

**XXIVth WORLD ROAD CONGRESS  
MEXICO 2011**

## **HUNGARY - NATIONAL REPORT**

### **STRATEGIC DIRECTION SESSION STC**

### **A STRATEGIC APPROACH FOR SAFETY: PUTTING KNOWLEDGE INTO PRACTICE**

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## **ABSTRACT**

The first National Road Safety Program implemented in Hungary from 1993 to 2000 provided good results, therefore a new Road Safety Action Program was prepared for the years 2008-2011 with the strategic objective to reduce the number road fatalities by 30% up to 2010, compared to the year 2001 figure. The tasks were compiled into a so called pillar structure: Human factor, Infrastructure, Regulation, Traffic control and Support of accident prevention activities.

The various network development measures (construction of new motorways, bypasses, etc.) go usually hand in hand with the improvement of road safety. However, there are measures explicitly aimed at improving road safety, such as reconstruction of black-spot sites outside built-up areas, installation of traffic actuated speed limit warning devices low-cost road safety measures in built-up areas.

Concerning regulations, the legal changes in 2008, including the introduction of the general (objective) responsibility of the vehicle owner (or operator) has to be mentioned, as it has the highest road safety impact.

The most important actual task is to implement the "Directive 2008/96/EC on road infrastructure safety management" onto the national public road network. According to this Directive, the aspects of road safety have to be more emphasized during the preparation and implementation of road investments.

The technical specifications for roads are special means of putting knowledge into practice. These specifications are prepared by the Hungarian Road Association. During the last four years several technical specifications related to road safety were published.

According to the data available, the number of personal injury accidents in 2009 was 6.85% less than in the previous year. The highest reduction (i.e. 15.41%) was observed in the number of fatal accidents (from 890 to 752). The strategic objective of 30% reduction of fatalities seems to be achievable by the end of 2010.

### **1. NATIONAL ROAD SAFETY PROGRAM 2008-2010**

The first National Road Safety Program implemented in Hungary from 1993 to 2000 provided good results. The completion of this program, unfortunately, was not followed by another comprehensive national road safety program.

The new Road Safety Action Program is a three-year complex package of measures, aiming at improving road safety. The Action Program itself contains the guidelines, objectives, actions and measures of road safety for the years 2008-2010, while the detailed tasks of the action areas outlined in the Action Program are described in other documents like the yearly action plans. This program is in its third year of implementation now. It is different in several aspects from previous programs which were in general also published in form of government decrees.

In the framework of the three-year period, yearly action plans are being issued, defining concrete tasks. The program includes well defined actions, including deadlines,

responsible organisations, potential measures and it identifies furthermore the success criteria and risk factors. The costs required to the implementation of the tasks and designated partners for co-operation are also included in the yearly action plans.

Thus the action program is a complex and integrated one, with an additional advantage of making possible to identify and control the various authorities, organisations and institutions in order to meet the objectives set. This structure created an opportunity of feedback and accountability. The Ministry of Transport, Telecommunication and Energy was responsible for the preparation of the action program, and a significant contribution to the planning work was also provided by background institutions of the Ministry, especially the National Transport Authority, the Institute for Transport Sciences, the Coordination Centre for Transport Development, and further road safety experts, e.g. from the National Police Headquarters.

### 1.1. Objectives

The strategic objective of the Road Safety Action Program is to reduce the number road fatalities by 30% up to 2010, compared to the year 2001 figure. The specific objectives related to the strategic ones are the following:

- Reduce the number of road fatalities related to human errors by 25%
- Reduce the number of road fatalities through improved infrastructure by 25%
- Improvement of the legal and technical regulations
- Reduce the number of road fatalities through more intensive, more modern, more economical and more efficient control by 40%
- Improvement of the accident prevention activities, increasing their efficiency, creating a uniform national information system on road safety.

A detailed analysis and assessment of the current situation was performed before publishing the road Safety Action Program. In this analysis, experts reviewed the Hungarian and international trends and best practices. The action areas and concrete measures to be implemented in the coming three years were defined considering the trends and practices mentioned. The tasks were compiled into a so called pillar structure. The individual pillars of the action program are at the same time the most important action areas aiming to improve road safety. The pillars are as follows:

- Human factor
  - Key risk factors
  - Disobeying traffic rules
- Infrastructure
  - Road network
  - Vehicles
  - Traffic mix
- Regulation
  - Highway Code
  - Rules of traffic engineering
  - Regulatory framework of financing
  - Other regulations
- Traffic control
  - Key risk factors
  - Roadside control
- Support of accident prevention activities
  - Accident data collection

- Program evaluation
- Other supporting activities

## 1.2. Actions

The actions were structured as much as possible according to the pillars derived from the analysis and from international practice. A more detailed structure and description of the measures related to each action are provided by the yearly action plans, following the scheme below.

### *1. Human factor*

- 1.1. Preparing traffic education programs for kindergartens and schools
- 1.2. Introducing traffic and road safety programs in the framework of the educational system
- 1.3. Improving driver training
- 1.4. Communication and PR measures, dissemination of information to a large population
- 1.5. Definition of minimum requirements of protective suits for motorcyclists

### *2. Infrastructure*

- 2.1. Strengthening safety aspects in the design of roads and the road environment. Road Safety Audit. Creating permissive road environment
- 2.2. Improving modal split and road use
- 2.3. Eliminating blackspots
- 2.4. Infrastructure safety measures

### *3. Regulation*

- 3.1. Review and modification of the Highway Code
- 3.2. Review and improvement of technical regulations
- 3.3. Preparing a regulation of a sustainable system of road safety
- 3.4. Review of traffic engineering plans
- 3.5. Improvement of visibility (vulnerable users, trucks, infrastructure)
- 3.6. Increasing the efficiency of measures against intoxicated drivers
- 3.7. Preparing rules complying with the EU regulations concerning the traffic of heavy vehicles during weekends
- 3.8. Other regulations

### *4. Roadside traffic control*

- 4.1. Enforcement of speed limits
- 4.2. Intensifying the control of compliance with technical requirements of vehicles
- 4.3. Control of the use of passive safety equipment
- 4.4. Control of the ability of the drivers to drive
- 4.5. Screening of violation in movement

### *5. Support of accident prevention activities*

- 5.1. Improving the road accident database
- 5.2. Coordinating safety activities in different fields (e.g. road authorities, police)
- 5.3. Analysis, evaluation, efficiency studies
- 5.4. Preparing a new management system of accident prevention
- 5.5. Support of the operation and road safety activities of the National Committee for Accident Prevention and its local committees.

The tasks allocated to the pillars are the responsibilities of several ministries, authorities, organisations and institutions. The coordination of the activities is the task of the ministry

responsible for transport. It is important to mention that an Inter-ministerial Committee was set up to help the allocation of the work to the interested ministries. The actual tasks of the first two years of the action program were summarised in the Action Plan 2008-2009. This document contains 77 actual tasks.

## **2. IMPROVING THE SAFETY OF THE ROAD INFRASTRUCTURE**

The Hungarian road network is of 135 478 km length. About 22% of this network (30 245 km) makes up the national public road network, operated by the Hungarian Road Management Company and by the State Motorway Management Company and to a smaller extent, by private concession companies. The density of the Hungarian road network is about that of the European average. However, the density and share of motorways is about one fourth of the average of the EU15 old member states.

The various network development measures (construction of new motorways, bypasses, etc.) go usually hand in hand with the improvement of road safety but their main reason is to improve accessibility and to increase capacity. Therefore here we deal only with measures explicitly aimed at improving road safety.

In 2008 the Coordination Centre for Transport Development launched a programme to reconstruct 25 black-spot sites (junctions) outside built-up areas. This programme has mainly been implemented.

Traffic actuated speed limit warning devices have been installed on the national road network at about 50 sites in 2008 and at 35 sites in 2009.

On behalf of the responsible ministry, the Coordination Centre for Transport Development issued in 2007 one, in 2008 two calls for local governments to support low-cost road safety measures to be carried out in built-up areas. A similar call is scheduled for 2010. In this scheme, local governments have to provide only 10% of the costs as their own contribution.

The objective of the program called „Co-financing measures on sections of national main roads in built-up areas capable to calm traffic, to increase the safety of pedestrians and to reduce the speed of vehicles” is to increase the safety of pedestrians and to calm vehicle traffic on sections of 1<sup>st</sup> and 2<sup>nd</sup> class national main roads in built-up areas.

The following engineering measures are eligible for funding under this call: road safety improvement measures on national main roads, construction of safe pedestrian crossings with middle islands and deviation of traffic lanes, with flashing amber signals and/or demand responsive push-button traffic signals if necessary; construction of “entry gates” of settlements with lane deviations; construction or reallocation of bus bays; installation of vehicle actuated speed limit warning devices.

In 2008, 83 local governments applied for funding under this scheme to the Coordination Centre for Transport Development being responsible to assess these applications. Local governments were eligible to submit several projects. The evaluation and selection of proposals was organised on the project basis. In total, 139 projects met the criteria of the call.

The applicants requested about HUF 640 million, which was more than the available HUF 500 million in the budget. In 52 submissions, vehicle actuated speed limit warning devices

were proposed, pedestrian crossings were foreseen at 74 sites, with middle islands or traffic signals and with added flashing amber signals or speed warning devices in some cases. Settlement entry gates were requested in 13 cases. Among the evaluation criteria, road safety had the largest weight, then the own contribution of the applying local government. In addition to these main criteria, the opinion of the local road operator, the traffic volumes, the heavy traffic volume and the availability of design were taken into consideration as criteria for the decision. According to the list based on the criteria enumerated above, 83 projects received funding, i. e. HUF 437 million from the Road Budget in 2009.

According to the evaluation committee composed from the experts of the Coordination Centre for Transport Development and the Ministry of Transport, Telecommunication and Energy, 37 applications were successful in the call for junction reconstructions in 2008. Mostly roundabouts but signalised junctions too received funding.

### **3. CHANGES OF THE HIGHWAY CODE IN ORDER TO IMPROVE ROAD SAFETY**

After the millennium, acknowledging the importance of regulatory measures, decision-makers paid more and more attention to them. The reason behind this fact was the recognition that appropriate modifications of the legal environment can be the cheapest and highly efficient means of improving road safety. A number of new regulations related to road safety came into force in the last years. The legal changes introduced in 2008 related to the following four areas proved to be of the highest impact:

- changes in the penalty point system
- changes in the rules of charging fines on the spot
- introducing the principle of “objective responsibility”
- declaring zero tolerance against drunken drivers.

#### **3.1. Changes in the Highway Code effective from 1<sup>st</sup> of May 2008**

From among the changes, the introduction of the general (objective) responsibility of the vehicle owner (or operator) has to be mentioned, as it has the highest road safety impact. Previously, if a running vehicle was found to violate traffic rules but the driver has not been identified on the spot, the vehicle owner was questioned about the driver of the vehicle at the moment of violation. The owner, however, was not obliged legally to reveal the identity of the driver in case his/her close relative was driving the vehicle. Drivers and owners often misused their rights, declining to identify the violator, aiming to avoid paying fines. From 1<sup>st</sup> of May 2008, only the owner (operator) is responsible for the violation, notwithstanding who committed it. The efficiency of the new regulation is shown by the fact, that after the change, from May 1<sup>st</sup> 2008 to August 31<sup>st</sup> 2009, the authorities issued 545 426 decisions in this matter. This means the completion of almost 33 000 processes and sanctioning measures per month. Since the introduction of the “objective responsibility” principle, the number of road fatalities has significantly decreased. Data clearly show that the introduction of that principle has significantly contributed to the success of road safety measures in Hungary in 2008. This result is encouraging when looking for further improvement measures in 2009 and 2010.

The legal processes involving the objective responsibility principle were mostly related to speeding (87.8% or 461.363 cases). In 50.287 cases (9.57 %) stopping and parking rules were violated while disregarding “no entry” and “obligatory direction” signs were dealt with in 6.051 processes.

### 3.2. Changes in the Highway Code effective from 1<sup>st</sup> of January 2010

The core concept of the modifications effective from 1<sup>st</sup> of January 2010 is to improve road safety and to protect the environment. Therefore most changes are related to the traffic of heavy goods vehicles, two-wheelers, pedestrians, and to increase environmental protection.

The paragraph containing the speed limits of different vehicle classes had to be modified for several reasons. On one hand, the distinction between speed regulations related to goods vehicles exceeding 2500 and 3500 kg total weight has disappeared.

On the other hand, the speed limits of vehicles on cycle paths, or on common pedestrian and cycle paths are set now in a more logical structure with some other changes of the speed limits. The speed limit for users of bicycle paths is now 30 km/h, for the users of common pedestrian and cycle paths is 20 km/h.

### 3.3. The EU Directive on “Road Infrastructure Safety Management”

The actual task is to implement the “Directive 2008/96/EC of the European Parliament and of the Council of 19 November 2008 on road infrastructure safety management” onto the national public road network. According to this Directive, the aspects of road safety have to be more emphasized during the preparation and implementation of road investments. The most important measures defined in the Directive are: the Road Safety Impact Assessment, Road Safety Audit, Road Safety Inspection and Road Network Safety Management. In order to fit the directive into the Hungarian legal environment, it is necessary to revise, modify and extend the currently relevant legal regulation, but new regulations are also necessary.

## 4. NON-GOVERNMENTAL ORGANISATIONS

In Hungary, the improvement of road safety is basically the task of the government. Measures in this respect are organised by the police, with the contribution of governmental as well as non-governmental organisations.

### 4.1. The organisation and activity of the National Committee for Accident Prevention

According to its statutes, the National Committee for Accident Prevention is an organisation without legal entity, operating under the control of the police to advise, consult, and coordinate activities related to road safety. Road safety campaigns are organised by this Committee. The structure of the Committee consists of a Board and of Technical Committees (TC). The chairman of the Committee is the Deputy Chief Police Captain, its co-chairman is the secretary of state of the ministry responsible for transport, its deputy-chairman is the head of the Traffic Section of the National Police Headquarters and its managing director is the head of the Department of Motorway Surveillance and Accident Prevention of the National Police Headquarters. Presently there are five technical committees within the Committee: TC for Legal and Regulation issues, TC for EU and International issues, TC for Education, TC for Research, TC for Communication and Contacts.

At present, according to the relevant government resolution of 2007, three years action programmes and yearly action plans are being prepared in order to implement actual road safety improving measures. The co-ordination of these activities is the task of the ministry responsible for the transport sector.

## 4.2. GRSP Hungary

Global Road Safety Partnership (GRSP) has started its work on Hungary in 2000, with the help of an advisor from the Secretariat in Geneva. As several Central-Eastern European Countries joined the European Union, the GRSP Secretariat decided to set up independent national GRSP organisations in order to help the cooperation between government, non-government and business sectors aiming to improve road safety.

The association „GRSP Hungary – Partnership for road safety” was founded in 2005 with 16 founding members as a public benefit organisation. GRSP Hungary has a total of 31 members now, including government, business and non-profit sectors.

The goals of GRSP Hungary are as follows:

- to foster cooperation in order to improve road safety, enhancing to meet the objectives set by the transport policy of the EU: to reduce the road fatalities by 50%
- to create an efficient cooperation in Hungary between the government, the non-government and that of the business sector, through their participation in joint projects aiming at improving road safety
- to create international cooperation with the GRSP Secretariat and other European GRSP organisations to help work in Hungary, and to adapt best practices
- to maintain contacts with other ministries interested in road safety and with their background organisations, with special emphasis on the National Committee for Accident Prevention and on the National Transport Authority
- to disseminate appropriate information about road safety efficiently at different levels of public education in Hungary

In order to improve the current situation, a safety belt campaign was started in 2008 based on the previous campaign of the National Committee for Accident Prevention. Within this project, billboards were set up in motorway rest areas, at the exits of filling stations and in parking lots of supermarkets. These locations proved to be the most appropriate to raise the awareness of drivers and their passengers.

Unfortunately, the number of pedestrian accidents is stagnating at a level exceeding 3000 per year. About 10% of these accidents occur at pedestrian crossings. Based on a survey of dangerous pedestrian crossings in Budapest, GRSP Hungary launched a special campaign to raise awareness to the safe use of “zebra crossings”. At selected 15 pedestrian crossings, pedestrians were reminded through graphics on the sidewalk to obey the rules of crossing, while at the same time the attention of responsible organisations might be focused on creating safer zebra crossings.

The motorway network is extended year by year. This requires from road users to obey some special rules on motorways. A number of serious accidents happened on emergency lanes of motorways in recent years. The campaign presents the right behaviour through short video clips.

## 5. PUTTING KNOWLEDGE INTO PRACTICE

### 5.1. Technical specifications for roads

The technical specifications for roads are prepared by the Hungarian Road Association, an association comprising professionals and organisations interested in road engineering.



These specifications are mandatory for national roads and they are recommended for local roads as well. The specifications are regularly reviewed and in case of emerging new knowledge, technologies or procedures, updated accordingly. Since 2009, these specifications are available not only in printed form, but also daily updated, on-line on the web.

During the last four years (between 2007 and 2010) the following technical specifications related to road safety were published. Most of them are updated versions of older ones, but some of them are quite new.

- In 2007

Safety fences along roads

Design of pavement markings

Forms, sizes, colours and arrangements of pavement markings

- In 2008

Design of roads

Traffic calming

General requirements of road tunnels

Requirements related to variable message signs

- In 2009

Design, location and operation of traffic signal control

Barrier-free road design

Design of pedestrian facilities

Design of overtaking and climbing lanes

Design of the infrastructure for public transport

Road Safety Audit- Methodology

Application of intelligent transport systems

- In 2010

Design of roundabouts

Safety equipment and provisional traffic control at roadworks.

Road restraint systems

I. Restraint requirements and placing along roads

II. Requirements on bridges

Design of bicycle facilities

Road safety impact assessment - Methodology (provisional version)

## 5.2. Professional journals

Related to road safety, scientific papers are published more or less frequently in three professional journals in Hungary:

- Hungarian Review of Transport Infrastructure
- Hungarian Review of Transport Science
- Hungarian Review of Urban Transport

All three journals are available in printed form and on-line.

### 5.3. Conferences, trainings

Recent knowledge is disseminated also at various conferences and trainings. These are organised by the Coordination Centre for Transport Development, the Hungarian Road Association, the Hungarian Scientific Association for Transport, the Hungarian Chamber of Engineers and by the universities.

The Macadam Academy, run by the Coordination Centre for Transport Development, is a program supported by the Hungarian Chamber of Engineers. The goal of the program is to foster professional cooperation within the transport sector, to create and to strengthen links, and probably the most important to create a forum for the dissemination of information, where transport professionals can meet and discuss actual issues, being important for them, independently of their employers, projects and obligations.

A special training related to road safety is the training of road safety auditors. With the support of the Coordination Centre for Transport Development, the Széchenyi István University, Győr is organising such trainings regularly from 2004, partly with participation of Dutch experts. So far, about 90 persons attended these trainings and about 40 of them received a certificate of auditor, passing successful examination.

## 6. RESULTS

### 6.1. Improving road safety

Data clearly show that 2009 was another success year concerning road safety improvement in Hungary. The results are even more valuable if we take into account that recent data were compared to year 2008, which was considered the most successful among the last forty years.

It is obvious that most of the data related to road accidents are reflecting a positive trend; regarding the number of personal injury accidents, fatalities and accidents under the influence of alcohol.

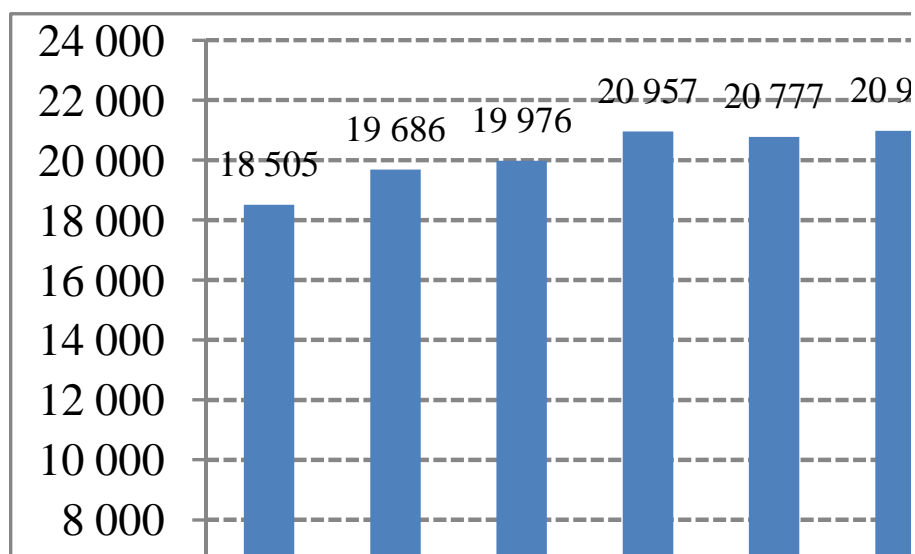


Figure 1 – Changes of the number of personal injury accidents

According to the data available, 17,864 accidents with personal injuries happened in 2009 (Figure 1), which is 6.85% less than in the previous year (19,174). Positive tendencies can be observed concerning the number of accidents with fatal, serious and light injuries as

well. The highest reduction (i.e. 15.41%) was observed in the number of fatal accidents (from 890 to 752), whereas the number of accidents with severe injuries has decreased by 9.51% (from 6,170 to 5,583), while the number of accidents with slight injuries has decreased by 4.85 % (from 12,114 to 11,527).

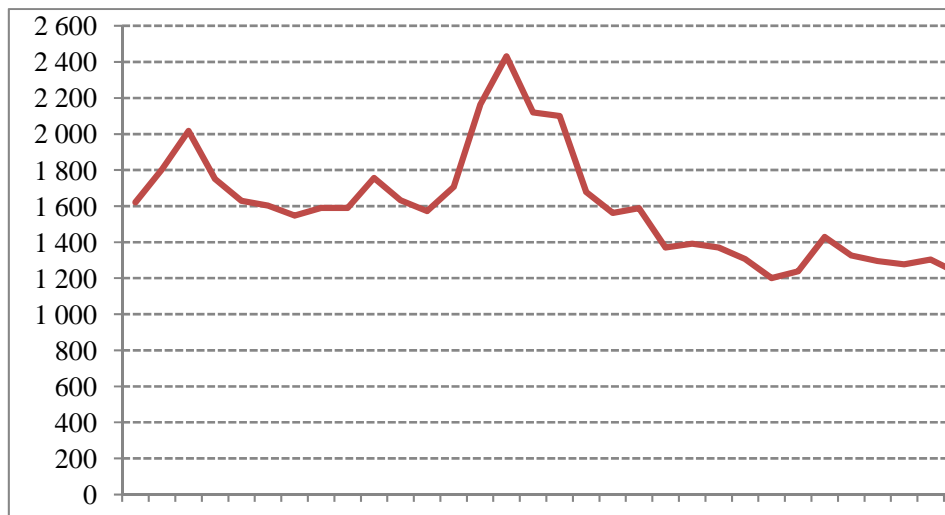


Figure 2 – Number of road fatalities from 1975

The biggest result in road safety is that 174 human lives were saved compared to the base year of 2008 (Figure 2). The number of road fatalities was reduced from 996 in 2008, to 822 in 2009. This is a reduction of 17.97% in one year, which is a remarkable result in international comparison. The number of seriously injured persons has decreased by 785 (from 7,227 to 6,442), while the number of slightly injured persons decreased by 1,307 (from 18,142 to 16,835).

A positive trend comes out also when looking for the figures of drunken driving. Compared to the 2,342 persons involved in 2008, altogether 2,274 persons (2.91% less) caused accidents with personal injuries under the influence of alcohol in 2009. Accidents related to alcohol within the total number of accidents represented 12.7% in 2009, which contains accidents caused by drunken pedestrians and passengers, i.e. not drivers too. Taking the averages, it can be observed that one of eight personal injury accidents were caused by a person under the influence of alcohol. This high ratio requires further measures.

As for the causes of accidents, speeding is the cause No1 again, neglecting priority rules ranking second, while disobeying turning rules comes third.

Car drivers were responsible for 62.7% of personal injury accidents in 2009. A further 8.6% was caused by truck drivers, about 1% by bus drivers. The share of motorcycle drivers and moped drivers causing accidents is 4.1% and 5.2% respectively.

Compared to their low share in traffic, cyclists' rate among accidents causes is relatively high. Looking at the figure of 10.2% of cyclists among persons responsible for accidents, cyclists caused apparently more accidents with personal injuries than truck drivers in 2009. Pedestrians were responsible for 6.2% of personal injury accidents in 2009, thus their share of 7.5% observed in in 2008 has been decreased.

## 6.2. Accidents data related to the programs

The current transport policy program of Hungary (Hungarian Transport Policy 2003-2015) sets a goal to decrease the number of personal injury accidents and that of the fatalities by 30% up to 2010, and by 50% up to 2015.

Comparing the data published by the Central Statistical Office for 2009 to those of 2001 (this latter being the base year of the Transport Policy) it can be stated that:

- the number of personal injury accidents has been decreased slightly (by 3.48%)
- the number of fatalities has been decreased considerably (by 33.66%)!

Assuming the tendencies will be maintained, the planned 30% reduction of fatalities seems to be achievable or even slightly exceeded by the end of 2010 (see Figure 3.)

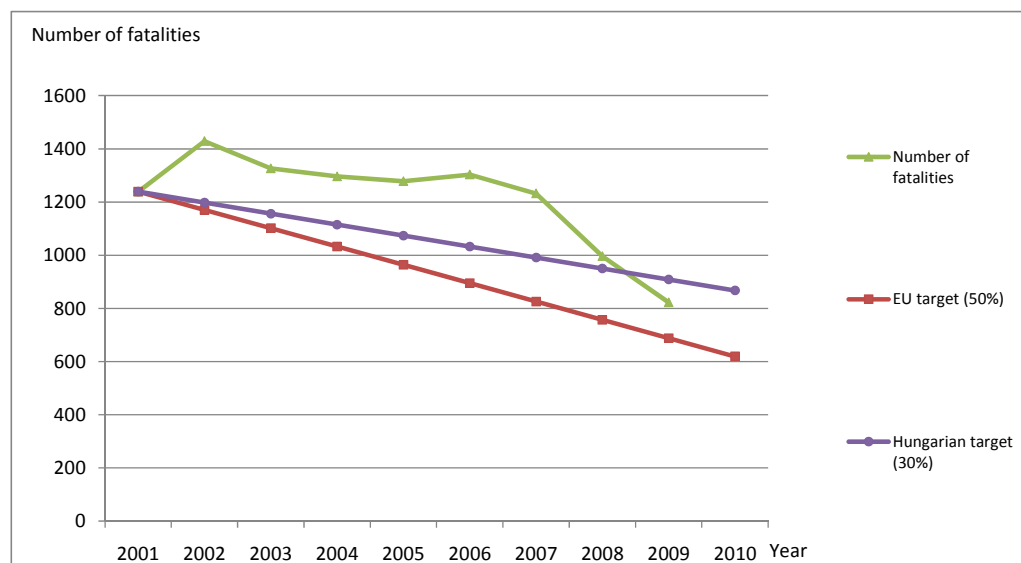


Figure 3 –Number of road fatalities compared to target values set by the „Hungarian Transport Policy 2003-2015”.