

## Quantitative road safety targets

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## Contents

<b>QUANTITATIVE ROAD SAFETY TARGETS .....</b>	<b>1</b>
<b>1 OVERVIEW .....</b>	<b>4</b>
<b>2 WHAT ARE QUANTITATIVE TARGETS?.....</b>	<b>7</b>
2.1 Final outcome targets .....	8
2.2 Intermediate outcome targets .....	10
2.3 Institutional output targets .....	11
2.4 Global, regional, country, state, local jurisdictional targets .....	12
2.4.1 Global targets for the Decade of Action .....	13
2.4.2 European targets .....	14
2.4.3 National goals and targets .....	16
2.5 Regional targets.....	22
2.6 Local targets.....	23
2.7 Organisational and stakeholder targets .....	25
<b>3 WHY SET TARGETS?.....</b>	<b>26</b>
3.1 Targets are the focus of the road safety management system .....	26
3.2 Do targets work? .....	28
<b>4 HOW TO SET TARGETS? .....</b>	<b>29</b>
4.1 Different approaches.....	29
4.2 How ambitious? .....	30
4.3 The target-setting process.....	31
<b>5 HOW TO MONITOR TARGETS .....</b>	<b>32</b>



<b>5.1. Safety performance indicators .....</b>	<b>33</b>
<b>5.2 Independent review .....</b>	<b>34</b>
<b>6 AVOIDING PITFALLS.....</b>	<b>38</b>
<b>REFERENCES .....</b>	<b>40</b>



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## 1 Overview

Current levels and socio-economic costs of deaths and serious injuries resulting from road crashes are considered unacceptably high at global level and in EU countries.

The *World Report of Road Traffic Injury Prevention* stated that setting challenging but achievable targets - as practiced by an increasing number of countries - is a sign of responsible road safety management.

Target-setting in road safety is a success story. Targets specify the desired safety performance endorsed by government at all levels, partners, stakeholders, organisations and the community. Setting challenging but achievable step-wise quantitative final and intermediate outcome and output targets towards the ultimate *Safe System* goal to eliminate death and long-term injury has been identified as international best practice.

Global, regional, national and local jurisdictions and organisations in general are increasingly establishing management frameworks to implement road safety strategies and programmes towards the eventual elimination of death and serious injury through interim targeted reductions.

### ***What are quantitative targets?***

#### Targets are expressions of road safety ambition

Quantitative targets represent the measurable road safety results which a country, jurisdiction or organisation wishes to achieve over a given time-frame. A country's focus on results and how they are to be achieved by evidence-based, system-wide intervention and effective institutional management are at the core of an effective road safety management system. Quantified road safety targets and provision of the means by which they are to be achieved are an expression of political will by a country or organisation to improve road safety. Countries have become more ambitious over time in their choice of long-term goals and interim quantitative targets. These have implications for the interventions selected and the capacity to deliver them by organisations in government and across the wider road safety partnership.

#### Target types: final and intermediate outcome and output targets

Targets for final outcomes (long-term and interim targets to reduce deaths and injuries) are used widely in many countries in national, regional and local road safety strategies and programmes. Targets have also been set for intermediate outcomes (e.g. decreases in mean motor vehicle speeds, increases in seat belt use, percentage of fleet with 5\* Euro NCAP rated vehicles) and institutional delivery outputs (e.g. numbers of random breath tests, number of speed checks,). These allow closer management of the range of interventions needed to achieve final outcome targets. Targets can also be set in relation to public acceptance and perceptions of safety measures.

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### **Who sets targets?**

Targets are set by governments at global, regional (e.g. EU), national, provincial and local levels. They are also set by organisations as the focus of a performance framework for work-related road safety management.

### **Why set targets?**

Targets provide the focus for the national road safety management system and strategy and the level of their ambition drive decisions about necessary institutional management capacity and the choice and scope of intervention to achieve them. Research and experience indicate that long-term goals and interim targets lead to:

- Increased political will and stakeholder accountability for road safety
- Closer management of strategies and programmes, better safety programmes and
- better safety performance, especially when targets are ambitious
- Better use of public resource
- Increased motivation of stakeholders

### **How to set targets?**

Current good practice involves a combination of top down long-term goals as well as bottom up empirically-derived interim targets (usually of 10 years duration), which are soundly related to interventions, their likely effectiveness in the national road safety strategy and the quality and likelihood of their delivery. *Result focus* is the overarching function of country and lead agency management for road safety which defines the country's level of ambition for road safety and takes into account the interventions and institutional arrangements which need to be put in place in order to realise it. The process involves:

- Appraising current road safety performance through high-level strategic review
- Adopting a far-reaching road safety vision or goal for the longer term
- Analysing what could be achieved in the interim and setting quantitative targets
- Agreeing quantitative targets and ensuring accountability across the road safety partnership.

### **How to ensure accountability?**

Targets need to be agreed across the road safety partnership since they specify the desired safety performance which is endorsed by governments at all levels, stakeholders and the community. Good practice indicates that governmental and professional consultation on targets forming the focus of the road safety strategy is usually conducted within the national road safety coordination hierarchy followed by a public consultation process. Governmental approval of the targets and national strategy is carried out within the upper tier of the multi-sectoral coordination body. Public service targets and annual performance agreements are means by which Government demonstrates its role and accountability for road safety responsibilities. Top management are fully involved in consulting on and establishing long-term goals and step-wise targets in organisations.

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**How to monitor targets?**

This involves continuous monitoring of targeted and other safety performance indicators, establishing the effectiveness of specific road safety measures by carrying out before and after studies; reviewing and updating of policies and measures with re-distribution of resources towards more cost-effective measures; identifying delays in implementation requiring corrective action and all aspects of the road safety management system which can contribute to success or failure; and establishing the level of public support for interventions.

**How to avoid pitfalls?**

Targets lacking political support are unlikely to obtain the level of funding or other resources needed for their attainment. An ambitious long-term or purely symbolic goal which is not supported by interim targets has no value. Interim targets should be accompanied by well-orchestrated and funded safety programmes designed to realise them. The national and organisational long-term goal and targets should have currency in the actions and goals of all responsible key agencies and departments. Good practice shows that interim targets set within the specific time frame of a national road safety strategy or programme need to be ambitious but realistic.

*Note: This web text outlines and discusses the different types, linkages between and main characteristics of quantitative targets; their take up by different jurisdictional levels and organisations; their value as a focus for road safety management as well as the pitfalls to avoid in their use. For discussion of the target-setting process as a management function and in the interest of avoiding duplicated text, please see [Road Safety Management](#).*

## 2 What are quantitative targets?

Quantitative road safety targets represent the road safety results which a country, jurisdiction or organisation wishes to achieve over a given time frame. Increasingly, they are set as step-wise, interim targets towards achieving the ultimate *Safe System* goal of eliminating death and long-term injury (OECD, 2008). Such targets aim to strengthen the commitment to improving road safety by stating in clear terms the improvement to be aimed for within a certain period as well as the means for their achievement (Elvik et al. eds., 2009).

Interim quantitative targets are usually expressed in terms of *final outcomes* e.g. numbers of deaths and serious injuries. Targets can also be expressed in terms of *intermediate outcome* e.g. reductions in average mean speed or increases in seat belt use. Some countries go further and set *output targets* for their institutional service delivery e.g. number of breath tests required to be administered annually by the police (Bliss, 2004). The example below in Figure 1 illustrates a comprehensive target hierarchy using all three target types and shows their linkages.

Figure 1: New Zealand's target hierarchy in the Road Safety to 2010 strategy



- The overall target is to reduce the socio-economic costs of road crashes
- To be achieved by meeting the second level of targets, requiring specific reductions in the numbers of fatalities and serious injuries
- A third level of targets consists of intermediate outcomes (including those related to speed, drink driving and rates of seat-belt wearing) that are consistent with the targeted reductions in final outcomes
- A fourth level of targeting is concerned with institutional delivery outputs such as the enforcement outputs that are required to achieve the third-level targets

Source: LTSA ,2000a

Final outcome targets are employed in most OECD countries, whereas intermediate outcome and output targets are used less frequently but to good effect e.g. in New Zealand, Norway, Sweden. The OECD recommends using a methodology as illustrated above that links interventions and institutional outputs with intermediate and final outcomes to develop achievable targets for different intervention options (OECD, 2008).

## 2.1 Final outcome targets

Final outcome targets usually comprise targets aimed at reducing numbers of deaths or serious injuries expressed as targeted percentage reductions. Some jurisdictions and organisations target reductions in casualty rates e.g. deaths per 100,000 population or deaths per 10,000 motor vehicles. However, a declining rate such as deaths per numbers of vehicles may mask increases in numbers of deaths and injuries which is why numbers rather than rates are, in general, found to be more useful. An additional reason for selecting numbers rather than rates in target-setting is the perception that communication with stakeholders and the public will be easier (Allsop ed., 2003) Examples of final outcome targets for selected European countries are presented in Table 1.

Table 1: Quantitative final outcome targets in selected European countries

Country	Target level
Austria	50% reduction in fatalities and 20% reduction in injury crashes by 2010 compared to average of 1998 to 2000
Belgium	50% reduction in fatalities by 2010 compared to 2000
Bulgaria	25% reduction in fatalities and injuries by end of 2010 compared to the 2002-2005 average
Cyprus	50% reduction in fatalities by 2010
Czech Republic	50% reduction in fatalities by 2010 compared to 2001
Denmark	40% reduction in fatalities and injuries by 2012 compared to 2005
Estonia	Maximum 100 fatalities in 2015 or 50% compared to 2002
Finland	Maximum 250 fatalities in 2010 or 42% compared to 2000 and fewer than 100 fatalities by 2025, the long-term goal is 0 fatalities
France	35% reduction in fatalities by 2012 compared to 2007
Greece	50% reduction in fatalities by 2010 compared to 2000
Hungary	30% reduction in fatalities and injury crashes by 2010 compared to 2001 and 50% by 2015
Ireland	60 fatalities per million by the end of 2012 and 50 or fewer in the following years with demonstrable downward reductions in each year of Strategy.
Italy	50% reduction in fatalities by 2010 compared to average of 1999 to 2001
Latvia	70% reduction in fatalities by 2013 in comparison with 2001. The interim goal is to reduce the number of killed by 50% till 2010.
Lithuania	50% reduction in fatalities by 2010 compared to 2004
Malta	-50% in fatalities by 2014 compared to 2004 -50% in injury crashes by 2014 compared to 2004



Country	Target
Netherlands	Maximum 750 fatalities and 17,000 injuries by 2010 or 25% compared to 2001 (fatalities) and a maximum of 580 fatalities in 2020.
Norway	New target set in 2009. 33% reduction in fatalities and serious injuries by 2020 compared to annual averages of years 2005-2008 + 0 fatalities for long-term.
Poland	50% reduction in fatalities by 2013 compared to 2003
Portugal	25% reduction in fatalities/population by 2015 compared to 2008 and 50% reduction in casualties by 2010 to average of 1998 to 2000
Romania	50% reduction in road crashes by 2012 compared to 2002.
Slovakia	50% reduction in fatalities by 2010
Slovenia	Maximum 124 fatalities in 2011 or 50% reduction in fatalities compared to 2005
Spain	40% reduction in fatalities by 2008 compared to 2004
Sweden	50% reduction in fatalities by 2020 compared to average 2006-2008, vision is 0 fatalities
Switzerland	50% reduction in fatalities and serious injuries by 2010 compared to 2000
United Kingdom	40% reduction in fatalities and serious injuries by 2010 compared to average of 1994 to 1998 – no target set to 2020

Source: COWI 2009 based on EU DG-TREN, Preparation of country profiles, Final Report, April 2005 (prepared by COWI), IRTAD Annual Report 2009, International Traffic safety Data and Analysis Group, OECD, International Transport Forum, 2009

#### Other types of final outcome target

*Regional targets:* Most final outcome targets are set at national level, but regional targets set within these are especially important where key aspects of road safety have been devolved from central to regional and local levels. Achievement of national or organisational targets will be dependent on systematic activity at lower jurisdictional or organisational levels which will need to be encouraged and supported at national lead agency levels and by the top management of organisations.

*Child casualties:* Final outcome targets can also include specific road user groups such as children or older users. In addition to targets to reduce killed and seriously injured casualties and the casualty rate for slight injuries, Britain set a target for 50% reduction in children killed and seriously injured by 2010 (baseline 1994-1998 average).

*Social costs:* Social or organisational costs can also be targeted. In New Zealand, as shown in Table 2, a reduction in social costs of road injury crashes was specifically targeted within the duration of the 2010 road safety strategy.

Table 2: Social costs of injury crashes: targets and outcomes 2003/2004 New Zealand			
	Base	Targets	
	2001	2004 not exceeding	2010 not exceeding
Social Cost (2001 prices)			
\$ billion	3.02	2.75	2.15
Cents per vehicle-km	8.4	6.7	4.4
\$ per person	783	700	650
\$ per vehicle	1145	1020	940

See Sections 2.4 and 2.5 on jurisdictional and organisational targets for further discussion and examples.

## 2.2 Intermediate outcome targets

Intermediate outcomes are causally linked to final outcomes and are also measurable. They represent interventions that are known to improve final outcomes e.g. reducing motor vehicle speeds, increasing seat belt use, improving the safety rating of the vehicle fleet or the safety quality of the road network.

Intermediate outcome targets are used in several countries e.g. New Zealand (see Table 3), Canada, and Sweden to help achieve national final outcome targets. Examples include targets to reduce average traffic speeds, to reduce the proportion of drunk drivers in crashes or in traffic, to increase seat belt and helmet wearing rates, to improve the physical condition of the road network or the standard of the vehicle fleet or the quality of post-crash services.

Intermediate outcome targets can be particularly useful where countries have not yet established crash injury data bases that can be used easily for multi-sectoral working and who want to start addressing key problems systematically to achieve results. In these cases surveys of key behaviours on high-volume roads and surveys of vehicle fleet safety quality and network safety quality can be carried out to provide baseline data for target-setting and monitoring data. See ERSO text on [Safety Ratings](#).

Table 3: Intermediate outcome targets for speed, excess alcohol and restraint use in New Zealand's Road Safety to 2010 strategy against 2001 baseline

	<i>Target</i>
	2004
Speed	not exceeding
Open road mean speed (km/h)	99
Open road 85 <sup>th</sup> percentile (km/h)	107
Urban mean speed (km/h)	55.2
Urban 85th percentile (km/h)	61
Alcohol	
Percent of driver deaths with excess alcohol	21%
Number of driver deaths with excess alcohol	48
Restraints	At least
Seat belts – front	92%
Seat belts – rear	75%
Children (under 15) restrained	90%

Source: LTSA, 2003

Using intermediate outcome targets can also simplify operational management. It has been noted that a long period of time can elapse between the implementation of countermeasures (vehicle safety measures are an example) and their final impact in terms of reduced final outcomes (deaths and injuries). At the same time, simple final outcome target-setting which does not involve forecasting of general trends may be confounded by other factors such as fluctuating economic trends (or increasing numbers of vulnerable road user groups (e.g. older people) in the general population) which can influence casualty reduction outcomes (Tingvall et al., 2010). Research indicates that intermediate outcome measures (safety performance indicators) should not be treated as statistically independent and that it is important to use a set of intermediate outcome targets at the same time (Tingvall et al., 2010).

### 2.3 Institutional output targets

Output measures represent physical deliverables of the key stakeholders which are used to achieve intermediate outcome targets. Example include targeting the number of speed enforcement operations required to reduce average traffic speeds or the number of breath tests to be administered to ensure a highly visible police presence to deter drinking and driving. See Table 4 for an example from New Zealand.

Table 4: Examples of annual institutional output targets in New Zealand

<p>In 2004, road safety was cited as a core business for the New Zealand Police. A total of 2.7 million police hours were allocated for road safety related activities in 2003/04. These resources were provided through the New Zealand Road Safety Programme and contributed approximately 23% of the total Police budget. The resources were focused on the reduction of road trauma through proactive on-road enforcement. Annual outputs targets were set and monitored periodically against national strategy intermediate and final outcome targets.</p>			
Annual output targets for breath-testing for excess alcohol in New Zealand	2001/02	2002/03	2003/04
hours to be delivered	505,920	543,025	574,140
number of Compulsory Breath Tests to be conducted (at the roadside)	1.4-1.6M	1.5-1.7M	1.5-1.7M
number of Mobile Breath Tests to be conducted	370-410K	500-550K	500-550K
offence notices to be issued	26-30,000	23-26,000	23-26,000
Annual police output targets for speed in New Zealand	2001/2	2002/3	2003/4
hours to be delivered	310,380	316,950	321,980
speed camera hours	74,000	74,000	74,000
on-road speed Traffic Offence Notices and Infringement Offence Notices to be issued	110-130K	200-250K	275-325K
speed camera Infringement Offence Notices to be issued	515-610K	500-550K	400-460K
offence notices issued	176,684	259,323	356,193
speed camera infringement notices	523,362	458,618	466,409

Source: Breen, 2004

In conclusion, in countries which need to improve the quality of national road traffic crash and injury databases, the use of both intermediate outcomes and output targets provide a useful starting point. Countries which are only targeting final outcomes can enhance their *results focus* by targeting intermediate outcomes and outputs. A range of data arrangements and partnerships will be required to facilitate final and intermediate outcome and output target setting (Bliss & Breen, 2009). Targets can also be set in relation to public acceptance and perceptions of safety measures.

## 2.4 Global, regional, country, state, local jurisdictional targets

Government needs to play a leading role in setting road safety targets and orchestrating their delivery. Targets can be set by different levels of government at global, EU, country, provincial and local levels.

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Road safety activity at international level can have a profound effect on national and local road safety results. At the same time, a country's local and regional activity is fundamental to achieving international goals and targets. The adoption of the long-term *Safe System* goal supported by interim quantitative targets based on evidence-based intervention accompanied by institutional strengthening needs to be fully supported at all these levels, to ensure effective activity during the Decade of Action.

#### **2.4.1 Global targets for the Decade of Action**

In response to the global crisis of road traffic injury as emerging economies motorise, the UN General Assembly resolution 64/255 of March 2010 proclaimed 2011–2020 the Decade of Action for road safety, with a '*global goal of stabilizing and then reducing the forecasted level of global road fatalities by 2020*' by increasing activities conducted at national, regional and global levels with the focus primarily on national and local action. Resolution 64/255, requested the World Health Organization and the United Nations regional commissions, in cooperation with the United Nations Road Safety Collaboration and other stakeholders, to prepare a Plan of Action for the Decade as a guiding document to support the implementation of its objectives. In addition, Resolution 64/255 invited the World Health Organization and the United Nations regional commissions to coordinate regular monitoring, within the framework of the United Nations Road Safety Collaboration, of global progress towards meeting the targets identified in the plan of action through global status reports on road safety and other appropriate monitoring tools.

The Global Plan establishes five pillars: road safety management, safer roads and mobility, safer vehicles, safer road users and post crash response. The Global Plan states that the Decade of Action goal will be attained through:

- adhering to and fully implementing the major United Nations road safety related agreements and conventions, and use others as principles for promoting regional ones, as appropriate;
- developing and implementing sustainable road safety strategies and programmes;
- setting an ambitious yet feasible target for reduction of road fatalities by 2020 by building on the existing frameworks of regional casualty targets;
- strengthening the management infrastructure and capacity for technical implementation of road safety activities at the national, regional and global levels;
- improving the quality of data collection at the national, regional and global levels
- monitoring progress and performance on a number of predefined indicators at the national, regional and global levels;
- encouraging increased funding to road safety and better use of existing resources, including through ensuring a road safety component within road infrastructure projects;
- building capacities at national, regional and international level to address road safety.

The United Nations Regional Commissions are becoming increasingly involved in assisting regional and national target-setting. The Improving Global Road Safety Setting Regional and National Road Traffic Casualty Reduction Targets project aims to assist low and middle - income countries in this process.

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The Accra Declaration from the Ministerial Round Table Africa Conference in Accra, Ghana, 2007 adopted an overall road safety target for Africa of halving road traffic fatalities by 2015.

The ESCAP Ministerial Declaration on Improving Road Safety in Asia and the Pacific (Busan, 11 Nov. 2006) includes the commitment to “Save 600,000 lives and to prevent a commensurable number of serious injuries on the roads of Asia and the Pacific over the period 2007 to 2015” and specifies eight road safety goals. It also refers to a complementary set of targets and indicators. ASEAN adopted a road safety action plan for 2005-2010.

### **2.4.2 European targets**

European targets to reduce deaths and disabilities have been set by a variety of international jurisdictions and organisations in the transport and health sectors as shown in Box 1.

#### **Box 1: European-wide targets**

The WHO Health for All policy in Europe set international targets to reduce mortality and disability from road crashes by at least 30% by 2020.

ECMT countries agreed in 2002 to reduce deaths by 50% by the year 2012 compared with the year 2000.

EU countries agreed a target to reduce deaths by 50% by the year 2010 compared with the year 2001 and a new long-term goal to 2050 and interim target to 2020 to reduce deaths by 50% has been proposed .

#### **EU 2010 targets**

In 2001, the European Commission (EC 2001) proposed the first EU-wide quantitative target to reduce deaths by 50% by 2010 and carried out a road safety action programme (EC 2003). While the target was not fully met, its impact on road safety progress has been significant. (See later section 5.2 for specific road safety outcomes.) The target and actions in the Road Safety Action Programme have helped to push road safety further up the agenda in many Member States and, following a wide range of initiatives, there has been more national target-setting. By the end of 2009 all EU countries (EU 27) had set measurable national targets with the exception of Germany, Malta and Luxembourg.

Road safety targets in EU Member States differ widely as to intermediate safety outcome performance, timescale and degree of challenge. Most EU countries aimed to reduce the annual number of deaths by 40 to 50% within typically about 10 years. These percentages represented an ambition to reduce the number of deaths more quickly than continuation of past trends would imply (Allsop ed., 2003).

#### **EU 2020 targets and the long-term goal**

Stakeholder consultation towards the development of the next EU Road Safety Action Programme 2011-2020 was carried out by the European Commission between July and December 2009. This consultation comprised a series of six thematic workshops and an

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internet consultation and culminated in a stakeholder conference in December, 2009. The results of the consultation provided good support for the adoption of a long-term goal and interim targets both at EU and national levels, as shown below in Box 2.

**Box 2: Recommendations from stakeholder consultation on goals and targets for the next EU Road Safety Action Programme 2011-2020**

*At EU level:*

Adopt a long-term shared vision across the road safety partnership for the future safety of the road traffic system (Safe System) for the ERSAP, the European Road Safety Charter and the European Road Safety Observatory in line with internationally recommended good practice.

Identify and adopt a shared interim target to reduce the number of deaths by a challenging but achievable percentage within the period 2011 – 2020 as the focus for road safety action. Set up small sub-group of experts and officials to consider existing proposals and related analysis on specific targeted levels of deaths.

- Identify and adopt a separate shared interim target to reduce the number of serious injuries in EU countries based on Member States definitions of serious injury.
- Consider the adoption of quantitative targets to reduce the risk of death for key vulnerable and unprotected road user groups e.g. for children.
- Ensure visions, targets and strategies are adopted as a condition of new EU membership.

*At national and local levels:*

Adopt a long-term vision (Safe System), interim outcome targets and also target intermediate outcomes (e.g. levels of seat belt use, reductions in mean speeds) and institutional outputs (e.g. numbers of breath tests, % of vehicle fleet with 4\*+ ) in new national and local road safety strategies

Source: COWI, 2010

In December, 2010 the EU Council of Ministers called for action towards achieving the eventual elimination of death and long-term injury on Europe's roads and supported the establishment of new quantitative targets to 2020. In 2010, the European Commission proposed that by 2050, the EU should move 'close to zero fatalities' in road transport and aim at halving road casualties by 2020. The report of the road safety rapporteur for the European Parliament has endorsed the objective of halving the total number of road deaths by 2020 and also calls for a 40% reduction in serious injuries, on the basis of a harmonised EU definition. ETSC has estimated that the total value to society of the specifically targeted reductions in road deaths in EU27 over the years 2011-2020 compared with 2010 that would be achieved by reaching the 2020 target by a steady progress over the decade is estimated as 182 billion euro (ETSC 2011).

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These are significant steps in the level of ambition proposed by the EU institutions. The European Commission proposal is also the first example of a specified time period for achievement of a long-term goal to be reached by a step-wise target and will require long-term planning and capacity building towards its achievement.

### **2.4.3 National goals and targets**

Targets are used widely in many countries in national, regional and local road safety strategies and programmes. Countries have become more ambitious over time in their choice of quantitative target with implications for the interventions selected and their delivery by institutions across the road safety partnership (Bliss & Breen, 2009).

#### ***National final outcome goals and targets***

##### Adoption of long-term goal to eliminate death and serious injury in road crashes

Several countries and jurisdictions have set a long-term goal for zero deaths and serious injuries and EU countries include Sweden, Scotland, Slovenia, Finland, Norway, and Western Australia. As ETSC has observed “There need be no contradiction between a far-reaching long-term vision or philosophy and a challenging but achievable, and thus necessarily more modest, shorter-term target associated with a strategy for the foreseeable future. If properly communicated and understood, both the ultimate vision or philosophy and targets for the next foreseeable steps towards it can serve their respective purposes side by side” (ETSC, 2003). Indeed, such activity is now acknowledged to be international good practice (OECD, 2008).

##### National targets

Since the 1970s when the first road safety outcome target was set in Europe (See Box 3), national final outcome targets have been used widely in road safety strategies and programmes. A further example from the UK is shown in Box 4. As shown in Table 5, most EU countries set national quantitative road safety targets and several have acknowledged the importance of the EU target in inspiring new targets and activity leading to improved national safety performance (COWI, 2010).



Table 5: National final outcome targets and performance – EU 27

Country EU 27	Road deaths in 2001	Road deaths in 2010	Reduction 2010-2001	National target for fatality reduction	Year to be realised	Baseline
Austria	958	552	-42%	-50%	2010	1998-2000
Belgium	1486	840	-43%	-50%	2010	
Bulgaria	1011	775	-23%	-25%	2010	2002-2005
Cyprus	98	60	-39%	-50%	2010	
Czech Rep.	1334	802	-40%	-50%	2010	2001
Denmark	431	265	-39%	-40%	2012	2005
Estonia	199	78	-61%	-55%		2002
Finland	433	270	-38%	-42%	2010	2000
France	8162	3992	-51%	-50%	2001	1997
Greece	1880	1281	-32%	-50%	2010	2000
Hungary	1239	739	-40%	-30%	2010	
Ireland	411	212	-50%	-25%	2006	1998-2003
Italy	7096	4090	-42%	-40%	2010	1998-2000
Latvia	558	218	-61%	-50% -70%	2010 2013	2001
Lithuania	706	300	-58%	-50%	2010	2004
Malta	16	15	-6%	-50%	2014	2004
Poland	5534	3907	-29%	-43%	2010	1997-99
Portugal	1670	845	-49%	-50%	2010	1998-2000
Romania	2454	2377	-3%	-20%	2008	2002
Slovakia	625	353	-44%	-50%	2010	
Slovenia	278	138	-50%	-50%	2010	2005
Spain	5517	2478	-55%	-40%	2008	2003
Sweden	531	266	-50	-50%	2007	1996
The Netherlands	1083	640	-41%	-30%	2010	1998
UK (GB+ N. Ireland)	3598	1912	-47%	-40%	2010	1994-98

\* Provisional figures or national estimates for 2010

- (1) Sweden - The definition of road deaths changed in 2010 to exclude suicides. The time series was adjusted so figures for previous years exclude suicides as well.
- (2) Figures have been corrected for police underreporting. In the Netherlands, the reported number of deaths is checked by Statistics Netherlands (CBS) and compared individually to the Death certificates and Court files of unnatural death.
- (3) Germany and Luxembourg are excluded from this table since they have not set national targets

Sources: ETSC, 2011; COWI,2010; IRTAD 2011

**Box 3: 30+ years of target and goal-setting in Finland**

Finland was the first European country to set a national target in 1973. It met this first very challenging target - to reduce deaths by 50% by the end of the 1970s – and achieved the largest fatality reduction in Europe during the 1970s (ETSC, 2003). Contributing to the success of the target were the introduction of speed limits, compulsory use of seat belts, as well as external factors such as the oil crisis leading to reduced trips.

The second target to reduce road deaths by 50% by the year 2000 was set in 1989 and was also successful. A more structured approach to speed limits was introduced for urban areas, pedestrian and cycle paths were built. Economic recession also played its part in the reduced numbers of road deaths.

The third target to halve the number of deaths by 2005 was set in 1997 but after a fairly poor start was later revised to 2010 which targeted a maximum number of 250 fatalities by 2010. In 2001, the long-term goal was set that ‘the road transport system should be designed so that nobody should die or be seriously injured on the roads’ in addition to the ambitious interim target.

Source: Peltola, 2003; COWI, 2010

**Box 4: Final outcome targets set in UK**

Against the background of changes in general public service delivery, the first national casualty reduction target was set in Britain in 1987, following a comprehensive review of road safety policy and research. The target was to reduce casualties by one third by 2000 compared with the average for 1981-85. Although the overall target was not achieved due to increasing minor injuries, deaths declined by 39% and serious injuries by 49%. The target process led to an increased profile for road safety; increased resources for and more discussion of national and local action.

Following a consultation exercise launched in 1996, new bottom-up targets were proposed by the Department for Transport and approved by Government and Parliament (Broughton et al, 2000). Compared with the average of 1994-98, new targets were set to achieve:

40% reduction in killed and seriously injured casualties (44% achieved by 2009)

50% reduction in children killed and seriously injured (61% achieved by 2009)

10% reduction in the casualty rate for slight injures per kilometre travelled by 2010 (37% achieved by 2009)

A further public service agreement target was set for the Department for Transport for 2005 – to reduce casualties in deprived areas of England more rapidly than in Britain as a whole. In 2002, the UK also joined other member countries in signing up to the highly ambitious targets set by the European Union and the European Conference of Ministers of Transport (now ITF)

While the UK aspires to being the safest road safety jurisdiction in the world, no further quantitative targets have been set for the new UK Strategic Framework for Road Safety to 2020 in which the Secretary of State for Transport Philip Hammond MP states that the policy will not be 'resorting to more targets, bureaucracy and regulation'.

Scotland, however, is continuing with the successful target-setting practice and has set a long-term goal in its new 2020 Strategy for 'A steady reduction in the numbers of those killed and those seriously injured, with the ultimate vision of a future where no-one is killed on Scotland's roads, and the injury rate is much reduced'. Scottish road safety targets from 2010 to 2020 are:

Target	2015 Milestone % reduction	2020 target % reduction
People killed	30%	40%
People seriously injured	43%	55%
Children (aged <16) killed	35%	50%
Children (aged <16) seriously injured	50%	65%

An additional 10% reduction target in the slight casualty rate to 2020 was also set.

Northern Ireland's vision in its 2020 strategy is 'To make a journey on Northern Ireland's roads as safe for all road users as anywhere in the world' and has also set road safety targets to 2020 (measured against a baseline of the 2004-2008 average figures):

To reduce the number of people killed in road collisions by at least 60% by 2020;

To reduce the number of people seriously injured in road collisions by at least 45% by 2020;

To reduce the number of children (aged 0 to 15) killed or seriously injured in road collisions by at least 55% by 2020; and

To reduce the number of young people (aged 16-24) killed or seriously injured in road collisions by at least 55% by 2020.

### **National intermediate outcome targets**

Some countries have also established intermediate outcome targets which provide the opportunity for closer management of activity within the national strategy towards achieving headline final outcome targets. In Europe to date, intermediate outcomes have usually been monitored rather than targeted in national road safety strategies. Sweden, however, was one of the first countries in the world to establish a results management framework using intermediate outcome targets. In the programme (1995–2000), eleven intermediate outcome targets were set and this practice has recently gained new momentum. Current examples of national intermediate outcome target setting from Sweden and Norway are shown in Tables 6 and 7.

Table 6: Target-setting hierarchy in Norway

Source: OECD, 2008

Table 1.2. Norway's quantified road safety targets for the year 2020.			
	Annual mean 2003-2006	Projected for 2020	Target for 2020
<b>Targets set for number of road users killed or seriously injured</b>			
Number of road users killed	250	285	125
Number of road users seriously injured	980	1 109	490
<b>Targets set for road safety indicators</b>		<b>State in 2007</b>	<b>Target for 2020</b>
1. Share of traffic complying with speed limits		52.6 %	75 %
2. Seat belt wearing in built up areas		85.4%	95%
3. Seat belt wearing outside built up areas		92.3%	97%
4. Use of bicycle helmets among children below the age of 12 years		62.9%	90%
5. Use of bicycle helmets among older children and adults		31.8%	75%
6. Use of bicycle lights in the dark		64%	80%
7. Adult use of pedestrian reflective devices in the dark		17%	70%
8. Share of vehicle kilometres performed by drivers impaired by alcohol or drugs		0.5%	0.35 %
9. Share of vehicle kilometres performed by fatigued drivers (based on self-reports)		11%	8.25%
10. (A) Hours of driver training (B) Share of training during first half of training period		104 hours; 10%	250 hours; 40%
11. Share of vehicle kilometres performed by cars rated 4 or 5 stars in EuroNCAP		36%	90%
12. Share of vehicle kilometres performed by cars with electronic stability control		19%	95%
13. Share of vehicle kilometres performed by cars with autonomous cruise control		0%	20%
14. Share of vehicle kilometres performed by cars with enhanced neck injury protection		4%	75%
15. Share of vehicle kilometres performed by cars with e-Call (assuming it is made mandatory from 1.1.2009)		0%	75%
16. Share of heavy vehicles with no brake defects		72%	90%
17. Share of drivers of heavy vehicles complying with regulations concerning length of daily rest period (determined by checking tacographs)		89.7%	95%
18. Share of drivers of heavy vehicles complying with regulations concerning length of daily hours of service (determined by checking tacographs)		94.5%	97%
19. Safety standard of main road network		170 fewer killed or seriously injured	
20. Safety standard of other national roads		140 fewer killed or seriously injured	
21. Safety standard of regional and local roads		40 fewer killed or seriously injured	

**Table 7: Examples of national intermediate outcome targets**

<p><i>Sweden has set a long-term-goal to eliminate death and long-term injury and an interim final outcome target to reduce road traffic deaths between 2007 and 2020 by 50% This corresponds to a maximum of 220 deaths in 2020. A target has also been set to reduce the number of serious injuries by 25% between 2007 and 2020. Thirteen intermediate outcome/safety performance indicators have been developed and targets proposed. The indicators which have been individually assessed to have the greatest effect on the number of fatalities are speed compliance, safe passenger cars and safe state roads.</i></p>				
Indicator/outcome measurement	Starting point	2008	Proposed targets to 2020	Potential saving in fatalities
1. Percentage share of vehicle kilometrage within the speed restrictions	43%	-	- 80 %	88
2. Increased share of vehicle kilometrage within the speed restrictions	52%	-	Increase of 86 %	29
3. Share of vehicle kilometrage with sober drivers	99.76%	-	99.9 %	30
4. Share of passengers using seat belts in the front seat of a passenger car	96%	95%	99%	40
5. Share of cyclists wearing a helmet	27%	28%	70%	10
6. Share of new passenger cars sales with the highest Euro NCAP score	66%	71%	100%	90
7. Share of new heavy vehicles with automatic braking system	0%	0%	100%	25
8. Share of vehicle kilometrage on roads with speed limits over 80km/h of dual carriageway roads	50%	52%	75%	50
	Other			12
Total				62
9. Share of safe pedestrian, cycle and moped passages for the main municipal street network	Approx. 25%	-	Not yet defined	-
10. Percentage of safe junctions on the main municipal street network	Approx. 50%	-	Not yet defined	-
Total for 9&10				30
11. Average time from injury to adequate rescue/medical care	-	12.3 min	Not yet defined	-
12. Share of drivers who stated that they have fallen asleep or nearly fallen asleep while driving	11.9%	12.7%	6%	
13. Prioritisation of road safety	-	-	Not yet defined	-
Total for 10,11,12				20
Total potential – fewer fatalities				424
Revised for double calculation (factor 0.6)				254

Source: SRA, 2009



## 2.5 Regional targets

Regional and local targets are also set, especially where jurisdictions have general decentralisation policies, where jurisdictions have specific local or regional responsibilities for the road network or other road safety duties. New Zealand, (see Table 8) the Netherlands (Box 5) and Germany are examples of countries which have implemented regional targets.

Table 8: Regional targets in New Zealand

	Deaths plus hospitalised		Deaths plus hospitalised over 1 day		Deaths plus hospitalised over 3 days	
	2004 # outcome	2004 target "not exceeding"	2004 # outcome	2004 target "not exceeding"	2004 # outcome	2004 target "not exceeding"
Northland	503	440	198	200	119	120
Auckland	2556	2120	821	840	573	600
Waikato	841	740	407	420	303	320
Bay of Plenty	567	490	277	270	169	160
Gisborne	91	70	47	40	30	30
Hawkes Bay	210	250	142	140	99	100
Taranaki	131	120	86	70	55	50
Manawatu/Wanganui	360	390	222	240	150	160
Wellington	325	320	203	200	109	120
Nelson Marlborough	155	140	89	80	65	50
West Coast	75	90	35	40	17	20
Canterbury	819	700	408	380	294	260
Otago	249	250	147	150	98	100
Southland	136	150	68	100	40	60
National	7018	6270	3150	3150	2121	2150

# 2004 Hospital data is for the 12 months to March 2004

Source: Breen, 2004

**Box 5: Example of final national and regional outcome targets in the Netherlands**

Targets in the Netherlands comprise:

- Reducing the number of traffic deaths to a maximum of 750 in 2010 and 580 in 2020 (respective decreases of more than 15% and 45% in comparison with 2002)
- Reducing the number of injuries requiring hospitalization to a maximum of 17,000 injuries requiring hospitalization in 2010 and a maximum of 12,250 injuries requiring hospitalization in 2020 (compared to 2002 this represents a decline of 7.5% and 34% respectively)
- National quantitative targets to reduce deaths are split up into 19 regional targets. Each region has an equal target, given that the conditions between regions do not differ greatly. The regions and provinces determine their own plans and measures to reach these targets
- Retaining the Netherlands position among the top 4 within the European Union in 2010 and 2020.
- The Netherlands also signed up to European targets set by the European Union and the ECMT.

Source: MVW, Netherlands 2005

In New Zealand, the national road safety strategy *Road Safety to 2010* set out regional targets to reduce the number of deaths and hospitalizations. In support of the national strategy, local authorities were expected to develop safety management systems, apply crash reduction studies and safety audit procedures (which are a pre-requisite of scheme funding), undertake detailed analysis to develop implementation strategies to meet targets and give appropriate priority to funding safety activity.

In some countries, the difference between regions in terms of traffic volumes and mixes may be too large to enable simple, equal disaggregation of the national target and further analysis will be needed to identify an appropriate level of ambition.

In Sweden, the active engagement of regional stakeholders in adopting the targeted outcomes foreseen in the Managing by Objectives strategy is currently being planned (STA, Sweden 2011).

## 2.6 Local targets

Targets are also set at local level e.g. in Norway and Great Britain. A review of local target-setting in Norwegian counties in the 1980s found that counties where quantified safety targets were set succeeded in reducing the accident rate per kilometre of travel more than counties relying on qualitative targets only. Counties with highly ambitious targets had a better safety performance than did counties with less ambitious targets or no quantified targets (Elvik, 2003). Cities and towns are also setting road safety targets (see Box 6 for UK examples).





**Box 6: Examples of city targets in UK****London**

Targets were set in 2001 and increased in ambition in 2006 when the Mayor announced new road casualty reduction targets for London to be achieved by 2010. These were:

- 50% reduction for all road users killed or seriously injured
- 60% reduction in the number of children killed or seriously injured
- 50% reduction in pedestrians and cyclists killed or seriously injured
- 40% reduction in the number of users on powered two-wheelers killed or seriously injured
- 25% reduction in the slight casualty rate (per kilometre travelled).

Progress towards these targets is measured against 1994-98 average casualty figures. Additionally, the Greater London Authority signed up to the European Union target to support activities and contribute to halving fatalities in the EU by 2010. The London Road Safety Unit - the lead management team in Transport for London which coordinated road safety across London - was disbanded in 2010.

**Gloucester**

Against the background of national casualty reduction targets, a Safer City project ran from 1996 to 2001 in the city of Gloucester. An objective to reduce city-wide casualties by one third by 2002 compared with the average 1991 to 1995 was set. Various urban safety management engineering methods were used, as well as enhanced enforcement and supporting publicity. The project brought together all those working locally in road safety including engineers, emergency services, magistrates, police, education and training staff, public transport operators, planners and research organizations. Political leadership was provided by a steering group of members from the City Council. While the target was not met for minor injuries, deaths and serious injuries fell by 38%. The Gloucester experience fed into national good practice guidelines for urban safety management.

ETSC has set up the Safer Cities network which seeks to:

- explore the possibilities of a stronger involvement of cities and towns in EU road safety policy by means of a formal consultation procedure;
- develop a reporting mechanism for European towns and cities in terms of their road safety performance (this reporting mechanism would be similar to that implemented under community air pollution policy, requiring local authorities to implement and work towards the achievement of EU road safety targets);
- develop guidelines for implementing cost-effective road safety measures at the local level based on best practice;
- set up quality criteria for financial support from the European Union for local road safety measures.



## 2.7 Organisational and stakeholder targets

Long-term goals in support of jurisdictional goals, targets and strategies are being set increasingly by organisations in the public and private sectors to meet work-related road safety objectives. For example, the Volvo Group states that ‘Our ultimate goal is zero accidents with Volvo Group products’ and one of the UK’s largest employers, Enterprise Managed Services, has set a target of zero crashes in road traffic.

A draft international ISO standard is being developed to assist employers of organisations of all types and sizes in establishing and implementing a road safety management system with the focus of long-term goals and interim targets. It is expected that adoption of the new standard will greatly assist the contribution that can be made in improving work-related safety by encouraging a systematic focus on achieving and monitoring road safety results. See ERSO text on [Work-related road safety](#).

### ***A new standard for road safety management systems – ISO 39001***

The ISO standard 39001 (ISO, 2012) on road safety management systems for organisations requires adoption of the long-term *Safe System* goal to eliminate death and long-term-injury and to decisions on objectives and targets for the interim (See Box 7). The organisation is required to follow a process that reviews its current RTS performance, selects RTS performance factors to work on, analyzes what it can achieve over time and sets appropriate objectives, RTS targets and plans to achieve them. These can include targets for final and intermediate outcomes, as well as organisational outputs. When establishing its targets, the organization is required to take into account its risks and opportunities, its RTS performance factors as well as give consideration to its management capacity. It shall also consider its technological options, its financial, operational and business requirements, and the views of interested parties.

#### ***Box 7: ISO 39001 - Road traffic safety (RTS) management systems***

*The RTS objectives shall:*

- be consistent with the RTS policy
- be measurable (if practicable)
- take account of applicable requirements
- be monitored and updated as appropriate

To achieve its RTS objectives, the organization shall determine:

- who will be responsible
- what will be done
- what resources will be required
- when it will be completed
- how the results will be evaluated (ISO, 2012)

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### Stakeholder targets

An effective target-setting process depends upon effective governmental lead agency direction and coordination, good in-house support, technical support from independent experts and consultation with a wide range of stakeholders to identify a system-wide programme of effective and implementable intervention (OECD, 2008).

In good practice target-setting, the accountability of key governmental stakeholders for meeting targets (e.g. the lead agency, highways sector, police sector) is underpinned by annual performance agreements which refer to annual and interim final outcome targets and institutional outputs (OECD, 2008).

The Swedish Managing by Objectives approach has involved setting an ambitious headline target (a 50% reduction by 2020) to be addressed by a range of intermediate outcome targets which are shared by a range of stakeholders. The process known as Interim Targets OLA involves stakeholder declarations of their intended contributions to specific outcomes which are reviewed annually against a range of intermediate outcome targets which address key safety risks. The following stakeholders, in addition to the SRA, have taken part in Interim Targets OLA:

- Swedish Association of Local Authorities and Regions [SKL]
- The National Society for Road Safety
- The National Police Board
- The Swedish Work Environment Authority
- Folksam [Insurance company]
- Toyota Sweden AB
- Ministry of Enterprise, Energy and Communications
- The Swedish Association of Road Haulage Companies
- The Swedish Bus & Coach Federation
- Swedish Taxi Association

## 3 Why set targets?

### 3.1 Targets are the focus of the road safety management system

The adoption of quantitative targets and achieving agreement on a clear means of achieving them provides the focus of an effective road safety management system. In the road safety management system shown below in Figure 2, key *institutional management functions* provide the foundation for system-wide *interventions* to achieve a range of *results* expressed as different types of quantitative targets and long-term goals (Bliss & Breen, 2009; OECD, 2008). See ERSO [Road Safety Management](#) web text.

Similarly the adoption of a long-term goal to eliminate death and serious (long-term) injury together with a requirement to consider setting interim targets (which can include targets for final and intermediate outcomes and institutional outputs) are the focus of the new ISO 39001 standard on road safety management systems (ISO, 2012).

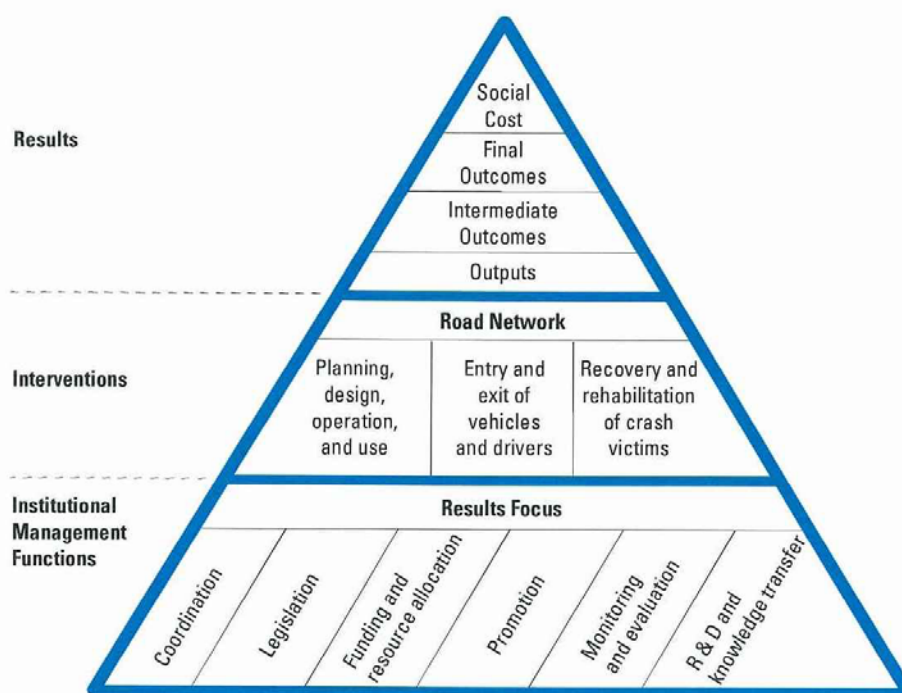
The overarching management function which is orchestrated on behalf of government by a lead agency/department/bureau is *results focus* which 1) determines the level of ambition

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expressed in quantitative targets which a country wishes to achieve in road safety and 2) ascertains how this desired result is to be achieved (Bliss & Breen, 2009). Targets provide the framework for and cohesion of road safety strategies. Targets drive decisions about interventions, their coordination needs, legislative needs, funding and resource allocation requirements, promotion needs, as well as requirements for monitoring and evaluation, research, development and knowledge transfer.

Figure 2: Road safety management system (Bliss and Breen, 2009)



Source: Bliss and Breen, building on the frameworks of Land Transport Safety Authority, 2000; Wegman, 2001; Koornstra et al, 2002; Bliss, 2004.

This road safety management system model derives from New Zealand’s comprehensive 2010 target setting framework which linked desired results with interventions and related institutional implementation arrangements (LTSA NZ, 2003) (LTSA NZ, 2000a). The New Zealand framework was adopted by the European Transport Safety Council (Wegman, 2001) which highlighted its results management framework, and it was further elaborated by the Sunflower Project (Koornstra et al., 2002) which located the institutional implementation arrangements in the broader context of country ‘structure and culture’. The first World Bank guideline concerning the implementation of the *World Report* recommendations (Bliss, 2004) used the framework to introduce prototype safety management capacity review tools. The updated guideline (Bliss and Breen, 2009) refines these tools and codifies good practice *institutional management* in high-performing countries. It further defines the organisational manifestation of the Sunflower Project ‘structure and culture’ in terms of seven *institutional management functions*.

Source: (LTSA NZ Consultation 2000a), (Bliss & Breen, 2009)

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### 3.2 Do targets work?

The *World Report of Road Traffic Injury Prevention* (Peden, 2004) stated that setting challenging but achievable targets, as practiced by an increasing number of countries, is a sign of responsible management. Targets specify the desired safety performance endorsed by government at all levels, partners, stakeholders and the community. Setting stepwise, challenging but achievable quantitative final and intermediate outcome and output targets towards the ultimate *Safe System* goal to eliminate death and long-term injury has been identified as international best practice. Research and experience have identified several effects. Targets:

**Increase political will** and stakeholder accountabilities. Experience in Europe indicates that targets get and keep road safety on to the political agenda. Targets and the means by which they are to be achieved are the ultimate expression of political will.

**Increase accountability** Experience also shows that targets are an efficient management tool for defining responsibilities for different levels of administration and among other actors.

**Better safety programmes** Targeting and objective measurement of safety performance through the monitoring and evaluation of final and intermediate road safety outcomes is the key to effective road safety management, programming and use of public resources (Bliss & Breen, 2009). Research shows that quantitative targets can lead to better programmes, a more effective use of scarce resources and an improvement in road safety performance (OECD, 1994).

**Better safety performance** Countries and counties with quantitative targets perform better than those without targets (Wong et al., 2006; Elvik, 2003; ETSC, 2006). A review compared the safety performance of 14 OECD countries with quantitative targets to countries without targets. Countries with targets performed better over the time period 1981-1999, with the percentage reduction in fatalities ranging from 4.5% in Norway to 21.1% in the Netherlands. A meta-analysis indicated that overall, countries with targets had 10.4% lower fatalities than the countries without targets in the first three years of the target period (Allsop et al., 2011) and with a sustained effect of 4% over the whole target period (Wong & Sze, 2010). Research also shows that targets that are ambitious are associated with better performance than less ambitious targets (Elvik, 1993, 2001; Locke & Latham, 2002; Allsop et al., 2011). However, if goals are set that are perceived as too ambitious to be delivered by the current road safety strategy without quantitative targets, they may not have the motivating effects that challenging, yet achievable, targets often have (Anderson & Vedung, 2005).

**Motivate stakeholders** Current good practice combines highly ambitious long-term goals using incremental quantitative targets sought within the life of a particular road safety strategy, usually of 10 years duration. A vision or philosophy providing a long-term goal and a succession of shorter-term targets directed towards its realisation can have complementary effects in motivating the initial development and subsequent implementation of road safety strategies (Allsop ed., 2003). The setting of challenging but achievable quantitative targets

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an strengthen motivation to contribute to casualty reduction and this can be maintained by regular and transparent monitoring of progress towards targets (Allsop ed., 2003).

**Tighter management** The use of the target hierarchy comprising intermediate outcome targets (e.g. on seat belt use, speed and excess alcohol) as well as institutional output targets ( e.g. for police enforcement activity) in addition to final outcome targets, as used in Australasia, represents best international management practice (OECD, 2008; Bliss & Breen, 2009).

**Targets need programmes** Success in improving road safety performance by setting a target is not guaranteed. Target require realistic programme of interventions to be developed and faithfully implemented (Elvik, 2003) made possible by a solid foundation of effective institutional arrangements (Bliss & Breen, 2009). Target-setting is but one step in the road safety programming process (OECD, 2002).

**Benefits outweigh costs** The costs and benefits of targeted road safety programmes are likely to vary substantially, making it difficult to provide typical figures. Analyses of road safety policy in Norway and Sweden (Elvik, 1999, 2001; Elvik & Amundsen 2000) indicate that it is in principle possible to achieve a reduction of the number of fatalities in road crashes of about 50% by introducing measures whose benefits are greater than the costs.

## 4 How to set targets?

### 4.1 Different approaches

Road safety targets can be formulated in many ways (Elvik, 2003; OECD, 1994). In OECD countries there are differences in both the ambition represented and in the approaches used to set the targets (OECD, 2008). This ranges from practice in some countries (e.g. Australia, Great Britain, Finland, the Netherlands) which have conducted in-depth analyses and have set their targets using statistical models to identify the expected improvements from different safety interventions. Other countries used less analytically-based approaches, focussed in intermediate outcome targets towards long-term goals (Sweden) and in some the target-setting is purely political.

In an evaluation of management-by-objectives as applied to road safety policy (which has very recently been taken up by Sweden) (Elvik, 2008) identified the following conditions for its success:

- The top management of government should strongly endorse the targets and make a firm commitment to realising them.
- The targets set should be challenging, yet in principle achievable.
- There should not be too many targets in view of the available policy instruments designed to realise them.
- The agency or agencies given the task of choosing how best to realise the targets should have authority to determine the priority to be given to all available policy instruments.
- Responsible agencies should be supplied with sufficient funding to implement all cost-effective road safety measures.



- There should be a system for monitoring progress in realising targets and providing feedback to responsible agencies on their performance.
- Incentives should exist to ensure commitment to targets from all agencies responsible for realising them.

Current best practice involves some combination of top-down long-term goals as well as bottom-up interim targets (usually of 10 years in duration) which are soundly related to the selected interventions stated measures and their likely effectiveness, as well as the management capacity required to deliver them (OECD, 2008; Bliss & Breen, 2009).

International best practice in target-setting is further defined as the use of a methodology that links interventions and institutional outputs with intermediate and final outcomes to develop achievable targets for different intervention options (OECD, 2008; Bliss & Breen, 2009).

## 4.2 How ambitious?

In good practice road safety management, 'results focus' is the overarching institutional management function. It determines the country's level of ambition for road safety and takes into account the interventions and institutional arrangements which need to be put in place in order to realise it. Countries have become progressively ambitious in the results they want to achieve as shown in Box 7.

### **Box 7: The evolution of 'results focus' to Safe System**

Four distinct phases in managing for results over the last 50 years have been identified and countries have become progressively more ambitious in the results they want to achieve. The current phase is a *Safe System* approach which has been endorsed at international level and recommended for take-up in high, middle and low-income countries.

Phase 1: focused on driver intervention and 'blame the victim', with safety management characterized by dispersed, uncoordinated, and insufficiently resourced units performing isolated single functions.

Phase 2: focused on system-wide interventions guided by the 'Haddon matrix'.

Phase 3: focused on system-wide interventions, targeted results and institutional leadership. Good practice countries used action plans with numerical outcome targets to be achieved with evidence-based packages of system-wide measures based and new institutional leadership.

Phase 4: is focusing on system-wide interventions; long-term elimination of deaths and serious injuries; shared responsibility – Safe System. This comprises stepwise targets towards a long-term goal to eliminate death and serious injury which are seen as an unacceptable price for mobility; system-wide intervention (foreseen in Phase 2 and used successfully in Phase 3), but with renewed emphasis on better road and vehicle crash protection, post-crash care; new emphasis on speed management aimed at more effective injury prevention; and strengthened, accountable institutional leadership and meaningful shared responsibility to achieve results.

Bliss & Breen, 2009 in OECD, 2008

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OECD (2008) recommends that all countries should adopt and promote ambitious targets that seek, in the long-term, to eliminate death and serious injury in road crashes to be reached by step-wise quantitative targets which are challenging but achievable. Setting targets is one thing but another to achieve them. The more ambitious the goals and target(s), the more effective the institutional arrangements will need to be to deliver the system-wide intervention set needed to meet the ambition (OECD, 2008). See ERSO web text on [Road Safety Management](#).

### 4.3 The target-setting process

Good practice jurisdictional target-setting is an iterative process requiring with several steps observed in the processes of countries which have achieved significant improvements in performance (Bliss & Breen, 2009).

- appraising current road safety performance through high-level strategic review
- adopting a far-reaching goal for the longer term
- analysing what could be achieved in the interim and proposing targets
- agreeing targets across the road safety partnership and ensuring stakeholder accountability for results

Similar steps are also foreseen at the organisational level in the draft ISO 39001 management system standard (ISO Draft, 2011) where requirements are set out for the planning process for reviewing safety performance, for top management of the organization to adopt the elimination of death and serious injury as the long-term goal and ensure the implementation of activities that deliver road safety improvements; as well as for planning management reviews and continual organizational improvements to achieve results. For further detailed discussion of this management function, see the results focus section in ERSO web text on [Road Safety Management](#).

A relatively small number of countries now use empirically derived targets, based on quantitative modeling of intervention options (Breen, 2004; LTSA 1998a, 1998b, 2000b, 2000c). In this approach, targets are based on empirical evidence relating to the selected interventions' previous effectiveness combined with best estimates of future effectiveness, using a model linking inputs and outcomes. The OECD recommends this approach since it bases targets on the achievements that can be expected from successful implementation of the interventions that make up the road safety strategy adopted (OECD, 2008).

Jurisdictional targets need to be agreed across the road safety partnership since they specify the desired performance which is endorsed by governments at all levels and which will involve integrated activity with a range of sectors and the community.

Good practice indicates that governmental and professional consultation on targets forming the focus of the road safety strategy is usually conducted within the national road safety coordination hierarchy followed by a public consultation process. Governmental approval of the targets and national strategy is carried out within the upper tier of the multi-sectoral coordination body. Public service targets and agreements are means by which Government

demonstrates its role and accountability for road safety responsibilities (see DfT UK, 2004) for example). Audit, independent reviews and inspection bodies monitor compliance.

## 5 How to monitor targets

Systematic and transparent quantified monitoring of the implementation of road safety strategy and progress towards meeting Government and organisational targets is essential both for maintaining the motivation of stakeholders (and hence the effectiveness of implementation) and for updating of the strategy and targets in light of experience. Most countries which are active in road safety have a comprehensive set of databases across transport, health and justice sectors to inform road safety problem analysis, target-setting, and the monitoring and evaluation of programmes, measures and performance. The example from the Netherlands in Box 8 illustrates the range of data which is routinely collected. The data requirements and the level and type of disaggregation are closely linked to the detail of the road safety strategy.

### **Box 8: Data systems in the Netherlands, 2006**

Ownership and use of commercial vehicles (CBS)  
Population of the municipalities in the Netherlands (CBS)  
Causes of Death (CBS)  
Use of protection devices  
International Road Traffic and Accident Database IRTAD  
IIS (Injury Surveillance System)  
National Patient Register (NPR)  
National Road Database (NRD)  
Accidents and Physical Activities in the Netherlands (APAN)  
National Travel Survey (NTS)  
Car Panel PAP (CBS)  
Periodic Regional Road Safety Survey (PRRSS)  
Survey of drinking and driving in the Netherlands  
Speed measurements on state/national motorways (TRC)  
Road Statistics (CBS)  
Motor Vehicle Statistics (CBS)  
Passenger Traffic Statistics (CBS)  
Road crash registration (BRON)  
Traffic Offences

Source: SWOV, 2006

In-depth data analyses enable past safety achievements to be understood and also allow target reductions in fatalities and injuries to be estimated on the basis of measured and expected trends. It is critical that these estimates are not simple forward projections of past



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reduction rates but are based on a comprehensive understanding of all the underpinning trends likely to impact on system safety (OECD, 2008).

Reliability and quality of data is a key issue, when developing road safety interventions. Even in good practice countries, there is scope for further efforts to link police collision reports to hospital data records to improve data quality and consistency, especially regarding serious injury crashes. Data quality and effective analysis are fundamental to building risk awareness and intervention effectiveness (OECD, 2008).

### 5.1. Safety performance indicators

Safety performance indicators (SPIs) are used in many countries to monitor progress, although only a few countries have a comprehensive system which seeks to monitor the quality of the whole system or use them in target-setting. Sweden has led the way and has used safety performance indicators for many years. In the last decade, there has been increasing awareness in Europe of the value of using safety performance indicators in understanding the current state of the road traffic system and how to manage for ambitious road safety results.

Safety performance indicators have been generally defined as “. . . measures (indicators), reflecting those operational conditions of the road traffic system, which influence the system’s safety performance” (Gitelman et al., 2007; SafetyNet, 2008).

Safety performance indicators (SPIs) intermediate outcome measures are measurable factors/ that are causally related to road traffic crashes or injuries. They are used SPIs in addition to crash injury data (final outcomes), in order to provide safety managers with core information about the current performance of the road traffic system (Gitelman, 2010). Establishing safety performance indicators/intermediate outcome measures requires the organization of network surveys and the development or support of arrangements such as vehicle and road infrastructure safety rating partnerships and programs.

Building on recommendations by ETSC (Wegman, 2001), the SafetyNet project provided a further methodological basis for the SPIs and developed SPIs for selected problem areas which were designated as central to road safety work in EU countries. Those areas are: alcohol and drug-use; speeds; protective systems; daytime running lights; vehicles (passive safety); roads, and trauma management (Gitelman et al., 2007). Country comparison reports produced by the SafetyNet project and the ETSC PIN Reports enabled detailed analyses of countries' positions with regard to certain kinds of road user behaviour, state of the vehicle fleet, road infrastructure and post-trauma care (Gitelman, 2010). In addition, local authorities can set their own local performance indicators and many of these have been set relating to speed reduction, child casualties, accident involvement of young and old drivers and accidents in relation to distance travelled (Maltby, 2003).

In Sweden’s latest monitoring of its targets, it was concluded that the road safety performance indicators that have the greatest potential for saving lives on Swedish roads are reduced speed levels, a continued increase in the percentage of the volume of traffic on

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roads with median barriers and an increase in the rate of the percentage of safe vehicles in the vehicle population. The Sober Traffic Road Safety Performance indicator is also considered particularly important, since drivers under the influence of alcohol killed in a crash have often been driving both too fast and without a seat belt.

For full review – see ERSO web text [Safety Performance Indicators](#)

## 5.2 Independent review

### ***Review of progress against targets***

*EU targets* The European Road Safety Council has been a strong, independent reviewer of EU policy (Allsop, 2001; Koornstra, 2003) and its PIN projects and the SafetyNet projects have been foremost in monitoring the performance of EU countries against EU-wide and national targets as well as developing monitoring frameworks.

Since 2001, road deaths have been reduced by 43% in the EU27. In the EU15, the countries which originally set the target, road deaths have been reduced by 48% (ETSC, 2011). The adoption of the EU wide 2001 quantitative target proved to be a turning point in motivating countries especially those facing the greatest challenges to manage their road safety outcomes (ETSC, 2011; COWI, 2010).

Monitoring of EU country progress against the EU target carried out by the ETSC PIN Project showed that Latvia, Estonia, Lithuania, Spain, Luxembourg, Sweden, France and Slovenia all reached the EU 2010 target. Portugal very nearly reached it with a reduction of 49.4%. Ireland, Germany, the UK, Italy, Slovakia and Belgium achieved reductions above the EU average, while the other countries progressed to a lesser extent (ETSC, 2011). Fatality trends for different combinations of EU countries since 1970 are shown in Figure 3 (ETSC, 2011).

ETSC estimates that had road deaths remained at the same level as in 2001, there would have been 102,000 more deaths in the EU. The total value to society of the reductions in road deaths in EU27 over the years 2002-2010 compared with 2001 is estimated as 176 billion euro (ETSC, 2011).

While the number of road deaths has declined considerably in the past decade in Europe, a worrying development is that the number of PTW riders killed rose in 13 out of 26 countries (ETSC, 2011).

Figure 3: Reduction in deaths for different combinations of EU countries since 1970

Source: ETSC 2011

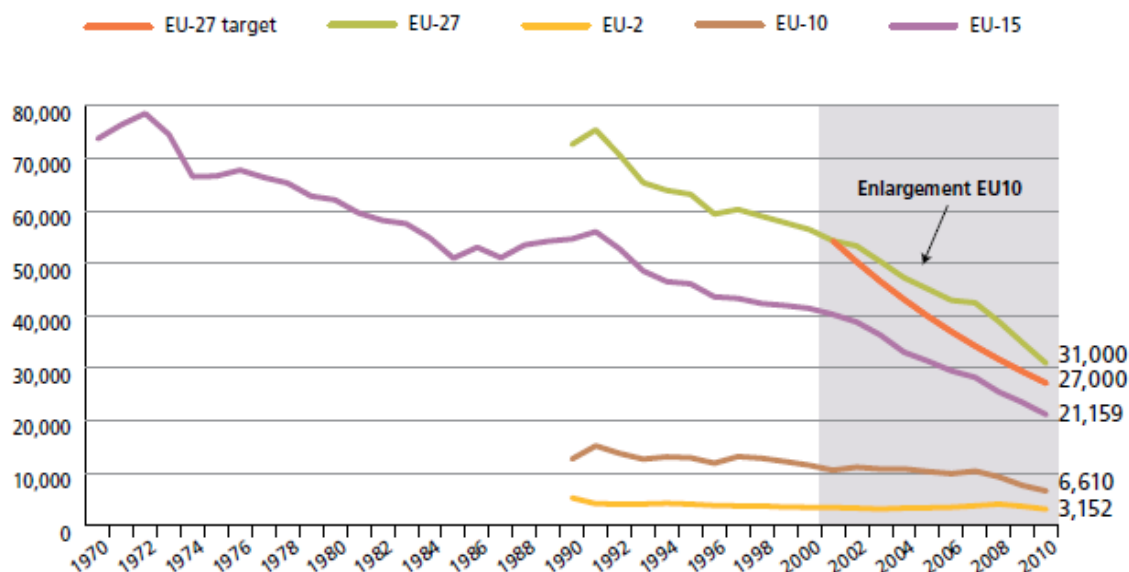


Fig.2: Reduction in road deaths since 1970 in the EU15 (purple line) and since 1990 in the EU27 (green line), the EU10 (brown line) and Bulgaria and Romania (EU2, yellow line).

Source: CARE database (except for 2010: PIN data as provided by Panellists).

*National targets* National road safety performance, strategy and targets are often evaluated in formal, published and independent peer reviews to achieve impartial, expert and transparent assessment.

In Britain, for example, there has been in-house review as well as two independent evaluations of road safety performance against the road safety targets (Broughton & Buckle, 2005, 2007). The 2007 review concluded that the headline target for reducing the number of killed and seriously injured road casualties (40%) would probably be met, but that the principal challenge would be to achieve a greater reduction in deaths than the current reduction (19%) against baseline (See Table 9). The review looked at progress to date in implementation in various areas of the strategy compared with the original assessment made in the target-setting process.

Table 9: Effects of new policies (% of reduction in killed and seriously injured), averaged over all types of road and road user.

	Estimate in target-modelling (Table 6 TRL 382)	Period 2000-05	Period 2006-10	Combined
New road safety engineering programme	7.7	7.0	2.5	9.3
Improved secondary safety in cars	8.6	2.8	7.2	9.8
Other vehicle safety improvements	4.6	0.1	0.1	0.2
Motorcycle and pedal cycle helmets	1.4	0.3	0.2	0.5
Safety on rural single carriageways	3.4	1.0	0.5	1.5
Reducing accident involvement of novice drivers	1.9	0.0	0.0	0.0
Additional measures for pedestrian and cyclist protection	1.2	0.0	0.0	0.0
Additional measures for speed reduction	5.0	4.0	2.0	5.9
Additional measures for child protection	1.7	0.1	0.1	0.2
Reducing casualties in drink/drive accidents	1.2	0.0	0.0	0.0
Reducing accidents during high-mileage work driving	1.9	0.3	0.2	0.5
Additional measures for improved driver behaviour	1.0	0.0	0.0	0.0
Combined effect of all measures	33.4	14.8	12.2	25.2

Source: Broughton & Buckle, 2007

Evaluations of the effectiveness of countermeasures are essential to focus further development and prioritise further actions. National or EU level crash data can be used to describe overall trends but in-depth data is normally the most effective in assessing detailed engineering changes whether vehicle, infrastructure or road user behaviour based.

Public acceptance surveys covering representative samples of road user opinion are helpful in establishing levels of understanding and support for different interventions. These can often be used to place the contributions of narrowly focused lobbies into context.

Sweden has also used independent review in assessing annual performance. An international panel of experts has been appointed with the mandate of providing input to road safety policy in Sweden in terms of how policy can be made more effective and successful (Elvik et al., 2010). The questions addressed were:

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- Was sufficient progress in improving road safety made in 2009 to expect the targets set for 2020 to be realised?
  - Did the road safety performance indicators develop favourably in 2009 and did they make the contribution to improving safety that is required for realising the targets set for 2020?
  - Are all road safety performance indicators fulfilling their intended function in the system of management by objectives, or do some of these indicators require further development?
  - Should some of the road safety performance indicators be dropped?
  - Are there areas of road safety policy that need more attention and should be given a higher priority in terms of road safety measures?

The main conclusions of the review of Swedish road safety policy presented in this report were summarised as follows:

- The number of road traffic fatalities in Sweden was greatly reduced in 2008 and 2009. If similar reductions are accomplished in the coming years, it will be possible to realise the targets of not more than 220 fatalities set for the year 2020.
- There was a smaller reduction of the number of seriously injured road users in 2008 and 2009. If future reductions continue to be as small as the reduction accomplished from 2007 to 2009, the target set for 2020 of not more than 4000 seriously injured road users will not be realised.
- It is likely that the reductions of the number of fatalities in 2008 and 2009 were abnormally large, in part because of the economic crisis that developed in full during 2008. One should not expect reductions of this magnitude to continue in future years.
- During 2008 and 2009 progress was made only for three road safety performance indicators. For nine safety performance indicators, no progress was made or a meaningful measurement of progress was not possible.
- The set of safety performance indicators used is in need of further development and critical review. There are probably too many indicators and several that need to be developed.
- In order to improve the management by objectives process the following is proposed:
  - A. There is a need to improve the management by objectives process by setting more targets for some vulnerable groups in the road traffic system. Hence, we propose targets for bicyclists, both with respect to seriously injured persons and fatalities. Special targets for other groups could also strengthen the management by objective process. The use of new safety performance indicators based on new targets should be considered.
  - B. The instructions from the government to all authorities in charge of road safety in the annual regulating letters (*regleringsbrev*) should be as co-ordinated as possible.

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- C. Certain road safety measures and reforms may be opposed by some users of the road traffic system. It is therefore important that the system designers develop strategies to overcome possible opposition.

### **Road safety management capacity review**

In developing new road safety strategies and projects the OECD recommends conducting a road safety management capacity review using the assessment framework and series of applicable checklists developed and used by the World Bank (OECD, 2008; Bliss & Breen, 2009).

#### **Box 9: Road safety management capacity reviews in low, middle and high-income countries**

Road safety management capacity reviews have been carried out in a range of low, middle and high-income countries (e.g., Bangladesh, Bulgaria, Vietnam, Bosnia and Herzegovina, Serbia, Ukraine, Armenia, Montenegro, Argentina, Sweden, Western Australia). These high-level strategic reviews have been carried out using World Bank checklists to assess road safety management capacity across the system to take account of *institutional management functions*, *interventions* and *results* and their interactions. They have been carried out by experienced road safety management specialists and funded at the country level or by the World Bank Global Road Safety Facility.

These reviews have provided a useful management tool for road safety policymakers and managers to assess current road safety performance and the quality of the road safety management system. They aim for a constructive dialogue between key road safety partners and stakeholders about the acknowledged strengths and weaknesses of current arrangements to inform the development of an investment strategy designed to achieve the country's ambition for improved road safety results.

Source: Bliss & Breen, 2009

## **6 Avoiding pitfalls**

Research has shown that there are several pitfalls which need to be avoided in setting quantitative targets (Allsop ed., 2003; Elvik, 2007; OECD, 2008).

Targets that do not have political support are unlikely to obtain the level of funding or other resources needed for their attainment.

A purely symbolic target has no value. Targets should be accompanied by safety programmes designed to realise them. A realistic programme should exist to ensure

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progress towards a target. The national target should have currency in the actions and goals of all responsible key agencies.

Many things can go wrong with implementation. Detecting problems early is important in order to steer the right course.

Good practice shows that targets set within the specific time frame of a national road safety strategy or programme need to be ambitious but realistic. If unrealistically ambitious for the time-scale, requiring a rate of progress well in excess of what has been achieved previously, they will be perceived as being out of reach and will not be accepted. On the other hand, if the national strategy target for the next 5 to 10 years is too easy then a major opportunity for saving lives will have been lost.

Economic and demographic trends have an important influence on road safety outcomes. Experiences from several countries show that there is a connection – though the precise relationship is not yet understood - between the number of road deaths and economic trends. An economic downturn in the economy, for example, is often accompanied by a decrease in the number of fatalities on the roads. Substantial decreases in the numbers of fatalities and casualties that since the global financial crisis began in 2008 have been noted. This needs to be taken into account in targets monitoring, so that a realistic picture of the effectiveness of interventions implemented can emerge.



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