

# TOWARDS A ROAD SAFETY PLAN FOR FLANDERS-BELGIUM

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## ABSTRACT

In 2005 the Minister for Mobility in Flanders-Belgium commissioned the Policy Research Centre for Traffic Safety at Hasselt University to elaborate a traffic safety plan for the Flanders region in Belgium. The 3 regions in Belgium are quite autonomous in their road safety policy, so this plan can be considered to a large extent as an equivalent of a national road safety plan.

The elaboration of the road safety plan started in the beginning of 2006 and is conducted in three steps. The first step is a thorough problem analysis ("status questionis") of the traffic safety problem in Flanders. In this phase facts and figures are written down about the evolution of traffic safety in Flanders-Belgium. The second step consists of the designing of a strategic vision on the development of road safety in Flanders. In the third and last step a number of policy measures will be selected. All selected measures will be presented in the template of a check-list with information about the measure: estimated cost, feasibility, expected effects, implementation horizon,...

A number of critical success factors are identified that might determine the resulting effects of the plan quite strongly: commitment of key actors, clear description of measures, competent governance, public support, sufficient financial resources and reliable data.

## INTRODUCTION

In 2005 the Minister for Mobility in Flanders-Belgium commissioned the Policy Research Centre for Traffic Safety at Hasselt University to elaborate a traffic safety plan for the Flanders region in Belgium. The traffic safety plan should identify the main traffic safety problems in the Flanders region, elaborate a strategy to improve traffic safety and propose concrete policy measures to reach the desired improvement.

In many ways the Flemish road safety plan is comparable with a national road safety plan. At least the approach is similar as the plan consists of an integrated approach of diverse aspects that play a role in traffic safety: legislation, education, licences, road infrastructure, enforcement, campaigns and so on. Furthermore, Belgium is a federalised country with a large autonomy for the 3 regions (Flanders, Wallonia and the Brussels Capital Region). Roughly the competences relevant to traffic safety between federal state and the 3 regions are divided as follows:

- Legislation, driving licences: federal state
- Road infrastructure, education: regions, municipalities, provinces
- Enforcement: federal police, local police

This paper describes the structure of the traffic safety plan, both from the point of view of the content of the plan as well as from an organisational point of view.

The focus is laid on issues that are relevant for many countries such as available knowledge on the international level, suitable safety indicators, comparisons between countries and regions, setting traffic safety targets and available data.

## **THE FRAMEWORK: EMBEDDING IN A POLICY OF SUSTAINABLE MOBILITY**

A road safety plan is not the "one-and-only" plan that rules traffic conditions in a country. There are strong links with other plans and policy domains, both on a 'vertical' and 'horizontal' level. The vertical level are road safety plans that exist on the local, national or international level and that should fit in with each other. Worth mentioning at the international level are the road safety plans of the World Health Organisation (Peden, 2004) and the European Commission (EC, 2003, 2006). In Belgium a "States General" for road safety was elaborated in 2001 at the national level. In the Flanders region until now no formal plan was carried out but in 2002 the Flemish Road Safety Council formulated a report with policy recommendations. At the local level municipal mobility plans were made in almost all Flemish municipalities during the latest years. Moreover traffic safety is one of the major topics in the local safety and security plans that are made by police zones.

Besides this vertical level, there is a horizontal level that plays an important role. As road safety is not an isolated element of the traffic system and traffic is not isolated from society in general, a road safety plan might not be seen separately from other policy plans and measures. At least there are (strong) interdependencies between road safety and mobility planning in general. This could be called the horizontal level. A few examples of domains that are strongly related to road safety are investment policy in road infrastructure, traffic management, transportation demand management, amenity of public spaces and policy concerning public transportation. In the Flanders policy vision this horizontal integration is expressed as "sustainable mobility", applying principles of sustainable development to traffic policy (MVG, 2003). But also environmental plans and programs, economic development plans, housing, urban planning etcetera may have important consequences on mobility and road safety and should therefore be kept in mind while elaborating a road safety plan (and vice versa).

## **STRUCTURE OF THE PLAN**

The elaboration of the road safety plan started is being conducted in three steps:

1. Facts and figures about traffic safety: a problem analysis
2. A policy vision towards safe traffic
3. Selection of measures

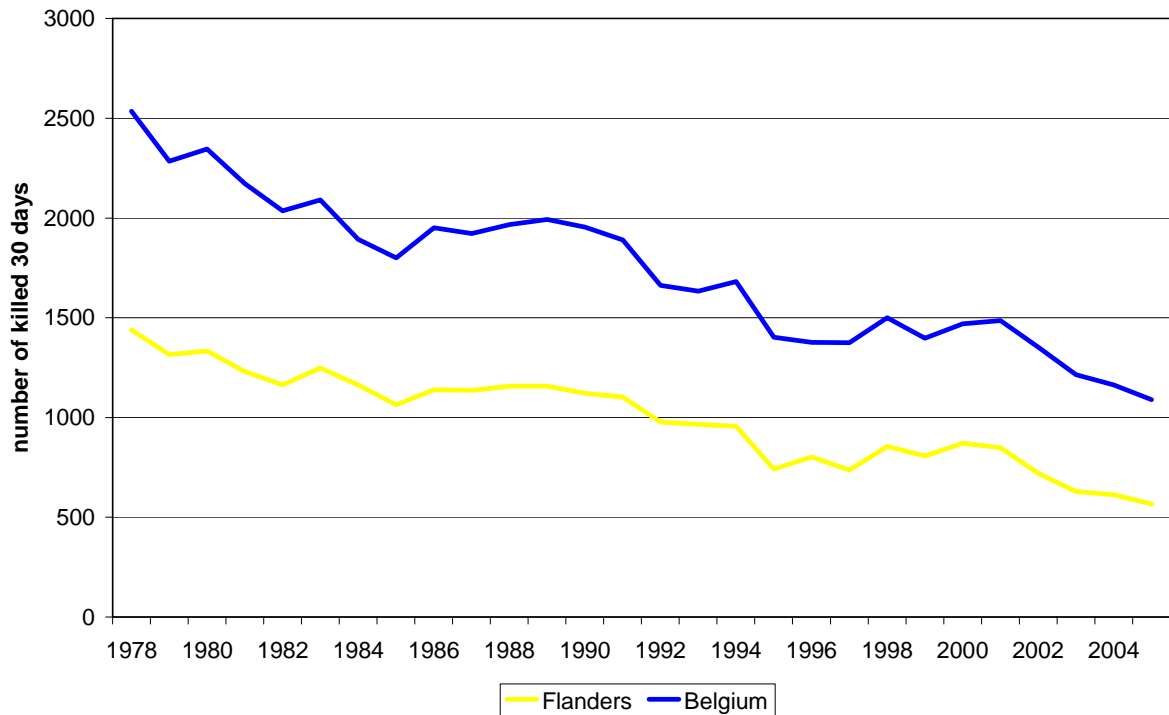
The first step is a thorough problem analysis ("status questionis") of the traffic safety problem in Flanders. In this phase facts and figures are written down about the evolution of traffic safety. The second step consists of the designing of a strategic vision on the development of road safety in Flanders. In the third and last step a number of policy measures will be selected. In this last step an attempt will also be made to quantify as precisely as possible the road safety effects of each of the selected measures. Furthermore estimates will be made of costs of the measures in order to facilitate policy decisions about the set of safety measures that will be selected to be implemented.

The three steps together will form the Flemish traffic safety plan.

## MAIN TRAFFIC SAFETY PROBLEMS IN FLANDERS

Since the seventies the yearly number of fatalities in traffic is decreasing, not only in Flanders, but in most Western European countries. In 2005 566 fatalities and 4437 severe injuries resulting from traffic accidents were registered in Flanders (NIS, 2006a). Until the nineties of the former century, the number of fatalities was still more than 1000 per year, see figure 1.

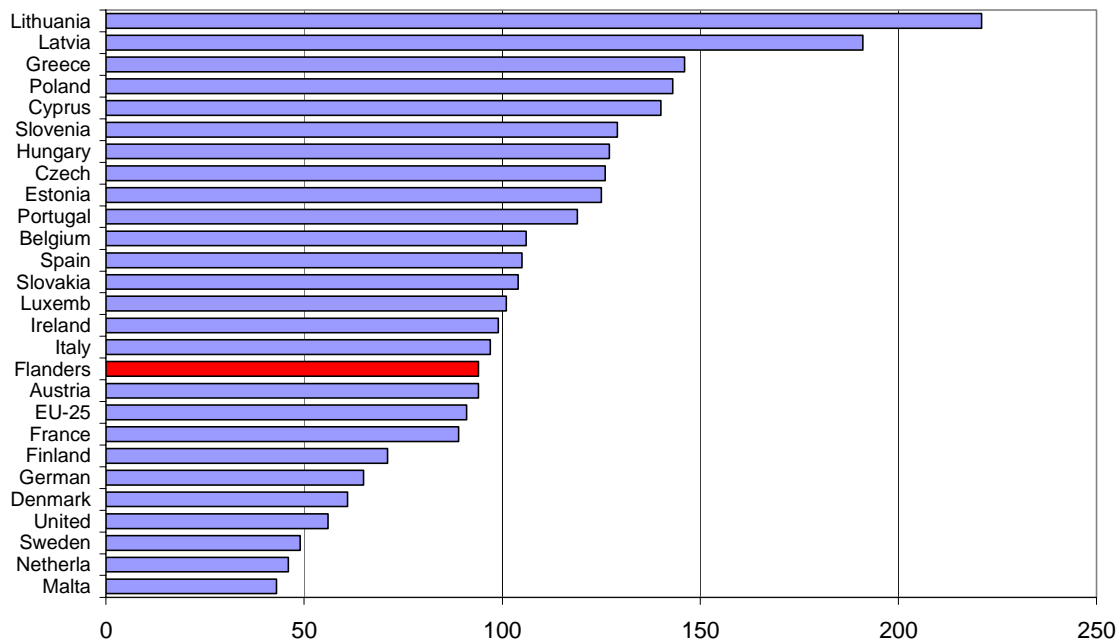
Figure 1 – Number of persons killed in road accidents (within 30 days)



Source: NIS, 2006a

Compared to the safest countries in Europe Flanders is performing moderately. Although Belgium – and Flanders – perform more or less on average compared to other countries within the European Union, an average Dutch, Swedish or British citizen runs only half the risk of a Flemish citizen to have a fatal traffic accident, see figures 2 and 3. The figures show that, whether the level of unsafety is expressed as a rate per million habitants or as a rate per driven vehicle-kilometers, the ranking between some countries remains relatively stable.

Figure 2 – Number of killed in road accidents per million inhabitants (EU-25, 2005)



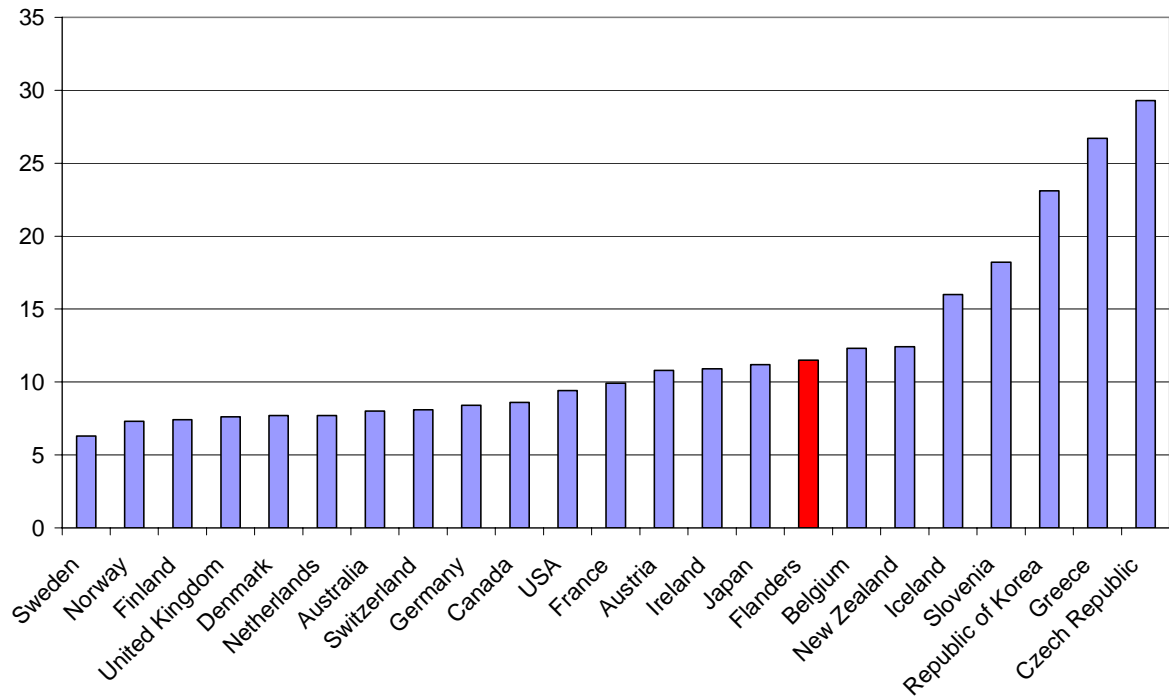
Source: EU-CARE, 2006; NIS, 2006a

In absolute numbers the largest problem group are person car occupants. Almost 60% of the fatally injured in Flanders-Belgium and 55% of the severely injured are car occupants. Bicyclists count for 14% of the fatally injured, pedestrians for 9%, motorcycle drivers 8% en moped drivers 4%.

The probability of having a fatal accident per kilometre driven is by far the highest for motorcycle drivers, followed by moped drivers. Also for bicyclists and pedestrians the risk is higher than for car occupants. Truck occupants and public transportation users have the lowest risk (see figure 4).

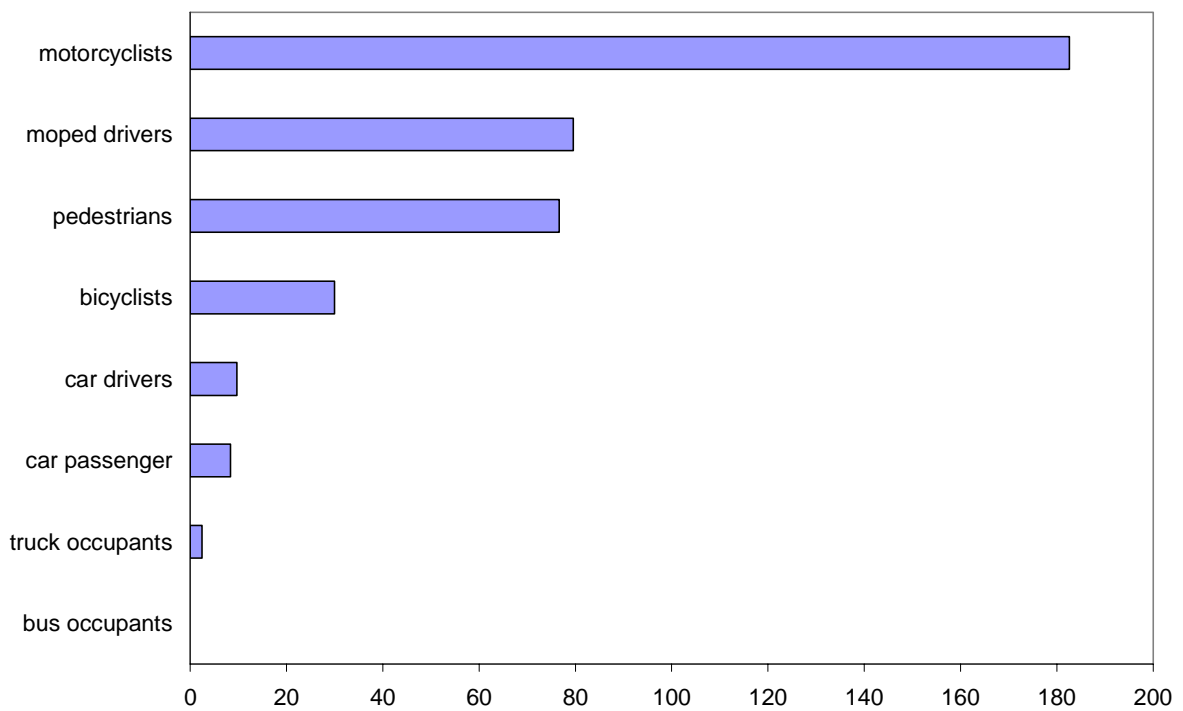
Also when the risk is expressed in relation to the travelling time with a certain vehicle type, motorcycle and moped drivers rank highest. However, according to this ratio pedestrians and bicyclists have almost the same risk as car users.

Figure 3 – Number of killed in road accidents per driven vehicle-km (2004)



Source: IRTAD, 2006; NIS, 2006a

Figure 4 – Lethal risk per billion person-kilometer (Flanders, 2000)



Source: NIS, 2006a; Van Hout et al., 2006; Zwerts & Nuyts, 2004

One fifth of all accidents are run-of-way-accidents, in which only one road user is involved. In about one in ten accidents more than two vehicles or pedestrians are involved. Most of the accidents consequently occur between two road users. In almost nine in ten of such accidents a person car is involved. Bicyclists and mopeds are present each other in one fifth of the collisions.

Almost half of the accidents are located inside built-up areas. Nevertheless about three in four fatalities are registered outside built-up areas. This is likely to be caused by the higher speeds outside built-up areas. The evolution in the most recent decade is more favourable on roads inside built-up areas compared to roads outside built-up areas.

An accident may occur on either an intersection or on a road stretch. About six in ten accidents happen on a road stretch. Moreover seven in ten fatal injuries are counted on road stretches. The number of accidents on intersections has decreased somewhat more during the last decade compared to the number of accidents on road stretches. One in four of the fatal injuries on intersections are bicyclists. Together with the moped drivers they count for one third of the fatal injuries on intersections.

Less than one in ten accidents occurs on motorways (speed limit 120 km/h). Half of the number of fatal injuries is registered on so called numbered roads (arterial roads), one third on municipal roads, and 13% on motorways. The decrease in the number of accidents is almost equal on numbered roads as on municipal roads. Contrarily on motorways a considerable increase in the number of accidents was noticed. The increase in accidents is even higher than the increase in driven kilometres, which causes consequently an increase in the accident rate (number of accidents per kilometre driven) on motorways. Nevertheless, the accident rate on motorways remains more or less three times lower compared to that on numbered roads.

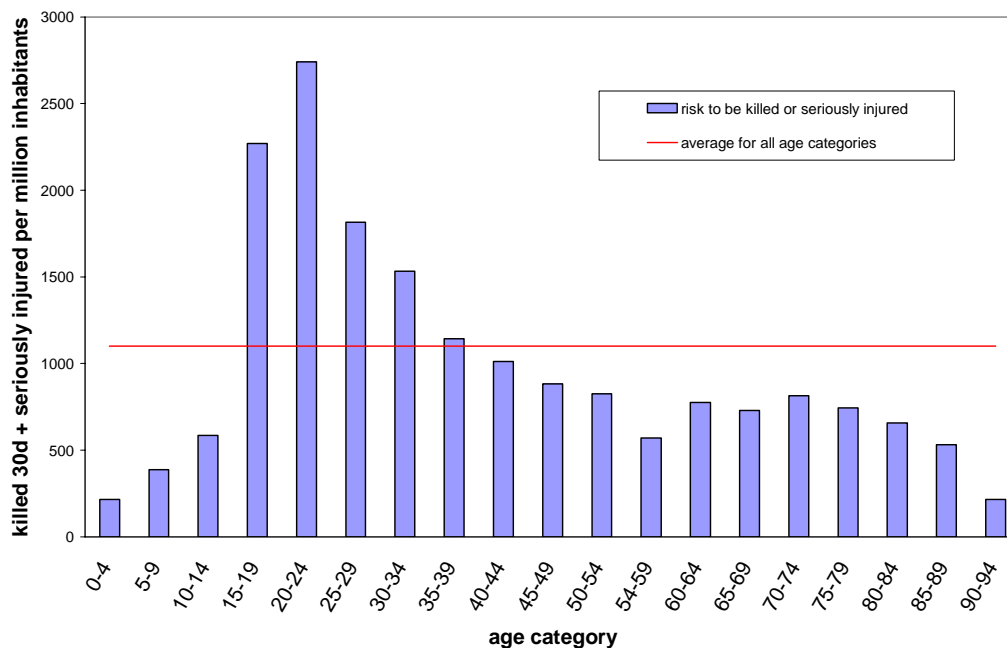
Almost half of the number of fatalities applies to people between the age of 16 and 34. Particularly inexperienced drivers are a serious risk group. In relation to the kilometres driven, also old-aged people (65+) are a risk group. While for young people the lack of experience is an important issue, for old-aged people the higher vulnerability is contributing to the higher injury risk. Irrespective of the travel mode (car, bicycle, moped, pedestrian) inexperienced drivers, bicyclists or pedestrians are overrepresented in accident statistics. Within the group of accidents with moped drivers, one in three accidents (36%) happen to 16-17-years-old youngsters.

In relation to the driven kilometres men have twice the risk of women to get killed in a traffic accident.

The number of accidents varies from one month to another. Fewer accidents are happening in the winter months and during summer holiday months July and August. Peaks in accidents occur in May/June and in September/October. Considerably more accidents occur during weekend nights than on weeknights. In general the severity of accidents during night is higher than during daytime.

Based on the available accident statistics a synthesis was made of the major road safety problems that were detected in the Flanders region. To do so, traffic safety problems were overlooked in several dimensions according to who is involved (car occupants, motorcyclists, bicyclist, pedestrians,...) where do the accidents happen (highways, inside/outside built-up areas, when do they happen (night-time, daytime, week or weekend). Based on the defining of the problem categories a vision for the future can be elaborated and policy targets can be set.

Figure 5 – Risk level per age category (Flanders, 2001)



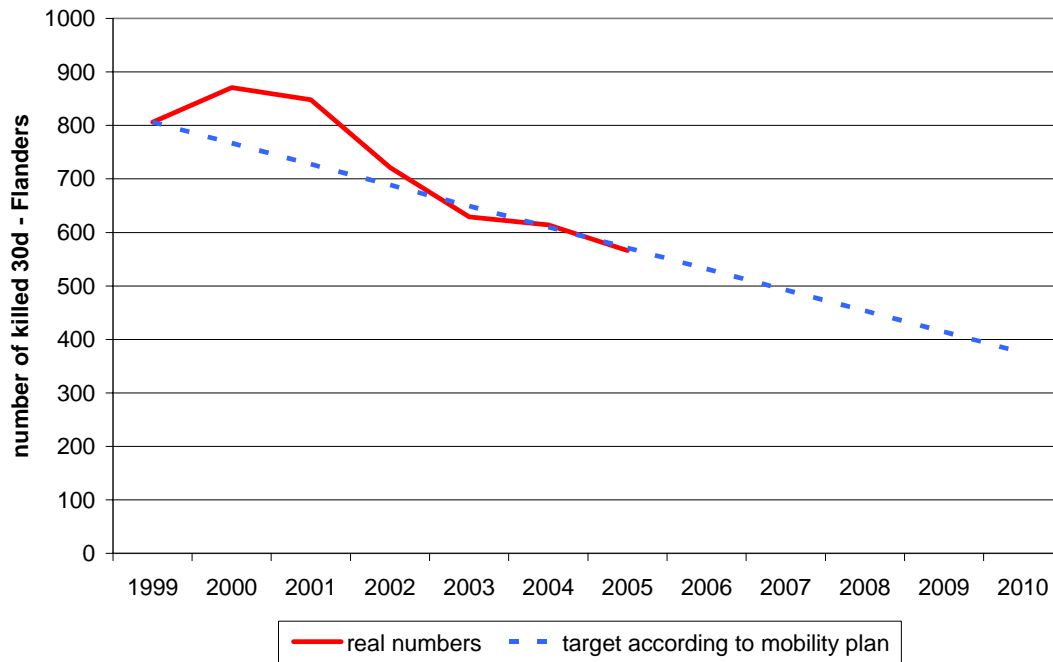
Source: NIS, 2006a, 2006b; Van Hout et al., 2006

## SETTING TARGETS FOR THE FUTURE

In 2001 a mobility plan for Flanders was elaborated. In this plan 5 major goals were defined within a framework of sustainable mobility (MVG, 2001). One of the major goals of this mobility plan was the improvement of traffic safety. The goals were concretized in terms of a reduction of the annual number of fatally and seriously injured people in traffic accidents by at least 50% in 2010 compared to the reference year 1999 (on that moment the year with most recent accident statistics). The 50% reduction target matches strongly with the goals set by the European Commission in her road safety action plan (EC, 2003) and the goals that were set by the Belgian federal government (BIVV, 2002). As figure 6 shows, the evolution during the past years is likely to meet the proposed target. Figure 7 shows that Belgium performed well during last years in comparison to other European countries. However, a considerable effort is still needed to reach the target level of maximum 375 killed or fatally injured in 2010. Moreover the question raises what should be the target after 2010. Although not yet fixed at the moment, there is being thought of defining a target in terms of "halving the gap between Flanders and the 3 safest countries in Europe", expressed through a simple indicator like the number of killed per million inhabitants. Knowing the actual value for this indicator in Flanders (about 90) and in the safest countries (about 45-50), and taking into account a further improvement in safety level in the safest countries, such a target would mean another reduction of at least 50% in the number of deaths in road traffic in Flanders during the next decade. While refined prediction models for traffic safety are not yet available in Belgium, there's no possibility to simulate effects of different policy measures thoroughly. Logically this means that any proposed target should rather be seen as a symbolic expression from a political willing, rather than the result from a rational analysis. Nevertheless, there are good arguments to set quantified targets, such as strengthening the political commitment to do tangible efforts.

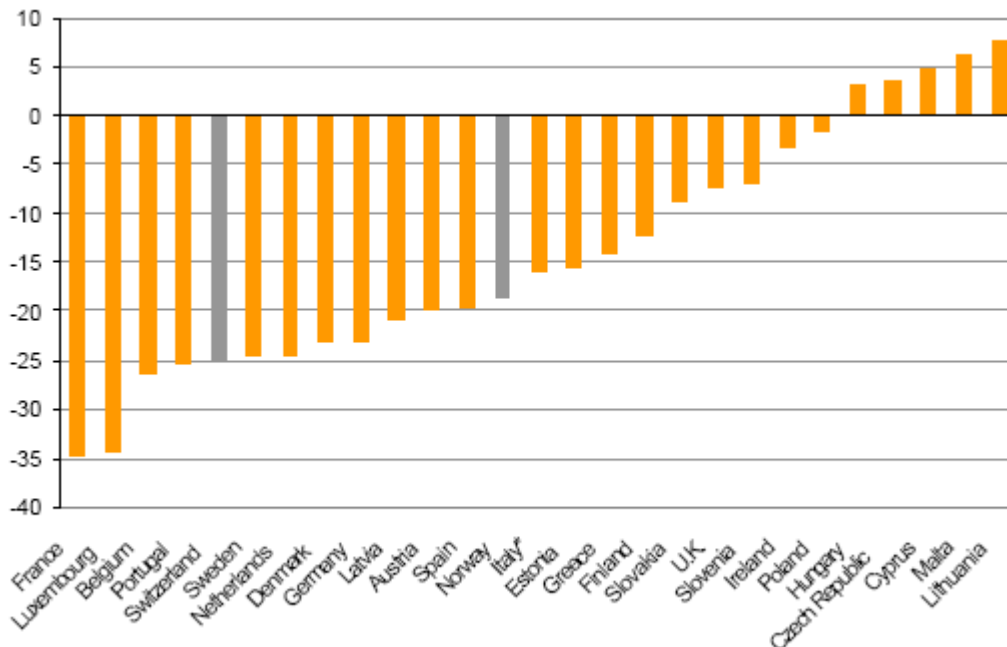
In each case it sounds reasonable to look further then 2010 at this stage as quite some possible measures (road infrastructure, vehicle technology, long-term educational programs etc) to improve traffic safety that will be planned in the following years will only generate possible effects after 2010.

Figure 6 – Number of killed 30d in traffic accidents – Flanders



Source: Daniels & Van Hout, 2006; MVG, 2001; NIS, 2006a

Figure 7 Reduction in road deaths 2001-2005, EU-25 (in %).



Source: ETSC, 2006



## DEVELOPING A POLICY VISION TOWARDS SAFE ROADS

An effective traffic safety policy should be the result of a systematic approach consisting of 4 components (Peden, 2004):

1. Identify problems
2. Formulate strategy
3. Set targets
4. Monitor performance

Before elaborating detailed measures a well-defined policy strategy should be worked out in order to create a useful base on which concrete measures should rely.

In the Flemish traffic safety plan the explicit option was taken to assimilate strong existing international concepts about traffic safety (such as the Sustainable Safety concept in The Netherlands and Vision Zero In Sweden) (Vägverket, 2006; Wegman, 2005) rather than trying to re-invent the wheel.

Based on the above-described elements a number of clusters of measures was selected. These measures refer to different target groups and will be further elaborated:

- Education and experience
- High quality road infrastructure as a precondition for safety
- Strong measures for vulnerable road users
- Use of personal safety devices
- Driving under influence of alcohol, illegal drugs and medicines
- Safety for young people
- Senior citizens and traffic safety
- Reducing frequency and severity of accidents with trucks
- Improve road safety for motorcyclists
- Reducing speeds
- Towards safe vehicles, not only for occupants
- Effective and efficient enforcement of road user behaviour
- An adapted legal system
- A suitable institutional arrangement of road safety policy

## ELABORATE VALUABLE POLICY MEASURES

The third and final phase of the plan consists of the elaboration of a set of policy measures that will be taken to improve traffic safety.

An important issue to deal with is whether the proposed measures should be limited to the competences of the Flemish regional government, whereas important competences are attributed to the Belgian federal government (e.g. the licensing system, highway code) and even to the level of the European Union (e.g. directives on vehicle equipment), but also to municipalities (e.g. local road infrastructure). A pragmatic solution was chosen, stating that a good road safety plan should address all important aspects (usually expressed as the three E's Engineering, Education and Enforcement) related to traffic safety but emphasizing those elements where the Flemish government has own competences and therefore can develop real steering mechanisms towards an improved road safety.

Measures will be selected from a long-list using the following decision criteria and giving priority to measures that rank the best for the different criteria:

- Expected favourable effects on road safety in general (number of accidents addressed by the measure and expected effects on that number)
- Implementation horizon (quick-to-implement measures are preferred above measures that can only be implemented in a long term perspective, *ceteris paribus*)
- Measures addressing increasing problems (such as accidents with trucks or motorcyclists)
- Measures addressing the severest accidents (severe accidents are more important than less severe accidents)
- Measures to improve safety conditions for vulnerable road users
- Cost level (low-cost measures are preferred above high-cost measures)

All selected measures will be presented in the template of a check-list. This check-list will contain specific information for each selected measure:

- Description of the measure (reason to take, aim, target group, detailed description, responsible body, area of application, addressed traffic safety problem(s))
- Estimated implementation cost (investment, maintenance)
- Feasibility (cycle time and scale of the measure, percentage already realised, needed financial resources, critical factors of success, term of realisation)
- Expected effects on traffic safety (addressed type of accidents, known effects, potential effect)
- Secondary effects (e.g. modal shift, increased/decreased road capacity, emission reduction,...)
- References (scientific papers and reports, manuals, other sources)
- Points of particular interest (e.g. specific accompanying measures such as enforcement, technical development, strong communication,...)

## CRITICAL FACTORS FOR SUCCESS

In a society or in a policy cycle quite a lot of confounding elements can occur and may impede a fully rational policy-making process. One must take these factors into account as they can strongly influence the feasibility and thus the resulting effects of traffic safety measures. As critical success factors for a road safety plan those elements could be considered that are necessary to achieve the mission of the plan. The following critical success factors for the road safety plan can be identified:

- Commitment of key actors in the road safety plan.

The involvement of key actors is assured by consulting the Flemish Council for Traffic Safety which consists of about 40 public and private organisations who are involved in traffic safety policy such as government agencies (justice, public works, education, mobility), representatives of road user groups (car drivers, motorcyclists, bicyclists, pedestrians), the federation of car manufacturers, public transportation companies, the transport sector, driving schools, independent experts and researchers,...).

- Describe measures according to the SMART-principle.

The SMART-principle is often used as a tool to evaluate whether objectives that are being set are appropriate. Being appropriate means that they are Specific, Measurable, Assignable, Realistic and Time-framed. The above-described framework should generate a set of measures that meets the SMART-principle. However, it must be clear that the making of a plan is just a first step in a process that should be followed by some other steps, at least an implementation step and preferably also an evaluation step.

- Competent governance

Political and bureaucratic leadership will be a strong requirement for the implementation of the traffic safety plan. Vertical relationships between federal government, regional government, provinces and municipalities do exist already, but should be reinforced. In Flanders a proper way to do this was developed through the so-called mobility agreements between regional government and municipalities. Either on the horizontal level a strengthened cooperation is needed between planning departments, police services, justice, departments for public works and education professionals. A facilitated cooperation between several government agencies, besides setting common goals and assigning responsibilities should therefore be seen as one of the major aims of a road safety plan.

- Public support for road safety policy

In the long term public support is a strong prerequisite for reaching the targets of a road safety plan. As traffic accidents are in majority due to human errors it seems to be clear that a firm public support for a road traffic policy (which is likely to reveal a positive attitude towards some specific measures) can have direct consequences on road user behaviour. On the other hand, considering a politico-economic model of transport, voters and interest groups influence government policies with respect to transport and therefore a sufficient public support for policy measures should be present (Rietveld, 2003).

- Sufficient financial resources

Well-targeted investments of financial and human resources have definitely the potential to reduce road traffic injuries and deaths. Inevitably financial resources are scarce and claims on government budget are numerous. Nevertheless not all measures should generate huge costs or costs could be transferred to offenders. Unfortunately, in many other cases measures will require an adequate funding.

- Availability of recent and good-quality accident and exposure data  
Accident data are the basis for analysing and describing traffic safety problems. How this data are used and presented will affect the way problems are interpreted. In order to compare and rank different traffic safety problems, the key information is the exposure (OECD, 1997). This emphasis on evidence reflects the need to continuously review and strengthen the evidence base for public health interventions (Peden, 2004).

## CONCLUSIONS

For over a century measures have been implemented all over the world in order to avoid road traffic accidents or to mitigate the consequences of accidents (Evans, 2004). In many countries in the world experience is acquired with strategies and measures to improve road safety. There are successes and there are failures. Both offer opportunities to learn from.

The World Health Organisation and others recommend each country to elaborate a road safety strategy involving relevant actors and with a multidisciplinary approach (Peden, 2004). The needs of all road users should be taken into account and the plan should be linked to other sectors. In the Flanders region the link to other sectors is embedded in the Sustainable Mobility concept.

As there is a lot of knowledge available on the international level (see for instance Elvik, 2004) and strong safety concepts such as the Dutch Sustainable Safety and the Swedish Vision Zero have been developed, there is a thorough base for developing traffic safety plans at a country level.

Looking at international data provides an interesting benchmarking mechanism for road safety performance between countries. More thorough comparisons between countries might however reveal underlying differences in approaches. Nevertheless 'bridging the gap with the neighbours' often seems to deliver a very fruitful argument for policy-makers to increase efforts for road safety.

Critical factors for success are the commitment of key actors in the road safety plan, describing specific, measurable, assignable, realistic and time-framed measures, competent governance, public support for road safety policy, sufficient financial resources and the availability of recent and good-quality accident and exposure data.

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