

Quantitative Road Safety Targets 2016



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1 Overview

Current levels and socio-economic costs of preventable 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 (WHO, 2004) 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 an identified international success story. Targets specify the desired safety performance endorsed by government at all levels, partners, stakeholders, organizations 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 by the OECD and other international organizations.

Global, regional, national and local jurisdictions and organizations 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. Global Sustainable Development Goals have been set to reduce road deaths. At EU level, a long-term Safe System goal has been set to eliminate road deaths supported by interim quantitative targets.

What are quantitative targets?

Targets are expressions of road safety ambition

Quantitative targets represent the measurable road safety results which a country, jurisdiction or organization 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 organization 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 organizations 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 serious injuries) are used widely in many countries in national, regional and local road safety strategies and programmes. Targets are also increasingly being set for intermediate outcomes which are causally related to death and serious injury. These address directly the underlying inherent risks in the road traffic system and involve, for example, decreases in mean motor vehicle speeds, increases in seat belt use, percentage of fleet with 5* Euro NCAP rated vehicles. Targets can also be set for 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.

Who sets targets?

Targets are set by governments at global, regional (e.g. EU), national, provincial and local levels. They are also set by organizations 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 the top-down long-term Safe System 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 jurisdictional or organisational; road safety strategy and the quality and likelihood of their delivery. Results 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 road safety strategy targets 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. Memoranda of understanding are used to cement working partnerships towards target delivery. Public service targets and annual performance agreements are means by which Government demonstrates its role and accountability for road safety responsibilities. Top management is fully involved in consulting on and establishing long-term goals and step-wise targets in organizations.

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

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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. Good practice monitoring also involves independent review.

How to avoid pitfalls?

Targets lacking political support are unlikely to obtain the level of funding or other resources needed for their attainment. The value of an ambitious long-term or purely symbolic goal which is not supported by interim targets is not evident. Interim targets need to be accompanied by well-orchestrated and funded safety programmes designed to realise them. The national and organizational 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 organizations; 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, see [ERSO web text on Road Safety Management](#).

2 What are quantitative targets?

Quantitative road safety targets represent the road safety results which a jurisdiction or organization 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 towards 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. Measuring, targeting and monitoring intermediate outcomes is essential for the delivery of a Safe System approach. Some countries also 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 quantitative 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. Examples of their use can be found in past or present strategies or agency approaches in New Zealand, Norway, Sweden, Australia, and the UK. The OECD and other stakeholders recommend using a methodology that links interventions and

institutional outputs with intermediate and final outcomes to develop achievable targets for different intervention options in support of a long-term goal (OECD, 2008; PIARC, 2016).

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 organizations 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. Another 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 current fatality reduction targets for selected European countries are presented in Table 1. See later section for examples of serious injury reduction targets.

Table 1: Quantitative targets for fatality reduction in selected European countries

| Country | Quantitative fatality reduction target |
|----------------|---|
| Austria | -50% fatalities by 2020 (in comparison with average for 2008 to 2010). |
| Belgium | -50% fatalities by 2020 (in comparison with 2010). |
| Bulgaria | -50% fatalities by 2020 (in comparison with 2010). |
| Cyprus | -50% fatalities by 2020 (in comparison with 2010). |
| Czech Republic | No more than 360 fatalities in 2020 (60% reduction in fatalities in comparison with 2009) |
| Denmark | Fewer than 120 fatalities in 2020 (-53% in comparison with 2010). |
| Estonia | -19% by 2015 (in comparison with 2003). |
| Finland | Fewer than 137 fatalities or 24 fatalities per million inhabitants in 2020. |
| France | -50% fatalities by 2020 (fewer than 2000 fatalities). |
| Germany | -40% fatalities by 2020 (in comparison with 2010). |
| Greece | -50% fatalities by 2020 (in comparison with 2010). |
| Hungary | -50% fatalities by 2020 (in comparison with 2010). |
| Ireland | No more than 25 fatalities per million inhabitants by 2020. |
| Italy | 50% fatalities by 2020 (in comparison with 2010). |
| Latvia | No more than 109 fatalities by 2020 and 138 by 2016. |
| Lithuania | -35% fatalities per million inhabitants by 2017. |
| Malta | -30% fatalities by 2020 (target period 2014-2020). |
| Netherlands | Fewer than 500 fatalities by 2020. |
| Norway | Fewer than 500 fatalities and serious injuries by 2024. |
| Poland | -50% fatalities by 2020 (in comparison with 2010). |
| Portugal | No more than 62 fatalities in 2015. |
| Romania | -50% fatalities by 2020 (target period 2014-2020). |
| Slovakia | -50% fatalities by 2020 (in comparison with 2010). |
| Slovenia | -50% fatalities by 2022 or fewer than 35 fatalities per million inhabitants. |
| Spain | Fewer than 37 fatalities per million inhabitants by 2020. |
| Sweden | -50% fatalities by 2020 (in comparison with average for 2006 to 2008). |
| United Kingdom | No overall UK or England target set to 2020 but targets set by devolved administrations: |
| - Scotland | -40% fatalities by 2020. |
| - Wales | -40% fatalities by 2020. |
| - N. Ireland | -60% fatalities by 2020. |

Sources: Road Safety Annual Report 2016, OECD/ITF, Paris; Global Status Report on Road Safety 2015, WHO, Geneva.

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 organizational targets will be dependent on systematic activity at lower jurisdictional or organizational levels which will need to be encouraged and supported at national lead agency levels, by national strategic frameworks and targets and by the top management of organizations.

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

Social costs: Social or organizational 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

| Social Cost (2001 prices) | Base | Targets | |
|---------------------------|-------|----------------------|----------------------|
| | 2001 | 2004 - not exceeding | 2010 - not exceeding |
| \$ billion | 3,02 | 2,75 | 2,15 |
| Cents per vehicle-km | 8,4 | 6,7 | 4,4 |
| \$ per person | 789 | 700 | 650 |
| \$ per vehicle | 1.145 | 1.020 | 940 |

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

2.2 Intermediate outcome targets

Intermediate outcomes are causally linked to final outcomes and are 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 using Euro NCAP and Euro RAP rating and improving the efficiency of emergency medical response.

Intermediate outcome targets are used increasingly to address Safe System goals, interim fatality and serious injury reduction targets and to implement Safe System strategy. Examples can be found in several countries e.g. Sweden, Norway, Australia. This type of target assists professionals in adopting a system-wide approach and allows closer safety management in implementation plans. Examples include targets to reduce average traffic speeds, to reduce the proportion of drunk drivers in accidents 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 using safety ratings or the quality of post-accident services.

Intermediate outcome targets are also useful where countries have not yet established accident injury data bases but which want to start addressing key problems systematically to achieve results. In these cases surveys of key safety 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 web text on Safety Ratings](#).

Using intermediate outcome targets can also simplify operational management and expedite implementation. A long period of time can often elapse between the implementation of counter-

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measures (international vehicle safety measures are an example) and their final impact in terms of reduced final outcomes (deaths and injuries). Intermediate outcome targets for improving vehicle safety quality (e.g. by using Euro NCAP star ratings) can speed up implementation through national fast-tracking of improvements via public procurement and safe travel policies.

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).

A Swedish example of a set of current intermediate outcome targets is provided in Table 3. 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. A range of indicators/intermediate outcome measurements have been set. 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.

Table 3: Example of current intermediate outcome targets in Sweden

| Indicator | Starting point | 2014 | Target for 2020 | Trend |
|---|----------------|------------------------|-----------------|--|
| Number of road traffic fatalities | 440 | 270 | 220 | In line with the required trend |
| Number of seriously injured | 5 400 | 4 900 | 4 000 | Not in line with the required trend |
| Share of traffic volume within speed limits, national road network | 43 % | 46 % | 80 % | Not in line with the required trend |
| Share of traffic volume within speed limits, municipal road network | 64 % | 63 % | 80 % | Not in line with the required trend |
| Share of traffic volume with sober drivers | 99,71 % | 99,78 % | 99,90 % | Not in line with the required trend |
| Share of front seat passenger car occupants wearing a seat belt | 96 % | 97 % | 99 % | In line with the required trend |
| Share of cyclists wearing a helmet | 27 % | 37 % | 70 % | Not in line with the required trend |
| Share of moped riders using a helmet correctly | 96 % | 96 % | 99 % | Not in line with the required trend |
| Share of new passenger cars with the highest Euro NCAP score | 20 % | 57 % | 80 % | In line with the required trend |
| Share of safe motorcycles (ABS) | 9 % | 39 % | 70 % | In line with the required trend |
| Share of traffic volume on roads with speed limit above 80 km/h and median barriers | 50 % | 73 % | 75 % | In line with the required trend |
| Share of safe pedestrian, cycle and moped crossings on main municipal road networks | 19 % | 25 % | Not defined | Cannot be assessed |
| Share of municipalities with good-quality maintenance of pedestrian and cycle paths | 15 % | No measurement in 2014 | 70 % | Starting year for the measurement in 2013, no measurement in 2014 – cannot be assessed |

Source: Swedish Transport Administration (2015). Analysis of Road Safety Trends 2014: Management by objectives for road safety work towards the 2020 interim targets, Borlänge.

2.3 Institutional output targets

Output measures represent physical deliverables of key stakeholders which are used to achieve intermediate outcome targets. Examples 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

| | | | |
|--|-----------|-----------|-----------|
| 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. | | | |
| 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

Targets can also be set in relation to public acceptance and perceptions of safety measures.

In conclusion, quantitative targets are an essential feature of addressing the Safe System goal and implementing Safe System strategy. The use of both intermediate outcomes and output targets provide a useful starting point in countries which need to improve the quality of national road traffic accident and injury databases. Countries which are only targeting final outcomes can enhance their safety management 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 and Breen, 2009).

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 are set by different levels of government at global, EU, country, provincial and local levels.

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. In recent years alignment between global, regional and national goals and targets has been increasingly evident.

This section presents examples of goals and targets set at different levels.

2.4.1 Global targets for the Decade of Action

UN Resolutions

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. It stated that a global goal should stabilize and then reduce the forecasted level of global road fatalities by 2020. A specific target, although not formally adopted by the UN, was identified by the UN Road Safety Coordination Committee in a Global Plan (UNRSC, 2011). This target was to be achieved by increasing activities conducted at national, regional and global levels with the focus primarily on national and local action.

UN 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.

UN Resolution 68/269 of April 2014 encouraged Member States of the General Assembly and the international community to take road safety into due consideration in the elaboration of the post-2015 development agenda, while recognizing the importance of a holistic and integrated approach to sustainable transport.

UN Resolution 70/1, 25th September 2015 set 17 Sustainable Development Goals and 169 targets which included for the first time formal goals related to road safety for the periods 2020 and 2030 as shown in Box 1.

Box 1: New global UN Sustainable Development Goals

The key goals and targets relating to road safety are:

- SDG 3 Ensure healthy lives and promote well-being for all at all ages.
3.6 Reduce road deaths and injuries by 50% by 2020 (2010 baseline).

- SDG 11 Make cities and human settlements inclusive, safe, resilient and sustainable
11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons .

- Other goals which relate to furthering road safety good practice include:

- SDG 12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices.

- SDG 12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities.

Most countries have national road safety strategies with ambitious targets in place and many of these are aligned with the objectives of the Decade of Action (OECD/ITF, 2016). As UN Resolution 70/1 noted, the United Nations Regional Commissions around the world have become increasingly involved in assisting regional and national target-setting.

The UNRSC Global Plan

The Global Plan (UNRSC, 2011) established 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.

National road safety activity is monitored in biennial Global Status Reports by the World Health Organization (for the latest, see WHO, 2016).

2.4.2 European targets

European targets to reduce deaths and disabilities have been set by a variety of international jurisdictions and organizations in the transport and health sectors as shown in Box 2.

Box 2: European-wide targets

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

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 reduce deaths by 50% by 2020.

EU targets

EU 2010 fatality reduction target

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 was significant and a 43% reduction in deaths was achieved.

The ambitious target helped to mobilise effective result-based action at local, national and EU levels. Most EU countries set national targets to reduce the annual number of deaths by 40% to

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50% within typically about 10 years (See Table 5). These percentages represented an ambition to reduce the number of deaths more quickly than continuation of past trends would imply (Allsop ed., 2003).

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 | 1.486 | 840 | -43% | -50% | 2010 | |
| Bulgaria | 1.011 | 775 | -23% | -25% | 2010 | 2002-2005 |
| Cyprus | 98 | 60 | -39% | -50% | 2010 | |
| Czech Republic | 1.334 | 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 | 8.162 | 3.992 | -51% | -50% | 2001 | 1997 |
| Greece | 1.880 | 1.281 | -32% | -50% | 2010 | 2000 |
| Hungary | 1.239 | 739 | -40% | -30% | 2010 | |
| Ireland | 411 | 212 | -50% | -25% | 2006 | 1998-2003 |
| Italy | 7.096 | 4.090 | -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 | 5.534 | 3.907 | -29% | -43% | 2010 | 1997-99 |
| Portugal | 1.670 | 845 | -49% | -50% | 2010 | 1998-2000 |
| Romania | 2.454 | 2.377 | -3% | -20% | 2008 | 2002 |
| Slovakia | 625 | 353 | -44% | -50% | 2010 | |
| Slovenia | 278 | 138 | -50% | -50% | 2010 | 2005 |
| Spain | 5.517 | 2.478 | -55% | -40% | 2008 | 2003 |
| Sweden | 531 | 266 | -50 | -50% | 2007 | 1996 |
| The Netherlands | 1.083 | 640 | -41% | -30% | 2010 | 1998 |
| UK (GB+ N.Ireland) | 3.598 | 1.912 | -47% | -40% | 2010 | 1994-98 |

* Provisional figures or national estimates for 2010
 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.
 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.
 Germany and Luxembourg are excluded from this table since they have not set national targets

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

EU 2020 fatality reduction targets and the long-term 2050 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 online 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 3.

Box 3: 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 2011, the European Commission Transport White Paper proposed that by 2050, the EU should move 'close to zero fatalities' in road transport, aim at halving road casualties by 2020 and envisage the setting of an injuries target. The European Parliament endorsed the objective of halving the total number of road deaths by 2020 and also called for a 40% reduction in serious injuries, on the basis of a harmonised EU definition.

The EU 2050 goal and 2020 target 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 requiring long-term planning and capacity building towards its achievement.

Policy Orientations for Road Safety 2011-2020

In 2010, the European Commission introduced the current road safety strategy - *Policy Orientations on Road Safety 2011-2020* with an ambitious quantitative target to reduce the number of road deaths by 50% between 2010 and 2020 (European Commission, 2011).

Policy Orientations promotes a systematic approach which takes account of human error and inappropriate behaviour and the role that improvements to vehicles, infrastructure and the emergency medical system can play in preventing human error and limiting injury consequences. Seven strategic objectives are set out which comprise various intervention fields as well as a targeted user group:

1. Improve education and training of road users
2. Increase enforcement of road rules

3. Safer road infrastructure
4. Safer vehicles
5. Promote the use of modern technology to increase road safety
6. Improve emergency and post-injuries services
7. Protect vulnerable road users

As for the previous action programme 2001-2010 the European Commission carried out an interim review of the *Policy Orientations* strategy and, in line with recommended good practice for monitoring and evaluation, commissioned an independent evaluation in support of this work (European Commission, 2015; Breen, 2015). See Section 5.2.

An EU serious injury target?

Following the agreement of a common definition of serious injury in January 2014 a Commission press release announced that a serious injury reduction target was expected shortly (March 2015). The Commission's interim review of the current road safety strategy (June, 2015) noted that "a target on the serious road traffic injuries remains to be set."

In September 2015, the European Parliament reiterated calls for a Pan-European target to reduce the number of serious road injuries calling for "the swift adoption of a 2020 target of a 40% reduction in the number of people seriously injured, accompanied by a fully-fledged EU strategy." The European Transport Safety Council (ETSC) and the independent study of Policy Orientations recommends that the EU should adopt a target of a 35% reduction between 2014 and 2020 in the number of people seriously injured on the roads (ETSC, 2014; Breen, 2015). Such a target would be similarly challenging and achievable for the Member States to the target to halve road deaths between 2010 and 2020.

2.4.3 National goals and targets

As indicated previously 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 and Breen, 2009).

National final outcome goals and targets

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 needs to 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). Such activity is now acknowledged to be international good practice (OECD, 2008; World Bank, 2009; PIARC, 2015).

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. 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).

Box 4: 40 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. By 2010 a 38% reduction in deaths has been achieved.

Finland's current target is for fewer than 137 fatalities or 24 fatalities per million inhabitants in 2020.

Source: Peltola, 2003; COWI, 2010

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 Norway are shown in Table 6.

Table 6: Target-setting hierarchy in Norway

| Table 1.2. Norway's quantified road safety targets for the year 2020. | | | |
|---|--------------------------|---------------------------------------|------------------------|
| | Annual mean 2003-2006 | Projected for 2020 | Target for 2020 |
| Targets set for number of road users killed or seriously injured | | | |
| Number of road users killed | 250 | 285 | 125 |
| Number of road users seriously injured | 980 | 1 109 | 490 |
| Targets set for road safety indicators | | State in 2007 | Target for 2020 |
| 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 | |

Source: OECD, 2008

2.5 Regional targets

Regional and local targets are also set, especially where jurisdictions have general decentralisation policies and specific local or regional responsibilities for the road network or other road safety duties. New Zealand, (see Table 7) the Netherlands (Box 5) and Germany are examples of countries which have implemented regional targets.

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Table 7: 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 | 2.556 | 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 | 7.018 | 6.270 | 3.150 | 3.150 | 2.121 | 2.150 |

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 accident 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, there is active engagement of regional stakeholders in adopting the targeted outcomes foreseen in the Managing by Objectives strategy (STA, 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 increasingly aiming for zero deaths and serious injuries, setting interim road safety targets and supporting strategies and programmes (see Box 6 for London example).

Box 6: Example of city targets in the UK

2010 targets

Targets for London 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).

By 2010, London had achieved a 57% reduction in KSI casualties.

| Casualty type | 1994-1998 Baseline casualties | Stretched target reduction by 2010 | Target number by 2010 | 2010 casualties (% change from baseline) |
|--------------------------------|-------------------------------------|---|--------------------------|---|
| Total KSIs | 6,684 | 50% | 3,342 | 2,886 (-57%) |
| Pedestrian KSIs | 2,137 | 50% | 1,069 | 913 (-57%) |
| Pedal cyclist KSIs | 567 | 50% | 284 | 467 (-18%) |
| Motorcyclist KSIs | 933 | 40% | 560 | 615 (-34%) |
| Child KSIs | 935 | 60% | 374 | 250 (-73%) |
| Slight casualties ⁴ | 38,997 | 25% | 29,248 | 26,003 (-33%) |

2020 goal and targets

Safe Streets for London - The Road Safety Action Plan for London 2020

London's Safe Streets plan was launched on the 6th June 2013 following a wide-ranging stakeholder and public consultation. The overarching aim of the plan is to work together towards roads free from death and serious injury. The plan introduced London's current target to focus resources to deliver tangible casualty reductions to reduce killed or seriously injured casualties (KSI) by 40% by 2020 (2005-09 baseline). The plan outlines a programme of actions structured around consideration of key factors: safe roads, safe vehicles, safe people and delivering in partnership.

Source: Transport for London, 2013

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;

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- 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 Organizational and stakeholder targets

Long-term goals in support of jurisdictional goals, targets and strategies are also being set increasingly by organizations 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’. One of the UK’s largest employers, Enterprise Managed Services, has set a target of zero crashes in road traffic.

An international ISO standard ISO 39001 (2012) has been developed to assist employers of organizations 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 web 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 organizations 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 6). The organization is required to follow a process that reviews its current RTS performance, selects RTS performance factors to work on, analyses 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 organizational 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

Source: ISO, 2012

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:

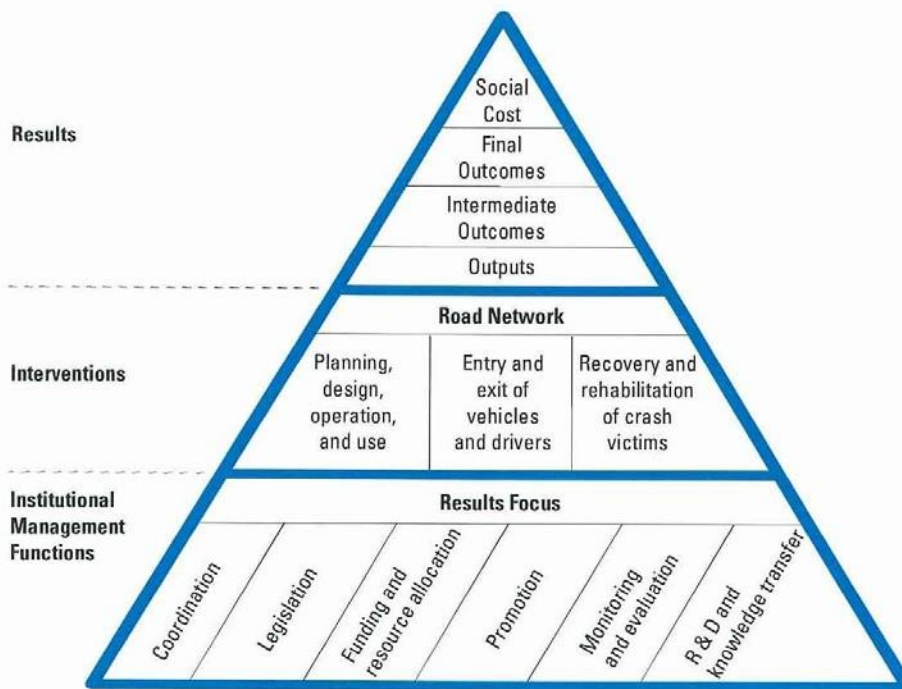
- Swedish Association of Local Authorities and Regions [SKL]
- The National Society for Road Safety
- The National Police Board
- The Swedish Work Environment Authority
- Folksam [Insurance company]
- Toyota Sweden AB
- Ministry of Enterprise, Energy and Communications
- The Swedish Association of Road 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](#).

Figure 2: Road safety management system



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

Source: Bliss and Breen, 2009

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 organizational manifestation of the Sunflower Project 'structure and culture' in terms of seven institutional management functions.

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

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 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 and 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.

3.2 Do targets work?

The World Report of Road Traffic Injury Prevention (WHO, 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, such as the following:

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 can 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.

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- 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 and intermediate outcome 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).

4.2 How ambitious?

Countries have become progressively ambitious in the results they want to achieve as shown in Box 8.

Box 8: 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

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 organizational level in the ISO 39001 road traffic safety management system standard (ISO, 2012) 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 organizational 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 9 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 9: 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

Sweden produces an annual report which measures progress against 2020 targets for final and intermediate outcomes.

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 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. The scope for further efforts to link police collision reports to hospital data records to improve data quality and consistency, especially regarding serious injury crashes is being addressed at EU and national levels. 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 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 on Safety Performance Indicators](#).

5.2 Independent review

Review of progress against targets

EU targets

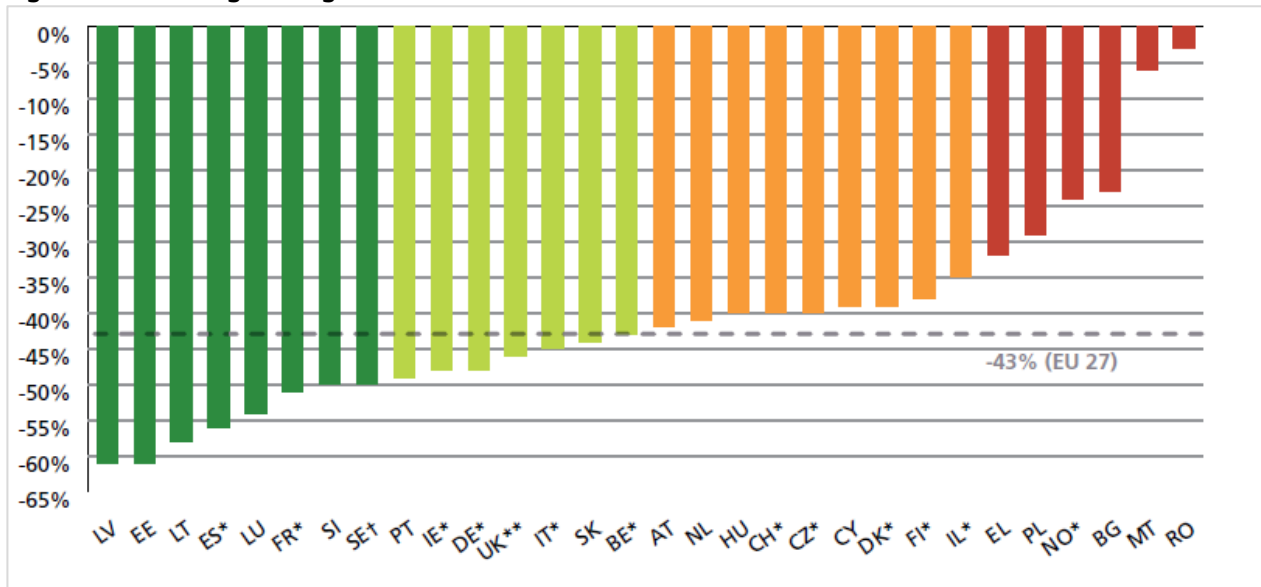
The European Road Safety Council has been a strong, independent reviewer of EU policy (Allsop, 2001; Koornstra, 2003) and its PIN projects and the SafetyNet projects have been foremost in monitoring the performance of EU countries against EU-wide and national targets as well as developing monitoring frameworks. Independent study was commissioned towards the Commission's interim evaluation of the 2020 target.

2010 target monitoring (-50% fatalities by 2010 with 2000 baseline).

The first 2010 target resulted in a 43% reduction in road deaths for EU27 countries. 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 2010 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 almost 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).

Figure 3: Percentage change in road deaths between 2001 and 2010.



*Provisional estimates were used for 2010 as final figures for 2010 were not yet available at the time of going to print.

**UK 2010: ETSC estimate for the UK based on EC CARE Quick Indicator.

†Sweden 2010: the definition of road deaths has changed and suicides are now excluded. The time series was adjusted so that figures for previous years exclude suicides as well.

Source: Figure 1, ETSC PIN Report (2011).

ETSC estimated 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

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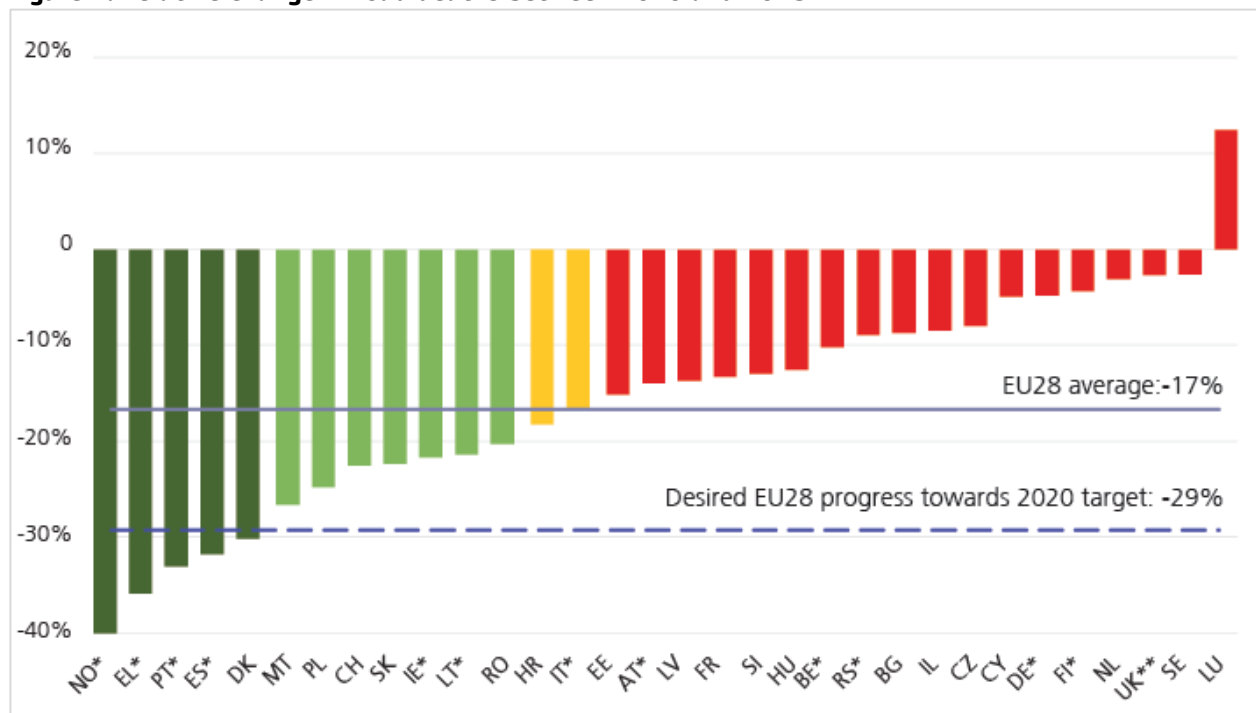
in EU27 over the years 2002-2010 compared with 2001 is estimated as 176 billion euro (ETSC, 2011).

2020 target monitoring (-50% fatalities by 2020 with 2010 baseline).

The independent study for the interim evaluation and ETSC PIN Reports indicates that while the current road safety strategy remains relevant, new effective action and implementation is needed by the EU and Member States between now and 2020 and beyond towards achieving the existing interim target and long-term goal (Breen 2015; ETSC, 2016).

Latest ETSC monitoring indicates that across the EU28, road deaths were cut by 17% between 2010 and 2015 (Fig.2), equivalent to a 3,6% average annual reduction. A 6,7% year-to-year reduction is needed over the 2010-2020 period to reach the target through constant progress in annual percentage terms. Yet the increase in 2015 means that the number of road deaths has to be reduced at a much faster average pace of about 9,7% each year between 2016 and 2020 for the EU to be on track for the target (ETSC, 2016).

Figure 4: Relative change in road deaths between 2010 and 2015



*National provisional estimates used for 2015, as the final figures for 2015 are not yet available at the time of going to print.
 **UK data for 2015 are GB provisional total for year ending September 2015 and Northern Ireland total for the calendar year 2015. Numbers of deaths in LU and MT are small and therefore subject to substantial annual fluctuation.

Source: Figure 2, ETSC PIN Report (2016).

Since the first EU target was set in 2001, monitoring has shown that a substantial 54% reduction in road deaths was achieved to 2014. While the 2020 target remains very challenging, EU road safety progress during the last two decades spearheaded by quantitative targets is an internationally acknowledged success story (Breen, 2015).

A range of recommendations were made for further EU action on targets and strategy development (See Box 10). In terms of meeting the 2020 target and encouraged by EU initiatives, the study recommended that national priorities should focus on making further progress in

securing compliance with key road safety rules. More or less immediate results can be achieved in the short-term through affordable combined publicity and police enforcement, particularly to address speeding – the single most important contributory factor to serious and fatal injury outcomes in road traffic crashes and one which influences the effectiveness of a range of measures (Breen, 2015).

Box 10: Recommendations for further EU action on targets

- A sharp focus is needed to address EU road fatality reduction objectives to ensure that interventions appropriately address goals and targets.
- The current focus on preventing and reducing the number of deaths of the results framework (2020 and 2050 goals) now needs to be expanded to include serious injury. The proposal for a 35% reduction in serious injuries by 2020 compared with 2014 seems an appropriate and challenging strategic target.
- It is suggested that the framework for the future development of Policy Orientations is provided by the evolving Road Injuries Strategy addressing fatal and serious injuries.
- Consistent with good practice road safety management, future road safety strategy needs to establish a clear road safety performance framework with specific objectives to allow targeting and monitoring and evaluation.
- The scope of Policy Orientations might be extended to include activity towards reducing work-related road deaths and serious injuries.
- Consideration should be given to setting targets to 2020 and beyond to increase seat belt use and crash helmet use; reduce average speeds and speeding over the limit; reduce levels and drinking and driving and fatal injury outcomes; improving the safety quality of the new vehicle fleet through use of Euro NCAP star ratings or for the road infrastructure (at least for TEN-T) using road assessment programme ratings EuroRAP.
- A road safety management capacity review is recommended to assist the development of a post-2020 Towards Zero strategy, involving key Commission Directorates and road safety partners who can deliver road safety results.
- In view of the challenges to 2020 and beyond, lead road safety unit capacity needs strengthening in DG MOVE, particularly in any further development of its road safety strategy and targets, coordination, monitoring and evaluation functions, as well as in technical support for Safe System intervention.

Source: Breen J (2015). Road safety study for the interim evaluation of Policy Orientations on Road Safety 2011-2020

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 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 8). 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 8: 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 6TRL 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:

- 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

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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 was 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.
- 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 11: 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 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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Notes

1. Country abbreviations

| | | | | | |
|--|----|---|----|---|----|
|  Belgium | BE |  Italy | IT |  Romania | RO |
|  Bulgaria | BG |  Cyprus | CY |  Slovenia | SI |
|  Czech Republic | CZ |  Latvia | LV |  Slovakia | SK |
|  Denmark | DK |  Lithuania | LT |  Finland | FI |
|  Germany | DE |  Luxembourg | LU |  Sweden | SE |
|  Estonia | EE |  Hungary | HU |  United Kingdom | UK |
|  Ireland | IE |  Malta | MT | | |
|  Greece | EL |  Netherlands | NL |  Iceland | IS |
|  Spain | ES |  Austria | AT |  Liechtenstein | LI |
|  France | FR |  Poland | PL |  Norway | NO |
|  Croatia | HR |  Portugal | PT |  Switzerland | CH |

2. This 2016 edition of Traffic Safety Synthesis on Quantitative Road Safety Targets updates the previous versions produced within the EU co-funded research projects [SafetyNet](#) (2008) and [DaCoTA](#) (2012). This Synthesis on Quantitative Road Safety Targets was originally written in 2008 and then updated in 2012 and in 2016 by Jeanne Breen, [Jeanne Breen Consulting](#).

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5. Please refer to this Report as follows:

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