



Road Safety Performance

National Peer review:
Russian Federation

UPDATE
2010

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INTERNATIONAL TRANSPORT FORUM

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EXECUTIVE SUMMARY

1. Background

2006 peer review: A peer review of road safety performance in the Russian Federation was conducted during 2004-2005 by international and national experts against a background of escalating road deaths and major changes in road travel and transport policies taking place in the Russian Federation. The review (ECMT, 2006)¹ reflected the concern that against the very rapid growth in motorisation the combination of weak performance goals, an intrinsically unsafe road system and fragmented institutional processes all pointed to a growing road safety crisis.

In the knowledge that sustained and substantial improvements in road safety can be achieved in these challenging scenarios through concerted, results-focused, system-wide, research-based action, the peer review made a series of recommendations for priority actions for road safety management. The review concluded that the Russian Federation's aspiration to achieve the capacity and performance evident in best practice countries would require a long and resource-intensive process, backed by unwavering political will to achieve results and rapid knowledge transfer of best practice.

2009 update: This update has been compiled under the auspices of the International Transport Forum (formerly ECMT)* in partnership, as for the original review, with the World Health Organisation and World Bank and in cooperation with the Ministries of Transport and Internal Affairs of the Russian Federation. The objective is to review the current road safety performance in the Russian Federation, to reflect upon the many developments since the first peer review and to outline recommendations for possible next steps to enhance road safety. The peer review team has used the findings and frameworks of the ITF/OECD *Towards Zero* (2008)² in this assessment, representing as it does the state of the art in good practice countries in addition to the findings and knowledge base of the 2006 peer review¹.

The valuable assistance and cooperation of the Russian colleagues in this process is acknowledged with thanks. The review team also takes this opportunity to thank the Russian Federation for its leadership in drawing worldwide attention to the need for effective global road safety action by hosting the first global Ministerial Conference on Road Safety in Moscow in November 2009.

“The problem we are talking about, the figures we are citing, are no less dramatic for our planet than the consequences of global recession, or even issues of food security.”

President Medvedev, Ministerial Conference on Road Safety in Moscow in November 2009.

* ECMT was transformed into the International Transport Forum following the Ministerial Decision of 2005.

2. Current road safety performance

A substantial improvement in safety performance in the Russian Federation has been achieved since 2004. Between 2004 and 2008, a significant 13% reduction in deaths has been achieved against a 24% increase in traffic, with a particularly sharp decrease in the numbers of road deaths occurring in 2008. This downward trend is continuing through 2009.

However, the road safety situation in the Russian Federation continues to be serious and challenging and deserving of continuing high priority in national, regional and local governance. In 2008, there were 29,936 road deaths and 270,883 police-reported injuries. Car user deaths (51%) and pedestrian deaths (36%) continue to dominate the major national road safety problem. The estimated socio-economic cost of road crashes was over RUR 908 billion (around US \$29 billion) representing over 2% of GDP. When compared internationally (and taking into account differences in definitions of fatality), death rates in crashes on Russian roads are five times as high as experienced in the global best performing nations in road safety (WHO, 2009)³.

3. Summary of developments to date

The importance of new, concerted national action to reduce deaths and injuries in road crashes is reflected in a number of high-level decisions, orders and discussions - the decision of the State Council presidium at the end of November 2005, the Presidential edicts in 2006 and 2008, and the Parliamentary hearings on road safety.

The Ministry of Internal Affairs is empowered with a coordination function (between the federal and regional and local executive authorities), by governmental decree of 19 October 2004. Road safety is one of the core responsibilities of the Ministry but, as noted below, there is some ambiguity concerning governmental department leadership arrangements and capacity which the review team considers would benefit from in-depth assessment by the Government.

In February 2006, the Government approved and began implementation of the Federal Target Road Safety Programme for 2006-2012 which is underpinned by a target to reduce the number of road deaths by 33% compared with 2004 levels, against which progress is being charted.

In April 2006, a statutory multi-sectoral Government Commission for Road Safety was established. Membership of the Commission includes high-ranking officials from the Russian Ministry of the Interior, the Russian Transport Ministry, the Russian Ministry for Emergency Situations, the Ministry of Public Health and Social Development, the Ministry of Education and Science, and other stakeholders from among the federal executive authorities, as well as public organisations and associations. The Commission is headed by First Vice-Premier of the Government of the Russian Federation and meets quarterly. The main tasks of the Commission established in legislation are to:

- Ensure coordinated action between the federal executive authorities in the development and implementation of state policy in the field of road safety.
- Identify the main priorities for regulatory improvements in the field of road safety.
- Coordinate actions of the federal executive authorities in developing safety projects and implementing federal programmes on road safety.

- Improve the coordination arrangements between the federal and local/regional levels of the federal executive authorities, and increase the efficiency of interaction with all other stakeholders in the field of road safety.

The Commission also reports to Parliament on progress in road safety.

A Federal Target Programme Coordination Council to facilitate delivery of the Road Safety Programme and targets has also been established, supported since 2006 by multi-sectoral, inter-governmental safety commissions in all regional entities of the Russian Federation.

These developments in coordination arrangements are noteworthy. However, as acknowledged by governmental stakeholders, it will be necessary for the Russian Federation to take further steps aimed at improving the functioning of the system of state management in road safety and conduct work to specify the tasks, functions, competences and responsibility of the executive authorities, at both Federal and local government level. The review team notes in particular that a lead governmental department has not yet been designated to support these two coordination bodies. This lead department will need clearly defined road safety management functions and capacity to lead policy development and encourage implementation of the road safety strategy. As discussed in later sections, good practice safety management indicates that such arrangements underpin the achievement of sustained improvement in road safety results.

In support of the goals set by the Russian Federation's road safety programme, a more comprehensive framework of legislation has been established with a strengthened penalty system. New legal alcohol content limits for blood (0.3 g/l) and breath (0.15 g/l) were introduced in legislation in July 2007 and these are consistent with international good practice. The penalty for failure to submit to medical examination in the context of drink-driving offences was increased to disqualification from driving for between 18 months and 2 years. Other new offences created included causing death as a result of excess alcohol (leading to a prison sentence), exceeding the speed limit by a large margin, driving on the wrong side of a divided carriageway, and extending the legal grounds for banning vehicles from use.

There have been improvements in the safety of the vehicle fleet (decrease in age, imminent fitment of seat belt reminders, daytime running lights and heavy goods vehicle safety provisions) with measures for further improvement planned. Enforcement activity to reduce unsafe behaviours has also been improved, including enforcement of seat belt use (5 fold increased penalties from 2007), excess alcohol, and automated speed enforcement (from 2008). Following a study of speed management in urban areas to improve pedestrian safety, new low speed zones and pedestrian zones have been designated, speed humps and parking restrictions have also been introduced. New draft legislative proposals have recently been submitted to reduce general speed limits in cities from 60 km/h to 50 km/h; to limit speeds to 30 km/h around office areas and 20 km/h in residential areas, with associated traffic calming measures, intelligent transport systems and tougher requirements for drivers to give way to pedestrians.

These developments represent a considerable body of activity and while formal evaluation of specific interventions has, unfortunately, not been carried out, it is likely that many of these actions will have contributed to improved safety performance. At the same time, it is likely that reductions in exposure to risk brought about by economic recession and lower speeds resulting from substantial congestion in large cities will have played some part in the reduction of deaths and serious injuries that has been recorded. Without reference to before and after studies of the effects of the interventions introduced in relation to other factors, the reasons for the changes in safety performance cannot be accurately established at this time.

4. Building Sustainable Capacity: Recommendations for priority actions

In carrying out this review, members of the team have referred to the road safety management capacity review framework devised by the Global Road Safety Facility of the World Bank⁴ and recommended for use by the ITF/OECD² in periodic road safety review. Reference is made to the 2006 peer review¹ and its knowledge base which include the wide range of ECMT, WHO and World Bank publications on global good practice. Of necessity, in view of the timescale of this current review and the lack of data in key areas, professional judgements have been used.

Overall, it can be concluded that encouraging progress is being made nationally in improving road safety performance and the review team commends the Russian Federation on the substantial actions taken to date. Concerns, however, remain about the road safety results being achieved and their long-term sustainability, given the national aspiration to meet the performance of global road safety leaders.

The original review concluded that the Russian Federation's aspiration would require a long and resource-intensive process. The central issue is how can the Russian Federation build on its achievements to date and avoid the fatalistic and costly pathway of many OECD countries which, for too long, accepted the heavy toll of road death and injury as an inevitable price of economic progress and motorisation?

The review team is of the opinion that, notwithstanding the challenges it faces to reach good practice levels of road safety performance, the Russian Federation can make further rapid and substantial progress in reducing death and injury. It makes this judgement because the current road death rate per capita is still exceptionally high in the Russian Federation and therefore it is reasonable to expect that high returns can continue to be achieved from targeted interventions that improve the protective quality of road infrastructure, vehicle fleet and emergency medical system and key behaviours (speeding, drunk driving, non-wearing of seat belts). Ongoing commitment to road safety research and evaluation will be fundamental in achieving this end.

A key recommendation is that the Russian Federation considers adopting a *Safe System* approach for the long-term in its next road safety strategy and programme (see Appendix 1), which is recommended for all countries by the ITF/OECD and World Bank on the basis of global good practice. The review recommends that good practice models in place in several countries are studied in-depth by the Russian Federation. To help achieve this a high-level study tour of selected countries by leading policymakers and experts from the key road safety sectors is recommended as a useful first step. The International Transport Forum, the World Bank and the World Health Organisation stand ready to assist the preparation of terms of reference for such a study tour and provide input as required.

Key characteristics of a Safe System approach (Source: ITF/OECD, 2008)²

- The elimination of deaths and long term injuries is the long term goal of *Safe System*
- It addresses all elements of the road traffic system in an integrated way.
- It recognises that prevention efforts notwithstanding, road users will remain fallible and crashes will occur.
- It specifies that in the event of a crash, the impact energies remain below the threshold likely to produce either death or serious injury.
- It emphasises that those involved in the design of the road transport system need to accept and share responsibility for system safety, while system users need to accept responsibility for complying with system rules and constraints.
- It requires leadership, a focus on results and strong institutional management capacity.
- It aligns safety management decisions with broader transport and planning decisions that meet wider economic, human and environmental goals.

The review notes that the government aims to take further steps aimed at improving the functioning of the of state management system for road safety. Building sustainable road safety management capacity is a prerequisite for achieving continuous improvement in ambitious road safety results. As noted previously, the review believes that it would be useful for the government to specifically appraise the current leadership arrangements for road safety in the Russian Federation and provide guidance for the establishment of clearer lines of lead agency responsibility and accountability. In this context the responsibilities and accountabilities of all key partner agencies for the management of national road safety performance and coordination at national, regional and local levels should be reviewed.

Towards this end, the review recommends that the Russian Federation considers these issues within the framework of a road safety management capacity review using global best practice tools, as recommended by the ITF/OECD and the World Bank for all countries seeking to improve their road safety performance. This would serve to accelerate the process of building sustainable road safety management capacity and it would also provide guidance to assist the more rapid adoption of a *Safe System* approach, if so desired. Typically, such a capacity review is commissioned by government and carried out by experienced, independent safety managers (recruited internally and externally as appropriate) working in close cooperation with the senior management and advisers of responsible governmental agencies. In this way the review process can be sensitively attuned to the realities and requirements of evolving institutional structures and cultures at the national, regional and local levels in the Russian Federation.

Further recommendations are made below for building on current and planned activity in the Russian Federation. These recommendations have been informed by international good practice benchmarks and are well aligned with the priorities typically addressed by leading countries seeking to continuously improve their road safety performance.

Building Sustainable Capacity: Recommendations for priority actions (2010)

Results Focus

- It is recommended that the Russian Federation considers the adoption of the *Safe System* approach with the long-term goal of eliminating road deaths and serious injuries, to be achieved using step-wise quantitative targets, as recommended to all countries by the ITF/OECD² and World Bank³.
- It is recommended that good practice models of this approach, which are being implemented in several countries, should receive in-depth study by the Russian Federation. A high-level study tour which looks at current practice first hand and which involves policymakers and experts from the key road safety sectors nationally is recommended as a useful first step. The International Transport Forum, the World Bank and the World Health Organisation stand ready to assist and provide input as required.
- It is recommended that the Russian Federation starts to prepare for its next road safety action programme and specifies new targets to 2020 to reduce death and serious injuries. Against the background of the long term goal for eliminating deaths and serious injuries, these interim quantitative targets to reduce death and serious injury by 2020 should represent goals that are challenging but achievable, taking into account the interventions planned and institutional arrangements put in place for their implementation. A second level of targets focusing on the implementation of interventions is recommended (e.g. intermediate outcome targets to increase percentage levels of seat belt use, reduce excess alcohol and mean speeds and intervention output targets such as targets for the numbers of speed checks, breath tests, and seat belt use).
- It is recommended that priority be given to research-based, system-wide interventions which pay special attention to: improving the protective quality of the road network; improving key road user behaviours such as speeding, excess alcohol and non use of seat belts and child restraints; the promotion and adoption of leading edge vehicle safety technologies (such as electronic stability control, seat belt reminders in all seating positions and alcolocks) and their interfaces with the road infrastructure using Intelligent Transport Systems (such as Intelligent Speed Adaptation (driver support) and pedestrian facility use alerts); and improvements in the emergency medical system.
- It is recommended that, in support of the government's aim to improve state road safety management, a high level review of current leadership arrangements for road safety in the Russian Federation is carried out to provide guidance for the establishment of clearer lines of lead agency responsibility and accountability. The responsibilities and accountabilities of all key partner agencies for the management of national road safety performance and coordination at national, regional and local levels should be reviewed. Towards this end it is recommended that the Russian Federation considers doing this within the framework of a road safety management capacity review, which is recommended global best practice^{2,3}. Typically, such a review is carried out by experienced, independent safety managers (utilising both internal and external expertise) in close cooperation with governmental agencies. This would serve to continue the process of building sustainable road safety management capacity and it would also provide guidance to assist the rapid adoption of a *Safe System* approach.

Coordination

- It is recommended that horizontal coordination across government is benchmarked against international good practice to see what further enhancements might be made. Vertical coordination between national and regional and local agencies of government should also be strengthened to allow devolved activities to be harmonised with the goals and priorities set at national level. The setting of regional targets, the establishment of regional coordination bodies, a legal duty imposed on devolved levels of government to carry out road safety activities and specific, earmarked allocations of resource are all good mechanisms for improving coordination to achieve results.
- It is recommended that the active engagement of the non-government, professional and business sectors be encouraged to help stimulate the demand for evidence-based improvements in road safety, increase resources available for investment in road safety and transfer knowledge about good practice.

Continued/over

Building Sustainable Capacity: Recommendations for priority actions (2010) continued

Legislation

- It is recommended that a policy review be carried out to regulate the safety of commercial land transport service operators. This would include organisational accountabilities, the licensing of operations and the licensing, testing and training of drivers in the passenger and commercial transport sectors. This review should also take special consideration of international experience in good practice health and safety-at-work policies concerning the fitment and use of tachographs and alcolocks to reduce driver impairment.
- It is recommended that legal frameworks for urban traffic management (including the impacts of uncontrolled land development) should also be strengthened.
- It is recommended that the administration of penalties be reviewed with reference to international good practice. In particular, the introduction of a driving licence penalty points system should be considered, as well improvements to the efficiency of the enforcement system with a view to reducing opportunities for its abuse.

Funding and resource allocation

- It is recommended that a governmental review is carried out of funding needs and funding mechanisms for road safety as well as safety research for the development of the next strategy. Specifically, agreed funding levels across the safety partnership should be reviewed.
- It is recommended that a methodology is formally adopted for establishing the socio-economic costs of road deaths and injuries, using values which are consistent with norms in the best performing countries and using cost benefit analysis wherever possible in allocating resources.

Promotion

- It is recommended that the government embarks on a major campaign to promote the far-reaching Safe System goals and interim quantitative targets. Good practice indicates that this requires: continued championing and promotion at a the highest level of the shared societal responsibility for road safety; multi-sector promotion of effective intervention; leading by example with in-house road safety policies; developing and supporting safety rating programmes and the publication of their results; carrying out national social marketing campaigns in support of deterrence-based police enforcement, focused on behavioural change; and encouraging local promotion initiatives.

Monitoring and evaluation

- It is recommended that the Russian Federation increases the scope of the collection of safety performance data, the absence of which is continuing to inhibit full understanding of the safety problem, and publish results. In particular:
 - Develop a comprehensive national crash data and analysis system.
 - Continue to improve computerised driver and vehicle registry systems against international good practice as a priority to provide key data and assist efficient roadside enforcement.
 - Conduct surveys of the volume and patterns of national travel for different types of road use.
 - Conduct roadside surveys in normal traffic of average mean speeds, seat belt use, and breath-alcohol.
 - Record the number of breath tests requested in police enforcement activity.
 - Monitor the safety quality of the vehicle fleet using new car safety rating assessment data.
 - Carry out full-scale International Road Assessment Programme (iRAP)5 surveys of the safety quality of roads.
 - Improve hospital injury surveillance which is fundamental for monitoring trends, identifying levels of under-reporting and programme evaluation and computerise health sector recording of road death and injuries.
 - Embark on research to reconcile data between health, transport and police sectors and identify levels of under-reporting of injuries in the national system.
 - Establish trauma registries in the emergency medical system.

Continued/over

Building Sustainable Capacity: Recommendations for priority actions (2010) *continued****Research, development and knowledge transfer***

- It is recommended that the Russian Federation initiates a road safety research programme to monitor the effects of the current programme, embarks on a policy review and engages the research sector in support of the Safe System approach. This would also include review of the safety benefits from wider policy initiatives designed to address air quality, greenhouse gas emissions, energy saving, and broader public health issues e.g. through lower speeds and safe walking and cycling environments.
- It is recommended that the government promotes rapid knowledge transfer on the Safe System approach for key stakeholders in different sectors both at decision-making and operational levels.
- It is recommended that a review of leading developments in new technologies for vehicle, highway and network management that offer potential safety gains is conducted.
- It is recommended that multi-sector demonstration Safe System projects be designed, implemented and evaluated, and findings promoted and rolled out nationally. Peer-to-peer twinning arrangements with countries which are developing innovative Safe System solutions are potentially useful in this respect.
- It is recommended that policymakers and practitioners in the Russian Federation engage in partnerships to develop road safety management capacity with international organisations such as the World Health Organisation, the World Bank, the International Road Assessment Programme, the European New Car Assessment Programme and the International Road Traffic Accident Database Group.

Evidence-based, system-wide intervention

- It is recommended that reviewing and updating the safe planning, design and operation of the road network against international good practice be continued. Head-on crashes, run-off-road crashes, junction crashes and pedestrian safety need to be addressed.
- It is recommended that reviewing best practice in vehicle safety standards be continued and state of the art test procedures (e.g. frontal off-set deformable barrier tests and pedestrian tests used in the European New Car Assessment Programme (Euro NCAP)⁶). Safety equipment such as electronic stability control should continue to be promoted and demand for safety equipment in government procurement policies and private sector occupational health and safety policies stimulated.
- It is recommended that post-impact care be strengthened by improving coverage nationally for access to emergency medical services and trauma care, as highlighted in the previous peer review.
- It is recommended that random breath testing without the need for reasonable cause for suspicion be introduced, in line with international good practice, and a new offence of failure to submit to a roadside breath test be created to improve efficiency.
- It is recommended that a policy review of novice driver licensing and testing be undertaken, with special reference to international good practice in reducing young novice driver deaths and serious injuries.

1. BACKGROUND

A peer review of road safety performance in the Russian Federation was conducted during 2004-2005 by international and national experts against a background of escalating road deaths and major changes in road travel and transport policies taking place in the Russian Federation.

The review concluded that the Russian Federation's aspiration to achieve the capacity and performance evident in best practice countries would require a long and resource-intensive process, backed by unwavering political will to achieve results and rapid knowledge transfer of best practice, with international organisations ready to assist wherever necessary on an on-going basis. The peer review findings and recommendations were incorporated into the Road Safety Improvement Federal Targeted Program 2006 – 2012 (RSI FTP) which was under development at the time of the peer review and introduced in 2006.

The purpose of this update, carried out under the auspices of the International Transport Forum (ITF)(previously ECMT),in partnership with the WHO and World Bank and in cooperation with the Ministries of Transport and Internal Affairs of the Russian Federation, is to review the progress in road safety performance since the 2006 Report was issued.

The peer review team has used the findings and frameworks of the ITF/OECD Towards Zero report in this assessment, representing as it does state of the art road safety management in good practice countries, in addition the findings and knowledge base of the 2006 peer review. The valuable inputs, assistance, and cooperation of the Russian road safety colleagues are acknowledged with thanks.

Following this background section, which presents the international and national context for the 2006 report and a summary of its main conclusions and recommendations, Section 2 presents an overview of current road safety performance in the Russian Federation, based on the available indicators. Section 3 discusses developments to date and Section 4 outlines some conclusions and key recommendations for next steps which might be taken to enhance road safety.

Introduction

Following the request of the Ministry of Transport of the Russian Federation, a peer review of road safety performance in the Russian Federation was carried out during 2004 and 2005, by the European Conference of Ministers of Transport (ECMT) (now the International Transport Forum (ITF)) in partnership with the World Health Organisation and World Bank. The in-depth review, published in 2006, was conducted by international and national road safety specialists who, on the basis of global good practice, identified and recommended measures designed to improve road safety performance in the Russian Federation.

The purpose of this update, carried out under the auspices of the International Transport Forum and jointly with the WHO and World Bank, is to review the progress in road safety performance since the 2006 Report was issued. The update is based on the original report cited above and written inputs from and meetings with officials from the Road Safety Department of the Ministry of Internal Affairs (DOBBD) and the Scientific and Research Institute of Road Transport (NIIAT) held in Moscow (October 8-9, 2009). In addition, the peer review team has used the findings and frameworks of the ITF/OECD *Towards Zero* report² in this assessment, representing as it does the latest state of the art in good practice countries. The review team is grateful for the excellent cooperation and assistance provided by the Russian colleagues in preparing this update, both in terms of providing core data and in the openness discussions on current road safety issues during this process.

The 2006 Peer Review

The original peer review was conducted against a background of the major changes in road travel and transport policies taking place in the Russian Federation, in common with other transition countries. These resulted from economic growth, the rapidly increasing access of citizens to private motor vehicles, the dramatic deterioration in road safety since the 1990s and the widely acknowledged need amongst policymakers and professionals nationally for further development in public policy, legal frameworks and road safety management.

The review reflected the professional concern that the rapid growth in motorisation, the combination of weak performance goals, an intrinsically unsafe road system and fragmented institutional processes all pointed to a growing road safety crisis. With a higher road death rate (per 100,000 population) in 2004 than any OECD country and contributing one third of all road deaths in ECMT countries, the high socio-economic costs, officially estimated at 2.5% of GDP, presented a considerable barrier to public health as well as to a healthy Russian economy.

In the knowledge that sustained and substantial road safety improvements can be achieved through concerted, results-focused, system-wide action, recommendations for priority actions were made by the review, as summarised in Box 1. The review concluded that Russian Federation's aspiration to achieve the capacity and performance evidence in best practice countries would require a long and resource-intensive process, backed by unwavering political will to achieve results and rapid knowledge transfer of best practice, with international organisations ready to assist on an on-going basis.

The peer review findings and recommendations were incorporated into the *Road Safety Improvement Federal Targeted Program 2006 – 2012 (RSI FTP)* which was under development at the time of the peer review and which was introduced in 2006. The findings also contributed to the creation of a statutory multi-sectoral Government Commission for Road Safety and a Federal Target Programme Coordination Council designed to encourage programme delivery and the achievement of the targeted one third reduction in deaths by 2012 compared to 2004.

Box 1. Summary of Recommendations for Priority Actions (2006)

In view of the seriousness of the road safety problem, it is recommended that steps are taken in the Russian Federation to:

- Ensure that the urgency of combating the long-term upward trend in deaths and serious injury in the Russian Federation is fully understood by all the responsible authorities.
- Ensure government leadership at the highest level to increase awareness of the threats posed by road traffic crashes to societal well-being and the economy.
- Establish urgently multi-sectoral co-ordination and leadership on road safety at the highest political level to:
 - Ensure that safety is fully integrated into transport, health, environmental and industrial policies.
 - Ensure co-ordination between national, regional and local authorities.
 - Establish a long-term vision for a safer road traffic system where deaths and serious injuries can be substantially reduced and ultimately avoided, as sought in other areas of public safety, and which can stimulate, guide and ensure continuity in road safety work.
 - Set challenging but achievable numerical targets to reduce road traffic deaths and pedestrian deaths.
 - Secure sustainable funding and substantially increase existing levels of financing for road safety and road safety research.
 - Increase the current very low value attached to preventing a road fatality to allow road safety to compete more successfully with mobility and environmental projects for expenditure.
 - Encourage the establishment of an active non-governmental and professional sector for road safety to help stimulate the demand for evidence-based improvements in road safety and the transfer of knowledge about best practice.
 - Establish a manageable and measurable national road safety programme to:
 - Set credible penalties and the means of collecting them.
 - Improve driver and vehicle licensing registries towards more efficient enforcement.
 - Increase the scope of the collection of safety performance data, the absence of which is inhibiting full understanding of the safety problem, and publish results.
 - Reduce motor vehicle speeds and improve pedestrian safety in urban areas by lowering the general urban speed limit to 50 km/h; introduce area-wide self-enforcing 30 km/h zones in residential areas and separate pedestrians from motor vehicles at speeds of over 30 km/h.
 - Improve the safety of road infrastructure in the first instance at high risk sites, through mass action programmes and by introducing best practice safety audit.
 - Increase seat-belt use through enforcement and publicity and by fitting seat-belt reminders in nationally-produced cars.
 - Reduce alcohol-related deaths and injuries by introducing a maximum legal limit of no more than 50mg/100ml for the general driving population accompanied by robust high-visibility enforcement.
 - Improve young driver safety through graduated driver licensing and by introducing a lower blood alcohol limit of 20mg/100ml.
 - Improve vehicle safety standards in general, but in the first instance through compulsory daytime running light use in cars and motorcycles.
 - Improve vehicle safety by compulsory in-vehicle speed limitation in heavy goods vehicles, compulsory front and side under-run guards and the provision of retro-reflecting markings.
 - Improve hospital injury surveillance which is fundamental for monitoring trends and programme evaluation. Strengthen post-impact care by improving coverage by emergency medical services and evidence-based practice. Wherever practicable in urban areas, provide emergency lanes to expedite the passage of emergency services.
 - Explore ways of achieving efficient multi-disciplinary knowledge transfer on road safety through existing funding mechanisms involving government departments and international organisations.
 - Collaborate with the ECMT, WHO, the World Bank and other potential partners to launch a large demonstration project in a specific region or area of the Russian Federation to present a targeted programme comprising a range of effective road safety activities. This could contribute positively to the long-term process of building country capacity for sustainable road safety, while demonstrating measurable road safety results in the short-term, to provide evidence-based benchmarks for the rollout of similar initiatives across the rest of the country.

2. CURRENT ROAD SAFETY PERFORMANCE

A significant improvement in safety performance in the Russian Federation has been achieved since 2004. Between 2004 and 2008, a substantial 13% reduction in deaths has taken place against a 24% increase in vehicle numbers with a particularly sharp decrease in the numbers of road deaths occurring in 2008. The most marked decreases since 2004 were in motorcyclist deaths (32%), pedestrian deaths (26%). Death rates in 2008 decreased by 12.4% (per 100,000 of population) compared with 2004. This downward trend is continuing through 2009.

The road safety situation in the Russian Federation continues to be serious and challenging and deserves high priority in national, regional and local governance. In 2008, there were 29,936 road deaths and 270,883 police reported injuries. Car user deaths (51% of total deaths) and pedestrian deaths (36%) continue to represent the main casualty problems. The estimated socio-economic cost of road crashes was over RUR 908 billion (around US \$29 billion) representing over 2% of GDP.

When compared internationally (and taking into account differences in definitions of fatality), death rates in crashes on Russian roads are five times as high as experienced in the best performing nations in road safety.

The review's understanding and detailed analysis of the road safety situation are limited by the lack of detailed safety performance and health sector monitoring data which are collected routinely in many European countries and recommended in the original peer review.

Summary of trends

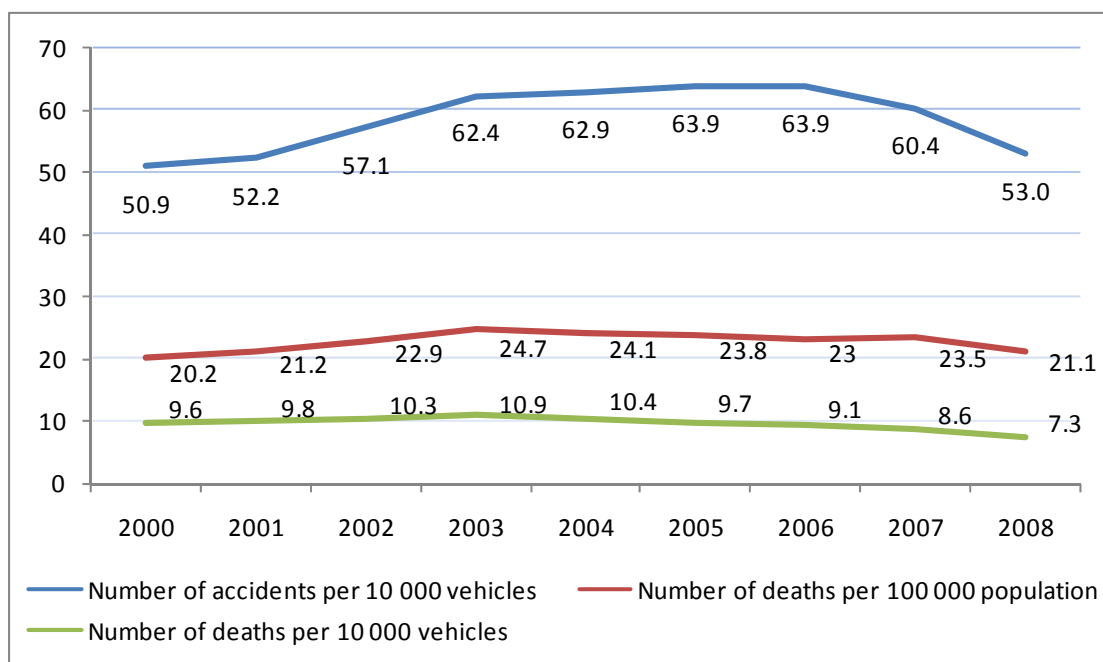
Final outcomes: deaths, injuries, crash costs

There were 29,936 road deaths ⁺ in the Russian Federation in 2008. This total represents a substantial 13% reduction in deaths, against increasing vehicle numbers, compared with the 34,506 lives lost in 2004. A particularly sharp decrease in deaths was experienced in 2008. Apart from car users, where deaths were slightly higher than in 2004, deaths in all road user classes have been decreasing since 2004 (since 2005 for bus users). The most marked decreases since 2004 were in motorcyclist deaths, though small in numbers (32%) and pedestrian deaths (26%). Safety performance continues to improve during 2009 with a continuing reduction in the number of deaths.

The national fleet exceeded 41 million motor vehicles (including motorcycles) in 2008, representing a 24% increase compared with 2004 and the number of drivers licensed rose by 40%. Population decreased very slightly by 1.6%. Death rates in 2008 decreased by just over 17% (per 100,000 of population) compared with 2004.

The socio-economic cost of road traffic crashes is officially estimated at over RUR 908 billion (around US \$29 billion) representing over 2% of GDP.

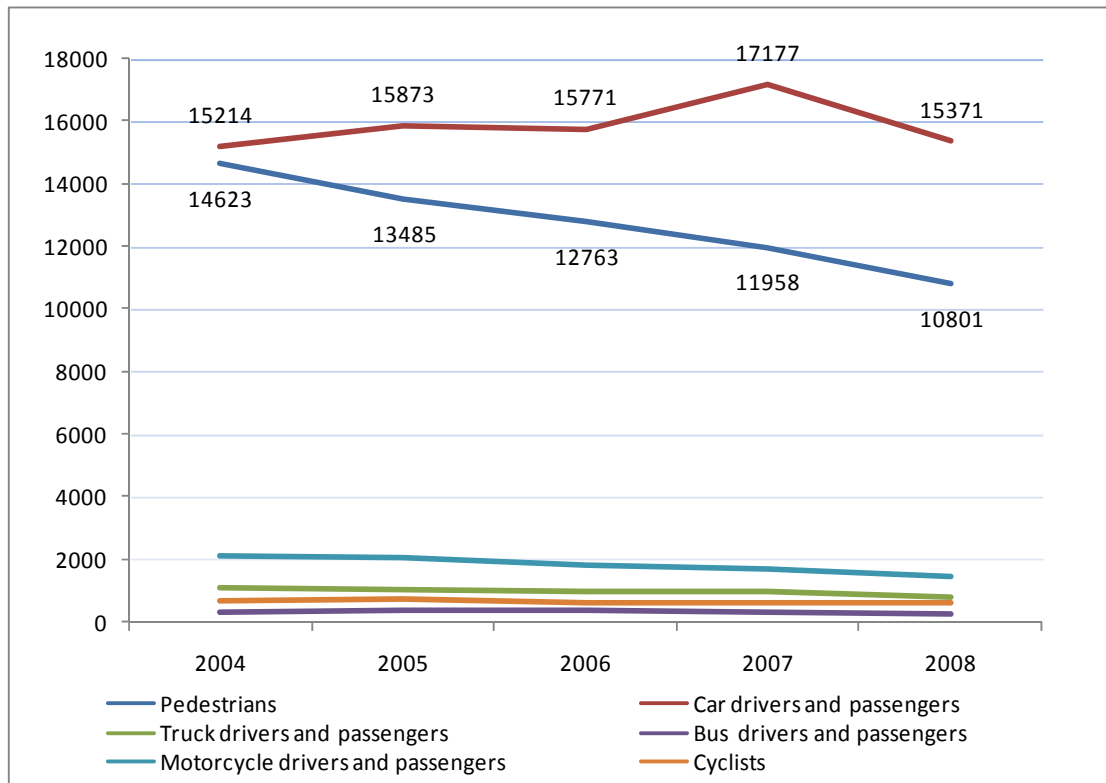
Figure 1. Road deaths and crashes per 10,000 vehicles and death per 100,000 population in the Russian Federation 2000-2008



Source: DOBDD, 2009.

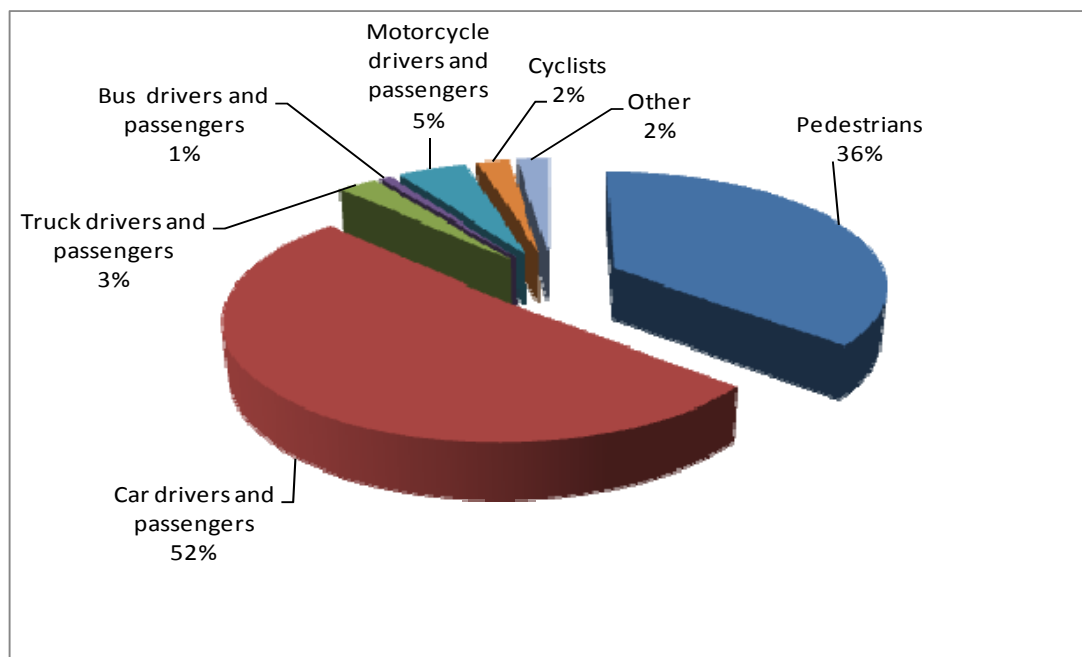
⁺ The definition of road death used here and in Figures 1-4 is death within 7 days. The international norm of defining death as occurring within 30 days was introduced in 2009. All international comparisons of fatalities made in this update are adjusted to the 30 day definition.

Figure 2. Road deaths by different types of road user in the Russian Federation, 2004 -2008



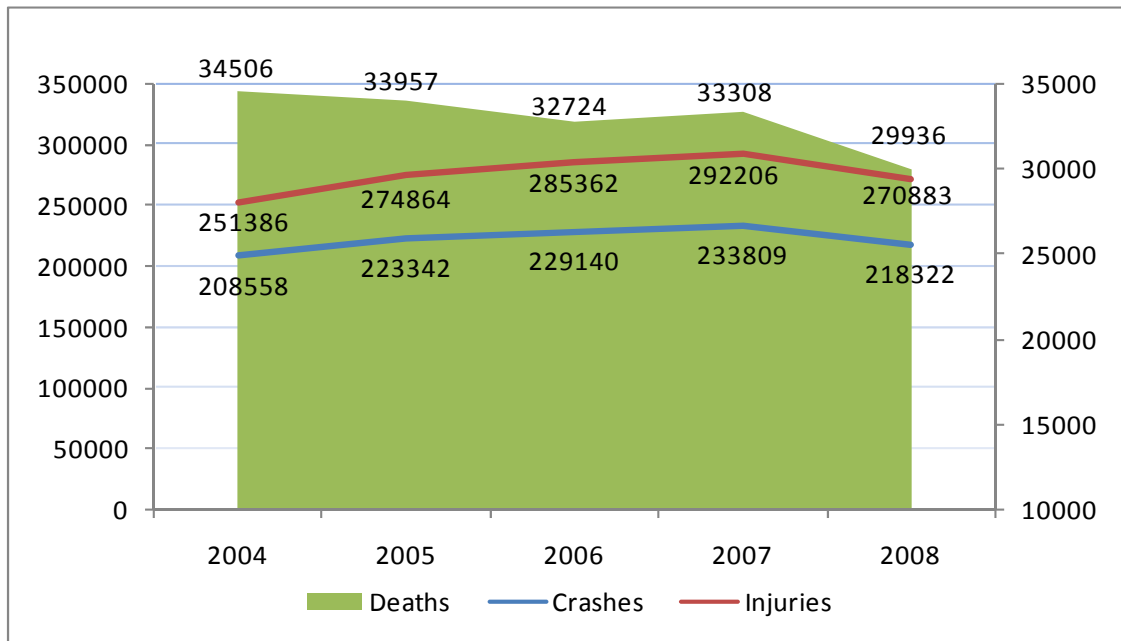
Source: DOBDD, 2009.

Figure 3. Road deaths by different types of road user in the Russian Federation, 2008



Source: DOBDD, 2009.

Figure 4. Trends in road crashes, deaths and Injuries in the Russian Federation, 2004-2008

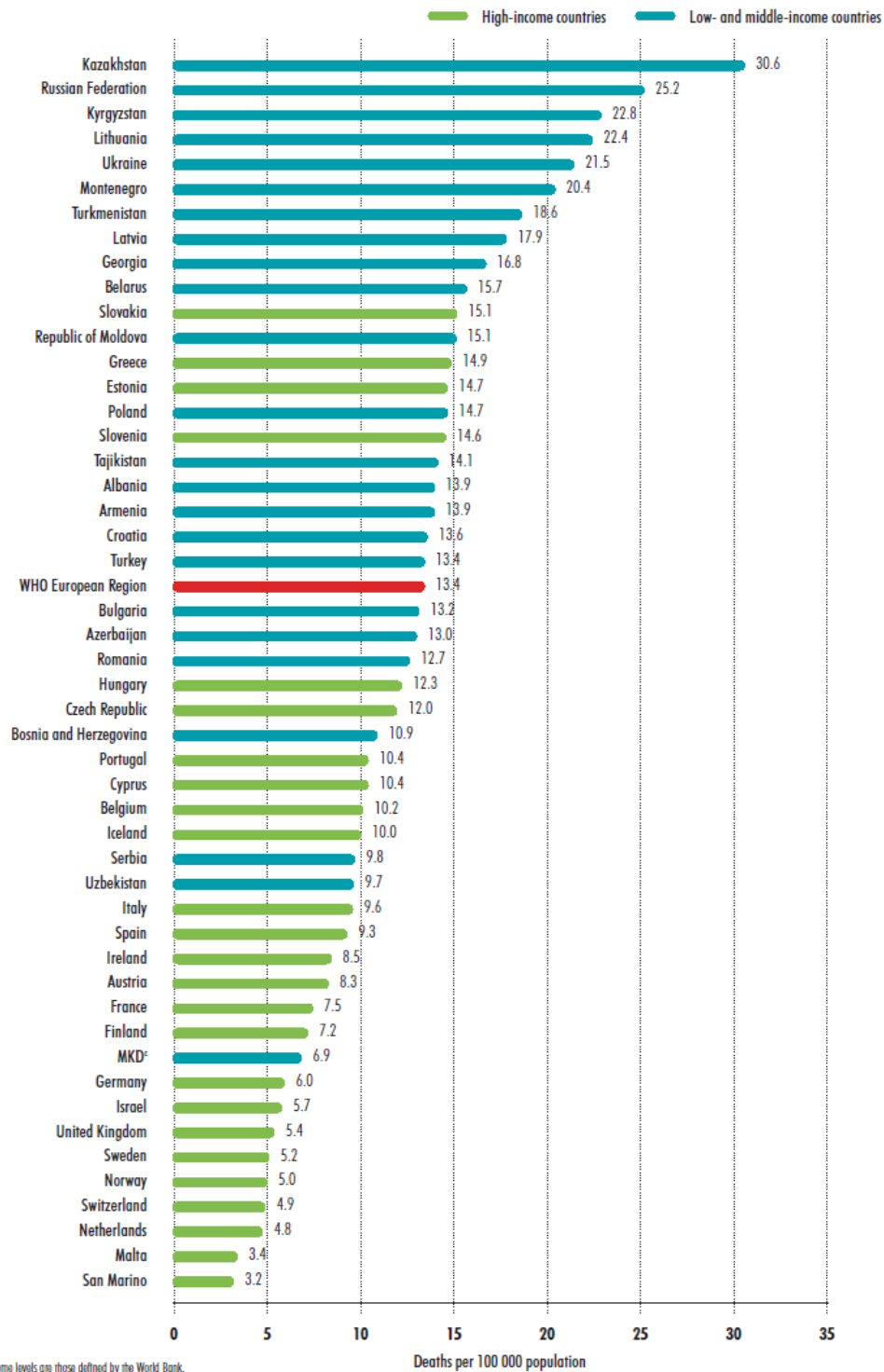


Source: DOBDD, 2009.

The Russian Federation is clearly on course towards its target to reduce deaths by 33% (23,119 deaths) by 2012 compared with the 2004 baseline which it set in its *Road Safety Improvement Federal Targeted Program 2006 – 2012 (RSI FTP)* if current trends continue.

In terms of international comparison, the Russian death rate of around 22.8 deaths per 100,000 of population (adjusted for 30 day definition) is over five times as high as provisional death rates (4.3 deaths per 100,000 of population) from the best performing nations in 2008. Modelled fatality data by the WHO for the previous year estimated that the death rate per 100,000 of population in the Russian Federation was second only to Kazakhstan for the worst performance in the WHO European region and five times as high as Sweden, the United Kingdom and the Netherlands, the leading performers in Europe and the world³.

Figure 5. Mortality Rates from Road Traffic Injuries per 100,000 population, 2007 WHO European Regions a,b,c,



^a Income levels are those defined by the World Bank.

^b Modelled mortality rates. Annex 1 presents details on modelling.

^c MKD is the International Organization for Standardization abbreviation for the former Yugoslav Republic of Macedonia; this is used in figures throughout this publication.

Source: WHO Regional Office for Europe ³.

Intermediate outcomes: e.g. speed levels, excess alcohol, seat belt use

Speed: There are no periodic national surveys of average mean speeds. The police report a 30% decrease in deaths caused by excess speed between 2004 and 2008.

Drinking and driving: The level of excess alcohol of drivers/riders in normal traffic is not measured. In 2004, the police reported that 3,645 people died in excess alcohol crashes, with a 35% decrease to 2,383 deaths in 2008.

Seat belt use: The level of seat belt use in normal traffic is not measured. The Ministry of Internal Affairs reports that self-reported quarterly surveys of seat belt use indicate that a national average of around 60% of front seat occupants wear their seat belts, compared with a reported level of 33% in 2007.

Safety quality of vehicle fleet: The age of motor vehicles has decreased as shown in Table and the percentage of foreign imported vehicles has increased and accounted for nearly 32% of the total number of motor vehicles. The number of imported private cars doubled in 2008 compared with 2004 and also increased for buses and heavy goods vehicles. These developments are significant since the safety quality of cars improves with decreasing age and many imported cars, in particular, have in crash tests demonstrated substantial improvements in safety design and equipment in recent years as a result of the combined effects of legislation and use of state of the art crash tests in new car assessment safety ratings. However, in 2009 a tax penalty for imported vehicles was introduced in favour of domestically produced cars.

	<i>Cars</i>		<i>HGVs</i>		<i>Buses</i>	
	2004	2008	2004	2008	2004	2008
<5 years	21%	28%	14%	18%	25%	28%
5-10 years	29%	26%	25.5%	20.5%	28%	27.5%
>10 years	50%	46%	60%	62%	45%	45%

Institutional outputs: e.g. numbers of breath tests, number of speed and seat belt checks

The annual numbers of roadside breath tests are not recorded by the police. Reported offence data for excess alcohol shows that the number of offences more than halved between 2004 (1,149,462) and 2008 (468,223). However, the number of refusals by drivers to take a medical test (451,740) increased by 27% during this period.

No reported data is available for levels of average mean speeds in normal traffic or the numbers of speed checks for excess speed. The number of speed offences increased from 12,814,979 in 2004 to 16,537,269 in 2008, an increase of 29%.

Data for seat belt offences was provided between 2006 when enforcement of seat belt legislation recommenced (1,321,683 offences) nearly doubling in 2008 (2,321,962 offences).

3. SUMMARY OF DEVELOPMENTS TO DATE

Since the original peer review commenced in late 2004, a range of developments have taken place. These have included new institutional arrangements for multi-sectoral coordination across government; the establishment of a road safety programme defined by a national target to reduce deaths and against which progress is being charted; much development in the legislative framework; improvements in the safety of the vehicle fleet (decrease in age of fleet; imminent fitment of seat belt reminders, daytime running lights, heavy goods vehicle safety provisions); enhanced police enforcement activity in mid-2008 to reduce unsafe behaviours (including seat belt use, excess alcohol, excess speed); strengthening of the penalty system and important new proposals for reducing urban speed limits.

These developments represent a considerable body of activity and while scientific evaluation is not available, many of these actions are likely to have contributed to improved performance. At the same time, any reductions in exposure to risk brought about by economic recession and lower speeds resulting from substantial congestion in large cities also need to be taken into account as possible factors contributing to the large reduction deaths in 2008.

DEVELOPMENTS SINCE LATE 2004

A range of institutional developments and intervention have taken place since the original peer review commenced in late 2004. These are outlined briefly in the following summary.

Institutional Management

Results focus

High-level review: The seriousness of the road traffic injury problem and the general conclusions and recommendations of the peer review have received high-level focus across Government. The importance of new, concerted national action to reduce deaths and injuries in road crashes is reflected in a number of high-level decisions, orders and discussions - the decision of the State Council presidium at the end of November 2005, the Presidential edicts in 2006 and 2008, and the Parliamentary hearings on road safety.

Lead agency: In October 2004, a governmental decree authorised the Ministry of Internal Affairs to coordinate the activity of all federal executive authorities concerned with road safety. Road traffic safety is identified as one of the priority tasks of the Russian Ministry of Internal Affairs and its territorial bodies. The review team notes, however, that a lead department in support of the inter-departmental Government Commission for Road Safety (see below) with clearly defined road safety management functions and capacity to lead the development and encourage implementation of the road safety strategy has not been established.

The *World Report on Road Traffic Injury Prevention* highlights the fundamental role of the lead agency in ensuring the effective and efficient functioning of the road safety management system. Responsible and accountable road safety leadership at country, state, provincial and city levels is vital to success. The overarching issue is the need for one agency, irrespective of sector, to take ownership of leading and coordinating the governmental effort on road safety to achieve results. The challenge then is for the lead agency to bring all the other agencies along in an active way. In good practice road safety management, the lead agency takes responsibility within government for the development of the national road safety strategy and its results focus - the overarching institutional management function. It usually also takes responsibility for horizontal inter-governmental coordination arrangements; vertical coordination of national, regional and local activities; coordination of delivery partnerships between government, professional, non-governmental and business sectors and parliamentary groups and committees. It plays a key role in ensuring a comprehensive legislative framework; securing sustainable sources of funding and creating a rational framework for resource allocation; high-level promotion of road safety strategy across government and society; periodic monitoring and evaluation of road safety performance; and the direction of research and development and knowledge transfer.⁴

In view of the important role of the lead agency role in road safety management and the ambiguity of the current arrangements in the Russian Federation, this area would benefit from further review. Road safety management capacity review tools developed by the World Bank could be readily applied to this task by independent safety management experts, in close consultation with government stakeholders and research experts. This would help to establish clearer lines of lead agency responsibility and accountability for the management of national road safety performance.

Target-setting: In February 2006, the Government approved and began implementation of the Federal Target Road Safety Programme for 2006-2012 which is underpinned by a target to reduce the number of road deaths by 33% compared with 2004 levels. The Programme aims to improve road safety at national, regional and local levels. The Russian Federation Transport Strategy also includes further

strategic road safety goals to 2030 for reducing the numbers of deaths from 23.5 per 100,000 of population in 2007 to 8 per 100,000 of population in 2030.

Coordination

In April 2006, a statutory multi-sectoral Government Commission for Road Safety was established and meets quarterly. Membership of the Commission includes high-ranking officials from the Russian Ministry of the Interior, the Russian Transport Ministry, the Russian Ministry for Emergency Situations, the Ministry of Public Health and Social Development, the Ministry of Education and Science, and other stakeholders from among the federal executive authorities, as well as public organisations and associations. The Commission is headed by First Vice-Premier of the Government of the Russian Federation.

The main tasks of the Commission established in legislation are to:

- a) Ensure coordinated action between the federal executive authorities on the development and implementation of state policy in the field of road safety.
- b) Identify the main priorities for regulatory improvements in the field of road safety
- c) Coordinate actions of the federal executive authorities in developing safety projects and implementing federal programmes on road safety.
- d) Improve the coordination arrangements between the federal and local/regional levels of the federal executive authorities, increase efficiency of interaction with all other stakeholders in the field of road safety.

The Commission also reports to Parliament on progress in road safety.

In addition, a Federal Target Programme Coordination Council has been established, which is a collegial programme implementation management body. Agreements have been concluded on co-financing of the activities within the Federal Target Programme framework. Regular meetings are held with decision-makers representing the President of the Russian Federation in the federal districts, heads of the Ministries involved in the Federal Programme, and chairmen of regional road safety commissions. Over 80 regional and about 1500 municipal road traffic safety programmes have been developed and are being implemented within the context of the Federal Target programme in 2006–2008. It is reported that these are largely synchronised with respect to planned measures and sources of financing.

Legislation

A clear priority of road safety work in support of the goals set by the Russian Federation's road safety programme has been to establish a more comprehensive legislation framework than existed previously in support of the design, operation and use of the road network, the entry and exit requirements of vehicles and users to the road network, the efficiency of police enforcement (e.g. owner liability for automated enforcement), and the administration of the penalty system.

Legislation on advertising on roads, urban development, licensing of passenger transport, technical regulations on motor vehicles for nationally-produced and imported vehicles, ambulance requirements, crash reporting and mandatory third-party insurance has also been introduced. A new blood alcohol limit and more severe penalties have been introduced for excess alcohol (driver disqualification for 18 month - 2 years for the first offence and criminal responsibility for causing death as a result of excess alcohol (leading to prison sentence), exceeding the speed limit by a large margin, driving on the opposite

carriageway, and extending the legal grounds for banning vehicles from use. A range of new policy initiatives are being taken and draft safety legislation has recently been proposed (See later sections).

Funding and resource allocation

Funds of around \$US 2 billion have been earmarked for the 2006-2012 programme, 43% of which is allocated from the federal budget. The programme recommends that the remainder be provided from the budgets of regional governments and non-budgetary sources. Annual amendments have been made specifying programme measures and their funding volumes. There is uncertainty concerning the 2010 budget due to the current economic climate.

In 2008, a new methodology was developed and specified (though not yet officially adopted) to assist resource allocation in the road safety programme, for estimating the socio-economic impact of road crashes. In particular the value of a 'statistical life' was increased to USD 700,000.

Promotion

Awareness campaigns of new legislation and penalties were carried out during the first two years of the implementation of the road safety programme.

Monitoring and evaluation

Some improvement in driver and vehicle licensing registries are reported. The Ministry of Internal Affairs has adopted regulations on the information support system and computerised information in the registry databases is made available to various state authorities.

New action is being taken in the health sector to prepare for the registration of road crash victims, nature of injury, initial treatment provided and treatment period. In 2009, the Russian Federation adopted the definition of death as occurring within 30 days.

Research and development and knowledge transfer

Road safety research is financed mainly within the context of the Federal Target Road Safety Programme for 2006–2012 and various policy review studies have been carried out in support of the programme leading to updates in national standards and design manuals. RUR 2,704.5 million are earmarked for road safety research and development.

Interventions

Planning, design, operation and use of the road network

Speed management: A study of speed management in urban areas to improve pedestrian safety was conducted within the framework of the Federal Target Programme in 2006. New road zone signs on speed limitation, pedestrian zones, speed humps and parking restrictions have been introduced into national standards. New draft legislative proposals have recently been introduced which reduce speed limits in cities from 60 km/h to 50 km/h; 30 km/h around office areas and 20 km/h in residential areas with associated traffic calming measures, intelligent transport systems and tougher requirements for drivers to give way to pedestrians.

High-risk sites: A reduced number of high-risk sites is targeted in the national road safety programme. In 2008 the Federal Road Agency introduced new guidelines for identifying high risk sites. The installation of lighting and safety barriers has been undertaken in high-risk locations.

Safety audit: One regional organisation has adopted a best practice safety audit protocol from abroad. State inspection of the network by the Ministry of Internal Affairs continues to be carried out.

Excess alcohol: New legal blood (0.3 g/l) and breath (0.15 g/l) alcohol content limits were introduced in legislation in July 2007. The penalty for failure to submit to medical examination (no breath or blood tests are carried out) was increased to disqualification from driving for 18 months – 2 years. The Ministry of Internal Affairs has reported decreases in the number of deaths and injuries involving excess alcohol in the first half of 2009 of almost 17% over compared with the same period for the previous year.

Seat belt use: As indicated in Section 2, the 5 fold increased penalty for seat belt - started to be enforced in 2007. While no objective survey data is available, self-reported seat belt use surveys indicate a reported increase from 33% in 2007 to 60% in 2009.

Entry and exit of vehicles and users

Vehicle standards: A range of vehicle legislation adopted UN ECE standards has been introduced covering the fitment of seat belt reminders for car drivers (from January 2015), the mandatory fitment of seat belts in inter-urban public transport vehicles (from January 2010; mandatory daytime running light use for powered two wheelers (September 2010); fitment to heavy goods vehicles of rear underrun guards (from September 2009), side underrun guards (September 2010), retro-reflective marking (September 2010). The mandatory use of daytime running lights in cars in urban areas (supplementing existing requirement for inter-urban and rural roads) has been proposed in draft legislation.

Driver/ rider licensing, testing and training: Voluntary learner plates for novice drivers were introduced in 2009.

Recovery and rehabilitation of victims

As mentioned previously, new action is expected which will improve the registration of road crash victims, the nature of injury, the initial treatment provided and the treatment period.

4. BUILDING SUSTAINABLE CAPACITY: RECOMMENDATIONS FOR PRIORITY ACTIONS

Overall, it can be concluded that encouraging progress in improving road safety performance is being made nationally and the review team commends the Russian Federation in the substantial actions taken to date. Concerns, however, remain about the road safety results being achieved and their long-term sustainability, given the national aspiration to meet the performance of the global road safety leaders.

The original review concluded that Russian Federation's aspiration to achieve the capacity and performance evidence in best practice countries would require a long and resource-intensive process. The central issue is how can the Russian Federation build on its achievements to date and avoid the fatalistic and costly pathway of many OECD countries which, for too long, accepted the heavy toll of road death and injury as an inevitable price of economic progress and motorisation?

The review team believes that the Russian Federation can make further rapid and substantial progress in reducing death and injury. It makes this judgement because the current road death rate per capita is still exceptionally high in the Russian Federation and therefore it is reasonable to expect that high returns can continue to be achieved from targeted, research-based interventions that improve the protective quality of road infrastructure, vehicle fleet and emergency medical system and key safety behaviours (speeding, drunk driving, non-wearing of seat belts).

A key recommendation is that the Russian Federation studies and considers in its next road safety strategy and programme adopting a Safe System approach for the long-term (see Appendix 1) which is recommended to all countries by the ITF/OECD and World Bank on the basis of global good practice.

A key issue identified by the review team is the need to continue to build sustainable road safety management capacity nationally, as acknowledged by the government. In particular, the Russian Federation needs to review and establish clearer lines of lead agency responsibility and accountability as well as the responsibilities and accountabilities of all key partner agencies for the management of national road safety performance. Towards this end, it is suggested that the Russian Federation considers review of these important issues, possibly within the framework of a road safety management capacity review to assist government in building sustainable road safety management including continuing support for road safety research.

Progress to date

In carrying out this review, members of the team have referred to the road safety management capacity review framework devised by the Global Road Safety Facility of the World Bank⁴ and recommended for use by the ITF/OECD² in periodic road safety review. Reference is made to the 2006 peer review and its knowledge base which include the wide range of ECMT, WHO and World Bank publications on global good practice. Of necessity, in view of the timescale of this current assessment, a full road safety management capacity review has not been carried out and professional judgements have been used where data is lacking in key areas.

Encouraging progress is being made in improving road safety performance in the Russian Federation. Since the original peer review, there have been a number of key institutional developments (although as previously indicated, a clearly defined lead agency has not yet been appointed); the establishment of a road safety programme defined by a national target to reduce deaths and against which progress is being charted; much development in the legislative framework; improvements in the safety of the vehicle fleet (decreasing in age; imminent fitment of seat belt reminders, daytime running lights, heavy goods vehicle safety provisions); enhanced enforcement activity to reduce unsafe behaviours (including seat belt use, excess alcohol) and strengthening of the penalty system as well as important new proposals for reducing urban speed limits. Many of these actions are likely to have contributed (or will contribute in future) to improved performance, although scientific ‘before and after’ evaluation is not available to inform an assessment.

Performance levels and long-term sustainability

The review team commends the Russian Federation in the actions taken to date. Concerns, however, remain about the road safety results being achieved and their long-term sustainability in view of the challenges ahead. The international comparisons presented in Section 2 indicate that overall performance by international and European standards continues to be poor, requiring ongoing focus at the highest levels of government, business and civil society if current trends are to be maintained and further improved.

The original review concluded that Russian Federation’s aspiration to achieve the capacity and performance evidence in best practice countries cannot be achieved overnight. Indeed, against the background of growing motorisation, the safety performance of leading countries took several decades of sustained investment, commitment and research-based action to bring national road safety outcomes under control.

The review team believes that the Russian Federation can build on its achievements to date and avoid the fatalistic and costly pathway of many ITF/OECD countries which, for too long, accepted the heavy toll of road death and injury as an inevitable price of economic progress and motorisation. As indicated in Appendix 1, which outlines four phases of road safety management observed over the last fifty years, this would require a shift to the *Safe System* approach – Phase Four, the latest evolution. While elements of the three earlier paradigms are evident in the Russian Federation, the issue is how to avoid the trajectory of the countries that have experienced this costly evolution and prevent the predictable onslaught of deaths and injuries that will otherwise result. The review team is of the opinion that notwithstanding the challenges the Russian Federation faces to reach good practice levels of road safety performance, it can make further rapid and substantial progress in reducing road deaths and

injuries by absorbing the lessons of high-income countries and rapidly adapting their good practice responses to the safety priorities of the Russian road traffic system.

Priority recommendations for the study of international *Safe System* approaches and the building of further sustainable capacity for road safety management are outlined in the Executive Summary. Key recommendations are for the government of the Russian Federation to review good practice *Safe System* models which are evolving in leading road safety countries. A high-level study tour which looks at current practice first hand and which involves policymakers and experts from the key road safety sectors nationally, regionally and locally is recommended as a useful first step. In addition, the review recommends that the current road safety leadership arrangements in the Russian Federation are formally reviewed to provide guidance for the establishment of clearer lines of lead agency responsibility and accountability as well as the responsibilities and accountabilities of all key partner agencies for the management of national road safety performance

APPENDIX 1. EVOLUTION OF RESULTS FOCUS TO SAFE SYSTEM

Source: Bliss T and Breen J, Country Guidelines for the Conduct of Road Safety Management Capacity Reviews and the Specification of Lead Agency Reforms, Investment Strategies and Safe System Projects. Global Road Safety Facility, World Bank (2009)

Successive shifts in road safety management thinking and practices in high-income countries have been evident over the last fifty years. Rapid motorization and escalating road deaths and injuries began in many OECD countries in the 1950s and 1960s and concurrently the ambition to improve road safety outcomes began to grow. Since the 1950s there have been four significant phases of road safety management which have become progressively more ambitious in terms of the results desired.

(i) Results Focus—Phase 1: Focus on driver interventions

In the 1950s and 1960s safety management was generally characterized by dispersed, uncoordinated, and insufficiently resourced institutional units performing isolated single functions (Trinca et al, 1988). Road safety policies placed considerable emphasis on the driver by establishing legislative rules and penalties, supported by information and publicity, and expecting subsequent changes in behavior. It was argued that since human error mostly contributed to crash causation it could be addressed most effectively by educating and training the road user to behave better. Placing the onus of blame on the road traffic victim acted as a major impediment to the appropriate authorities fully embracing their responsibilities for a safer road traffic system (Rumar, 1999)

(ii) Results Focus—Phase 2: Focus on system-wide interventions

In the 1970s and 1980s these earlier approaches gave way to strategies which recognized the need for a systems approach to intervention. Dr. William Haddon, an American epidemiologist, developed a systematic framework for road safety based on the disease model which encompassed infrastructure, vehicles and users in the pre-crash, in-crash and post crash stages (Haddon, 1968). Central to this framework was the emphasis on effectively managing the exchange of kinetic energy in a crash which leads to injury, to ensure that the thresholds of human tolerances to injury were not exceeded. The scope of policy broadened from an emphasis on the driver in the pre-crash phase to also include in-crash protection (both for roadsides and vehicles) and post-crash care. This focused road safety management on a system-wide approach to interventions and the complex interaction of factors which influence injury outcomes. It underpinned a major shift in road safety practice which took several decades to evolve. However, the focus remained at the level of systematic interventions and did not directly address the institutional management functions producing these interventions or the results that were desired from them. The strengths of this approach mask its inherent weakness as being viewed as embracing all the essential elements of the road safety management system, whereas the institutional context is not directly addressed. In many ways much of the contemporary debate on road safety is still bounded by the dimensions of the ‘Haddon Matrix’ which only addresses system-wide interventions and for this reason institutional management functions and the related focus on results still receive limited attention.

(iii) Results Focus—Phase 3: Focus on system-wide interventions, targeted results and institutional leadership

By the early 1990s good practice countries were using intervention focused plans setting numerical outcome targets to be achieved with packages of system-wide measures based on the evidence generated from ongoing monitoring and evaluation. It had become clear that growing motorization need not inevitably lead to increases in death rates but could be reversed by continuous and planned investment in improving the quality of the traffic system. The United Kingdom, for example, halved its death rate (per 100,000 head of population) between 1972 and 1999 despite a doubling in motorised vehicles. Stronger expressions of political will were evident and institutional management functions were becoming more effective. Institutional leadership roles were identified, inter-governmental coordination processes were established and funding and resource allocation mechanisms and processes were becoming better aligned with the results required.

Developments in Australasian jurisdictions (e.g., Victoria and New Zealand) further enhanced institutional management functions concerning results focus, multi-sectoral coordination, delivery partnerships, and funding mechanisms (WHO, 2004; Bliss, 2004; Wegman et al., 2006; Trinca et al., 1988). Accountability arrangements were enhanced by the use of target hierarchies linking institutional outputs with intermediate and final outcomes to coordinate and integrate multi-sectoral activities. This phase laid the foundation for today's good practice and reflects the state of development in many higher performing countries today. The strengths of this approach can turn into weaknesses to the extent that the focus on safer people, safer vehicles, safer roads and safer systems diverts attention away from the road network where the actual deaths and injuries are incurred. Successful targeted plans have achieved large measurable gains in improved road user behavior and this success helped to reinforce the earlier approach which focused purely on driver interventions. The sharpened emphasis on setting ambitious but achievable targets could also inhibit innovation, to the extent that targets are bounded by what is deemed to be technically feasible and institutionally manageable, thus blunting the aspiration to go beyond what existing evidence suggests is achievable.

(iv) Results Focus—Phase 4: Focus on Safe System long-term elimination of deaths and serious injuries and shared responsibility.

By the late 1990s two of the world's best performing countries had determined that improving upon the ambitious targets that had already been set would require rethinking of interventions and institutional arrangements. The Dutch Sustainable Safety and Swedish Vision Zero strategies set a goal to make the road system intrinsically safe (Wegman et al., 1997; Tingvall, 1995; Committee of Inquiry into Road Traffic Responsibility, 1999).

The emphasis on effectively managing the exchange of kinetic energy in a crash to ensure that the thresholds of human tolerances to injury were not exceeded (as originally promoted in Phase 2) was revitalized and given an ethical underpinning in the sense that road deaths and injuries were seen as an unacceptable price for mobility. The implications of this level of ambition are still being worked through in the countries concerned and elsewhere. These strategies recognize that speed management is central and have refocused attention on road and vehicle design and related protective features. The blame the victim culture is superseded by blaming the traffic system which throws the spotlight on the shared responsibility and accountability for the delivery of a Safe System.

For example, Vision Zero aims for an approach in which safe vehicle design delivers a protected occupant into a road system where conflict is minimized by design and energy transfer in crashes is safely controlled. In this system users comply with risk-averse behavioral norms created by education, enforcement and incentives. The emphasis is on the road users' right to health in the transport system and their right to demand safer systems from decision-makers and road and vehicle providers. The strengths of this approach are becoming increasingly evident. What was previously seen as radical and unachievable by many road safety practitioners and policymakers has quickly become the benchmark and central debating point for analyses of what constitutes acceptable road safety results.

Safe System Principles (World Bank 2009)

Managing kinetic energy in the event of a crash A key design principle of a *Safe System* approach is that the system must rely on a balance between allowable travel speeds and the inherent safety of the infrastructure and vehicles. Allowable speed limits must take into account the crash protection offered to users by roads and vehicles. The chances of survival for an unprotected pedestrian hit by a vehicle diminish rapidly at speeds greater than 30km/h, whereas for a properly restrained motor vehicle occupant the critical impact speed is 50km/h (for side impact crashes) and 70 km/h (for head-on crashes). Speed management is central and scientific knowledge about human tolerance thresholds is further informing decisions about safe speeds for the road network.

Network safety engineering principles New safety design principles have been set out for safer roads which better reduce everyday human error and take better account of human tolerance thresholds, not only for motor vehicle occupants but for vulnerable users. These aim for a better match between road function, speed limit, layout and design in the road hierarchy, separating dangerous mixed road use, wherever possible, and speed management and crash protective design. In a *Safe System* approach, highway engineers generally address four main crash types, vulnerable user crashes, crashes at intersections, run-off-road crashes and head-on crashes.

Improving the crash-protection of vehicles for car occupants and pedestrians Research and experience have shown how levels of crash protective performance for car occupants and potentially for pedestrians can be improved greatly by a combination of legislative norms and safety ratings.

Improving post crash care is characterized by efficient emergency notification, fast transport of expert medical personnel, correct at scene diagnosis, patient stabilization, prompt transport to point of treatment, quality emergency room and trauma care, and extensive rehabilitation services.

The tools and accumulated practices used to support the results management framework for the *Safe System* approach are the same as those used in the past to prepare targeted national plans. Targets are still set as milestones to be achieved on the path to the ultimate goal, but the interventions are now shaped by the level of ambition, rather than vice versa. Innovation becomes a priority to achieve results that go well beyond what is currently known to be achievable. In moving forward the *Safe System* approach reinterprets and revitalizes what is already known about road safety, and raises critical issues about the wider adoption of interventions that have proven to be effective in eliminating deaths and serious injuries (e.g., median barriers). The question becomes one of how to introduce these proven safety interventions more comprehensively and rapidly, and indeed this question applies to all elements of the road safety management system with potential for improvement.

The shift to a *Safe System* approach is also well attuned to the high priority global, regional and country development goals of sustainability, harmonization and inclusiveness. A *Safe System* is dedicated to the elimination of deaths and injuries that undermine the sustainability of road transport networks and the communities they serve. Its focus on safer and reduced speeds harmonizes with other efforts to reduce local air pollution, greenhouse gases and energy consumption. And its priority to afford protection to all road users is inclusive of the most vulnerable at-risk groups such as pedestrians, young and old, cyclists and motorcyclists. These co-benefits of shifting to a *Safe System* approach further strengthen the business case for its implementation.

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