ROAD SAFETY MANUAL
A GUIDE FOR PRACTITIONERS!

ROAD SAFETY MANAGEMENT

TARGET AND STRATEGIC PLANS

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6. ROAD SAFETY TARGETS, INVESTMENT STRATEGIES, PLANS AND PROJECTS

KEY MESSAGES

- Adoption of a Safe System goal for the long-term supported by short and medium-term quantitative targets provides the focus for achieving better performance.
- Adoption of a road safety target, and strategies and actions which seek to deliver it, indicates that a country has recognised that it needs to respond to fatal and serious injury crashes occurring on its road network.
- Meaningful target-setting requires competent data collection and analysis of risk using the collected data.
- Intervention selection should be guided by evidence of its likely effectiveness, assessment of likely community and government support, and whether the country has capacity to implement it.
- Absence of implemented policy or action (assuming awareness of the intervention) is often a clear indicator that there may be difficulty in introducing that action. A review of road safety management capacity and identification of gaps to be addressed is a critical first step.
- Implementation also requires identifying what changes to current operating practices within agencies will be required, what impacts of actions on other policy areas will need to be addressed, and the level of capacity needed to achieve successful implementation progress.
- Funding and implementation of a demonstration project to build capacity in LMICs is strongly recommended as a first step. This will enable later-stage target setting, strategy/action plan assembly and targeted outcome delivery to be achieved as successful demonstration project approaches are then rolled out across the country.
- The demonstration project should treat a high-risk corridor with a complete range of interventions across the road safety agencies, review selected policies, establish project management arrangements and monitor outcomes to establish progress.
- The demonstration project will develop capacities within agencies in LMICs (i.e. strong bureaucratic and political linkages; improved advocacy; strengthened road safety management, leadership and coordination; and extended technical knowledge).
- Strategies for the later growth and consolidation investment phases should be evidence-based and actions should be data-driven.
- It is recommended that time-limited targets for these investment phases be ambitious, but realistic. Substantial legislative actions will be an important vehicle to support policy change as part of medium-term strategy.
6.1 INTRODUCTION

This chapter outlines the timeframes for the setting of targets at the country level, the investment strategies and plans, including projects, required to deliver on these targets and the implementation challenges and prerequisite conditions involved in successful delivery. ‘Investment strategies and plans’ refers to the application of resources to implement specified strategies and actions, including policy changes and the term is used interchangeably in this chapter with ‘strategies and actions’.

Strategy-led targets are a powerful means to progress the road safety agenda, at national, regional and local levels. Better performing countries will take strategic action at all three levels. Setting of targets at an organisational (e.g. road safety agency) level is also useful in supporting achievement of national objectives.

Key Developments in Road Safety described the setting of challenging, achievable and measurable (quantitative) road safety targets in support of the long-term Safe System goal as international best practice and as an international success story. Once a country recognises that it can no longer accept the level of death and serious injury occurring on its road network, the common response is to make the decision to adopt a target and develop a supporting road safety strategy and plan (either a programme or a group of projects).

The approaches to target setting and associated investment strategy and plan development followed by HICs are usually more developed and typically build upon a more established road safety position than is feasible for most LMICs in the establishment phase of their road safety investment journey. This is due primarily to the differences in road safety capabilities and experience, especially in managing road safety activity, which exist between most LMICs and HICs, as well as an absence of reliable crash data. A different approach is required for most LMICs compared to that followed by most HICs (see Timeframes for target-setting and investment planning).

Investment strategies and plans required to deliver agreed targets need not only to be developed but also successfully implemented (see Investment Strategy and Action Plans Implementation). This is a substantial challenge.

It is useful to consider goals or targets being developed for three timeframes — there are long-term goals (i.e. elimination of fatalities and serious injuries), medium-term targets (e.g. the UN Decade of Action target of a 50% reduction in fatalities by 2020 from 2011); and short-term targets (i.e. reductions over a 3 to 5 year period). The setting of short and medium-term targets should always be considered as milestones on the journey to achieving the ultimate target of eliminating death and serious injury. Adoption of this long-term goal will shape actions planned and taken in the interim. The setting of quantified targets for these timeframes is discussed in Setting Targets.

Within any timeframe, targets can be set for final outcomes (the usual measure), for intermediate outcomes and for institutional outputs as defined in The Road Safety Management System. These options are discussed further in Performance Indicators.
HOW DO I GET STARTED?

The underlying objective for LMICs will be the development of capacity to manage road safety, through ‘learning by doing’. An important first step is identification of weaknesses within the road safety system (both for management and for risks on the network). This should be followed by adoption of a demonstration project – across the sectors – as an establishment investment phase to build technical and management knowledge. Adequate government commitment and funding will be critical.

This first step will enable informed later stage targets (for the medium and long-term timeframes) and strategies/actions (for the associated growth and consolidation investment phases) to be devised and implemented successfully, building – in the case of LMICs – on the roll-out across the country of the interventions piloted in the demonstration corridor, the implementation of key policy reviews carried out as part of the demonstration project, and the conduct of further reviews.

Funding and implementing a demonstration project (a multi-sectoral treatment of a corridor or urban area plus some key policy review activity) is the strongly recommended means to develop capability in whole-of-government road safety management for LMICs. It should be the initial action taken, following a road safety management capacity review.

For LMICs, a commitment to improving road safety outcomes may lead to an aspirational ‘top down’ target being adopted for the short-term (e.g. next five years) with recognition that delivery of that initial target will be most challenging. However, the prime focus must be on a demonstration project or projects.
6.2 TIMEFRAMES FOR TARGET-SETTING AND INVESTMENT-PLANNING

TARGET-SETTING TIMEFRAMES

Investment strategies and actions need to be adopted to support improved road safety performance and the achievement of targets – in the short-term (one to three years), the medium-term (three to ten years) as well as in the long-term (beyond ten years). For LMICs, steady progress through demonstration projects is the recommended option for the short-term, with or without an aspirational (notional) short-term target.

For both LMICs and HICs, thoughtful investment plans and strategies will be essential to achieve steady progress towards medium-term targets and eventually to move further towards the ultimate long-term goal (see The Road Safety Management System). An understanding of the relationship between investment phases and strategy timeframes is necessary.

Figure 6.1 The phases of investment strategy: World Bank Guidelines, 2009 Source: Adapted from Mulder and Wegman (1999).

The establishment (short-term timeframe) phase of road safety investment planning focuses on building core capacity to enable effective targeted road safety performance to begin and grow. The two key purposes of activity in this phase should be:

- setting up management and coordination arrangements for road safety;
- developing a performance management culture.

Demonstration projects offer the most effective means of delivering those outcomes through:

- activities delivered on specific road corridors;
- review of selected key policy issues.

This approach will create a platform of knowledge to support later scaling-up of investment in the growth phase to accelerate improved road safety performance. Much implementation delivery is dependent upon the ‘enablers’ of strengthened legislation, necessary data systems, and a range of tools and guidelines being in place. This takes time to achieve, but it is essential these matters receive attention early in the establishment phase to be in place to support later implementation phases.

Necessary data management systems and tools required to enable better planning for action on the
network are to be progressively identified and developed, as outlined in Effective Management and Use of Safety Data. Available capacity to utilise these tools and to put these systems in place, when they are developed, would determine the scope and timing of their introduction.

In the growth (medium-term timeframe) investment phase, key priorities are to develop a robust performance management framework for all agencies, with targeted safety programmes. For LMICs these would be based on earlier successful demonstration project interventions and project management learnings. These programmes would be rolled out across the country, especially across high-risk sections of the road network. Recommended changes from policy reviews undertaken in the establishment phase would also be implemented, and ‘enabling’ systems and legislation developed in the establishment phase would underpin implementation of key interventions proceeding. It will be critical that adequate funding is achieved for this phase to enable a major increase of intervention activity to occur. Earlier growth phase experience for HICs would guide their next growth phase steps.

In the consolidation (long-term) investment phase, key priorities are to ensure the performance management framework has been established in regions and districts, and to take all necessary measures to improve management and operational efficiency and effectiveness, while seeking opportunities for future safety innovations.

For the growth and consolidation timeframes, the necessary development of strategies to meet adopted targets will rely upon capacity being in place by that time to assemble meaningful proposals.

Table 6.1 indicates the recommended linkage between target timeframes and investment plan phases and provides an indication of the likely position (for targets and investment activity) in which most LMICs and HICs would find themselves at present.

<table>
<thead>
<tr>
<th>Target timeframe</th>
<th>Short term</th>
<th>Medium term</th>
<th>Long term</th>
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<tbody>
<tr>
<td>Investment (action) plan phase</td>
<td>Establishment</td>
<td>Growth</td>
<td>Consolidation</td>
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<td>Likely situation: most LMICs</td>
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<td>Likely situation: most HICs</td>
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Table 6.1: Target timing, investment plan phases, and likely LMIC and HIC situations
6.3 STRENGTHENING CAPACITY TO SET AND DELIVER TARGETS

REQUIREMENTS FOR EFFECTIVE ROAD SAFETY PERFORMANCE

Critical success factors (for HICs and LMICs) include a country’s ability to:

- analyse the current road crash situation (based on data as much as possible);
- identify its road safety issues;
- set meaningful road safety targets, and action plans with timelines and accountabilities to achieve them;
- obtain the funding, activate skilled resources, and deploy effective decision-making and consultation arrangements to support intervention delivery;
- implement effective interventions;
- regularly review performance.

Capacity review guidance (GRSF, 2009, 2013; see Institutional Management Functions in Management System Framework and Tools) recognises the need to develop capacity over time as a country moves from weaker to stronger institutional capacity, and to progressively apply this improving capacity. This of course has implications for the effectiveness of identified short-term actions. Development and attempted delivery of a short-term strategy in circumstances where knowledge and implementation skills are undeveloped are unlikely to provide meaningful results in the establishment phase (OECD, 2008).

Establishing the organisational structures and processes of countries that have been carrying out systematic road safety management for some time will not be achieved overnight in LMICs. Bliss and Breen (2012) indicate that achieving results will require long-term political will that is translated into road safety investments that are targeted across a range of sectors and in governance and institutions, infrastructure, vehicle fleets, licensing standards, safety behaviours and the health system. These are not trivial tasks. Adequate lead time for the development of organisational and staff capability is needed.

A guide to assist nations in Africa to improve their road safety capacity in order to develop a national strategic road safety action plan is described below in Box 6.1.
BOX 6.1: CASE STUDY – MANAGING ROAD SAFETY IN AFRICA: A FRAMEWORK FOR NATIONAL LEAD AGENCIES

The problem: Africa has the highest per capita fatality rate of road fatalities in the world, and is expected to worsen by the year 2030. The World Health Organization (WHO) estimates the rate of road traffic fatalities in Africa at 24.1 per 100,000 people, compared with 18.5 in Asia and 10.3 in Europe. While Africa has one of the lowest road network densities, 2% of the world’s motor vehicles and 12% of the world’s population, Africa experiences 16% of the world’s fatalities. There are twice as many fatalities caused by road traffic injury as deaths from malaria. Many road traffic crash victims are poor, or pushed into poverty as a result of a traffic crash. Transportation projects to address safety are generally small and not coordinated to achieve measurable safety results.

The solution: At a conference in Ghana in 2007, African Ministers responsible for Transport and Health committed to transportation and health services improvements to prevent road crashes. In 2011, the African Road Safety Action Plan 2011-2020 was adopted and endorsed by the African Union Conference of Ministers. This Plan establishes a framework for African countries to develop a road safety management system that guides them in becoming a national lead agency for improved road safety and public health in Africa. The purpose of the framework is to increase national capacity to address road safety problems. National commitment is required to spearhead a country’s efforts in addressing road safety and champion institutional management functions.

The outcome: The framework provides a tool for preparing a national strategic road safety action plan. The framework outlined in the Plan increases a lead agency’s strategic institutional management functions to generate a results focused approach to addressing safety problems, systematic data management processes, coordination among agencies and key partners to build understanding and support for road safety, effective legislation of roads, vehicles and road users including compliance and enforcement, allocation of sufficient funding and resources for safety initiatives, public education promoting road safety, monitoring of progress, and evaluation of successes. Lead agencies can use this tool to strengthen their ability to make better investment decisions focused on safety.

Source: SSATP Africa Transport Policy Program, 2014

The problem: Rapid motorization in Asia and the Pacific, especially the explosive growth in motorcycle fleets, is creating serious and growing road safety problems. The problem is particularly acute among Asian developing countries, in which road accidents are now already the second most important cause of premature death for the 5-14 year age group and the leading cause of death for the 15-44 year age group, the most economically productive segment of the population. Road accidents have major impacts on the health, poverty, social development, and economies in the countries of Asia and the Pacific. In the 10 country ASEAN region, road accidents cause over 106,000 deaths and over 5.7 million injuries each year (based on 2008 data).

The solution: This project builds on previous successful work by the ADB for ASEAN countries. The following tasks are being undertaken:

(i) identify training and human resource needs across the region;

(ii) identify locations where joint train-the-trainer courses, research, and safety initiatives can be developed for application across ASEAN countries;

(iii) develop a series of train-the-trainer courses covering the key issues (e.g., motorcycle safety, data analysis, traffic police enforcement). Following initial training of the trainers in a central course, they will be assisted to run the initial in-country courses and demonstration projects to establish such courses in each country;

(iv) assist countries to develop and implement demonstration and pilot projects;

(v) develop training materials and manuals centrally by bringing key international and local ASEAN experts together to modify and adapt such materials from other countries for application in ASEAN countries; and

(vi) coordinate closely with the private sector, nongovernment organizations, and other agencies involved with road safety to maximize project effectiveness.

The outcome: The outcomes from this project are expected to include (i) strengthened capacity to monitor and analyse road accident data, (ii) strengthened capacity to implement road safety strategies, (iii) strengthened capacity to address motorcycle safety issues, (iv) improved enforcement capacity of traffic police, (v) a pipeline of road safety projects, and (vi) knowledge products disseminated publicly.

Source: ADB

As recommended in Institutional Management Functions in Management System Framework and Tools, the first step for LMICs in establishing their road safety activity (their establishment investment phase) will be to prepare demonstration projects rather than embark on ambitious national road safety plans and aspirational targets which are more appropriate for the growth investment phase in the medium-term.

They will need to actively build their knowledge and management capability as the first steps to giving effect to that project and to its ongoing expansion to a broader scale across the country. This experience will progressively develop the capability necessary to set future targets and supporting strategies and plans.

The use of suitable demonstration projects by LMICs is discussed in detail in Demonstration Project for the Establishment Phase in LMICs in Investment Strategy and Action Plans Implementation.

It is important to note that a demonstration project must be carefully adapted to each country. Even though the project will generate expertise it is vitally important to prepare an ongoing programme for future actions, based on each country’s capacity. In that way, a ‘permanent’ capacity can be generated in order to carry out the road safety improvements.

For HICs, demonstration projects across road safety agencies that trial innovative treatments can also be an effective way to prepare for wider roll-out. It can strengthen institutional leadership and capacity, including knowledge and delivery partnerships. Projects of this nature provide a focused opportunity; for example, the chance to trial and embed Safe System approaches within new strategies and within the practices of the road safety agencies.
6.4 ASSESSMENT OF A COUNTRY’S ROAD SAFETY PROBLEMS

IDENTIFYING SPECIFIC NEEDS AND OPPORTUNITIES IN THE MANAGEMENT SYSTEM

Issues will exist in all countries across their management system, in the results achieved to date, the scope and quality of the interventions applied, and in institutional management capacity. Results will reflect the interventions introduced and the effectiveness of that set of interventions, as determined by the extent of critical supporting systems in place. This will include the commitment to funding; the extent of relevant legislation; and the level of deterrence in place, including enforcement and justice system support.

Adequacy of road safety management arrangements in linking agency heads with ministers is essential to achieving good performance, as outlined in The Road Safety Management System and Box 6.3 indicates the importance of strong linkage between the bureaucracy and elected members and Ministers in a country.

BOX 6.3: GOOD PRACTICE COORDINATION AND DECISION MAKING ARRANGEMENTS FOR ROAD SAFETY

A coordination framework that links road safety senior managers through executive management, across relevant sectors, to a group of ministers meeting regularly - which makes operational decisions at lower levels and formulates policy recommendations for, and reports on strategy performance to ministers - reflects the necessary systematic view of road transport operation and its professional and political challenges. Provision for public inquiry at parliamentary level and broad consultation arrangements with stakeholders, including special interest groups, are recommended. Model Jurisdictions: Victoria, Japan, New Zealand, Norway, Western Australia, Sweden, The Netherlands.

Source: PIARC (2012).

Further key questions that need to be considered are:

- Is there supportive research and development available, working with the agencies to support problem definition, targeting of issues, and evaluation of outcomes through evidence-based intervention design?
- Can the country answer questions such as: ‘what are the major serious crash types?’; ‘what are the major serious crash risks by type and location?’; ‘what are the highest serious casualty crash road lengths?’; and ‘what can be done to more accurately quantify these?’ before considering potential solutions and the likely barriers to implementing these solutions?
- How is road safety management influenced by the political model and the legal system within the country, as well as historical and cultural practices?
- Are the coordination, leadership and decision-making arrangements across government agencies adequate to achieve agreed problem definition, to develop a range of potential interventions, to gain political support for these actions in a prioritised way (see Box 6.3 above) and to implement them successfully?
- Are measures in place to build provincial and local government capacity to improve road safety outcomes?
• How can knowledge and institutional management capacity be strengthened over time through ‘learning by doing’?

UNDERSTANDING EXISTING NETWORK-LEVEL CRASH RISKS

Capacity to identify network-level crash risks is critically important. Countries face a variety of road safety challenges on their networks. HICs have high light passenger vehicle motorisation rates, while LMICs usually experience high two-wheeler motorisation rates, high roadside pedestrian volumes, and high proportions of heavy vehicles (trucks and buses) in the vehicle fleet.

Issues influencing comparative crash risks on networks in different countries include:

• the levels of safe infrastructure provision;
• the safety levels of the vehicle fleet;
• the mix of vehicle types using the network;
• the levels of road user compliance with the laws and road rules (respect for the rule of law);
• the controls on drivers and vehicles entering and remaining on the network;
• the emergency medical management of crash victims.

As an infrastructure safety example, there will be different proportions of total traffic volumes operating on high quality motorways in different countries. These roads have lesser crash risks (per unit of travel) than single-carriageway roads. This is an example of the very different problems that countries can face and which they need to better understand in order to prepare plans to address the problems.

Understanding the relationships between road safety performance and road safety conditions (e.g. abutting land use and roadside access control; road and roadside safety features; vehicle type, mix and safety standards; travel speeds; driver and rider compliance with road laws; quality of road laws; novice driver licensing requirements; and emergency medical management in a country) is a critical requirement for assessing underlying crash risk on the road network and in taking action to reduce the risks.

Two landmark European studies — The SUNflower (Sweden, UK and Netherlands) and the SUNflower +6 (the original three countries, plus Czech Republic, Hungary, Slovenia, Greece, Portugal, and Spain) studies, assessed many of these conditions and provided useful insights into this road safety performance/underlying conditions relationship in different countries (see Box 6.4 for the SUNflower three countries findings and Box 6.5 for the SUNflower +6 countries findings. Note that these comments refer to conditions in the years before 2005).
British risks are highest for pedestrians and for motorcyclists, but lowest for car occupants, compared to the other countries. Factors that may explain these risk differences include the higher traffic density on British roads, the greater use of roundabouts at junctions, and the lower average speed on main inter-urban roads.

Car occupant risk is highest in Sweden. Factors that may explain this are the higher Swedish average speed on main roads despite lower speed limits, lower traffic density, and lower speed limit enforcement level.

For the three countries, the risk on motorways is almost five times lower than on other roads; this risk differs slightly in the three countries (2.0 per billion vehicle kilometres in Britain versus 2.3 in the Netherlands and 2.5 in Sweden).

The risk on Dutch roads other than motorways is about one-third higher than the risk on these roads in the other countries. Factors that might explain this include: higher exposure and risk to moped riders, higher cyclist exposure, lower seatbelt use, and higher junction density.

Britain needs to find an infrastructure solution that will enable pedestrian and vehicular traffic to co-exist at lower fatality levels; for example, by extending the length of urban roads with 20 mph (30 km/h) speed limits.

It is noted that many of the report recommendations, including those above, have since been implemented in the three countries, with positive results achieved.

Source: Koornstra et al., 2002)
This box illustrates the differences in underlying conditions and risk between (A) three Central European countries (Hungary, Czech Republic and Slovenia) and the original SUN study countries of Sweden, UK and Netherlands and between (B) three southern European countries (Greece, Spain and Portugal) and the original SUN study countries.

(a) Hungary, Czech Republic and Slovenia

Development of road safety in these countries varied considerably. Results reflected differences in national road safety management and enforcement strategies.

Improvement in Slovenia over the decades to 2003 was likely to have been a consequence of a) early introduction of several road traffic regulations, b) their effective enforcement, c) extensive construction of new motorways and expressways, d) the considerable upgrading of the vehicle fleet, and e) the introduction of several traffic calming measures and general improvement of infrastructure safety standards of roads.

Slovenia benefited from more flexible and effective road safety policy at national and regional level, with defined targets distributed among stakeholders.

For all three countries, safety performance benefited from: extension of the motorway network in the 1990s shifting traffic onto a relatively safer road type, and wide implementation of low-cost safety measures in municipalities (roundabouts and other traffic calming elements) where implementation has solely been based on local decisions.

Progress of the three countries compared with targets set, was rather slow. ‘Moreover, improvements in road safety organization, management and cooperation among all stakeholders, together with provision of sufficient resources, seem to be crucial for further development’.

(b) Greece, Spain and Portugal

All three countries published a plan covering a period of three or more years (including the year 2005) that set quantified targets for a reduction in the number of road fatalities, a relatively new aspect of road safety in the Southern countries studied. The targeted reductions for Portugal were ambitious, proposing a halving of road deaths by 2010, whilst those for Spain were in line with the European overall projection (EU White paper) and those for Greece were more modest.

The organization of safety activities at a central level shows a lead ministry engaged in both the development of policies across the territory as well as the coordination of activities across various ministries. In Spain, some of the regions have assumed the lead for organizing some road safety matters.

For these countries, vertical coordination of safety activities from central and regional to the local level is not well-developed.

(c) Summary for All SUNflower +6 countries

For some countries the changes identified were related to important political changes (e.g. Portugal, Hungary, and the Czech Republic). The same picture can be seen in these countries as for the SUN countries: an increase in motorised traffic resulting in a growing number of casualties. These growing numbers led to increased attention on road safety, leading to new road safety policies and
An understanding of the scale of existing problems in a country requires availability of relevant data. More accurate and extensive data will likely lead to more accurate assessment of problems and development of solutions to address these problems. The value of extensive and accurate data being available has been demonstrated in *Effective Management and Use of Safety Data*. OECD (2002) emphasised the benefits of road safety visions, targets and plans, which are underpinned by comprehensive crash and other data. It argued that without an evidence-based planning approach with clearly stated objectives it is unlikely that an effective strategy can be developed or implemented. As indicated in *Effective Management and Use of Safety Data*, lack of data makes it difficult to highlight road safety as a priority for action at the strategic level or to have a consistent evidence-based approach to problem identification and specific countermeasure development and implementation.

Development of reliable national and local systems for collection of reliable crash statistics as outlined in *Effective Management and Use of Safety Data* has to be a leading priority. While good data systems are essential to measure crash occurrence and identify key risk factors, OECD (2008) stressed the need to also measure intermediate outcomes (such as mean free speeds, speeding offence levels, alcohol impaired driving rates, seatbelt wearing rates, network route safety level ratings, vehicle fleet safety ratings) and changes in these measures over time (see *Performance Indicators*). Other major influences on road safety outcomes (e.g. travel growth, alcohol consumption trends, heavy vehicle, motorcycle and moped growth) also need to be measured. Competent analysis of these data is a critical requirement to guide action in the medium-term.

Indications of the challenges faced in understanding network-level crash risks as illustrated in Figure 6.2.
This demonstrates the inherently unsafe condition of the infrastructure, the unrestricted access to it from the roadside, and the overall poor level of management of road safety on this section of the road network. It is a situation which occurs in many countries across the world.

There are many other common high crash risk environments. For example, crash risk is substantially increased when median openings are provided on major arterial roads with no provision made to protect turning vehicles from rear-end collisions, and no protection provided for oncoming vehicles in the other carriageway, or for turning vehicles moving into, or across, the other carriageway. Major negotiation with landowners who typically demand access to their businesses, or with road users wishing to have a convenient U turn facility, would be needed to achieve reduction in crash risks of this type. The prevalence of this condition indicates the difficulty faced by road authorities in changing community responses to circumstances of this nature.
6.5 INVESTMENT (STRATEGY AND ACTIONS) PLANS AND IMPLEMENTATION

STRATEGIES AND ACTIONS

Both strategies and actions are investment plans. However, Austroads (2013) notes that there is a considerable difference between countries as to what is included in a strategy document and what is included in action plans. It notes that one key point of difference is the level of detail on specific measures. Some include greater detail within the strategy, some leave detail to the action plans, while others provide detail for the initial period of the strategy (e.g. the first two years), but rely on action plans (reviewed perhaps every two years) to supply detail for later stages of the strategy. It concludes that there is no answer as to which is the best approach on this issue. The important point is that the strategy should allow enough flexibility to address any specific problems that arise as the strategy unfolds (for instance, in light of new information on potential problem groups), changes in the political environment (including changes in funding or priorities), or with the emergence of new techniques with which to address risk.

ACHIEVING RESULTS IN THE ESTABLISHMENT PHASE

Adoption of establishment phase actions requires countries to consider what constitutes a challenging level of ambition (i.e. target) for that short-term time period. Actions that can be taken in order to address any adopted short-term targets will vary considerably between countries:

- There will be substantial differences between HICs and those LMICs introducing the Safe System approach for the first time and implementing a demonstration project for a new intervention.
- LMICs will need to build initial capacity, while those HICs who have previously established knowledge and road safety management skills and experience, will have a more limited additional capacity building challenge as they will effectively be approaching the growth phase (see Achieving Results in the Growth and Consolidation Phases in Investment (Strategy and Actions) Plans and Implementation).
- While the UN Decade of Action encourages a 50% reduction in fatalities from 2011 to 2020, most LMICs are experiencing increasing motorisation rates and their road safety management knowledge and coordination is at ‘entry’ levels (see Target-setting Approaches in Setting Targets for LMICs and short-term target setting).
- Ideally there will be a focus in LMICs on developing and implementing demonstration projects which will build knowledge, confidence and competence in implementation. The scope of demonstration project actions in the initial years should not be too complex, in recognition of existing capacities.

In LMICs, demonstration projects and other means, including ongoing strengthening of existing road safety activities and the development of digital data systems for licensing and offence records (and their linkage) will be a challenging, gradual but rewarding process. Improvements to public sector governance and the implementation of the supportive, enabling systems necessary to underpin good public policy and good road safety performance, will take considerable focused effort over a number of years.

These are substantial challenges. This is not to discourage immediate action, but there needs to be a realistic sense of what can be achieved in the short-term. This will depend heavily upon:
- the level of resources;
- the advisory expertise marshalled in support (particularly for overall project management and administration);
- the outcome focus of the activity;
- the extent of high-level commitment to achieving change and performance improvement.
It is also vital that actions which increase road crash risks are not taken, even if the outcome is unintended. Box 6.6 details the unanticipated impact of resurfacing of roads leading to higher travel speeds and therefore increased fatalities in the former East Germany before remediation measures were taken.

**BOX 6.6: STATE OF BRANDENBURG, GERMANY, EARLY 1990S**

The experience of the German State of Brandenburg in the years immediately after German reunification is relevant for other emerging countries. Initially there was:
- little road safety experience within the road authorities;
- a high proportion of old/unsafe vehicles on the network;
- many novice drivers with little pre-licence supervised driving experience;
- police reluctance to actively enforce road rules due to historical links to the former political system.

An early action reflected the lack of available knowledge. A programme of new asphalt resurfacing of existing roads without corresponding safety mitigation measures resulted in increased speeds and greater numbers of fatalities. Time was required to identify appropriate road safety actions. Within a few years road safety success was eventually achieved, with a reduction of 72% in severe accidents and 81% in fatalities within 20 years in a sustainable way.

*Source: Wenk & Vollpracht (2013).*

For all countries, there are known interventions, which if implemented effectively, will deliver results (see Intervention Selection and Prioritisation). These interventions include: safer speeds, improved seatbelt wearing, reduced drink driving, improved safety of road and roadside infrastructure, promotion of the benefits of safer vehicles to the public, improving safety for vulnerable road users (pedestrians, two-wheeler riders, cyclists) and improved medical management after crashes occur.

These recommended measures are applicable to all countries. However, there are further measures which would be relevant in targeting improved safety in LMICs. These measures include: safer heavy vehicles (trucks and buses), safer heavy vehicle driver compliance with road rules, and further two-wheeler measures including a focus on helmet wearing and provision of separate roadside lanes (or at least hard shoulder provision) on rural roads.

The challenge in LMICs is to achieve the preconditions necessary to deliver these outcomes. This usually requires a number of years of effort. Road safety improvement is a continuous process requiring ongoing commitment.

It is essential that the focus on improving institutional management capacity to deliver improved road safety outcomes is not lost in the consideration of potential interventions in LMICs. This strengthening is critical to supporting an ability to implement effective road safety measures and is the major road safety challenge in all countries.

For LMICs, actions rather than comprehensive road safety strategies (which will be developed in future years) will be most useful in guiding early-stage (establishment phase) road safety activities. Strategic intent – adopting Safe System principles, strengthening management arrangements, acquiring knowledge, and establishing research capacity, will be required. However, production of an implementable highly-developed road safety strategy and achievable target from the beginning is unlikely to be a feasible objective.
DEMONSTRATION PROJECT FOR THE ESTABLISHMENT PHASE IN LMICS

As outlined in [link1164]The Road Safety Management System[/link], a road safety demonstration project would be developed and implemented as a first step in LMICs. Projects could be multi-sectoral activities on selected road corridors or in specific urban areas, and they could also include selected jurisdiction-wide road safety policy reviews. All require coordinated action, by and across the road safety agencies, but with projects at a smaller and more manageable scale than for the complete country or for all potential policy reviews. Note that the term ‘demonstration project’ is sometimes used to describe a small-scale trial of a specific treatment type (e.g. a new innovative treatment). Advice on these and other lower cost approaches is provided elsewhere in this manual (see from [Infrastructure Safety Management: Policies, Standards, Guidelines and Tools]). The term is used quite differently in this section, with the key distinction being the scale and multi-sectoral nature of the approach, and the capacity development focus (as described below).

Capacity needs to be progressively developed, with coordination and decision-making mechanisms agreed to between the road safety agencies, and then successfully introduced and experienced on a day-to-day basis. Links up to decision-making at the political level (between Ministers) need to be achieved. In this environment of unavoidably slower development of understanding and capacity, most benefit will be derived by ‘learning by doing’.
The key deliverable would be improved capacity of the country’s road safety agencies to deliver road safety improvement. It would also provide a clear message to the community that improved performance is achievable. Box 6.7 outlines the high-level objectives of Safe System demonstration projects.

**BOX 6.7: WORLD BANK SAFE SYSTEM DEMONSTRATION PROJECTS: HIGH-LEVEL OBJECTIVES**

The generic high-level objectives of demonstration project programmes are to:

- target road safety results in selected high-risk, high-volume roads/areas for the long-term and the interim;
- provide dimensions for new quantitative target-setting, business cases, roll-out;
- provide opportunity, focus and mechanisms for policy development and policy pilots;
- aid institutional strengthening, especially lead agency delivery, coordination and multi-sectoral partnership working, monitoring and evaluation, and knowledge transfer;
- enhance political, professional and public acceptability of important interventions.

*Source: GRSF (2013).*

Projects need to include critical, basic and coordinated on-road corridor treatments such as the enforcement of laws, the identification and treatment of blackspots or high crash risk sections, improvement of the emergency medical management systems for post-crash care, and public information programmes to raise awareness of what is being done and the benefits it will bring.

Policy development components of demonstration projects (separate from the corridor actions) will usually include some of the following: new driver licensing procedures and policies, including testing; improved vehicle safety policies; strengthened road safety rules and regulations; and improved licence and vehicle and traffic offence data systems and their linkage. The resourcing, guidance and persistence needed to achieve even small changes in approach by the agencies will be substantial. Experience has shown that the level of effort required for this is consistently under estimated and under-resourced. Suitable selected demonstration projects are a recognised means of building the ability to deliver improved road safety through developing necessary skills, knowledge and commitment for later broader system-wide application.

The measurement (both baseline and ongoing) and monitoring of intermediate outcome performance is an essential component of demonstration project activity and is important for the later phases of broader road safety activity. In summary:

- The collection and monitoring of survey data for intermediate outcome factors, as outlined in Performance Indicators, will provide a means of measuring progress over time, reliable predictions of likely changes in fatalities and serious injuries and will encourage awareness and insight.
- Measurement should start before any demonstration project is implemented, to establish a baseline condition.
- Overall road safety outcomes will also be influenced by other factors such as traffic growth, change in traffic mix, etc.
- Monitoring and evaluation is a powerful measurement approach for all countries. It will provide reliable feedback to those conducting on-the-ground operations targeting improved safety outcomes.

While detailed digital crash record databases may not be in place, the level of overall fatalities can be collated from local police records and hospital records for the demonstration project corridor activity, and usually (with effort) for a larger area. The country would then be in a position to assemble the evidence base to assess demonstration project benefits and this would support a broad roll-out programme for the
subsequent medium term or growth phase.

Detailed project objectives and project components for a road safety demonstration project, drawn from recommendations for the establishment phase arising from a typical recent World Bank road safety management capacity review, are set out in Table 6.2 and Table 6.3.

**TABLE 6.2: DETAILED OBJECTIVES FOR A SPECIFIC DEMONSTRATION PROJECT**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Strengthen road safety management capacity in Country A to deliver a demonstration project. Establish road safety decision-making arrangements at executive and working group level of the key agencies, and consultation arrangements with stakeholder groups/experts</td>
</tr>
<tr>
<td>2</td>
<td>Designate a lead agency to conduct the demonstration project and specify its formal objectives, functions and resourcing requirements. This will include a small road safety cell to provide advice and secretariat services to the coordinated decision-making of project partners.</td>
</tr>
<tr>
<td>3</td>
<td>Develop and implement interventions by the sectors in a selected corridor. Monitor and measure changes in road safety performance.</td>
</tr>
<tr>
<td>4</td>
<td>Identify and conduct selected policy reviews to address key road safety priorities. Make recommendations to improve road safety results.</td>
</tr>
<tr>
<td>5</td>
<td>Accelerate road safety knowledge transfer to strategic partners.</td>
</tr>
</tbody>
</table>

These five objectives are interrelated and mutually reinforcing. The aim is to create a joint project which encourages agencies to work together constructively to: deliver (and then evaluate) a set of well-targeted, good practice interventions across the sectors in identified higher-risk corridor(s); conduct further policy reviews; and accelerate road safety knowledge transfer. It is anticipated that the road safety demonstration project may typically cost around US $20 million (and at least $10 million as a minimum), have four major components and be implemented over a fouryear timeframe (see Table 6.3).
<table>
<thead>
<tr>
<th>Component</th>
<th>Typical US $m.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  A resourced project executive committee to lead and manage components 2,3 and 4</td>
<td></td>
</tr>
<tr>
<td>2  Interventions in high-risk, high-volume demonstration corridors (urban and rural sections) with monitoring and evaluation systems in place.</td>
<td>19.0</td>
</tr>
<tr>
<td>3  Policy reviews of road safety priorities, e.g. from projects such as driver licensing standards; heavy vehicle safety; safe infrastructure design, operation, management standards and principles; crash investigation capability strengthening for Police; developing road safety research capability; penalty frameworks for offences</td>
<td>0.4</td>
</tr>
<tr>
<td>4  Building knowledge through technical assistance, study tours to other countries, and a fully resourced road safety group (or cell)</td>
<td>0.6</td>
</tr>
<tr>
<td>TOTAL</td>
<td>20.0</td>
</tr>
</tbody>
</table>

The recommended scale of demonstration projects is around this amount and timescale because minor funding is unlikely to realise benefits described earlier in this section. The substantial change in the management of road safety from individual agency ‘best efforts’ to a coordinated and well led whole-of-government management approach, which builds the skills necessary to manage a whole of country improvement, requires significant investment and leadership. Governments and funding agencies need to recognise this requirement. An example of a demonstration project is provided in Box 6.8.
A corridor demonstration project is underway in Kerala, India. The corridor which is to receive a major safety performance upgrade through multi-sectoral efforts is an 80 kilometre length of MC Road, a State Highway, from Kazhakkootam to Adoor. This major highway passes through some rural areas, but there are many towns and much urban (ribbon) development along its length.

The three-year project has a budget of some US $14 million and is funded by the Government of Kerala and the World Bank. The project planning commenced in late 2014. Development of institutional capacity to deliver the project across the road safety agencies is underway and it is planned that intervention design, necessary training and procurement will commence at the one-year mark of the three-year project. It is intended that the full-scale implementation will be ready for roll out from the mid-point of the three year project. Various agencies are involved through a Management Group, which reports to the Kerala Road Safety Authority (KRSA) Executive Committee. These agencies include Public Works, Motor Vehicles, Police, Health, Education and the KRSA itself, which is being strengthened to provide facilitation and support to the other road safety partners. District councils (local communities) will also be fully consulted on proposals.

Interventions are to be based on application of Safe System principles and will include safer infrastructure safety treatments such as:

- shoulder widening to provide for safer motorcycle use;
- intersection treatments such as traffic signals, smaller roundabouts and channelization;
- curve alignment markers and other advisory signage;
- line marking, guideposts and reflectors;
- roadside barrier;
- footpath provision;
- pedestrian crossing treatments such as raised platforms, signals, advance signage and lighting in the towns;
- review of speed limits to meet Safe System principles, especially in towns and at schools;
- extended use of existing technology to improve vehicle speed compliance and curtail unsafe overtaking on curves.

Other non-infrastructure measures include a review of incentives which encourage unsafe bus driver behaviour, enforcing adequate lighting on vehicles, enforcing wearing of helmets and seatbelts, improved ambulances for retrieval of crash victims and more rapid conveyance to the major hospitals along the route which are to be better equipped to handle road trauma.

Campaigns are being planned to advise the community of the project purpose, with the intention of obtaining its support for the project and the changed behaviour required to be supported through enforcement.
ACHIEVING RESULTS IN THE GROWTH AND CONSOLIDATION PHASES

For the growth and consolidation phases of investment, development of comprehensive strategies and action plans will be necessary and there will be capacity available by then to build meaningful proposals which can be fully assessed for their likely contribution to proposed targets. In the later part of the growth phase and beyond, the estimated aggregate impact of implementable actions can be utilised to provide a target (see Setting Targets). This is applicable to HICs and to LMICs.

The availability of developed capacity, data and tools is essential to enable analysis of risk and selection of relevant interventions to be carried out. A major crash risks analysis, within say, a ten year strategy, should be conducted at least every two years and inform ongoing action plan renewal.

Analysing crash outcome risks by type of crash, type of behaviour, type of road user, type of road, identified higher-risk locations, type of vehicle, potential impact of improved post-crash care, and other factors, will guide development of countermeasure strategies and actions.

Interventions (i.e. countermeasures) to address the identified risks in the growth and consolidation investment phases can be developed based on evidence from demonstration projects and other jurisdictions, as well as from research. The Austroads Guide to Road Safety Part 2 (2013) provides a conceptual framework for countermeasure selection, based on the Safe System approach, and sets out steps for:

- matching countermeasures to problems;
- assessing whether particular countermeasures are likely to be successful;
- the likely returns on investment;
• the capacity to deliver particular countermeasures.

Basic evaluation techniques and the economic measures (benefit-cost ratio, net present value and first year rate of return) are described, and the importance of public acceptability and favourable benefit-cost outcomes are discussed.

ABILITY TO IMPLEMENT INTERVENTIONS FOR THE GROWTH PHASE

In HICs and LMICs there will be many potential interventions which can be applied in the growth phase and beyond. Later chapters address road safety engineering interventions in detail (see Intervention Selection et Prioritisation), and other interventions (such as improved road user behaviour through legislation, enforcement, and licensing; improved vehicle standards; and improved post-crash care) are also important.

These measures have proven to be effective in many different countries. It will be necessary to determine what measures can be put in place to target the major crash risks in a country, and to then implement these. This requires data, analysis skills, knowledge of potential interventions, and experience in guiding initiatives through legislative and policy development processes, particularly at the political level. Lack of capacity to implement known effective interventions is a major constraint in many countries, especially many LMICs.

Solutions do exist but, as an example, the linkage between the overall problem at a country level and specific initiatives may not be well-recognised. Forums or workshops for exchange of information between states or regional areas in a country, or between countries, are one recommended mechanism to increase awareness of the connection between potential actions and higher-level strategic direction. When this activity focuses on implementation experiences in various states, with practical issues and elements discussed, there will be good prospects for successful knowledge exchange.
6.6 SETTING TARGETS

TARGET-SETTING APPROACHES

Target-setting can be informed by the estimated outcomes of agreed action plans. Alternatively (and most commonly) targets can simply be aspirational in nature.

Most HICs will have adopted a national road safety target for a five to ten year period. The associated strategy (investment plan) for achieving the target is likely to be supported by action plans with a two to three year life, which enable periodic review and adjustment to be made to priorities over the life of the strategy and target.

In some cases the target will be a top down declaration of aspiration with necessary strategy and actions to achieve it to be determined promptly, progressively implemented and with progress regularly reviewed.

Top down target-setting, such as applying the Decade of Action 50% fatality reduction target for the period from 2011 to 2020 (see Typical Numerical Targets Adopted - Examples in Setting Targets for more detail), is much more likely to be applied in LMICs, as there is often little other evidence-based information on which to start their road safety journey. However, this aspirational approach can often lead to disappointing short-term and medium-term results.

For HICs that have good crash data, an understanding of the problems, knowledge of potential solutions, and good resourcing (in breadth and depth) in the agencies and the research community, more specific targeting can be developed. In some HICs, the target is based upon a negotiated set of strategic actions with a calculated (estimated) impact on fatalities and serious injuries. There will be linkages between the bureaucracy and the political level for discussion and resolution of potential implementation issues (often beyond transport impacts) that could otherwise derail/block initiatives - before target (and associated strategy) adoption and publication. This can be considered bottom up target setting.

Bottom up modelling of potential strategy achievement in order to develop a quantitatively-based target is a tool used in a number of leading jurisdictions. Modelling (Austroads, 2013) generally aims to determine current trends in crashes based on recent events to consider road use over time, and any potential changes to road use patterns (e.g. from changes in traffic volume or composition arising from economic growth), as well as make assumptions about likely future casualties given these forecasts. This enables the estimation of a baseline forecast, which shows the expected change in casualties over the life of a strategy if no further action was to be taken.

This is often known as a business-as-usual case and is an important step in the modelling process. Without this business-as-usual estimate, it would be impossible to predict the gains in road safety as a result of any planned initiatives. This baseline case allows for changes in population growth, increases in exposure on the road network, as well as various economic factors.

The effects of these forecasts on broader transport objectives need to be examined, particularly those relating to community health, e.g. changes to travel mode, impacts on levels of activity, or environmental impacts (Racioppi et al., 2004). There may also be a need to link with other sectors, particularly the health sector, to determine other policies that may impact on the baseline forecast.

While this bottom up approach is a powerful way to foster informed discussion about the options available, it is of course no guarantee of acceptance of the proposed actions at the political level. Leaders may not support actions proposed as necessary to deliver a more ambitious target.
Whether the top down or bottom up approach is used to produce a target, this knowledge and experience will underpin strategy and action plan development and implementation. Either approach is capable of supporting improved road safety performance. However, as noted in *Strengthening Capacity to Set and Deliver Targets*, until sufficient capacity to manage road safety is in place in a country, it is unlikely that a bottom up approach will be feasible. For this reason, Table 6.4 indicates that for the ‘establishment’ and early ‘growth’ investment phases a top down approach to target setting is likely to be the only feasible option for LMICs. However, it will be aspirational with little chance of success.

<table>
<thead>
<tr>
<th>Investment (action) plan phase</th>
<th>Establishment</th>
<th>Growth</th>
<th>Consolidation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top down</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Bottom up</td>
<td>X</td>
<td></td>
<td>✓ (For early growth stage)</td>
</tr>
</tbody>
</table>

Table 6.4: Feasible target setting options

While LMICs could usefully base any short-term target they adopt on the five to ten year targets currently being adopted by good practice countries, there are major shortcomings in doing so:

- In many LMICs, fatalities and serious injuries are continuing to increase as motorisation growth continues.
- LMICs (as noted earlier) do not have the building blocks in place in their investment establishment phase to take the necessary action to achieve change which is being proposed in the HICs, who are mostly in the growth, or even consolidation, phases.

LMICs may wish to indicate a short-term target in the initial years of investment establishment as this aspiration may drive improvement. However, they need to recognise that it is highly unlikely that any targets can be achieved until their capacity to manage road safety is strengthened.

Regional/state and local plans and targets should reflect the adopted national approach, with variations for local circumstance and intent. In this way, a more consistent understanding by the community, road safety practitioners, and politicians at various levels of government can be established. However, target-setting at the local level (as distinct from the regional/state level) is likely to be problematic as the data, resources and level of expertise are generally not readily available. Therefore, national or state targets are often adopted.

**CASE STUDIES – TARGET-SETTING**

A bottom up approach to interim target-setting was followed in the state of Western Australia (Box 6.9).
The state of Western Australia (WA), Australia, developed a Safe System based road safety strategy for the period 2008 to 2020. A mathematical model was developed to provide the projected benefits of implementation of a combination of best practice Safe System countermeasures. Various options and combinations of benefits derived for a range of policy and funding choices were provided to the public through a comprehensive public consultation programme as the strategy was developed.

Australasia’s Safe System philosophy aspires in the long-term to prevent death and serious injury within its road transport system. The Western Australian approach asserts that new fundamentally safe road designs will result from viewing the safety of the road transport system in this light. These safe designs and protocols for operation can shift system safety a large step forward in contrast to the incremental progress characterising traditional approaches.

Using evidence-based estimates of effectiveness and recent crash data for WA, the model forecast future savings in serious casualties for each year from 2008 to 2020. These predicted savings were summed over the strategy life for each initiative, assuming it alone was implemented. A full range of best practice Safe System options drawn from combinations of safe roads and roadsides, safe speeds, safe vehicles and safe road use, were prepared for comparison of serious casualty savings. The predicted total number of serious casualties prevented over the life of the strategy was the principal measure of option worth. These savings were estimated relative to the level of serious casualties that could be expected to occur in the absence of a significant road safety strategy. (Offsetting allowance was made for the combined effect of traffic growth and serious casualty reduction due to increased motorisation, and for the impact of potential delays in implementation of a measure). The model produced the following two key outputs:

1. the estimated total number of serious casualties which would be saved over the life of the strategy;
2. the percentage reduction in serious casualties which would be achieved in the final year of the strategy compared with the most recent starting or baseline year for which data were available.

An optimal combination of these Safe System based initiatives was proposed. If adopted fully, this combination of measures was estimated to reduce annual serious casualties in WA by around 50% of 2006 levels by 2020.

**Source:** MUARC (2008).

Top down or aspirational target-setting is the most widely used method – and it is the only feasible approach which can be used in the establishment phase. It can also be used effectively for the growth and consolidation phases. For example, Sweden operates a mix of top down and bottom up approaches to interim road safety target-setting (**see** Box 6.10).
In 2012, Sweden conducted a review of its 2010 to 2020 strategy and its (then) current interim targets and performance indicators to ensure that the interim targets for road safety remained challenging and realistic. Reductions in fatalities in the three previous years (to 2012) had exceeded earlier predicted outcomes and progress towards 2020 targets.

Agencies meet six times a year to monitor road safety performance against agreed objectives and targets to 2020, share knowledge and coordinate efforts. The then current goal for road safety specified an interim target for a 50% reduction in fatalities and a 25% reduction in the number of serious injuries between 2007 and 2020. Measures to improve road safety for children were to be given special priority. Since these interim period targets were adopted, progress has been managed and monitored on the basis of 13 agreed performance indicators. The results have been analysed, presented and discussed at annual conferences since 2009. The 2011 review analysis considered future options and past recent trends in performance, and showed that current targets for the maximum number of fatalities in 2020 will be achieved due to vehicle and infrastructure trends that can be predicted until 2020. This is without the contributions expected from other measures (i.e. users, speeds, post-crash care and more). The greatest improvement will be for protected road users.

The analysis shows that it would be possible to strengthen the targets to a 50% reduction of fatalities and 40% for very severe injuries between 2010 and 2020. But that would require measures above and beyond those that are included in the prediction, corresponding to approximately 70 fewer fatalities and 210 fewer very severe injuries on an annual basis. The diagram below shows alternative targets for trends in fatalities in road traffic until 2020.

Reasons for performing an analysis included:

- Current trends suggested the previous 2020 target does not constitute a major challenge.
- New measures have emerged that need assigned targets, and new problems have appeared.

Figure 6.3

Conclusions from the analysis:

It is reliable and offers a solid basis for priorities in the ongoing road safety effort.
Strengthening the targets in the manner suggested by the analysis is sufficiently challenging to encourage continuation of effective effort and innovation.

The set of performance indicators for the joint road safety effort should be revised.

Trends in the area of safe vehicles and infrastructure will strongly contribute to target fulfilment for 2020. A number of challenges – particularly improving speed compliance, unprotected road user safety and use of new technology – must also be dealt with.

Achievement of targets identified by the analysis requires efficient management by objectives and new knowledge, especially for improving unprotected road user safety.

TYPICAL NUMERICAL TARGETS ADOPTED – EXAMPLES

For a road safety strategy to be successful, realistic but ambitious quantified road safety targets should be set. As outlined in *Key Developments in Road Safety*, the establishment of quantified road safety targets has been found to have significant association with improvements in road safety. Road safety targets need to be quantitative and measurable so that the level of aspiration is clear, the extent to which the target has been achieved can be determined, and if it has not been achieved, then the extent to which the result is short of the target can be measured.

Quantified road safety targets have been set in a number of regions (see *Key Developments in Road Safety*) and countries in recent decades, including Finland, France, The Netherlands, Sweden, the United Kingdom, Australia, New Zealand, Ireland and the United States.

Ireland has achieved substantial fatality reductions in recent years to be among the best performing EU countries. The strategy adopted for the period 2013 to 2020 has a target of a 24% reduction in fatalities...
and a 40% reduction in serious injuries over the life of the strategy (Road Safety Authority, 2013).

Many countries have adopted the UN Decade of Action target of a 50% reduction in fatalities and serious injuries from 2011 to 2020. Indonesia is one example of a country adopting this top down 50% reduction target (fatalities per population) with an associated strategy and policy actions adopted to achieve this target by 2020. There is also a targeted 80% reduction in the fatality rate per population to be achieved by 2035, with policy actions identified to achieve that outcome. These targets and policy actions are expressed in the National Road Safety Master Plan 2011–35 (Republic of Indonesia, 2011) for the period to 2015 and then for each five-year period to 2035. Progress has been slow. Measurement, evaluation of, and reporting on progress against the Plan has been increased substantially in 2014 with a focus on detailing the activities (content, timing, resources) required to deliver the actions within the Plan.

National plans should provide sufficient flexibility for local preferences and priorities to be identified and expressed in local plans.

SETTING TARGETS FOR SELECTED ROAD USER GROUPS/RISKS

In addition to final outcome targets for overall fatalities and serious injuries being defined in a strategy, outcome targets can be set for different at-risk road user groups and for various risk categories under the Safe System pillars.

For example, the current New Zealand Safer Journeys 2010–2020 Strategy (Ministry of Transport, 2010) targets a 40% reduction in the fatality rate of young people and a 20% reduction in fatalities resulting from crashes involving drug or alcohol impaired drivers, as shown in Table 6.5.

**TABLE 6.5: NEW ZEALAND’S SAFER JOURNEYS 2010-20 STRATEGY**

<table>
<thead>
<tr>
<th>Target focus</th>
<th>Target reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase the safety of young drivers</td>
<td>Reduce the road fatality rate of young people from 21 per 100 000 population to a rate similar to that of young Australians of 13 per 100 000</td>
</tr>
<tr>
<td>Reduce alcohol/drug impaired driving</td>
<td>Reduce the level of fatalities caused by drink and/or drugged driving, currently 28 deaths per one million population, to a rate similar to that in Australia of 22 deaths per one million population</td>
</tr>
<tr>
<td>Achieve safer roads and roadsides</td>
<td>Significantly reduce the crash risk on New Zealand’s high-risk routes</td>
</tr>
<tr>
<td>Achieve safer speeds</td>
<td>Significantly reduce the impact of speed on crashes by reducing the number of crashes attributed to speeding and driving too fast for the conditions</td>
</tr>
<tr>
<td>Increase the safety of motorcycling</td>
<td>Reduce the road fatality rate of motorcycle and moped riders from 12 per 100 000 population to a rate similar to that of the best performing Australian state, Victoria, which is 8 per 100 000</td>
</tr>
<tr>
<td><strong>Target focus</strong></td>
<td><strong>Target reduction</strong></td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Improve the safety of the light vehicle fleet</td>
<td>Have more new vehicles enter the country with the latest safety features. The average age of the New Zealand light vehicle fleet will also be reduced from over 12 years old to a level similar to that of Australia, which is 10 years</td>
</tr>
<tr>
<td>Achieve safer walking and cycling</td>
<td>Achieve a reduction in the crash risk for pedestrians and particularly cyclists, while at the same time encouraging an increase in use of these modes through safer road infrastructure</td>
</tr>
<tr>
<td>Improve the safety of heavy vehicles</td>
<td>Reduce the number of serious crashes involving heavy vehicles</td>
</tr>
<tr>
<td>Reduce the impact of fatigue and address distraction</td>
<td>Make management of driver distraction and fatigue a habitual part of what it is to be a safe and competent driver</td>
</tr>
<tr>
<td>Reduce the impact of high risk drivers</td>
<td>Reduce the number of repeat alcohol and speed offenders and incidents of illegal street racing</td>
</tr>
<tr>
<td>Increase the level of restraint use</td>
<td>Achieve a correct use and fitting rate of 90% for child restraints and make the use of booster seats the norm for children aged 5 to 10</td>
</tr>
<tr>
<td>Increase the safety of older New Zealanders</td>
<td>Reduce the road fatality rate of older New Zealanders from 15 per 100 000 population to a rate similar to that of older Australians of 11 per 100 000</td>
</tr>
</tbody>
</table>
6.7 PERFORMANCE INDICATORS

WHOLE-OF-JURISDICTION INDICATORS

Intermediate outcomes (performance indicators) (OECD, 2008) are of substantial value in reliably predicting final outcomes. The Road Safety Management System and Effective Management and Use of Safety Data outline output, intermediate outcome and final outcome measures. The measurement, collection and monitoring of intermediate outcome data for selected factors will provide a means of measuring progress over time. It provides for effective monitoring that encourages awareness and insight. It will also provide reasonably reliable predictions of likely changes in fatalities and serious injuries for each element measured.

A number of possible intermediate outcome measures are specified in those chapters, for example, seatbelt wearing rates, speed monitoring, alcohol impairment in fatal and serious injury crashes and helmet wearing rates. For LMICs the following intermediate outcome measures could be added: truck rear lighting operational rates, wrong-way vehicle travel rates, proportion of length of high pedestrian areas with footpaths, rate of provision of raised speed reduction devices with highly visible advanced signage at pedestrian crossings on arterial roads in urban areas, and more.

One option (Austroads, 2013) to link these measures to desired results (adopted targets) is to develop an ‘outcome management’ framework which directly links the outputs from the strategy (i.e. what will be done) with outcomes (i.e. what is to be achieved). This is a useful approach which focuses attention on key outcomes, encourages modelling of effectiveness of outputs on final and intermediate outcomes achieved, and assists in the monitoring process. It will be a later (growth and consolidation phases) activity for most LMICs.

Strategies may often include intermediate outcome (or road safety performance indicator) targets as well as relying on intermediate outcome measures to predict underlying impacts on targeted outcomes. In some cases, output targets will also be set within a strategy.

TARGET-SETTING FOR INDIVIDUAL AGENCIES

Final outcome, intermediate outcome or output targets can also readily be devised at an organisational (road safety agency) level, compared to an overall target for final outcomes across the country – which are to be achieved as a consequence of all agency contributions.

For example, a road authority can calculate the reduction in expected fatalities (outcomes) from certain blackspot treatments or a programme of crash risk reduction along road lengths. It can measure mean speed reductions (an intermediate outcome measure) achieved as a consequence of installing raised speed reduction devices at sections of the network where pedestrian fatality or intersection fatality risks are higher. Finally, it can measure the number of blackspot locations treated or lengths of network treated to reduce serious crash risk – a measure of outputs.

It is most useful for all organisations to have their own strategic plan, actions and targets, based on the jurisdiction’s overall strategy. The agency strategy should indicate, in as measurable a manner as possible, how and what they intend to achieve with their own activities to meet their obligations as part of the overall country target.
6.8 MEETING TARGETS

Establishing a road safety target is a major opportunity to involve and inform the community about the road safety risks which exist in the community, the measures available to reduce the risks and to actively and openly seek the support for improved performance.

It is also important that political support for a target is matched not only by commitment to regulation and legislation, but also by a commitment to funding, with a long-term vision. The economic costs of injury prevention strategies can be set against government savings in terms of reduced levels of health and welfare expenditure. This is a particularly important advocacy tool for use with finance ministries, which in many countries play a decisive role in determining overall government expenditure priorities.

Wherever possible ‘early wins’ should be identified and used to reinforce political support for the overall target and associated strategy. This may involve setting targets or adopting measures that are less demanding in the early phase of implementation, but which will result in encouragement to move forward more aggressively at a later stage. Using evidence to report and publicise early successes gives confidence to the strategy and will build further support within government.

Politicians play a critical role in responding to evidence-based advice about potential policy changes and options for management of externalities (other non-road-safety impacts of proposed road safety changes). They need to be adequately supported to be prepared to provide leadership in implementing beneficial road safety change.

PATHWAY TO EFFECTIVE ROAD SAFETY TARGETS, INVESTMENT STRATEGIES, PLANS AND PROJECTS

**GETTING STARTED**

- LMICs should commission an expert road safety management capacity review, adopt the Safe System goal and approach, identify the country’s road safety risks and then develop, fund and prepare a demonstration project involving all agencies. It should include a multi-sectoral treatment for a substantial higher risk corridor or urban area plus selected national policy reviews. This should form the LMIC investment plan for the establishment phase.
- The planned demonstration project should treat a high-risk corridor or extensive urban area with a complete range of interventions across the road safety agencies, identify selected policy areas for review (for example driver licence testing requirements, vehicle safety standards), establish project management arrangements and prepare for monitoring and measuring of agreed intermediate outcome safety measures (such as mean speeds, seatbelt and helmet wearing rates and alcohol impairment rates in fatal and serious crashes on the corridor) to enable progress being achieved with the demonstration project to be identified on an ongoing basis.
- Project management for the demonstration project is to include identification of an agreed lead agency to support coordination and decision-making activities within a newly established project working group of agencies. The working group will report to a senior level steering committee of agencies.
- Implement a crash data system as a priority.

**MAKING PROGRESS**

- Complete implementation of the demonstration project.
- Progressively evaluate performance by measuring and reporting intermediate outcomes and final...
outcomes to the public.
- Build knowledge and capability through these and other means, such as exchanges, information sharing with other jurisdictions, fact-finding missions, and international literature reviews to implement effective interventions.
- Develop legislation and systems and promote senior government executive and public awareness of the need for their commitment to road safety investment.
- Achieve adequate funding to progressively extend the demonstration project outcomes (suitably modified based on lessons learned) across the network.
- Implement ongoing reforms of safety policies and institutional management arrangements, including adoption of a national lead agency, its agreed role and responsibilities and agency coordination and support.

**CONSOLIDATING ACTIVITY**

- Disseminate crash data and other safety performance data from the national crash analysis system.
- Set medium-term targets for country outcomes, country intermediate outcomes and outputs by organisations and develop and implement growth investment (strategy and action) plans to achieve these targets. HICs are likely to be carrying out these tasks as an immediate priority.
- Determine whether top down or bottom up target-setting is to be used and look to the targets being adopted by leading countries for guidance.
- Implement comprehensive multi-sectoral measures across the total network.
- Manage, monitor and report on road safety performance across the network.
- In the longer-term consolidation investment phase, support regions and local governments to develop longer-term targets, strategies/action plans and safety performance monitoring.
6.9 REFERENCES


Bliss T & Breen, J (2013), Road Safety Management Capacity Reviews and Safe System Projects, Global Road Safety Facility, World Bank, Washington, DC.


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