APPENDIX 1

Of the RA Government Decree N 995 dated 13 August 2009

National Road Safety Strategy for Armenia and Yerevan and Five Year Action Plan

August 2009

REPUBLIC OF ARMENIA

CONTENTS

1. STAKEHOLDERS CONTRIBUTING TO STRATEGY

- RA the Presidential Administration
- RA Government Staff
- RA Ministry of Transport and Communication
- Road police department of RA Police
- RA National security council secretary staff
- RA Ministry of Finance
- RA Ministry of Economy
- RA Ministry of Healthcare
- RA Ministry of Justice
- RA National statistical service
- RA Ministry of Education and Science
- RA Ministry of Emergency Situations
- RA Ministry of Urban Development
- Yerevan Municipality
- "Transport PIU" State Institution
- "Armenian roads directorate" SNCO
- "MCA-Armenia" SNCO
- "Achilles - driver right protection centre" NGO
- "National road safety council" NGO

2. DEFINITIONS AND ACRONYMS

1. Fatality: Armenia defines a road collision fatality as a death from road collision injuries within one week of the occurrence of the collision. This definition differs from the international definition since instead of one week period 30 day period is accepted therein. In case of accepting one week instead of 30 days the number of registered casualties will be less for 8-10% (Report "Accident costing method for Armenia" (2003), "Consultant Services for Road Safety Improvement" by SWECO International, June 2003).

2. Injury (Serious/Slight): Based on the "Accident Costing Method for Armenia" (2003), the distinction between slight and serious (severe) injury is not clear-cut. Internationally, a severe injury is often defined as an injury that requires at least one day in hospital.

3.Casualty: This refers to injuries that are classified as fatal, serious and slight.

4. Collision: This term has been used to define the interaction between road users (combinations of drivers, pedestrians, cyclists) that results in a fatality, a serious injury a slight injury or damage only.

5. Vulnerable Road User (VRU): The definition for Vulnerable Road Users does not include passengers. 'Vulnerable' refers to road users who are more susceptible to injury than others, particularly pedestrians, people with disabilities, children and the elderly (due to the fact that they have a softer/brittle bone structures), cyclists and motorcyclists (taking into account the fact that they don't have vehicle crumple zones, airbags and seatbelts to protect them during collisions).

ACRONYMS

RA – Republic of Armenia

SNCO - State Non-Commercial Organization

NGO – Non-Governmental Organization

ARD – "Armenian Roads Directorate" SNCO

TRG – Traffic Research Group of ARD

BAC – Blood Alcohol Content

MoTC – Ministry of Transport and Communication

MoH – Ministry of Health

MoES – Ministry of Education and Science

NSS – National Statistical Service

WB – World Bank

VRU - Vulnerable Road User

RSCA - Road Safety Council of Armenia

PI – Performance Indicator

3. VISION

A community travelling safely

4. TARGET

To reduce the number of road fatalities by 10 per cent over the next 5 years

Targets should be realistic and achievable. The target is based upon an achievable value using a realistic reduction rate of 10%. The associated cost of the programme is related to the cost to the Nation based on a current economic assessment of collision costs (1% GDP). The calculation for Armenia has been based on existing experience from the United Kingdom (Figure I). Between 1970 and 2000, there was a 60% reduction in fatalities (even though the number of vehicles nearly doubled during the same period).

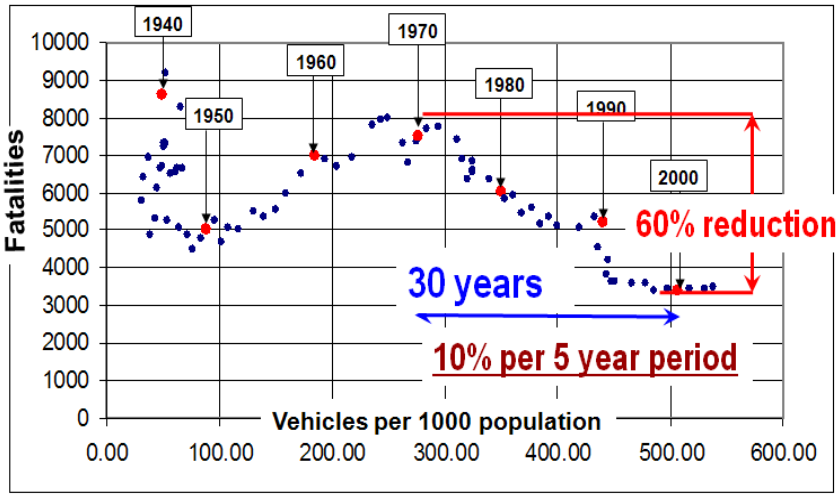

Figure 1. UK Fatality tend

The Strategy target figure (e.g. "To reduce the number of road fatalities by 10 per cent over the next 5 years") is related to the investment in road safety. Taking the annual collision cost estimate of $70m a 10% reduction in casualties would show as a cost reduction of $7m/annum. Over a 5 year period this would amount to a saving of $35m.

Based on international experience, an acceptable rate of return for investment in a safety scheme, on average, is around 300%.

The current estimate for programme activities for 5 years is $10m plus $0.1m per year to run the Secretariat.

This means that for a $10m investment over 5 years there is a $35m return, equivalent to a 350% rate of return.

5. STRATEGIC OBJECTIVES

The Strategy is to be achieved by the following strategic objectives:

- Establishing a new Institutional Framework responsible for delivering the Strategy, including a Road Safety Council of Armenia and a Secretariat. Providing training for staff of the Secretariat
- Developing an integrated national database of Collision information to inform future activities, improve road safety policy and programs, and enable the monitoring and evaluation of schemes
- Increasing the use of occupant restraints (seat belts) and cycle/motorcycle helmets
- Improve effectiveness of speed and drink driving enforcement
- Improving road user behaviour, particularly vulnerable road users
- Road safety engineering measures
- Monitoring and evaluating activities

The strategic objectives of this National Road Safety Strategy have been identified from the currently available data which are detailed in Section 8: Road Safety in Armenia).

6. INSTITUTIONAL FRAMEWORK

A new Institutional Framework will comprise the following components: Road Safety Council of Armenia, a Secretariat and Working Groups.

This is discussed in more detail in Section 9.4.

7. INTRODUCTION

In 2003, the socio-economic costs of collisions in Armenia were estimated to be over 1% of national GDP for Armenia (Road Safety Management Capacity and Investment needs (September 2006) ECSSD, World Bank). In addition to these costs, the loss of the main wage earner in road traffic collisions often pushes families into poverty. Research has shown that children from the lowest income groups are five times as likely to sustain fatal and serious injury in road traffic as other groups. In Armenia where, according to the RA NSS 2007 integrated living standard rates, one quarter (25%) of the population live below the poverty line, improving road safety is a key issue for both national poverty reduction and child mortality reduction strategies.

Armenia joined the European Conference of Ministers of Transport (ECMT) in 2003 and adopted the ECMT Acquis upon joining the organization which involved signing up to an aspirational target.

Although the Traffic Convention (Vienna 1968) was ratified by the RA National Assembly and in 2004, the Convention on Road Signs and Signals (Vienna 1968) has not yet been adopted. The RA Government has however adopted decisions and other legal acts relating to traffic organization, enhancement of road capacity by adjusting parking and stopping areas for vehicles, regulation of public transport stops, application and installation of traffic lights, traffic signs, traffic markings and pedestrian guardrails.

Public Safety is of major concern to the Republic of Armenia established in National Security Strategy of the Republic of Armenia. High level political interest in improving road safety clearly exists in Armenia, with the ambition to achieve the good practice road safety levels found in Europe. Armenia is firmly committed to improving its safety performance. In December 2005, a Presidential decree formed a multi-agency Task Force to develop proposals to address traffic management and safety issues and to develop proposals to reform the provision of traffic safety management services provided by the traffic police. The Task Force has prepared an ambitious good governance and anti-corruption action plan to reform the legal and administrative framework for traffic management, policing and safety. Actions include classifying the road network, defining roles and responsibilities of various ministries in relation to road traffic, providing for new systems of technical

inspection and driver licensing, and clarifying the structure of the state traffic police and their functions. These provide an important new framework for transport and traffic system organization in the Republic of Armenia.

In 2006 the Government of Armenia requested the World Bank to finance the preparation of a Traffic Management and Safety project to, among others, address road safety on a national scale and also specifically within Yerevan. The development of this National Road Safety Strategy is one of the key outputs of this project and has been developed in consultation with key stakeholders in all sectors in order to create a comprehensive review of road safety issues.

8. ROAD SAFETY IN ARMENIA

8.1 OVERVIEW

The vehicle fleet in Armenia is old (12 years on average) and of relatively poor safety quality, however at least 10,000 newer vehicles are imported annually. Armenia is experiencing rapid growth in motor vehicle ownership and use. In the last five years the motor vehicle fleet increased by 30%, while the traffic carried by road increased by 38% (freight) and 61% (passengers). This rapid motorization is causing traffic congestion in Yerevan and traffic collisions to increase rapidly across the country (Figure 2). The term collision is used to define the interaction between road users. A collision may involve multiple road user classes (e.g. a car and another car or a pedestrian and a car). There are more injuries and fatalities than there are collisions because many collisions have more than one casualty.

Major road safety engineering activities are starting on the road network. Traffic management arrangements (as distinct from targeted road safety measures) in urban areas, especially Yerevan, are improving but do not generally encourage lower risk driver and pedestrian behaviour.

Between 2000 and 2005, the number of collisions in Armenia increased 40%. In 2005, Armenia experienced 43 collisions per 10,000 vehicles, with 10 deaths and 58 injuries per 10,000 vehicles. With 40% of Armenia's population only, over 25% of Armenia's traffic collisions occur in Yerevan, but 75% of them involve pedestrians.

Figure 2 National collision data (1990 to 2007) with moving average trend line superimposed. Source: The Republican Police (Traffic Police)

There is a large quantity of data available, including from the police, MoH, ARD and NSS that can provide a useful indication of the collision and injury situation on Armenian roads.

A collision data analysis capacity exists within the ARD based on data provided by Police. ARD Traffic Research Group provides regular summaries of collision data on Interstate and Republican motorways.

8.2 A REVIEW OF COLLISION DATA

8.2.1 DATA QUALITY

Collision data provided by the Traffic Police, ARD and the MoH provides information on:

- Drivers and vulnerable road users
- Collision clusters (places where collisions often happen)
- Contributory factors
- Victim age
- Injury types
- Location

Collision data is recorded by police for all fatal and serious collisions, but only in paper format. This data has to be compiled, analysed and plotted onto location maps manually (Figure 3).

Figure 3 Collision data plotted on map. Source: ARD Traffic Research Group

While the data quality is relatively good, more effort is required to coordinate the data collection from all sources and integrate it into a national database. This will provide a more detailed picture of contributory factors and remedial measures.

Data collection formats require standardization between the collecting agencies in order to simplify the process of data combination and comparison. A modern GIS computer based system is required to properly store and analyse collision data.

Socio-economic costs of road collisions for Armenia have been analysed and an overall estimate prepared. The non-governmental sector in road safety is developing (in terms of stature and funding) which can provide a useful contribution which will support future effective road safety performance.

8.2.2 TRAUMA DATA (YEREVAN)

Trauma data for Yerevan collected by the MoH gives an interesting insight into the injuries suffered by the victims. Similar data may be available from the other Marzes. The injury breakdown by type of injury and class of injured also indicates high levels of multiple injuries and head trauma, more so for the vulnerable road user (Figure 4). The high level of brain injury and polytrauma, in the case of vehicle occupants, suggests a lack of use of occupant restraints (seat belts). Among VRU, the speed of impact and secondary impact with the highway and non-use of helmets could also be a factor.

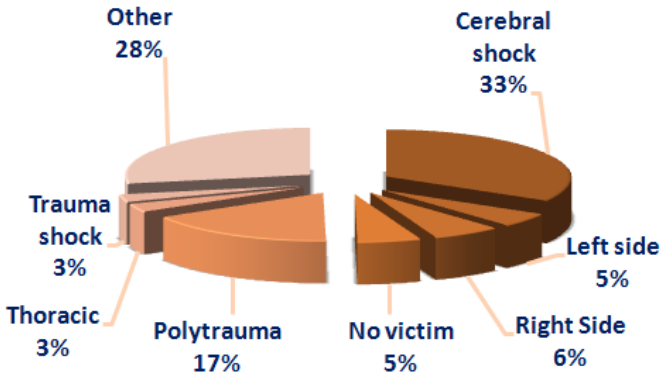

Figure 4 Injury breakdown (2006). Source: MoH Data

This data suggests at least two areas for further action and investigation:

- Use of occupant restraints (seat belts) and safety helmets
- Vehicle standard and maintenance (e.g. fitting of seat belts, vehicle primary safety)

There are clearly health related costs involved in road collisions and the data suggest that this must be a considerable drain on health resources. There are also long term health recovery costs associated with the levels of the injuries sustained, for example brain injury recovery can be a very slow process.

According to Accident Costing Method for Armenia, "Consultant Services for Road Safety Improvement" by SWECO International, June 2003, the economic costs of collisions suggest that:

- Total costs for fatal collisions 6.0 – 7.5 billion ADM
- Total costs for severe injury collisions: 14.4 – 21.7 billion ADM
- Total costs for slight injury collisions: 0.7 – 1.0 billion ADM

This gives a total of between 21 and 30 billion ADM or approximately 70 and 100 million US$ (or 1% of GDP) based on exchange rate of 300 ADM to 1 US$..

These costs do not include costs for collisions with property damage only, but these are comparatively small.

8.2.3 INJURY DATA (YEREVAN)

Pedestrian and driver injuries are distributed fairly evenly across the age ranges (Figures 5 and 6), suggesting that any education activities should encompass the whole population, not a specific group, for example children.

There is a need to review the relevant educational material in use to the current condition and assess its effectiveness.

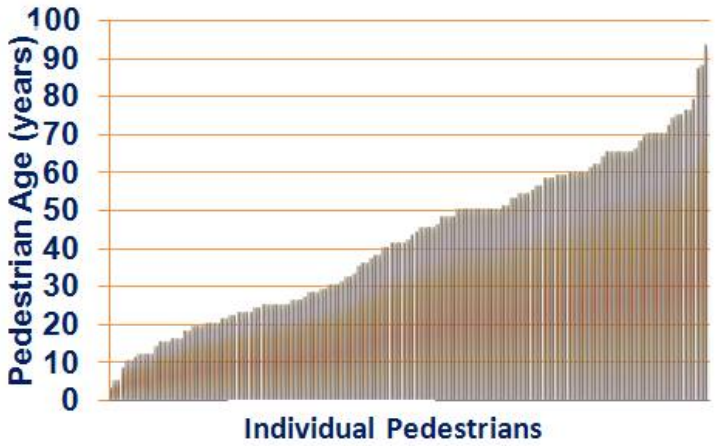

Figure 5 Age distribution of pedestrian casualties (2006). Each vertical bar represents an individual casualty. Source: MoH Data.

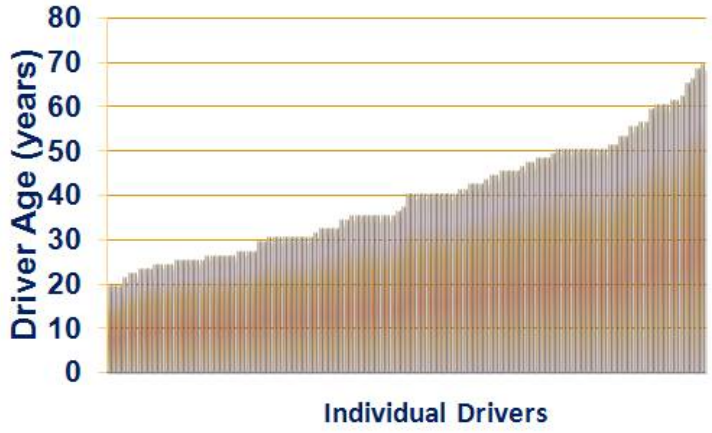

Figure 6 Age distribution of driver casualties (2006). Each vertical bar represents an individual casualty. Source: MoH Data.

Figure 7 shows the casualty data for each month of the year. The reasons for the variations are a matter for future research.

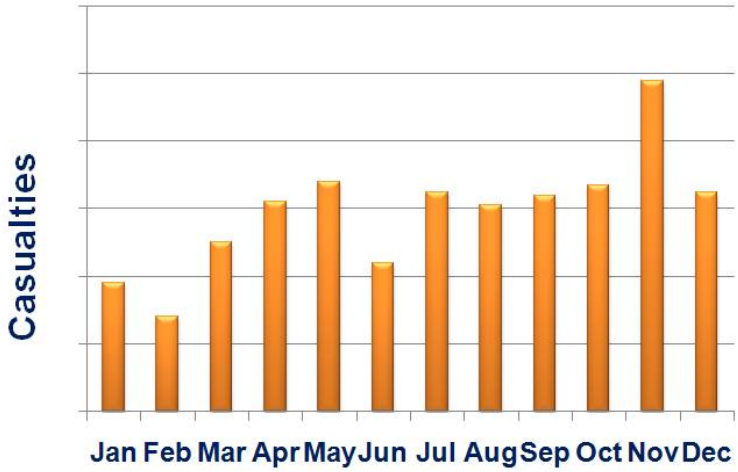

Figure 7 Casualty data by month (2006). Source: The Republican Police (Traffic Police)

8.2.4 INJURY LOCATION DATA (YEREVAN)

Both the Traffic Police and MoH data records the general location of injury collisions and enables the creation of a collision location hierarchy for prioritising investments (treatments) (Figure 8).

It should be possible to reproduce similar results for other Marzes in Armenia.

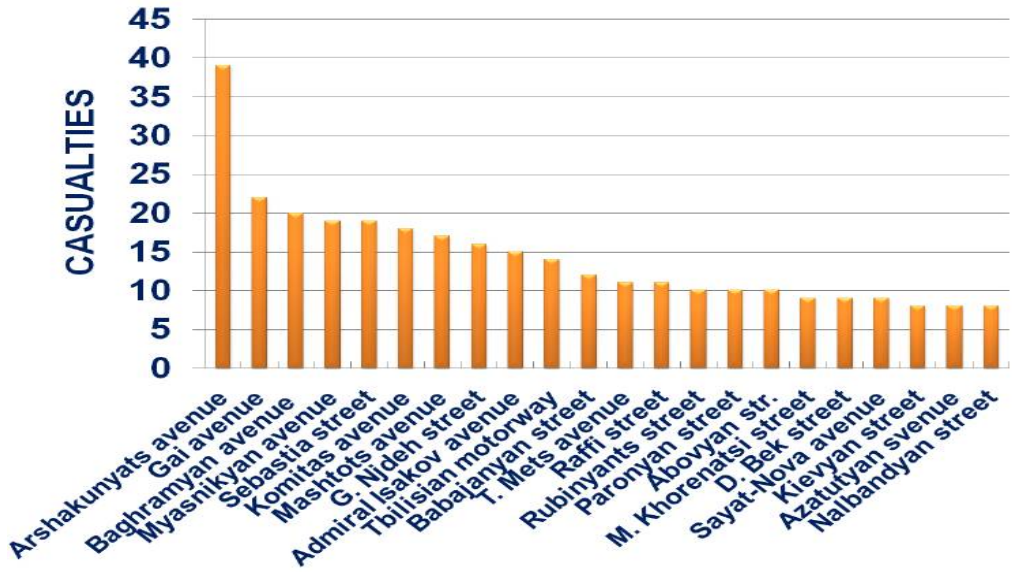

Figure 8 Injury location data on Yerevan roads (2006). Source: The Republican Police (Traffic Police)

8.2.5 CONTRIBUTORY FACTORS AND INJURY DISTRIBUTION (YEREVAN)

Traffic police data records contributory factors (Table 1). Much of this data may be based on professional judgement but for scientific purposes more data should be based upon instrumented measurements (for example permanent speed monitoring sites can give information on speeding patterns).

Table 1 Collision contributory factors (Yerevan 2005/2006). Source: Traffic Police

	Collisions		Fatality		Injury	
	2005	2006	2005	2006	2005	2006
Over-speeding	211	298	46	38	266	379
Breaking traffic rules at the junctions	20	27	1	3	29	41
Disregarding road signs and markings	56	54	9	3	76	73
Drivers' unfamiliarity with changes in markings	92	86	11	9	105	105
Driving irresponsibly	12	17	1	3	26	29
Breaking rules for crossing the road by pedestrians	18	29	2	2	17	30
Total	409	511	70	58	519	657

Collision contributory factor data is essential to creating a remedial measures programme and identifying areas where research should be undertaken. Figure 9 illustrates the number of casualties for each collision in Yerevan. The majority involve single drivers, passengers and pedestrians.

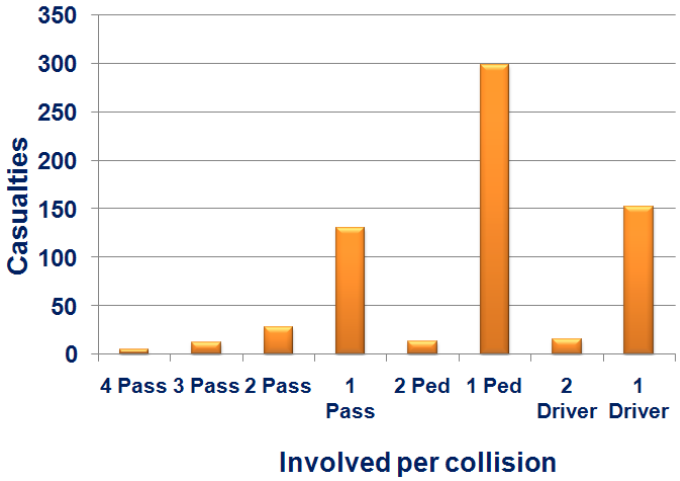

Figure 9 Number of persons injured per collision (2006). Source: The Republican Police (Traffic Police)

8.2.6 CONTRIBUTORY FACTORS (NATIONAL ROADS)

The TRG provides regular reports and analysis of Police collision data. These include collision contributory factor information for the Interstate and Republican motorways (Table 2).

Table 2 Contributory factors for collisions and casualties on interstate and republican motorways (2006). Source: ARD Traffic Research Group.

CONDITIONS	Collision	Fatality	Injury
Icy pavement	19	12	46
Slippery pavement	8	0	13
Poor visibility	21	6	46
Poor light	14	8	14
No Ped. Crossing	6	4	3
Poor signage	2	0	2
Poor highway edge	7	1	14
No crash barriers	4	1	8
Poor pavement	2	0	8
Work in progress	5	1	6
Poor road marking	2	0	2
Rail crossing	1	2	1
Trees/posts	1	0	3

These data suggests at least two areas for further action and investigation:

- Winter maintenance
- Driving in adverse weather conditions and at night.

8.2.7 VIOLATION DATA (NATIONAL ROADS)

National roads data indicating traffic violations are shown in Table 3. From this data three key issues for further investigation and action emerge:

- Speed enforcement
- Drink driving
- Driver behaviour

Table 3 Traffic violations on interstate and republican motorways (2006). Source: AARD Traffic Research Group.

VIOLATION	Collision	Fatality	Injury
Speeding	173	52	282
Signalling	30	5	68
Drunk	34	10	60
Fell asleep	16	8	19
Struck object	25	8	37
Overtaking	11	1	23
Junction	4	1	3
Close following	12	1	19
Overtaking	17	3	26
Vehicle faults	11	0	19
Passenger transport	2	0	5
Parking	1	0	1

9. STRATEGIC ISSUES

9.1 INTRODUCTION

The strategic objectives have been developed from the initial assessment of road safety institutional capacity and available road safety data.

The World Bank observed in an earlier study that, "*Effective management structure with clearly defined responsibilities for road safety is currently lacking. New arrangements need to be put in place to develop capacity to understand the road safety problem and prepare evidence-based and data-led strategies and countermeasures. While road safety management problems have been identified by government, working relationships across government, both vertically and horizontally, are poor and currently impede progress.*"

"*Against the background of very poor public respect for traffic law, effective multi-sectoral working relationships need to be established urgently at senior managerial, Director and Ministerial levels. Building on the important reforms underway, a national road safety strategy is needed to set out clear management responsibility on the part of the different government agencies and to provide for effective co-ordination arrangements with a dedicated secretariat. Road safety funding arrangements are inadequate and lack transparency.*"

A Framework document was developed to outline the elements that would guide the process that draws the stakeholders together and resulted in development of both the Road Safety Strategy for Armenia and Yerevan and the associated Five Year Action Plans.

The Road Safety Strategy for Armenia identifies the need to develop an organisation, the National Road Safety Council of Armenia and its associated Working Groups that will develop the road safety activities outlined in the Action plans. The key elements of the Strategy are:

- Secure dedicated funding for road safety
- Establish a new road safety institutional framework

- Develop an integrated national road safety database
- Improve road safety engineering quality
- Improve road safety culture
- Improve usage of seat belts
- Improve speed limit enforcement
- Road users and alcohol
- Reducing factors diverting and impacting on drivers attention
- Strengthening capacities of traffic police
- Working group training and support
- Improving mechanisms controlling the working hours and health state of drivers carring out passenger and freight traffic, and private entrepreneur drivers
- Enhancement of the role of mass media for public awareness purposes.

9.2 OVERVIEW

The first element of the strategy is to address road safety management by the formation of a new Institutional Framework to manage and delver the Strategy and Action Plan.
It will begin to address the road safety issues identified from the currently available data. As more and better quality data become available, the issues addressed will be refined.

The factors that make a strategy successful identified internationally are:

- Political commitment
- Leadership and road safety champions
- Road safety planning (goals, strategy, action plan, funding)
- Data sharing integrated information systems
- Accountable stakeholders
- Collaboration between stakeholders
- Monitoring and evaluation
- Trained and equipped staff
- Marketing, outreach and public information

Effective road safety management is characterised by three key strategic elements:

- clearly defined performance targets which are realistic and achievable,
- a comprehensive framework of integrated interventions and
- effective implementation arrangements involving key stakeholders.

Road safety management in Armenia needs a greater focus on road safety final outcomes (specifically: reducing fatalities, casualties and collisions), and appropriate interventions to achieve these casualty reductions.

Achievable and realistic targets for the reduction of road casualties have not been set and the road safety situation is not monitored as effectively as it could be.

Data sharing would be improved by introducing and using a GIS-based analysis system. This would help with the identification of individual high-risk sites throughout the network. The absence of specific road injury data sets in computerised health sector systems inhibits understanding of road injury epidemiology.

Apart from final outcomes, limited monitoring is undertaken of road safety performance including key road user behaviour. An in-depth understanding of the problems based on research and analysis of collision data is needed. Challenging but achievable final outcome targets need to be set and the underlying primary and secondary performance indicators established to help monitoring.

Current estimates of the costs to society should also be made. The World Bank Country Assistance Strategy for the Republic of Armenia (June 30, 2004) Report identifies traffic safety as an aspect of infrastructure that contributes to non-income poverty: "Transport is a major constraint….Furthermore, problems with vehicle licensing and road safety lead to unduly high numbers of traffic deaths. "

9.3 SECURE DEDICATED FUNDING FOR ROAD SAFETY

For a road safety programme to be realistically achievable, it must be balanced against income available for implementation. Sustainable funding is a key factor in the ongoing delivery of road safety. One of the ongoing tasks of the Road Safety Council of Armenia and Secretariat will therefore be to identify and secure long term funding sources.

The International donor community strongly supports road safety initiatives and the RSCA should actively try to secure and further to supplement Government funding. The Secretariat should identify options for donor funding and make proposals to the Government of Armenia to secure donor funding.

Estimates of funding required is:

1. Secretariat - $0.1m / year
2. $10 million investment over 5 years

An evaluation of domestic funding sources should also be undertaken for example, surcharges (e.g. fuel levies, vehicle insurance, loading, vehicle licensing, road tolls) and private sector funding. The study would also need to assess the level of evasion and ease of collection of such revenues.

9.4 ESTABLISH A NEW ROAD SAFETY INSTITUTIONAL FRAMEWORK

A new Institutional Framework will comprise the following components: Road Safety Council of Armenia (Board), a Secretariat and Working Groups.

Board

- The Prime Minister will act as chairman of the Board. The Board will comprise of the heads of core government institutions and NGO dealing with Road Safety, and the Mayor of Yerevan (with his consent)
-

- The Function of the Board will be mainly of a strategic nature: approving annual budgets, reviewing strategic targets and overall progress of Strategy and Action Plan
- The Board is expected to meet relatively infrequently (every 6 months).

Secretariat

- The Secretariat will have mainly an operational function and undertake a secretarial role for the Board, including organising agendas, minutes and venues, as well as coordinating working groups and ensuring they meet regularly
- It will comprise of full-time staff dedicated to the implementation of the Strategy
- Most of the Secretariat's staff will have key specialist functions so that it can also undertake an advisory/ consultative role to the Board and Working Groups. This will include updating/revising the Five Year Action Plan
- The Head of the Secretariat will be responsible for the day-to-day running of the Secretariat, and also be represented on the Board as the Board Secretary
- The Finance Manager will be responsible for managing the income and developing sustainable funding
- The Data Analyst / Statistician will act as a data co-ordinator between other government institutions (for example Road Police, Hospitals, ARD) and will be responsible for obtaining collision data and developing a common structure for collision reporting and will also be responsible for analysing and reporting on the collision data
- Statistician will be responsible for analysing and reporting on the collision data
- The Media Expert with be responsible for maintaining media interest in road safety issues and developing suitable road safety materials for the programme
- The Education specialist will be responsible for understanding the road safety issues for each road user group and developing materials to improve the behaviour and understanding of each group.

The Secretariat will be established within the ARD according to the legislation of RA. Funding for the Secretariat would be directed through the MoTC.

Working Groups

- Various Working Groups will be established to prepare and detail the road safety activities to be undertaken by the different Stakeholder organizations and will be coordinated by the Secretariat
- The nature and function of each Working Group will reflect the Strategic Issues identified in the Strategy
- Membership will comprise representatives from respective Stakeholder organisations (government institutions, NGOs. etc)
- Job Description ("Passport of Position") of Civil Servants will be revised to include contribution to the function of the relevant Working Group and therefore these members will be essentially funded from within their respective organisations
- The Working Groups will be meeting regularly. The Head of Secretariat will act as a Co-ordinator of each Working Group.

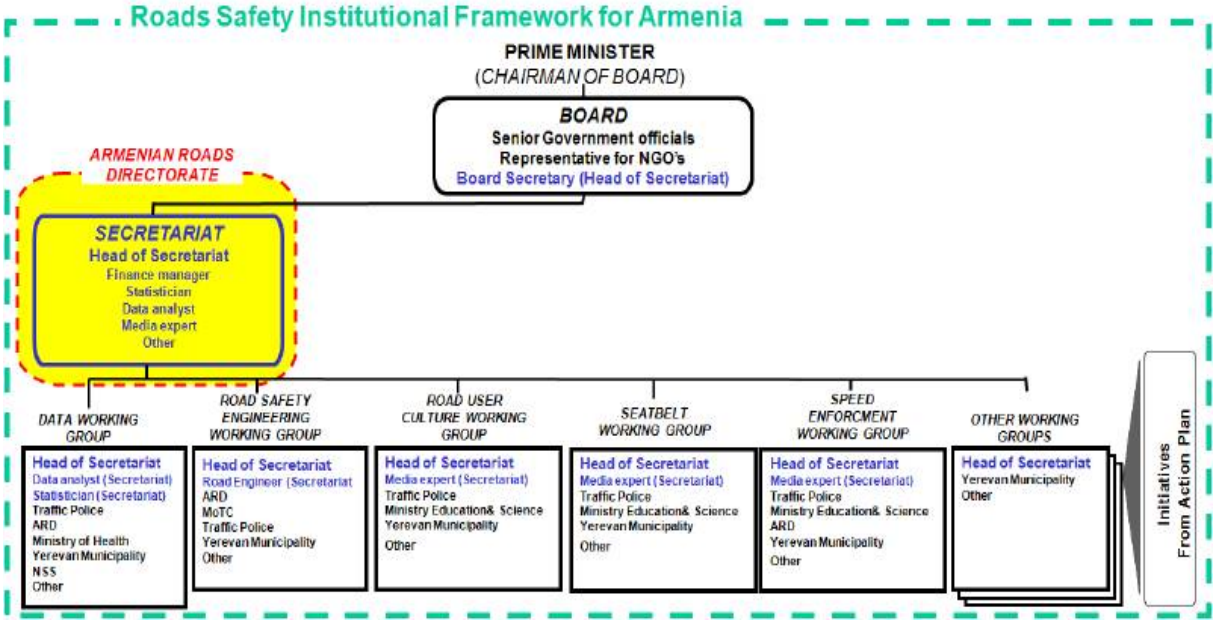

Figure 10. A new Road Safety Institutional Framework for Armenia

9.5 DEVELOP AN INTEGRATED NATIONAL ROAD SAFETY DATABASE

Collision data is available from the Police, the Roads Authority, the MoH and the Traffic Research Group. The currently available data is not integrated and the development of a national database would bring all of the available collision and injury data into a single framework for analysis. This will enable improved contributory factor analysis.

A reliable and accurate collision and injury database is essential to the process of improving road safety by:

- Accurately identifying at risk road user groups
- Targeting resources effectively and efficiently
- Setting realistic targets for collision reductions
- Setting metrics to identify effectiveness of the activities

The data Working Group will be set up to integrate and coordinate national data. The data should include:

- Traffic volume and composition
- Flow
- Speed
- Collision data
- Injury data (on the spot and hospital)
- Fatalities
- Data related to secondary indicators (fines issues, vehicles registered etc)

Improved data collection will:

1. Establish a causal relationship between collisions and a potential performance indicator;
2. Assess the policy relevance of a potential performance indicator;
3. Define a potential road transport safety problem as an indicator or set of indicators;
4. Define the results of step 3 in a measuring protocol per performance indicator;
5. Define a performance indicator measuring programme;

6. Carry out the measurements;
7. Compare results of 6 with 'targeted road safety programmes', if appropriate;
8. If possible, verify/validate the assumptions formulated in step 1;
9. Based on the outcome of step 6, modify a 'targeted road safety programme'; and
10. Report on the results of this whole process, e.g. annually.

9.6 IMPROVE ROAD SAFETY ENGINEERING QUALITY

The quality and standard of road infrastructure is varied across Armenia, especially on non-highway/republican roads, where it is generally lower than good European practice. On city roads, which contribute the highest numbers of fatalities, there is little evidence of road safety engineering. Here there is a general lacj of key road furniture, lane and other road markings, pedestrian and public transport user facilities. Road design standards are relatively new and are a combination of Russian and older Soviet standards. Some standards for road signs however differ from those for Europe.

All road designs have to be approved by the traffic police. They have a 'road safety audit' team who have to inspect and approve all highway design drawings. However, the team aren't always able to comment on all designs (due to limited staff), and the auditors only check for correctness of designs.

Although designers do incorporate road safety measures their designs for new and rehabilitation schemes, budget constraints limits the amount of safety aspects that can be incorporated, therefore only the most important ones are considered including guardrail, road signs and markings.

The Engineering Working Group will promote improvements in road safety engineering, identifying appropriate tools and training.

Sample indicators: Improvement in safe road design by enhancing standards (particularly in relation to road signs) and road safety audit processes, and by providing more funding for incorporation of road safety measures.

9.7 IMPROVE ROAD SAFETY CULTURE

Developing a national road safety culture will significantly help improve road safety. This will be done by undertaking a national behavioural change campaign targeting all road user groups:

- Drivers
- Passengers
- Pedestrians
- Cyclists
- Motorcyclists

The first stage of this process will be to understand the current situation by surveying public attitudes and understanding. An assessment will also be required to assess the quality of currently available road safety education material, especially that which is used in school programmes. Following this targeted education campaigns can be developed.

An inventory of pedestrian facilities and associated casualties should also be conducted in order to identify effective remedial measures.

Sample indicators: Improvement in public knowledge of safety issues, reduction in injuries and collisions by adopting safer behaviour (detailed in other activities, safer behaviour at junctions or at pedestrian crossings, increase in use of pedestrian crossing facilities (by pedestrians), increase in use of cycle/motorcycle helmets.

9.8 IMPROVE USAGE OF SEAT BELTS

There is a very low level of seat belt wearing in Armenia, despite it being compulsory. Many vehicles, especially old Soviet manufactured taxis do not even have them fitted. An indication of the failure to wear seat belts can be seen in the nature of driver collision injuries (thoracic and cerebral).

Improving seat belt compliance for drivers and passengers can yield a large reduction in injury severity.

Implementation of a seat belt programme would be developed using international good practice manuals.

The first phase of the strategy to improve seat belt wearing levels will be to assess the current wearing levels. This will form the baseline from which improvements can be measured.

In order to sustain the benefits of a seat belt programme, it must be continued for at least the duration of this strategy and into the next five year strategy.

A key factor in the effectiveness of the seat belt programme is the support and involvement of the traffic police in enforcing seat belt wearing. The Road Safety Council of Armenia will need to develop a close working relationship with the police.

Sample Indicators: Increase in usage of seat belts and child car seat and reduction in specific non-wearing related injuries.

9.9 REDUCE FACTORS DIVERTING AND IMPACTING ON DRIVERS ATTENTION

Speaking on the phone and smoking when driving are the factors which divert the drivers attention, thus endangering the life and health of all road users. The first stage of the programme will be to establish its exact contribution to collisions and injuries. This would involve the cooperation of the traffic police and the MoH.

This would involve a behavioural change campaign.

Sample Indicators: Reduction of the number of collisions and injuries coupled with reducing speaking on the phone, smoking and other attention diverting factors when driving.

9.10 IMPROVE SPEED LIMIT ENFORCEMENT

The effect of speed enforcement and lower speeds on collision and casualty reduction is well documented (The effects of drivers' speed on the frequency of road accidents. M C Taylor, et al TRL REPORT 421). There are also international good practice manuals available to guide the implementation and conduct of a speed management programme.

In order to develop a successful strategy, permanent and temporary monitoring sites will be required to identify levels and patterns of speeding. Monitoring locations will enable:

- Identification of longer term speeding trends
- Locations where additional enforcement is required and when to enforce
- A broader picture of traffic activity

Speed enforcement will require the strong cooperation of the Traffic Police.

Sample Indicators: Reduction in speeding, with respect both to (a) mean speed, (b) speed variance, and (c) percentage of speed limit violations.

9.11 ROAD USERS AND ALCOHOL

Alcohol is considered to be a key factor in collisions. The first stage of the programme will be to establish the exact contribution of alcohol to collisions and injuries. This would involve the cooperation of the traffic police and the MoH (Hospital data)

This would involve a behavioural change campaign.

As with Seat Belt wearing and Speed management, there are existing international good practice manuals to inform and guide the programme.

Sample Indicators: Behavioural changes coupled with reduction in alcohol related collision casualties.

9.12 IMPROVE MECHANISMS CONTROLLING THE WORKING HOURS AND HEALTH STATE OF DRIVERS CARRING OUT PASSENGER AND FREIGHT TRAFFIC, AND PRIVATE ENTREPRENEUR DRIVERS

Control over drivers working hours and health state currently is a significant issue. Cases are known when drivers work in 12-24 hour operating schedule without week-ends. Another issue is their health state examination. All these circumstances can endanger the life and health of all road users. The first stage of the programme will be to recommend improving measures for control over drivers' working hours and health state. This would involve the cooperation of Police, the MoH, the MoTC and the Labor Inspectorate of Armenia.

As with Seat Belt wearing and Speed management, there are existing international good practice manuals to inform and guide the programme.

Sample Indicators: Reduction of the number of collisions and injuries coupled with improving mechanisms of control over drivers' working hours and health state.

9.13 STRENGTHENING CAPACITIES OF TRAFFIC POLICE

The Traffic Police are a key agency for the successful delivery of road safety. The Traffic Police have begun implementing a GPS based police vehicle tracking system developed in Armenia and many of the patrol vehicles are fitted with a video/radar based enforcement system.

The Traffic Police have been deploying equipment but not enough to equip all officers. It is necessary as a first part of the development of the strategy to assess needs and identify:

- Produce an inventory of equipment requirements (Speed guns, breathalysers, GPS locators for collision plotting etc)
- Identify additional staffing levels to fully enforce existing legislation (speed, alcohol, seat belts)
- Identify special training needs (e.g. safety audit and collision investigation).

The Traffic Police would benefit from a wider training programme on Traffic Policing issues by developing links with other European Forces by:

- Identifying European residential police training courses
- Instituting a regular training programme on road safety issues.

The legislation will require reviewing and changing as necessary to allow the satisfactory prosecution of offenders (i.e. updating legislative instruments (supporting enforcement)).

9.14 WORKING GROUP TRAINING AND SUPPORT

As an important step to initiating the Road Safety Strategy it is recommended that a training programme is implemented In order to assist the Working Groups and stakeholders gain a detailed understanding of the fundamental issues of road safety. Training workshops should include:

- General principles of road safety
- Key issues of road safety (Speed, Vulnerable road users, Seat belts, Alcohol)
- Traffic Police involvement and publicity
- Collecting baseline data
- Measuring effectiveness
- Collision monitoring
- Monitoring vehicle speeds and evaluation of traffic speed data
- Flow monitoring, monitoring pedestrian movements
- Attitude surveys, Road user surveys, evaluation of public perception
- Evaluation of collision changes
- Remedial treatment selection

The Strategy recommends the use of published international good practice manuals. Provision should be made to translate these documents into the Armenian language immediately.

Consideration should be given to external expert support/consultancy to provide advice and support during the early stages of the implementation of the Strategy.

10. ACTION PLAN FOR ARMENIA AND YEREVAN

The Action Plan identifies the steps that must be taken, or activities that must be performed well, for the strategy to succeed. The Action Plan has the following elements:

- Specific tasks: what will be done and by whom.
- Time horizon: when will it be done.
- Resource allocation: what specific funds are available for specific activities.
- How the activities will be evaluated and reported.

System Elements of the Action Plan are:

- Establish the Road Safety Council of Armenia and Secretariat
- Working Groups
- Working Group Support
- Secure dedicated funding for road safety
- Data Management and develop an integrated national road safety database
- Strengthening capacities of traffic police
- Promote road safety engineering quality
- Improve road safety culture
- Improve usage of seat belts
- Improve speed limit enforcement
- Road users and alcohol
- Yerevan

Each "**System Element**" relates to the "**Strategic priorities for next 5 years"** as outlined above (in Strategic Issues). Each Strategic Issue is broken down into an "**Action Plan for next 5 years**" which details the specific activities required to be conducted for the success of the strategy. "**Performance Indicators**" allow each activity in the Action Plan to be assessed for the measure of its success.

The Action Plan shows indicative funding only for each system element (under **"Recommended funding"**). Accurate funding requirements can only be determined once the Working Groups, acting under the Secretariat, have each produced detailed costed Project Plans for submission, through the Secretariat, to the appropriate stakeholder agencies for implementation. The system elements involving seatbelts, speed and alcohol have been estimated using a value of between $0.50 and $1.00 per capita. A breakdown of the operational cost for the Secretariat is shown in Appendix 4.

Figure 11 shows a cycle for a Speed Management Programme as an example of typical project. It is a "cycle" because the output reports at the close of the cycle are used to refine the development of future activities in a subsequent work programme.

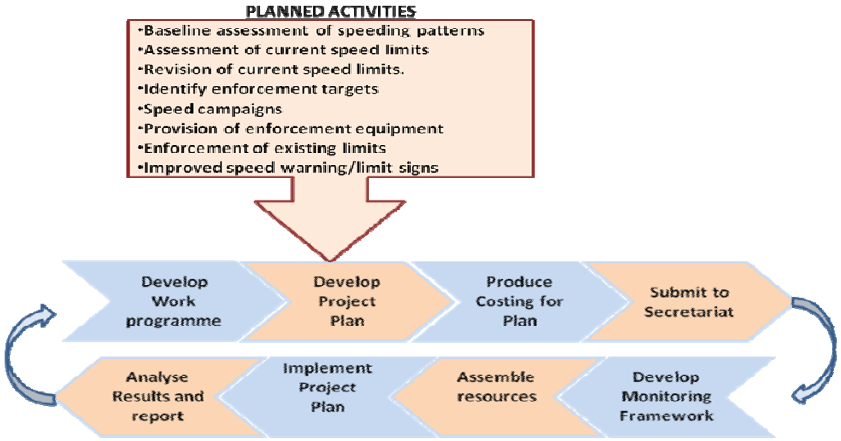

Figure 11 Example of project cycle for a speed management programme

Below is presented the Action Plan for next 5 years.