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ROAD SAFETY

ACHIEVING AMBITIOUS ROAD SAFETY TARGETS

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ACHIEVING AMBITIOUS ROAD SAFETY TARGETS

JTRC RESEARCH FINDINGS

This document outlines the key findings of the Joint OECD/ECMT Transport Research Centre's (JTRC) current research project on *Achieving Ambitious Road Safety Targets*.

KEY MESSAGES

Over many years, countries with good road safety performance have reduced their road safety fatalities and injuries from initially high levels through the use of legislation, education and enforcement, as well as improvements to vehicle safety and the safety of the road infrastructure. However, the current levels of road fatalities and injuries in OECD/ECMT member countries are still too high and clearly not acceptable. Road casualties are a major public health problem and the costs of road crashes on average are equivalent to around 2 % of GDP.

National targets for road safety (e.g. in terms of reduction in fatalities and serious injuries) raise the profile of road safety and focus the national efforts to achieve further reductions. Key JTRC project findings -- which take into account assessments of country performance against the ambitious road safety targets set (e.g. national targets and the ECMT's -50 % fatalities target) -- include the following elements:

- While a few countries are making good progress, **exceptional efforts** will be required in most countries over the next five years to achieve the road safety targets that have been set.
- **Strong, sustained political will** is needed to ensure that road safety is given the necessary priority by government. This will be evidenced by a championing of road safety at the highest political level, securing appropriate and sustainable funding, supporting policy and legislative changes, the existence of a capable bureaucracy providing support to the political level and the active engagement of stakeholders.
- **Speeding, driving impaired by alcohol and non-use of seat belts and child restraints** continue to be major road safety problems in all countries. Fully addressing these three key problems could save up to 50 % fatalities in many countries. Other major problems of concern in many countries are: young drivers, road infrastructure (including rural/country roads) and vehicle safety. Other road safety issues becoming more important in some countries include: driving impaired by drugs (i.e. illicit and prescribed, over-the-counter), pedestrians, motorcyclists, increasing volumes of heavy goods vehicles, driver distraction from on-board telematics equipment and fatigue.

- An in-depth understanding of the particular **road safety problems** in one's country is of crucial importance. Good data collection and analysis systems are critical to track progress and guide future initiatives. Well targeted counter measures should be based upon analysis of crash problems and research findings on causes and cost-effective counter measures.
- There are many **strategies and actions** available to deal with these major road safety problems and help achieve the targets that have been set. Many have been well proven in various member countries, including those with good road safety performance. However, many countries have not adopted all the 'best practices' available. Drink driving, speeding, young drivers and inadequate infrastructure are major contributors to crash causation and severity and appear to be amenable to action in the short term. Improved vehicle safety and seatbelt wearing rates will also reduce road trauma significantly.
- **Strategic road safety management and co-ordination arrangements** need to be strengthened to improve the effective delivery of road safety programmes, including enforcement, education and safer network programmes. Measures should be adopted to reinforce the accountability of government institutions for achieving the agreed road safety outcomes.
- In some countries with good road safety performance, there is evidence that road safety improvements are plateauing and that the traditional measures may not be sufficient. A paradigm shift to a **"safe system" approach** may also be required recognising that the road transport system should be designed to be safe and forgiving to road users who may make errors. This will require a change in current road safety culture and acknowledgement of a sharing of responsibility for overall road safety between road system managers, road users and vehicle manufacturers.
- There is a need for **greater knowledge about funding mechanisms for crash prevention and treatment**. Although very little, if any, accurate information is available about the funding of road safety, there are indications that greater public (and private) resources are being spent on treatment and other consequences of road crashes than on prevention of those crashes. Governments are therefore encouraged to review their resource allocations and increasingly favour crash prevention.
- **Implementation of effective measures** will not necessarily be popular in the short term. Building stakeholder support with community and business leaders will help consolidate the support that will be needed. Regular monitoring and feedback to stakeholders on progress and performance and achievement of early wins will be important in securing public support.

SUMMARY OF RESEARCH FINDINGS

Road crashes account for around 180 000 deaths every year in OECD and ECMT countries, i.e. on average one fatality every 3 minutes. Road casualties are a major public health problem in all countries. As well, the costs of road crashes on average are equivalent to around 2 % of GDP in most countries.

Road Safety Performance

OECD/ECMT countries include a wide range of economies with large differences in their road safety performance. The best performing countries have fatality rates of around 5-7 killed per 100 000 population. Fatalities in these countries have generally decreased by more than 50 % since the 1970s, over a period when motorisation increased substantially. Countries with relatively low levels of road safety performance have typically not yet reached their peak and the number of fatalities is continuing to increase. There are a large number of countries whose level of road safety performance falls between these two groups. In all countries, significant numbers of lives can be saved by concerted and resolute action.

How can countries with the best road safety performance further decrease fatality levels and how much can these countries achieve using current best practice approaches? How can other countries best apply the experience of the better performing countries to achieve reductions in fatalities?

Targets and progress

National targets for road safety (e.g. in terms of reduction in fatalities and serious injuries) raise the profile of road safety and focus the national efforts to achieve further reductions. Ambitious road safety targets have been set by international organisations (e.g. the ECMT's -50 % fatalities target by 2012) and many countries have also set national targets to reduce the number of fatalities and in some cases levels of injuries. Some countries have found it useful to identify sub-targets (e.g. increased seatbelt usage, decrease in speeding, etc.) in order to guide their programmes, strategies and activities.

Latest available results suggest that only a relatively small proportion of countries are on track to achieve their national targets or international targets. It can be expected that, in future, similar reductions in fatalities will be progressively more difficult to achieve. Among the 43 ECMT countries whose Ministers agreed the ECMT target (i.e. to reduce by 50 % the number of fatalities between 2000 and 2012), latest results available suggest only around a quarter appear to be on track.

Consequently, *exceptional efforts* will be required in many countries over the next five years to achieve the road safety targets that have been set for 2010-2012.

Specific safety problems on the road system

Speeding, i.e. inappropriate speed and excessive speed, is the major road safety problem in a majority of member countries, often contributing to as much as one third of fatal accidents and being an aggravating factor in the frequency and severity of all crashes. Speeding is a widespread social problem as typically, at any time, 50 % of drivers are above the speed limits.

Drink Driving. In many countries, 20 % or more of driver fatalities involve a blood alcohol content (BAC) level in excess of the legal limit. Drink driving remains a blight upon road use in these countries despite many years of active countermeasure application including quite severe penalties. However, despite its importance, many countries are unable to provide comprehensive data on alcohol-involved fatal crashes and knowledge of drink driving crash involvement and trends are often not available.

Seat-belt wearing. In many countries, around 50 % of the people killed in road crashes were not wearing a seatbelt. Many of these lives could have been saved had they done so. Seatbelt wearing first became compulsory in a number of countries well over 25 years ago. In some countries, seatbelt wearing is only compulsory in the front seat and child restraint systems are still not mandatory or regulated.

Other key problems include:

- Young drivers, who are heavily overrepresented in road fatalities and whose crash involvement also imposes high risks on their passengers and other road users.
- Insufficiently safe infrastructure for current travel speeds, as evidenced by the high fatality risk on many rural roads.
- Insufficient motor vehicle crash protection for occupants.

New and (re-) emerging problems. A number of new issues are emerging and some traditional issues are gaining prominence. These include:

- Pedestrian safety (particularly increasing risks to elderly pedestrians).
- Motorcycle safety (particularly in countries where motorcyclists are riding increasingly more powerful motorcycles).
- Driving while impaired by drugs (whether legally prescribed or illicit).
- Increasing volumes and risks associated with heavy goods vehicles.
- Unlicensed drivers.
- Fatigue.
- Repeat offenders.
- International drivers who may be immune from cross-border penalties.
- The adverse impact of on-board technological and mobile equipment (i.e., driver distraction).

How can ambitious targets be achieved?

Application of best practice measures to key and emerging problems

Much can be achieved by successfully tackling a small number of major road safety issues, including speeding, drink-driving and non-wearing of seatbelts which together could be expected to save up to 50 % fatalities in many countries. Many strategies and actions are available to deal with the key problems which have been well proven in various member countries, including those with good road safety performance. However, most member countries have not adopted all the “best practices” available. Crashes caused by speeding and young drivers are centrally important to achieving the road safety targets and appear amenable to further action in the short term. Overall road safety performance levels would be improved significantly -- particularly in countries with lower levels of road safety performance -- if all countries adopted best practices in dealing with the traditional safety problems, including speeding, alcohol, seat-belt wearing and young (especially young male) drivers. Possible measures are set out below.

An in-depth understanding of the particular road safety problems is crucially important. Counter measures should be based upon analysis of crash problems and research findings on causes and cost effective counter measures. *Road crash data systems* are a pre-requisite to the identification of road safety issues and the building block for well targeted and effective interventions. Countries without effective data and analysis systems should be encouraged to take action to redress this shortcoming.

Speed management can provide greater safety benefits more quickly than any other single safety measure. Enforcement, broadly interpreted, is the most effective way to control speed. Decreasing mean speeds by 5 % can be expected to reduce injury accidents by around 10 % and to save 20 % of fatal collisions -- starting almost immediately. However, enforcement of existing speed limits alone is not sufficient. Speed limits need to be appropriate for the standard of the road, the roadside risks, the number of curves and intersections, the traffic volumes, the mix of traffic and the presence of vulnerable road users. Other essential components of a speed management policy are education, infrastructure improvements -- to create safer self explaining roads that are consistent with the speed limits -- and the use, where appropriate, of new technologies.

Reduced drink-driving. Based on best practice experiences, measures to address drink driving include setting BAC limits to sensible low levels. Many countries now have BAC limits set at 0.5 g/l¹ or less for the general driver population and as close to 0.0 g/l for young drivers and professional drivers as testing equipment allows. Highly visible enforcement action is then needed to enforce the limits. Many countries have random breath testing and enforcement backed by extensive publicity about the dangers of drink driving, with tough sanctions for repeat offenders. In some jurisdictions, there are mandatory alcohol interlock licence conditions for repeat offenders, to prevent use of their vehicle while intoxicated.

1. In 1993, in its Resolution N° 93/5 on *Drink as a factor in road accidents*, the ECMT recommended a maximum blood-alcohol level of 0.5 g/l, which was subsequently adopted by a majority of Member countries.

Seat-belt wearing. For countries with low wearing rates, the priority should be to increase the levels rapidly towards best practice (over 90 % for front-seat and rear-seat occupants). The most important action is to establish legislation to make seat belt wearing compulsory for all vehicle occupants. Seat-belt wearing should be actively enforced and supported by public information campaigns. As well, manufacturers should be encouraged to include seat-belt warning systems in new vehicles and government fleet purchasers should require them to be fitted.

Reduced young driver crash risks. Young drivers (particularly young males) face very high risks in the first years after licensing for solo driving. Reductions in these risk levels -- which affect not only young drivers but also their passengers and other road users -- are both necessary and achievable. Thus, in any system, while at least 50 hours of pre-licensing practice are recommended, experience in one country showed that increasing this to 120 hours reduced crashes in the two years following licensing by about 40 %. Exposure to risk following licensing can be reduced by protective restrictions that are progressively lifted as the novice gains experience. Restrictions known to be effective include lower BAC limits (e.g. 0 or 0.2 g/l) and initially restricting driving with young passengers or at night. As well, education, training and licensing should aim to create drivers who are *safe*, and not just technically competent.

Drug driving testing is an emerging issue in many countries. Random roadside saliva testing for cannabis and methamphetamine, already carried out in one jurisdiction, could be expanded to other jurisdictions. As technology develops, it can be anticipated that the range of drugs tested will increase and the sensitivity of the detection equipment will improve.

Vulnerable road users. Reducing risks to pedestrians -- particularly the young and elderly -- requires a reduction in vehicle travel speeds and investment in protective infrastructure treatments. Increased motorcycle fatality levels usually reflect the increasing popularity of riding, often with increasingly powerful motorcycles. Requiring helmet use by all motorcycle riders will reduce fatalities but when crashes occur at speeds over 50 km/h, fatal outcomes become highly likely even for helmeted riders. Consideration could be given to more consistent licensing conditions for cars and motorcycles to prevent migration to less safe modes.

Heavy vehicles are increasing as a proportion of road use. A better understanding of the risks these vehicles present is needed including their effects on other vehicles in traffic and the effects of fatigue on the complex task of driving a heavy vehicle.

Of course, all such measures require public support and adequate enforcement.

Limits of traditional approaches/interventions

In-depth analysis of crash types in selected countries has indicated some conflict types (e.g. single vehicle crashes, motorcycles crashes and crashes involving heavy good vehicles) that may not decrease as rapidly in future. This research challenges practitioners to find additional ways of achieving higher levels of road safety performance where the full range of traditional approaches may appear to have been applied.

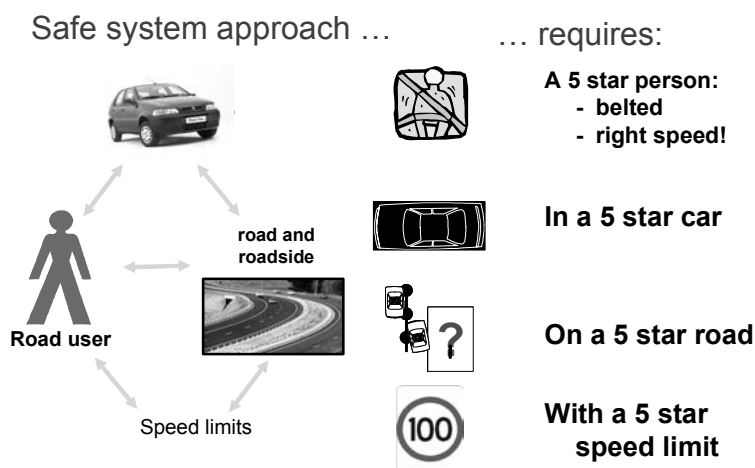
Safe system approach: new ways of assessing and addressing risks and involving the community

Many countries with good levels of road safety performance are now making a paradigm shift and focusing on achieving safe road systems. Adopting a safe system approach -- building upon Sweden's Vision Zero and the Netherlands' Sustainable Safety approaches and consistent with the World Report² -- is a central part of this focus. The key relevant transport system components in these approaches are:

- Safer vehicles
- Safer and more forgiving infrastructure
- Safer speeds
- Road user compliance with road rules.

Under a safe system approach, the thresholds of physical resistance of the human body to the energy released during a crash (which is related to the impact speed) are a critical input to the development of laws, regulations and infrastructure. The World Report notes pedestrians incur a risk of around 80 % of being killed at an impact speed of 50 km/h, while this risk is reduced to 10 % at 30 km/h. For car occupants, wearing seat-belts in well designed cars can provide protection to a maximum of 70 km/h in frontal impacts and 50 km/h in side impacts.

A safe system approach builds on existing road safety measures and can be applied progressively in all countries, not just the best performing ones. One important characteristic of a safe system approach is a commitment to obtaining much greater community involvement, identifying and acknowledging the respective roles that government, other groups and individuals will play in improving road safety. This new thinking also means a cultural shift and a sharing of responsibility for overall road safety between road system managers, road users and vehicle manufacturers.



2. World report on road traffic injury prevention. WHO and World Bank, Geneva, 2004.

Implementation issues

Of course, in many cases, transport administrations are familiar with many of the research findings and best practices for improved road safety. The difficulties they face are often related more to implementation. Properly addressing implementation issues and barriers is essential for successful applications of policies.

Political and administrative leadership is an essential prerequisite for action

A crowded policy agenda for all governments, the likely unpopularity with the public of potential behavioural countermeasures (particularly those which restrict individual freedoms), the long timeframes (in terms of the electoral cycle) required before many interventions produce benefits, the low levels of public awareness of road safety risks and potentially effective measures, the substantial resources required to implement infrastructure (and legislative) measures, the existence of some commercial interests without a strong commitment to road safety and the possibility that political opponents will seek to capitalise on the unpopularity of measures proposed, all mitigate against a leadership position being readily taken at the political and administrative levels.

Against this background, a government's willingness to act will depend upon the political saliency of road safety, the personal commitment of the responsible Minister (or Ministers) and Chief Minister and the existence of a capable bureaucracy in which the government has confidence. Recent experience shows that commitment at the highest level of the governments leads to a higher national awareness of safety issues.

A capable bureaucracy, for its part, needs to understand the practical realities and requirements of political decision-making; to foster community awareness of risks and solutions through extensive stakeholder involvement and input; to seek win-win solutions in concert with other community agendas (reduced greenhouse emissions/lower speeds); to implement thoughtful and relevant public information campaigns; to develop sound business cases for road safety investment based upon proven research; to support the political level strongly on a day to day basis with high quality reactive and proactive advice; and to foster the development of skilled human resources in road safety.

Lead agencies have a strategic role to play in co-ordinating actions by different organisational and institutional arrangements

Lead agencies have a critical role in co-ordinating actions and the involvement of stakeholders. Inadequate stakeholder and community consultation in preparing the safety plan, timeframes for implementation that are too short to be effective or too drawn out to win political interest, targets that are impossible to achieve or represent no challenge, strategies that are not based on research evidence and a lack of political and bureaucratic accountability in any adopted plan are all ingredients for failure.

Timeframes should be adequate to enable longer term actions to be implemented but this should be balanced by actions that will deliver early benefits. Targets are vitally

important to gain support and to publicly demonstrate commitment and should be “challenging but attainable” to encourage innovation and energetic responses.

The most effective strategies are often developed in an open consultative manner with public involvement, perhaps through public discussion papers seeking comment. When actions are implemented, the active monitoring of countermeasure effectiveness, public reaction and crash trends and a preparedness by government to move quickly to address any likely failures, are important indicators to the public of accountability and commitment to the strategy.

To be effective, road safety strategies have to be derived from a sound understanding of the current problems which in turn depends on high quality analysis of existing crash data and trends. A comprehensive, accurate crash data base is essential for this to be feasible. In addition, the systematic evaluation of delivered programmes will provide critical information and fresh insights to assist refinement of future programs and quantification of the benefits achieved which can be published to build and maintain public support.

Integrated effective implementation

Road safety programmes are characterised by the number and diversity of institutions involved in their implementation. Inadequate involvement of relevant government agencies and a lack of involvement of other stakeholders in a co-ordinated implementation effort serves to reduce the effectiveness of countermeasures.

Integrated, co-ordinated implementation is a vital requirement for success. This is so for relevant actions at national, regional or local levels. There are numerous models used to achieve integration. As an example, representation of all key agencies at the most senior level in committees regularly advising and seeking decisions from a group of relevant ministers is one model that has been quite successful.

Policy development and implementation requires a careful balancing of interests and government support. For example a safety measure to restrict novice driver access to the system in their first year of driving will have significant social mobility consequences, which need to be addressed. Another key factor to successful implementation of road safety measures is a regular monitoring of their impacts and feedback to help fine tune the measures.

A better knowledge of road safety funding helps in better allocating the resources

One of the difficulties most jurisdictions face is their inability to track and trace the effects of road safety expenditures. Very little, if any, accurate information is available about the funding of road safety measures by individual governments. There is a need for a better knowledge of road safety funding in most countries. Governments and their communities should be prepared to identify the amount of road safety funding being provided in absolute terms and as a proportion of their budgets and of overall GDP. This will allow road safety allocations to be published and compared to the size of the road safety task and the funding effort in comparable jurisdictions.

The allocation of resources between the funding of preventative measures and the funding of activities required to deal with the consequences of road crashes (public health/hospitals, legal/courts, repair/replacement of property damaged, etc) should also be identified. Investment in prevention is likely to substantially reduce road trauma and generate savings in acute and long term health care costs.

Although the data are available in a few countries only, indications are that greater public (and private) resources are being spent on treatment and other consequences of road crashes than on prevention of those crashes. Governments are therefore encouraged to review their resource allocations and increasingly favour crash prevention.

Knowledge transfer to non- OECD/ECMT countries

The assessments and findings outlined above relate to OECD/ECMT member countries. At a global level, the World Report indicates that around 1.2 million persons are killed each year and up to 50 million injured. In 2004, road traffic was the 9th leading cause of disease or injury. Unless strong actions are taken, the situation will get much worse, particularly in developing countries. If current trends continue, the WHO expects road traffic will be the 3rd leading cause of disabled adjusted life years lost (an index of which combines years of life lost as well as years free from disabilities), from disease or injury in 2020.

All countries need to take concerted and resolute actions to combat road traffic crashes, fatalities and serious injuries. Many of the measures outlined above are also applicable in developing countries. The adoption of a safe system approach, at the outset, can contribute to prevent this unacceptable outlook being realised. Dissemination of relevant advice from OECD/ECMT countries, including research findings from this JTRC report on *Achieving ambitious road safety targets*, will be valuable and help a wide group of developing countries deal with the major road safety problems they are facing.

Conclusions

Achieving the road safety targets will require leadership and preparedness to adopt policy positions that may be unpopular in the short term. Political leadership, a strong lead agency and good co-ordination across government agencies on legislation, enforcement, road measures, licensing and vehicle measures, insurance, road user behaviour measures and public communications are needed. Clearly targeted communication programs are essential to 'bring the public along' and win acceptance for change.

In most countries, speeding, as well as drink driving and seat-belt wearing, are the major issues, and more effective action can be taken. In many countries, significant gains can also be made by addressing other key challenges such as young drivers, safer infrastructure and safer vehicles, supported by effective enforcement and public information.