

## **SUPREME – European Best Practice in Road Safety**

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### **Abstract**

The aim of the SUPREME project was to identify best practice road safety measures, which have been actually implemented in Europe, and by publication of the results to promote the exploitation of such measures. 31 partners from 27 countries (including four international organisations) provided information of potential best practice measures, which were divided into nine categories: education and campaigns; driver education, training and licensing; rehabilitation and diagnostics; vehicles; infrastructure; enforcement; statistics and in-depth analysis; institutional organisation of road safety and post-accident care. All submitted measures were systematically assessed according to eight different criteria, including effectiveness, costs and benefits, acceptability, transferability and sustainability. Altogether 250 candidate measures were submitted, 24 of which were ranked as best practice measures, 21 as good practice and 10 as promising practice measures. This overview of the SUPREME project describes briefly the data collection process, the number of submitted measures by category and country, the evaluation process, and the 55 measures which were evaluated favourably.

### **Introduction**

SUPREME (Summary and Publication of Best Practices in Road Safety in the Member States) was a project funded by DG TREN of the European Commission. 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. The target audiences of the project are decision and policy makers at all levels, from European to local, as well as the scientific community and practitioners in the field. The aim was to provide user specific information on outstanding safety measures with a view to implementation in other countries or at the European level. /1, 2/

The project was coordinated by the Kuratorium für Verkehrssicherheit (KfV) from Austria and the consortium consisted of 31 partners from 27 countries /1/.

### **Study process**

The project consisted of the following stages:

- definition of best practice
- data collection
- data analysis
- summary and recommendations
- dissemination

Each of these stages is briefly described below.

## How was “Best Practice” defined?

A number of conditions can be set for best practice road safety measures. The nine different criteria used in this study are listed below, each criterion illustrated by questions asked<sup>1</sup>.

1. *Description of the measure*: Does the description of the measure tell clearly what was actually done?
2. *Definition of the target group*: Is the target group, or target groups, for this road safety measure clearly defined (is it clear what road safety problem the measure is intended to solve)?
3. *Size of the target group*: Has the contribution of accidents or injuries within the target group to the total number of accidents or injuries been estimated?
4. *Expected effects on safety*: Were the expected effects of introducing the measure estimated (in quantitative terms) when planning the measure and justifying its use?
5. *Evaluation of effects*: Have the actual effects of the measure on road safety been evaluated, or is an evaluation study planned for?
6. *Costs and benefits*: Have the costs and benefits of the measure been estimated? Were such estimates made before or after introduction of the measure, or both before and after?
7. *Public acceptance*: Was any information collected regarding public acceptance of the measure? If known, what is the level of public acceptance of the measure?
8. *Sustainability*: Are the effects of the measure expected to be permanent or transient? If effects are expected to be transient, what steps have been taken to ensure a lasting commitment to use of the measure in order to maintain its impacts as long as possible?
9. *Transferability*: Can this measure be implemented on a wider scale or are the effects expected to be local only?

The key criterion was that the measure causes a sustained reduction of road accidents and accident victims, mainly fatalities and serious injuries, and the effects of the measure were based on evaluation studies, or the measure affected risk factors that are known to contribute to accidents or injuries. Only measures that passed this key criterion were evaluated with respect to the other criteria. The measures, which passed the effectiveness criteria, were then assessed on a 3-point scale from 0 to 2 (or similar process) for the other criteria, and the measures with highest total scores were qualified on the list of recommended measures

## Data collection

A network of country experts, covering all EU countries plus Norway and Switzerland, was asked to submit suggestions for best practice measures by filling in a rather detailed questionnaire in the internet. Prior to data collection the measures were divided into nine categories

1. Education and campaigns
2. Driver education, training and licensing
3. Rehabilitation and diagnostics
4. Vehicles and safety devices
5. Infrastructure
6. Enforcement
7. Statistics and in-depth analysis
8. Institutional organisation of road safety
9. Post-accident care

To support and guide country experts in data collection they were provided with lists of the kinds of measures that could and should be considered, and a brief description of what were the basic criteria

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<sup>1</sup> Elvik, R. Development of criteria for identifying best practice in road safety and collecting information on the use of best practice road safety measures. Unpublished project document.

for *best practice* measures. Regarding enforcement, for example, country experts were asked to consider implemented measures concerning different kinds of speed and alcohol enforcement, drug enforcement, use of seat belts and other safety devices, overtaking, close-following, driving licenses, condition and load of vehicles, sanctions, driving time, administrative support systems etc. Altogether, the lists of potential types of measures were rather extensive and covered practically all road safety measures.

Another important data source were international organisations working on European level. They were also asked to submit suggestions for best practice measures the same way as country experts. Altogether 15 such organisations were asked to participate, among them EC DG-TREN (European Commission Directorate - General Energy and Transport), WHO (World Health Organisation), ETSC (European Transport Safety Council), EuroNCAP (European New Car Assessment Programme), OECD/ECMT (European Conference of Ministers of Transport), TISPOL (European Traffic Police network), and Red Cross Europe.

### **Overview of submitted measures**

Altogether 250 proposals for best practice measures were submitted, distributed by category and country as shown in Table 1.

Most frequently the suggested measures concerned education and campaigns, infrastructure, enforcement and driver education, training and licensing. Almost 60% of the proposals came from eight countries (Belgium, Germany, the Netherlands, Spain, Denmark, Slovenia, Austria and Sweden), which each submitted more than 10 suggestions. All countries submitted at least one proposal.

*Table 1: Proposals for best practice measures.*

<b>Education and campaigns</b>	
Best	<i>Speak out!</i> campaign for young car passengers (B, Norway)
Good	Educative continuum (France)
	<i>Flash!</i> multi-media theatre monologue (Belgium)
	<i>BOB</i> campaign against drink driving (Belgium)
	<i>Goochem</i> , the armadillo, seat belt campaign (the Netherlands)
	<i>The sign of light</i> pedestrian visibility campaign (Latvia)
Promising	<i>Zebra seef</i> road safety education label (the Netherlands)
<b>Driver education, training and licensing</b>	
Good	Initial driver training (Denmark)
	Accompanied driving (Sweden)
	Safety halls (Sweden)
<b>Rehabilitation and diagnostics</b>	
Good	Rehabilitation of severe violators (Austria)
	Rehabilitation of drink driving offenders (Switzerland)
	Rehabilitation of young offenders (Germany)
	Diagnostic assessment of drunk drivers (Austria)
<b>Vehicles and safety devices</b>	
Best	EuroNCAP
	Daytime running lights
	Bicycle side reflection
	Alcolock
	Event data recorders (black boxes)
Promising	Mandatory bicycle helmet use
	Intelligent speed assistance (ISA)
<b>Infrastructure</b>	
Best	Low speed zones in residential areas (
	Roundabouts
	Rumble strips (profiled pavement markings, Sweden)
	Winter speed limits and winter maintenance (Finland)
	Road safety audits
Good	Hierarchical mono-functional road network
	High risk site management
	Variable message signs
	Road safety inspections
Promising	Measures against tree collisions (France)
<b>Enforcement</b>	
Best	Safety camera programme (United Kingdom)
	Automatic speed enforcement (France)
	Section speed control (the Netherlands)
	Random breath testing
Good	Targeted seat belt enforcement
	Penalty point system (Latvia)
<b>Statistics and in-depth analysis</b>	
Best	Correcting for underreporting of road traffic fatalities (the Netherlands)
	The Rhône road trauma register (France)
	National travel survey (United Kingdom)
	Monitoring speed and drink driving offences (Switzerland)
Good	Monitoring mobile phone offences (United Kingdom)
Promising	Road safety information system (Latvia)
	In-depth analysis of heavy truck crashes (the Netherlands)
<b>Institutional organisation of road safety</b>	
Best	Sustainable safety (the Netherlands)
	The TARVA programme for the estimation of the effects of safety measures (Finland)
Promising	Federal action programme for greater road safety (Switzerland)
	Road safety fund (Belgium)
<b>Post-accident care</b>	
Best	Emergency lanes in congestion (Germany and Switzerland)
	Use of mobile intensive care unit (Denmark)
	Helicopter transport of crash victims (the Netherlands)
Good	First aid courses integrated with driver training
	Tow trucks in the motorway network (the Netherlands)
Promising	Promoting the implementation of eCall systems (Finland)
	Psychological support for crash victims (Spain)

### Analysis of submitted measures

For each submitted measure it was first assessed whether it passed the effectiveness criterion, and those qualified were then assessed with respect to the other criteria according to Table 2 or similar process. In order to qualify for this second stage a measure had to get a score of 1 or 2 for the effectiveness criterion. Each of the nine categories of measures was assessed by one or two experts in the area.

Table 2: Assessment criteria.

Criterion		Score	
1	Description of measure	0	Superficial
		1	Fair
		2	Adequate
2	Definition of target group	0	Superficial
		1	Fair
		2	Adequate
3	Size of target group	0	Small
		1	Moderate
		2	Big
4	Expected effect on safety	0	Not estimated
		1	Not estimated but obvious
		2	Estimated
5	Evaluation of effects	0	No evaluation
		1	Previous studies or likely effect on risk factors
		2	Adequate evaluation study shows positive effect
6	Costs and benefits	0	Not estimated
		1	Previous studies
		2	Estimated, and costs exceed benefits
7	Public acceptance	0	Not assessed, no indications of acceptance
		1	Not assessed, indications of acceptance
		2	Assessed and well accepted
8	Sustainability	0	Not likely
		1	Possible but not certain
		2	Probable
9	Transferability	0	Not likely
		1	Possible but not certain
		2	Probable

It was recognised at the very beginning that the assessment could not be done entirely objectively, but often involved judgement of the assessor. Nevertheless, the process seemed to discriminate reasonably well best or good measures from those that were less successful. In the end measures that scored highest were chosen on the list of recommended measures.

### The best, the good and the promising measures

In the following, best, good and promising practice measures are listed by category (Table 3). Measures labelled *best practice* were proven effective on reducing accidents or injuries, and scored well also in other assessment criteria. *Good practice* measures scored well in general, but suffered from lack of information concerning effectiveness or cost benefit ratio. *Promising practice* measures were mainly new measures that had not yet been fully evaluated, but according to experts had considerable safety potential.

Table 3: Identified best, good and promising practice road safety measures.

<b>Education and campaigns</b>	
Best	<i>Speak out!</i> campaign for young car passengers (B, Norway)
Good	Educative continuum (France)
	<i>Flash!</i> multi-media theatre monologue (Belgium)
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	Variable message signs
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<b>Enforcement</b>	
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	Section speed control (the Netherlands)
	Random breath testing
Good	Targeted seat belt enforcement
	Penalty point system (Latvia)
<b>Statistics and in-depth analysis</b>	
Best	Correcting for underreporting of road traffic fatalities (the Netherlands)
	The Rhône road trauma register (France)
	National travel survey (United Kingdom)
	Monitoring speed and drink driving offences (Switzerland)
Good	Monitoring mobile phone offences (United Kingdom)
Promising	Road safety information system (Latvia)
	In-depth analysis of heavy truck crashes (the Netherlands)
<b>Institutional organisation of road safety</b>	
Best	Sustainable safety (the Netherlands)
	The TARVA programme for the estimation of the effects of safety measures (Finland)
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	Tow trucks in the motorway network (the Netherlands)
Promising	Promoting the implementation of eCall systems (Finland)
	Psychological support for crash victims (Spain)

### Level of implementation

Identified best, good or promising practice measures were typically implemented in less than a half of all countries (Figure 1). The measures concerning infrastructure made the exception: they were implemented in 79% of all countries, on average. The implementation level in the Nordic countries was frequently higher than the average level in all countries. Furthermore, the level of implementation varied by category and country.

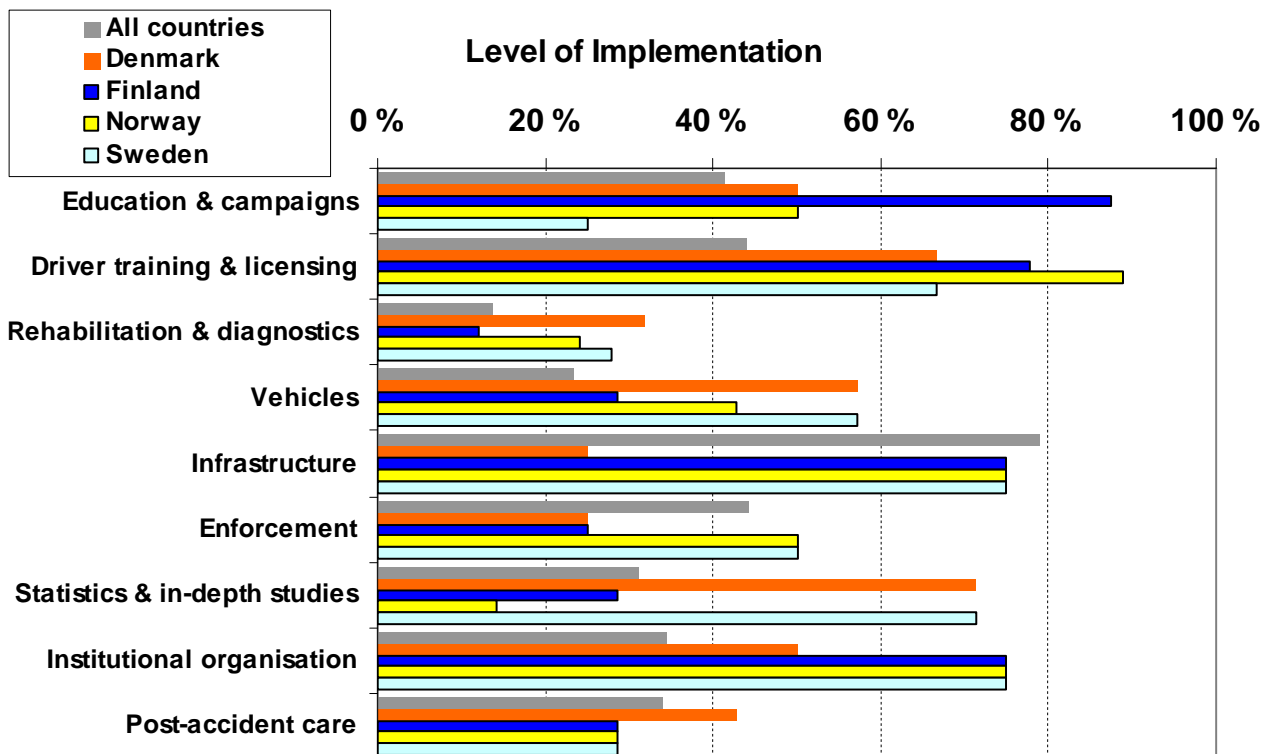


Figure 1: Implementation of best practice measures in all countries (average in EU member states + Norway + Switzerland) and Denmark, Finland, Norway and Sweden (the percentage of best, good and promising practice measures, which were implemented).

### SUPREME reports

The final reports of the SUPREME project can be downloaded from the project website /1/ and include

- A - Methodology (765 kB)
- B - List of measures collected and analysed (305 kB)
- C - Handbook for measures at the country level (1,18 MB)
- D - Handbook for measures at the European level (829 kB)
- E - Review of implementation at the country level (695 kB)
- F1 - Thematic Report - Education and campaigns (922 kB)
- F2 - Thematic Report - Driver education training licensing (974 kB)
- F3 - Thematic Report - Rehabilitation and diagnostics (857 kB)
- F4 - Thematic Report - Vehicles (1,21 MB)
- F5 - Thematic Report - Infrastructure (673 kB)
- F6 - Thematic Report - Enforcement (805 kB)
- F7 - Thematic Report - Statistics and in-depth analysis (614 kB)



F8 - Thematic Report - Institutional Organisation (606 kB)

F9 - Thematic Report - Post accident care (678 kB)

The Handbook for measures at the country level (report C) provides a summary description of all best, good and promising practice measures. It is currently (early May 2008) available in 13 different languages, including Danish, but not in Finnish, Norwegian or Swedish yet.

## **Conclusions**

The results show that road safety in Europe could be significantly improved by implementing measures, which are known to reduce accidents or their consequences, and meet also other criteria for best practice measures. On European level, typically less than half of the identified good, best or promising practice measures were implemented. In Denmark, Finland, Norway and Sweden the implementation level was often but not always higher than the European average. Even though road safety in these countries is among the best in Europe, they could still benefit considerably by introducing new best practice measures and by more extensive use of effective measures that are already in use.

The SUPREME project was based on a questionnaire study where a network of country experts provided information of implemented measures. It was obvious that some country experts were more active in providing this information, and perhaps had better access to the information that was needed to fill in the questionnaires. There was also variation between countries in the interpretation of whether some measure qualified as best practice measure. Because of such differences, and the rather long questionnaires that had to be filled by the country expert for each measure, not all best practice measures were not necessarily reported. Therefore, the list of best practice measures presented here is not exhaustive, and other effective measures can be found e.g. in the Norwegian handbook /3/.

It also became clear that proper evaluation studies of the effects of implemented measures are rare. This is unfortunate, because there are still important gaps in our knowledge of the effects of different measures on safety. The effect may vary by e.g. the details of the implementation, traffic infrastructure, and geographical and cultural environment, which also change with time. Therefore it would be important to include a study of the effects on all implementation plans.

## **Acknowledgements**

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