

Promotion of mobility and safety of vulnerable road users - Summary

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Summary of the European research project PROMISING

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Contents of the project: The mobility needs of pedestrians, cyclists and motorised two-wheelers, are not integrated automatically in the planning for traffic and transport in Europe. As a consequence, safety policies often have a curative approach, which may restrict the mobility of these vulnerable road users.
Safety analysis shows that in Europe as a whole, the risk of a fatal accident per kilometre travelled is highest for riders of motorised two-wheelers. Young car drivers have a higher risk of a fatal accident per kilometre travelled than pedestrians and cyclists of the same age do.
The European research project PROMISING aimed at developing measures to improve both safety and mobility of vulnerable road users. The potential for problem reduction was specified for four target groups of vulnerable road users: pedestrians, cyclists, motorised two-wheelers (i.e. motorcyclists and riders of mopeds) and young car drivers. The differences between European countries in their transport modes were taken into consideration.

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1. Aim and approach

This final report of the PROMISING project integrates the findings of the work of six workpackages. The reports of these workpackages are available separately. The final report selects main findings of the different workpackages and combines the results as much as possible. The report is policy-oriented and illustrated with photos and clear examples, in accordance with the requests of EU DGVII, the commissioner of the project.

The aim of the PROMISING project was to develop measures that reduce the risk of injury to vulnerable and young road users as much as possible in a non-restrictive way. That is to say that safety and mobility must be improved together; the improvement of safety should not take place at the cost of reduced mobility.

The potential for problem reduction was specified for four target groups: pedestrians, cyclists, motorised two-wheelers (i.e. motorcyclists and riders of mopeds) and young car drivers. The aim was to present measures within an implementation framework, with the main focus on technical, non-restrictive aspects. The differences between European countries in their transport modes were taken into consideration.

In order to determine the potential for problem reduction, available data and expertise of the following subjects were studied and combined:

- safety problems,
- task requirements,
- measures related to problems and tasks,
- effects of measures on safety and on mobility,
- costs of measures.

The research consists of six workpackages. The first four workpackages each focused on one of the target groups. The research approach between the packages varied.

Since there is a lack of planning for the mobility of pedestrians and cyclists, the research approach in the workpackages on these subjects was to take walking and cycling as modes of transport in their own right, and consequently to combine transport criteria with safety criteria.

The research approach for the motorised two-wheelers and young drivers differed from this, because of the high risk of these modes in relation to the high speed and complex driver task. In these workpackages, the most important safety measures were selected and subsequently mobility aspects were integrated.

The PROMISING project paid much attention to the effectiveness of measures. Calculations of the costs and benefits of a selection of measures were needed to compare the different measures. Workpackage 5 described the technique and application of cost-benefit analyses and calculated the costs and benefits of 20 measures selected by the other workpackages. The points of view of road users and their own experiences were also considered in the comparison of the measures. For this reason, an international forum of interest groups was consulted during the project. In four countries, a national forum with representatives of governments and interest groups was asked for their opinions. These consultations are coordinated in WP6.

In this current report, the most important results and conclusions of the six workpackages are discussed.

2. Analysis and main conclusions

The analysis of the safety problem shows that in Europe as a whole, the risk of a fatal accident per kilometre travelled is highest for riders of motorised two-wheelers. Young car drivers have a higher risk of a fatal accident per kilometre travelled than pedestrians and cyclists of the same age do. The risks for pedestrians and cyclists do not differ significantly. However, the risk of a fatal accident per kilometre travelled for different modes, varies tremendously from country to country. This could be due to national and local conditions.



Cycling in Raalte, the Netherlands.



"Cycling in Schwerte ... earlier at your destination"(Germany).

An important subject in the study was to consider in what way safety problems of pedestrians, cyclists and motorised two-wheelers might be related to the fact that these modes are not integrated automatically in the planning for traffic and transport in Europe, whereas those of car drivers are.

The favouring of cars as a mode of transport in planning and infrastructural design over other modes has its roots in the 1960s and 1970s. This period was marked by rapid increase of car ownership. Car transport was given priority over other modes in transport planning. One consequence of this is that in the framework of safety policies, a curative approach (to protect other modes to the threats by cars) is currently promoted that may restrict the mobility of the pedestrians, cyclists and motorised two-wheelers. In fact, it is explicitly recommended to not promote cycling, for example, as long as certain safety measures have not been implemented.

A new mentality towards non-motorised transport emerged in the 1980s, when the growing negative impact of motorised transport, such as pollution, noise and space requirements, became noticeable. From then on, it became important to reduce both the need for travelling large distances and

the share of car use. In the PROMISING project, travelling was therefore not considered as a goal in itself, but as a means for participating in society (going to work, shopping, visiting friends et cetera). Also, the possibilities of different transport modes in fulfilling the mobility needs of different target groups (including elderly and children) have seriously been considered.



Cycling in Paris, France.

Although the opportunities and benefits of non-motorised transport are receiving an increasing amount of interest, there is no balance in planning and design between motorised and non-motorised transport. In the PROMISING project, planning and design principles have been reviewed critically for their implications on infrastructural facilities for the four target groups (cyclists, pedestrians, motorised two-wheelers and young car drivers).

The main conclusions of the problem analysis are given below.

A shared conclusion for walking and cycling is that the design of road facilities generally is not, but should be, directed towards their safety and mobility needs. These needs concern a coherent network, direct routes to destinations, safety, comfort, easy task performance and attractiveness. To consider walking and cycling as a means of transport requires a change of thinking on the political level. If the safety and mobility of all groups are to be enhanced in an integrated way, a better balance in mobility and safety for all modes of transport must be created. Modes that will be promoted will be subject to higher quality requirements and to fewer restrictions. Political interventions are needed to achieve this, and road users ask for this change. Several studies (e.g. the SARTRE-survey, 1998) show that more people ask for high planning priority for walking and cycling than for car driving. However, the various (competing) needs and interests of all citizens, road users and interest groups (such as shopkeepers) must all be taken into account when selecting measures. Policy implementation should therefore also focus on conflict management and on balancing the different interests and needs.

The project also showed that the needs of riders of motorised two-wheelers do not receive priority in road design, either. It is generally not recognised that design criteria for motorcycle/moped riding should be different to those

applied for driving in cars. The riders are much more vulnerable to imperfections of the road surface than car drivers, and special requirements must therefore be made recognised for road markings, road surface repairs, longitudinal grooves, drainage et cetera.

The actual priority treatment for cars implies that the needs of young drivers are already catered for regarding the planning and design of infrastructure. The safety problems of young drivers and riders of motorised two-wheelers indicate there is a need for improved education in combination with behavioural restrictions. A graduated licensing system for car drivers is necessary. Young people should not only rely on riding and driving by themselves to fulfil their mobility needs. This entails that in the case of young drivers and riders of motorised two-wheelers, a non-restrictive approach will not be sufficient to solve road safety problems.

A common need for all groups is education that focuses on a considerate and respectful attitude towards other road users.

The way forward: combining long-term planning and short-term measures

The analysis indicated the main problems for the for target groups that need to be addressed to improve road safety. In order to make the recommended safety measures work, the following conditions should be made:

- Walking and cycling need to be recognised as transport alternatives in their own right.
- The needs of motorised two-wheelers need to be integrated in the design of safety measures for motorised vehicles, because their needs may conflict with those of cars and heavy vehicles.
- For young drivers, a graduated system for drivers' licences needs to be introduced, and the use of cars should be limited.

This way, the safety of the four groups can be increased significantly while it allows people to choose more freely between the different options for modes of transport to satisfy their mobility needs.

Evidently, long-term planning is needed to create the fundamental changes that will improve the safety and mobility of vulnerable road users. Measures require a framework that takes the various needs of vulnerable road users into account. The rapid growth of mobility along with the impact of traffic on livability and the environment also necessitates long-term planning. Yet, this does not mean that it is impossible to achieve results in the short term, as progress is already being made. The provision of an integrated network for pedestrians and cyclists is a gradual process that has already started. It requires that these groups of road users be given more priority in planning and road design. At crossings in urban areas all over Europe, the conditions for safety and efficiency for pedestrians and cyclists are improving.

Long-term planning is also needed if real progress is to be made in the field of road safety.

New concepts provide the framework that long-term planning requires. These concepts stop defining road fatalities as a negative, but largely accepted side-effect of the road transport system. Rather, road fatalities can and should be avoided, and the probability of accidents can be reduced drastically by means of the infrastructure design. And where accidents still

do occur, the process which determines the severity of these accidents should be influenced in such a manner that the possibility of serious injury is virtually eliminated.

The Dutch concept of Sustainably Safe Traffic and the Swedish 'Zero Vision' concept both aim at reducing fatality risk, and are examples of new approaches towards road safety and road accidents. The Dutch system is currently characterised by:

- a structure that is adapted to the limitations of human capacity through proper design, and in which streets and roads have a neatly appointed function, as a result of which improper use is prevented.
- vehicles which are fitted with facilities to simplify the driver's tasks and which are designed to protect the vulnerable human being as effectively as possible.
- road users who are adequately educated, informed and, where necessary, guided and restricted.

A road safety system based on this framework can be combined with transport policies that consider walking and cycling as a mode of transport. This approach can be implemented gradually.

The main consequences of the necessary framework and new concepts for road planning and design are:

- Motorised traffic with a flow or distribution function must be segregated from non-motorised transport.
- A network of main traffic routes must be created for pedestrians and cyclists.
- A fair balance between motorised and non motorised traffic for priority facilities at crossings should be achieved.
- The maximum speed of motorised traffic should be limited on roads where it mixes with non- motorised traffic.

3. Main measures per group

The measures that were suggested for each target group are discussed in this section.

3.1. Pedestrians

Of the pedestrian safety measures considered in the report of WP1, the following two are the most comprehensive and most closely associated with urban planning and policy philosophies:

1. area-wide speed reduction or traffic calming schemes;
2. the provision of an integrated walking network.

These are two complementary measures, which can be taken simultaneously without conflicting. Not only do they apply to different parts of the urban fabric, but they also address different objectives. Area-wide schemes (the most widespread of which is the 30 km/h zone) are aimed at reducing vehicle speeds and thus at allowing for a safer mingling of pedestrians with motor traffic. Integrated walking networks (usually centred around a downtown pedestrian zone) serve to remove and/or reduce conflicts between pedestrians and vehicles and to provide or improve crossing points.



Walking in Delft, the Netherlands.

In addition to road and traffic planning and management, there are other measures that could improve the safety of pedestrians. Vehicle users must be made to accept pedestrians as road users equal to themselves, to know the rules and regulations that protect pedestrians, and to observe pedestrian rights. To some extent, adequate road and traffic management contributes to the achievement of the behaviour expected from drivers. Other measures (education, information, enforcement) are usually needed to achieve the right balance, and additional incentives may be found in areas other than mobility and safety. One example of such an additional incentive would be preoccupation with the environment.

Both the requirements that pedestrians' movement patterns create for traffic planning and traffic management and the design of roads and their environment are summarised in chapter 5 of this report. Approximately 100

measures have been reviewed with regard to their safety and mobility effects and their costs.

3.2. Cyclists

The same basic planning principles that apply for pedestrians apply for cyclists. Because cycling is suitable for travel over greater distances than walking, it is necessary to distinguish a flow and an access function. As is the case with motorised traffic, a network for the flow function is required. However, this network cannot follow the network for through-motor traffic easily, since the mesh of the routes of the cycling network is smaller. Provisions for cycling should therefore not simply be seen as additional features of the traffic structure for motor traffic. Rather, they require a network of their own.

In addition to this, technical requirements to be met by bicycles and by other vehicles in connection with the safety of cycling are reviewed. Reliable and easily maintainable devices for bicycles make the requirements less restrictive, because if the devices do not work properly or have to be repaired, the bicycle will be used less. Injuries to cyclists and pedestrians may be reduced by a better design of cars and heavy vehicles.



Utrecht, the Netherlands.

A hierarchy of roads was developed according to function, design and behaviour for all modes of transport (based on the Dutch Sustainable Safe traffic System and the Swedish Zero Vision concept). It was based on the requirements of coherence of the network, directness, safety, comfort and attractiveness on the one hand and on the new concepts for road safety in the Dutch sustainable traffic system and the Swedish Zero Vision on the other hand.

The hierarchy was developed only for built-up areas and comprises 5 types:

1. through-traffic route with a speed limit of 70 km/h and only grade-separated crossings;
2. main street or urban arterial road with speed limit of 50 km/h and, in some areas, 30 km/h;
3. residential street with a speed limit of 30 km/h;
4. walking-speed street;
5. car-free areas for pedestrians and cyclists.

Further main principles for road safety and transport education and driver instruction are presented in the report of WP2.

3.3. Motorised two-wheelers

The report of the workpackage regarding motorised two-wheelers emphasises that road authorities must be made aware of the fact that riders of mopeds and/or motorcycles are much more vulnerable to imperfections of the road surface than car drivers are. Special requirements must be recognised for road markings, road surface repairs, longitudinal grooves, drainage et cetera. The same applies to the design and location of guard rails, which may add to the injuries of riders when they collide with the rails. Furthermore, speed-reducing measures like humps may pose special problems for mopeds/motorcycles. However, speed reduction measures must also be reviewed to guarantee more strongly that riders of motorised two-wheelers keep to the limit.

A better consideration of the needs of motorised two-wheelers fits in with a non-restrictive approach.



Special traffic rules, such as those allowing motorbikes to overtake slow moving lines of cars and allowing for them to ride on lanes with limited access, may give riders of motorcycles/mopeds some privileges compared to car drivers. This requires that decisions about the position of motorised two-wheelers in traffic management be made on a political level. Furthermore, more empirical information is needed on the effects of such special rules.

The perception of mopeds/motorcycles is a special problem for other road users. This problem can only partly be solved by the use of daytime headlights by riders of mopeds/motorcycles. Car drivers must be made aware of the need to look out for mopeds and motorcycles and to learn to anticipate on their presence.

Training and experience are important factors if riders are to be able to control the moped/motorcycle in all kinds of situations, to cope with imperfect road surfaces and obstacles on the road, to recognise situations in which other road users may not react adequately to their presence, and to understand the consequences of behaviour which is different from that of car drivers as well as how to cope with these consequences. Countries with a relatively low minimum age for riding a moped or without compulsory training or licensing should reconsider their regulations. Low-speed mopeds with lower requirements could also be considered in these countries.

Vehicle improvements to the motorised two-wheelers could be restrictive, because they may add to the costs of riding. In some countries, mopeds are tuned to make them go faster. This is a serious safety problem, since their riders are not properly prepared for these higher speeds. But, within limits, rider motivation and riding style have more effect than vehicle characteristics on accident rates.

The lack of protection of riders of mopeds/motorcycles can only partly be compensated for by wearing a helmet or other protective clothing. Wearing helmets is compulsory for motorcyclists in all European countries. Actual wearing rates may be close to 100%, with the exception of a few countries in Southern Europe. However, helmets are not always worn correctly, which may greatly reduce their protective effect.

3.4. Young drivers

The measures recommended for young drivers are in general restrictive regarding the options for behaviour. Lack of skill, inexperience, high exposure to difficult situations, and willingness to take risks are the main reasons why young car drivers face problems different to those of other car drivers.

Reduced car use is possible and has a positive result. Evaluation studies show that alternatives such as disco buses and cheaper public transport have a positive effect on road safety figures. If alternatives for car use are brought into line with the specific mobility needs of young people, the restrictiveness may be limited. In the search for attractive measures, a social marketing approach is required.

Another measure that would reduce car use by young people and thus lower the mortality rate would be to raise the minimum age for driving. However, it is also important to extend the learning phase as inexperience contributes greatly to the high accident rates of young drivers. A solution would be to introduce a graduated licensing system in which the learning period is extended. This can be achieved by lowering the minimum age for starting the training, while the minimum age for obtaining a licence remains the same.

The licence system could also be turned into an intermediate system, in which the full licence can only be obtained if the driver stays violation-free or observes restrictions such as accompanied driving, night curfews or a lower alcohol limit. A second test after probation could be added to this, to motivate drivers to gain experience and not to simply refrain from driving.



Although the behaviour in respect of drinking and driving by young drivers is not worse than that of older drivers, drinking and driving is a very serious problem, because young drivers are more exposed to alcohol during weekend nights. A lower legal limit for alcohol consumption in relation to driving is recommended in combination with certain social and economic measures.

Improvement of education and instruction is a possible, non-restrictive measure. Driving simulators are a technical means which provides good opportunities for improving the education. Hazard perception training is also effective, but the training of appropriate driving skills may result in a negative effect: the overestimation of abilities which leads to higher accident rates.

However, the problem analysis also makes clear that personality traits are influential for about 30% of the target group. They demand other intervention strategies, which may start at an earlier age.

Technical measures that involve limitations to the car, are at present still a theoretical option. The application of Intelligent Transport Systems could provide solutions, but the actual development of such instruments is not primarily motivated by safety.

4. Costs, benefits and effective measures

Because the costs of measures are often tremendous, there is an increasing demand for information about the relationship between the costs and benefits of these measures. Furthermore, there are many competing demands from society for improving the standard of living, for social activities and for preservation of the environment and the cultural heritage.

In the PROMISING project, the methodology of the cost-benefit analyses is described and the cost-benefit ratios of 20 measures are calculated. The calculations were made for single measures only, as it is very difficult to get good data on the exposure and risk of injury for each mode of transport and, related to this, of the effects of measures on travel efficiency and safety. Only those measures of which the effects are well-known, and only situations in which policy requirements and objectives are clearly articulated and widely supported were assessed for their cost-benefit ratio, since monetary values had to be assigned to the effects. These considerations limited the selection of measures for the analysis.

The analyses presented are in most cases based on data from one country, which also limited the selection of combinations of measures.



Emmen, the Netherlands.



Amsterdam, the Netherlands.

A methodological problem exists in the case of cost-benefit analyses for measures controlling car traffic. Measures that reduce motor traffic, either by raising the direct costs or by slowing traffic down, will often fail a cost-benefit test because the methodology is biased in favour of the amount of kilometres travelled. In this sense, cost-benefit analyses can hardly be said to be neutral with respect to long-term policy objectives. Reduced cost and increased demand always count as a benefit in cost-benefit analyses, whereas a reduction in demand (*ceteris paribus*) counts as a loss of benefit. Policies that aim to reduce travel demand by a particular mode of transport are very difficult to justify by means of cost-benefit analyses. Yet it may be precisely such, restrictive, policies that are needed in order to promote a sustainable transport system.

Cost-benefit analyses are a subject of new projects in the fifth framework for EU research. The results from the PROMISING project show that there clearly is a need for a review of the input of these analyses.

Cost-benefit analyses were made of the following measures for improving the safety and mobility for vulnerable and inexperienced road users:

- roundabouts;
- road lighting;
- integrated area wide urban speed reduction schemes;
- environmentally adapted through-roads;
- upgraded pedestrian crossings;
- parking regulations;
- front, side and rear underrun guard rails on trucks;
- local bicycle policies to encourage mode switching from car driving;
- bicycle lanes;
- bicycle paths;
- advanced stop lines for cycles at junctions;
- mandatory wearing of bicycle helmets;
- improved bicycle conspicuity;
- daytime running lights on cars;
- daytime running lights on mopeds and motorcycles;
- mandatory wearing of helmets for moped and motorcycle riders;
- design changes on motorcycles;
- graduated licensing – lowered age limit for driver training;
- license on probation – lowered BAC-limit for novice drivers;
- disco buses.

A generalisation of the results leads to the following conclusions:

- Measures that *reduce driving speed*, especially in urban areas, will improve safety, and sometimes mobility, for pedestrians and cyclists. However, more kinds of benefits must be included in the analysis, such as social safety, mobility opportunities for children, elderly and handicapped people, as well as the city and residential climate.
- The benefits of *facilities for pedestrians and cyclists* exceed their costs by a wide margin.
- Measures that *improve conspicuity and visibility* of road users are cost-beneficial.
- The implementation of measures regarding *injury protection*: underrun guard rails on trucks and helmet wearing for motorised two-wheelers are cost-beneficial.
- *Graduated licensing* and *driver's licence on probation, including a lower BAC limit of 0.01%*, are promising measures for inexperienced drivers.

When the results of the cost-benefit analyses are combined with the recommended measures from the reports on pedestrians, cyclists, motorised two-wheelers and young car drivers, and when it is taken into consideration that only isolated measures could be included in the cost-benefit analysis, the following 10 measures can be said to be the most important according to the PROMISING-project:

1. a separate network of direct routes for pedestrians and a separate network of direct routes for cyclists;
2. transport alternatives for young drivers, such as disco buses;
3. a categorisation of roads to separate flow traffic from distribution traffic and access traffic;

4. area wide speed reduction apart from roads with a flow function for motorised traffic;
5. infrastructural design standards for pedestrians, cyclists and motorised two-wheelers: implementation (and development);
6. priority rules and regulations for cyclists and pedestrians in urban areas and technical measures that support priority and stimulates perception and anticipation;
7. privileges for motorised two-wheelers in relation to car drivers;
8. a graduated or intermediate licensing system for young car drivers and motorised two-wheelers;
9. education that focuses on a considerable and respectful attitude to other road users;
- 10 injury protection by design of cars and heavy vehicles.

5. Implementation: recommendations

The following considerations for implementation of measures can be presented.

Although single measures may be effective, isolated safety measures of one single type do not, in general, go very far in reducing safety and mobility problems. It is considered more advisable to aim for balanced and comprehensive solutions rather than to seek a one-to-one relationship between one problem and one countermeasure. Therefore, packages of several measures should be implemented.

Implementation of a good proportion of the safety measures applied in urban areas requires co-operation between authorities on all levels. It requires cooperation between local authorities and the national government or administration, as the central administration may provide support to the local initiatives (through regulations, incentives, expertise, follow up and information gathering) in many cases. Conversely, local initiatives may complement national action and give it more prominence on the local level (in safety campaigns, educational issues, et cetera).

The international level cannot be disregarded. The EU could harmonise technical requirements for vehicles and licensing systems, for example. Perhaps highway codes can also be reviewed for harmonisation to a certain extent. Regarding infrastructural facilities and design, the EU can support good local initiatives by rewarding a recommended approach with subsidies.

Target setting is a good way of establishing what has to be done to plan for the future. It makes clear what kind of resources we need to bring in, what kind of tools are needed for good planning, and it directs our activities towards looking for an effective and efficient approach.

Setting targets and planning cannot be fruitful without monitoring success and failures.

Monitoring is an instrument to adapt policies when they are not as effective as planned, to remain flexible because external factors may change, and also to keep all parties alert and involved. Showing progress is of course a very important stimulus for continuation of a policy.

A key recommendation for all groups is to involve the road users or their representatives in the planning process. The analyses made clear that their needs have not been taken into account in the planning and the design of facilities. The best means for determining whether measures will work and whether they will provoke a good use of facilities and the right behaviour is involvement of the road users. Because of the mobility needs of society and their economic function, and because of the impact of traffic on other use of space, the social climate and the environment, it is also important to involve communities and different interest groups in the design of the transport and traffic system.

Development of expertise and training is an important precondition for the development of effective policies, both in government and the private sector. Three aspects need to be addressed.

Firstly, to make sure that those coming into the profession fully appreciate both the policy needs and all the practical necessities of planning for different groups of road users.

Secondly, to ensure that those already in the profession maintain their skill levels and keep abreast of the latest developments. Best practice can change very quickly.

Lastly, there is a need to raise the status of those in the profession so that good-quality people are tempted to come into the profession in the first place, and to stay in it, knowing that they have sufficient chances for promotion.

More general recommendations can also be deduced from the PROMISING project. Progress in the fields of transport and traffic can be promoted by an exchange of expertise and experiences. An exchange of expertise and experiences is most helpful when it guides process-related thinking. It is impossible to copy solutions from one country to another and even from one city to another. Principles and guidelines can help the parties involved in finding solutions in their own context. Training is a precondition for progress and should be directed to process-related learning. Good examples should provide further inspiration and demonstrate the attractiveness of solutions.

In summary, it can be said that the context, that is the transport, political, technical, economical and cultural environment, will determine which solutions fit best locally, regionally and nationally. Principles can be applied but must be transformed into concrete measures.

6. To conclude

For walking and cycling, safety problems have a direct relation with the absence of a mobility policy. The recognition that walking and cycling are means of transport opens up a wide variety of measures with a high potential for safety improvement. The possibilities for promotion of walking and cycling by fulfilling requirements such as comfort, direct access, priority and safety, shows that there is no need to limit our perspective of walking and cycling to problem aspects.

Acknowledgement of walking and cycling as means of transport however, asks for a fair balance between the interests of different modes of transport, limiting the threat that motorised vehicles pose to walking and cycling. Categorisation of roads and traffic calming provide a good framework for this.

The positive margins between benefits and costs for these kind of measures are also wide. Other benefits of walking and cycling, such as health, a pleasant city and a residential climate for leisure, recreation and shopping, further support the notion that these modes of transport should receive more priority. This is also the case when such disadvantages of motorised traffic as pollution, noise and space requirements are considered. A safety policy for pedestrians and cyclists is most effective when it is combined with a mobility policy and therefore is non-restrictive in its nature.

For motorised two-wheelers and young drivers the situation is different. The risks involved with riding motorised two-wheelers are high on average. Sub-groups of young drivers also have a very high risk. While a non-restrictive policy for motorised two-wheelers can decrease safety problems, the problems cannot be solved sufficiently by such a policy. Yet, it remains important that the special needs of motorised two-wheelers are taken into consideration to a greater extent, for example in the design of road infrastructure.

A non-restrictive policy for young drivers implies that transport alternatives be developed to cater for their mobility needs.

A restrictive policy for both motorised two-wheelers and young drivers is needed, which means age limitations and full licensing limitations. Furthermore, speed control and injury protection measures are necessary. Thus, for these target groups, a safety policy cannot possibly be entirely non-restrictive.

From the abovementioned conclusions of the PROMISING project, two recommendations for further research seem to be most important.

1. The absence of explicit policies for various modes of transport entails that criteria must be developed to cater for the needs of their users. The current criteria for traffic flow, right-of-way regulations and the like must also be reviewed. Several countries have already developed manuals for a better planning of cycling, outlining basic principles and presenting design alternatives. Much can be learned from the expertise and experiences in developing solutions adapted to other national and local situations with a different transport and traffic history.

2. Cost-benefit analyses could support the selection of priority measures. However, a more solid basis is necessary for taking the various kinds of benefits of traffic and transport policy alternatives into account, and must be developed. Current data for cost-benefit analyses are mainly determined by the amount and speed of motorised traffic.

The measures presented in this report are sufficiently PROMISING for safety improvement to justify adoption of the approach for a better balance in planning and investments for all modes of transport.

List of publications resulting form the project

Final report for publication

Promotion of mobility and safety of vulnerable road users. Final report of the European research project PROMISING.

SWOV Institute for Road Safety Research, Leidschendam, the Netherlands.

Deliverable 1

Measures for pedestrian safety and mobility problems. Final report of workpackage 1.

NTUA National Technical University of Athens, Greece.

Deliverable 2

Measures to promote cyclist safety and mobility. Final report of workpackage 2.

VTT Technical Research Centre of Finland, Espoo, Finland.

Deliverable 3

Integration of needs of moped and motorcycle riders into safety measures. Final report of workpackage 3.

SWOV Institute for Road Safety Research, Leidschendam, the Netherlands.

Deliverable 4

Safety of young car drivers in relation to their mobility. Final report of workpackage 4.

BAST Bundesanstalt für Straßenwesen, Bergisch-Gladbach, Germany.

Deliverable 5

Cost-benefit analysis of measures for vulnerable road users.. Final report of workpackage 5.

TRL Transport Research Laboratory, Crowthorne, United Kingdom.

Deliverable 6

National and international forums to discuss the approach and the results of PROMISING. Final report of workpackage 7.

SWOV Institute for Road Safety Research, Leidschendam, the Netherlands.

Leaflet

Integrated planning for mobility and safety is promising. Leaflet on the European research project PROMISING.

SWOV Institute for Road Safety Research, Leidschendam, the Netherlands.

