

Evaluation of Implementation of “Road Traffic Safety Programme in Latvia 2007 - 2013”

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Introduction

The Cabinet of Ministers on the 3rd of April of 2007 accepted “Road Traffic Safety Programme in Latvia 2007 - 2013”. The Programme was created in line with the declared goal of the EU – to reduce the number of killed in road accidents until 2010 by half in comparison with 2001.

To achieve the goal, several problems have to be solved, which have an essential impact on road traffic safety:

- ensuring the safety of vulnerable road users;
- raising of the level of safety for children in road traffic;
- ensuring the keeping of safe driving speed for vehicles;
- extermination of driving under the influence of alcohol;
- reduction of driving in fatigue;
- reduction of the level of severity of road traffic accidents;
- promotion of public involvement in the solution of road traffic safety problems.

Evaluation of road traffic safety level

The number of registered vehicles in the last twelve years has increased for 2.5 times, the development of road and street infrastructure is not capable to meet the increase of traffic volume and the road quality continues to deteriorate. Despite this fact the increase of road traffic safety may be seen in the recent years [see Figure 1].

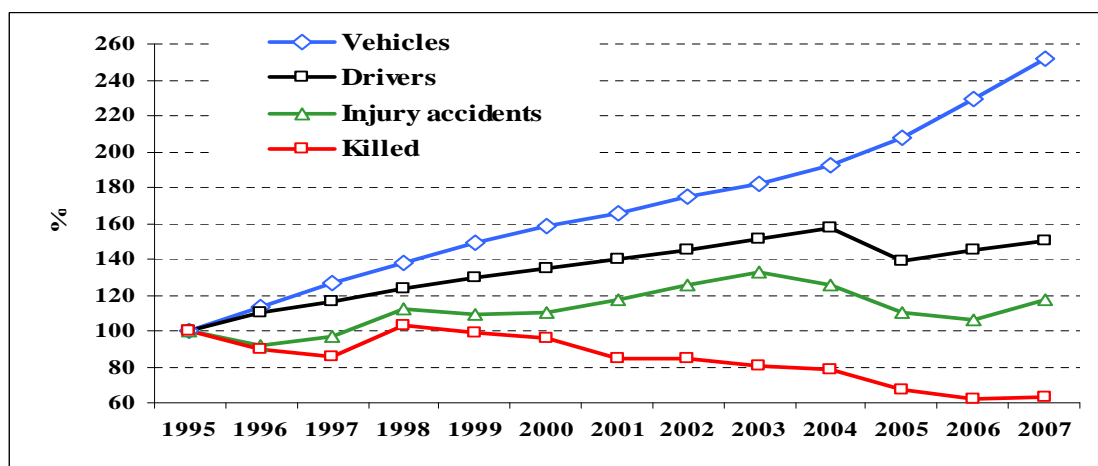


Figure 1 Changes in road traffic safety characteristics

4781 road traffic accidents with injured took place in 2007, in which 419 persons were killed and 6088 injured. The number of accidents with injured in comparison with 2006 has increased by 11.1%, the number of killed – by 2.9% and the number of injured – by 12.7%. In 2008 the situation has improved.

The risk to be killed in road traffic accident has decreased from 0.0338 in 2006 to 0.0299 in 2007. The risk to be involved in road traffic accident with killed / injured has decreased from 0.36 in 2006 to 0.34 in 2007.

The EU has set a goal to decrease the number of killed in traffic accidents for two times from 50000 persons in 2001 to 25000 persons in 2010. According to the reduction of killed from 2001 to 2007 Latvia is in one of the leading places in the European Union [see Figure 2].

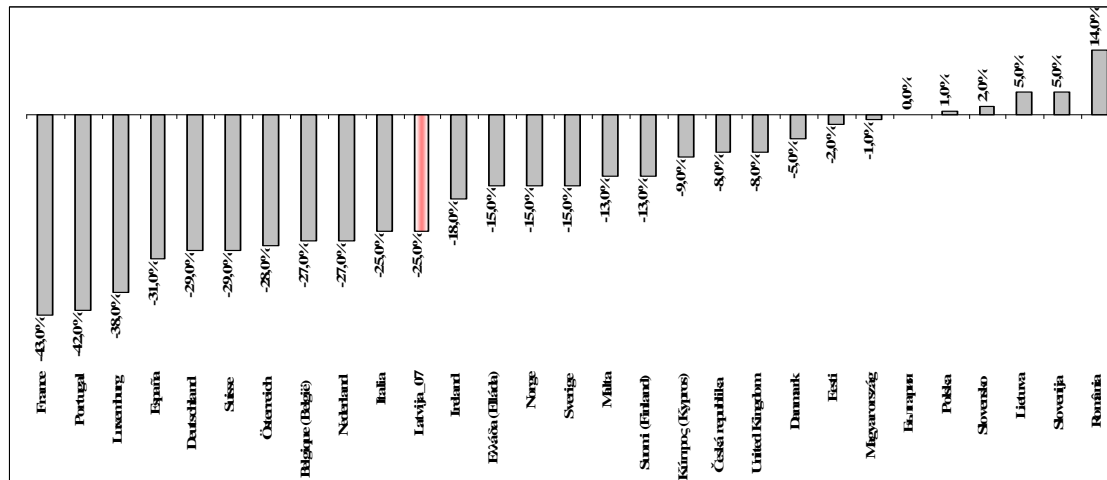


Figure 2. Reduction of the number of killed in road traffic in the EU member states in 2001 - 2007

Though the trends of recent years may witness improvements in road traffic safety, in the context of the European Union Latvia still has relatively high number of killed in road traffic accidents [see Figure 3].

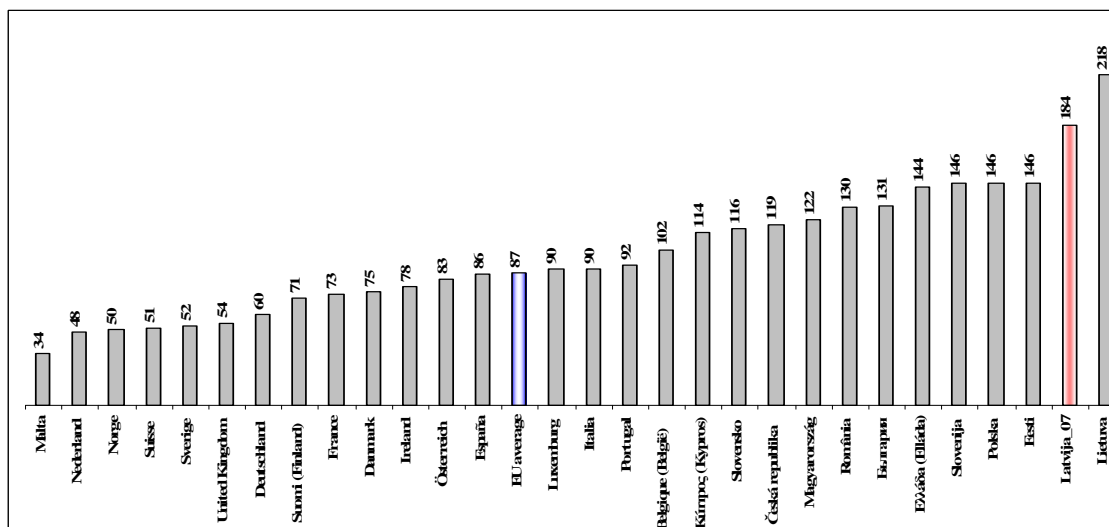


Figure 3. Number of killed per million in habitants in the EU member states in 2007

Most important road traffic safety problems in Latvia

2192 road traffic accidents with injured were recorded in 2007 in which **vulnerable road users** – pedestrians, cyclists, drivers and passengers of mopeds, motorcycles and quadricycles were involved (45.8% from the total number). In these accidents 193 vulnerable road users were killed (46.1% from the total number) out of which 158 killed road users (37.7%) were **pedestrians**:

- 🚶 71 pedestrian was killed in state main roads (44.9% from the total number of killed pedestrians and 27.3% from the total number of killed on state roads);
- 🚶 In urban areas 81 was killed, i.e. 51.3% from the total number of killed in urban areas.

In comparison with 2006 the number of killed vulnerable road users has decreased by 4.5% from 202 killed in 2006 to 193 killed in 2007, mostly at the expense of cyclists and moped drivers: the number of cyclists decreased from 33 in 2006 to 18 in 2007 and the number of moped drivers - from 7 in 2006 to 4 in 2007. The number of killed pedestrians and motorcyclists has remained in the level of the previous year.

It has to be noted that in 2007 the accidents with injured involving the **drivers of quadricycles** were recorded for the first time; in total 15 such accidents were recorded in which 3 drivers or passengers were killed and 18 - injured.

559 **children** up to the age of 14 (8.6% from the total number) were injured in 2007 in accidents, out of which 11 children were killed. 17.0 % from all injured pedestrians and 13.6% from all injured cyclists are children. Comparing with 2006 the number of injured children has decreased by 2.1%.

The number of killed drivers has increased by 13.4% from 127 killed in 2006 up to 144 killed in 2007, and the number of killed passengers has increased by 9% from 78 in 2006 up to 85 in 2007. One of the most important causes is the **exceeding or wrong choice of speed**. 87 persons (20.8% from total number) were killed in 2007 because of speed violation.

In 2007 **drivers under the influence of alcohol** caused 519 accidents with injured / killed (10.9% from total number). In these accidents 91 person was killed (21.7% from total number) and 780 persons were injured (12.8% from total number). In comparison with 2006 the number of such accidents has increased by 19.3%, in particular the number of killed has increased by 8.3% and the number of injured – by 19.1%.

38.0% of accidents with injured (42.1% on state roads) in 2006 took place during **dark hours (twilight or night)**. 50.8% from killed were registered during dark hours.

In total, 111 pedestrians or 70% from all killed in accidents were killed during dark hours; in particular on state roads 58 pedestrians or 82% were killed. In comparison with 2006 the number of killed in dark hours decreased, as follows:

- 🚦 by 10.5% in Latvia in total from 124 persons killed in 2006 to 111 killed in 2007;
- 🚦 by 17.1% on state roads from 70 killed in 2006 to 58 in 2007.

Severity of road traffic accidents is expressed by the number of killed per 100 accidents with killed / injured. Despite the fact that this indicator has decreased down to 8.8 in 2007 [see Figure 2], it still is approximately 1.6 times higher that the average European indicator (5.5) and approximately 2.5 times higher that in the Nordic countries (3.3-3.7). Severity of road traffic accidents in state roads (17.0) is approximately four times higher that in urban areas (4.3).

The use of passive protection measures is very important in order to mitigate the consequences of road traffic accidents. In 2007 the use of seat belts in car front seats has not increased in comparison with 2006 (77.1% and 76.6% respectively). The use of seat belts in car rear seats still is rare; the belts are used only by 25% of passengers.

Drivers and passengers of motorcycles use safety helmets more often that drivers and passengers of mopeds (96.5% and 74.0%. respectively).

1526 accidents with killed / injured were registered on state roads in 2007 (31.9% from total number) with 260 killed (62.1% from total number of killed) and 2178 injured (35.8 % from total number of injured).

Special attention has to be paid to the improvement of road traffic safety in the Riga city where 1934 accidents with killed / injured (40.5% from total number) took place in 2007: 46 pedestrians were killed (29.1% from total number) and 799 injured (56.9% from total number).

Analysis of quantitative indicators of Road Traffic Safety Programme 2007 – 2013

In line with the goal set in Section 2 of Road Traffic Safety Programme [5], the number of killed in 2007 should not exceed 373 persons (see Figure 4). Unfortunately 419 persons were killed in 2007, i.e. for 12.3% more than specified to achieve the goal of 2010.

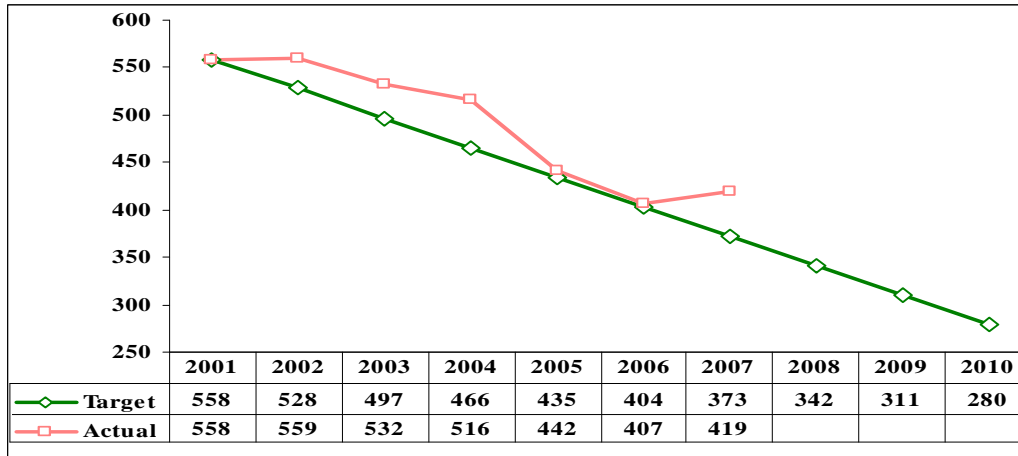


Figure 4. Number of killed and specified goal.

To achieve the goals set in Road Traffic Safety Programme a number of tasks was defined the fulfilment of which would significantly improve road traffic safety.

Ensuring of safety of vulnerable road users

In line with quantitative indicators of Road Traffic Safety Programme the number of killed vulnerable road users in 2007 should not exceed 175 persons. Unfortunately 193 persons were killed in 2007, i.e. for 10.3% more than specified to achieve the goal of 2010.

Approximately 82% of all vulnerable road users are pedestrians. In line with quantitative indicators of Road Traffic Safety Programme the number of killed pedestrians in 2007 should not exceed 135 persons. Unfortunately 158 persons were killed in 2007, i.e. for 17.0% more than specified to achieve the goal of 2010.

The number of killed pedestrians in 2007 should not exceed 56 persons in urban areas and 81 person on roads outside urban areas. Unfortunately 81 person was killed in urban areas in 2007, i.e. for 44.6% more than specified to achieve the goal of 2010. Comparing with 2001 the number of killed pedestrians has not decreased. On roads 77 pedestrians were killed in 2007, i.e. for 5% less than specified to achieve the goal of 2010.

Increase of children safety in road traffic

In line with quantitative indicators of Road Traffic Safety Programme the number of killed/injured children in road traffic accidents in 2007 should not exceed 405. Unfortunately 559 children were killed / injured in 2007, which is for 38% more than specified to achieve the goal of 2010.

Ensuring the keeping of safe driving speed for vehicles

In line with quantitative indicators of Road Traffic Safety Programme the number of killed in accidents because of speed in 2007 should not exceed 115 persons. The number of killed in such accidents in 2007 was 87, i.e. 24.3% less than specified to achieve the goal of 2010.

Extermination of driving under the influence of alcohol

In line with quantitative indicators of Road Traffic Safety Programme the number of killed in accidents because of driving under the influence of alcohol should not exceed 68 persons. The number of killed in such accidents in 2007 was 91, i.e. 33.8% more than specified to achieve the goal of 2010.

Reduction of severity of road traffic accidents

In line with quantitative indicators of Road Traffic Safety Programme the severity of road traffic accidents in 2007 (number of killed per 100 road traffic accidents with killed / injured) should not exceed 9.0. In 2007 this indicator was 8.8, i.e. 2.2% less than specified to achieve the goal of 2010.

Achievements, benefits and efficiency of Road Traffic Safety Programme

Cost benefit analysis was used to evaluate the efficiency of measures to improve road traffic safety, i.e. evaluation was done what results were achieved with the implementation of road traffic safety improvement measures that required certain funding. Cost Benefit Ratio (CBR) was used for the evaluation [6]:

$$\text{CBR} = \frac{\text{Benefits from the implementation of measure (Lats)}}{\text{Invested funds to implement the measure (Lats)}}$$

Benefits of implementing the Road Traffic Safety Programme in 2007

As road traffic accidents have incidental character that may deviate from regular trends within one year, the benefits from the implementation of the Programme in 2007 are calculated by using the deviation of actual road traffic safety indicators from the average indicators of the last three years (2004-2006) [1], as well as, using the losses caused to the society:

$$\text{TZ} = \text{TZb} * \text{nb} + \text{TZi} * \text{ni} + \text{TZm} * \text{nm}$$

Where **TZb**, **TZi**, **TZm** are the average losses caused by one killed person, one injured and one accident in Lats;

nb, **ni**, **nm** – the number of killed and injured and accidents.

Total benefits in the first year of implementation of Road Traffic Safety Programme 2007-2013 are **8.59 million Lats**.

Investments in the implementation of Road Traffic Safety Programme

Each year every Ministry dealing with road traffic safety problems receives funding from the state consolidated budget to ensure the principles that guarantee road traffic safety. However, it is insufficient to achieve the set goal – to eliminate the number of killed by half. Therefore additional financing of 19.7 **million Lats** (in 2006 prices) was allocated for the implementation of different tasks set in Road Traffic Safety Programme [5].

Additional financing for road traffic safety improvements was achieved from the state and municipal resources, international funds, as well as, other sources of financing. In 2007 different sources of financing provided ~16.8 million Lats, i.e. ~85% from the planed additional funding.

Efficiency of Road Traffic Safety Programme

The results achieved in the previous chapter are used to determine the Cost Benefit Ratio, and the efficiency of the first year of implementation of Road Traffic Safety Programme 2007-2013 is calculated [see Table 1].

Table 1. Efficiency of Programme implementation.

Benefits, total, million Lats	8.59
Additional costs for road traffic safety, total, million Lats	16.78
Total efficiency = benefits / costs (2007)	0.5

As the main investments concern infrastructure and their results will only appear in the future, the first year of the Programme implementation is satisfactory.

Conclusions and recommendations

1. Fast development of automobilisation, incompliance of road network with road traffic safety requirements and behaviour of road users in road traffic hindered the development of road safety improvement trends in the last three years – the number of both killed and injured has increased;
2. Relative road traffic safety indicators are still one of the worst in the European Union member states, despite the fact that the rate of improvement of road traffic safety in Latvia is one of the best in the European Union;
3. Though the severity of road traffic accidents has decreased, it still is higher than the average level of the European Union;
4. In 2007 the reduction of killed in accordance with the set quantitative indicators was not achieved;
5. In comparison with 2006 positive reductions in the following fields were achieved:
 - ✓ risk to be killed and risk to be involved in accidents with killed / injured;
 - ✓ number of killed cyclists and moped drivers;
 - ✓ number of injured children;
 - ✓ number of pedestrians killed in dark hours.
6. In comparison with 2006 the following negative indicators have increased:

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- ✓ number of killed drivers and passengers which is mostly connected with the exceeding of speed limit on roads;
 - ✓ number of accidents with killed / injured caused by drivers under the influence of alcohol and respectively the number of killed / injured in these accidents;
 - ✓ number of killed pedestrians.
7. It has to be noted that in 2007 accidents with killed / injured where quadricycles were involved were registered for the first time. As the number of quadricycles still increases, sharp increase of such accidents may be foreseen;
8. Analysis of the measures implemented within the Programme shows that different measures have been implemented to achieve the set goals, however:
- ✓ As the significant portion of losses is caused by road traffic accidents with pedestrians in the conditions with limited visibility measures have to be implemented intensively that provide physical separation of different groups of road users;
 - ✓ Children road safety education system is not yet complete. It has to be completed in the soonest possible time as children in the future will become new road users;
 - ✓ Traffic organisation measures and traffic safety improvements in the road network have to be continued by creating safe and mobile environment for all road users;
 - ✓ Control of road users has to be improved by paying special attention to speed control with the use of photo radars;
 - ✓ It is important to continue the forming of public awareness on safe traffic in the road system, however, it may not fully replace engineering measures in the road network and control of road users;
 - ✓ Development of technical and material basis for road rescue services has to be continued further that would allow saving the lives of injured in road traffic accidents;
9. In comparison with the average indicators of the last three years, total benefits amount up to 8.59 million Lats and the first year of Programme implementation is satisfactory, however, the Programme was not implemented in full scale:
- ✓ Desired measures were not implemented mostly due to insufficient funding;
 - ✓ Improvement procedures of road quality and traffic organisation schemes have not improved significantly;
 - ✓ Best achievements may be seen in improving the road user awareness and the road user control;
 - ✓ Children education on road traffic is still far from the minimal necessary level.
10. To achieve the set goal, road traffic safety has to be recognised as the state priority and active work has to be continued to achieve the set goals by adapting and using the best practice of other member states of the European Union [7].

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