quite similar to **Road Safety Audits (RSA)**. In Belgium, for example, the Flanders region has developed an instrument called 'PAC' (Provinciale Auditcommissie). The 'PAC' gathers expert opinions on traffic projects and this also has a positive influence on the decision making processes. A minor problem is that the 'PAC' is only mandatory for larger projects, and the procedure could be bypassed by the roads managers. In Switzerland the Road Safety Audit procedure is currently at the stage of being introduced and the training of auditors is in the planning phase.

## 5.3 Pilot trials

Despite the fact that Home Zones and 30 km/h zones are widespread across the EU, it is important to see that some countries are just entering the process of adjusting their road infrastructure. Poland has reported on a pilot project: The innovative traffic calming project 'Dutch Town' is being currently implemented in the city Pulawy. The project is based on Memorandum of Understanding with the Netherlands and implements best traffic calming and infrastructural measures. Some of the solutions are being introduced in Poland for the first time and require legislative changes.

## 5.4 Barriers to implementation

In general, it is important to see that for many countries the investment in infrastructure measures which are driven by road safety concerns is not feasible in a mid-term perspective but has to be considered as a long-term process. In addition, road maintenance in times of rapidly growing traffic

volumes consumes considerable parts of the infrastructure budgets. For many of the Member States, the construction and up-grading of a trunk highway or road network is the clear priority in terms of economic integration and access to markets. Despite the fact that this process is strongly supported by the EU (also in financial terms), the financial situation at the local level does not allow for the consideration of large-scale investments exceeding the basic standards.

**Road Safety Audits:** In Spain, the process of introduction is hampered due to the fact that a number of road engineers raised opposition based on liability concerns (what would happen if an existing road “rated” poorly when conducting a road inspection). The debate has probably delayed the introduction of RSAs. Sweden does not intend to introduce any such routine. It is considered to be costly and time demanding to risk creating unnecessary bureaucracy. Safety measures have traditionally been given priority in planning and implementation of infrastructure measures. The existing set of rules and regulations safeguards sufficient safety standards.

**Home zones:** Hungary has reported the lack of a legal base for the introduction of Home Zones. Legislation does not foresee the mixed use of roads – an intended adjustment of the Guideline on Road Design will allow them to differentiate sections of roads in built-up areas depending on their function (flow, distributor, access function). For Lithuania and Greece public acceptance is a major concern. In Greece, this is also due to the fact that in some cases existing standards are neglected in construction (e.g. in case of speed humps).

**30 km/h zones:** For Austria it has been reported that major barriers to the implementation of such zones are lack of budget at the local level and the resistance of the local population (which is in most cases not based on rational arguments).

Quite common barriers to the implementation of **roundabouts** are:

- ◆ the frequent lack of budget at local level to cover costs of construction and acquisition of land for retrofitting
- ◆ that in certain cases the capacity limits of roundabouts in peak hours are lower than those of crossings with street lights (if traffic volumes of the streets differ strongly)
- ◆ in case of significant pedestrian frequencies roundabouts do necessitate longer walks
- ◆ In Italy legislation is – to some extent – a barrier to the upgrading of existing junctions since the relevant decree covers only the construction of new junctions. Thus, retrofitting frequently is not done or not in compliance with the legal standards

## 5.5 Generation and use of information

The considerations on the use of information in decision-making, but also the issues of coordination and cooperation have revealed a wealth of information. In this section some of the most interesting approaches are highlighted. However, it has become evident that the production of information as well as the subsequent use of information deserves particular attention in the exchange between countries.

- ◆ Blackspot management with localised accident data is common in Finland. All road districts have annual safety goals and a tool called TARVA, which is used to calculate the expected and

current reduction in injuries and fatal accidents due to implemented measures (taking into account regression-to-the-mean effect, for example). The same tool can be used for the prediction of the safety effects of planned measures before implementation. Norway has implemented a similar set of tools.

- ◆ In France, the National Interministerial Road Safety Observatory (ONISER) centralizes all data on road accidents and injuries as well as traffic data based on a traffic counting system based on a representative sample of road locations; ONISER also manages a register of behaviour (“tableau de bord des comportements”), which monitors, in particular, speed as well as distance between vehicles and other behavioural indicators.
- ◆ Ireland has reported a very pragmatic approach: each scheme submitted by local authority (LA) has to be backed up with accident analysis and cost benefit. There is a very good working relationship between National Road Authority (NRA) and LA’s. NRA personnel also advise LAs on accident remedial schemes on non-national roads.
- ◆ In the United Kingdom the Highways Economic Note 1: Valuation of the Benefits of Prevention of Road Accidents and Casualties (HEN1) is produced on a yearly basis giving the Department for Transport estimates of the values for prevention of road casualties and road accidents for use in the appraisal of road schemes. The Department maintains updated versions of the accident (STATS19), traffic and vehicle speed databases. The choice of a particular intervention measure is dependent on the statistical analysis of long term trends, available resources (based on the cost estimates from the HEN1), number of accidents or accident exposure, expected accident reduction and or a combination of the above and judged on the expected First Year Rate of Return or Net Present Value following an economic assessment.

It is also encouraging to see that many countries are investing in the improvement of data. Cyprus, for example, has recently introduced a Highway Management System at the Public Works Department where all information concerning the island’s road network should be collected and regularly updated. Estonia has recently established the local road database at national level. All Estonian road safety databases are also open to public use and can be accessed via internet.

## 5.6 Cooperation and coordination in infrastructure safety

In many countries, fragmented competencies and lack of regulations and/or incentives for cooperation between different layers of administration are key barriers for information exchange and cooperation. However, several countries have provided brief reviews of quite interesting approaches which might be useful in the process of infrastructure planning and adjustment:

- ◆ In France, the current strategy to improve safety on rural infrastructures (SURE) involves cooperation between regional and county authorities within the Equipment network as well as cooperation between road authorities and local actors (police forces, elected bodies, NGOs). The road management system was recently decentralized, so that most of the responsibility of actors is at the county level.
- ◆ In the United Kingdom the Department for Transport is also about to set up a new National Road Safety Delivery Board to bring together representatives of the key road safety delivery



partners. The Board's task will be to sort out problems and issues, assist in developing closer partnerships and ensure that good practice is widely disseminated with the intention of helping further local partnerships that are struggling. The "Mixed Priority Routes" project is an example in which 10 local authorities in England worked in partnership with the Department for Transport with the schemes covering a range of different road types and environments. An example for the *cooperation between different departments* is the famous Safety Camera partnership which comprised the local authorities, police, magistrates' courts and, where appropriate, the Highways Agency. The members work together in partnership, under a mutually agreed Memorandum of Understanding in order to ensure that enforcement policy is integrated and consistent with other local road safety initiatives, such as Engineering and Education.

- ◆ In Swedish local traffic safety work, a routine has been worked out, called OLA<sup>6</sup>, founded on cooperation between the designers of the transport system. There is joint discussion and investigation as to whether the serious outcome of an accident that has occurred could have been avoided. After an in-depth analysis of the accident, the system designers involved give a recommendation for corrective measures. The idea of this procedure is to win broad, deep insight regarding the cause of the accident and its severe consequences. The approach has been positively received by the system designers.
- ◆ In Belgium, representatives of local and federal police are always invited to join traffic infrastructure projects. This has several advantages: their knowledge of the specific situation supports the selection of the most appropriate solution. In addition, it offers the chance to organise corresponding enforcement strategies or other measures.

## 6 Enforcement

BP safety measures on the field of enforcement aim at reducing traffic law violations that contribute too many severe accidents or injuries. The most important violations in this sense are speeding, drink driving and non-wearing of seat-belts. Four BP measures have been selected, three of which aim at reducing speeding, one aiming at reducing drink driving:

- ◆ **Speed cameras (UK):** Cameras are installed at accident sites, national guidelines exist, and arrangements to use fines for other RS measures exist too.
- ◆ **Automatic speed enforcement (France):** Fixed and mobile cameras are used in combination, especially at high risk sites, camera sites are available on the internet, all cameras are linked to a central office where photos are analyzed, and bills are sent directly to car owner (however, there is driver, not owner responsibility).
- ◆ **Section control (Netherlands):** Section control is installed on several rural roads, where the owner is responsible for speed limit violations which are not more than 30 km/h in urban areas or not above 40 km/h in rural areas above the speed limit, sites are chosen according to environmental or safety criteria.
- ◆ **Random breath testing (Sweden):** There are random procedures for testing, the BAC limit is 0.02, there are strong sanctions and voluntary rehabilitation courses; the annual proportion of the population that is tested is 17% (which is the second highest in Europe, the maximum is 34% in Finland).

Subcategories and Measure	Implemented
Fixed speed cameras	AT, BE, CH, CY, EL, FR, HU, IT, LT, LU, MT, NL, NO, PL, SE, SL, UK
Automatic speed enforcement	CZ, DE, EL, FR, LU, UK
Section control	AT, CZ, NL, PL, UK
Random breath testing	AT, BE, CH, CY, CZ, DK, EE, EL, FI, FR, LT, LV, LU, NL, NO, PL, SL, UK

Table 9: Countries in which BP measures or similar measures are implemented

### 6.1 Countries in which BP measures are implemented

The BP enforcement measure that is implemented in most countries is **speed cameras**. Although the reported effects generally are good, there is still some room for improvement. The most important one seems to be driver responsibility, which leads to a proportion of drivers who never are (and need not fear being) punished for speeding. In the worst case, the car owner can just say that a close relative was driving the car and thus escape prosecution because next of kin do not have to be denounced. Owner responsibility exists only in a few countries, e.g. in France, in the UK and the Netherlands. Some countries assume that the acceptance of speed cameras might increase if fines would be earmarked for RS measures, especially speed enforcement. The criteria according to which speed cameras are set up also are an important factor for acceptance and effectiveness. In France and

Greece, for example, it is a problem that speed limits often do not correspond to the road category and standard. When speed limits are perceived as far too low, acceptance is also low. It is therefore suggested that speed reductions should be achieved by a combination of infrastructure and enforcement measures, in addition to speed limits. Problems with acceptance arise also in countries in which regional, not one national, authorities are responsible for setting up speed cameras (e.g. Austria, Switzerland, and Germany). This often leads to inconsistent criteria for speed camera locations, while drivers would appreciate more consistency and predictability. More stringent criteria for the choice of speed camera locations are also recommended in France. A good example as regards criteria for setting up speed cameras is the UK, where a systematic monitoring of crashes is carried out prior to installation. Fixed Speed cameras are in some countries, e.g. in the Netherlands and the UK, supplemented by mobile cameras, which is likely to increase the effectiveness.

**Section control** exists only in a few countries, mostly because of limitations e.g. of the technical equipment, data privacy legislation, or driver responsibility. In Hungary there are plans to implement section control.

**Random breath testing** has been reported from many countries. One problem, however, is that "how random" the procedures actually are - is mostly not reported. In many countries, e.g. Norway, Belgium, Germany, "random" only refers to the possibility to conduct breath tests without specific suspicion. The tests may nonetheless be carried out systematically at times and places where large proportions of drunk drivers are expected. This may be effective at these times and places, but is less likely to affect the total proportion of drunk drivers. Countries that have reported random testing procedures are Finland, Estonia, Cyprus, and Denmark. The proportion of population that is annually tested is 34% in Finland, 17% in Sweden, and 15% in Hungary. Other countries have not reported testing rates.

## 6.2 Barriers to implementation

Countries in which BP enforcement measures are not implemented have only seldom reported explicitly reasons for this. Some countries where no fixed speed cameras are installed have mobile cameras instead. In Ireland fixed cameras would be less cost effective because of the low traffic volumes in most parts of the country. In Estonia, the legislation does not allow speed camera control. As regards section control, the most important reasons seem to be data privacy legislation and high requirements to technical equipment and data processing. Driver responsibility also may hinder its implementation because of the many drivers that may escape punishment, which makes the measure less cost-effective. Countries in which section control sites are planned are Belgium and Finland. In Norway trials with very promising results had to be terminated because of the intervention of the data protection authority. Random breath testing, which depends on the activity and motivation of police officers, is in some countries suffering from low motivation (because fines are not contributing to the municipal budgets) or from the inclination to bribes.

A topic that is mentioned by most countries as an important barrier to effective enforcement is driver responsibility, which should be replaced by owner responsibility.

## 7 Statistics and In-depth Analysis

One of the major obstacles to promoting a scientific approach to road safety is the poor quality of data in many countries. The more we know about the causes of road accidents the better we will be able to design and implement appropriate solutions. Reliable statistics are essential for effective research and the development of well founded national road safety strategies.

In SUPREME the following best practice measures have been selected:

- ◆ **Check Fatalities:** which is based on the comparison of several data sources in order to come to reliable numbers of traffic fatalities, i.e. to tackle the problem of underreporting
- ◆ **Accident Data collected by Medical Institutions:** which helps to calculate the number of non-fatal casualties and supports investigations about injury severity and long-term impacts
- ◆ **Comprehensive Database:** which constitutes a comprehensive information system which is based on interlink ages between several registers (databases)
- ◆ **Speed and Alcohol Offences:** which is a monitoring system in the areas of speeding and drunk driving including levels of police checks, violation rate, severity of sanctions, fatal accidents and the responses of drivers concerning safety rules
- ◆ **Mobile Phone Offences:** which proposes regular roadside surveys on the use of mobile phones while driving
- ◆ **In-Depth Analysis of Truck Accidents:** is a data collection based on on-site inspections, police and hospital information for a limited number of accidents including a control group data collection (which is otherwise rarely applied in road safety statistics)
- ◆ **National Travel Survey:** means the regular provision of up-to-date information about personal travel covering the purpose, the mode of traffic, origin and destination, travel times and distances as well as a set of personal data

Subcategories and Measure	Implemented	Similar measure implemented	Pilot Test
Check Fatalities	NL, SE	AT, BE, CZ, DK, EE, FI, IE, MT, UK	
Accident Data Collected by Medical Institutions	FR, NL, (NO), SE	CH, DK, GR	AT, CZ, HU, IT
Comprehensive Database	LV		CH, DE
Speed and Alcohol Offences	CH	AT, DE, ES, LV, NL	DK
Mobile Phone Offences	UK	CH	
In-Depth Analysis of (Truck) Accidents	NL	DE, DK, FI, FR, SE	AT, ES, HU
National Travel Survey	DK, FR, NL, NO, SE, UK	CH, DE, GR, (LV),	AT, BE, MT

Table 10: Countries in which BP measures or similar measures are implemented

## 7.1 Countries in which BP measures are implemented

In the field of statistics and in-depth analysis hardly any exact copying of the selected Best Practices could be identified but rather the underlying principles were applied in an individual fashion. Thus we can see that a large number of countries implemented similar measures or pilot trials, but the actual number of countries to implement exactly the same type of measure is rather small.

**Check Fatalities:** The Swedish procedure closely resembles the Dutch. The primary data source is based on road accident reports from the police. These are supplemented by information from the national data base of deceased persons, medical services and The National Board of Forensic Medicine (exclusion from the traffic fatality register in case of indications for suicide or a disease).

**Accident Data collected by Medical Institutions:** Even in countries where such systems are applied, it is never possible to reach a 100% rate – e.g. the systems exclude persons who visit practitioners or health care centres after an accident. A second problem which has been reported from the Netherlands, as well as Switzerland, is that the quality of data, the coding for external causes, is often poor and thus of limited value. In the Netherlands, the National Patient Register (NPR) was set up for research and policy purposes. It is used to investigate the actual dimension of road safety victims. The data is provided by all teaching (known as Academic) and general hospitals, and practically all specialised hospitals. For coding the injury diagnoses and the type of crash, together with the patient's mode of transport, use is made of the international coding of the World Health Organisation: the ICD-CM (Clinical Modification of the International Classification of Diseases).

*Problems* with using the NPR involve poorly coded data by the hospitals, because they do not see the need for coding traffic crashes well. In Norway, the injury data base that was based on hospital data was shut down in 2001, but it may be re-started. In Sweden, the new system for Traffic Accident Data Acquisition, STRADA, collects data from both the police and medical services. At the moment, about 60 per cent of the hospitals with emergency wards deliver data to STRADA on a regular basis. The objective is to reach 100 per cent. Still, the medical service part of the system does not cover persons that are injured in road accidents and go to medical care centres instead of the hospitals.

**Comprehensive Database:** Except for Latvia, no other country has reported a comparable system. The same level of information is available in many countries though spread over several sources. The two original features of the Latvian example are firstly, that all registers are managed by one organisation and secondly, that the option to link data from all registers with a key indicator is not in use in any other country (also see: barriers to implementation).

**National Travel Survey:** An interesting point of the National Travel Survey in France is that researchers may request specific indicators to be included. From the Netherlands – with a long-standing tradition of such surveys – a particular problem has been reported: longer time series are not possible due to changes in the survey design (the last major change occurred in 1999).

## 7.2 Implementation of measures similar to BP measures

**Check Fatalities:** When discussing this measure there is an obvious link to the general question regarding the completeness of data (this will be referred to later on). Interesting input has come from Finland, where the actual coverage has been studied in periodic mail surveys covering a random sample of citizens. According to the latest survey in 1996, the actual number of people who were *killed or injured* in road accidents was approximately 52,200<sup>7</sup>, whereas the official number in the statistics is 9,703.<sup>8</sup>

Practically in all countries there is a tendency for the coverage to improve in correspondence with the severity of the injuries, and it is close to 100% for fatal accidents.

The check routines vary significantly throughout the EU. Austria, for example, upon completion of the compilation of accident data, the National Statistics Office in close cooperation with KfV does a cross-check with the national register of death causes. If the number of killed persons differs between the two registers, then additional queries are conducted – similar proceedings have been reported for Denmark. In Malta the small size of the country allows for continuous comparisons between the accident sheets submitted and the police activity reports to ensure that the detailed database of the Malta Transport Authority represents all the accidents that have occurred.

**Accident Data Collected by Medical Institutions:** In Denmark the Accident Analysis Group in Odense University Hospital collects information on injuries caused by accidents (traffic accidents and other types of accidents) from casualty departments in three hospitals in Denmark – covering

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<sup>7</sup> Rätty, P. Tutkimus liikenneonnettomuusrekistereiden edustavuudesta ja peittävydestä [Representativeness and coverage of traffic accident registers in Finland]. *Finnra Studies* 38/2000.

<sup>8</sup> Road Accidents 1996. Statistics Finland.

the region Funen. Data on several aspects of the accident (e.g. means of transportation and accident situation) as well as medical data is collected. In Greece, the National Centre for Emergency Response collects a wealth of data. Whenever an accident results in injuries or fatalities, the type of injury or the reason of death is described in detail in medical terms by the personnel that are present at the accident site prior to the victim's transfer to the hospital. However, this abundance of information has not yet been used to the best advantage due to lack of staff in the relevant institutions.

**Speed and Alcohol Offences:** Several countries (Austria, Germany, Latvia, Netherlands and Spain) have reported that data on speeding and drink-driving are available in the central register of driving licenses – such data are collected due to the penalty point system. These data serve as trend-analysis, a basis for further policies or as an evaluation tool. Latvia is again in a specific situation. The Latvian *Road Traffic Safety Information System* contains a comparable range of information but at the moment the main problem is the shortage of researchers who could analyse the amount of information.

**In-Depth Accident Research:** In most countries which have similar measures such analysis is not restricted to truck accidents. In Sweden, there are in-depth studies on all fatal accidents. An interesting point in Germany is that the automotive industries there are involved in research. In the year 1999, the joint project between the Federal Highway Research Institute (BAST) and the German Association for Research in Automobile Technology (FAT) was initiated, its name was GIDAS, the “German In-Depth Accident Study”. An additional inspection area and team was provided in the area of Dresden. Since 1999, the GIDAS project has collected well over 6,000 accidents with 11,500 vehicles involved and more than 17,000 descriptions of injuries. The interdisciplinary team consists of engineers and medical doctors and has a staff of about 100 persons.

In regard to *truck accidents* Denmark and France have presented comparable actions: in 2006 the Danish Accident Investigation Team for road accidents conducted an in-depth analysis of accidents between bicyclists and trucks turning right based on 25 accidents (Havarikommissionen for Vejtrafikulykker, 2006). The in-depth analysis is based on on-site inspections of location, infrastructure, and vehicles as well as interviews with all involved parties and with witnesses, and further available information for instance from police and hospitals. In France, on-site in-depth accident analyses have been carried out by INRETS since 1982 (EDA or “Etude Détaillée d'Accidents”), and have since focussed on a number of specific French problems or categories of road users.

**Mobile Phone Offences:** Interestingly enough it seems that currently in many countries the use of mobile phones while driving is not a major policy issue, i.e. policy-makers lack interest in launching public debate. Only Switzerland has reported that there are no roadside observations but that the use of mobiles phones is investigated in the course of a representative, annual survey based on questionnaires.

**National Travel Survey:** Only a few countries have reported that such surveys are done regularly: In Switzerland and Germany such surveys are conducted at larger intervals (5 years). In Greece, surveys are carried out in Athens and Thessaloniki: The problems are that only in the last 3-5 years have these surveys been conducted by using the same zoning system and roadside interviews

positions. Therefore, compatible analysis could only be made of the last 5 years. An additional barrier is that the data are kept confidential and are not available for public use.

### 7.3 Pilot trials

**Accident Data Collected by Medical Institutions:** For Italy, efforts to create links between different data sources have already been planned in the National Health Plan 2006 - 2008, explicitly encouraging the (rather autonomous) Regional Health Systems to combine their data with those from police records. The implementation is pending. In Germany, a pilot project in Hessen is currently being implemented. It links police accident report data, hospital data and information of the emergency services. The pilot should provide deeper insight in regard to underreporting of severely injured persons as well as longer-term impacts of accidents.

Two countries have indicated that pilot investigations are done in the framework of the SafetyNet project respectively further research has been supported by the implementation of the project. In Austria, the collection of data from road accident victims in Austrian medical institutions will be started in 2008 in the framework of the project Injury Database (IDB). In Hungary, a pilot has been launched in the framework of the SafetyNet Project: i.e. to analyse data from the central hospital database in Hungary. The results are used to estimate the real number of road accident injuries and to get more reliable information about the injuries in order to prevent them more effectively.

**Comprehensive Database:** Switzerland will make major steps towards a comparable system in 2009. Links to the registers for vehicle registration, driver and administrative measures should be created. Vehicles will be identified by their number plates. In addition, accident data will be integrated into a road management system (MISTRA) and can thus be linked with road data and traffic data. However, if no linking with police data takes place, which is considered to be highly unlikely, any benefits of this system will be at a low level.

**Speed and Alcohol Offences:** In March 2007, the Danish Transport Research Institute published a report on the characteristics of the drink driver based on data on traffic accidents involving drink drivers, offences involving drink driving, and interviews with drink drivers (Bernhoft et al., 2007).

**In-Depth Analysis of Lorry/Truck Accidents:** Two research institutes from Spain, CIDAUT and IDIADA, are participating in the European Truck Accident Study (ETAC). This in-depth study has suffered from the excessively low budget for each accident investigated (around 600 euros, accordingly to the information available) which has obvious implications for the scope of investigations and the reliability of the final conclusions.

**National Travel Survey:** The considerable costs for these surveys lead to the situation that in some countries a number of smaller-scale investigations is carried out or that it is done just once or twice at long intervals. In Austria, the current situation is marked by fragmented projects of several institutions which collect mobility survey data for different purposes. In Malta, such surveys were carried out in 1989 and 1998.

## 7.4 Barriers to implementation

**Check Fatalities:** As already indicated, the statistical coverage for fatalities tends to be quite satisfactory in most of the countries, thus there are various plausibility checks being done but the scope of checks cannot be compared to the Dutch example. In a lot of countries the current risks of underreporting are deemed to be marginal.

**Comprehensive Database:** Several countries (Austria, Belgium, Germany as well as the Netherlands) have pointed out that data protection or privacy issues would not allow such a step. It will be hard to convince politicians of the value-added compared to the intensive public debate which would be triggered off. Spain has reported failed attempts of the insurance industry to link the insurance policies and the database on offenders in order to use the latter information to adjust the insurance premiums: the data protection laws prevent this linkage of information for the time being.

**In-Depth Analysis of Truck Accidents:** In Belgium, the feasibility of an in-depth analysis is being checked at present. An important legal aspect is that the public prosecutor has to accept that an independent survey is conducted on the same accidents as in the official survey.

**National Travel Survey:** In particular, in the case of Belgium and Malta, the high costs of such surveys have been mentioned as a major problem.

## 7.5 Completeness of data

There are many aspects to be considered when striving for the completeness of accident data. Some of the major points are included in the considerations on the best practice measure “Check Fatalities” from the Netherlands (see previous sections). However, several countries have reported aspects which might be of general interest.

- ◆ Austria, for example, data on *accidents without any injured people, but with material damage* have not been compiled since 1995. Only in five out of nine Austrian provinces do the police even keep track of these accidents. A pilot project should help to establish a new baseline for estimations
- ◆ In Greece time series, i.e. the work with older data sets poses severe difficulties and long periods of data processing tend to decrease the value of results in terms of policy-making
- ◆ In Italy data collection is challenged by the existence of three sources of data which lead to considerable periods for data processing and thus often an inadequate accuracy of preliminary data
- ◆ Lithuania has pointed out the problem of lacking accuracy in accident location
- ◆ STRADA data system in Sweden does not comprise data from all hospitals with emergency wards; the official national accident statistics is still based on police reported accidents. A study showed that the police reported cases in STRADA do not include a large number of injured vulnerable road users, mostly cyclists and pedestrians

- ◆ In the United Kingdom several studies have been carried out to estimate the traffic accident reporting rates. On the national level basis, work is underway to compare various databases to establish the true underreporting rate.
- ◆ For Slovenia, current efforts are aimed at the central management of traffic-related accident data for all Ministries involved – the activities are led by the Ministry of Transport

## 7.6 Quality of data – in particular the injury severity

The responses to this major general question have revealed comparable problems in a number of countries: in most cases the police officers are in charge of completing the accident data file which is then the primary source for the accident statistics. Further on the classifications of injury severity used by the police vary across the countries with obvious implications for cross-comparisons.

- ◆ Austria distinguishes between: heavily injured, slightly injured and unclear injuries. The latter category is not used in other countries. In the compilation of the accident statistic the KfV subsumes the category under the heavily injured. The official definitions according to which police executives should distinguish between heavily and lightly injured persons are much too complicated to form a practical guideline for on-the-spot assessment. KfV is constantly lobbying to introduce the definition used in Germany which states that the term “heavily injured” refers to all persons who have to visit a hospital for medical survey or treatment
- ◆ In Belgium “severely injured” person are those victims who stay at the hospital for more than 24 hours (but there is no formal procedure for the communication between the police and the hospitals.
- ◆ In Finland only three categories are in use: “fatal injury”, “other injury” and “no injury” but in case of fatal accidents the Road Accident Investigation Teams investigate in-depth all fatal road accidents. Their reports provide very detailed information of practically all aspects of fatal accidents - the road users and vehicles involved, the location, the factors contributing to the accident and its severity. Resulting injuries are reported using the abbreviated injury scale (AIS) – similar standards and procedures have been highlighted for Sweden
- ◆ In France fatalities, hospitalized victims (more than 24 hours in hospital) and light injuries are counted
- ◆ Estonia plans to define and start the collection of data on injury severity before 2010, within the framework of the National Road Safety Programme
- ◆ In Greece the criterion is usually whether or not the injured is able to contact / speak to the emergency forces (lightly injured) or not (seriously injured). Subsequently trained staffs of the Centre for Emergency Response arriving on site provide their assessment.

A large group of countries (Czech Republic, France, Hungary, Latvia, Poland, Slovenia) has reported that in case of serious injuries police is obliged to have a check and feedback with the hospital – mostly within 30 days but in some cases also in the first 24 hours (Spain). In France, even a medical certificate is included in all full-scale accident reports, mentioning duration of temporary incapacity and an estimate of the percentage of permanent total disability resulting from the crash.

## 7.7 Long-term impact of traffic injuries

For obvious reasons data on the longer-term impacts of traffic accidents can only be gained on the basis of accessible data from hospitals and health insurance institutions. The analysis of Hospital Discharge Registers is one of the options – but these data are often not easily accessible. The Swiss report has hinted at the potential to retrieve information from the insurance sector:

- ◆ Switzerland has a database of all accidents suffered by people employed in Switzerland. This national database maintained by the insurance companies contains the accidents of around half of the resident population and provides information on long-term damage to the injured persons. Further information can be obtained from disability insurance statistics.

Three countries have mentioned that studies on the longer-term impact had been carried out:

- ◆ In France, the Rhône Register has provided a basis to follow up a cohort of road crash victims (“ESPARR”) in order to assess the long term medical, psychological and social consequences of accidents. The study has been carried out since 2005 by a team of epidemiologists of UMRESTTE, a mixed research unit associating INRETS, University Claude Bernard of Lyon, and the French Institute of Health Surveillance (IVS). An assessment of their state of health and social situation one year after the crash has been performed. The study will be published in 2007. It is intended to do follow-up surveys among the sample over a period of at least three years.
- ◆ At the beginning of the 2000s, a study was conducted in Spain with the support of the Spanish Directorate General for Traffic. The study followed a sample of 2,180 road accident victims between 2 and 4 years after the accident and concluded that 15% of those who survive a road crash must be treated in hospitals as in-patients, 32% are forced to take a sick leave from work of between one and three months, and another 29% have to remain away from work for more than three months.<sup>9</sup>
- ◆ In Poland, a pilot study was initiated by the NGO ‘Alter Ego – assistance for road traffic victims’ and the Motor Transport Institute.

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<sup>9</sup> Rodríguez, J. I. (2005) El reto de sobrevivir. Article published in Trafico Magazine (magazine of the Spanish Directorate General for Traffic), November-December 2005 issue, Madrid.

## 8 Institutional Organisation of Road safety

Institutional organisation of road safety refers to a variety of measures which aim at providing a basis for the implementation of safety measures on all fields of road safety. Measures in this category of the SUPREME project are related to the general organizational framework, visions, targets, and strategies, provision and allocation of financial resources, and tools and strategies for the selection and implementation of measures. Activities in this area are for the most part integrated in the political and administrative systems of the countries. The BP measures that have been proposed are:

- ◆ **Road safety visions & targets - Sustainable Safety (Netherlands):** This concept has led to the implementation of effective road safety measures on a large scale, supported by a comprehensive Start up programme. It is oriented towards ambitious and realistic goals, includes coordinating mechanisms, and incentives.
- ◆ **Road safety plans & programmes - Long term road safety programme (Switzerland, Finland, and Norway):** All three plans provide a coordination mechanism and guidelines for effective road safety work towards realistic long-term goals for road safety. They support coordination within the transport sector, and support the implementation of effective road safety measures according effectiveness or efficiency criteria. The Swiss plan is the only plan that implicitly includes incentives and that addresses financing issues.
- ◆ **Efficiency analysis - Evaluation studies and decision making tools (Finland and Norway):** The evaluation studies and decision making tools that are used in Norway and Finland provide a basis for the application of scientific research methods on a large basis. They have real influence on decisions on the implementation of road safety measures that are effective in terms of prevented accidents, and in terms of cost-effectiveness.
- ◆ **Resource allocation processes - Road safety fund (Belgium):** The Belgian Road Safety Fund is a cheap and effective measure with a striking logic concept. It uses money paid for traffic offences to support police services for road safety actions. The actions focus on important accident contributing risk factors. The allocation of money is conditioned on a quality assessment of the project plan, and expenses have to be justified. Money that has not been spent or justified can be asked back. The measure is cheap as it is financed by its own activities.

An overview of countries in which the BP measures and measures that are similar to the BP measures are implemented is given in Table 11.

Subcategories and Measure	Implemented	Similar measures with same focus
<b>Road safety visions &amp; targets</b> ♦ Sustainable Safety	NL	CH, DK, FI, IE, NO, SE
<b>Road safety plans &amp; programmes</b> ♦ Long term road safety programme	CH, FI, NO	AT, BE, CY, DE, DK, EE, EL, HU, IE, IT, LV, NL, PL, SE, UK
<b>Efficiency analysis</b> ♦ Evaluation studies and decision making tools	FI, NO	AT, DE, FR, IE, NL, UK
<b>Resource allocation processes</b> ♦ Road safety fund	BE	AT, SE, UK

Table 11: Countries in which BP measures or similar measures are implemented

## 8.1 Countries in which BP measures are implemented

Institutional Organization of Road Safety is one of the areas with the largest differences among countries. Measures in this field are closely linked to the national administrative and political systems and therefore not directly comparable. At least, they have to be regarded based on the current framework conditions and on the historical developments in each country. It is therefore not surprising that none of the proposed BP measures have been reported from any other country than the ones which have proposed these measures. However, most countries have at least some aspects of the institutional organization of RS more or less in common with the BP measures.

In addition to these measures, more general success criteria for Institutional Organization of RS have been identified, which are related to the coordination of RS work and to RS goals. They include an adequate coordination mechanism for road safety, specific goals which are challenging but achievable, regular monitoring of progress towards the goals, incentives to pursue these goals, and links between RS goals and plans to budgeting processes in order to provide sufficient resources and incentives. For these criteria BP measures are not explicitly defined, they may be fulfilled by implementing BP measures (e.g. the RS plans and programmes fulfil most of them), but also in many other ways. They are therefore discussed in the next section.

## 8.2 Countries in which measures similar to the BP measures are implemented

### 8.2.1 Formal Coordination mechanism

The existence of an adequate coordination mechanism is one of the general criteria for Institutional Organization of RS for which no specific measure has been selected as BP. There is a large variety of different coordination mechanisms in different countries, which reflect the differences in the

political, administrative, and historical background of European countries. Therefore, none of the coordinating mechanisms can be defined as “the best”. Whether or not they are effective depends more on their adequateness and on how they work in practice than on what kind they are.

A formal coordinating mechanism on national level, e.g. a RS Commission or RS Council, exists in most countries. RS Councils, in which governmental institutions (Ministries, Roads Administration, Police) are members, have been implemented in Belgium (Interministerial Committee for RS), Denmark, France (Interministerial RS Committee and Interministerial Secretariat for RS), Greece, Ireland (High level group on RS), Italy (National Committee for RS) Poland and Slovakia. Formal coordinating mechanisms in which non-governmental organisations are also members (e.g. automobile clubs, motor vehicle manufacturers) have been implemented in Belgium, Germany, Italy, Latvia and in the UK (Advisory Panel). Some countries also have a RS observatory (e.g. France, Spain).

RS Commissions which consist only of regulatory bodies have mainly the aim of coordination actions related to RS in different areas. The main goal of a RS Council, which consists of all relevant interest organizations, is to observe and control the activities of regulatory bodies (Ministry, Road authority, or RS Commission consisting of regulatory bodies). However, this separation does not always work as intended. For example, in Italy, the RS commission and council are working so closely together that the good relationship between these two bodies undermines both critical discussions between them and the supervising function of the RS Council. In other countries, e.g. Slovakia, the councils or committees for RS have practically no influence on actual RS work, mostly because of a general lack of resources and interest.

In many other countries, there is no such formal coordinating mechanism. In these countries (Austria, Czech Republic, Estonia, Finland, Malta, Norway, and Switzerland) the Ministry with responsibility for Transport (Transport Authority in Malta) has the main responsibility for RS and for coordinating RS work. As can be seen in the following sections, the absence of a formal coordinating mechanism in terms of a RS council or committee does not necessarily impair the coordination of RS work in these countries. In Switzerland, a national RS Commission is planned, the tasks of which will be RS observation and evaluation of the national RS programme.

Only two countries (Lithuania and Slovenia) have reported that there is no institution with a central responsibility for RS work, rather there seems to be a diffusion of responsibility.

### 8.2.2 *Road safety visions & targets*

RS visions are descriptions of “ideal” states that may be defined as the theoretical background for RS work: targets that give a precise definition of what is to be achieved, and provide a basis for evaluation. Visions have been explicitly formulated only in a few countries. The one that comes closest to the Dutch Sustainable Safety is the Swiss concept which combines a paradigm of forgiving roads and Vision Zero as a basis for the national RS programme. Vision Zero, which contends that the only ethically acceptable number of road fatalities is zero, has been developed in Sweden and adopted, implicitly or explicitly, by some other countries (Denmark, Finland, Norway). Ireland has the aim to become the safest country in the world as regards RS.

Specific goals for RS have been defined in many countries, mostly within national RS plans or programmes. However, not all of these goals fulfil all criteria for BP. Goals which are challenging but attainable, based on a thorough analysis of accident statistics, which are regularly monitored and, if necessary, adjusted, and for the attainment of which incentives are provided, have been reported from Ireland and the UK. In other countries (Austria, Belgium, Denmark, Finland, Germany, Norway), there are specific goals which are based on assessments of accident and fatality numbers, but monitoring and incentives could still be improved. RS that has not been defined based on an analysis of the accident situation and that is not directly linked to measures and monitoring, seem less promising.

### 8.2.3 *RS plans and programmes*

Plans of programmes for RS exist in most European countries. They contribute to improving RS by providing specific goals, increasing commitment to these goals, and providing basic conditions for the achievement of these goals. Among the relevant framework conditions are the definition of responsibilities, funding, information, incentives, and a regular quality control. Additionally, a multisectoral approach is likely to be favourable for achieving RS goals.

Plans that fulfil most of these criteria have been reported from several countries in addition to the countries from which the selected BP measures have been proposed (Switzerland, Finland, and Norway). Regular monitoring of progress towards RS goals is included in the programmes in Belgium, Estonia, Germany, Ireland, Latvia, Netherlands, and the UK. A direct link to budgeting processes is only seldom included in the plans and programmes. Countries which have reported a direct link between RS plans and budgeting are Austria, Estonia, Latvia, Norway, and the UK.

The existence of a RS plan or programme, even if it fulfils all or most BP criteria, does not imply that the plans have any impact on actual RS work in practice. Even in Norway, where one of the selected BP plans is implemented, there is still room for improvement, and even decisions that are based on the RS action plan are not always in accordance with the criteria that are defined in this plan (e.g. cost-effectiveness), but rather by political considerations.

### 8.2.4 *Efficiency analysis and evaluation*

Evaluation studies are a prerequisite for continuous improvements in RS, and the use of cost-effectiveness analyses supports the most effective use of limited resources. However, a systematic monitoring of improvements in RS is not very frequently conducted. Countries which have reported regular RS evaluations are Austria, France, Finland, Germany, Ireland, Latvia, the Netherlands, and Spain. In France, Germany and Spain, there are RS observatories which have the main responsibility for this task. In Germany, evaluations focus mostly on changes in behaviour and attitudes instead of accidents, fatalities and injuries. Specific tools which are applied by the road authorities, and which have been selected as BP measures, are in use in Finland and Norway.

Cost-effectiveness or cost-benefit analysis is seldom used. Countries which systematically apply this type of analysis are Finland, France, Germany, Ireland, Latvia, the Netherlands, and Norway. In France, cost-effectiveness is mostly taken into account in decisions concerning rural infrastructure. In

the Netherlands, guidelines for cost-effectiveness have been developed and all larger and some smaller infrastructure projects are being evaluated with cost-effectiveness analysis. In Ireland, the RS strategies are systematically evaluated, and measures are implemented based on cost-benefit analyses.

The use of evaluation studies and cost-effectiveness analysis does not always imply that the results are taken into account in decisions on the implementation of measures. This may be due to a lack of incentives, because other criteria are taken into account as well as a part of the decision strategy, or decisions may be made based on political considerations with less concern for factual arguments.

#### 8.2.5 *Resource allocation*

Resource allocation is the part of institutional organization of RS that is most critical in many countries. If coordination mechanisms, goals, plans or programmes lack influence, this is mostly because there is a lack of resources. Formulating ambitious plans is obviously more easily accomplished than actually funding their implementation.

The BP measure in this subcategory, the Belgian RS Fund, has not been implemented in any other country, although it is more easily and more directly transferable than the other Institutional Organisational measures. A similar fund is implemented in Austria and Sweden. These funds use money that is paid for customized licence plates. Unlike the Belgian fund, these funds do not provide equally strong incentives for investing the money effectively. Another targeted funding system has been reported from the UK, where funds are provided by central government based on previous performance on improving RS and on quality of future plans. Revenue raised by the fines can be used for a wider range of RS issues, each area no longer keeps the revenue it raised itself and must apply to the central government for a portion of the overall revenue raised. In Hungary, a part of the official charges collected in the framework of vehicles' technical inspections is used on RS education and campaigns. In Austria, the national RS programme is linked to budgeting via the programmes and budgets of each of the Austrian counties, which report annually to the Ministry of Transport. In Greece, the national RS committee is responsible for budget allocation via the ministries and according to pre-defined priorities, including low-cost-high-performance measures, measures aiming at urgent problems, and basis infrastructure measures. In Italy, budget allocation processes have recently been revised in order to ensure that money that is spent based on the RS plan is received by those who are responsible for the goals.

For resource allocation in general, no BP measure has been selected, partly because there is a lack of examples that might qualify as BP, and partly because resource allocation is, in the same way as formal coordination mechanisms, too closely linked to the political and administrative framework of the countries to identify a (potentially transferable) "best" measure.

#### 8.2.6 *Conclusion*

The most frequently implemented measure is a plan or programme for RS, closely followed by a RS goal and a formal coordination mechanism for RS. More seldom implemented are measures which require more expertise and better framework conditions (e.g. availability of reliable data), namely

regular monitoring and cost-effectiveness analyses. Still more seldom are links between RS goals and budgeting processes.

All of these measures in the field of Institutional Organization of RS can facilitate RS work, but they are no guarantee for achieving improvements in RS as has been seen in the previous sections. It is rather the interaction of the framework conditions in each country, the implemented institutional organizational measures, and the people working with these measures, that is decisive for whether or not RS may or may not be improved. An assessment of such interactions in each European country would be far beyond the scope of this report.

### **8.3 Barriers to implementation**

In many countries, most or all of the BP measures are not implemented. This does not necessarily mean that the implementation of BP or similar measures would lead to improvements of RS work in general or of RS, and often there are good reasons for not implementing these measures. For example in Italy, Vision Zero is deliberately not implemented because it would be likely be used in a counterproductive way, supporting the avoidance of any quantitative prioritisation. In France, a RS programme once existed, but was abolished, partly because the goals had not been achieved, and partly because of insufficient resources and intersectoral institutional problems. Instead, safety policies are now defined twice a year by Interministerial RS Committee, and sectoral RS programmes have been developed which are more promising. A barrier to the implementation of a RS fund following the Belgian example is that a growing ambition for more revenue by over-extended financial punishments of traffic violations is not desirable.

Countries which have not implemented regular evaluation studies or systematic resource allocation processes often report a lack of resources and a lack of interest as the main reason. A lack of resources, either for conducting the processes or for implementing effective RS measures, seems paradoxical as a reason for not conducting evaluation studies or cost-effectiveness analyses – if decisions on the implementation of safety measures were based on assessments of cost effectiveness, and if the implementation were regularly evaluated, it would eventually be possible to achieve more safety improvements for the same amount of money, as has been demonstrated e.g. in Finland. However, in many countries, rather large efforts would be necessary to provide necessary framework conditions for conducting such analyses. These conditions include availability of reliable statistics and independent investigations, as has been reported from Italy and the Czech Republic.

## 9 Post accident care

Post-accident care is takes place after an accident occurred. In contrast to the other themes covered by SUPREME, post-accident care does not deal with accident prevention but mitigating the consequences of an accident. It is evident that the optimum care for everyone cannot be achieved since this would be far too expensive. Furthermore, for comparably low risks – like traffic accidents – there is little willingness amongst the population to pay in advance. Moreover, the health sector in many European Countries has reached the limits in terms of financing the facilities or even an expansion of capacities. Funds are clearly limited and would call for a stringent focus on efficiency. However, it is a fact that policy-making practically never follows the strict logic of the cost-benefit ratios: and this is particularly harmful in the case of post-accident care.

The benefit is measured as a gain in Quality Adjusted Life Years which probably expresses in the most concise way the inherent objectives of best practices in this field. The following measures have been identified in SUPREME:

- ◆ **Mandatory First Aid Courses** for drivers in order to increase the probability to get qualified first support in case of an accident
- ◆ **Psychological Support for Victims** which can help to prevent or mitigate the consequences of long-lasting psychological post-accident traumas for persons who are directly, as well as indirectly, affected by the accident
- ◆ **Rettungsgasse** which means to open a lane for emergency vehicles in case of accidents on highways and expressways
- ◆ **Integrated Accident Management including Tow Trucks** in order to prevent delays and secondary accidents
- ◆ **Two Tier System with Emergency Physicians** complementary to standard paramedic services can significantly improve the impact of immediate aid and transport to hospitals
- ◆ **Ambulance Helicopters** as an option for severe accidents in order to reduce arrival and / or transport times
- ◆ **Automated eCall Emergency System** as option in new cars as an improvement for accidents involving only one car in remote rural areas

The following table lists the countries (as acronyms – for a list of the acronyms please see Annex 1)

- ◆ Which have implemented the measure
- ◆ Which have implemented a similar, respectively, a comparable measure
- ◆ Which have run pilot tests of the measure

Subcategories and Measure	Implemented	Similar measure implemented	Pilot Trial
<b>Mandatory First Aid Courses for Drivers</b>	AT, CH, DE, DK, EE, HU, LV, LT, NO	BE, SI	
<b>Psychological Support for Victims</b>	AT, CZ, LU	BE, FI, IT, NL	CH, ES,
<b>Emergency Lane or 'Rettungsgasse'</b>	CH, DE		
<b>Integrated Accident Management with Tow Trucks</b>	NL	BE, CH, UK	GR
<b>Two-Tier Emergency System</b>	AT, BE, DE, HU, LU, SI, SK	CH, DK, FR, (LV), SE, UK	GR
<b>Ambulance Helicopters</b>	AT, BE, CH, CZ, DE, ES, FI, (FR)*, HU, LT, (LV), LU, NL, NO, PL, SE, SI, UK	DK	
<b>Automated eCall Emergency System</b>			AT, NL

Existing but rarely used (FR) respectively small capacities (LV)

Table 12: Countries in which BP measures or similar measures are implemented

## 9.1 Countries in which BP measures are implemented

A significant number of countries have implemented the following measures:

- ◆ Mandatory First Aid Courses for Drivers
- ◆ Use of Ambulance Helicopters
- ◆ Two-tier emergency systems

**Mandatory First Aid Courses:** A general problem is the fact that such a course, which is held once at the start of 50 or 60 years of driving, is no guarantee for competent behaviour in case of an accident. In none of the countries where first aid courses are a mandatory element of novice drivers' education is there legislation which foresees a repetition of the course after a certain period of time. The *duration of courses* ranges from 6 hours such as e.g. in Austria, over 8 hours (Estonia) to 14 hours in Latvia.

Some country experts pointed out that it would probably be best to approach this proposal from a general community perspective rather than targeted at road injuries/drivers, as bystanders or passengers can also play a very important role. In many countries this type of training is not limited

to novice drivers. In some countries training in first aid is also provided at school. In most countries men who have to attend compulsory military or community services are trained in first aid.

One aspect is the introduction of quality standards. The Swiss colleagues see the need for research on content of courses since certification and uniform quality standards across all providers is a key quality aspect. In Denmark, for example, the instructor of the course must be approved by the Danish First Aid Council, in Estonia such courses are carried out by authorised physicians.

**Psychological Support to Victims:** Austria has reported an interesting model which targets a broad support network. Ambulance services are combined with the support of trained 'crisis intervention teams'. If needed, these teams offer support to those directly affected by the accident as well as the family of the victim. The teams consist of persons with various professional backgrounds such as psychologists, psychotherapists as well as paramedic staff. All members of the network are trained and the training for crisis intervention has been harmonised among all Austrian providers. Training providers and trained forces are integrated in a network (so-called Plattform Krisenintervention).

**Emergency Lane (Rettungsgasse):** The country surveys hint at the fact that one could mark out some distinct geographical patterns across Europe. Finland, Norway and Sweden, and to some extent Denmark, have emphasized that due to low traffic densities as well as a rather relaxed driving culture this measure is not a priority issue in road safety debates. Other countries have reported that the existence of emergency or breakdown lanes or broad hard shoulders are sufficient to provide swift access to accident sites – this might be true for large parts of motorways in rural areas but in congested agglomeration areas with a high density of access and exit lanes - this argument is not valid. In Austria, the 'Rettungsgasse' is expected to be included in the Austrian Road Traffic Act by 2007.

**Ambulance Helicopters:** This measure is widely used – but in several country surveys critical issues related to the cost-efficiency have been stated (see barriers to implementation).

**Automated eCall Emergency Service:** For this measure the interest is strongly concentrated in the northern countries. Again, this might be due to the existence of large, sparsely populated regions where such automated call devices might have significant impact. Finland has been active in promoting eCall. The nationwide implementation of the eCall system has been underway in Finland since the spring of 2004. Norway is considering participating at a European level: according to an evaluation of the automatic emergency call system eCall the effect on the number of fatalities is likely to be positive, but whether or not the measure would be cost-effective is very unsure.<sup>10</sup> Sweden is active in following the development of eCall. It is one of the prioritised areas for the Swedish Road Administration. For Latvia, marked interest in the system has been mentioned. The 2007-2013 National Road Traffic Safety Programme 2007-2013 includes the recommendation to elaborate the strategy and calls for an action plan for the implementation of automatic tracing of emergency calls (eCall) system.

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<sup>10</sup> Erke, A. (2006). Revision of the Handbook of Road Safety Measures – Automatic crash notification. Working document SM/1818/2006. Oslo: Institute of Transport Economics.

## 9.2 Implementation of measures similar to BP measures

**Mandatory First Aid Courses:** In Belgium and Slovenia the first aid course are not mandatory but knowledge of general first aid concepts and practices is necessary and tested during the exam to obtain a temporary driving license.

**Psychological Support to Victims:** In several countries this type of support is available though it seems to be not as widespread or a standard feature of emergency teams:

In Belgium persons directly involved as well as their relatives victims might receive support: services are provided through hospital or police services as well as post-hospital services and private organisations. In Finland medical personnel has basic training for immediate psychological support. Hospitals, health centres, Red Cross and other voluntary organisations organise debriefing sessions, typically during the next few days after the accident, both for the victims and their families and friends on a voluntary basis. The police can supply contact information. In Italy, some Regional Health Services, the Italian Red Cross, and the main Italian Integrative Health Service have already started providing psychological support, aimed at preventing or alleviating Post Traumatic Stress Disorder for any person involved in accidents. Following the first trial studies, the target has been extended also to rescuers, fire-fighters, and even police officers. In addition to the primary goal of immediate support, the services provide a precious source of information on accidents' causes (though laws on privacy are a sensitive issue in this field). In the Netherlands, victims, their relatives and partners etc. are offered to contact a central desk for help ('victim support') which may provide practical, juridical or psychological support. The organisation responsible for this type of help is called 'Slachtofferhulp Nederland' ('Victim support Netherlands'), and consists of 250 professional workers and about 1500 volunteers.

**Emergency Lane:** In the Czech Republic an interesting recent amendment of legislation has come into force concerning the behaviour of drivers in a traffic jam: drivers have to clear the median gap between two lines for the swift access of rescue teams.

**Two-Tier System of Emergency Services:** Under this category those countries have been clustered which have these services available but not all over the country:

In Switzerland, the two-tier system is implemented only in some cantons. Other systems are also in use. The organization coordinating the EMS systems in Switzerland (IVR) has developed certain requirements that have to be met in order to be recognized as a qualified EMS. In Denmark, the measure is fully implemented in Copenhagen but is continuously being improved. In addition, it is assessed that it is possible to receive advanced first aid performed by a doctor in large parts of the country although not on a 24 hour a day basis. France has a network of fifteen SAMU which function in a similar way to the Medical Intensive Care Unit (MICU) in Copenhagen. SAMU are centres under the responsibility of an emergency physician. In Latvia specialists of *Disaster Medicine Centre* with specially equipped vehicles staffed with assistant, physician and nurse) are expanding their coverage. In Sweden, Medical Intensive Care Units (MICUs) can be found in about 10 places in Sweden.

**Integrated Accident Management with Tow Trucks:** In Belgium the so-called FAST (tow truck) project was initiated by the Flemish authorities and covers most of Flanders since January 2007. These FAST tow trucks can be dispatched by police. Integrated incident management does occur in the United Kingdom, but only on a limited basis. It tends to occur on sites of major road construction and tow trucks provide a free recovery service to a safe location beyond the end of the road works.

**Ambulance Helicopter:** In Denmark these services have a limited geographical scope. Transport by helicopter is implemented in the southern part of Region South. The helicopter used for transport is located just south of the German border and services Germany as well as the southern part of Denmark. A further implementation of the measure – in order to cover larger part of the country – is being discussed.

### 9.3 Pilot Trials

**Automated eCall Emergency System:** Besides the group of northern countries with their explicit interest in the system – though only Finland is actually implementing the system – two countries have started concrete actions.

In the Netherlands, the automotive platform ADI has launched the establishment of an e-call platform in which public authorities (Public Service Answering Points - PSAPs - and the Ministry of Interior), service providers, and car producers are represented. The initiative heads for an operational organisational structure based on an agreed level of services. Austria has recently run a small-scale pilot on the use of such services. The pilot survey has been financed by the Ministry for Transport, Innovation and Technology. It was based on cooperation between Dolphin Technologies, an Austrian mobile phone provider as well as one Drivers' Association (ÖAMTC). Besides this pilot, no major action has been taken. And there has not yet been a broader public debate on such systems.

**Psychological Support to Victims:** In Switzerland, a psychological support system for road traffic victims is in the course of preparation. Such a system is proposed with a timeline of 2012 set for full implementation. Within the Swiss Society of Applied Psychology (SBAP) a special service for emergency psychology is available.

### 9.4 Barriers to implementation

**Mandatory First Aid Courses for Drivers:** In France, there is no first aid teaching within driver training, as it is deemed preferable to call the local SAMU (emergency medicalized ambulance) or Fire Brigade immediately and never to touch unconscious victims of an accident for fear of aggravating some lesions, or harming the victim.

**Integrated Accident Management with Tow Trucks:** The implementation of this measure has not been discussed in many sparsely populated countries with small agglomeration areas such as for example Finland, since tow trucks are not always necessary for the clearance of the incident site. Furthermore, traffic densities are rather low, and the risks caused by incidents to the traffic approaching the site are less severe than in countries with more congested roads.

**Two Tier Emergency System:** For obvious reasons the introduction of such standards with full coverage of the country is a financial challenge for larger countries. This is clear from the reports of many countries (CH, DK, FR, SE) where such or similar systems exist, though concentrated in certain areas (mostly the larger cities).

**Ambulance Helicopter:** Ambulance helicopters are a very costly life-saving device. Many emergency practitioners believe that fast transportation from the accident site to hospital is usually less important than stabilising the state of the victim on site and preparing the person for transportation.

In technical terms, the *use of helicopters also poses some major problems* which have been reported from Austria, France and Denmark.

The rate of wrongly ordered missions is the same as in the case of road emergency services – and despite the small percentage, this still poses extremely high costs in case of helicopter services. Only road emergency services can be used around the clock in most cases – the landing of the helicopter at the accident spot has to be done without the use of automatic devices – this might pose serious problems during night-time or in case of fog etc. In terms of cost-efficiency experiences and further research will have to show whether the expansion of the two-tier emergency system might be more effective than the introduction of helicopter services. This has been explicitly mentioned for Denmark which is a relatively small country with a limited number of long distances. According to experts of the MICU, the expansion of the two tier emergency system could be more cost effective – a similar statement has been put forward by the Austrian expert in post accident care. For Malta – due to its small size – the introduction of helicopter services has never been considered.

**Automated eCall Emergency System:** In the reports from Austria and Switzerland the question has been raised whether systems based on mobile phones might not be a cheaper and more effective solution though it touches on privacy issues. Switzerland has planned an automatic system for the localization of emergency calls for 2012. But this system is only active when somebody makes a call. The reason that eCall is currently not promoted in Switzerland is related to issues of privacy. In any case, i.e. for both systems, the mandatory introduction in the European Union would require special legislation. BfU from Switzerland considers launching a cost-benefit-study on eCall compared to tracing emergency calls from mobile phones. Spain has raised some pragmatic issues such as that many emergency centres fear that their available resources will not have sufficient capacities to cope with all in-coming automated emergency calls. And also, the costs for technical upgrading of medical services might be a serious barrier to implementation. The anchoring of legislation in Spain would also be rather complex due to the split competencies between national and regional levels.

## 9.5 Integrated accident management - response times

All countries have provisions for the quick and effective coordination of emergency services in place. Some countries such as the UK have mentioned current initiatives for improvement such as joint control rooms of the services in order to optimise deployment of staff but generally speaking dispatch and coordination seems to work quite well in the 27 countries. An interesting point is the **differing standards as regards response times**. In several reports statements on these standards were included:



In Germany, emergency stations, where emergency vehicles are deployed, are located in such a way that each emergency site can be reached, as a rule, within a maximum driving time of 12 minutes. For sparsely populated areas with only low traffic density, the legally required time span within which the vehicle has to reach the spot is up to 15 minutes. In Latvia, the legally anchored response time for emergency services is 15 minutes inside built-up areas and 25 minutes outside built-up areas. Percentage of EMS responses meeting the demand is 96% inside built-up areas and 88% outside built-up areas. Average response time of EMS is 6 min inside built-up areas and 17 min. outside built-up areas. According to Slovak legislation, emergency service providers are obliged to allow for the departure of ambulance cars within 1 minute after the emergency call was received. In the United Kingdom, England and Wales are served by 32 ambulance trusts. All of these trusts provide both emergency and non-emergency patient support. The ambulance service aims to reach 95% of category A (life-threatening) calls in urban areas within 14 minutes and in rural areas within 19 minutes. It also aims to reach 75% of all these calls within eight minutes or less. Austria and Spain have not yet anchored these standards in legislation.

In Norway, the reorganization of hospital services with more centralization in order to provide better quality is currently being planned. Improved quality includes both the medical services, the general effectiveness of the organization and reducing response-times. Studies about the efficiency of the Norwegian emergency services have shown that response times are generally too long.<sup>11</sup>

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<sup>11</sup> Folkestad, E.H., Gilbert, M. & Steen-Hansen, J.E. (2001). Når det haster – prehospitale responstider i Vestfold og Troms i 2001 (When time is short – prehospital response times in vestfold and Troms). *Tidsskr Nor Lægeforen*, 3, 324-328.

# **Annex 1: List of country acronyms**



AT	Austria
BE	Belgium
CH	Switzerland
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
GR	Greece
ES	Spain
FI	Finland
FR	France
HU	Hungary
IE	Ireland
IT	Italy
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
NO	Norway
PL	Poland
PT	Portugal
SE	Sweden
SI	Slovenia
SK	Slovakia
UK	United Kingdom