

EUROPEAN CONFERENCE OF MINISTERS OF TRANSPORT



Road Safety Performance

National Peer Review: Russian Federation



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EUROPEAN CONFERENCE OF MINISTERS OF TRANSPORT (ECMT)

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Foreword

Following the request of the Ministry of Transport of the Russian Federation in February 2004, this “peer” review of road safety performance in the Russian Federation has been carried out by the ECMT in partnership with WHO and the World Bank. The purpose of this review is to attempt to provide an overall description and assessment of the Russian Federation’s work to improve road safety and to suggest, on the basis of international evidence and experience, steps which might be taken to secure long-lasting, cost-effective and publicly acceptable improvements in road safety.

As in other transition countries, road travel and transport policies in the Russian Federation are currently undergoing major change. This is a result of the rapidly increasing access of citizens to motor cars and the widely-acknowledged need amongst policy makers and professionals in the Russian Federation for further development in public policy, legal frameworks and road safety management.

A growing road safety crisis

The Russian Federation has the highest road death rate (per 100 000 population) of all ECMT member countries and contributes one third of all road deaths in these countries.

Against the background of a 260% increase in car fleet since the early 1990s and a decrease in population, indicators have shown a dramatic deterioration in road safety in the Russian Federation. In 2004, 208 558 reported road crashes resulted in 34 506 deaths and 251 386 injured victims. Around half of those killed in road crashes are aged between 15-44 the most economically active portion of the population. In addition to this toll of human tragedy and suffering, the high socio-economic costs of crashes, which are officially estimated at around 2.5% of GDP, present a considerable barrier to a healthy Russian economy. The societal price being paid for new motor vehicular mobility is, clearly, substantial.

The problem is predominantly urban, concentrated in Russia’s largest cities, and with particularly sharp increases in deaths and serious injuries experienced in the Moscow region. A child is injured, on average, in every eighth road traffic crash nationally and child casualties have increased by some 10% since 1999. Pedestrians and car occupants are the two largest key casualty groups and a range of factors is seriously challenging their safety. Chiefly, these comprise inappropriate mixes of road user traffic, particularly in urban areas; high motor vehicle speeds, a poor road environment and poor vehicle crash protection. The combination of weak performance goals, an intrinsically unsafe road system, and fragmented institutional processes all point to a growing road safety crisis in the Russian Federation, especially if the current rapid rate of growth in motorisation continues. With the economy growing faster than those in most industrialised countries and against the background of the Russian Government’s aim of doubling national gross domestic product (GDP) and personal mobility by 2012, further substantial growth of the private car fleet is expected.

Enhancing societal awareness, political priority and road safety management

International experience confirms that an increasing death rate is not an unavoidable by-product of motorisation. Substantial improvements in road safety can be achieved through concerted, sustained, evidence-based action.

The size of the challenge to bring the road injury problem under control in the Russian Federation means that all sectors of society need to be mobilised to offset the scale of current and escalating societal damage caused by road traffic injury. Political priority for road safety action and resources, therefore, needs to be set at the highest level – by the President, the Prime Minister and by Parliament.

Enhanced awareness by all stakeholders is needed on a range of issues. These include:

- Understanding the new thinking in road safety -- away from blaming the victim and instead towards focusing on all elements of the transport system.
- Ensuring that safety, mobility and environmental compatibility are truly equal priorities in practice (as stated in the Transport Strategy).
- Recognising that the study and implementation of a co-ordinated multi-sectoral targeted system-wide evidence-based road safety plan will help to bring the problem under control.

The Russian Federation's aspiration to achieve the capacity and performance evident in best practice ECMT countries will require a long, resource-intensive process, backed by unwavering political will. The international organisations stand ready to assist Russian colleagues on an on-going basis with technical assistance, knowledge transfer and support for best practice demonstration projects.

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CONCLUSIONS AND RECOMMENDATIONS FOR PRIORITY ACTIONS

Road traffic injury – an urgent problem

The Russian Federation has a very serious, costly road safety problem which, on a year-by-year basis, and against the background of rapidly rising motorisation is, increasingly, running out of control. Already high levels of reported road deaths have increased by 25% since 1998 with large annual percentage increases in crashes, deaths and casualties. In addition to the human tragedy and suffering, the high socio-economic cost of crashes, which are officially estimated at 2.5% of GDP, present a considerable barrier to a healthy Russian economy.

The problem is predominantly urban, concentrated in Russia's largest cities, and with particularly sharp increases in deaths and serious injuries experienced in the Moscow region. Pedestrians and car occupants are the two largest key casualty groups and their safety is being seriously challenged by inappropriate mixes of traffic in urban and rural areas, high motor vehicle speeds, a poor road environment and poor vehicle crash protection.

The combination of weak performance goals, an intrinsically unsafe road system, and fragmented institutional processes points to a growing road safety crisis in the Russian Federation, especially if the current rate of growth of motorisation continues. With the economy growing faster than those in most industrialised countries and the Russian Government's aim to double national GDP and personal mobility by 2012, further substantial growth in the private car fleet is expected.

Increasing societal awareness and political priority for road safety

Developing societal awareness of this urgent and largely avoidable problem to create a supportive climate for effective action is a first priority, and one which is acknowledged by the responsible authorities. This requires a pervasive vision or philosophy that the high levels of death and serious injury in the transport system are wholly unacceptable and their eventual elimination is a paramount goal which can be embraced by all sectors and integrated into all government transport, health and industrial policies. The message that the new vehicular mobility comes at too high a societal price comprising premature death, disabling injury and damage to the economy needs strong and widespread communication.

Political priority for road safety action and resources needs to be set at the highest level by the President, the Prime Minister and by Parliament. The seriousness of the problem warrants championing of road safety by the most authoritative sources in the Russian Federation.

The size of the challenge to bring the road injury problem under control in the Russian Federation needs to be widely understood by policy makers in all responsible departments and at central, regional and local levels. Enhanced awareness is needed of the importance of analysis of key problems; understanding new thinking in road safety away from blaming the victim and instead towards focusing on all elements of the transport system; and recognising that government action extends beyond setting legislative standards and norms to system-wide evidence-based solutions to bring the problem under control. In this way, appropriate political and institutional mindsets and thus appropriate institutions, programmes and resources can be created.

Strong government and parliamentary leadership can also motivate the private and professional sector to engage fully in the task of reducing road traffic injuries. Not least, the establishment of active non-governmental organisations representing vulnerable road users, victims and society could be encouraged to play a key role in maintaining political and media attention on road safety.

Organisation and high-level co-ordination

It is widely acknowledged in the Russian Federation that public sector responsibility for road safety is not just the responsibility of a single ministry nor merely a central government function. It is a multi-disciplinary, multi-sectoral and highly political area of activity which touches the lives of every citizen.

A lead agency has been appointed and an inter-departmental co-ordinating body is to be re-established. Leadership at the highest possible political level in the Russian Federation would ensure full co-operation and co-ordination of the many agencies and stakeholders involved; appropriate financial support for action and send signals to all sectors of society about the importance of the safety and security of Russian citizens.

The co-ordinating body should bring in all departments with responsibilities for road safety; representatives of local and regional government; and set up expert working groups to analyse problems; assess potential countermeasures, and develop policy packages and programmes.

Aided by the lead agency, such co-ordination can build delivery partnerships for road safety both inside and outside government; establish a national long-term vision for road safety as mentioned above; devise and implement strategy, set targets - for final and intermediate road safety outcomes; devise road safety action plans which integrate road safety fully into transport, land-use, health, environment, justice and industrial policies (through tools such as safety impact assessment) and advise on resource allocation and monitoring.

Securing sustainable funding for road safety

Appropriate levels of funding are a pre-requisite for road safety and the Russian Federation needs to substantially increase the funds available for road safety.

While securing adequate funding remains a problem even for the best performing countries in road safety, there is much useful experience that the Russian Federation can draw from to identify the full range of funding mechanisms. Funding in countries active in road safety usually comes principally from general tax revenues. Other options might include establishing an annual road safety fund, and increasing insurance levies to better reflect road user risk. Specific allocations to the regions and local authorities for targeted annual programme activity have proved effective.

At the same time, the amount spent on road safety is related to the value society places on preventing a fatality. Interest and support for road safety may be reduced if too little economic value is attached to human life. The low value attached to preventing a fatality in the Russian Federation may play against recognising the high cost-effectiveness of a range of interventions and it is recommended that this be reviewed at the earliest opportunity.

Priority measures

As indicated previously, embarking on a long-term programme to meet the Russian Federation's aspiration to achieve the capacity and performance evident in best practice ECMT countries, will require a long, resource intensive process, backed by unwavering political will. These next sections highlight several priority measures which outline how the Russian Federation can accelerate its efforts

in the form of a manageable and measurable programme with support from the international community.

- Increasing respect for road traffic law

Introducing credible penalties; enhancing implementation measures to remove opportunities for abuse and centralising driver licensing and vehicle registries (as planned) deserve early attention to improve public trust in the work of the police and the efficiency of enforcement operations (see Section 5.2.4).

- Establishing systematic collection of safety performance data

Systematic collection of the minimum set of data necessary to carry out situation analyses, identify priorities, set realistic but challenging targets and monitor achievements. This could be linked to annual publications (enhancing accountability and transparency) and baseline surveys on the leading risk factors (*e.g.* speeding, alcohol and seat-belt use) (see Section 5.2.3).

- Establishing a research-based approach

As in other fields of public health, serious road injury prevention requires an evidence-based approach to determine priorities; identify countermeasures and to evaluate the effectiveness of their implementation. Establishing and ensuring support is key to an effective long-term national road safety research programme (see Section 5.2.1. “Encouraging other stakeholders”).

- Speed management and pedestrian safety

Priority measures include taking a variety of speed measurements; introducing credible penalties and a programme of police speed enforcement with supporting publicity. Introducing a maximum general urban speed limit of 50 km/h and 30 km/h zones in residential areas would greatly improve pedestrian safety. Work to create conditions for the introduction of automated enforcement needs to be carried out as soon as possible (see Section 5.2.7. “Embarking on a long-term programme of speed management” to “Strategies and measures to improve pedestrian safety”).

- Safer roads

As a matter of priority appropriate professional organisations need to be engaged in the task of creating understanding amongst policy makers and professionals that road safety is as much an implicit feature of road design as mobility or capacity building. Re-engineering the road network with safety in mind is a long-term process involving significant human and financial resources but small Safety of the road infrastructure projects and mass programmes can give high returns on investments in the short-term meriting specific allocations of resources in block grants. A new system of safety auditing of new road schemes should be introduced as more roads are built (see Section 5.2.7. “Embarking on a long-term programme for engineering safer roads”).

- Seat-belt use

Measuring levels of a seat-belt use and introducing police enforcement programmes and combined publicity drawing attention to the consequences of not wearing a seat-belt and the risks of being caught without a seat-belt. Establish credible penalties for failing to wear a seat-belt. Requiring the use of cheap and effective seat-belt reminders in nationally produced motor vehicles. Adopt effective national standards for child restraints and organise health sector loan schemes (see Section 5.2.7. “Increasing seat-belt use”).

- Young drivers

Young, economically active adults are a high-risk group in the Russian Federation, as in other European countries. Graduated licensing systems, where young drivers have step-wise access to a variety of restrictions (including a maximum blood alcohol limit of 20mg/100ml) imposed until achieving a full licence have been successful elsewhere and is worthy of study for appropriateness in the Russian context (see Section 5.2.7. “Managing exposure to risk through specific land-use and transport policies”).

- Drinking and driving

A maximum legal limit of 50mg/100ml should be introduced for the general driving population which can form the focal point of a package of countermeasures to reduce drinking and driving including high-visibility police enforcement and publicity (see Section 5.2.7. “Embarking on a long-term programme for improving the safety of road infrastructure”).

- Safer vehicles

Improving the crashworthiness of Russian vehicle fleet to the standards of many ECMT countries is a long-term but highly efficient means of reducing a substantial number of road injuries and requires the formulation of a long-term strategy. First and relatively easy steps to improve the safety of vehicles, both for vehicle occupants and pedestrians include a requirement for the use of daytime running lights by drivers of cars and motorcycles and the fitment of under-run guards, retro-reflective markings and in-vehicle speed limiters in commercial transport (see Section 5.2.7. “Producing safer vehicles”).

- Post impact care and injury prevention.

Hospital injury surveillance is needed which is fundamental for monitoring trends and programme evaluation. There is a need to set standards and disseminate clinical protocols specifying procedures on the management of patients during emergency medical services on the roads, while in transport and in hospitals to reduce pre-admission deaths rates and disability from road crashes. There is a need for capacity building for road injury prevention activities within the health sector (see Section 5.2.7. “Post-impact care and injury prevention”).

Organising technical assistance and professional capacity development

The multi-disciplinary nature of effective road safety programming requires technical expertise in many spheres both in terms of the content and implementation of policy. Long-term investment, both nationally and internationally, in capacity building in professional organisations and within government can be of use. The ECMT, World Bank and WHO are able and willing to assist in this task.

A range of World Bank instruments are available to assist the development, preparation and implementation of country road safety strategies and related operations. ECMT recommendations provide a framework for road safety policy and the network of contacts across its membership allow effective information exchange and peer review. WHO has several arrangements to implement collaborative activities in its Member States, including bilateral agreements on priority activities identified by country. Over the past few years, collaboration between WHO and the Ministry of Health in the Russian Federation included activities in the area of injury prevention, with a focus on road traffic safety and improvement to injury surveillance. Under this collaboration, the development of reviews, policy settings, the organisation of multi-stakeholder workshops took place which brought together experts from different sectors involved in road traffic safety and awareness-raising and advocacy events.

Regional targeted programmes and large demonstration projects

As part of the new national road safety programme, the launch of a large demonstration project in a specific region or area of Russia could present a showcase of a range of effective road safety activities which could lead to a broadening of activity in other regions. This pilot could bring together most elements of “best practice” road safety. In doing so the Russian Federation could draw heavily on good practice and technical assistance, especially from their near neighbours in Europe and the three international organisations associated with this review that are, again willing and able to co-operate closely.

Such a pilot 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, and provide evidence-based benchmarks for the rollout of similar initiatives across the rest of the country.

SUMMARY OF RECOMMENDATIONS FOR PRIORITY ACTIONS

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.

SUMMARY OF RECOMMENDATIONS FOR PRIORITY ACTIONS *(cont.)*

- 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 HGVs, 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.

1. INTRODUCTION

1.1. Background

Road travel and transport policy in the Russian Federation is currently undergoing major change. This is a result of the rapidly increasing access of citizens to motor cars and the widely-acknowledged need in the Russian Federation for further development in public policy, legal frameworks and road safety management.

Against the background of a 260% increase in car fleet since the early 1990s, indicators have shown a dramatic deterioration in road safety in the Russian Federation. In 2004, more than 280 000 reported road crashes took place resulting in more than 34 500 deaths and 251 400 injured victims. Reported road deaths rose by 25% since 1998 with some large annual percentage increases.¹ Traffic and casualty trends indicate that further large increases in deaths and serious injuries can be expected. According to official sources, the socio-economic costs of road crashes are estimated at around 2.5% of GDP.²

The growing burden of road injury and the substantial societal price being paid for the new vehicular mobility in the Russian Federation is, clearly, a key challenge for the responsible agencies and society at large.

1.2. Terms of reference

At the request of the Ministry of Transport of Russian Federation in February 2004, this “peer” review of road safety performance in the Russian Federation has been carried out by the ECMT in partnership with WHO and the World Bank.³

This procedure is used extensively within the OECD in a variety of policy fields, at the request of the country being reviewed. Such “peer” reviews can be an effective way for countries to examine openly and systematically their policies and practices through detailed comment, discussion and insight. Apart from providing an open appraisal of their policies, it can help the ministries concerned to refine policies that can make a difference. Lithuania was the first country to undertake this type of review in the safety field, in view of the fact that the Baltic countries have shown relatively high road crash injury rates and following a meeting of the Baltic ministers in December 2000 which confirmed their concern for improving the situation.⁴

The purpose of this review is, therefore, to attempt to provide an overall description and assessment of road safety in the Russian Federation and to suggest, on the basis of international evidence and experience, steps which might be taken to address the significant challenge ahead to secure long-lasting, cost-effective and publicly acceptable improvements in road safety. Notwithstanding the high importance of local and regional action, the focus of the review is road safety leadership and activity at the national level. The timing of this review coincides with the development of a new national road safety programme in Russia.

1.3. Information sources

The description and assessment of the Russian Federation’s road safety policy has been based principally on the following sources of information:

1. A mission to Moscow on 11–17 December 2004 with a review team comprised of experts designated by the ECMT, the World Bank and WHO and members of the Secretariats of these organisations.
2. Background, statistical and policy information was provided in meetings with representatives of federal, regional and local government. In particular, meetings were held with the Ministry of Internal Affairs; round table meetings were organised by the Ministry of Transport bringing together representatives of all ministries with road safety responsibilities; meetings and site visits were held with representatives of the governments of Moscow and the Moscow region. Meetings were also held with representatives of the research institutes NIIAT and MADI and with members of the ambulance service.
3. The review team had the privilege of attending the International Transport Forum on Road Safety on 15 December 2004 in Moscow and derived a lot of useful information and insight from the presentations of the many governmental and non-governmental stakeholders.
4. Other reference sources included ECMT reports and recommendations on road safety; the *World Report on Road Traffic Injury Prevention*; the WHO Regional Office for Europe companion report *Preventing Road Traffic Injury: A Public Health Perspective for Europe*, and World Health Assembly and other international resolutions on road safety and public health. Source documents also included various statistical publications, European project reports and contributions from Russian colleagues to international literature.

This review has taken place during a time of great change in organisational structure for road safety as well as legislative and administrative development, sometimes complicating the process of information gathering and analysis. Against this background and notwithstanding the helpfulness and full co-operation of Russian colleagues, the review team's understanding and detailed analysis of the road safety situation has been limited by the information available, including the lack of detailed safety performance data.

1.4. Report structure

Following these introductory paragraphs, Section 2 provides some background on the global impact of road traffic injury; international perspectives on road safety and the Russian role in recent international statements and agreements.

Section 3 outlines various elements of road safety in the Russian Federation – the historical, human, economic and legislative context; road safety indicators and past and future trends.

In Section 4, a summary is given of how road safety is managed in the Russian Federation and road safety activity to date is described.

Section 5 discusses developments in road safety management in the Russian Federation with reference to international best practice including the *World Report on Road Traffic Injury Prevention* and ECMT policy documents on road safety. In particular, it underlines the importance of government leadership in road safety, encouraging organisational capacity building and supportive road safety institutional arrangements in Parliament and across civil society; the importance of a national road safety vision, strategy, target and plan of action with priority actions backed up by appropriate levels of human and financial resources. Furthermore, it examines possibilities for further international co-operation in road safety.

The Section “Conclusions and Recommendations for Priority Actions” at the beginning of the report summarises findings and suggests priority next steps to enhance performance in road safety. Finally, further material is contained in the appendices.

Notes

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2. INTERNATIONAL PERSPECTIVE

2.1. Introduction

Road safety is an issue of global importance. The key problems, though differing in extent from one country to the next, are common to all. The benefits of shared research and experience in road intervention are well understood. The potential for co-operative and concerted action is being increasingly appreciated.

With the aim of providing context for this national review, this section provides a brief snapshot of the global situation, new ideas about effective road safety, the recent steps taken by policy makers at an international level towards concerted action and the active role of the Russian Federation in these international discussions and agreements.

2.2. Road traffic injury - international trends and comparisons

Worldwide, the number of people killed in road traffic crashes each year is estimated at almost 1.2 million, while the number injured could be as high as 50 million – the combined population of five large cities. The majority of deaths are currently among vulnerable road users such as pedestrians and two-wheeled vehicle users who benefit least from policies designed for motorised travel but bear a disproportionate share of the disadvantages of motorisation in terms of injury, pollution and the separation of communities. Among children aged 5-14 years and young people aged 15–29 years, road traffic injuries are the second-leading cause of death worldwide. Economically active age groups between 15–44 years, account for more than half of all road traffic deaths. The socio-economic cost of road traffic injury globally is estimated at between 1%-5% of countries' Gross Domestic Product depending on the method of evaluation.¹

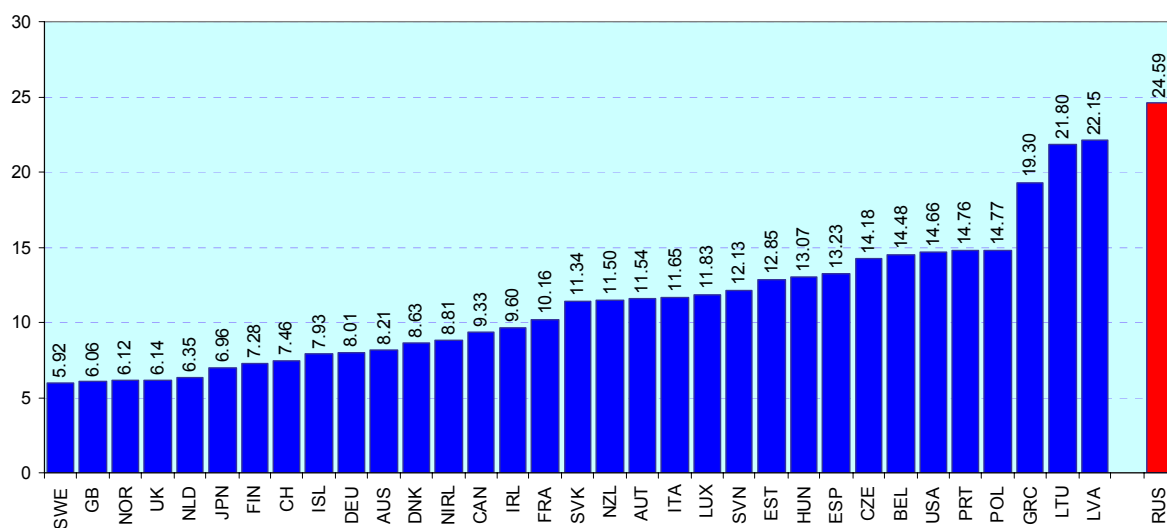
Without concerted, effective action, road traffic death and disabling injury is forecast to rise globally by some 67% between 2000 and 2020. Road traffic injury is forecast to rise from ninth place to be the third leading contributor to the global burden of disease.²

Likewise in the Russian Federation, current trends and activity suggest that the already high number and rates of death from road crashes are set to increase much further. The Russian Federation has a significant upward trend in death rates. While deaths decreased in 2004, this may have been due to statistical fluctuation rather than a change in the underlying fatality risk.

The Russian Federation has a higher road death rate (per 100 000 population) than any OECD or Baltic country (Figure 2.1). One third of road deaths in ECMT countries occur in Russia.³

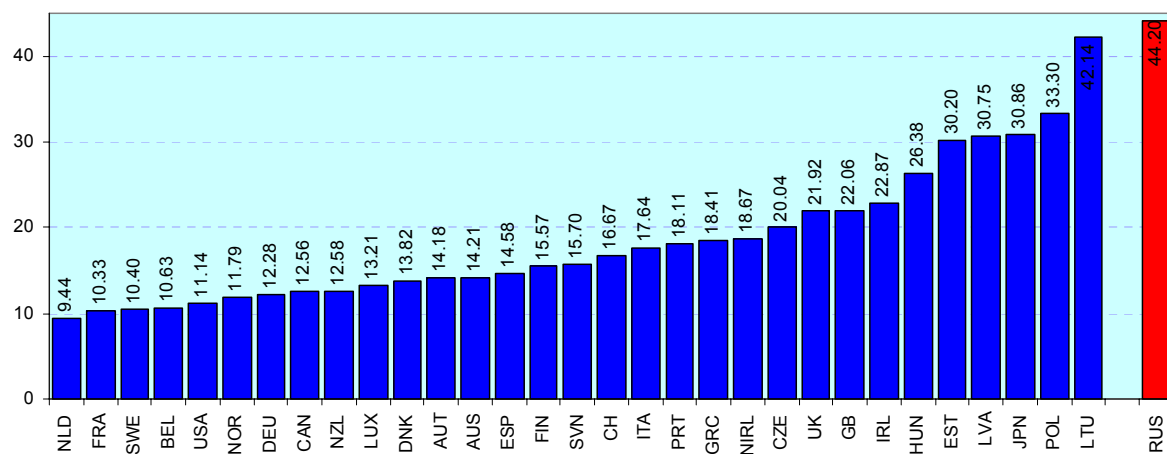
Pedestrian safety is a particularly pressing problem for the Russian Federation having a higher proportion of pedestrian fatalities (44%) than any OECD or Baltic country.

Figure 2.1. Road deaths by 100 000 population in OECD and Baltic countries



Source: IRTAD, OECD/ECMT and National Statistical Bureaus/Statistical Yearbooks latest available data: 2000-2004.

Figure 2.2. Pedestrian deaths as a percentage of all road deaths in OECD and Baltic countries



Source: IRTAD, OECD/ECMT and National Statistical Bureaus/Statistical Yearbooks latest available data: 2000-2004.

2.3. Key changes in global road safety thinking

As the ECMT, WHO and the World Bank acknowledge, a major shift in road safety thinking has taken place over the years which is summarised below:^{4,2,5}

- While road crashes may happen and cannot all be prevented, road traffic injury can be predicted and reduced.
- Good data and a scientific approach are essential allowing rational analysis and effective remedial action.

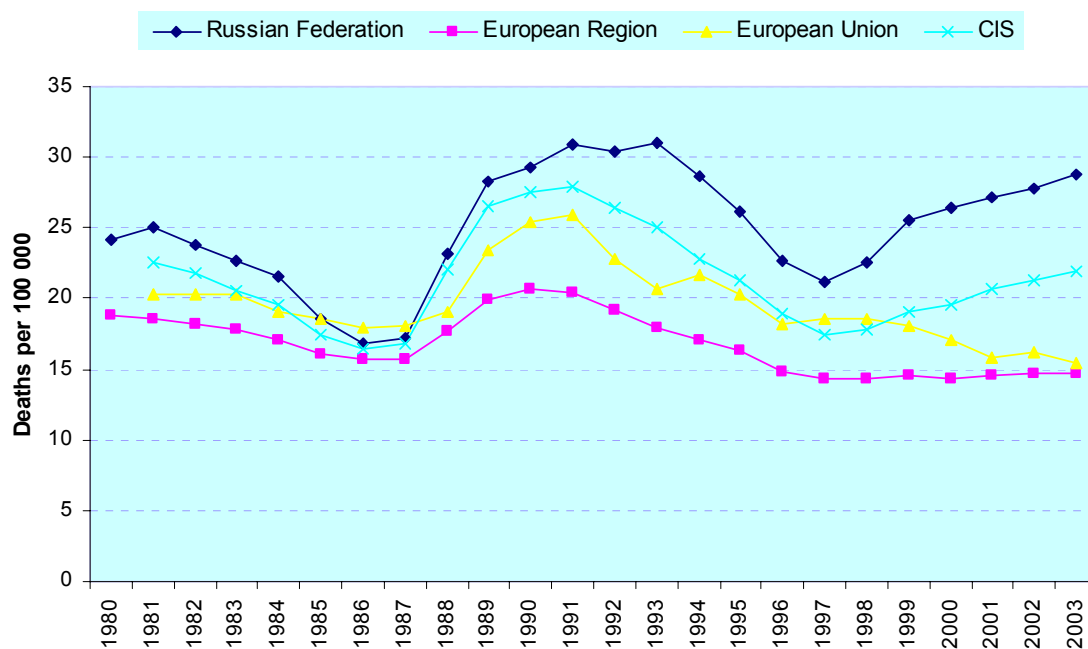
- Road traffic injury is a problem of such consequence that many sectors, including health, need to be fully engaged in responsibility, activity and advocacy for road traffic injury prevention.
- Traffic system providers need to build-in and assure on-going safety to cope with commonly made errors, take better account of the vulnerability of the human body and acknowledge that speed management is central.
- Road traffic injury is a social equity issue – equal protection to all road users should be aimed for to avoid an unfair burden of injury and death for poorer people and vulnerable road users, such as pedestrians and children. Even in high-income countries, the risk of road injury for children in low-income families is five times higher than of those who are better-off in income terms.
- Technology transfer works when it looks at existing local problems, conditions and traffic mixes and when informed by local knowledge.
- Intervention at the local, regional and national levels helps to ensure effective and rapid responses to local conditions.

The major recent development in road safety policy has been the change in emphasis from blaming the victim for road safety problems rather than different elements of the design and operation of the highly demanding modern transport system.

Early road safety policies placed considerable emphasis on establishing legislative rules, basic traffic management functions such as driver licensing and vehicle inspection and expecting changes in behaviour by means of information and publicity. Such measures were generally used in isolation as the main plank of road safety policy to try and persuade users to behave safely, but without much success. It was argued that since human error contributed mostly to crash causation, human error could be most effectively addressed by educating and training the road user to behave better. Research continues to show that this emphasis solely on education and training is incorrect.¹ Over-emphasis on the role of individual responsibility and blaming the victim prevents the relevant authorities from fully embracing their responsibilities.

These approaches gave way in several countries in the 1970s and, more generally, in the 1980s to increasingly successful strategies which recognised the need for a systems approach, formulated in the United States, focused on improving the infrastructure, vehicle safety (especially crash protection) and user compliance with key safety measures. The systems approach involves targeting, systematically, evidence-based interventions at crash prevention, reducing injury severity and post-crash care. This policy development saw a broadening of delivery mechanisms, using, in addition to legislation: automated police enforcement; fiscal incentives; technical guidelines; better crash and injury information systems and databases and independent crash investigation and research. By the early 1990s, and with political support, many countries were using action focused plans with numerical targets and broad packages of measures. As indicated in Figure 2.3 by the trends in decreasing death rates in European Union countries, growing motorisation does not inevitably lead to increases in death rates but can 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 population) despite a doubling in licensed motorised vehicles between 1972 and 1999.⁶

Figure 2.3. Trends in transport-related* deaths per 100 000 population



* Over 90% of transport deaths and transport accident costs in EU countries are from road crashes (*Transport Safety Performance in the EU – A Statistical Overview*, June 2003).

Source: WHO mortality database (Mortality indicators by 67 causes of death, age and sex), 2005.

In the late 1990s, this systems approach was further refined in Europe and achieved new rationality in the Vision Zero and Sustainable Safety strategies being implemented in Sweden and the Netherlands and, more recently, in Finland and Switzerland (Appendices 1 and 2). The “blame the victim” culture gave way to “blaming the traffic system” with new understanding that speed management and human limitations - both behavioural and physical - are core issues for the design and operation of the road traffic system for the following reasons. Firstly, the causal relationship between speed and road safety is explained by the laws of physics. Secondly, human tolerance thresholds are known for most parts of the body.¹ Research shows that the probability of a pedestrian being killed rises by a factor of eight as the impact speed of the car rises from 30 km/h to 50 km/h.⁷ Studies show that pedestrians have a 90% chance of surviving a car crash at 30 km/h or below, but less than a 50% chance of surviving an impact at 45 km/h.⁸ The best-designed vehicle on the road today provides crash protection currently up to 70 km/h for car occupants wearing seat-belts in frontal impacts and 50 km/h in side impacts.⁹ The human tolerance to injury for a pedestrian hit by even the best-designed car will be exceeded if the vehicle is travelling at over 30 km/h.⁹

Based on this current scientific knowledge, it is increasingly being understood that traffic system designs should provide:

- Where shared use by all road users, a 30 km/h limit with appropriate engineering to assure this.
- Where speeds above 30 km/h and space shared by cars, cyclists and pedestrians, there should be proper separation of and space provided for each class of user.

- Where vehicles approach each other at speeds of 70 km/h or more, they should be separated by barriers.
- Better crash protection is needed to protect car occupants in impacts with cars and other motor vehicles.
- Better crash protection is needed at roadsides *e.g.* collapsible lamps and crash cushions.

While the elimination of all road crashes is not feasible for the foreseeable future, there is substantial evidence that the numbers and rates of death and serious injury can be greatly reduced in the shorter term by targeting the key risk factors and implementing more widely and efficiently safety principles and measures that are known to be correct and effective (Appendices 3 and 4).

In parallel with European developments, road safety policies in Australasia achieved new heights in results and performance management, delivery partnerships and multi-sectoral co-ordination demonstrating that the individual responsibility of all stakeholders could be enhanced by emphasising their responsibilities, competences and accountabilities.

International organisations – WHO, the ECMT and the World Bank – agree that achieving better performance in road safety can be achieved through using long-term visions, system-wide strategies, targeted plans, safety performance indicators, safer designs (given the points made above) and new delivery mechanisms. Finding new opportunities for increased road safety activity through multi-sectoral approaches is being promoted, as well as the need to find synergies with environmental and public health policies. Road safety, for example, is fundamental to sustainable transport. Unsafe journeys on foot to use public transport provide a further incentive to give up public transport in favour of private car use.

2.4. International policy context – resolutions, targets and calls for action

2.4.1. Introduction

In parallel with these developments in approach, road safety has moved centre-stage in recent years in the policy-making of many European countries as well as in European and international agencies. For example, President Jacques Chirac, in his Bastille Day speech in 2002, designated road safety as one of the three national priorities for his Presidency and is spearheading a new road safety action plan in France. While the effects have yet to be properly established (to take account of any annual statistical fluctuation), in the following year after the introduction of the first steps of this plan, crash rates declined by 17.5%, serious injuries fell by 19% and deaths were 21% lower than the previous year.¹⁰

Since 2002, there have been several international policy initiatives which have brought together countries, including the Russian Federation, in support of co-operative effort towards reducing road crashes and injuries. The principal initiatives are as follows:

2.4.2. ECMT targets (*Bucharest Council, 29-30 May 2002*)

In view of the fact that road crashes are the most serious negative consequence of transport in its Member Countries, a serious public health problem and impose enormous costs on society, the ECMT unanimously adopted in Bucharest in 2002 a common quantitative target (as well as the monitoring procedure in 2004) for all 43 member countries, including the Russian Federation, to reduce, by 2012,

the number of road deaths by 50% compared with the year 2000 (See Appendix 5).^{11,12} Addressing the Bucharest Council, ECMT Secretary General, Mr. Jack Short, said: “Death on the road is the biggest concrete challenge to achieving sustainability. Many countries have adopted targets for fatality reductions or have other numerical targets for accident reductions. These have been shown to be valuable in giving a clear political signal and in focusing efforts on this problem.”

2.4.3. *United Nations Resolution 58/289 (Improving Global Road Safety, 11 May 2004)*

This resolution notes the recommendations contained in the *World Report on Road Traffic Injury Prevention* launched on 4 April 2004 and invites WHO, working in close co-operation with the United Nations’ regional commissions, to act as a co-ordinator on road safety issues within the United Nations’ system; requests the Secretary General to draw upon the expertise of the United Nations’ regional commissions as well as WHO and the World Bank and underlines the need for the further strengthening of international co-operation, taking into account the needs of developing countries, to deal with issues of road safety.¹³

Addressing the United Nations Assembly on 14 April 2004, Mr. Viktor Kirianov, Head of Road Traffic Safety of the Russian Ministry of Internal Affairs, supported the resolution and underlined the urgent challenge which road traffic injury presents to society and the importance of government leadership: “One of the most important areas of strategy development is the participation of state structures – above all, the governments of our countries – in developing and implementing national road safety programmes with the support of state financing.”¹⁴

United Nations collaboration events were held in October 2004 and March 2005 to organise appropriate follow-up to the UN Resolution.

2.4.4. *United Nations Fifty-seventh World Health Assembly Resolution*

Resolution WHA57.10 on Road Safety and Health, 22 May 2004

This resolution recognises that road traffic injuries constitute a major but neglected public health problem that has significant consequences in terms of mortality and morbidity and considerable social and economic costs, and that in the absence of urgent action this problem is expected to get worse. The resolution, which was supported by the Russian Federation, urges Member States to integrate road traffic injury prevention into public health programmes; establish government leadership in road safety; facilitate multi-sectoral collaboration across ministries, communities and society; assess the national situation and ensure that resources are available that are commensurate with the size of the road safety problem; prepare and implement a national strategy on road injury prevention; and take specific measures to prevent mortality and morbidity (noting that evidence-based interventions exist for reducing the impact of road traffic injuries) and evaluate their impacts.¹⁵ The resolution also requests the WHO Director-General to collaborate with Member States in order to further research, build capacity and advocate for road injury prevention, raise awareness about the risk factors related to road traffic collisions and to strengthen pre-hospital and trauma care for survivors.

Launching the *World Report on Road Traffic Injury Prevention* on World Health Day, 7 April 2004, Secretary-General Kofi Annan said: “...road safety does not just happen by chance. Achieving and sustaining safety on the roads requires deliberate action from many sectors of society.” WHO Director-General, LEE Jong-Wook, and World Bank Group President, James D. Wolfensohn, urged in

the foreword to the report, “The time to act is now. Road safety is no accident. It requires strong political will and concerted, sustained efforts across a range of sectors.”¹

2.4.5. *Children’s Environment and Health Action Plan for Europe – 23-24 June 2004*

The Russian Federation is a member of WHO and the WHO *Fourth Ministerial Conference on Environment and Health* held in Budapest adopted regional priority goals to improve children’s health.¹⁶ In this respect Regional Priority Goal II aims to prevent and substantially reduce health consequences due to injuries. In recognition of the fact that road traffic injuries are a major cause of child mortality and morbidity, the Plan advocates strengthened implementation of road safety measures including adequate speed limits, and education and enforcement, as set out in the recommendations of the *World Report on Road Traffic Injury Prevention*. Addressing the Budapest Conference, Dr Marc Danzon, WHO Regional Director for Europe, said: “Tomorrow’s children will be our judges. The care we have taken today in crafting these policy options is the legacy of European leadership in health and environment, and the further efforts needed to shepherd these recommendations into national and regional and global realities will be our testing ground. Success will be measured by a fairer, healthier and safer future for our children.”

2.4.6. *Conclusion*

The Russian Federation has played an active role in the international agenda and has participated and signed up to a range of agreements and targets. While not legally binding, participation in these agreements shows that the Russian Federation fully acknowledges the gravity of the problem of road traffic injury, is seriously committed to take steps towards its alleviation and aspires to achieve the capacity and performance evident in best road safety practice.

In this section, contemporary thinking on road safety management has been outlined and can be used as a yardstick for understanding the current Russian traffic situation and, from a “peer” perspective, considering where the Russian Federation is now in road safety and the management of the challenges ahead.

Notes

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3. ROAD SAFETY IN THE RUSSIAN FEDERATION

3.1. Introduction - national context

3.1.1. Geography, climate, population

The Russian Federation stretches over a vast expanse of Eastern Europe and northern Asia. With an area of 17 075 400 square kilometres, it is the largest country in the world, covering almost twice the territory of Canada, China or the United States. The country stretches across the north of Eurasia, and contains a large share of the world's Arctic and Sub-Arctic areas. It borders 16 states – five EU countries (Finland, Estonia, Latvia, Lithuania, Poland), five NIS countries (Belarus, Ukraine, Georgia, Azerbaijan, Kazakhstan), as well as Norway, China, Mongolia, the Democratic Republic of Korea and has sea borders with the United States and Japan.

Figure 3.1. Map of the Russian Federation



Source: <http://en.wikipedia.org/wiki/Russia>

Note: the designations employed and the presentation of this material do not imply expressions of any opinion whatsoever on the part of ECMT/World Bank/WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitations of its frontiers or boundaries.

Most of the Russian Federation has a continental climate with large variations in summer and winter temperatures. The greater share of the vehicular mileage is produced in winter conditions, with large seasonal variations both in temperature and daylight hours.

The Russian Federation ranks seventh in the world population (in 2003 the population was 144 526 378). Due to the enormous size of the Russian Federation, most parts are, on average, unevenly populated. The population is most dense in the European part of the Federation, in the south-west area of the Ural Mountains, and in the south and south-eastern part of Siberia. A sharp drop in population took place in the early 1990s due to a fall in births. By 2004, the population decreased by around 3% compared with 1990.

According to the 2002 census around 80% of the population is ethnically Russian, 3.8% Tatar, 2% Ukrainian, 1.2% Bashkir, and 1.1% Chuvash. The remaining 12% of the population belong to more than 150 nationalities. The Russian language is the only official state language but, in practice, the

native language of individual republics often co-exists with Russian. The Cyrillic alphabet is the official script.

3.1.2. Political and administrative context

The Russian Federation was formed in December 1991 after the dissolution of the Union of Soviet Socialist Republics (USSR) which was divided into 15 independent states. It contains most of the area, population, and industrial production of the former Soviet Union. Since 1991, the Russian Federation has been engaged in building a democratic political system and market economy.

The Russian Federation is a federal democratic republic with a directly elected president for a four-year term. The Prime Minister and other senior state officials are nominated by the President and appointed after parliamentary approval. The Russian Parliament consists of an upper house, the Federation Council, comprising 178 delegates serving a four-year term, and a lower house, the State Duma, comprising 450 deputies also serving a four-year term.

The country has 88 constituent administrative areas. There are 21 republics within the Federation which have a high degree of autonomy on most issues. The remaining territory consists of 48 *oblasts* (provinces) and seven *krais* (territories) in which there are nine autonomous *okrugs* (autonomous districts) and one autonomous *oblast*. In addition, there are two federal cities (Moscow, the capital city of the Russian Federation, and St. Petersburg).

3.1.3. Economic trends

The prolonged decline in manufacturing during the 1990s together with the Asian financial crisis in 1997 culminated in the depreciation of the ruble. General trends in the Russian economy have been favourable since 1999. Between 1999 and 2001, GDP grew by 21% and inflation fell from 85.7% to 17.7%. This was the result of higher oil and gas prices, a weak ruble and the pursuit of macro-economic policy and structural reforms by the Russian government towards a modern market economy. Significant reforms of the tax system, the regulatory framework, land sales and the court system took place.

State Statistics Service figures indicate that average wage growth since 2000 has been rapid, higher than most other CIS countries (*e.g.* twice as high as in Ukraine) and close to levels in south-eastern Europe. Regionally, there is a large variation in levels of income. As indicated in Table 3.1. the average monthly wage in 2003 in Moscow was 12 times higher than that of the Republic of Ingushetia, and almost three and a half times as high as the Russian Federation's average.

Table 3.1. Average per capita income (per month; rubles*) in the Russian Federation and in some Russian regions: 2003

	1995	1997	1999	2000	2001	2002	2003
Russia	515	942	1 664	2 290	3 078	3 972	5 162
Moscow	1 803	3 524	6 857	9 285	12 137	14 916	16 819
Chuvash Republic	301	479	817	1 120	1 525	2 031	2 749
Republic of Ingushetia	115	290	363	486	882	1 151	1 392

*In thousand rubles until 1998

Source: *Russian Statistical Yearbook*, 2004. Federal State Statistics Service, Moscow, 2004.

3.2. Transport sector

3.2.1. Transport infrastructure

The transport system: rail transport, road transport and infrastructure, urban electric transport, maritime transport, inland waterway transport, air transport and trunk pipeline transport provided about 7.2% of GDP in 2003.¹

Radical institutional change has taken place in the transport sector during the development of the market economy. In addition to primary privatisation and de-monopolisation, transfer from direct administrative management to state regulation of the market has taken place and a system has been established for state regulation of transport activity. The main Characteristics of the transport infrastructure in the Russian Federation are set out in Table 3.2.

Table 3.2. Transport infrastructure length in the Russian Federation in 2003

Transport mode	Km total
Length of operating lines of public railways	85 000
- of which electrified lines	42 300
Roads with hard surface	745 000
- of which public	544 000
- of which motorways	29 000
Inland waterways – total navigable routes	101 700
of which	
- routes with guaranteed dimensions	46 000
- routes with navigation marks	71 400
- of which routes with night navigational aids	33 800
Trunk pipelines – total	219 000
of which:	
- crude oil pipelines	47 000
- petroleum products pipelines	15 000
- gas pipelines	156 000

Source: *Main Indicators of Transport Performances in Russia*, Federal State Statistics Service, Moscow, 2004.

Metro systems exist in eight cities, and are under construction in two cities. In 2003, there were 420 kilometres of metro lines, 2872 kilometres of tramlines, and 4793 kilometres of trolleybus lines. In 2002 there were 451 airports in Russia.

Russian cities have the highest recorded per capita use of public transport in the world. Around 85% of all motorised trips in urban areas are made on public transport compared with about 20% for Western Europe and 3% for the United States.² The *Russian Urban Passenger Transport System* is one of the largest in the world incorporating over 78 000 surface transport vehicles on over 11 000 routes. However, this record is being challenged by rapidly increasing car ownership, traffic congestion and the deteriorating quality of urban transport services.

Two-thirds of the Russian Federation's road network is classified as public roads and 90% of these are classified as territorial (regional) roads. Although only around 5% are classified as federal roads, these carry around half of total freight transported on Russian roads.

3.2.2. Motorisation

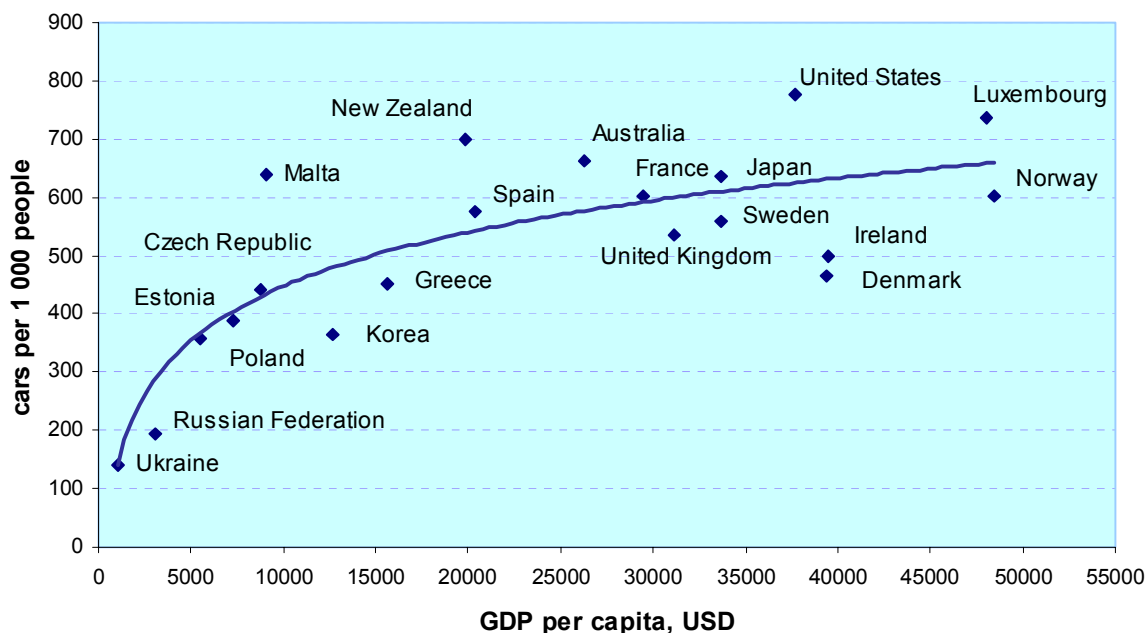
Table 3.3. shows the composition and recent development of the Russian car, bus and truck fleet. There are around 23 million private cars and more than 2.5 million trucks under private ownership in Russia. Around 50% of cars, 61% of trucks and 46% of buses are over 10 years old. In 2003, the fleet grew by 4.3%. After 1990, substantial growth in motor vehicles took place in the Russian Federation with a 260% increase in the number of cars. The country is in a phase where increases in GDP rapidly increase motorisation. The relationship between increasing motorisation and per capita GDP is indicated in Figure 3.2 for several countries.

Table 3.3. The Russian car, truck and bus fleet

Motor vehicle type	Number of motor vehicles, thousand									Average growth rate, % (1998/2004)
	1991	1995	1998	1999	2000	2001	2002	2003	2004	
Cars including	8 964	14 195	18 820	19 624	20 247	21 232	22 468	23 383	24 208	29%
- private cars	8 677	13 688	17 761	18 543	19 097	19 984	21 135	22 082	23 075	30%
Trucks and lorries including	2 744	3 860	4 277	4 387	4 401	4 482	4 625	4 668	4 770	11.5%
- private trucks and lorries	4	798	1 249	1 440	1 568	1 698	1 920	1 996	2 586	7%
Buses including	449	631	6 27	633	640	663	703	729	766	23%
- private buses	0.1	N/A	N/A	170	186	211	250	270	363	-
TOTAL	12 157	18 686	23 724	24 644	25 315	26 377	27 796	28 780	29 744	25%

Source: *Main Indicators of Transport Performances in Russia*, Rosstat, Moscow, various years.

Figure 3.2. Motorisation levels and per capita GDP in different countries: 2003



Source: ECMT Road Accident Data Base, World Development Indicators, World Bank 2005.

Table 3.4. Motorisation levels in different countries, 2003³

Country	Number of motor vehicles per 1 000 people		
	Cars	Trucks and lorries	Buses
Russian Federation	161	32	5.0
Belgium	470	51	1.0
Great Britain	430	49	4.0
Hungary	223	29	2.0
Germany	524	31	1.0
Italy	567	53	1.6
Canada	482	131	2.1
Netherlands	382	39	1.0
Poland	242	42	2.1
United States	812	31	3.0
France	477	88	1.6
Sweden	448	35	1.0
Japan	412	175	1.0

Source: Transport and Communication in Russia, 2004.

The motorisation level in the Russian Federation now stands at approximately 205 vehicles per 1 000 people, including 169 cars per 1 000 people. With the economy growing faster than those in most industrialised countries alongside the Russian Government's aim of doubling national GDP by 2012, further substantial growth of the private car fleet is expected. A motorisation level of 230-250 cars per 1 000 people by 2008 has been forecast.

The majority of the country's motorised vehicle fleet is concentrated in towns and cities. A key problem is the gap between the existing road network capacity and sharply increased motorisation levels, which the network was not designed to accommodate. The town plans of large Russian cities were, in general, formed during a period when a motorisation level of 180 motor vehicles per 1 000 people was accepted as the calculating norm for town-planning projects for the longer term (to 20 years). While the norm was revised in 1994 to 200-250 cars per 1 000 people, it resulted in little change due to a shortage in resources for reconstruction and development of urban road networks. Currently available estimates indicate that, at present, more than 20% of total passenger transportation volumes in urban areas are by private car instead of an expected 10-15%. The outcome is a substantial overload of the road network in large Russian cities which contributes to considerable economic and social loss.

3.2.3. *The Russian Federation Transport Strategy*

This policy document was approved by the government in December 2003 and is being implemented through a Targeted Federal Programme (TFP) entitled *Modernisation of the Transport System of the Russian Federation*. However, the administrative reform in 2004 and the new priority of doubling GDP by 2012, will probably necessitate some modifications to the strategy.

The strategy introduces the principle of sustainable development of the transport system for the first time. Economic efficiency, safety and environmental compatibility are all equal priorities. The Strategy sets out the following objectives to be delivered by 2025:

- A 50% increase in vehicular mobility of the population.
- The majority of settlements to have all-year-round access to basic communications.
- 80% of families to have regular use of a car (compared with 50% in 2003).
- Deaths per 1 000 vehicles to be reduced by 50% (from 1.2 to 0.6), but no target to reduce total deaths.

The main aims of motor transport development in the strategy are:

- To maximise opportunities to use motor transport to increase population mobility and to expedite the circulation of goods.
- To reduce various costs associated with motorised transport.
- To reduce the negative consequences of motorisation.

The strategy further defines goals to:

- Improve territorial and urban planning taking into account forecasts of motor vehicle and traffic growth.
- Create a legislative base for the improved management of motor vehicles.
- Develop the public passenger transport system as an alternative to private car use.
- Unify the requirements for freight operators and discourage illegal operators.
- Create a statistical monitoring system.

Tasks for the state are:

- To create conformity between supply and demand of road network capacity and condition.
- To provide a transport network across the Russian Federation.
- To secure uninterrupted traffic irrespective of seasonal and weather conditions.
- To improve the quality of roads to the level of international standards.
- To decrease the number of crashes on account of road conditions.

Specific targets, countermeasures and additional responsibilities for road safety are also described and discussed in Section 4.4.3.

3.2.4. *Conclusions – the national context*

- The Russian Federation is the largest country in the world and among the biggest in population. It is in the process of building a democratic political system and market economy.
- The Russian Federation has a well-developed transport infrastructure for goods, and for public passenger transport in large cities, although the high use of public transport is declining in favour of private transport.
- The country stretches over several climatic zones and a large part of vehicular mileage is driven in winter conditions.
- The regional variation in population income is very large, which is not reflected in the size of current penalties for traffic offences which are, in general very low.
- There is a long-term trend of decreasing population in the Russian Federation.
- The economy is growing faster than those in most other industrialised countries. Motorisation is in a very rapidly-growing phase alongside economic growth.
- The number of motor vehicles has increased by some 260% since the early 1990s.

- The road network is having to accommodate a level of traffic beyond the capacity for which it was designed – the volume and density of motor vehicle traffic have grown much faster than road network development.
- 50% of cars, 61% of trucks and 46% of buses are over 10 years old.
- The transport strategy expects to double the population's mobility giving a large majority of families the opportunity to actively use a car. Much of the focus is in reaching conformity between supply and demand in network capacity. At the same time mobility, safety and environmental compatibility are stated as equivalent priorities in the transport strategy and quantitative targets to reduce road user death rates have been set.
- If the heavy socio-economic burden incurred by the industrial world is to be avoided where focus on private and commercial motorised transport mobility has been at the expense of public transport and the safe access needs of non-motorised road users different strategic objectives need to be very carefully balanced. Administrative reform and new strategic goals since the strategy was approved in 2004 will probably necessitate some modifications to the strategy.

3.3. Road safety situation

3.3.1. Data sources

The following sources of statistical information on road crashes and injury are available in the Russian Federation:

- The State Report on *Road Traffic Safety in the Russian Federation* (issued once every two years).
- *Statistical and Analytical Yearbook on Road Traffic Accidents in Russia*, Department of Road Traffic Safety, Ministry of Internal Affairs, various years.
- Annual statistical reports *Morbidity of Russia's Population*.
- *Russian Statistical Yearbook 2004*, Federal Service of State Statistics, Moscow 2004.

The Russian Federation has a national computerised road accident database. Road crashes are recorded by a specialised service within the Ministry of Internal Affairs (State Road Inspection) which has responsibility for traffic surveillance/enforcement and also vehicle and driver licensing and testing. Road authorities keep crash files for roads under their jurisdiction.

The standard road accident recording card features more than 50 variables (*e.g.* location, date, time, road condition such as road friction, vehicles and persons involved, and collision type). In the Russian Federation, a fatality is defined as death at the location of the road crash or death caused by the crash within seven days following the crash.⁴ Computerised data is available at each police department and feeds into the central crash database system. Data are transferred to a regional centre, then onwards to a federal centre, where there is a large data warehouse. Data are also transferred to the federal statistical services of the Russian Federation. Injury data is recorded in hospitals.

Road network analysis of crashes is carried out regularly by the sub-divisions of the State Road Inspection to detect high-risk crash sites. Following the introduction of a new law on “Obligatory Civil Liability Insurance of Vehicle Owners”, the number of recorded road crashes involving property damage has increased threefold.

3.3.2. *Data limitations*

As set out in subsequent sections, existing data indicates that the Russian Federation has a very large road safety problem. However, the review’s understanding and detailed analysis of the road safety situation are limited by the lack of detailed safety performance data which are collected routinely in many European countries.

In addition to analysing final outcomes such as road crashes, deaths and injuries, there is a need for survey data on those factors which are causally related to crashes and their severity such as excess speed on different types of roads, the non-use of seat-belts in the front and rear of cars, and levels of drinking and driving in normal traffic. These intermediate outcomes determine final road safety outcomes and their measurement provides the opportunity for policy makers and those monitoring policies to gain a better understanding of system performance than is allowed by reference to final outcome data alone.

In the Russian Federation no nationally representative measurements of speed, seat-belt wearing, use of child restraints, helmet wearing, and excess alcohol in normal traffic are carried out periodically. Surveys of these factors in normal traffic are necessary to identify the extent of these key road safety problems and to assess the effects of interventions. Without these it is difficult to gain any robust picture of overall safety performance. The few studies carried out regionally indicate a very low adherence to speed limits and widely varying seat-belt use (from 10-15% to 60-70%).

It has not been possible from the statistical compilations available from the police/Ministry of Internal Affairs to examine key elements of the crash injury problem or to allow cross-tabulations of important variables for different types of road user. For example, it is not possible to determine whether or not car occupants had used their seat-belts from the crash database.

The under-reporting of injuries to the police occurs in most countries and is a widely-acknowledged problem. Levels of under-reporting for different road users are usually assessed through the studies which link hospital and police data. No assessment is available on the reporting rate of injury crashes to show if under-reporting of road crash injuries is a key issue, although Russian colleagues believe that the reporting of fatalities is reliable.

Routine data were not available on emergency department attendances, admissions to hospital or on costs to the health sector for the purposes of this review. Understanding levels of system risk for different road users requires travel data and is not possible with existing information.

Effective road safety policy-making is dependent upon the availability of reliable, detailed and easily accessible information. In carrying out this review, the team has been fully dependent on data forwarded by the Ministry of Internal Affairs. While the Ministry’s assistance in gathering available data has been much appreciated, it has not been possible to review data quality. Suggestions are made in Section 5 on how to address the urgent data needs of policy makers and professionals in the Russian Federation to underpin their efforts to improve the safety of the road traffic system.

3.3.3. Overview of national road crash injury data

General trends

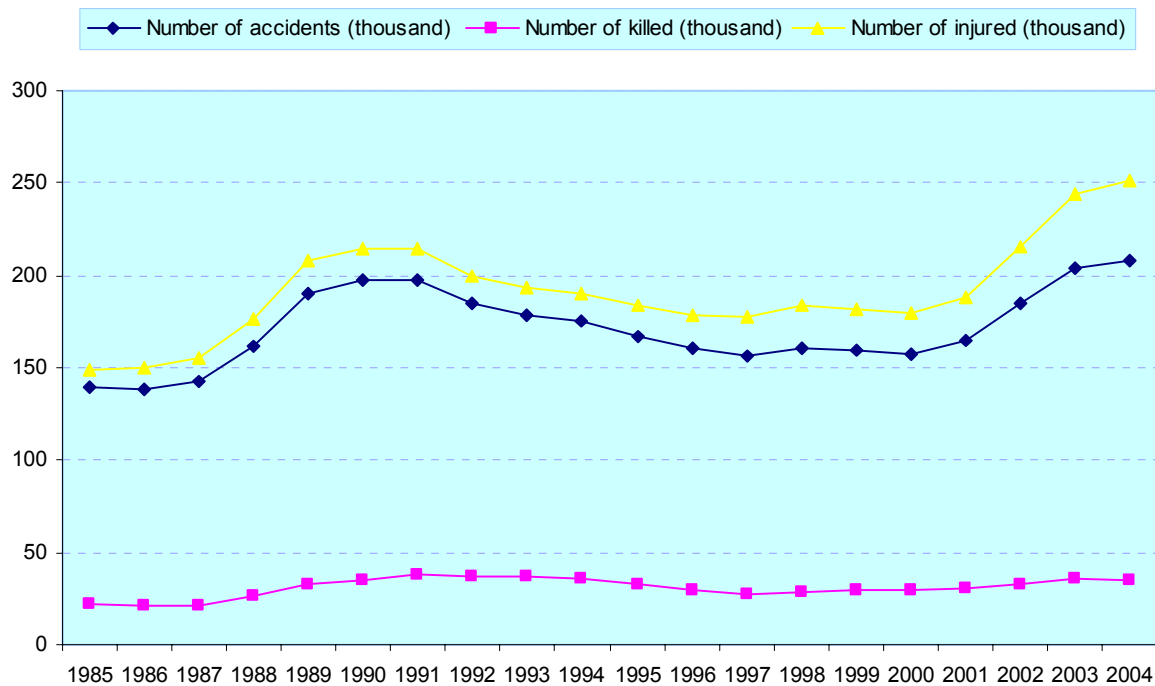
In 2004, official statistics indicate that road deaths comprised over 99% of all transport deaths.⁵ The total number of 208 558 reported road crashes resulted in 34 506 deaths and 251 386 injured victims.⁶

Assuming the reporting rate has remained relatively unchanged (reporting may have improved as awareness of the problem grows), the following national road crash injury trends were evident during the last decade, as also shown in Figure 3.3.

- Sharp increases around 1990, as in many other countries in central and eastern Europe.
- Continuous reductions in crashes and injuries (but not deaths) between 1991 and 1997 coinciding with a period of economic decline.
- Increases in all outcomes since 1998, with steepest increases in crashes, injuries, deaths in the years 2001-2003, coinciding with a period of economic growth and improvements in the system of data collection for the road accident database.
- Between 1999 and 2004 the number of injuries increased by 37%, and the number of deaths by 19% (5 485 deaths).
- A decrease in deaths took place in 2004, against the long-term upward trend, but this may represent a statistical “blip”.
- Deaths are now back at the 1990 level, but crashes and injuries are far above the 1991 level.
- Death rates per 100 million population have been relatively stable over the years, with a slight increase since 2000.
- Death rates per 100 million motor vehicles were at a much higher level before the mid-1990s, but these values are still far above those of most other countries in the industrialised world.

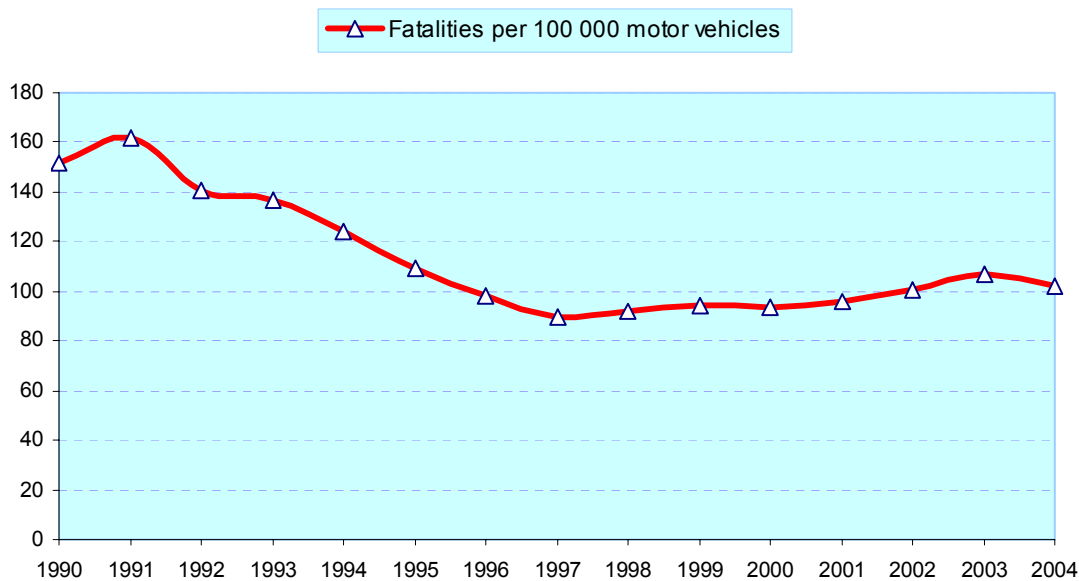
As Figure 3.4 shows the long-term trend since 1997 has been a rising death rate on Russian roads with deaths rising by 19% compared with a 7.5% increase in vehicles between 1998 and 2004.

Figure 3.3. Time series of road crashes, deaths and injuries in the Russian Federation, 1985-2004



Source: Review team ECMT/World Bank/WHO.

Figure 3.4. Road death rates (per 100 000 motor vehicles) in the Russian Federation



Source: Review team ECMT/World Bank/WHO.

Road crash location by road type

Table 3.5 shows the distribution of crashes by road location. In 2004, 72% of all crashes occurred in urban areas (towns, urban settlements, villages), with the majority of these taking place in large cities. This figure corresponds with the share of urban population (73%).

Around 68% of road crashes involving pedestrians occurred in the cities and other settlements, 14% on regional and local roads (outside urban areas) and 13.5% on federal roads (outside urban areas). Around 49% of pedestrian deaths occurred in cities, towns and settlements, 31% on regional and local roads (outside urban areas) with 20% occurring on federal roads (outside urban areas).

Table 3.5. **Road crashes, deaths and injuries by road location, 2004**

Road location	Crashes	%	Deaths	%	Injuries	%
Cities, towns and settlements	148 737	72	16 837	49	170 503	68
- of which motorways inside urban areas	20 846		3 831		24 848	
Roads (outside urban areas)	59 151	28	17 518	51	80 069	32
- of which federal roads (outside urban areas)	19 775	9	6 802	20	27 118	11
Regional and local roads* (outside urban areas)	39 376	19	10 716	31	52 951	21

*Including private, departmental enterprise etc. roads

Deaths by time of year and day

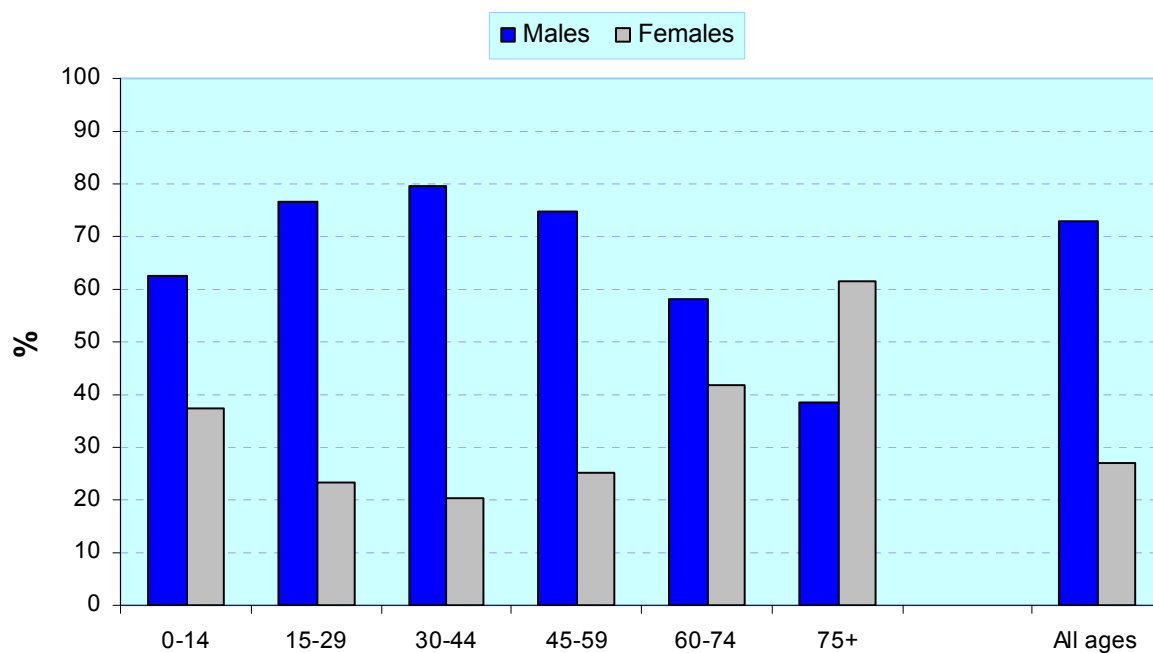
The most serious outcomes of road traffic crashes occur in November and the least serious outcomes between May and July. The most “dangerous” days of the week are Friday, Saturday and Sunday involving nearly half of the total number of road traffic crashes, deaths and victims. Most road traffic crashes occur in the period from 11.00 hours to 18.00 hours and those with most serious consequences occur at night between midnight and 07:00 hours.

Deaths by age and sex

Data on age and sex specific rates show that, as in other countries, males are more likely to be killed in road traffic crashes than females (see Figure 3.5.). In 2004 the likelihood of males dying from road traffic injuries was over two-and-a-half times that of females in the Russian Federation.

Road traffic injuries affect all ages but death rates peak in economically productive people between the ages of 15-44 because of increased numbers of road crashes in these age groups. The loss of lives and years lived with disability result in a greater burden of injuries, as well as socio-economic loss. The total number of children injured in crashes rose by 10% between 1999 and 2004. On average, a child is injured in every eighth road traffic crash. In 2001 it was reported that more than 3 000 children were disabled in road crashes annually.⁷ For females, there is a peak in death rates in older people over 75 years, which is linked more to their frailty, rather than greater involvement in road crashes.

Figure 3.5. Age-standardized mortality rates for road traffic injuries, for males and females in the Russian Federation (2004)



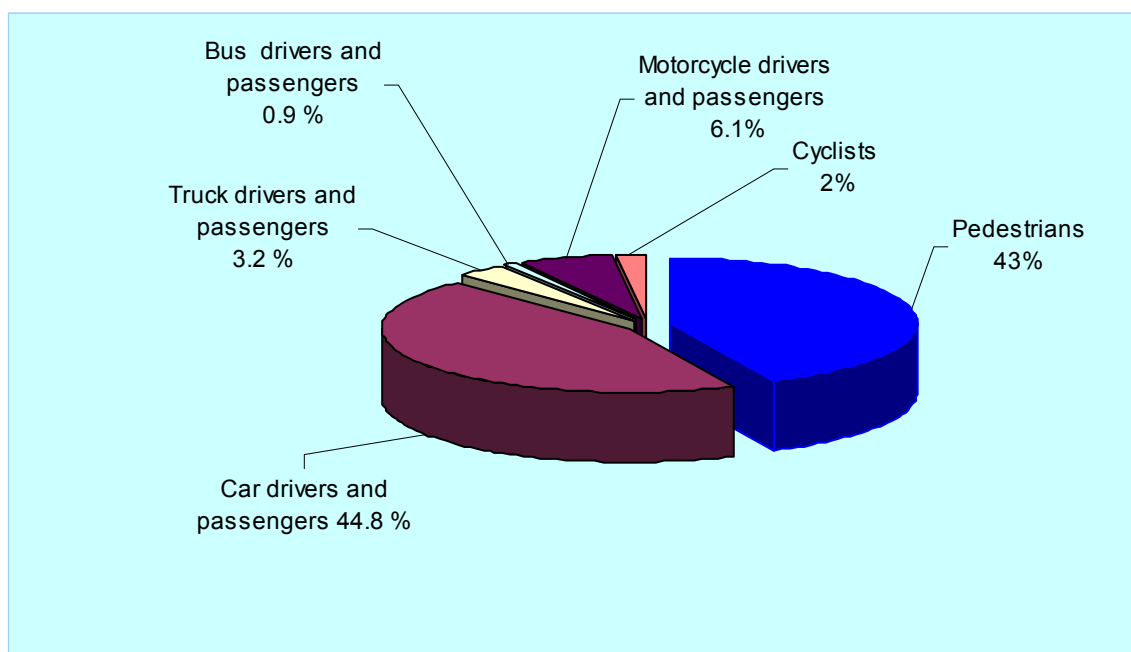
Source: Review team ECMT/World Bank/WHO.

Deaths by type of road user

Pedestrian deaths and car occupant deaths contribute respectively to over 43% and 45% of total deaths (Figure 3.6). The sharp increase in pedestrian deaths in 1997 is shown in Figure 3.9, and their unusually high contribution to total deaths, when compared with many other European countries, points to the incompatibility of the current Russian transport system to cope with rising traffic levels and the needs of vulnerable road users.

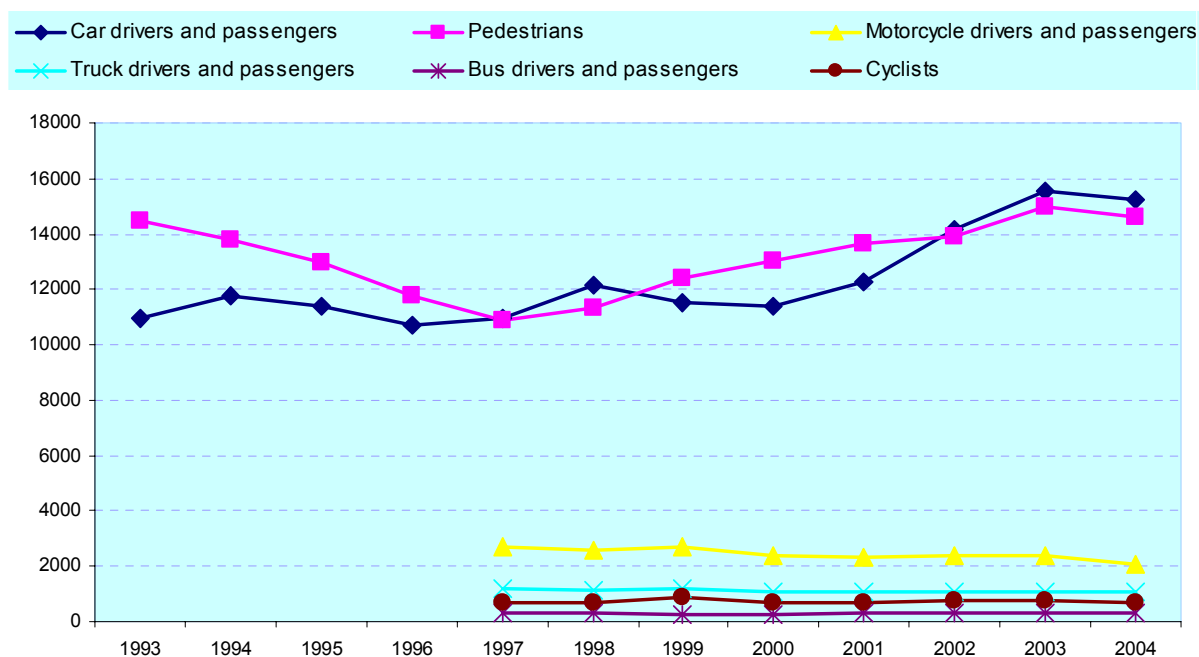
As Figure 3.6. indicates, bus casualties form a relatively small proportion of overall deaths in national road traffic. It is worthy to note, however, that over the last few years the increasing number of minibuses (comprising one third of the total bus fleet in 2004) has been accompanied by sharp increases in the annual number of crashes involving such vehicles. Minibuses comprised 54% of all crashes involving buses in 2004 and led to over 900 deaths and 9 000 injured victims.

Figure 3.6. Road deaths by road user class, 2004



Source: Review team ECMT/World Bank/WHO.

Figure 3.7. Time series of road deaths by road user class in the Russian Federation



Source: Review team ECMT/World Bank/WHO.

Moscow and the Moscow region

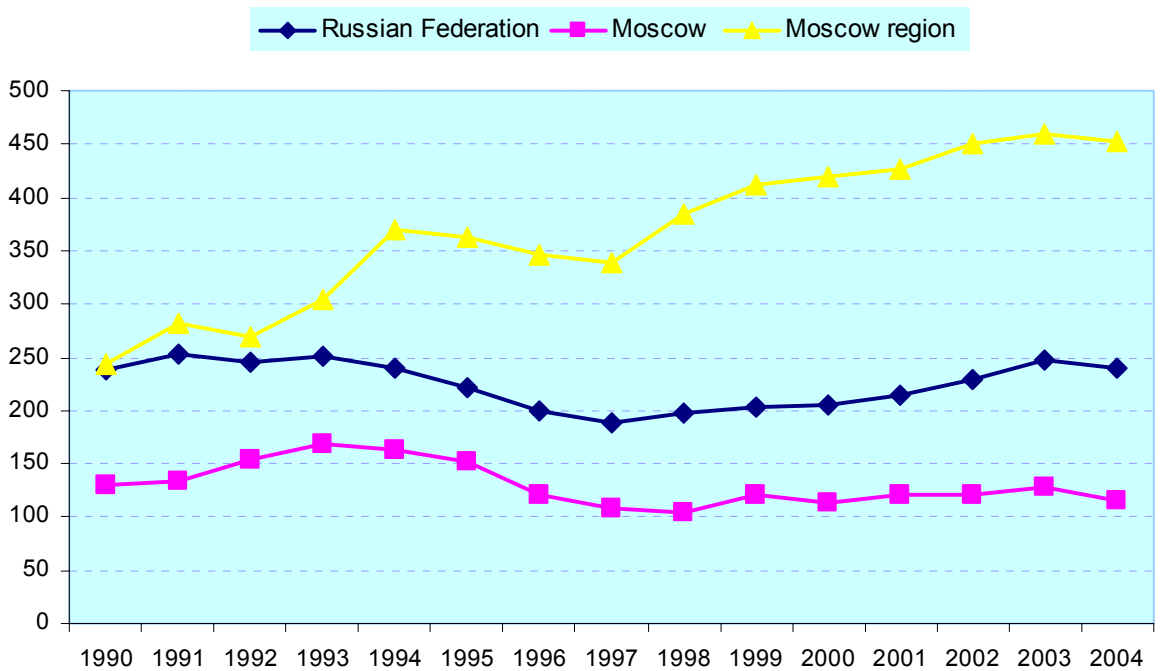
Moscow and the Moscow region together currently contribute to more than 12% of crashes, injuries and fatalities of the Federation compared with just under 8% of deaths in 1990 (Table 3.6). This indicates a growing road safety problem in and around the capital city which reflects, in part, the concentration of economic activity and above-average traffic growth in these areas. The Moscow region, having experienced particularly rapid economic growth and motorisation, features an even steeper increase in deaths since the early 1990s (Figures 3.8. and 3.9.) particularly amongst pedestrians. More than 60% of those killed in the city of Moscow are pedestrians.

**Table 3.6. Deaths in Moscow and the Moscow region
as a percentage of all road deaths**

Years	Moscow	Moscow region	Total	% of all road deaths in the Russian Federation
1990	1 155	1 620	2 775	7.8
1991	1 193	1 874	3 067	8.2
1992	1 360	1 789	3 149	8.6
1993	1 472	2 011	3 483	9.4
1994	1 447	2 431	3 878	10.9
1995	1 302	2 375	3 677	11.2
1996	1 036	2 257	3 293	11.2
1997	926	2 204	3 130	11.3
1998	884	2 502	3 386	11.7
1999	1 026	2 664	3 690	12.4
2000	978	2 702	3 680	12.4
2001	1 025	2 738	3 763	12.2
2002	1 259	2 987	4 246	12.8
2003	1 327	3 049	4 376	12.3
2004	1 195	2 994	4 197	12.2

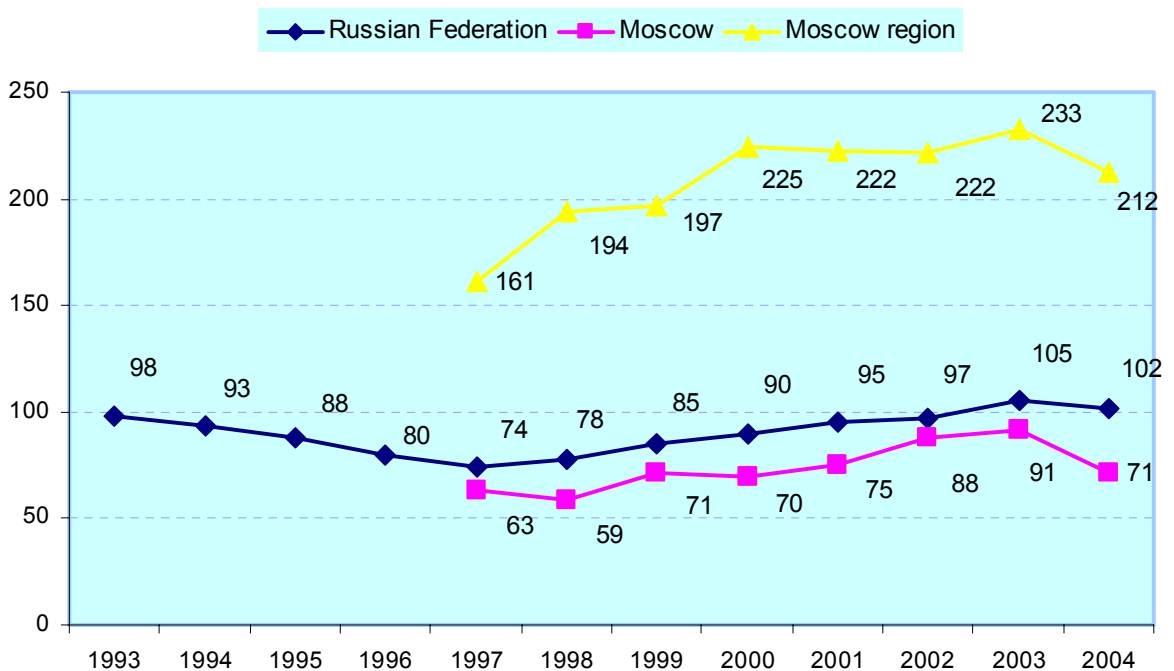
Source: Review team ECMT/World Bank/WHO.

Figure 3.8. Number of deaths per million population in the Russian Federation, Moscow, Moscow region, 1990-2004



Source: Review team ECMT/World Bank/WHO.

Figure 3.9. Pedestrian death rates (per million population) in road crashes in the Russian Federation, Moscow and the Moscow region



Source: Review team ECMT/World Bank/WHO.

3.3.4. *Impact on health sector*

A recent review by health institutions in the Russian Federation concluded that mortality following road traffic crashes is 12 times higher than for other traumas; disability is six times higher, and road traffic victims are seven times more likely to need hospitalization compared with victims of other types of trauma. Road traffic injuries account for 75% of all types of injury, with victims of road traffic crashes accounting for more than 60% of the total number of severe trauma cases. More than 70% of victims require costly hospital treatment.⁸

The recent increases in road crashes and resulting road traffic injuries place excessive demands on the health sector, both in terms of human and financial resources. A disproportionately high demand is being made of health services both in the pre-hospital phase, in emergency departments, on hospital wards, surgical theatres and intensive care, and on rehabilitation services. Human and financial resources, which are already constrained, are being overstretched by the rising epidemic of road traffic injuries.

3.3.5. *Socio-economic costs*

Various estimates have been made in the Russian Federation of the total socio-economic cost of road crashes ranging from 1.5% to 5% of Gross Domestic Product (GDP). Official estimates indicate that these are around 2.5% of GDP (Ministry of Internal Affairs, 2005).

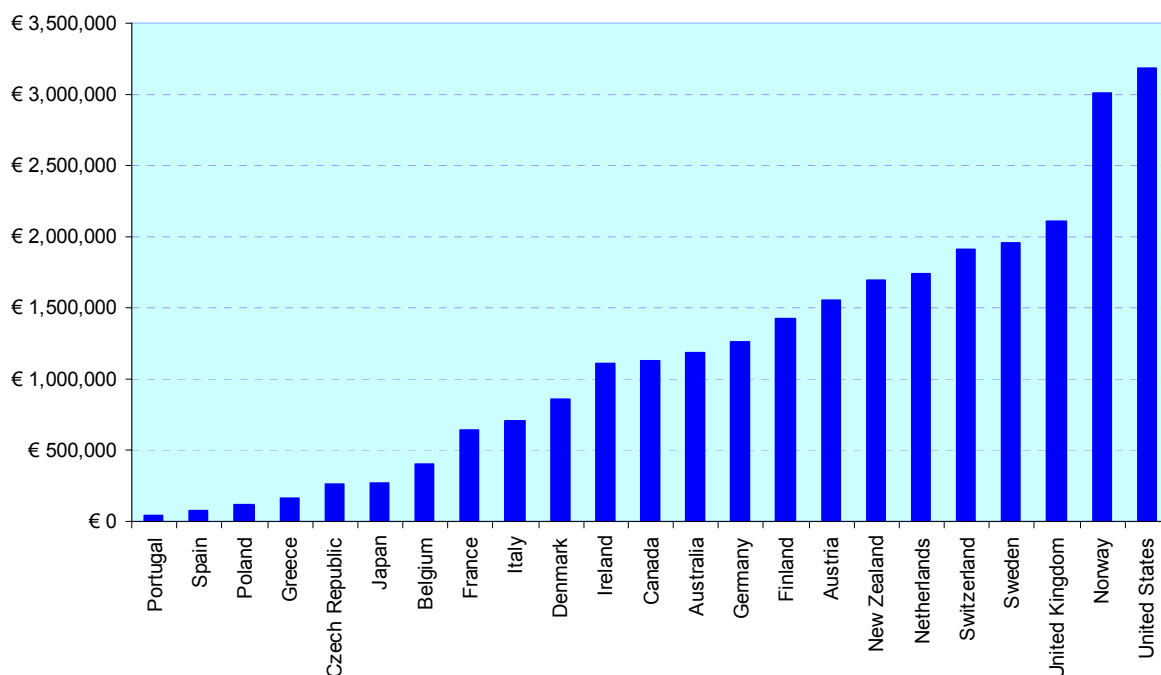
In 1999 a methodology for estimating the socio-economic costs of road crashes was agreed for a five-year period to 2005 and is now being revised. The method for estimating the cost of a death in road traffic takes account of years of life lost before retirement. The current socio-economic cost of a death is estimated at RUB 2.4 million (EUR 70 000),⁹ which is a small proportion of the value adopted in many countries as indicated in Figure 3.10. The actual monetary value assigned is an issue where road safety has to compete for financial resources with other objectives, for example, reducing travel time.

3.3.6. *Police-reported contributory factors to road crashes and injuries*

Contributory factors to road crashes, as recorded by the State Road Inspection (*Gosavtoinspectia*), give a similar picture to what is known from police data for many western countries: the main factor is speed (around 29% of crashes in 2003), followed by alcohol (around 15% of crashes, 11% of deaths). Overtaking (followed by head-on collision) contributes to around 14% of all crashes.

Road condition

Road inspection statistics indicate that unsatisfactory road conditions contribute to around 25% of injury crashes, although special investigations indicate that the percentage may be considerably higher. Low cohesion characteristics of road surfaces are reported as a factor in one third of such crashes. Around 24% of car to pedestrian impacts are caused by lack of or failure in function or supervision of road lighting.

Figure 3.10. Official monetary valuation of a road death in 23 countries (2002 prices)¹⁰

Source: “The Use of Efficiency Assessment Tools: Solutions to Barriers”, *Rosebud Handbook*, EC Project, 2004.

Vehicle condition

Official statistics indicate that 2.4% of injury crashes in the Russian Federation take place on account of technical faults in motor vehicles, although special investigations indicate a much higher contribution at 14-16%. The presence or absence of crash protection provided in vehicle design will have a greater impact still on injury causation.

Alcohol

Time-series analysis of police records indicates a continuous annual decline in the contribution of alcohol to crashes, injuries and deaths between 1994 and 2004. Deaths caused by drunk drivers as a proportion of all deaths are reported to have decreased from around 25% in 1994 to around 13% in 2004. This is a low percentage when compared with other European countries. In the absence of scientific evaluation, the review team finds these reported trends difficult to understand for several reasons.

The sharp drop in consumption following the government’s anti-alcohol campaign in the mid-1980s, when controls on the sale and production of alcohol took place, had been reversed by 1995. There have been no recent decreases in alcohol consumption. Sales of alcohol increased annually between 1996 and 2003¹¹ and the *Russian Longitudinal Monitoring Survey*¹² reported increases in alcohol consumption for both men and women in 2002. Every year, about 40 000 people die from alcohol poisoning alone and most of these are young males – the high-risk age group in road traffic.¹³

While the severity of penalties increased recently and the penalty for failure to undergo a medical test for excess alcohol was brought into line with the penalty for excess alcohol, the number of drivers stopped by police for drinking and driving has, in general, decreased since 2000.¹⁴

Research and experience internationally indicate that increasing penalties alone does not reduce drinking and driving. Such an important decline in alcohol-related deaths would normally be associated with changes in drinking patterns, or the introduction of demonstrably effective new interventions such as a highly visible police presence conducting random breath testing, supported by regular publicity, to deter potential offenders.

In 2004, it is reported that over one thousand deaths were caused by drunk pedestrians, one third of the number caused by drunk drivers.

In-depth study

In various European countries the scientific multi-disciplinary in-depth study of representative samples of road crashes to determine the main contributory factors to road crashes, road traffic injuries and their consequences and to identify countermeasures is carried out. These kind of in-depth studies are needed in the Russian Federation.

3.3.7. Conclusions - statistical data on road traffic crashes, injuries, costs

- The Russian Federation has a very substantial road safety problem which, without urgent attention at the highest and broadest levels of society, is likely to deteriorate further significantly and on an annual basis.
- Deaths in road traffic rose by 25% between 1998 and 2004 and, while there was a decrease in 2004, this may be due to statistical fluctuation rather than marking out a reversal in the long-term upward trend.
- The Russian Federation has the highest road death rate (per 100 000 population) of all ECMT member countries and contributes one third of all total road deaths in those countries.
- The majority of crashes occur in cities and urban areas, while the most severe crashes occur in non-built-up areas.
- All age groups are at a high risk, but this is particularly the case for those between the age of five and 44 years. Injuries to children have increased by 10% since 1999.
- The main road user groups involved are car occupants (45% of deaths) and pedestrians (43%).
- The Russian Federation has a higher share of pedestrian deaths than any OECD or Baltic country and deaths have risen steeply in the Moscow region.
- The socio-economic cost of road crashes is officially estimated to be around 2.5% of GDP. The value of a statistical life in estimating socio-economic costs is substantially lower than that used in ECMT and OECD countries.
- Speed is identified in police-reporting as the main contributory factor in crashes and their severity.
- The reported national trends in alcohol-related road crashes are puzzling and require in-depth scientific analysis.

- The review's analysis is limited by the absence of data on the amount of travel by different road user groups, a question mark about levels of reporting of road crashes, national survey information on speeds for different types of road, the level of drinking and driving in traffic, seat-belt use and crash helmet use, both in traffic and in crashes.
- There is little routine information available on hospital attendance rates due to road traffic injuries and on outcomes, making it difficult to assess the performance of post-impact trauma care.
- It has not been possible to verify data quality or to ascertain whether the under-reporting of crash injuries is a problem in the Russian Federation as in other countries.

Notes

1. Federal Statistics Office of Russia (2004), *Main Indicators of Transport Performance in Russia*, annual publication.
2. International Association of Public Transport (UITP), *Millennium Cities Database for Sustainable Mobility*, January 2001.
3. *Transport and Communication in Russia*, 2004.
4. For international comparisons, the Russian fatality total needs to be adjusted given the general European definition of death within 30 days of the crash.
5. Databank, *Russia in Figures 2005*, Federal Service of State Statistics.
6. *Road Traffic Accidents in Russia* (2005), Statistical Yearbook of the Department of Road Traffic Safety, Ministry of Internal Affairs, Moscow – the source of all statistical information in this section unless noted otherwise.
7. Silyanov, V.V. and B. Anokhin, *The First Federal Programme for Ensuring Road Traffic Safety in Russia (Some Results of Practical Realisation)*, Proceedings of 12th International Conference on Traffic Safety on Three Continents, 19-21 September, 2001, Moscow.
8. Russian Academy of Medical Sciences, the State Institution, the National Research Institute of Public Health Review: *Road Traffic Injuries in the Russian Federation, 1999-2003*.
9. Sub-programme on Road Traffic Safety, Federal Targeted Programme Modernisation of Transport System in Russia, Moscow, 2002, Ministry of Transport of Russian Federation (www.mintrans.ru).
10. *The Use of Efficiency Assessment Tools: Solutions to Barriers*, ROSEBUD Handbook, EC Project, 2004.
11. Federal Service of State Statistics (2004), *Russian Statistical Yearbook*, Moscow.
12. University of North Carolina-Chapel Hill, Carolina Population Center (2005), *Russian Longitudinal Monitoring Survey (RLMS)*.
13. Federal State Statistics Service (2003), NOBUS (*National Survey of Household Welfare and Program Participation*), Moscow.
14. Department of Road Traffic Safety, Ministry of Internal Affairs, Moscow, 2005.

4. ROAD SAFETY MANAGEMENT IN THE RUSSIAN FEDERATION

4.1. Introduction

This section provides a brief overview of road safety activity to date in the Russian Federation. It outlines briefly the different governmental responsibilities for road safety; the legal basis for road safety policy; the road safety programmes over the last ten years and the general road safety measures which are in place. Analysis and discussion of findings are to be found in Section 5.

4.2. Road safety responsibilities

4.2.1. National responsibilities

Responsibilities for road safety in the Russian Federation have undergone significant change in recent years and the process of determining the specific functions and accountabilities of different ministries, organisations and co-ordinating arrangements continues.

Responsibilities for various aspects of road safety in the Russian Federation are, in practice, shared between federal and regional governmental bodies and local government (summarised in Table 4.1.) Unlike the situation in many other European countries, the central safety functions are located in the Ministry of Internal Affairs, rather than in the Ministry of Transport. In common with many other European countries, responsibility for many of the traffic management functions has been devolved to regional and local levels.

There is a tradition of establishing co-ordinating committees for road safety work in the Russian Federation. A Road Safety Commission set up in the 1990s but disbanded in 2004, comprised ministries (deputy ministers), and government agencies concerned with safety and had an overall co-ordinating role. The co-ordination of traffic safety activity (federal bodies and the regions) was entrusted to the Ministry of Internal Affairs in October 2004. New co-ordinating arrangements between authorities have not yet been formalised. The institutional responsibility for complex, multi-disciplinary analysis of the problems and decisions at an inter-departmental level is yet to be established.

The newly formed Traffic Safety Department of the Ministry of Internal Affairs is currently co-ordinating the preparation of a proposal for upgrading road safety management at national level. A report is to be presented to the Presidium of the State Council, chaired by the President. To integrate the responsibilities of the many ministries involved, the possible creation of a special governmental commission on road traffic safety is under consideration.

New political impetus for road safety is evident from the State Duma and Federal Council with parliamentary hearings on road safety being held for the first time in 2004.

The Ministry of Internal Affairs has a major role in the field of road safety, particularly since October 2004. Road safety is one of its nine primary tasks. The main road safety functions are carried out by a new Department of Road Traffic Safety, regional bodies of the State Inspection of Traffic Safety (GIBBD) with support from the Ministry's Scientific Research Centre for Road Safety Problems.

Table 4.1. Responsibilities of the Federal Ministries for Road Safety

Ministry of Internal Affairs	Ministry of Transport	Ministry of Industry and Energy	Ministry of Health and Social Development	Ministry of Education and Science	Ministry of Civil Defence Affairs, Emergency Situations and Liquidation of Consequences of Natural Disasters	Ministry of Defence	Ministry of Culture and Mass Communications
<ul style="list-style-type: none"> - Lead agency - Intergovernmental co-ordination - Road traffic rules - Driving licensing and testing - Vehicle registration - Road crash recording - Vehicle and road inspection - Traffic supervision and enforcement 	<ul style="list-style-type: none"> - Passenger and commercial transportation rules - National road network - Licensing, supervision, inspection and control of transportation - Inspection and certification of international transport including - Border control - Weight control - Advanced training of passengers and commercial drivers (C&D categories) - Vehicle certification (certain functions) 	<ul style="list-style-type: none"> - Vehicle certification (certain functions) - Policy in the field of technical norms and national standards - Town-planning policy 	<ul style="list-style-type: none"> - Assessing fitness to drive for driver licensing purposes - Post-impact medical care - Hospital registration of road casualties 	<ul style="list-style-type: none"> - Education standards and programmes - Licensing of driving schools - Training of drivers and specialists 	<ul style="list-style-type: none"> - Prevention and management of emergency situations resulting from road crashes - Rescuing people involved in road crashes 	<ul style="list-style-type: none"> - Registration and technical control of army vehicles - Supervision of army vehicle traffic 	<ul style="list-style-type: none"> - Information

* - as at 1 September 2005

- The Department of Traffic Safety is a self-standing unit of the Ministry of Internal Affairs of the Russian Federation. Its main tasks include:
 - Preparing proposals on state policy measures and their implementation in the field of road traffic safety.
 - Improving the legislative and regulatory framework in the field of road traffic safety.
 - Organising and implementing road traffic safety measures within its competence.
 - Ensuring co-ordination of activities of governmental bodies at the federal, regional and local levels in the field of road traffic safety.
 - Enhancing the state control and inspection system in the field of the road traffic safety.
 - Organising and co-ordinating the activities of different bodies of the Ministry in the field of road safety.
 - Management of the State Inspection of Road Traffic Safety and its units.
 - Management and supervision of the Scientific Research Centre for Road Safety Problems of the Ministry of the Russian Federation, as well as the Centre for Emergency and Special Measures of the Ministry of Internal Affairs in the field of road safety.
- The State Inspection of Traffic Safety (GIBBD). In addition to traffic control functions, the field units also have responsibility for organising and performing vehicle registration and technical vehicle inspections, driver testing and licensing, inspection of the road network, information campaigns, maintaining the road crash register, participating in, developing and implementing measures directed at preventing road crashes and decreasing the severity of their consequences.

The Ministry of Transport is responsible for the development of state policy and the legislative and regulatory framework in the field of road transport, urban electric transport and road infrastructure. The Ministry is responsible for two federal bodies:

- The Federal Service of Supervision in the Sphere of Transport (*Rostransnadzor*) carries responsibilities for control and supervision in the sphere of road transport (excluding matters of road safety). This body is responsible for issuing licences for passenger road transport.
- The Federal Road Agency (*Rosavtodor*) is responsible for the state management and provision of state services in the sphere of road transport and road infrastructure and for ensuring conformity of federal highways to rules, standards, technical norms and other regulatory requirements. The federal network makes up around 5% of the network, but carries a large proportion of traffic and contributes to 11% of total crashes and over 20% of road deaths. The FRA is also responsible for issuing permits for the international transportation of passengers. Traffic safety is mentioned three times amongst the FRA's responsibilities: setting out the parameters for the state of the network, the technical specifications of highways and services; the introduction of temporary traffic restrictions for vehicles on federal highways in the interest of traffic safety; and to ensure traffic safety on sections of federal highways during their construction, repair and maintenance.

The Ministry of Industry and Energy has responsibility for the technical regulation and certification of motor vehicles as well as town planning and land use.

The Ministry of Health and Social Development has responsibility for determining the fitness to drive of motor vehicle drivers; the provision of emergency medical assistance at the scene as well as other elements of post-impact care.

The Ministry of Education and Science sets educational standards and is responsible for the licensing of driving schools and professional training.

The Ministry of Culture and Mass Communications has responsibility for road user information on traffic safety policy.

The Ministry of Natural Resources is concerned principally with environmental protection.

The Ministry of Civil Defence Affairs, Emergency Situations and Liquidation of Consequences of Natural Disasters is responsible for the prevention and management of emergency situations including rescuing people involved in road crashes.

The Ministry of Defence is responsible for the registration and technical control of army vehicles and carries out road traffic control of vehicles owned by the ministry and its subsidiary bodies.

4.2.2. Regional and local government responsibilities

At a regional level the management of the motor transport sector is carried out by the respective executive bodies. The main responsibilities include legislation and standards concerning the operation of urban passenger transport; road construction; improving motor transport fuel quality and the use of alternatives and the organisation of environmental control.

In the largest Russian cities *e.g.* Moscow and St. Petersburg, state regulation is carried out in the areas of traffic engineering, parking policy and requirements for the rolling stock used locally. State policy is also developed in the field of environmental protection, town planning and public health.

The role of local government is set out in the Federal Law “Concerning the general principles of local government organisation in the Russian Federation”. Local authorities have the power to organise and regulate local transport provision, land-use planning, aspects of environmental protection, setting and charging local rates for local services, the development of municipal plans and programmes and the collection of statistics relating to local economic and social conditions.

However, there is no specific road safety responsibility established in present legislation at regional or local levels.

4.2.3. Research sector

Notwithstanding that data to inform road safety policymaking is generally weak, there is well-developed research capacity for road safety in the Russian Federation. Several governmental and non-governmental research organisations contribute to road safety work:

- The Scientific and Research Institute of Road Transport (NIIAT) is involved in the development of certification and licensing of the road transport system, technical requirements including environmental and vehicle inspection standards; and road safety issues, particularly in the field of road passenger and freight transport safety.
- *RosdorNII* is involved in the preparation of standards, fundamental and applied research work relating mainly to the federal road network.
- The State Road Research and Design Institute (*Soyuzdornii*) also works in the area of standards design and development and testing of safety devices such as barriers.
- The State Technical University (MADI) is the centre for education, infrastructure and transport telematics in roads and transport. It contributed to the preparation of the first national plan for road safety; carried out work to estimate crash costs, the preparation of regional road safety programmes and the development of motor vehicle insurance policy.
- The Scientific Research Centre on Road Safety Problems of the Ministry of Internal Affairs (NIC BDD) plays a leading role as a scientific and research institute within the Ministry of Internal Affairs in co-ordinating and performing research studies on causes of road crashes, the development of preventative measures, providing legislative and regulatory, as well as analytical and informative background for activities of the State Inspection of Traffic Safety.

According to the Federal Road Agency of the Ministry of Transport, road safety comprises around 12% of research work connected with road transport and infrastructure.¹

4.2.4. *Non-governmental road safety organisations*

There are no non-governmental organisations which have road safety as their sole focus to facilitate improvement of the road safety situation in Russia through their activities. However, organisations, such as the Russian Automobilist Society, Inter-regional Association of Driving Schools, and Russian Association of Professional Transport Education deal with aspects of road safety.

During the International Forum on the Problems of Road Traffic Safety held in the Kremlin Palace in December 2004, insurance and motoring organisations expressed interest in being more involved in the provision of road safety.

4.2.5. *The media*

The media has a key role to play in road safety in helping to draw attention to the scale of the problems and stimulating debate on effective countermeasures. To date media attention has been limited to documentaries and occasional press reporting on road safety issues.

4.3. The legal basis for road safety policy

4.3.1. *Federal law on road safety*

The basis for road safety activity in the Russian Federation is set out in the 1995 Road Safety Law. The law sets out a framework for road safety policy by setting out the responsibilities of government

and executive agencies; the co-ordination and regulation of activities; the drafting of technical specifications and standards; the implementation of traffic engineering measures; provision of road safety resources; organisation of driver training and road safety education; the implementation of measures for medical assistance; the compulsory certification of products, goods and services; licensing provisions; insurance provisions and the performance of state supervision and control. The law also makes provision for the establishment of future road safety programmes at federal, regional and local levels.

4.3.2. Road Traffic Rules of the Russian Federation

Traffic rules implemented in 1993 with subsequent amendments set out a range of requirements. These include: the duties of drivers, pedestrians and passengers; rules for driving speed choice, junction priority; railroad crossings, various road user manoeuvres and movements in the network; general rules for passenger and freight transport; the application of traffic signals; the carriage of a warning triangle for emergencies; rules of road user behaviour regarding pedestrian crossings and bus stops.

4.3.3. The Russian Federation Code concerning Administrative Offences

Different types of penalty for road traffic offences are set out in the Russian Federation Code on administrative offences which include warnings, details of fines and driver licence withdrawal.

Table 4.2. Examples of penalties for motor vehicle traffic offences

Type of traffic offence	Penalty
Excess alcohol (“Driving in a state of alcohol intoxication or permitting a vehicle to another person to drive the vehicle in a state of alcohol intoxication”)	<i>Licence withdrawal for 18 months to 2 years</i>
Failing to pass a medical test of alcohol intoxication	<i>Licence withdrawal for 18 months to 2 years</i>
Exceeding the posted speed limit by 10-20 km/h	<i>RUB 50 (EUR 1.5) or warning</i>
Exceeding the posted speed limit by 20-40 km/h	<i>RUB 100 (EUR 3)</i>
Exceeding the posted speed limit by 40-60 km/h	<i>RUB 100-300 (EUR 3-9).</i>
Exceeding the posted speed limit by more than 60 km/h	<i>RUB 300-500 (EUR 9-14.5) or licence withdrawal for 2-4 months</i>
Failing to stop at a red traffic light or comply with traffic controller command	<i>RUB 100 (EUR 3)</i>
Crossing railway line outside railway level crossing, crossing through closing or closed barrier on level crossing, stopping on railway level crossing, failing to stop at traffic light or stop command of officer on duty	<i>RUB 500 (EUR 14.5) or licence withdrawal for 3-6 months</i>

Table 4.2. **Examples of penalties for motor vehicle traffic offences** (cont.)

Driving on opposite carriageway	<i>RUB 300-500 (EUR 8-14) or licence withdrawal for 2-4 months</i>
Failing to give way at a junction where other vehicles have priority	<i>RUB 100-200 (EUR 3-6)</i>
Failing to comply with stopping and parking rules on roads, creating consequently an obstacle for traffic, as well as stopping and parking in tunnels	<i>RUB 100-300 (EUR 3-9) or warning</i>
Driving along bicycle or pedestrian paths and pavements	<i>RUB 50 (EUR 1.5)</i>
Failing to comply with stopping and parking rules on pedestrian walkways, creating consequently an obstacle for pedestrians	<i>RUB 100-200 (EUR 3-6) or warning</i>
Committing a road traffic or vehicle operating offence resulting in minor injury	<i>RUB 500-800 (EUR 14.5-23) or licence withdrawal for 3-6 months</i>
Committing a road traffic or vehicle operating offence resulting in serious injury	<i>RUB 1 500-2 500 (EUR 44-73) or licence withdrawal for 6 months to 1 year</i>
Hit and run	<i>RUB 1 000-1 500 (EUR 29-44) or licence withdrawal for 6 months to 1 year or imprisonment for 15 days</i>
Driving whilst disqualified	<i>RUB 1 000 to 1 500 (EUR 29-44)</i>
Driving a motor vehicle without carrying on board legally required documents	<i>RUB 50 (EUR 1.5) or warning</i>
Failing to fulfil civil liability insurance obligations on behalf of the car owner	<i>RUB 500-800 (EUR 14.5-23)</i>

Average monthly income in the Russian Federation = RUB 3 000

Source: Code of Administrative Offences of the Russian Federation/Department of Road Traffic Safety, MIA

4.3.4. **The Federal Law “On Technical Regulations”**

Established in 2002, this legislation provides, *inter alia*, for technical regulation of motor vehicle transport including the general principles of standardisation and its procedures, principle of conformity, certification and type approval, accreditations of certification bodies and test laboratories and state control over observance of technical requirements.

According to this legislation, as from 1 October 2003, all technical requirements including, for motor vehicles are voluntary with the exception of vehicle safety, environmental safety, nuclear safety and some other safety standards which are adopted into mandatory technical regulations following parliamentary approval. These standards are either developed nationally or adopt UN ECE standards (although, at present, not necessarily incorporating amendments which adapt to technical progress).

The new national “System for the Certification of Motor Vehicles and Trailers” established by this federal law now comprises mandatory requirements on a range of construction and use matters affecting motor vehicle safety.

4.4. Road safety programmes during the last decade

Since 1996, there have been two road safety programmes and a third was being drafted at the time of the review. Little information is available on these programmes and no formal assessment of their progress has been made; hence the review team’s difficulty analysing specific successes or failures of the first two programmes.

4.4.1. *The First Road Safety Programme (1996-1998)*

A special programme called “Improvement of Road Safety in Russia, 1996-98” started in June 1996. It was prepared by the Russian ministries of transport (the co-ordinating body), internal affairs, health and education and the Moscow State Technical University (MADI) and the Russian Road Research Institute (*RosdorNI*).

A target was set to reduce deaths by 10-20% compared with 1991 levels in order to save 3 200-6 500 lives. The budget was around RUB 9 billion (about EUR 1 billion) with 80% of funding provided by regional road funds. Given that resources were not made available until 1998, the plan was extended to 2001 with additional funding. The programme covered five areas of activity:

- (i) Information and education:
 - Preparing and widely disseminating publications aimed at increasing public awareness of road safety problems and producing regular television and radio programmes dealing with road safety.
 - Improving training programmes and other educational material aimed at the safety of children in traffic.
- (ii) Remedial engineering work at black spots:
 - Identifying black spots and implementing remedial measures.
 - Assigning road laboratories to monitor the technical and operational condition of hazardous road locations.
- (iii) Improved traffic control at black spots:
 - Installing traffic control facilities at hazardous road locations.
- (iv) Improved emergency system:
 - Establishing a new radio communication system on the federal road network.
 - Establishing a first aid training system for drivers, traffic police and staff of road maintenance units.

- Providing emergency and rescue tools to facilitate the evacuation of victims from damaged vehicles.
 - Equipping ambulances with special facilities and instruments for emergency medical assistance.
 - Establishing ambulance patrol teams on major roads.
- (v) Information system for the recording of road crashes

During this period a new road traffic safety law was approved and a governmental commission on road safety was established chaired by the first deputy prime minister of the Russian Federation.

A scientific evaluation of the programme's contribution towards the targeted reductions compared with the 1991 baseline is not available.

4.4.2. The Second Road Safety Programme (2002-2010)

The sub-programme on *Road Traffic Safety* of the federal targeted programme *Modernisation of Transport System of Russia 2002-2010* was approved in December 2001 as a follow-on from the first programme. A target was set to reduce road crashes by 15% and deaths by 15-20% (4 000-6 000 lives) by 2010 over a period of eight years.

The overall budget was set at around RUB 25 billion (EUR 944 million) comprising around 3% from the federal budget (RUB 62.9 million budgeted in 2005), 2.5% from local and regional budgets and 95% from other sources.^{1,2} It is worthy to note that a reduction of 15% corresponds to EUR 90 000 to prevent one fatality which can be compared with the 1 million Euro to prevent one fatality recommended by the European Commission in advice to member states for cost-effective investment in road safety.³

Planned actions comprised:

- (i) Improving the state system for road safety management
 - Developing and improving regulations setting out the state road safety management system, control and supervision in the field of road safety; establishing a road safety monitoring system including study and analysis of public opinion on road safety.
 - Providing an information system for locating crashes on the network and administrative and technical improvement of the first aid system.
 - Improving the co-ordination of organisations involved in road safety.
- (ii) Improving state policy in relation to road users:
 - Public education in safe road behaviour, regular TV and radio programmes, video and printed material.
 - Preparing and implementing new training methods for children and young road users, establishing clubs for driver training and improving knowledge of traffic regulations.

- Preparing standards, legislation, programmes and special facilities for driver training.
 - Putting together a project for a centre for psychological and physiological diagnostics and rehabilitation of drivers.
- (iii) Improving the construction and use of domestically produced vehicles:
- Preparing standards for the construction and use of vehicles; developing active and passive safety systems for domestically-produced vehicles.
- (iv) Improving traffic management and control:
- Implementing improved traffic management systems, new technical facilities and tools for traffic management and control, with special attention to pedestrian bridges and underpasses.
- (v) Integrating the new programme with the previous programme

The intergovernmental Co-ordinating Council, headed by the Ministry of Transport and comprising representatives from different ministries and organisations, was established in order to organise the implementation and day-to-day monitoring of the sub-programme. General supervision of the implementation of the sub-programme measures was assigned to the State Road Safety Commission of the Russian Federation. Regional targeted programmes, entitled Road Traffic Safety (financed through regional budgets and other sources) were envisaged in the sub-programme.

According to the Ministry of Transport these two programmes have not been fully carried out. The proceedings of the *Second All-Russian Conference on Traffic Safety* (Moscow, 1998) indicated that in the course of realisation of the 1st Road Safety Programme in 1997-1998 there were no appropriate funds for capital investments and financing of scientific and technical works and developments was several times less than was initially planned.⁴ It has been estimated that the Second Programme was financed to around 60% taking into account all sources of financing.

4.4.3. The road safety elements of the Transport Strategy - 2003

As mentioned previously, the government approved a national transport strategy in December 2003 which contained several new road safety elements. Specific safety targets and countermeasures were defined with the improvement of traffic safety being identified as a national priority. A quantitative goal was set to reduce the per capita risk of being killed in a road crash from 25 in 100 000 people (2003) to 14-15 in 100 000 people by 2015.

A number of state priority actions to reduce the number and severity of road crashes were presented:

- Expanding educational activity to create a “road culture” amongst Russian citizens and to improve awareness of the road injury problem.
- Improving the technical regulation of vehicles to ensure safe design and use.
- Improving driver skills and responsibilities.
- Improving traffic engineering and developing the road network.

- Improving road safety enforcement activity.
- Increasing sanctions to an appropriate level.
- Significant increased activity to improve traffic engineering, driver training and retraining, communication systems, improved notification of road crashes and medical first aid.

4.4.4. The Third Road Safety Programme (under development at the time of peer review)

According to the revised (September 2005) Federal Targeted Programme on the *Modernization of Transport System of Russia* the implementation of five sub-programmes, including a *Road Traffic Safety Sub-Programme* had to be concluded in 2005.⁵

The draft *Federal Targeted Programme on Road Traffic Safety Enhancement* (2006-2012) includes a top-down target of a 33% decrease in the total number of deaths in road crashes compared to 2004. A summary of the draft programme outlines the following broad themes:

- Carrying out scientific research for identification of priority measures to prevent road traffic injury and reduce its consequences.
- Upgrading the legislative and regulatory framework of road traffic safety.
- Enhancing measures and volume of work for increasing pedestrian safety.
- Increasing vehicle passive and active safety, increasing enforcement of seat-belt fitment and use, child restraints and other safety devices.
- Enhancing novice driver training and testing and licensing.
- Improving methods and forms of enforcement/inspection of road user behaviour and compliance with road traffic rules and regulations.
- Wide-scale introduction of automatic means of traffic regulation enforcement.
- Improvement in first aid at crash scenes.
- Publicity and awareness raising campaigns.
- Broadening the role of non-governmental organisations.

4.5. Road safety measures in the Russian Federation

A brief overview of road safety measures carried out to date in the Russian Federation is presented:

4.5.1. Driver licensing and testing

Licensing access to motor vehicles

The age for access to driving is 18 years for a car, 16 years for motorcycles and 14 years for mopeds, the age for the latter two categories being much lower than elsewhere in Europe. About 60% of 18-year-olds acquire a driving licence, although the number of new licences among adults is decreasing. For heavy goods vehicles the age of access to driving is 18 years. Drivers of buses must be 20 years or more.

Driver testing

The driving test consists of a theoretical computer based test with a range of questions and a very short practical driving test (when compared with tests in many other countries). Driving tests are carried out by the police. Driver training is licensed by the Ministry of Education and Science and carried out by state organisations or private driving schools which provide training to around one third of novice drivers. Legislation requires the licensing body to carry out systematic checks on driving schools. About 2 000 000 new drivers receive training a year. Around 16% of total number of injury crashes committed by drivers, are caused by drivers with less than three years' experience.

4.5.2. Safety of the road infrastructure

“The condition of our roads is critical...the development of road infrastructure is a high priority. Every fourth kilometre of the road network requires improvement. Only 85% of the road network has signs and 40% of these do not meet standards. 80% of traffic lights are outdated.” Mr. Kirianov, Chief of Traffic Safety Department, International Forum on the Problems of Road Traffic Safety, 15 December 2004, Kremlin Palace, Moscow.

Improvements in the quality of the road network are key governmental objectives, given the challenges posed by the enormous size of the Russian Federation and the dramatic growth in motor vehicles since the early 1990s resulting in network congestion, environmental problems and high road crash rates. The Federal Highways Association (FHA), established in 1992 to administer the federal road network, has reported that over half of the federal road network is in need of repair. The Highways Sub-Programme of the Special Federal Programme *Modernisation of the Transport System of the Russian Federation (2002-2010)* provides the framework for activity. Increasing traffic safety and developing road services is one of 12 programme projects.

Land-use planning and road safety impact assessment

In the Russian Federation, land use planning is practised separately from transport planning with adverse consequences for road safety. There has been large growth in businesses and shopping centres along major roads which is creating new challenges for safety management and for the co-ordinated activity of the various responsible authorities. Safety impact assessment is the principle of checking

new transport and land-use projects such as a shopping centre or a large retail or office establishment building to assess their potential area-wide impact on overall traffic demand and safety before entering design phase. There has been discussion on this intervention at EU level and elsewhere and it is encouraging to see that Road Safety Impact Assessment is mentioned in the Transport Strategy as a planned future action.

Road standards

Road sign standards in general follow the *Vienna Convention on Road Signs and Signals*, Vienna, 1968, although some signs are not always provided, for example, the warning sign for road humps. Road design standards are formulated at national level. The Ministry of Internal Affairs has reported that every fourth kilometre of the road network requires improvement. Only 85% of the road network has signs and 40% of these do not meet standards. New national standards for road signs (GOCT P Technical means for road traffic management: road signs general technical requirements) enter into force from 1 January 2006. In general, road design standards and guidelines have not kept pace with international best practice in road safety engineering, although in recent years the production of guidelines has begun.

Road environment and speed management

A description of speed limits in operation in the Russian Federation is presented in Section 4.5.4. The road environment, both in urban and rural areas is not designed to manage speed and influence drivers' choice of speed within posted limits. In general, there is little tradition of improving the road infrastructure to manage speed in the Russian Federation and speed limits, road design and layout are not closely matched to road function.

Pedestrian facilities

The provision of pedestrian facilities is, in general, very limited. There is evidence of physical separation but with insufficient coverage. Safe crossing provision on busy roads is limited. Norms concerning traffic signals are problematic with insufficient time being allowed for pedestrian phases of traffic lights even on multi-carriageway roads. There are no programmes to ensure safer routes.

HGV facilities

There is a lack of heavy goods vehicle parking facilities and rest areas on long-distance routes resulting in parking along high-speed public roads and an increase in crash risk for other road users. The Sub-Programme on Roads of the Federal Programme on Modernisation of the Transport System envisages measures for roadside services along federal and territorial roads.

Road safety assessment

There are prescribed safety checks on new projects carried out by the government for compliance with standards especially the design of road junctions and the installation of signs and markings. However, this is not road safety audit as is generally understood in road safety engineering (*i.e.* an impartial

multi-stage safety check of projects at different design stages carried out by crash investigation and prevention specialists which goes far beyond pure compliance-testing with norms).

Black spot management and road safety inspection

Black spots are defined in the Russian Federation as sites where there have been three or more injury crashes along a section of not more than 400 metres in one year, irrespective of traffic volume. GIBBD carries out routine inspections of road condition and crash sites and makes recommendations for remedial treatments. The police regularly forward information on the location of black spots (including potential deficiencies in road conditions, such as friction problems) and recommendations for low-cost measures to the responsible road authorities. They can impose sanctions over authorities that fail to act. Evaluation of a special treatment programme of 1 000 black spots in Russia (about 10% of the nationally identified total) indicated a resulting reduction of 3 600 fatalities (including 1 700 children).⁶ Over the last 12 years and using a specially created database, ROSDORNII (with the support of MADI) has been regularly monitoring the road network by analysing data on road crashes and road conditions on the Russian road network and identifying the location of black spots. A number of small-scale projects in the north-west Russian cities were implemented in co-operation with road police and municipalities with the support of foreign funding (Finland) to define and prioritise risk based on economic assessments and to propose and plan the elimination of black spots on the urban network. In general, this kind of work receives insufficient financial support.

The quality of road design is, in general, substandard and while safety checks are carried out the review team recommends that a review of the quality of the current inspection and implementation system takes place. Major road infrastructure faults are highly visible on the road network. These include missing central barriers and emergency lanes on multi-lane motorway-type roads with speed levels greater than 80 km/h; unprotected lamp post and telegraph poles; the siting of private businesses and access alongside these roads without parking restrictions, although there are acceleration or deceleration lanes available; pedestrian crossings on 2x4 lane carriageways without traffic lights or other traffic regulation; no pedestrian pavements in roads through rural villages thoroughfares; missing guard rails *e.g.* on motorway ramps with critical curvature and unprotected railroad crossings on multi-lane carriageways.

Road maintenance

In 2003, RUB 6.6 billion was allocated to highway maintenance for work which included upgrading road surfaces along 33 800 kms of road; the erection and replacement of 50 500 road signs and the replacement of 22 900 kms of guardrail. Maintenance activity on around 15 700 kms of federal roads and over 16 000 kms of local roads was planned for the 2002-05 programme.

4.5.3. *Vehicle safety standards and technical inspection*

“National car manufacturers are unable to ensure high technical and safety standards of manufactured vehicles”, Mr. Kirianov, Chief of Traffic Safety Department, International Forum on the Problems of Road Traffic Safety, 15 December 2004, Kremlin Palace, Moscow.

The Russian Federation is a contracting party to the UNECE 1958 *Agreement on Type Approval* and the 1998 *Agreement on Global Harmonization*, and the 1997 *Vienna Agreement on the Periodic Inspection of Motor Vehicles*.

Currently, the Russian Federation accepts imports of new foreign vehicles which are type approved to various UNECE regulations and some EU directives. Every fifth car is imported and the share increases year-on-year. National regulations for domestically produced vehicles (which comprise the majority of the annual new car fleet), *e.g.* on visibility, are also set out which, increasingly require UNECE standards for vehicle construction. However, important safety standards are often much inferior to those in vehicles type-approved to the latest European standards *e.g.* frontal and side impact protection. In some cases, no mandatory standards are required (*e.g.* seat-belts in minibuses and coaches and child restraints for use in cars).

Frontal impact car occupant protection crash test

Russia applied UNECE Regulation 94 on 8/4/96 – the frontal angled impact test, which was rejected in 1996 by EU member states in favour of the frontal offset deformable barrier (ODB) test which is more representative of real world conditions in new EU legislation. However, an amendment to adopt the ODB test is currently on the table in Geneva to upgrade Regulation 94 to the level of the EC directive which may or may not be adopted by the UNECE.

Side impact car occupant protection crash test

The Russian Federation applied UNECE Regulation 95 on 8/4/96 – a side impact test not taken up in 1996 by the EU which adopted, instead, a stricter test more representative of real world conditions. As with the frontal impact directive, amendments to the UNECE Regulation 94 to upgrade this to make it compatible with the EC directive which may or may not be adopted by the UNECE are on the table.

Rear seat-belts and child restraints

Rear seat-belts have to be used if fitted. The fitment of rear belts for domestic manufacture is in accordance with UNECE Regulation 14. Some vehicles on the road do not have rear belts. While child restraints conforming to UNECE Regulation 44 are accepted in imported vehicles and as an aftermarket extra, there is currently no national requirement for child restraints to mandatorily meet this standard.

Safer car fronts for pedestrians

Despite awareness of the new EC directive requiring car manufacturers to provide pedestrian protection, no action is foreseen, since no UNECE regulation currently exists.

GAZ buses

These are the most wide-spread in the Russian bus fleet. Some models meet national requirements for vehicle construction. One model complies fully with existing UNECE regulations. Legislation to fit new buses with seat-belts has recently been adopted.

HGVs

There is significant domestic production and new vehicles are required to comply with some UNECE regulations. UNECE standards to prevent other vehicles under-running the front, side and rear of HGVs, however, have not been implemented. In-vehicle speed limitation of HGVs is not mandatory as in other European countries. There is no requirement for new vehicles to be fitted with retro-reflective markings.

Periodic vehicle inspection

Less than 5% of crashes are reported by the police as originating from a vehicle defect. For cars that are more than ten years old, the contribution is reported to be 40%. Mandatory periodic inspection which is carried out jointly by the public and private sectors is required for all motor vehicles, including private cars, public service vehicles and goods vehicles, but the standard of facility varies nationally. In many cases inspections are carried out via a manual visual inspection, in other cases with the aid of technological equipment. The majority of facilities are equipped for car diagnostics only. Buses, taxis and freight vehicles are required to be inspected every six months. Cars less than five-years-old are tested every two years and those over five-years-old, every 12 months. In 2002, it was estimated that around 20% of motor vehicles tested with diagnostic equipment failed the technical inspection, the majority of these being privately-owned vehicles.

4.5.4. Setting and securing compliance with key safety rules

“Half of our road accidents are due to speeding, driving in lanes in the opposite direction and drink driving. There is a lot of speeding above the legal limit and driving under the influence of alcohol.”
“Half of the children injured are passengers in cars, where seat-belts have not been used, or not used properly.” *“The public does not appreciate the scale of the road safety problem in Russia. Sensitising people is important”,* Mr. Kirianov, Chief of Traffic Safety Department, International Forum on the Problems of Road Traffic Safety, 15 December 2004, Kremlin Palace, Moscow.

Speed limits

Speed limits in the Russian Federation are set out in Table 4.3. The urban limits are higher than those operating in many European countries, which are typically 50 km/h for main roads and often 30 km/h on an area-wide basis in traffic-calmed residential areas. Some local authorities have reduced the urban 60 km/h limit. For example, the city of Severodvinsk in the Arkhangelsk region on the White Sea shore changed their speed limit from 60 to 40 km/h with good results. Speed limits of 20 km/h are required inside dwelling zones and in courtyards accordingly but not on an area-wide basis and without self-enforcing physical measures. Physical measures to reduce speed such as road humps are usually introduced near schools, hospitals and other places with intensive pedestrian traffic. There has been discussion about the possibility of imposing winter speed limits (as, for example, implemented in Finland).

Table 4.3. Speed limits in the Russian Federation

Built up areas*	- 60 km/h
Dwelling zones and common areas (courtyards)	- 20 km/h
Roads outside built up areas:	
- Cars and trucks (lorries) with maximum permitted mass of less than 3.5 tonnes, on highways	- 110 km/h
- The same, on other roads	- 90 km/h
- Intercity and small-size buses, motorcycles (on all roads)	- 90 km/h
- Other buses, cars with trailers, trucks (lorries) with maximum allowed mass more than 3.5 tonnes, on motorways	- 90 km/h
- The same, on other roads	- 70 km/h
- Motor vehicles which are used for organised transportation of groups of children	- 60 km/h
- Motor vehicles towing other vehicles	- 50 km/h

*In some cases executive bodies of the subjects of the Russian Federation (regions) may establish higher speed limits for some sections of urban roads if road conditions ensure safe movement under this speed.

Source: *Road Traffic Rules of the Russian Federation*/Department of Road Traffic Safety, MIA

No information is available nationally on average mean speeds of motor vehicles on different types of roads, though some research surveys indicate widespread flouting of posted speed limits. In 2003, around 390 000 offences were recorded of exceeding the speed limit by as much as 60 km/h.

Radars are generally used by traffic police for speed limit enforcement and PKS (stationary camera devices for speed control) are used in some locations *e.g.* tunnels, but for surveillance, rather than enforcement. Speed cameras are not used widely in the Russian Federation. Changes in the legislation concerning the liability of vehicle owners would be needed to enable the introduction of automatic speed control, including speed cameras, and for issuing fines via licence plate recognition.

Blood alcohol limit

There is no legal limit for blood alcohol content (BAC) in the Russian Federation. Excess alcohol is an offence, which is detected by means of a medical test. A medical test is required by the police following reasonable cause for suspicion of excess alcohol. Random stopping is not applied. However, all drivers involved in an injury crash are required to be tested for alcohol including the deceased or unconscious. Where it is not feasible to give a medical test due to the physical condition of the driver, a 50mg/100ml limit is applied. In the past, if a driver refused to undergo a medical test if stopped in traffic following suspicion of alcohol the offence attracted a lesser penalty than for excess alcohol. In 2003, 1.2 million drivers were stopped and requested to undergo a medical test on alcohol intoxication, however many refused to undergo a test and simply paid a penalty of RUB 1 000-2 000. From April 2005 the penalty for failing to perform a medical test on excess alcohol is licence withdrawal, as for the offence of excess alcohol.

Seat-belt use

The law requires the use of seat-belts in the front and rear of cars if they are fitted. Front seat-belt fitment has been required since 1997, but the fitment of rear seat-belts is not mandatory. Children are not required to wear adult belts in the front or rear seat if under 12. While seat-belt wearing is not measured by survey, nor use recorded by the police on crash reporting forms, usage appears to be low and enforcement of seat-belt use is not a police priority. Expert assessments of usage range from 10-15% to 60-70% depending on the region and urban/rural context, with highest rates found in the regions of Samara and Lipetsk. Average usage has been officially estimated at around 40%. The fine for non-compliance is currently RUB 50 (EUR 1.5). Fines were increased (which helped to raise wearing rates), but were lowered again as a result of a parliamentary appeal. There have been awareness-raising campaigns in the media.

Child restraints

There is no technical regulation, as yet, on the standardisation, fitment or use of child restraints but one is foreseen by the Ministry of Internal Affairs.

Crash helmets

Use is mandatory for motorcyclists but there are no mandatory use requirements for moped riders or helmet standards for cyclists. No survey information is available about levels of use.

Daytime running light use

There is no mandatory requirement for the compulsory use of mandatory daytime running lights for cars and motorcycles. No surveys have been carried out on their voluntary use by drivers and riders. The observations of the review team in Moscow were that use is minimal even in poor daylight conditions.

Commercial transport driving and working time

UNECE provisions are adopted for international carriers which aim to address the problem of cumulative driving fatigue. For other road carriers national regulations on working and rest time of drivers were adopted in 1999 and are co-ordinated with international (UNECE) requirements.

Enforcement

Roadside checks by the police are carried out at specially equipped checkpoints, although there is little information about enforcement levels. In 2003, 30 million traffic offences were recorded. Enforcement activity is rarely combined with supporting education and publicity. Fines cannot be collected directly by the police at the place of accident. Infringements, for which fines above RUB 100 are foreseen, are reported to a supervisor who decides whether the offence is just subject to a fine or whether the case goes to court. This procedure complicates penalty-imposing mechanisms. In general, inefficiency in the penalty system causes a feeling of permissiveness amongst users.⁷

Bribery, which is generally acknowledged to be widespread in the Russian Federation, also affects contact with traffic police. It is not possible to assess the size of the problem from offence data, given the difficulty associated with legal prosecution, but clearly this is an important issue when it comes to public respect for road traffic law. Cases of bribery in the law enforcement practice of the State Inspection (*Gosavtoinspektsia*) are prosecuted under the Criminal Code of the Russian Federation. For example, in 2003-2004, there were 281 criminal proceedings instituted against officials and 66% of cases were successfully prosecuted. At the same time a similar and increasing number of court cases are instituted against drivers bribing officials (115 cases in 2003 and 147 cases in 2004).⁸

In 2002, the system of driving licence revocation was simplified, with the licence being returned at the end of the disqualification period. While creating perception of a high risk of being caught is widely understood as the first priority of enforcement, appropriate penalties for traffic offences form an essential part of a road safety package. Their severity provides an indication of the importance society attaches to road traffic offences. With the exception of the strict penalties for excess alcohol, other fines for breaching key road traffic offences are token, when compared with other European countries (Table 4.4).

Table 4.4. **Fines (in EUR) for traffic offences in different European countries**

	Exceeding speed limit by 20 km/h	Overtaking offences	Failing to stop at a red traffic light
Russian Federation	3	8-14	3
Great Britain	From 72	From 130	From 130
Spain	90-300	90-300	90-300
Austria	20-55	70-145	70-145
Germany	Up to 35	30-125	50-200
Norway	From 390	640	640
Ireland	From 80	From 80	From 80
Netherlands	From 70	95	From 95
Belgium	From 150	From 175	From 175

Source: Allgemeiner Deutscher Automobil-Club/German Automobilist Club (www.adac.de)

Information, publicity and education

There is currently no formal system of mandatory road safety education provision in schools, although road safety education was fairly well developed in former times. Many teachers do not receive training and schools are lacking in tools and educational material. There is no established government media information nor road safety organisation campaigns about road safety, although *ad hoc* television programmes and articles deal from time-to-time with issues such as drinking and driving and child restraint use. One of the objectives of the current Ministry of Science and Education strategy over the next six years is to encourage road users to be more law-abiding. Youth clubs for road safety have been established over the last two years and a programme is being prepared for enhancing road safety amongst young road users.

4.5.5. *Post-impact care*

“We also need to improve our emergency medical services. The lack of emergency communications system directly contributes to the problem”, stated Mr. Kirianov, Chief of Traffic Safety Department, International Forum on the Problems of Road Traffic Safety, 15 December 2004, Kremlin Palace, Moscow.

A review by Russian health organisations⁹ concluded that the factors contributing to problems with pre-hospital emergency care for road crash victims are:

- Delayed arrival of ambulance.
- Poor qualifications of medical workers to cope with combined and multiple wounds.
- Lack of knowledge and skills among road users in providing primary medical care.
- Lack of communication means to call ambulances.
- Non-observance of casualty transportation rules.
- Lack of medicines needed for intensive care, shortage of anti-shock manuals.
- Poor quality of in-car first aid boxes, standard first aid sets and means of immobilisation.

Access to emergency services

There is a central emergency number through which ambulance services can be accessed. There is almost universal coverage by ambulance services in cities where about 79% of road traffic incidents are attended to by ambulance, but less on highways where attendance is about 38%. Poor telecommunications are a hindrance in rural areas and often contribute to critical delays. In cities emergency medical services provide on the spot medical aid, which consists of attendance by medical staff in about 96% of cases but this is only about 25% on highways, the rest being provided by paramedics. On the scene and post-crash deaths on the way to hospital are reportedly as high as 58% of all road deaths. It is acknowledged that the high fatality rate is partly because of delays caused by poor telecommunication infrastructure to call the emergency services, delays in ambulance response and transport times due to traffic, and poor road worthiness of vehicles, especially in rural areas. There is a 30-minute standard which ambulance services try to adhere to, although this is not always met. There is no data on the proportion of ambulances keeping to response times. In addition poor and incomplete equipment and medicines, and lack of up-to-date training of drivers and paramedics are also reported to adversely affect the quality of care.

Provision of first aid at scene

There are no precise regulations regarding the scope of responsibilities and activities of the competent authorities, including the provision of first aid at the site of road traffic crashes. This includes both the extraction and transport of cases to hospitals and essential first aid on the scene for severely injured cases. Anecdotal evidence suggests that, as with other aspects of vehicle driver training and licensing, this is poorly adhered to. Similarly there is little information on training course attendance. First

responder training for the police and fire brigade is a requirement but no information on formal evaluation is available.

Hospital care

In cities, road casualties are taken to trauma hospitals with emergency departments. Outside of the big centres, the specialised departments of the central district hospitals provide trauma care. There is no data on admissions. There is no measure of injury severity by a formal score, or evaluation of outcomes. There is a variation of specialist care at these hospitals, and not all have the manpower of trauma specialists and facilities to deal with multiple and severely wounded trauma cases. The review was informed that essential equipment and medicines for the management of the critically ill may be missing or outdated. There is concern amongst the medical profession that patients may be treated by surgeons who do not have adequate and up-to-date training in trauma care rather than outreach visits by specialists being arranged, or cases transferred to a higher level of care at regional or national hospitals. In addition, it was reported that there are hospitals which receive cases from the federal highways, but only about 50% of these are manned by medical staff, the rest by paramedics. This problem of sub-optimal care in rural areas is compounded by the fact that it is in these settings where cases may have a worse injury severity compared to urban areas. Rehabilitation services such as physiotherapy and occupational therapy is provided for those with disabling trauma, although there are concerns amongst the medical profession about the scale and quality of such services, especially in district hospitals.

There is no systematic use of scoring for the severity of injuries and there was little information on the evaluation of the quality and organisation of trauma services.

Notes

1. Ministry of Transport of Russian Federation (2002), Federal Targeted Programme, *Modernisation of Transport System of Russia*, sub-programme “Road Traffic Safety”, Moscow.
2. Ministry of Transport of Russian Federation, *Information Note on Sub-programme on Road Safety and Implementation of its Measures in 2003-2004* (www.mintrans.ru).
3. Commission of the European Communities (2000), *Priorities in EU Road Safety: Progress Report and Ranking of Actions*, COM(2000)125 final, Brussels.
4. Proceedings of the Second All-Russian Conference on Traffic Safety (1998), Moscow.
5. Ministry of Transport of the Russian Federation (www.mintrans.ru).
6. Silyanov, V. and B. Anokhin, *The First Federal Programme for Ensuring Road Traffic Safety in Russia (Some Results of Practical Realisation)*, Proceedings of 12th International Conference on Traffic Safety on Three Continents, 19-21 September 2001, Moscow.
7. Gorev, A. (2001), “The Main Problems of Road Safety in Saint Petersburg and Ways of their Solution”, Automobile and Road Institute, University of St. Petersburg, *Road Safety on Three Continents*, Moscow.
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5. ROAD SAFETY MANAGEMENT: ENHANCING PERFORMANCE

5.1. Introduction

Road crash and injury rates in the Russian Federation have been affected substantially by social and economic developments during a period of dramatic change in the last decade. This has been a period of huge administrative and financial upheaval and reform, during which there have been significant changes in the rule and public perception of the law. Car ownership more than doubled putting enormous strain on the existing network, car occupant and pedestrian safety, the health sector and society at large. The Russian Federation is faced with considerable and difficult challenges in bringing its serious road safety situation under control as a result of this recent history.

A review of road safety management in the Russian Federation using ECMT and World Bank checklists¹, and based on the information presented in Sections 3 and 4 indicates some entrenched weaknesses that are generally acknowledged. Collectively, the identified weaknesses present a considerable barrier to future success.

In summary, road safety management to date in the Russian Federation has not focused on the achievement of measurable results. Safety targets have been proposed, but currently these have little currency and do not figure in the actions and goals of key agencies responsible for road safety improvements. From a safety perspective, the road network in the Russian Federation is of a low standard, especially for pedestrians. Compliance with existing road safety engineering standards is uneven. Road user compliance with road rules is poor. Driver and vehicle licensing and testing standards are weak, as is compliance with them. Funding is uncertain, legislation is undergoing major reform, and effective inter-agency co-ordination is in its infancy. While some evaluation has been carried out, the level of analysis is generally insufficient and results are not fully taken into account. Road safety promotion has lacked political vision and social inclusiveness. This combination of weak performance goals, an intrinsically unsafe road system, and fragmented institutional processes all points to a growing road safety crisis in the Russian Federation, especially if the current rate of growth of motorisation continues as forecast.

In its meetings with key policy makers and professionals in Moscow, the review team found widespread understanding of the scale of the problem, determination to put new organisational, management and policy processes in place, awareness of global developments in road safety and keenness to understand, spread and develop any international good practice which could add value to the national effort. This section outlines key strategies and measures which have been employed successfully elsewhere which the review team believes could assist the national leadership of road safety.

5.2. Measures to enhance performance

As indicated in Section 2, a major change in thinking about road safety has taken place globally over the last decade on the basis of substantial research and experience. This is starting to filter through into national and international road safety policies and management.^{2,3} Briefly stated, this new understanding is that serious and fatal road crash injury is largely avoidable and can be predicted and prevented to a significant extent; that good data, a scientific approach and a solid research base is necessary to understand the problem and its management; that speed is the core of the road safety problem; that the traffic system should better accommodate common error such that simple mistakes do not result in death and serious injury; that vulnerable road users have as much right to a safe traffic system as motor vehicle users; and that effective road safety programmes require national high level political support, multi-sectoral leadership, a systems approach and effective delivery partnerships. In

short, road safety problems can be brought under control with an evidence-based approach, good management and strong political will.

There is consensus amongst international agencies such as WHO, the World Bank and the ECMT on good road safety management practice and the type of institutional and organisational arrangements needed in government and civil society. Such practice was most recently articulated in the *World Report on Road Traffic Injury Prevention* which made six major recommendations as to how countries could enhance their road safety effort, irrespective of the size of their casualty problem or level of motorisation. These are summarised in Table 5.1. A pre-requisite for their delivery is recognition by national and regional leaders that the road traffic injury problem is urgent; that road crashes lead to enormous but avoidable socio-economic cost, damage, human misery and suffering and realisation that evidence-based solutions are largely known. Each of these recommendations in relation to road safety management in the Russian Federation is discussed. Some suggestions, of course, will have already been taken up or are being considered within the current road safety review.

Table 5.1. *World Report on Road Traffic Injury Prevention: Recommended actions*

1.	Identify a lead agency in government to guide the national road traffic safety effort
2.	Assess the problem (through in-depth data analysis and research), policies and institutional settings related to road traffic injury and the capacity for road traffic injury prevention in each country
3.	Prepare a national road safety strategy and plan of action
4.	Allocate financial and human resources to address the problem
5.	Implement specific actions to prevent road traffic crashes, minimise injuries and their consequences and evaluate the impact of these actions
6.	Support the development of national capacity and international co-operation

5.2.1. *Political leadership: lead agency; inter-governmental co-ordination*

A lead agency

Typically, countries which have achieved a substantial and sustained reduction in road crash injuries have a strong central lead co-ordinating department which carries out a range of key lead functions. These include horizontal inter-governmental co-ordination and delivery partnerships; good vertical co-ordination of national, regional and local implementation; securing sustainable funding; ensuring strong research and technical support; encouraging strong all-party parliamentary interest and encouraging influential non-governmental organisations with a strong interest in road safety.

The Ministry of Internal Affairs has recently become the lead agency for road safety in the Russian Federation and a Traffic Safety Department has been established. In line with good practice on transparency and accountability, the lead Ministry's responsibilities are clearly set out in legislation. This ministry is also responsible for the co-ordination of activities of the federal and regional governmental bodies in the field of road safety as well as some other tasks related to the safe functioning of the transport system.

High-level multi-sectoral co-ordination

An effective road safety programme cannot be designed and implemented by one ministry alone, since reducing road traffic injury is a multi-disciplinary problem with many societal challenges which require response from many sectors. In practice, many government departments share responsibility for road safety but unless special arrangements are put in place, achieving accountability, appropriate co-ordination and realising the full potential of individual sectoral responsibilities is fraught with difficulty. The component problems of road traffic injury are so diverse that meaningful institutional collaboration within government needs to take place so that a system-wide strategy can be adopted and programme integration of the (sometimes competing) development, environment, accessibility, equity and safety objectives of national/regional governments achieved.

Guided by the lead agency, such co-ordination can build institutional capacity and partnerships for the delivery of road safety both inside and outside government. It can establish a national long-term vision for road safety; devising and implementing strategy, setting targets - for final and intermediate road safety outcomes; devising road safety action plans which also integrate road safety into other policies such as land-use, health and environment and advise on resource allocation and monitoring.

There is a tradition of co-ordinated inter-governmental arrangements for road safety, but none currently exist and inter-departmental divisions and different approaches to the planning of road safety activities prevail. Alongside the Ministry of Internal Affairs, the State Council is working to identify road safety priorities and to develop new arrangements for multi-sectoral co-ordination of road safety.

In some countries, inter-governmental co-ordination is chaired at the highest level by the president, prime minister or chief executive of the lead agency (see New Zealand and French examples below). Given the keen interest in road safety on the part of the State Council which is chaired by the President and which has set up a Working Group on road safety, the Russian Federation is well placed to make arrangements for the establishment of new permanent high-level, high-visibility co-ordination. Both the President and the Prime Minister have acknowledged the severity of the national road safety problem. Continuing commitment to road safety in the Russian Federation at this highest level should ensure full co-operation and co-ordination of the many agencies and stakeholders involved; appropriate financial support for action, as well as sending signals to all sectors of society about the importance of the safety and security of Russian citizens.

“In Russia about 100 people die in road traffic accidents every day. The causes of this are commonly acknowledged and we have to implement system-wide measures enabling us to overcome this terrible situation.”

President Vladimir Putin’s Annual Address to the Federal Assembly, Moscow, 25 April 2005.
<http://president.kremlin.ru>

Following this address, government requested the preparation of a federal targeted programme on road safety for the period to 2012.

Box 5.1. New Zealand's National Road Safety Committee (NSRC)

Co-ordination: Chaired by the chief executive of the lead agency, it brings together the chief executives of seven key government agencies concerned by road safety including local government.

Accountability: The terms of reference for the NRSC are set out in a memorandum of understanding. Road safety is clearly identified as core business for each of the partners in their documentation and in the adopted national road safety strategy giving potential for wider implementation of specific proven measures and increased resources.

Support: The NRSC has a *National Road Safety Working Group* made up of representatives of the NRSC organisations which sets the agenda and prepares papers for quarterly NRSC meetings as well as setting-up working groups on specific issues.

Box 5.2. Interministerial Committee for Road Safety (CISR) in France

Chaired by the Prime Minister, the co-ordinating committee brings together the following government departments:

- Transport
- Interior
- Defence
- Justice
- Health
- Education
- Research
- Finance

The Committee meets several times per year and the secretary is the Director of Road Safety and Traffic within the Ministry of Transport.

Effective co-ordination between national, regional and local levels

Given that responsibility for the safety of the road network is shared by different levels of government, the lead agency has a key role in establishing effective co-ordination and implementation partnerships. Establishing strong links between central and local government activity through clear responsibilities set out in legislation, targets, plans, contracts, funding mechanisms and annual monitoring is key to achieving good national performance.

While responsibilities for road safety are, in practice, shared, the road safety responsibilities for regional and local authorities are not set out in legislation as in other countries *e.g.* the Netherlands, Sweden and the United Kingdom. In these cases, defining responsibilities for road safety at regional/local level in legislation has facilitated interaction and contractual arrangements for positive road safety outcomes, while still leaving local authorities free to decide how to carry out that duty in local circumstances. Regional and local road safety plans in these countries are assisted by best practice guidelines. Guideline activity is in its infancy in road safety as a tool for technical assistance to the regional and local authorities in the Russian Federation. In devising the new national targets and

plans, the lead agency needs to give careful consideration to the range of mechanisms which can be utilised to encourage, support and enhance local and regional road safety efforts.

One recent example of a local delivery partnership for road safety is in Sakhalin. In June 2005, members of the Sakhalin Administration, Road Traffic Inspection (GIBDD), business groups and civil society organisations came together to officially affirm their commitment to improve road safety with the signing of the *Agreement on the Formation of the Sakhalin Road Safety Partnership*. Planned projects include efforts to improve the wearing of seat-belts, improving safety at high risk sites and a crash data collection and analysis project providing key information for road safety planning improvements through enhanced reporting systems and statistical data analysis.

Encouraging other stakeholders

From the discussions in the ministries and the December 2004 conference on road safety in the Kremlin Palace, it was clear that there is broad understanding that obtaining national commitment requires professionals from many disciplines and community and opinion leaders from many fields to help drive community and political opinion and to overcome major structural barriers.

Experience in various parts of the world shows that different institutional arrangements can help to encourage a mutually supportive climate for road safety. Besides strong governmental leadership, these include a well-supported national research sector, active well-informed parliamentary committees providing all party initiative, support and scrutiny; active professional organisations to assist with the establishment of guidelines and training and pro-active independent coalitions of professionals and citizens to create awareness of road injury problems and to stimulate demand for road safety. In addition, the insurance sector can play a key role in classifying high risk offenders or in encouraging various safety measures through differentiation in insurance premiums.

- Well-supported national research sector

The Russian Federation has good capacity for road safety research, although it is clear to the review team that, both in relation to the size of the problem and the available information, it has been under-used in recent years. While representatives of research organisations are engaged in the national policy-making process, the role of research-based knowledge in decision-making seems more limited than the research capacity potential allows.

The importance of evidence-based action is as important for road injury prevention as in other areas affecting public health and policy makers need objective information for cost-effective road safety work. Support of multi-disciplinary research includes behavioural studies; road crash injury research, biomechanics and vehicle design; road safety engineering; post-impact care; demonstration projects; and the development of standards for national and international legislation.

Given that parliamentarians and the media often rely upon impartial advice from road safety research organisations on road safety issues which, in turn, help to inform the wider public, the optimal arrangement is for a large element of road safety research capacity to be independent of government. Finally, there needs to be continued appropriate levels of human and financial resource from government; access to sources of data and opportunities for international networking. Examples of such European road safety research organisations are those that come together under the umbrella of the *Forum of European Road Safety Research Institutes* (www.ferfi.org/).

- Active well-informed all-party Parliamentary legislative committees

Some countries also have set up all party Parliamentary committees which have contributed much to road safety.

Box 5.3. Parliamentary highlights in Europe and Australia

Sweden's Parliamentary Transport Committee played a key role in enshrining the Vision Zero policy in legislation and introducing numerical fatality reduction targets to 2007 to encourage fast action and focus.

The Dutch Standing Committee on Transport, Public Works and Water Management played a similar role in ensuring that sustainable safety and casualty reduction targets were covered by legislation.

In Australia, the *Victorian Joint Standing Committee on Road Safety* was key to the successful adoption of the first legislation worldwide on compulsory front seat-belt wearing. Victoria made seat-belt wearing compulsory from the beginning of 1971 which led to a reduction in car occupant deaths in Victoria by 18% by the end of 1971 and 26% by 1975.

In New South Wales in the early 1980s, the Parliamentary Standing Committee on Road Safety (STAYS SAFE) was responsible for the introduction and full-scale implementation of highly visible random breath testing which led to a 20% reduction in alcohol-related deaths and injuries and received over 90% public support in opinion surveys.

- Active professional organisations

Individual non-governmental institutes such as those representing the road engineering or health professions can make an important contribution to road safety.² These organisations are usually funded by professional membership subscriptions which assure their independent voice. They can provide an authoritative voice in helping to stimulate awareness and action on road safety amongst their profession; helping to identify best practice as well as embarking on training activity and professional capacity development (e.g. the *Institution of Highways and Transportation* in the United Kingdom, www.iht.org.uk or the *Dutch Highway Engineering Organisation*, CROW, www.crow.nl). Independent research institutes such as the *Dutch Institute for Road Safety Research* (SWOV) (www.swov.nl) have also taken on some of these functions. Such organisations have been in the forefront of advances in road safety policy development, urban safety management; pedestrian safety and black spot treatments.

- Pro-active coalitions of professionals and citizens:

Independent non-governmental organisations (NGOs), which bring together representatives of professional and citizens groups can also play a major role in road casualty reduction. They can draw attention to the scale of the road injury problem; provide impartial information for policy makers and media; identify and promote effective, acceptable solutions; challenge ineffective policy options; form effective coalitions of organisations with a strong interest in casualty reduction; and measure their success by their ability to expedite the implementation of research-based measures.² The National Society for Road Safety in Sweden is one example of an effective umbrella organization which brings together representatives from a wide range of organizations with strong interests in road safety (www.ntf.se). In several countries the insurance industry helps to fund such organisations, an example being the Austrian Road Safety Board (www.kfv.at).

Box 5.4. Sources of NGO funding

The Brussels-based European Transport Safety Council (ETSC) receives funding from a variety of sources which helps it preserve its independence, 50% of annual budget is received from government (European Commission), 30% from industry (corporate sponsors), 20% from ETSC's members (national umbrella road safety organisations, professional, insurance and research organisations) (www.etsc.be).

Box 5.5. Successful NGOs in Sweden and the United Kingdom

The National Society for Road Safety in Sweden (NTF) which, amongst other campaigns, has successfully promoted the case for speed management and evidence-based road safety measures (www.ntf.se).

The all-party Parliamentary Advisory Council on Transport Safety in the United Kingdom comprising Members of Parliament, experts, organisations with a strong interest in securing progress in road safety promotes evidence based measures and helped to expedite the introduction of key road safety measures such as compulsory seat-belt use and speed measures (www.pacts.org.uk).

Recommended actions

- Effective institutional and organisational arrangements both in government and outside are a pre-requisite for delivering road safety and the Russian Federation could draw on much international experience in this field.
- The seriousness of the road safety problem merits continued presidential and prime ministerial commitment.
- Having appointed a lead agency and having established state council working arrangements in road safety, the review team encourages Russian colleagues to take further urgent steps towards implementing their plans for a multi-sectoral co-ordinating body which, at the highest political level brings together all the key governmental stakeholders in road safety with clearly defined responsibilities for each of the partners.
- The lead agency should review all available mechanisms towards the establishment of effective implementation partnerships with key stakeholders, including regional and local levels.
- An all-party parliamentary road safety committee in the Russian Federation could help to champion road safety and provide initiative, support and scrutiny.
- Road safety research is a key tool in the successful management of road safety and Russia is to establish a comprehensive road safety research programme and to encourage the further development of independent road safety research arrangements which can contribute to public and policy debate.

- Professional organisations in the Russian Federation should be encouraged to help identify and publicise best practice activity and to engage in training activity across all the relevant disciplines.
- The development of independent road safety NGOs to stimulate demand for effective measures to improve the safety of all road users should be encouraged by the provision of initial pump-priming assistance from government and support from insurance organisations.

5.2.2. *Assessing the problem, policies and institutional settings for road safety*

The key problem areas

Research internationally shows that the main road safety problems may differ in extent and mix from one country to the next but their characteristics are common. As Appendix 6 shows, these fall into three categories.⁴

First order problems are obvious even at a superficial level; second order problems are revealed by a somewhat deeper analysis; third order problems are almost totally hidden. Historically, there has been a clear tendency to focus too much road safety work on first order problems and too little on second order, and particularly third order problems.³

First order problems emerge directly from crash or injury data. The key first order problems observed from Russian data, reported by Russian colleagues and mentioned in previous sections include:

- Pedestrians are at a very high risk in urban areas and contribute to 43% of total deaths.
- Speed is a large problem and a factor in every third crash involving casualties.
- There is a shift from safer to less safe travel modes in urban areas with the decreasing use of public transport and the increasing use of cars.
- The crash risk of young drivers is very high.
- The usage of seat-belts and crash helmets is not enforced and is too low.
- Alcohol is a factor in a large proportion of crashes.
- Too many roads and vehicles lack adequate crash protection.
- The standards of roads and streets are weak and compliance is observably poor.
- The road safety of children as pedestrians and as car occupants is inadequate.
- The rescue service and medical treatment of traffic victims is insufficiently effective.
- Motor vehicle and road user visibility is insufficient in daylight.

Second order road safety problems are not equally obvious but show up after closer analysis of first order problems and may reduce the effectiveness of countermeasures aimed at solving first order problems. Section 4 highlighted several key problem areas in the Russian Federation:

- Urban safety management is inadequate.
- Enforcement of key traffic rules is neither sufficient nor efficient enough.

- Control of road condition and design from a safety point of view is insufficient.
- Control of vehicle condition and design from a safety point of view is insufficient.
- Access of riders to two-wheeled motor vehicles is too early.
- Training and testing to obtain a driver's licensing is too limited.
- Traffic safety education of citizens is inadequate.
- Penalties for traffic offences are generally much too low.
- Problems with administering penalties facilitate bribery.

The third order (hidden) road safety problems which are the most important are often, of a more general character and deal with underlying processes or conditions that can impede possible solutions to the first and second order problems.

- Absence of effective co-ordination and interaction of government agencies.
- Absence of an effective legal basis in the field of road safety.
- Absence of effective economic tools and resources for road safety.

As indicated previously, serious attention is being given to these areas by the Russian authorities in new discussions on road safety.

5.2.3. *Improving data systems across transport, health and justice sectors*

One of the urgent priorities for safety management is to improve Russian data systems across transport, health, and police and justice sectors to enable the measurement of key problems; to facilitate the implementation of effective road safety measures and to measure safety performance. As indicated in Section 3.3.2 monitoring of road safety performance is currently limited to the collection of crash data, involving casualties and road safety is only partially evaluated. The involvement of the scientific community in this process is important, as is their access for research purposes to key road safety data.

Recommended actions

- Periodic national travel surveys need to be carried out to establish the travel patterns and risk exposure in the system of different types of road use.
- It is recommended that national surveys of key safety indicators be carried out as soon as possible such as average mean speeds on different types of road, roadside random breath testing surveys to establish drinking and driving levels in normal traffic; surveys of seat-belt use, crash helmet use, the use of daytime running lights etc.).
- Collection of key variables is needed in police crash data such as seat-belt use.
- The scope of the annual statistical publication of the characteristics of the road crash injury problem should be extended.
- Establishing levels of under-reporting of road crashes and injury is needed especially by matching police crash reports with hospital admission data.

- Improving the availability of routine information on hospital attendance and admission rates due to road traffic injuries and outcomes is needed.
- Accident analysis of police data to allow cross-tabulation of a range of variables is needed and such data should be made available free of charge for research purposes.
- Quality control mechanisms on road safety data should be introduced.
- It is recommended that the scientific multi-disciplinary in-depth study of samples of crashes be pursued in the Russian Federation to ascertain contributory factors, the causes and consequences of injury and countermeasures.
- Amendments and changes to the existing legislation are needed in order to support enforcement activity such as speed camera deployment.

5.2.4. *Improving the penalty system and respect for traffic law*

A reduction in public respect and observance of traffic law has been a downside of the transition from the old to the new political orders. The ensuing relaxation in police enforcement and penalty regimes due to public pressure has influenced the overall road safety situation negatively.

At the same time inconsistencies in the law enforcement system undermine public respect for the law. The decision-making process involved in applying penalties invites abuse. Russian professionals widely acknowledge that the penalty system currently in operation is not serving road safety – neither in the weakness, contradictions and loopholes of most of the penalties, the absence of a penalty points system, nor the lack of account taken of the wide differential in earnings across the country. Penalty points systems are in operation in many parts of Europe which aim to properly align penalties for different offences to road safety risks. A British example is to be found in Appendix 7.

Recommended actions

- In order to improve understanding of the key road safety problems and to measure safety performance, it is recommended that the range of data needs in transport, justice and health sectors outlined in Section 5.2.3. receive urgent attention.
- Additional strong measures are needed aimed at eliminating bribery in dealings with the police and road users.
- It is recommended that a penalty points system be introduced in the Russian Federation.

5.2.5. *National road safety visions, targets, strategies and plans of action*

A long-term road safety vision for a safer system

There is no systematic, nationwide promotion of a vision for improved road safety and the collective social responsibility to work towards its achievement in the Russian Federation. While many professionals are deeply aware of the problem, road safety is not seen as a major concern for public health by society at large. There is widespread acknowledgement amongst professionals that the road safety plans and strategies implemented to date have not been wholly successful. One of the

acknowledged challenges is how to create better public awareness of the seriousness of the road safety problem to achieve a supportive climate for a range of interventions.

Experience in Europe indicates that complacency about death and injury in society can be shaken and sights raised by adopting a vision or philosophy for road safety which can relate to the general public.⁵ Some countries, for example, Sweden and the Netherlands have enshrined national visions, policies and targets within legislation such as the long-term and far-reaching *Swedish Vision Zero Strategy* which combines ethics, biomechanics, environmental management and pragmatism in its approach. As with the *Dutch Sustainable Safety Strategy*, which has a similar approach, parliamentary scrutiny and approval stimulated public debate and prepared the way for future successful work. Finland has recently adopted the *Vision Zero Strategy*, as has Switzerland with its *Via Secura* theme. These long-term strategies for a safer traffic system (summarised in Appendices 1 and 2), supplemented with casualty reduction targets, require fundamental and wide-scale re-working of various aspects of the design and operation of the national traffic system, to achieve better interface between human, vehicle and road environment.^{6,7}

Setting quantitative targets

Setting casualty reduction targets can also mobilise resources and encourage co-operation. Various targets have been proposed in Russia to 2010, both in the second road safety programme and in the transport strategy. The *Russian Federation Transport Strategy* prepared in 2003 set headline targets for the years 2025 (deaths per 1 000 vehicles reduced by 50%, from 1.2 to 0.6) and 2015 (deaths reduced to 14-15 per 100 000 people). The basis for these calculations is unknown and hence agency, industry and community contributions to the targets and their likely achievability cannot be assessed. A new national target, however, is to be set within the context of the road safety review being undertaken currently in the Russian Federation.

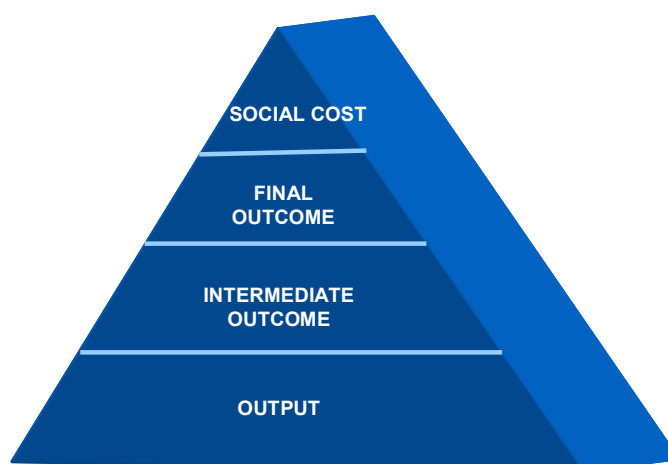
The Russian Federation also joined ECMT member countries in agreeing to work to the aspirational target of reducing deaths by 50% by 2012, compared with the year 2000. A checklist of 17 steps for countries to contribute towards achieving this goal is attached in Appendix 7.⁸ Given that this target is highly challenging for those countries with even the best road safety records and notwithstanding the Russian contribution that could be made towards it, this might not be realistically achievable national goal for the Russian Federation.

Much has been written about successful target-setting in Europe in recent years. Research shows that quantitative targets can lead to better programmes, a more effective use of scarce resources and an improvement in road safety performance at local and national levels.^{9,10,5} Experience shows that national targets need to be ambitious but realistic. If unrealistically ambitious, requiring a rate of progress well in excess of what has been achieved previously, they will be perceived as being out of reach and will not be accepted. On the other hand, if the national target is too easy then a major opportunity for saving lives will have been lost. Effective national target-setting is not a simple political statement, but a process requiring analysis, evaluation and consultation. Forecasts for traffic growth and casualty reduction based on long-term road death and traffic trends need to be taken into account as well as the potential effects of countermeasures for road casualty reduction and their likely public acceptance. Several national examples have been published and serve as useful illustrations of what is involved in setting challenging but achievable targets.¹¹

Most targets are set at national level, usually for a ten-year period, but regional and local targets are also set, especially where the direct influence of national government programmes is limited. Safety performance indicators, causally related to crashes or injuries, are being used increasingly.¹²

Of all the many targets set worldwide, the comprehensive New Zealand target setting hierarchy shown in Figure 5.1. is generally considered to be optimal and is recommended for consideration in the Russian Federation. The first level of target-setting is to reduce the socio-economic costs of road crashes. The second level of target-setting comprises final outcomes – requiring specific reductions in deaths and serious injuries as well as death and serious injury rates for all road users and specific users. It would be very appropriate in the Russian Federation, for example, to target reductions in pedestrian deaths and injury rates. The third level of target-setting is for intermediate outcomes which consist of performance indicators *e.g.* targeted reductions in average mean speed, in alcohol-related deaths and targeted increases in seat-belt use. The last level is to target the outputs which will influence all previous levels of target, such as the level of police enforcement activity *e.g.* number of speed checks, breath tests, and seat-belt checks.¹³

Figure 5.1. New Zealand's Target Hierarchy



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

Source: Land Transport Safety Authority (2003), *Road Safety to 2010*, Wellington.

Using well established road safety strategies as the basis for action plans

While there is understanding amongst policy makers and other professionals of the value of dealing with many different elements of the traffic system, a full systems approach has not been adopted to date in road safety work in the Russian Federation.

As indicated previously, many motorised countries responding to rising road trauma levels have achieved large reductions in casualties through outcome-oriented and science-based approaches. The multiple system-wide strategies involved approach to road injury prevention includes managing exposure to risk; reducing inequalities in safe access between motorised vehicle users and vulnerable road users; effective countermeasures to reduce road traffic crashes and injuries in various settings; reducing the severity of injuries and the long-term consequences following a crash through improved post-collision care and rehabilitation.² Speed is a key systems factor in all of these strategies, whether in decisions about separating out different types of road use, safer use of shared road space, better determination of road and vehicle speed limits, the crash protective design of motor vehicles and equipment or the opportunity for effective post-crash medical intervention.

Recommended actions

- The inter-departmental co-ordinating group should establish a long-term vision for a safer road traffic system which can stimulate, guide and ensure continuity in road safety work.
- It is recommended that the process of setting realistic but challenging targets to 2015 for the Russian Federation commences taking into account forecasts for traffic growth and casualty reduction based on long-term road death and traffic trends as well as evaluation information on the potential effects of countermeasures. In this way, the country can make its own specific contribution towards the aspirational –50% ECMT target.
- The New Zealand model offers a comprehensive and rational target-setting framework for safety performance management internationally and is recommended for consideration in the Russian Federation. This will, however, necessitate new data collection, analysis and evaluation and wide consultation.
- Strategies and measures adopted in other European countries, *e.g.* in the United Kingdom, the Netherlands and the Nordic countries can also provide a good framework for safety actions in the Russian Federation.
- Regional targets and targets to reduce pedestrian deaths and injuries are also recommended.
- It is suggested that a long-term targeted action plan for the Russian Federation should set out multiple system-wide strategies; outcome-oriented and science-based approaches together with specific components, such as those outlined in Section 5.2.7. This will entail close co-operation between policy makers and the professional and research community as well as wide consultation with stakeholders.

5.2.6. *Allocating financial and human resources*

Road safety funding

Road traffic crashes contribute to large socio-economic cost in the Russian Federation estimated at between 1-4% of GDP depending upon the method of calculation with official estimates at 2.5%.

Funding sources and levels remain unclear and are limited. Funding shortages for the *Second Road Safety Plan* (2002-2010) in the Russian Federation were noted.

Investment in evidenced-based road safety action is highly cost-effective, as illustrated below in the example of costs and savings from Victoria, Australia. Countries demonstrating best practice road safety performance fund their road safety investments from a variety of sources and, increasingly, seek to internalise the external costs of crashes through higher insurance premiums for high-risk groups. While there is no clearly preferred funding model, all best practice countries have access to sustainable and annual sources of road safety funding.¹⁴

**Table 5.2. Road safety as an investment
(Road crash cost estimates in Victoria, Australia)**

	Overall community costs (million EUR per year)	Government services costs (million EUR per year)
Fatality costs	783	10
Serious injury costs	3 808	815
	Community savings if fatal and serious injuries were reduced by 20% over 5 years	Government savings if fatal and serious injuries were reduced by 20% over 5 years
Possible future annual savings	917	164

Source: Department for Road Safety VicRoads, Melbourne, Victoria, Australia.

Typical road safety funding sources are:

- General tax revenues

Many best practice countries fund large components of their road safety programmes from general tax revenues, as part of the national budgeting processes. Often the specific road safety components are embedded within larger engineering, enforcement and education programmes and are difficult to identify as individual budget items. This approach to road safety funding is relatively simple to administer although it lacks transparency in terms of determining equitable cost sharing across road user groups and in monitoring the financial performance of investments.

- Road funds

Revenue sources for road funds typically come from fuel taxes, vehicle registration and licensing fees, and road user charges for heavy vehicles. There are few examples of road funds being used to finance road safety investments. In some countries, such as South Africa, a small proportion of road fund income is dedicated to road safety activities, whereas in the New Zealand *Road Safety to 2010 Strategy*, the road fund finances the national road safety enforcement programme, national road safety education, national publicity and awareness campaigns, national strategy management and co-ordination processes, national and local low-cost safety engineering measures, and general road network investments that contribute to improved road safety outcomes (www.transport.govt.nz).

- User fees

Many entry and exit services concerning measures such as driver licensing, vehicle inspection and operator licensing are directly funded from road user fees, paid either to the government agencies

responsible or private sector agencies working on their behalf. These fees borne by users represent a substantial proportion of a country's total road safety investment.

- Insurance levies

Some countries levy a fee on vehicle insurance premiums to help fund road safety programmes, but the amount of funding raised is generally small and is often used to fund education and publicity initiatives to improve road user awareness of road safety risks. Finland provides the best known example of this approach and more recent initiatives can be found in the State of Victoria, Australia (www.tac.vic.gov.au), and in the Canadian province of British Columbia (www.icbc.com).

- Earmarked taxes

As well as various taxes and user charges being channelled to road funds for a variety of purposes, some taxes can be earmarked for a specific purpose. For example, revenue from traffic fines is used to finance road safety activities in some countries. The most recent example of this is the United Kingdom, where fines revenue from speed cameras is earmarked to provide additional speed cameras at hazardous locations (www.dft.gov.uk).

Levels of public sector road safety investment in different countries are not readily identifiable, because many safety-related expenditures are embedded in broader categories of expenditure across the transport, health, justice and education sectors. Likewise, the levels of private sector investment are not widely known. This situation prevails in the Russian Federation, but there is a general view that investment levels are low and commensurate with the poor performance being achieved.

Recommended actions

- Funding options and levels should be reviewed against international good practice and sustainable sources for the delivery of a long-term road safety programme guided by numerical targets.
- It is also recommended that the scope be explored for the allocation of international monies through bilateral aid/exchange programmes.

Resource allocation

As well as having access to sustainable sources of road safety funding, countries demonstrating best practice road safety performance also have well-established procedures to guide the allocation of resources across their safety programmes.

Cost-benefit analysis has proved to be a useful road safety resource allocation tool in many best practice countries, but its application requires the valuation of lives saved and injuries avoided. This raises complex conceptual and measurement issues, and there is no strong professional consensus on the best approach to take. Some best practice countries have adopted values of statistical life, based on estimates of peoples' "willingness to pay" for small reductions in risk.¹⁵ Others have adopted a "gross output" or "human capital" approach which values the loss of current resources and losses in future output, and sometimes adds a significant sum to account for related "pain, grief and suffering". Other measures can also be used, such as those based on the values revealed in "court awards" to surviving dependents.¹⁶

These valuation issues have a long history of discussion and debate in the Russian Federation and since 2002 a “gross output” type calculation has been used to estimate the national costs of road crashes, replacing the previous “net output” calculation which excludes the value of the crash victim’s estimated future consumption. Based on the currently applied method of evaluating the socio-economic losses from road crashes, a road fatality in the Russian Federation is now valued at approximately RUB 2 375 000 (EUR 70 000), road injury – at 41 800 (EUR 1 215)¹⁷, which falls far short of the values adopted by different European countries. It would be appropriate to reconsider the costs of road crashes in the Russian Federation, as part of the broader strategic considerations concerning preventative measures and the way ahead.

Recommended actions

- Optional methods for the valuation of the costs of road deaths and injuries in the Russian Federation should be reviewed and procedures decided upon to estimate the costs of road crashes to the nation, and to estimate the value of the fatalities and injuries avoided, to guide the future allocation of resources to road safety measures.
- As part of the broader review and establishment of sustainable funding sources, procedures for the evaluation of road safety measures and allocation of road safety resources should be formalized, including the setting of official values for fatalities and injuries avoided.

Knowledge management and training

Best practice road safety performance is underpinned by an array of specialist skills and knowledge across the transport, health, justice, education and planning and development sectors, and across related scientific disciplines. The creation and on-going management of these skills and knowledge actively engages the public and private sectors, the research and development sector and professional and non-governmental networks, nationally, regionally and globally.

Substantial investment in the creation of the necessary human resources will be required in the Russian Federation to sustain the preparation and implementation of an upgraded national road safety strategy.

Recommended actions

- Knowledge gaps and skills shortages in all areas of road safety management and operations in the Russian Federation should be identified and training programmes developed, funded and implemented in high priority areas with assistance wherever possible from the appropriate international organisations.
- Strategic research priorities should be identified and funding support provided to build and sustain the capacity of the national research sector.

5.2.7. *Implement specific actions to prevent road traffic crashes, minimise injuries and their consequences and evaluate the impact of these actions*

The *World Report on Road Traffic Injury Prevention* presented an overview of system-wide strategies for crash prevention and the reduction of road traffic injuries and their consequences. On the basis of this global good practice and following the visit of the review team to the Russian Federation, the following elements shown in Box 5.6. are seen as the general strategic components needed in a long-term national strategy on road safety, each of which is discussed separately in this section. Recommendations for immediate priorities are outlined in the Section “Conclusions and Recommendations for Priority Actions”.

Box 5.6.

The critical components of long-term road safety work in the Russian Federation

-
- Managing exposure through specific transport and land-use policies.
 - Embarking on a long-term programme for engineering safer roads.
 - Reducing motor vehicle speeds by means of a long-term programme of speed management.
 - Reducing the high number and risks of death and serious injury to pedestrians in urban areas.
 - Improving substantially the vehicle crash protection offered by domestically produced vehicles.
 - Ensuring seat-belt, child restraint, crash helmet use and reducing drinking and driving.
 - Improving post-impact care.
-

Managing exposure to risk through specific land-use and transport policies

Internationally growing attention is being given to the importance of managing exposure to risk in the system through introducing specific land use and transport policies. These aim to influence the amount of travel through more efficient land use; the choice of travel mode through encouraging safer modes; and placing restrictions on users, vehicles or parts of the road infrastructure to minimise exposure to high risk scenarios. Some of the priority issues, which the Russian Federation now has to deal with, are as follows:

- Providing safer land-use

The rapid economic and industrial growth currently being experienced in the Russian Federation and the haphazard development of residential, commercial and industrial activities poses new challenges for safety management and co-ordination. Such development produces increased vehicle traffic resulting in heavy flows through residential areas; mixes of vehicles capable of high speed with unprotected users such as pedestrians, and long distance heavy commercial traffic using routes not designed for such vehicles. The rapid growth of shopping centres adjoining main roads in Russia without appropriate traffic management creates new hazards for car occupants as slower vehicles join faster moving vehicles. Such problems require systematic analysis and co-ordinated safety management and planning on the part of the different authorities involved in the siting and development of land-use and highway safety. The introduction of area-wide safety impact assessments on land-use planning and transport projects, as envisaged in the draft Russian Transport Strategy;

would allow the potential effects of planning decisions relating to transport or land use on the whole network to be considered at an early stage to avoid unintended, adverse consequences for road safety.¹⁵ Ensuring the separation of pedestrians and motor traffic at speeds of over 30 km/h in and around cities, towns and villages is a high priority for future Russian land-use and network planning. The application of route management techniques, not evident in Russian urban planning, would improve road safety by encouraging efficient land use and networks where the shortest/quickest/safest routes coincide.¹⁸

**Figure 5.2. Archangelsk: Black spot:
Pedestrians crossing the street from the bus stop to the shopping centre**



Source: Review team ECMT/World Bank/WHO.

- Encouraging the use of safer modes *e.g.* public transport

Comparisons of the risks associated with different types of road travel, in Europe conclude that bus and coach travel is the safest and motorcycling the least safe travel mode.¹⁹ The loss of quality and quantity of public transport services during the 1990s is a key concern for Russian transport policy and major changes in the organisation of public transport to address this decline are currently underway. Other measures which could be considered to encourage the higher use of public transport in large Russian cities are the use of park and ride schemes, congestion charging, car parking fees, and giving priority to higher occupancy public transport vehicles through special lanes in the urban network.

- Introducing step-wise access to a full licence for novice drivers and riders

As in other countries, young drivers and riders are over-represented in total road crash casualties. The Russian driver licensing and testing regime is very weak. Graduated licensing systems have been introduced in many countries often leading to large decreases in crashes.² These systems give step-wise access to a full licence and commonly impose restrictions on novice drivers such as limits on night-time driving, limits on the number of passengers, and a prohibition against driving after drinking any alcohol. These restrictions are lifted as new drivers gain experience and teenage drivers mature, gaining a full licence. Consideration of a graduated driver and rider licensing scheme is recommended in ECMT Resolution No. 48.²⁰

The age of access to two-wheeled motor vehicles is currently 16 years for motorcyclists and 14 years for moped riders in the Russian Federation which is lower than in the best performing countries in road safety and deserves review. Though a much smaller casualty problem when compared to pedestrians and car occupants in the Russian Federation, motorcycling is on the increase in many parts of Europe with concomitant increases in deaths and disabling injury. It is worth noting that despite the widespread belief that compulsory training is an effective countermeasure and the focal point this has played in many motorcyclist safety strategies, there is no evidence to show that it results in reduced deaths and serious injuries.²

Recommended actions

- It is recommended that steps be taken in the Russian Federation to improve co-ordination between planning and transport authorities towards safer land use for car occupants and vulnerable users.
- The introduction of urban regulations, including area-wide safety impact assessments on planning and transport projects, as envisaged in the *Russian Transport Strategy*, would provide focus for better management.
- The separation of motorised and non-motorised travel should be a key objective in land use and transport policies to ensure, amongst other things, the separation of pedestrians and motor traffic at speeds of over 30 km/h in and around cities, towns and villages.
- National guidelines should be produced on the establishment of route hierarchies where the shortest/quickest/safest routes coincide.
- Against the background of declining use of public transport in the large cities of the Russian Federation, continuing steps should be made to encourage users to move from higher risk to lower risk modes of transport. In addition to the changes foreseen in the organisation of public transport, it is recommended that park and ride schemes, congestion charging, car parking fees, and giving priority to higher occupancy public transport vehicles through special lanes in the urban network could all encourage higher use of public transport in large Russian cities. It is also recommended that studies are carried out in the largest cities towards integrated urban transport plans where safety is an equal consideration to congestion and environmental protection.
- It is recommended that the Russian Federation's driver and rider licensing and testing regime be urgently reviewed to consider age of access to riding, the quality of the current driver testing system compared with international best practice, the introduction of step-wise access to driving for novice drivers (with restrictions such as vehicle occupancy; time of travel and alcohol user) as suggested in ECMT Resolution No. 48 on ways of influencing human behaviour with a view to improving road safety [CM(86)16]²⁰.

Embarking on a long-term programme for engineering safer roads

As indicated by many Russian colleagues, the road network is not designed for safe current and increasing levels of car use nor to ensure the safety of pedestrians. In general, safety engineering standards and rules across the road network hierarchy are weak and lack clear specification and compliance with existing rules and standards is poor. During the review team's visit to the Russian Federation, many professionals outlined a range of problems which need to be overcome, which cannot be rectified overnight and which necessitate a long-term programme of work.

Implementing remedial low-cost/high-return measures at high-risk sites has long been a feature of road safety engineering in the Russian Federation and the scope for implementing large programmes of activity is widely recognised. As many professionals acknowledge, this is just one part of any strategy to improve the road infrastructure and, in many instances, results from mistakes made in planning and road design. Road safety is central to the planning, design and operation of the road network and involves a range of strategies and measures.

Safety conscious planning involves classifying roads and setting speed limits to match road function and separating out motorised from non-motorised traffic wherever possible. Proactive design includes self-explanatory road layouts, area-wide speed reduction and traffic calming, providing crash-protective roadside objects and introducing safety audits. By adjusting the design and layout of the road and road networks such that they are “self explanatory” to minimise error and more “forgiving” if an error is made, Safety of the road infrastructure can make a major contribution to road injury prevention and mitigation. Finally, if all else fails, implementing low-cost/high-return measures at high-risk sites provide a remedial action at specific sites, along stretches of road or on an area-wide basis. Such a programme entails engineering and re-engineering over the long-term. However, the returns are very large and many European countries report high benefits to cost of implementing road safety engineering.²¹ A Dutch study concluded that a reduction of more than one third in the average number of injury crashes per million vehicle-km driven on all types of road in the Netherlands could be achieved in these ways.²² It is suggested that the developing Russian Safety of the road infrastructure programme includes activity on the following:

- Re-classifying the road network

It is recommended that the existing road hierarchy in the Russian Federation is reviewed, initially in urban areas, to ensure that its functional classification system takes sufficient account of land use, location of crashes, vehicle and pedestrian flows, and safety objectives including management of speed. This would provide a framework for systemic safety management on road design standards, speed limits, road layouts and operational conditions and increasing safety, in particular by encouraging appropriate choice of speed within the posted limits.

Box 5.7. Re-classifying the urban network in the Netherlands

A Dutch study estimated that two-thirds of the urban network in the Netherlands could be re-classified into “residential roads” with a 30 km/h speed limit to lessen the risk faced by vulnerable road users from motorised traffic.

To a timetable agreed between national government and the road controlling authorities, a re-classification system was put in place within two years. The Dutch functional road hierarchy (see Appendix 8) sets out appropriate speed limits, geometric design, road layout standards and operating conditions for roads with flow, distributor and access functions. For urban areas, a distinction is made between residential access roads (where low area-wide speed limits could apply) and other access roads.

Box 5.8. Percentage of urban roads treated with 30 km/h

5% of urban roads in 1986
 9.5% in 1990
 16% in 1996
 30% by 2000
 50% by 2002



- Self-explanatory road layouts

These involve improving road layout and design to prevent use that does not match the functions for which the road is designed; manage safe traffic mix by separating different kinds of road users in order to eliminate conflicting movements except at low speeds; and prevent uncertainty amongst road users concerning appropriate road use. A large body of knowledge and information exists internationally in support of such an urban safety management framework and is available in the form of design standards and best practice guidelines and manuals.^{23,24} It is recommended that existing Russian design manuals, standards and guidelines are reviewed in light of international best practice and local need.

- Area-wide speed reduction and traffic calming

This has been implemented widely in European countries typically comprising self-enforcing 30 km/h zones and leading to around 15-80% reductions in road injury crashes.²⁵ It is recommended that, as a matter of urgency, demonstration projects are carried out in the Russian Federation since this measure would have a substantial effect on national performance in pedestrian safety.

- Introducing multi-stage independent road safety audit

It is recommended that a mandatory system of safety audits is introduced in the Russian Federation which would comprise a multi-stage safety check of road projects at different stages by an impartial team which goes beyond the existing prescribed compliance checks with standards.²⁶ The review recognises that this requires some professional capacity development.

- Safer roadside objects

Research and experience indicate that the siting and design of off-road objects can play a major role in reducing collisions and the severe consequences that are typically associated with them. It is recommended that a review is carried out of the scope for a mass action programme of roadside object treatment in the Russian Federation aimed at:

- Designing roads without dangerous roadside objects by using mandatory road safety audit.
- Introducing clear zones at the side of the road, wherever possible. The removal of roadside obstacles in Norway led to ratios of benefit to cost of around 19:1.²⁷

- Designing roadside objects so that they are more “forgiving”. Break-away lighting columns led to reductions in injuries of around 30% in the number of fatal and serious crashes at the treated sites.²⁸
- Protecting roadside objects with barriers to absorb part of the impact energy *e.g.* median cable barrier, central cable rails, crash cushions.

Given that dangerous overtaking, often involving crossing into the opposite carriageway, is identified as a key contributory factor on Russian roads, demonstration projects would be useful to identify the scope for national savings from median barrier programmes.

- Implementing low-cost/high-return remedial measures at high-risk sites

Monitoring in the Russian Federation shows that there has been successful, though limited, implementation of minor safety works at black spots. To date these have mainly been implemented at single sites rather than along stretches of roads or on an area-wide basis. High benefits to cost are usually achieved both on local and state roads and investment in this area is likely to deliver good returns well into 2015, if appropriate resources both in money and staff are allocated.

Recommended actions

- It is recommended that the existing road hierarchy in the Russian Federation is reviewed in light of best practice to ensure that its functional classification system takes sufficient account of land use, location of crashes, vehicle and pedestrian flows, and safety objectives including management of speed.
- It is recommended that existing Russian design manuals, standards and guidelines are reviewed in light of international best practice on urban safety management and local need.
- Demonstration projects on area-wide speed management and traffic calming would be useful.
- A system of mandatory road safety audit on new road schemes is recommended in line with international best practice. This comprises a multi-stage safety check of road projects at different stages by an impartial team which goes beyond the current prescribed compliance checks with standards.
- It is recommended that the Russian Federation reviews the scope for a mass action programme of roadside object treatment, and median cable barriers in particular to prevent dangerous overtaking.
- The scope for large casualty reduction from black spot programmes is likely to be very large and funding of a large national programme of remedial treatments is recommended.

Embarking on a long-term programme of speed management

Speed is at the core of the road crash problem and is widely understood as the single most important determinant of road safety. It is likely to be, therefore, a key consideration for the forthcoming Russian road safety strategy.

Research shows that an average increase in speed of 1 km/h is associated with a 3% higher risk of an injury crash, a decrease of 1 km/h leading to a 3% decrease in injury risk.^{29,30} An average increase in speed of 1 km/h leads to a 5% higher risk of serious or fatal injury. An average decrease of 1 km/h would lead to a 5% lower injury risk.³¹ The probability of a pedestrian being killed rises by a factor of 8 as the impact speed of the car increases from 30 to 50 km/h.³² For car occupants in a crash, the likelihood of death at an impact speed of 80 km/h is 20 times higher than at an impact speed of 32 km/h.³³ Pedestrians have a 90% chance of surviving car crashes at 30 km/h or less but less than a 50% chance of surviving a crash at around 45 km/h.³⁴

Environmental damage from exhaust emissions and traffic noise are also greater at higher than at moderate speeds. Speed management is, therefore, required to balance these disadvantages with the shorter journey times offered by higher speeds.

Successful countermeasures to reduce vehicle speeds aimed at deterrence, prevention and injury mitigation include the setting of speed limits according to road function, better road design, the enforcement of limits by the police using radar, laser and speed cameras and supporting publicity to increase the awareness about the consequences of speed. Speed limitation devices in vehicles such as HGVs can improve road safety by automatically controlling the maximum speed at which a vehicle can travel. Vehicle crash protection can also help, although there are limits. The best-designed vehicle on the road today provides crash protection currently up to 70 km/h for car occupants wearing seatbelts in frontal impacts and 50 km/h in side impacts. The human tolerance to injury for a pedestrian hit by even the best-designed car will be exceeded if the vehicle is travelling at over 30 km/h.³⁵

In the Russian Federation, speed is a contributory factor in around 29% of road traffic deaths and existing speed limits are widely flouted on Russian roads. Recommendations for the components of a long-term programme of speed management in the Russian Federation include the following actions:

- Measurement of vehicle speeds

Measurements of speed to indicate speed distributions, 85th percentile speed, average mean speeds and the percentage of drivers exceeding the posted speed limits on different types of road in the Russian Federation need to be taken to establish a starting point for intervention and subsequent monitoring.

- Speed limits on urban roads

It is recommended that an urgent review is undertaken of urban legal speed limits and the urban road classification in the Russian Federation network as discussed in the previous section. Upper speed limits in urban areas are usually 50 km/h in Europe, which is much lower than in the Russian Federation. It is recommended that the upper legal speed limit of 60 km/h is reduced, as a general rule with some exceptions, to 50 km/h as suggested in the 1996 ECMT Recommendations on speed moderation. Within this limit, lower limits can be posted. Access roads and residential areas in European towns and cities are often designed to achieve very low speeds in the interests of vulnerable road user safety. Speed limits in these areas are normally around 30 km/h, but in special cases a speed limit of 15 km/h or even lower is prescribed. Physical measures such as speed humps and chicanes are well-established means of ensuring that these low limits are self-enforcing. Measures differ in cost, and the need to treat a vast total area in towns and cities throughout EU countries favours inexpensive but demonstrably effective measures. Such steps are likely to make an important contribution to improving the Russian Federation's very serious urban safety problem.

- Speed management on motorways and rural roads

As Table 4.3 indicates, speed limits in the Russian Federation are consistent with the upper limits in the best performing countries, which are typically between 70-90 km/h on single carriageway rural roads and 110-120 km/h on non-urban dual carriageways and motorways. Because much lower speeds are appropriate at particular times and places, upper limits are typically supplemented by variable local speed limits operating in line with weather, traffic and road conditions. A range of engineering measures is needed in addition to the general limit to encourage appropriate speed and make hazards perceptible. These include provision for slow-moving traffic and vulnerable road users; overtaking lanes and lanes for vehicles waiting to turn across the path of oncoming traffic; median barriers to prevent overtaking and to eliminate head-on crashes, improving hazard perception by means of road lighting at junctions, roundabouts, improved vertical alignment, advisory speed limits at sharp bends; regular speed limit signs, rumble strips and “clear zoning”: the systematic removal of roadside hazards such as trees, utility poles, and other solid objects. Much standardization has been carried out on such measures.

- Police enforcement

There is little information about average mean speeds on rural roads in the Russian Federation, but international experience shows that bringing average mean speeds down on such roads by means of police enforcement can be an activity with a high benefit to cost ratio.

- Speed cameras

Apart from some specific locations in tunnels, speed cameras are not used in the Russian Federation. They are, however, being used increasingly in many European countries as a highly effective and cost-efficient means of supplementing police radar activity to reduce excess vehicle speed and road crash injury.³⁶ The well-publicised use of such equipment in areas where non-compliance and associated crash risk are high has been shown to reduce crashes substantially and to be publicly acceptable.³⁷ There are some administrative and institutional obstacles that are impeding the implementation of speed cameras in the Russian Federation and it is recommended that these be quickly resolved, in view of the large casualty reduction benefits that could accrue from a programme of speed camera deployment.

Box 5.9. The benefits of police radar operations

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- Studies show that speed enforcement using radar or instruments that measure mean speed between two fixed points and stopping points staffed by uniformed police officers can reduce fatal and injury crashes by 14% and 6% respectively.²⁷
 - The use of a long-term, speed enforcement strategy on rural roads in Tasmania, Australia resulted in a 3.6 km/h reduction in overall average speed and 58% decrease in crashes involving death and hospital admission. The two-year enforcement programme resulted in a benefit-cost ratio of 4:1.³⁵
-

Box 5.10. The benefits of speed camera enforcement

- In the United Kingdom, the implementation of cameras at fixed sites is reducing deaths and serious injuries by 50% at high-risk sites.³⁷
- In Victoria, Australia a 30% decrease in crashes occurred across the whole urban arterial network through the deployment of speed cameras.⁵⁵
- Reflecting the strong political will expressed by the French President, reducing excess speed is a priority for France. Since October 2002, a programme of automatic speed enforcement is being rolled out comprising digital video cameras, automatic number plate recognition and system for automatic consultation with remote vehicle and driver licensing registries. First results are promising, both in term of reducing speeds and improved efficiency.

- Combined publicity and enforcement

This is necessary to enhance high visibility policy and to provide feedback to road users about the campaign. It is recommended that a national advertising campaign in support of police enforcement and drawing attention to the consequences of excess speed be introduced.

- Speed limiters for heavy goods vehicles

Consideration should be given to the fitment of in-vehicle speed limiters on heavy goods vehicles which limit top speeds to 90 km/h in line with best European practice and as recommended in ECMT Recommendations on speed moderation [CEMT/CM(96)1/FINAL].³⁸

Recommended actions

- Speed is acknowledged globally to be the single most important determinant of road safety and its management is, therefore, a key consideration in road safety strategy. It is recommended that a package of measures is introduced in the Russian Federation to address excess and inappropriate speed.
- Measurements of speed to determine the high and low percentiles, average mean speeds and percentage of drivers exceeding the posted speed limits on different types of road in the Russian Federation need to be taken to establish a starting point for intervention.
- National re-classification of the road network, where speed limits and road design and layout match road function, would provide a rational framework for speed management in the Russian Federation.
- The range of speed limits operating in urban areas is much higher than in the best road safety performing countries in Europe and limits should be set according to the function of the road. The speed limit for an urban expressway where pedestrians are physically separated from motor traffic can be higher than the speed limit of 30 km/h in residential areas, where pedestrians and motorised traffic can mix in relative safety.

- Area-wide traffic-calmed 30 km/h zones are commonly implemented in Europe within an urban safety management approach. These could contribute to a significant improvement in the safety of vulnerable road users and car occupants if implemented in the Russian Federation.
- A review of speed management on rural roads is recommended benchmarking current activity with international best practice.
- The combination of publicity and police enforcement has contributed to useful reductions in average mean speeds internationally and it is recommended that a national advertising campaign be undertaken alongside a programme of speed enforcement on roads outside built up areas.
- Well-publicised area-wide speed camera operations are an efficient and cost-effective means of achieving reductions in speed-related crashes and injuries.
- It is recommended that legislation is amended to transfer liability for excess speed to the vehicle owner, where excess speed is recorded by speed cameras.
- Consideration could be given to the fitment of in-vehicle speed limiters on heavy goods vehicles in line with best practice.

Strategies and measures to improve pedestrian safety

In the Russian Federation, the risks of traffic injury borne by pedestrians are the highest in the industrialised world. Nearly everyone is a pedestrian for some part of his or her lifetime. There is an urgent need for a review of pedestrian safety in the Russian Federation and the setting out of clear competences of the different authorities for managing improvements in pedestrian safety. In view of the seriousness of the injury situation, it is recommended that a numerical target is set to reduce pedestrian deaths, both nationally and also, in view of the sharply increasing rates in the Moscow region, on a regional basis.

Mass motorisation since the 1960s in much of Europe and currently in countries such as the Russian Federation, has created traffic systems which cater mainly for motor vehicle user and all too often at the expense of the safety of other users and most notably pedestrians. Often vulnerable road user error is cited as the main reason for crashes involving vulnerable road users and motor vehicles. For example, a recent Russian review cited that 64% of all road traffic crashes involving pedestrians are connected with their crossing the roadway inappropriately. The more fundamental cause of the lack of safe and acceptable crossing facilities where large volumes of pedestrians wish to cross may often be overlooked in such analysis.

The safety of people walking in urban areas is now a key consideration in many countries and a package of measures has been proposed in ECMT Recommendation on vulnerable road users: pedestrians [CEMT/CM(98)19/FINAL].³⁹ Key strategies for pedestrian safety, taking into account scientific knowledge on the role of speed in crashes and biomechanics, have been set out on the basis of European research and experience.^{40,41} The appropriateness of these to the Russian setting is discussed with recommendations.

Box 5.11. Key strategies for pedestrian safety⁴¹

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- Land use planning which minimises exposure to risk in the course of pedestrian trips.
 - Creating safer, attractive, connected pedestrian routes within an urban safety management framework.
 - Managing traffic mix, by separating different kinds of road use to eliminate conflicts where conditions are favourable to separation.
 - Creating safer conditions elsewhere for integrated use of road space, *e.g.* through area-wide speed and traffic management, increased pedestrian and vehicle conspicuity, and vehicle engineering and technology.
 - Mitigating the consequences of crashes through better crash protection.
 - Modifying the attitudes and behaviour of drivers of motor vehicles through information, training and the enforcement of traffic law.
 - Consulting and informing pedestrians about changes being made for their benefit, and encouraging them in steps that they can take to reduce their risk.
-

- Land use planning and safer routes

No information is available for the Russian Federation, but research in other parts of Europe shows that most pedestrian crashes occur within 1.6 km of the victim's home or place of business.⁴¹ Planning can help minimise exposure to risk in the course of trips that pedestrians have to make, especially when going to and from work or home in several ways. Creating safer, connected routes that pedestrians want to take is one strategy. Pedestrian facilities are not likely to be used if they involve lots of steps or involve long detours. The introduction of a safety impact assessment procedure mentioned previously would also ensure that pedestrian safety needs are taken into account before new land use projects are implemented. It is recommended that demonstration projects establish the most appropriate solutions for the Russian Federation.

Box 5.12. Pro-vulnerable road user transportation strategy in York, United Kingdom

In 1989, the city of York introduced a transportation strategy which gave priority to pedestrians, disabled people and cyclists. Measures included substantial traffic calming, park and ride facilities, city centre pedestrianisation and the introduction of pedestrian and cycle networks.

Compared with 1981-85, cycle and pedestrian casualties reduced by more than one third, without any decrease in walking and cycling.

Box 5.13. Urban safety management in Baden, Austria

In the town of Baden in Austria, an integrated transport and safety plan was introduced in 1988 with a range of measures:

- Enlarging an existing pedestrian area.
- Improving network of cycling facilities.
- Introducing new city bus lines.
- Constructing an urban through pass.
- Constructing roundabouts.
- Implementing 30 km/h zones.
- Parking management and car parks.
- Stricter enforcement of traffic rules.
- Treating high-risk crash sites.

Since the introduction of the plan, road traffic injuries and deaths declined by about 60% between 1986 and 1999 making Baden is one of the safest towns in Austria.




- Separating different kinds of road use

While pedestrianised areas and pavements are evident in Russian cities, there is, in particular, insufficient attention to safe crossing places on busy roads. In towns and villages, the provision of pavements is not systematically provided. The risk of a crash on roads without pavements separating pedestrians from motorised traffic is twice that on roads with pavements.⁴² The survival of unprotected users depends upon ensuring either that they are separated from the high speeds of motor vehicles or - in the more common situation of shared use of the road – that the vehicle speed at the point of collision is low enough to prevent serious injury on impact. At speeds of less than 30 km/h, pedestrians can mix with motor vehicles in relative safety.

- Creating safer conditions for shared use

In addition to the need for further speed management in the Russian Federation which has been discussed previously, work to remedy poor provision at crossings and junctions is badly needed. While no information is available on usage levels of daytime running lights, it is likely that their fitment and use on motor vehicles would contribute to pedestrian casualty reduction, since failing to see a motor vehicle in traffic is a well-established contributory factor in crashes according to international research. An analysis of the effects of daytime running lights in different countries concluded that 15% fewer pedestrians were hit by cars.²⁷

Figure 5.3. Examples of separating out road users in Sweden, Spain and the United Kingdom

	<p>Footpath separate from the carriageway</p> <p>Footways alongside carriageway</p>
	<p>Grade-separated crossings</p>
	<p>Pedestrian areas</p>

Source: Breen J., European Transport Safety Council, *European Priorities for Pedestrian Safety*, Presentation to MAA Pedestrian Safety Conference, Sydney, 2002.

- Safer car fronts for pedestrians

Pedestrians in EU countries will soon benefit from Phase 1 of new legislation to require safe car fronts for pedestrians in the event of a crash with an injury-reducing effect of around 3% fewer deaths and 13% less serious injuries. It is recommended that the Russian Federation takes up this new EU directive as a mandatory requirement for nationally produced cars as soon as possible.⁴³

- Changing driver behaviour

Creating awareness of the risks to pedestrians through information, training and the enforcement of key traffic regulations is a necessary part of any package.

- Consulting and informing pedestrians

Consulting and informing pedestrians about changes being made for their benefit, and encouraging them in steps that they can take to reduce risks have also been identified as key elements. The role of alcohol has been identified by many European countries as a key issue for pedestrian safety.

Recommended actions

- In view of the severity of the pedestrian injury problem in the Russian Federation, it is recommended that a numerical target be set nationally and regionally to reduce pedestrian deaths and serious injuries.
- A broad-based strategy for improving pedestrian safety is needed to address the high risks of death and serious injury currently faced by pedestrians in the Russian Federation. Demonstration projects are recommended to test a range of solutions for wider take-up.
- The importance of 30 km/h as the threshold for severe pedestrian injury needs to be widely understood. Well-established urban safety management techniques include the establishment of an urban road hierarchy which better addresses the needs of pedestrians. The blanket speed limit of 60 km/h in urban areas in the Russian Federation, for example, should be lowered.
- The safety engineering (both road and vehicle) interventions in a Russian pedestrian safety strategy are particularly important and include:
 - Separation of pedestrians from high-speed traffic.
 - The creation of further pedestrian facilities *e.g.* pavements, footways and crossings.
 - Better provision at crossings and junctions.
 - Area-wide traffic-calmed 30 km/h zones in town/city centres and residential areas.
 - Daytime running lights on motor vehicles.
 - Take-up of existing EU requirements for pedestrian protection on car fronts.
- Modifying the attitudes and behaviour of drivers of motor vehicles through information, training and the enforcement of traffic law are important in the strategy; as is
- Consulting and informing pedestrians about changes being made for their benefit, and encouraging them in steps that they can take to reduce their risk.

Producing safer vehicles

As discussed in Section 4.5.3, safety standards of national car, bus and heavy goods vehicle manufacturing are lower than for those vehicles which are subject to EU type approval and this situation is widely acknowledged in the Russian Federation. The national motor vehicle certification system comprises UNECE standards for the purposes of domestic production. However, there is no

system which sets out a timetable for mandatory take-up of technical requirements to the vehicles, accepted within the framework of activity of the UNECE World Forum for agreement of regulations in the field of motor vehicles. There are instances where UNECE standards have not yet been taken up or where there are many exemptions. There are also examples of existing UNECE standards that have been updated for the purposes of EU legislation, but not yet amended by UNECE. In the latter case, adoption of the EU standard is recommended where substantial safety benefits could be expected.

- Car safety

Russian citizens are not benefiting sufficiently from the substantial improvements in European car safety design that have taken place over the last ten years. Improvements in car design which have led to a large reduction in fatal and serious injury risk amongst car occupants are due, principally, to heightened EU activity during the 1990s. These benefits are due to the effects of new legislative standards for front and side impact protection and the impact of new predictive and retrospective consumer information systems providing objective data on the performance of cars in state of the art crash tests and in real crashes. In the United Kingdom and Sweden, for example, vehicle safety improvements have produced a 15-20% reduction in car occupant deaths over the last twenty years.^{44,45} It has been estimated that three and four star rated new cars tested in the European New Car Assessment Programme (EuroNCAP) offer a 30% lower risk of injury than cars with a lower rating or no rating at all.⁴⁶ As mentioned previously, the first phase of new EU legislation on pedestrian protection is forecast to produce pedestrian injury savings. Although vehicle crash protection rather than active safety measures continues to be the best hope for casualty reduction for the immediate short-term (although promising technology is on the horizon), the mandatory use of daytime running lights (DRL) by cars and motorcycles has been enacted by many jurisdictions which has resulted in useful casualty reduction. Studies have shown that the introduction of DRL leads to a reduction in the number of multi-party daytime crashes of between 10% and 15%.²⁷ It is recommended that the Russian type approval system be reviewed in light of these developments.

- Bus safety

The high use of public transport in Russian cities is important for road safety. As with car type approval, it is suggested that a review be conducted of bus safety standards to identify the scope for improving the safety quality of the Russian fleet in line with European best practice. The fitment of seat-belts, for example, is one measure which could contribute to safety improvement and is being adopted for new vehicles.

- HGV safety

While the Russian Federation has taken up UNECE standards for side and rear guards to prevent cars and other vehicles under running these vehicles, the UN ECE standard for frontal under run protection has not been adopted, as is the case in EU countries. Given that cars which under run the fronts of HGVs is the most common type of under running, it is recommended that this standard be taken up for new vehicles. The need for in-vehicle speed limitation has been mentioned previously.

- Periodic vehicle inspection

Facilities for period vehicle inspections vary widely in the Russian Federation. The number of testing centres with diagnostic equipment is too few to meet demand and professionals are concerned, particularly in the case of heavy goods vehicle testing, that many defects are not detected. It is recommended that an audit of current vehicle testing facilities is conducted with the aim of identifying the scope for upgrading.

Recommended actions

- A review of vehicle safety standards and the type approval system in the Russian Federation is recommended to explore how it can maximise its opportunity to produce higher levels of vehicle crash protection in its domestic fleet, taking account of the highest European standards available.
- Taking-up EU requirements for front and side impact testing for car occupant protection and pedestrian protection for new vehicle types could result in a large reduction in deaths and serious injuries.
- Motoring, safety and consumer organisations in European countries have supported government efforts to create a demand for safer cars by engaging in consumer information programmes such as the European New Car Assessment Programme. It is recommended that Russian organisations are encouraged to engage similarly.
- The mandatory fitment and use of daytime running lights to motor vehicles has potential to reduce car occupant and pedestrian casualties in Russia.
- Rear seat-belts need to be fitted in all rear-seating positions.
- Child restraints, which currently do not have to meet any standard, need to be approved for use nationally to the highest European standard.
- It is recommended that long-distance buses and urban minibuses are fitted with seat-belts.
- HGVs in the Russian Federation need to be fitted with 90 km/h speed limiters as recommended in ECMT Resolution No. 96/1 and fitted with front under run guards, in line with UNECE 93, which is likely to lead to improved car occupant protection in frontal crashes between HGVs and cars.
- It is recommended that a review of current vehicle testing facilities is conducted with the aim of identifying the scope for the upgrading of facilities.
- In order to show leadership in road safety, some European governments, *e.g.* Sweden, have taken the lead in setting out in-house road safety policies which might be considered in the Russian Federation.

Reducing alcohol-related road injuries

With reference to the international best practice as well as ECMT Resolution No. 93/5⁴⁷ the current situation in the Russian Federation is discussed and recommendations are made for action.

- Measuring excess alcohol in the Russian Federation

Roadside surveys are needed to establish national levels of drinking and driving in normal traffic and to measure performance. These are usually conducted in the high alcohol hours and many jurisdictions have experience of this type of survey.

- BAC limits

The legal limit provides the basis of the package of measures needed to reduce alcohol-related crashes and injuries and gives clear formal guidance to drivers about safe driving practice. The limit of 50mg/100ml is generally accepted as the norm in European countries and is recommended by the European Union for drivers in general and by the ECMT in Resolution No. 93/5.⁴⁷ Some European countries permit legal limits of 80mg/100ml but these double the risk for the drivers compared to 50mg/100ml limits.² There is no legal blood alcohol limit in the Russian Federation at the moment, but draft legislation establishing a 30mg/100 legal limit is under discussion.

- BAC limits for novice drivers

Studies show that establishing a lower illegal BAC (between zero and 20mg/100ml) for young or inexperienced drivers leads to reductions in crashes of between 4% to 24%⁴⁸ and this limit for novice drivers is recommended for consideration in the Russian Federation.

- High visibility random breath testing

Random, high visibility breath testing at roadside checkpoints combined with hard-hitting publicity is well established as the most effective means of achieving reductions in alcohol-related casualties. It is recommended that the requirement of suspicion is removed from breath testing procedures in Russia to improve the efficiency of police operations.

- Failure to undergo a medical test on alcohol intoxication

In 2003 in the Russian Federation, 1.2 million drivers were stopped and requested to undergo a medical test for alcohol intoxication, however many refused to undergo a test and merely incurred an administrative penalty of RUB 1 000-2 000. Since mid-April, 2005, the penalty for failing to undergo a medical test (previously only a fine) is licence withdrawal.

- Evidential breath testing

Roadside evidential breath testing equipment provides an important means of improving the operational efficiency of enforcement. The current control on excess alcohol in the Russian Federation is enforced by the police on the spot with electronic breathalysers with a complex medical test, performed in an ambulance, required in the event of a positive breath test. Alongside the introduction of a legal limit for blood alcohol (with breath equivalent) it is recommended that legislation establishing evidential breath testing is also introduced to improve the efficiency of police operations.

- Repeat offenders

Targeted testing directed at high risk offenders is also necessary. However, action directed specifically at persistent offenders has, in general, a numerically small impact on casualty reduction. Increasingly, in-vehicle breath alcohol ignition interlock devices are found to be effective in reducing recidivism. The wider use of alcohol interlocks in public and commercial transport in the future could extend the potential impact of this tool in dealing with the problem of drink-driving. With this in mind, Sweden, Germany and some Australian states have experimental programmes in progress, using such devices in connection with public transport and commercial road transport. In Sweden, alcohol interlocks are now installed in over 1 500 vehicles and two major truck suppliers have offered alcohol interlocks as standard equipment on the Swedish market since 2002. It is recommended that in the new road safety programme, the Russian Federation considers how alcohol interlocks might be best used nationally.

- Severe penalties

Severe penalties form an important part of the package of drinking and driving. However, the evidence of their success in deterring drunken drivers or reducing recidivism, as an alternative to systematic police enforcement, is lacking.^{49,50}

- Drugs other than alcohol

The use of drugs other than alcohol is also perceived by professionals to be a problem for road safety in the Russian Federation and deserves study.

Recommended actions

- Periodic roadside breath testing surveys are essential to establish national levels of drinking and driving in normal traffic. A package of measures is needed to reduce drinking and driving in the Russian Federation.
- Achieving a high public perception of the risk of being detected above a blood alcohol limit which reflects up-to-date crash analyses is the principal means of combating drinking and driving.
- It is recommended that an upper limit of no more than 50mg/100ml for the general driving population, which represents good practice in Europe, be introduced.
- A lower level of 20mg/100ml is commonly implemented for young novice drivers to reflect their heightened risk of crash involvement after drinking alcohol and should be considered for implementation in the Russian Federation.
- Highly visible random breath testing activity combined with publicity is a demonstrably cost-effective means of reducing alcohol-related road traffic casualties and removal of the requirement for reasonable cause for suspicion would improve the efficiency of Russian breath testing operations.
- Evidential breath testing at the roadside to improve the operational efficiency of enforcement is needed in the Russian Federation.
- Experimentation with alcohol interlock in commercial and public transport operations may provide a useful means in the Russian Federation of improving the safety of public and freight transport.

Increasing seat-belt use

Crash studies indicate that the use of seat-belts more than halves the risk of fatal injury in car crashes. Levels of seat-belt use, however, in the Russian Federation are low, though not precisely established in national surveys. Many cars are not fitted with rear seat-belts and child restraints neither conform to any set standard nor are widely used. Urgent action on the part of the authorities is needed to address this problem. A range of measures is proposed in ECMT Resolution No. 38 which might be considered for a Russian strategy for increasing seat-belt use.⁵¹ The following measures are particularly important:

- Measuring levels of seat-belt and child restraint use

In order to find a starting point for the Russian strategy levels of use in normal traffic need to be measured on an annual basis and targets set for increasing levels of use. The highest levels secured to date in European countries are over 90% for the front seat and over 80% for the rear seat. The police should record whether the seat-belt or child restraint was used in accidents.

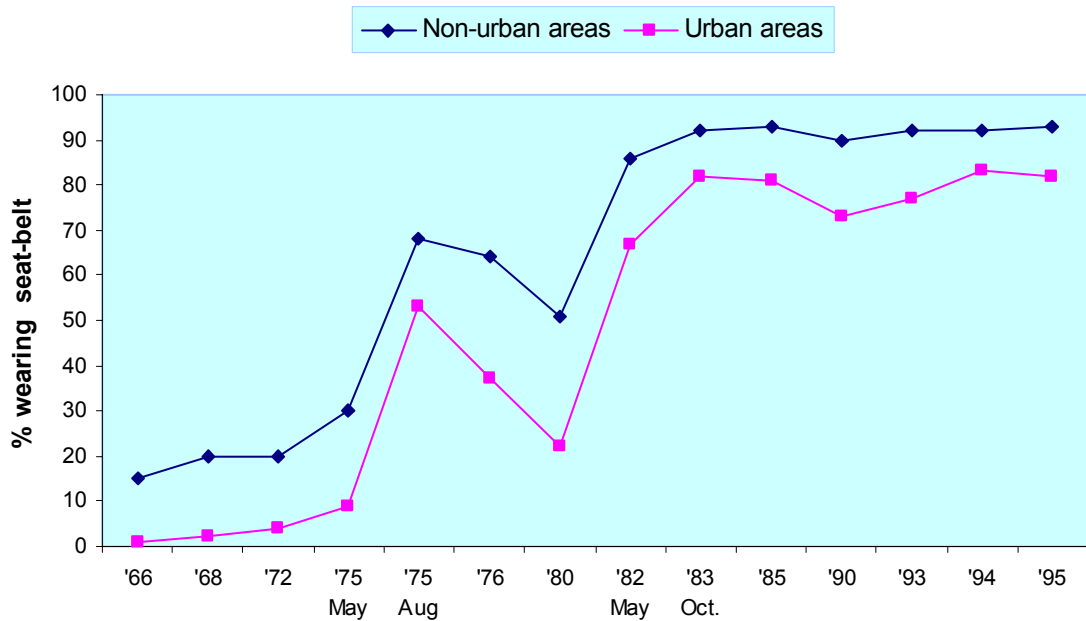
- Combined publicity and enforcement

Studies have shown that enforcement can achieve incremental increases in seat-belt usage if it meets certain conditions. Enforcement needs to be risk targeted, highly visible and well-publicised, conducted over a sufficiently long period and repeated several times during the year. Studies indicate that the benefit to cost ratio of such seat-belt enforcement programmes is of the order of 3:1 or more.⁵² It is recommended that a programme of combined publicity and enforcement is established to increase seat-belt use in the Russian Federation.

- Seat-belt reminders

Seat-belt reminders are intelligent visual and audible devices that detect whether seat-belts are in use in various seating positions and give out increasingly urgent warning signals until the belts are used. They are being fitted increasingly in new cars as a cheap and efficient means of further improving seat-belt use. In Sweden, for example, some 35% of all new cars sold currently have seat-belt reminders and it has been estimated that reminders in all cars could lead to national levels of seat-belt use of around 97%, contributing to a reduction of some 20% in car occupant deaths. The European Transport Safety Council estimated a 6:1 benefit to cost for requiring seat-belt reminders in the front seat of cars in EU countries. It is recommended that seat-belt reminders are required in nationally produced vehicles in the Russian Federation.

Figure 5.4. The history of the promotion of seat-belt use in Finland; percentage of wearing rates in front seats and key dates



- 1 January 1971: compulsory installation of seat-belts in new cars.
- 1 July 1975: compulsory use of seat-belts (> 15 years).
- 1 April 1982: fines for non-use.
- 1 September 1983: “on the spot fines”.
- 1992-1994: information and enforcement campaigns.

Source: ETSC (1996), *Seat-belts and Child Restraints: Increasing Use and Optimizing Performance*, European Transport Safety Council.

Recommended actions

- The measurement of seat-belt and child restraint wearing levels in traffic should be carried out nationally as soon as possible.
- The use of seat-belts and child restraints should be recorded by the police in accident reporting.
- Seat-belts should be required mandatorily in all seating positions in all new cars.
- Type approval of child restraints in the Russian Federation should be to the latest European standard with universal anchorage points.
- A combination of information and police enforcement activity should be carried out to secure stepped increases in front and rear seat-belt wearing.

- Seat-belt reminders, which are a cheap and easy device, could be required in all new cars produced in the Russian Federation.
- It is recommended that the health sector carries out child restraint loan schemes.

Post-impact care and injury prevention

There is little information on the evaluation of the quality and organisation of trauma services in the Russian Federation which deserves study in view of the importance of this strategy in reducing death and disability. There is a need for capacity building for road injury prevention activities within the health sector. The appropriate management of victims injured in road crashes following a crash is a crucial determinant of the chance and quality of survival.

European research indicates that about 50% of deaths from road traffic collisions occur within minutes at the scene or in transit and before arrival at hospital. For those patients who are taken to hospital, some deaths occur within the first four hours after the crash (15%) but the majority occur after four hours (35%).⁵³ There is, therefore, a chain of opportunities for intervention. Effective trauma management is characterised by efficient emergency notification, fast transport of qualified medical personnel, correct diagnosis at the scene, stabilisation of the patient, prompt transport to point of treatment and access to rehabilitation services.

- Access to emergency services

According to the Ministry of Health and Social Development 3% of all road deaths occur on the scene, 55% - after crash, before reaching hospital, 42% -in hospital. Contributory factors to these outcomes include delays caused by a lack of telecommunication infrastructure to call the emergency services, delays in ambulance response and transport times due to traffic, and poor road worthiness of vehicles, especially in rural areas. While access to emergency services is good in urban areas, about 38% of road traffic incidents are attended to by ambulances on rural roads. While there is a 30-minute standard response time, no information exists as to the performance of the ambulance service in meeting this. Improving the telecommunication infrastructure is a key objective in Russian transport policy and various ministries are working in partnership to try and improve the access and quality of emergency services. Wherever practicable, improvements need to be made in the urban network for emergency lanes to expedite emergency rescue teams.

- Provision of first-aid at scene

Global guidelines for essential trauma care including emergency medical assistance at the scene have been produced recently by WHO in collaboration with other international health organisations.²

While there is considerable belief amongst Russian policy makers and professionals about the value of first aid training of members of the public, no information is available which evaluates the effectiveness of first aid provision at the site of road traffic crashes. There is little information on training course attendance. According to WHO, there is no strong evidence that basic first aid training by drivers and members of the public would decrease pre-hospital mortality.² There is, however, some evidence internationally, albeit weak, about the value of first responder training of commercial drivers and emergency services staff.² While first responder training for the police and fire brigade is a requirement, there is no information on formal evaluation.

It is recommended that existing policy be reviewed in light of the new global guidance to allow resources to be focused on those areas of pre-hospital care which can decrease pre-hospital death and disabling injury.

- Hospital care

There is no measure of injury severity by a formal score in hospitals in the Russian Federation nor systematic evaluation of treatment outcomes. There is a variation of specialist care at these hospitals, and not all have the manpower of trauma specialists and facilities to deal with multiple and severely wounded trauma cases, particular in rural areas. Rehabilitation services such as physiotherapy and occupational therapy are provided for those with disabling trauma, although there are concerns amongst the medical profession about the scale and quality of such services, especially in district hospitals.

It is highly likely that there may be great gains to be made in reducing fatality from road traffic injuries with the use of an evaluative and evidence-based approach to trauma care in the Russian Federation. Decreases in mortality of around 30% have been achieved in the last few decades in some OECD countries through a systematic approach to improving the organisation and delivery of trauma care.

Recommended actions

- In the Russian Federation there is a need to further develop surveillance systems using data from the health services. More information is needed on issues such as coverage and response times of ambulance services so as to evaluate quality of care and demand on the health services. Similarly much could be gained by developing hospital-based surveillance systems to monitor the epidemic of road traffic injuries as well as to evaluate the quality of post-crash care.
- There is a need to set standards and disseminate clinical protocols specifying procedures for the management of patients by emergency medical services on the roads, while in transport and in hospitals to reduce pre-admission deaths rates and disability from road crashes.
- Better access is needed to emergency services in rural areas in the Russian Federation.
- Provision is needed especially in cities for emergency lanes to expedite the passage of emergency services.
- The organisation of trauma care, in the pre-hospital and hospital phase needs to be carefully evaluated in order to determine its optimal configuration so as to reduce delays in the transfer of patients to the place of definitive treatment.
- First responder training needs to be developed in a systematic way to emergency services staff such as police and firemen and carefully evaluated.
- There is a need for strengthening human resources to ensure that there are optimal numbers of skilled trauma care staff at centres commensurate with demand.
- Existing staff especially in district hospitals need refresher training in essential trauma care skills. This could be developed using Russian models and with input from the *Advanced*

Trauma Life Support Training and the *Essential Trauma Care Guidelines* developed by WHO.⁵⁴

- The shortage of essential equipment and medicines in emergency departments and intensive care units at district hospitals needs to be addressed.
- Health service and other interventions should be evaluated to promote cost-effective high quality of care.
- There is a need for capacity building for injury prevention activities with the health sector.

5.2.8. Development of national capacity and international co-operation

Global engagement

The launch in 2004 of the *World Report on Road Traffic Injury Prevention* by WHO and the World Bank and subsequent United Nations and World Health Assembly resolutions catalysed a new momentum in global road safety initiatives. International dialogue is now focusing on building a global partnership that can assist and accelerate the process of low and middle-income countries building their scientific, technological and managerial capacities to prepare and implement cost-effective road safety programmes. The priority areas being addressed by this dialogue include the global scaling-up and harmonizing of related technical assistance, funding, knowledge management and training, and research and development.

Senior officials and specialists in the Russian Federation have been building effective networks with their international counterparts and have been benefiting from the exchange of information and transfer of knowledge from best practice countries. This openness is to be encouraged and with the growing momentum building up in the international road safety community the benefits to the Russian Federation of global engagement should continue to grow in the future.

Recommended actions

- Opportunities to build national capacity through global engagement in knowledge management and training activities should be reviewed and a programme of active participation prepared.

Demonstrating good practice

Countries demonstrating best practice road safety performance have shaped their road safety programmes over years of implementation and evaluation of results achieved, and have made the necessary commitments to a long process of learning by doing. Countries attempting to catch up with best practice road safety performance must commit to substantial initiatives, if they are to more rapidly reverse the rising death and injury toll accompanying high motorisation growth rates.

Well designed pilot projects can support this process. Such projects should be multi-sectoral and encompass all the elements of a national road safety strategy. They should be of sufficient scale and intensity to contribute positively to the long-term process of building country capacity for sustainable 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. This latter objective can be achieved by targeting high-risk road corridors and urban areas with sufficient resources to make a measurable impact.

As indicated previously, engaging available international technical assistance to assist the efficient and effective transfer of good practice and the preparation and implementation of road safety strategies and plans is of high importance.

Recommended actions

- Opportunities should be identified for large-scale pilot projects in high-risk corridors and urban areas in the Russian Federation, where the successful adaptation and transfer of international best practice can be demonstrated.
- These opportunities should be seized to build national capacity in improving knowledge and training amongst professionals.

5.2.9. Conclusions

This section has set out broad strategic themes, which are recognised globally as key to the development and management of a successful, and comprehensive long-term system-wide road safety programme. The review team fully recognises that many of these elements cannot be undertaken overnight in the Russian Federation, but require careful national analysis and study, planning, development, funding and public, professional and political support for their effective implementation.

Given the rapidly changing road safety environment in the Russian Federation and the work which is currently underway to define a new programme in the State Council and the Ministry of Internal Affairs, the Section “Conclusions and Recommendations for Priority Actions” at the very beginning of the report sets out the issues which are seen by the review team as being particularly urgent, can be enacted relatively quickly and without prohibitive investments and, if requested, with on-going and close co-operation between the international organisations and Russian colleagues.

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Appendix 1

A BRIEF SUMMARY OF THE SWEDISH VISION ZERO POLICY

Aims

- Accepting that trying to prevent all crashes is an unrealistic thing to do, the long-term aim is to prevent serious health loss such that no-one will be killed or seriously injured within the Swedish road transport system.
- By 2007, deaths should be reduced by at least 50% against the 1996 baseline total.
- Within the headline target, setting safety performance goals for infrastructure and vehicles and targets for compliance with traffic rules of high safety importance.

Strategic principles

- The traffic system has to adapt to take better account of the needs, mistakes and vulnerabilities of road users.
- The level of violence that the human body can tolerate without being killed or seriously injured forms the basic parameter in the design of the road transport system.
- Vehicle speed is the most important regulating factor for safe road traffic. It should be determined by the technical standard of both roads and vehicles so as not to exceed the level of violence that the human body can tolerate.

System designer has primary responsibility

- System designers are responsible for the design, operation and the use of the road transport system and are thereby responsible for the level of safety within the entire system.
- Road users are responsible for following the rules for using the road transport system set by the system designers.
- If the users fail to comply with these rules due to a lack of knowledge, acceptance or ability, the system designers are required to take the necessary further steps to counteract people being killed or injured.

Operational principles

- At **political level** not allowing road traffic to produce more health risks than other means of transportation or other major technological systems.
- At **professional level** seeing serious health loss due to traffic accidents as an unacceptable quality problem of products and services connected with road transportation.
- At **individual level** viewing serious health loss as unacceptable, being aware of what it takes to create a safe system, and playing an active part in placing demands on society and manufacturers for safe road traffic.

Action strategy

- To prevent accidents leading to serious injury especially by limiting exposure to risk.
- To reduce the severity of injury in a crash through crash protective design and protective clothing.
- To ensure that the severity of injuries received is minimised through efficient rescue service, health care and rehabilitation.

Appendix 2

A BRIEF SUMMARY OF THE DUTCH SUSTAINABLE SAFETY POLICY

Aims

- The adverse consequences of today's mobility demands should not present a burden for future generations given that the means are available to substantially reduce the costly and largely avoidable road casualty problem.
- By 2010, deaths should be reduced by at least 50% and injuries by 40% compared with the 1986 baseline total.

What is a sustainable safe traffic system?

- Infrastructure adapted to human limitations through proper road design.
- Vehicles equipped to make the driving task easier and to offer good crash protection.
- Road users who are provided with adequate information and education and, where necessary, deterred from undesirable or dangerous behaviour.

Strategic principles

- Re-classifying the road network according to road function, establishing an unequivocal function for as many roads as possible.
 - The flow function: enabling high speeds of long-distance traffic and, often, large volumes.
 - The distributor function: serving districts and region as containing scattered destinations.
 - The access function: enabling direct access to properties alongside a road or street.
- Establishing speed limits according to road function.
- Ensuring compatibility through design between function, layout and use.
 - Prevent unintended use.
 - Prevent large discrepancies in speed, direction *and mass at moderate and high speeds*.
 - Prevent uncertainty amongst road users by making the road course more predictable.

Action strategy

- Establishing partnerships at national, regional and local level to re-engineer the road network with greater emphasis on safety.
- Two-phase implementation programme with two-year start-up to re-classify network.
- 30 km/h speed limit introduced as a general rule for all built-up areas with powers for local authorities to make exceptions.

Appendix 3

THE MAIN RISK FACTORS FOR ROAD INJURIES

[Peden *et al* (eds.), 2004]

Factors influencing exposure to risk

- Economic factors including social deprivation.
- Demographic factors.
- Land use planning practices which influence length of trip and travel mode choice.
- Mixture of high speed motorised traffic with vulnerable road users.
- Insufficient attention to integration of road function with decisions about speed limits, road layout, design.

Risk factors influencing crash involvement

- Inappropriate or excessive speed.
- Presence of alcohol, medicinal or recreational drugs.
- Fatigue.
- Being a young male.
- Being a vulnerable road user in urban and residential areas.
- Travelling in darkness.
- Vehicle factors – such as braking, handling and maintenance.
- Defects in road design, layout and maintenance which can also lead to unsafe road user behaviour.
- Inadequate visibility due to environmental factors (making it hard to detect vehicles and other road users).
- Poor road user eyesight.

Risk factors influencing crash severity

- Human tolerance factors.
- Inappropriate or excessive speed.
- Seat-belts and child restraints not used.
- Crash helmets not worn by users of two-wheeled vehicles.
- Roadside objects not crash protective.
- Insufficient vehicle crash protection for occupants and for those hit by vehicles.
- Presence of alcohol and other drugs.

Risk factors influencing severity of post-crash injuries

- Delay in detecting crash.
- Presence of fire resulting from collision.
- Leakage of hazardous materials.

- Presence of alcohol and other drugs.
- Difficulty rescuing and extracting people from vehicles.
- Difficulty evacuating people from buses and coaches involved in crash.
- Lack of appropriate pre-hospital care.
- Lack of appropriate care in the hospital emergency rooms.

Appendix 4

KEY ROAD SAFETY STRATEGIES AND INTERVENTIONS

[Peden *et al* (eds.), 2004]

Managing exposure to risk through land use and transport policies:

- Providing efficient land use and networks where the shortest/quickest/safest routes coincide, *e.g.*:
 - Using “smart” land use policies for long-term planning.
 - Introducing area-wide safety impact assessments on new projects.
- Encouraging people to move from higher-risk to lower-risk modes of transport.
- Placing restrictions on users, vehicles or infrastructure to reduce exposure to high risk, *e.g.*:
 - Restricting access to parts of the network and giving priority to higher occupancy vehicles.
 - Restrictions on power to weight capabilities of motorised two wheelers.
 - Introducing graduated driver licensing systems (GDL).

Shaping the road network for road injury prevention:

- Safety-conscious planning of road networks such as:
 - Classifying roads and setting speed limits to match road function.
 - Separating out motorised from non-motorised traffic wherever possible.
- Incorporating safety features into road design such as:
 - Self-explanatory road layouts.
 - Area-wide speed reduction and traffic calming.
 - Providing crash protective roadside objects.
 - Introducing safety audit.
- Implementing remedial low-cost/high-return remedial measures at high-risk sites.

Providing visible, crash-protective, “smart” vehicles:

- Improving the visibility of vehicles:
 - Fitting daytime running lights in cars.
 - Fitting high mounted stop lamps in cars.
 - Fitting daytime running lights for motorised two wheelers.
 - Improving non-motorised vehicle visibility.

- Crash protective vehicle design:
 - Providing safer car fronts for pedestrians and cyclists and developing safer bus and truck fronts.
 - Providing front, rear and side under-run guards in trucks.
 - Improving frontal and side impact protection for car occupants.
 - Protecting car occupants against roadside objects.
 - Providing seat-belts, child restraint anchorages and airbags.
 - Improving vehicle-to-vehicle compatibility, fitting front, rear and side under-run guards on trucks.
- “Intelligent” vehicles:
 - Providing smart seat-belt reminders, intelligent speed adaptation, alcohol interlocks, electronic stability braking.

Setting and securing compliance with key safety rules:

- Enforcement of speed limits, using stationary and automated enforcement e.g. speed cameras.
- Alcohol impairment laws: setting appropriate limits and deterring excess alcohol offenders through random and sobriety checkpoints combined with mass media publicity.
- Mandatory seat-belt and child restraint laws and their enforcement.
- Mandatory helmet use laws and their enforcement.
- Driving and working time rules and their enforcement.

Delivering post-crash care:

- Improving access to the emergency medical system (EMS).
- Better organisation of hospital trauma care.
- Providing rehabilitation care.

Appendix 5

THE ECMT ROAD SAFETY TARGET AND MONITORING PROCEDURE

ROAD SAFETY: IMPLEMENTATION OF THE OBJECTIVE – 50 % KILLED BY 2012 [CEMT/CM (2004)12]

The ECMT Council of Ministers of Transport meeting in Ljubljana on 26 and 27 May 2004 agreed the following Monitoring Procedure:

Road accidents are the most serious negative consequence of transport in ECMT member countries. About 100 000 people are killed and over 2 million injured each year in Europe. Road accidents are a serious public health problem, the greatest killer of young men, and impose enormous economic costs on society.

There is intensive activity in many ECMT countries to combat road accidents. There are new broader approaches and strategies, innovative concepts, specific initiatives (e.g. countermeasures) and implementation experience at national level. These include Sweden's vision zero concept, the very demanding numerical targets set in other countries, new efforts to communicate and educate road users, innovative approaches by transport firms to improve safety among employees, gradual licensing programmes and more targeted and effective enforcement programmes. These are showing concrete results and are providing ideas for ways forward in other countries.

ECMT has over many years contributed to the effort to reduce accidents by publishing comparative data, by sharing good practice between governments and by agreeing forward looking recommendations that can serve as a good basis for progress in all countries.

The extremely worrying number of accidents and their social and economic consequences led the Council of Ministers, in Bucharest in 2002, to unanimously adopt a common quantitative objective for all ECMT Member countries. ECMT Ministers of Transport agreed to reduce, by 2012, the number of victims killed in road traffic accidents by 50 %, in comparison with 2000.

To achieve this «Goal», a strategy needs to be defined by each Member state. Moreover, all stakeholders involved in road safety policy need to be implicated in this strategy. The Road Safety Group, building on the principles set out by Professor Rumar in his paper on «Past, Present and Future of ECMT Work in the Field of Road Safety» [CEMT/CM(2002)14], defined a broad framework to monitor progress in meeting road safety objectives.

In this respect, it is proposed to consider the 17 following steps as a check list of actions to be taken with a view to meeting the target.

These points are grouped under three broad headings:

- *The need for awareness and involvement of the public/community; more emphasis on a vision and strategy on road safety, need for quantitative targets:*
 1. Treat the road safety problem as a society problem, and also as a public health problem (WHO) with socio-economic consequences.
 2. Create a vision about the future safe transport system that is commonly accepted.
 3. Create a road safety strategy, based on infrastructure, vehicles and behaviour, which the various road safety actors support.
 4. Set quantitative long-term as well as intermediate goals at national level, and if possible at the regional and even local level.
 5. Organise clear institutional and organisational roles and responsibilities and set up appropriate structures to co-ordinate them at national, regional and local levels.
 6. Based on this strategy, formulate a national road safety action plan, if possible, with regional components.
 7. Integrate the different transport policies towards accessibility, mobility, safety and environment as far as possible.
 8. Inform decision-makers and educate the public on matters of road safety in such a way that the public requires action from authorities and other decision makers and accept decisions taken.

- *The importance of reliable statistical and other information, in particular research information:*
 9. Identify and focus the problem areas by means of crash and health statistics.
 10. Study and compare road safety countermeasure cost effectiveness.
 11. Take advantage of research outcomes to improve the situation.

- *The need for adequate funding and effective management systems:*
 12. Delegate countermeasure responsibility as close to the problems as possible.
 13. Increase government funds committed to road safety in accordance with the magnitude of the road safety problem and allocate them according to cost efficiency principles.
 14. Create an independent body to follow-up and evaluate the results of the road safety efforts and compare them with the road safety plan.
 15. Create a road safety result management system and introduce, if necessary, specified requirements for each cause of accident; establish safety performance indicators for the principal causes and monitor them with a view to evaluating the effectiveness of countermeasures taken.
 16. Create effective enforcement systems especially for these countermeasures, that have the biggest potential in fatalities reduction.
 17. Do not forget the importance for saving lives and reducing the consequences of injury of effective rescue systems.

Appendix 6

THREE LEVELS OF ROAD SAFETY PROBLEMS IN ECMT COUNTRIES *(Source: Past, Present and Future Road Safety Work in ECMT, [CEMT/CM(2002)14]* **prepared by Professor Kare Rumar)**

First order problems

(obvious even at a superficial crash analysis)

- Speeds, especially in built-up areas, are too high.
- Alcohol and drugs are too frequent in road traffic.
- Road safety is too low in urban areas.
- The road safety of children is inadequate.
- The road safety of unprotected road users is too low.
- The crash risk for young drivers is too high.
- Driving of cars is too widespread especially in urban areas.
- The standard of the roads and streets is not correct in many places.
- The accident and injury risks for elderly road users are too high.
- Too many roads and vehicles are inadequate from an injury prevention point of view.
- The usage of protective devices (belts, helmets etc.) is too low.
- The rescue service and medical treatment of traffic victims is not effective enough.
- The conspicuity of road users is insufficient in daylight. Their conspicuity at night is much worse.
- The crash risk in reduced visibility conditions such as darkness and fog is too high.
- The crash risk in winter traffic is too high.
- Heavy vehicles are over-represented in serious crashes.
- Some intersection types have crash risks which are too high.

Second order problems

(reduce effectiveness of solving first order problems)

- Road traffic rules (legislation) are not clear, not logical and not consistent.
- Enforcement of licence requirements and traffic rules is not efficient enough.
- The control of road condition from the safety point of view is insufficient.
- The control of vehicle condition from the safety point of view is insufficient.
- Training and examination for driver licensing is not good enough.
- Traffic safety education of citizens is inadequate.
- The way traffic offences and crimes are treated in court is irregular and not in harmony with the corresponding risks.

Third order problems

(problems which prevent or block the possible solutions of the first and second order problems)

- Current awareness of the seriousness of road safety problems, the value of road safety measure is too low among decision-makers and road users and prevents implementing existing knowledge.
- The present management system for road safety work is inadequate. A quick and efficient road safety management system requires result management based on performance indicators.
- No vision of the future that most people in society stand behind to create creativity, energy and participation.
- No quantitative targets.
- The present information and diagnosis system for road safety is very crude and partly inaccurate.
- Poorly supported and co-ordinated research.
- Consumers, communities and companies need to become more actively involved in the road safety effort.

Appendix 7

THE BRITISH PENALTY POINTS SYSTEM

Great Britain has had a penalty points system since 1982, but the principle that repeated offences can lead to the loss of one's driving licence goes back at least as far as the 1930s.

Under British law, all road traffic violations are criminal offences and normally dealt with by the criminal courts. The courts have long had powers to disqualify drivers ordering them to surrender their driving licences and preventing them from obtaining a new one for a period of time.

Road traffic offences may be divided into three types - for the purpose of this paper they are described as Types A, B and C (*note*: these are not terms in common use, but they do simplify the description of the system which follows).

Type A

Very serious offences (*e.g.* driving with excess alcohol). Almost always, the offender will be *disqualified* for at least 12 months even on the first occasion.

Type B

Fairly serious offences (*e.g.* exceeding the speed limit). The offender will not normally be disqualified for a single offence (though this *may* happen) but the details of the offence will be *endorsed* on the licence so that it may eventually lead to disqualification.

Type C

Minor offences (*e.g.* illegal parking). These offences are not endorsed on the licence and do not count towards a disqualification.

This paper is mainly concerned with Type B offences.

The system of endorsement of licences was introduced in the 1930s as a simple method of recording offences at a time when licences were issued by local authorities, there were no central records, and computers did not exist. Today the licensing system is centralised and computerised, but the system of endorsement has been maintained. Endorsements (and now penalty points) are all recorded on the central computer to which the police and courts can gain access.

The *Road Traffic Act 1962* introduced a rule that any driver who committed three endorsable (Type B) offences within three years would normally be disqualified for six months. This system was criticised as paying too little attention to the relative seriousness of offences. A government working party, reporting in 1981, recommended a more refined system. Each type B offence would be allocated a number of penalty points and a driver who accumulated 12 or more points in three years would be disqualified, normally for six months. In deciding what numbers to give to different offences, the working party looked first at the average fines imposed by the courts.

This report was accepted by the government and legislation was introduced in the *Transport Act 1981* and came into force on 1 November 1982. Since then, there have been various minor changes to the number of points allocated to each offence and new offences have been added to the system.

The same 1981 report also recommended that the system of *fixed penalty payments*, previously applying only to some Type C offences, should be extended to certain Type B offences, and this was introduced in 1986. The police may give a *fixed penalty notice* to the driver suspected of committing the offence. A driver who does not want to plead his innocence in a court simply pays a standard fine to a court official (“the fixed penalty clerk”). (In Britain the police are not allowed to accept fines directly from drivers). Since 1992, fixed penalty notices may also be sent by post to the registered keeper of the vehicle, mainly where offences are detected by automatic cameras.

When a fixed penalty is paid, the fixed penalty clerk endorses the licence with details of the offence and penalty points. Where the legislation allows the courts to choose from a range of numbers (e.g. speeding, between 3 and 6 points) the fixed penalty clerk must always take the lowest number in the range (in fact, no more than 3 points can be given for any fixed penalty offence). If by adding the latest offence the number of penalty points would exceed 12 (excluding any more than three-years-old) the fixed penalty system cannot be used and the driver is prosecuted and faces disqualification by a court. So, with one exception (see next paragraph) a person cannot lose the right to drive simply through penalty points without first appearing before a court.

In 1995, Parliament approved new legislation [the *Road Traffic (New Drivers) Act 1995*] dealing with the problem of newly qualified drivers who commit offences, and the associated high accident risk. This came into force in June 1997. Under this Act, drivers who obtain six or more penalty points within two years of passing the driving test have their licences revoked (by the licensing authority, not the court) and revert to the status of “learner drivers” until they pass another driving test. As learners, they are permitted to drive with “L” plates if accompanied by an experienced driver. Such drivers are still at risk of six months disqualification (*i.e.* not being permitted to drive at all) if they obtain a further six penalty points, making 12 in all.

Because the British system evolved gradually, there is little evidence of the effect of penalty points on the number of offences committed and on road accidents. Behavioural studies in the United Kingdom and elsewhere show that the threat of losing one’s licence is a very real deterrent to driving offences, much more so than fines. However, this threat was equally present in the system before penalty points were introduced. For this reason, there was no significant change in the number of reported Type B offences when the points system was introduced in 1982. Reductions in road accidents in the early 1980s occurred mainly for other reasons (introduction of mandatory seat-belt wearing and evidential breath testing for drink-drivers, both in 1983).

The government is currently monitoring the effect of the introduction of the Road Traffic (New Drivers) Act 1995. However, as this has not long been in force, and affects only drivers who passed their test *after* 1 June 1997, it is too early to detect any effect on road accident statistics.

The penalty points system acts as a constant reminder to drivers that they risk losing their licences and thus plays an important part in the overall enforcement strategy. It may well have contributed to the accident reduction which has been observed at sites where automatic cameras have been used to detect speed and traffic light offences, since drivers are aware that if they are caught four times by the cameras they are almost certain to lose their licences.

Department of the Environment, Transport and the Regions (UK)
Road Safety Division

THE BRITISH PENALTY POINTS SYSTEM: “Type B offences”

Information correct as on 31 July 2001. Fixed penalty offences are marked * and lowest point in range applies where a fixed penalty is paid.

<u>Offence</u>	<u>Points</u>
Careless or inconsiderate driving	3 - 9
Being in charge of (but not driving) a motor vehicle when unfit through drink or drugs or over prescribed alcohol limit	10
Failing to provide breath specimen (screening test for alcohol offences)	4
Failing to provide breath or blood specimen for analysis (evidential test) when accused of “being in charge” with excess alcohol	10
Leaving motor vehicle in dangerous position*	3
Unlawful carrying of passenger on motorcycle*	3
Failing to comply with certain traffic signs or police directions*	3
Using vehicle in dangerous condition, or in breach of requirement concerning brakes, steering gear or tyres*	3
Driving otherwise than in accordance with a licence (and which would not have been in accordance with any licence that could have been granted to that person)*	3 - 6
Driving after false declaration of physical (medical) fitness, or after failing to notify relevant medical condition or after refusal or revocation of licence on medical grounds	3 - 6
Driving with uncorrected defective eyesight, or refusing eyesight test	3
Driving while disqualified	6
Using motor vehicle without third-party insurance	6 - 8
Failing to stop after accident or to report accident to police	5 - 10
Failure (by vehicle owner etc.) to give police information to identify person driving at time of alleged offence	3
Contravention of speed limit*	3 - 6
Contravention of motorway regulations (other than speed or unlawful stopping)*	3
Contravention of pedestrian crossing regulations (for wrongful stopping only)*	3
Not stopping at patrolled school crossing	3
Contravention of order restricting traffic on street used as playground*	2

*Appendix 8***THE DUTCH ROAD HIERARCHY***(Source: Crow, 1997)*

- **Flow roads:** these go from place of departure to destination and have a flow function for through traffic without interruption. For these roads admissible speed limits are 100-120 km/h and complete separation of traffic streams is envisaged.
- **Access roads** enter and leave an area and comprise *distributor roads* (with the needs of moving traffic continuing to pre-dominate) and *local distributor roads* (giving equal importance to motorised and non-motorised local traffic but separating users wherever possible). These roads have a connecting function for car traffic to/from large urban districts, villages and rural areas with traffic interchange at limited sections. Speeds should not exceed 50km/h within built-up areas and 80km/h outside. Separate paths for pedestrians and cyclists, dual carriageways as standard, with stream separation on the full length and speed management on major crossings and right of way are essential features.
- **Residential access roads:** these are for reaching an individual dwelling, shop, or company where the needs of non-motorised users predominate. Roads with an access function for vehicles with constant traffic interchange comprise the vast majority of roads. For these roads speed is limited to 30km/h in towns and villages and to 40km/h at crossings and entries in rural areas, otherwise 60km/h may be acceptable. Where a road performs a mixture of functions, the appropriate speed is normally the lowest of the speeds appropriate to the individual functions.

GLOSSARY OF TERMS

Air bags: safety devices that inflate and are installed in vehicles to protect the driver or passengers in the event of a collision.

Alcohol interlock: an electronic breath-testing device connected to the ignition of a vehicle. The driver has to breathe into the device. If the driver's breath alcohol level is above a set limit, the vehicle will not start.

Biomechanics: the study of the mechanics of the human body and how it moves which is of particular importance in understanding the nature and sources of road crash injury.

Blood alcohol content (BAC): the amount of alcohol present in the bloodstream, usually denoted in grams per decilitre (g/dl). A legal BAC limit refers to the maximum amount of alcohol allowed in the bloodstream that is legally acceptable for a driver on the road. In some countries, the law stipulates an equivalent quantity of alcohol in the air breathed out, in order to facilitate detection of drink-driving.

Breakaway columns: lighting or telegraph poles, designed to break or collapse on impact.

Breathalyser: an instrument that measures the relative quantity of alcohol in the air a person breathes out.

Capacity development: organisational and human resource development which allows the carrying out of road injury prevention policy.

Chicane: a physical speed management measure consisting of an obstacle on one or other side of the road, which has the effect of narrowing the width of the road.

Child restraint: special seat restraint for children, designed according to age and weight, offering protection in the event of a car crash.

Clear zones: the systematic removal of all hazardous features near the roadside, to minimise the chances of injury should a vehicle run off the road.

Coalition: an alliance of organisations often coming together under one umbrella organisation in pursuit of particular objectives.

Congestion-charging: charging road users directly for the use of a specific section of the road network with the aim of reducing congestion.

Cost-benefit analysis: compares crash and injury costs with the benefits of avoiding the crash and injury. Avoiding such crash and injury costs represents the economic benefit of road safety measures. The benefit-cost ratio represents the economic advantage of the safety measures. Cost-benefit analysis requires the valuation of lives saved and injuries avoided.

Cost-effectiveness: in practice, a cost-effective measure is one which achieves a particular objective at reasonable cost. In cost-effectiveness analyses the costs of a measure are set against its effects. The measure's effects are not expressed in monetary terms. Starting from a given safety target and budget, this method can identify the path which will produce the highest casualty savings.

Crash protection: design of exterior and interior of vehicles and roadside objects which reduces the severity of injury on contact.

Crash-protective roadside objects: collapsible or breakaway roadside objects or energy-absorbing “cushions” on barriers and rails that reduce the severity of injury on contact.

Front and side impact protection: crash-protective design of cars to provide occupant protection in the event of a frontal crash or when a car is hit from the side.

Cumulative driving fatigue: fatigue is a general term used to describe the experience of being “tired”, “sleepy”, “drowsy”, or “exhausted”. Too little sleep and factors associated with driving patterns or work schedules are examples of contributory factors which have cumulative effects and can increase risk of a fatigue-related crash.

Daytime running lights: the fitment to motor vehicles or use of lights during daytime to improve visibility or conspicuity. These can be ordinary front headlamps or specially designed daytime running lamps.

Delivery mechanisms: tools and procedures used by road safety managers to implement road safety programmes.

Delivery partnership: specific partnerships between stakeholders (inter-governmental as well as non-governmental) established to ensure implementation of key road safety activity often underpinned by formal agreements, memoranda of understanding, funding contracts.

Evidence-based approach: an approach to road safety which is based on scientific analysis of problems and effectiveness of countermeasures.

Excess alcohol: an amount of alcohol in the blood or breath which is in excess of the maximum legal limit.

Exposure to risk: the probability of being exposed to the risk of road traffic crash or injury. In road traffic, risk is a function of four elements. The first is the exposure – the amount of movement or travel within the system by different users or a given population density. The second is the underlying probability of a crash, given a particular exposure. The third is the probability of injury, given a crash. The fourth element is the outcome of injury.

Forgiving roadside objects: objects and structures designed and sited in such a way that they reduce the possibility of a collision and severity of injury in the case of a crash as well as accommodating errors made by road users. Examples are collapsible columns, guard fences and rails, and pedestrian refuges.

Functional classification of roads or road hierarchy: the process of classifying roads in a network according to their function (usually flow, distributor and access functions) and setting speed limits according to the road function.

Grade-separated crossings: crossings that separate non-motorised road users from motorised road users so as to avoid collision, for example, footbridges over motorways.

Graduated driver licensing: this involves step-wise access to a full driver license, restrictions on novice drivers such as limits on night time driving, limits on the number of passengers, and a prohibition against driving after drinking any alcohol.

High visibility police enforcement: patrolling by the police which is easily seen by passing road users, for example, at random breath testing checkpoints with the aim of deterring potential offenders.

Human capital approach: an approach based on human capital theory that focuses on the centrality of human beings in the production and consumption system. The “human capital approach” model includes both direct and indirect costs to individuals and society as a

whole due to road traffic injuries. Such costs include emergency treatment, initial medical costs, rehabilitation costs, long-term care and treatment, insurance administration expenses, legal costs, workplace costs, lost productivity, property damage, travel delay, psychosocial impact and loss of functional capacity.

Human tolerance to injury: the limited ability of the human body to withstand external forces which lead to injury, *e.g.* in a road traffic crash.

In-vehicle speed limitation device: a device fitted in a vehicle that does not permit speeds in excess of a maximum limit.

Institutional arrangements: the organisational structures, procedures and mechanisms put in place to allow effective road safety management and activity.

Institutional capacity building: for road safety means ensuring that the full range of functions needed to deliver road safety can be carried out by organisations with appropriate financial resources and trained human resources.

Knowledge transfer: the process of spreading knowledge about road safety to other professionals and policy makers.

Land-use planning: the process by which decisions are made on future land use over time which needs to include consideration of road safety as well as other general welfare needs.

Low-cost and high-return remedial measures: low-cost, highly cost-effective engineering measures applied at high-risk sites following systematic crash analysis, otherwise known as black spot treatments.

Lead agency for road safety: the public agency which has the principal responsibility for road safety and has a range of functions. In Europe, the lead agency is usually a single government department, but it can also be a

multi-sectoral governmental body. Its responsibilities are often set out in legislation.

Mass action programmes: large-scale/intensive action programmes implementing specific road safety measures over a large area *e.g.* speed cameras, median barriers or remedial measures for roadside obstacles.

Morbidity: Any departure, subjective or objective, from a state of physiological or psychological well-being (Last, 2001). Both incidence and prevalence are measures of morbidity.

Mortality: death in a road traffic crash which occurs within 30 days (UNECE), though differing definitions exist.

Motorisation: the process of equipping a country with motor vehicles.

Non-governmental organisations: organisations which are generally formally established organisations but not statutory authorities for road safety which carry out a wide range of road safety activity independently from government.

Organisational arrangements: the organisational structures, procedures and mechanisms put in place to allow effective road safety management and activity.

Organisational capacity building: for road safety means ensuring that the full range of functions needed to deliver road safety can be carried out by organisations with appropriate financial resources and trained human resources.

Park and ride: a transport scheme that encourages out-of-town parking and entry into the town by means of public transport.

Peer review: systematic examination and assessment of the performance of a state by other states or/and entities, *i.e.* international organisations, with the ultimate goal of helping the reviewed state improve its policy making,

adopt best practices, established standards and principles. The examination is conducted on a non-adversarial basis, and it relies on mutual trust among the states and parties involved in the review, as well as their shared confidence in the process. (*Peer Review*, OECD 2003).

Performance indicators: any measurement that is causally related to crashes or injuries, used in addition to a count of crashes or injuries, in order to indicate safety performance or understand the process that leads to crashes.

Physical self-enforcing measures: road engineering measures – such as road humps, chicanes and rumble strips – that force drivers to reduce or lower speeds, without any additional enforcement or intervention by the police.

Post impact care: the care administered to an injured road crash victim at the scene, on the way to hospital or in hospital.

Professional capacity development: ensuring that there are sufficient numbers of road safety professionals from different disciplines and sectors in the governmental and non-governmental sectors engaged in effective road safety management, research and activity.

Random breath testing: alcohol breath tests administered randomly at roadside checkpoints by the police, without any necessary cause for suspicion.

Road hump: a convex elevation installed across the road that acts on the dynamics of vehicles in such a way that drivers have to reduce speed to avoid discomfort to themselves or damage to their vehicles.

Road infrastructure: road facilities and equipment, including the network, parking spaces, stopping places, draining system, bridges and footpaths.

Roadside objects: functional objects by the side of the road, such as lamp posts, telegraph poles and road signs.

Road safety audit: checks that are carried out by independent safety teams at various stages of an individual road project to ensure that its design and implementation are consistent with safety principles, and to determine whether further design changes are needed to prevent crashes and injuries.

Road safety engineering: improving the safety of all aspects of the road infrastructure and network, including planning, design, layout, and operation.

Road safety management: good practice indicates that this comprises efforts by public authorities to target specific results in road safety, implement system-wide interventions and programmes and establish effective implementation arrangements, especially the accountabilities of different organisations for results.

Route management: in an efficient road network, exposure to crash risk can be minimised by ensuring that trips are short and routes direct, and that the quickest routes are also the safest routes. Route management techniques can achieve these objectives by decreasing travel times on desired routes, increasing travel times on undesired routes, and re-directing traffic.

Rumble strips: a longitudinal design feature installed on a roadway shoulder near the travel lane. Rumble strips are made of a series of indented or raised elements that alert inattentive drivers through their vibration or sound. They are also widely used for speed reduction.

Safer car fronts for pedestrians: or pedestrian protection which comprises crash protective design to provide protection to pedestrians in impacts with the fronts of cars.

Safety impact assessment: this is conducted on an area-wide basis to assess the effect of a new road scheme on the whole network.

Safety performance data: comprise information on final outcomes e.g. road

crashes, deaths and injuries as well as survey data on factors which are causally related to crashes and their severity such as excess speed on different types of road, the non-use of seat-belts in the front and rear of cars, and levels of drinking and driving in normal traffic. These intermediate outcomes determine final road safety outcomes and their measurement provides the opportunity for policy makers and those monitoring policies to gain a better understanding of system performance than is allowed by use of final outcome data alone.

Seat-belt reminder systems: intelligent visual and audible devices that detect whether or not belts are in use in different seating positions and give out increasingly aggressive warning signals until the belts are used.

Self-explanatory road layouts: the use of engineering measures such as road markings and signs that make clear the course of action by different road users.

Socio-economic costs of road crashes: the social and economic costs of road traffic crashes and injuries which mostly include an economic valuation of preventing death and serious injury.

Speed cameras: cameras at fixed sites or used by mobile police patrols which take photographs of vehicles exceeding the speed limit. Their purpose is to enforce speed limits and to producing evidentiary information.

Speed hump: a convex elevation installed across the road that acts on the dynamics of vehicles in such a way that drivers have to reduce speed to avoid discomfort to themselves or damage to their vehicles.

Sustainable transport: transport that achieves the primary purpose of movement of people and goods, while simultaneously contributing to achieving environmental, economic and social sustainability.

Traffic calming: a strategy aimed at significantly reducing vehicle speeds in a residential area or on an urban arterial road, in

order to protect vulnerable road users and residents and improve the quality of life of those living in the neighbourhood.

Traffic mix: form and structure of different modes of transport, motorised and non-motorised, that share the same road network.

Two-wheeled motor vehicle: a two-wheeled vehicle powered by a motor engine, such as a motorcycle or moped.

Under-run guards in trucks: front, side and rear guards that can be fitted to trucks to prevent cars and other vehicles running under the trucks in a collision. Under-run guards can also provide energy-absorbing points of contact for other vehicles to protect them in the event of a crash.

Underreporting of road crash injuries: to the police is a universal problem which is studied by linking hospital and police data to identify disparities in data sets.

Urban safety management: traffic calming, traffic safety management and speed reduction carried out in a particular urban or residential area after area-wide analysis of the key problems and consideration of effective countermeasures.

Visibility: being seen or conspicuous in the road environment

Vulnerable road users: road users most at risk in traffic, such as pedestrians and cyclists. Children, older people and disabled people may also be included in this category.

Willingness to pay: one method of assigning a value to human life by determining by survey the maximum amount road users are prepared to pay for prevention of death and injury in road crashes

Note: Many of the definitions in this Glossary are derived from the *World Report on Road Traffic Injury Prevention*, Peden *et al*, 2004.

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Road Safety Performance National Peer Review: Russian Federation

The Russian Federation has the highest road death rate of all ECMT member countries and contributes one third of all road deaths in these countries. In addition to the high toll of human tragedy and suffering, the socio-economic cost of crashes, officially estimated at 2.5% of GDP, presents a considerable barrier to a healthy Russian economy.

The problem is predominantly urban, concentrated in Russia's largest cities, and with particularly sharp increases in deaths and serious injuries experienced in the Moscow region. International experts who undertook this review confirm that substantial improvements in road safety can be achieved through concerted, sustained and evidence-based action.

The size of the challenge means that all sectors of society need to be mobilised and political priority for road safety action and resources needs to be set at the highest level.

This peer review of road safety performance in the Russian Federation has been carried out by the ECMT in partnership with the World Bank and WHO.

