



ROAD SAFETY IS NO ACCIDENT

– Synthesis Report of four Working Groups on
Education, Enforcement, Engineering and Emergency Care constituted under
the National Road Safety Council



Ministry of Road Transport and Highways
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Preface¹

Road safety is both a health and development issue of concern. Road accidents are a human tragedy. It involves high human suffering and monetary costs in terms of untimely deaths, injuries, loss of potential income, etc. Although we have undertaken initiatives and are implementing various road safety improvement programmes, the overall situation as revealed by data is far from satisfactory.

Road traffic accidents are amenable to remedial action. Many developed countries have witnessed a drop in road accidents and casualty numbers, by adopting a multi-pronged approach to road safety that encompasses broad range of measures, such as traffic management, design and quality of road infrastructure, safer vehicles, law enforcement, provision of accident care, etc. The challenge for us is to adapt and evaluate these approaches to suit our needs.

We have accumulated considerable experience in the formulation and implementation of road safety. However, the Government alone cannot tackle road safety problems. Active involvement of all stakeholders to promote policy reform and implementation of road safety measures is a must. Addressing road safety in a comprehensive manner necessitates the involvement of multiple agencies/sectors such as health, transport and police. Therefore, a coordinated response to the problem is imperative. Experience in developed countries indicates that deaths and injuries can be prevented through affirmative action.

It is now globally accepted that addressing holistically the shortcomings in four accident-causing areas, namely, Engineering, Enforcement, Education and Emergency care, offers

¹ The Ministry of Road Transport & Highways (MORTH) gratefully acknowledges the contribution and effort of Shri Pradeep S. Mehta, Secretary-General, Consumer Unity and Trust Society (CUTS) International in preparing this consolidated report incorporating issues and recommendations of Working Groups on Education, Enforcement, Engineering and Emergency Care on Road Safety, constituted by the MORTH.

the best solutions. Acknowledging this, the Road Safety Cell of the Ministry of Road Transport & Highways (MoRTH) vide its order number RT-25014/3/2011-RS dated April 11, 2011 constituted Working Groups on each of them.

While the Executive Summary in section one encapsulates the major findings of the four Working Groups, I take this opportunity to reiterate the most important factors and the key messages.

National Road Safety Day on 11th May

National Road Safety Day be adopted on May 11 to coincide with the launch of the Decade of Action for Road Safety (2011-20) proclaimed by the United Nations General Assembly in March 2010 to start on May 11, 2010 which calls upon member States to implement the activities in a holistic manner. The National Road Safety Day can start on May 11, 2012 and the interim period could be used for preparing for the same. The guiding principles for this Decade of Action are those espoused in the ‘safe systems’ approach (please see 1.1.1 and 1.1.2). The timing of this endeavour is also relevant considering India’s high ranking in terms of road accidents that were close to half a million with more than 1,34,513 fatalities in 2010 and catastrophic economic burden in terms of loss of life of the main bread earner leading to lower living standards and poverty, besides the human costs of bereavement.

Need for a policy

International best practices reveal that most countries have a stated policy to reduce road accidents, fatalities and injuries. In fact, the Sundar Committee has reviewed and suggested certain amendments in the draft for adoption by the Government of India *inter alia* making a commitment to reduce morbidity and mortality through road accidents.

Recognition of the fact that funds are needed

Existing resources and systems cannot cope with the growing menace. Sub sections 1.4.1 and 6.2 of this report list various suggestions. The suggestion of the Committee on Infrastructure headed by the Prime Minister had suggested long back that a Road Safety Fund should be created by levying a cess of one percent on sale of diesel and petrol.

Nodal agency

The lack of an appropriate institutional set up at both Central/State level and coordination often results in varying application of rules. Tamil Nadu, for instance has adopted a State Road Safety Policy, a State Road Safety Council and a Road Accident Management System – all excellent working institutions.

Improving Data Reporting System

The data collection system needs reform and strengthening by capturing disaggregated data on the cause(s) of accidents. This should then be used in greater detail for each of the four Es of road safety. The report makes reference to a beginning made by Tamil Nadu. To do so, a high level of investment in technology would be required.

Catch them young

For a country with scant regard for discipline, road safety must be brought in the curriculum of schools as a part of a package on life/value education rather than as an individual. Taking just one issue to the over-burdened child will not bear adequate fruits, and hence road safety should be part of an innovative package of life skills. Road safety issues must be taught to each age group in a structured way to dovetail with other skills such as environment, consumer and health. This would have a cascading effect considering the pressure children can exert on their parents specifically.

Targetting drivers....

The campaign for a road safety decade of action should begin by look at drivers as a priority target to focus upon through better licencing systems, and enforcement along

with training and education. It needs mention that 78 percent of accidents are caused due to drivers' fault, hence this suggestion.

Ready availability of actionable studies

Over the years, many experts and committees have analysed all the issues surrounding road safety. The time now is for action. Section seven illustrates some such studies available. The need is for the government to analyse each of such studies, see what action (if any) has been taken and then draw up an action plan.

Executive Summary

1.1 Background

1.1.1 Launching 2004 as the ‘Year of Road Safety’ and the World Health Day, the United Nations General Assembly (UNGA) coined the slogan ‘Road Safety is no Accident.’ Seven years later, the year 2011 marks the beginning of the Decade of Action for Road Safety (2011-20) as proclaimed by the UNGA in March, 2010. The proposals emanating from the international community seek concerted efforts across all societies to address the growing road safety crisis. It proclaimed, ‘the period 2010-2020 as the Decade of Action for Road Safety with a goal to stabilise and then reduce the forecast level of road traffic fatalities around the world by increasing road safety activities conducted at the national, regional and global levels.’

1.1.2 The guiding principles for the Decade of Action for Road Safety are those espoused in the “safe system” approach. This approach aims to develop a road transport system that is better able to accommodate human error and take into consideration the vulnerability of the human body. The goal of a “safe system” is to ensure that accidents do not result in fatality or serious human injury. Road users, vehicles and the road network are addressed in a holistic manner through a wide range of traditional and newer approaches.

1.1.3 Closer home, in India, during the period mentioned above (2004-2011), road safety did engage attention of the policy makers. On January 13, 2005, the Cabinet Committee on Infrastructure headed by the Prime Minister directed the Ministry of Road Transport & Highways (MoRTH) to present a note to the Empowered Committee of Secretaries for creation of a Directorate of Road Safety and Traffic Management. MoRTH constituted a Committee under the Chairmanship of Shri S Sundar, former Secretary, Surface

Transport, the same year. The Committee submitted its report in February 2007. The recommendations of the Committee have not borne fruit till date. Creation of a Board has run into trouble with the Parliamentary Standing Committee to which the Bill on National Road Safety & Traffic Management Board was referred recommending that the same be withdrawn. The Committee observed *inter alia* that the law should not be restricted to national highways but should cover all roads in the country.

1.1.4 In the meanwhile, numerous studies on road safety had been conducted by various experts (please see details in Section 7). The latest attempt made by the Road Safety Cell of MoRTH in April 2011 is creation of four Working Groups to address the 4Es critical to road safety, namely, Engineering (roads and vehicles), Enforcement, Education and Emergency medical services as decided in the 12th National Road Safety Council meeting held on March 25, 2011. This report synthesises the reports of the four Working Groups.

1.2 Special Environment in India

1.2.1 India is a country of continental dimensions encompassing diversity in terms of geography, terrain, climate, language, rural urban divide, language and culture. Therefore, “one size fits all” approach may not be appropriate in addressing the road safety issues. Developed countries with high levels of urbanisation, education and common language are more suited for a uniform approach and strategy. In India, the road safety approach has to shed its urban-centric bias to address the issues and challenges in the rural and remote areas as well. Therefore, the content, emphasis, medium and focus might have to be different across regions and in local idiom and language.

1.2.2 Road users in India are heterogeneous in nature – ranging from pedestrians, animal-driven carts, bicycles, rickshaws, handcarts tractor trolleys, and the illegal jugads in some states, to various categories of two/three wheelers,

motor cars, buses, trucks and multi-axle commercial vehicles, etc. Limited road space has further exacerbated the problem.

1.2.3 India's somewhat indifferent record of road safety is due to several factors.

The road network has developed historically from the point of view of providing accessibility rather than mobility. Attendant road deficiencies make it extremely difficult to provide all the desired safety features on the existing network.

1.2.4 A Working Group set up by the Planning Commission in the year 2000 had estimated the cost of road accidents at Rs 55,000 crore, which constituted three percent of the GDP for the year.

1.2.5 An analysis carried out for the year 2010 shows that the main causes of road accidents are: drivers' fault (78.0 percent); pedestrian fault (2.7 percent); mechanical defect in vehicles (1.7 percent); bad roads (1.2 percent); and other factors (16.4 percent). These figures lay down the priorities – that need to be addressed without further loss of time.

1.2.6 In India the total useful life of vehicles is very high and, therefore, periodic inspection of in-use vehicles for compliance with safety and emission norms is very important. A beginning has been made but we still have a long way to go.

1.2.7 India contributes to eight percent fatalities with only one percent vehicle population. Age profile of the accident victims in 2010 showed that the 25-65 year age group accounted for 53.1 percent of total road accidents followed by 15-24 year age group with a share of about 32.4 percent. Amongst the vehicle category – two-wheelers accounted for the highest share of accidents – 23.8 percent followed by trucks, tempos, tractors and other articulated vehicles at

23.3 percent, cars; jeeps and taxis 21.8 percent; buses 9.5 percent; auto rickshaws 7.3 percent and other motor vehicles 7.8 percent.

1.2.8 The problems at the site of impact arise from lack of awareness about Emergency Medical Service (EMS) System; lack of basic first aid skills; non availability of standardised toll free national access number to call for medical help; lack of adequate number of first respondents/ambulances and lack of standardised protocols and medical directives for EMS. Similar problems are faced during transit and at the healthcare facility.

1.3 Haddon Matrix

Notwithstanding the special environment prevailing in India, the Working Group on Engineering (Vehicles) has referred to the **Haddon Matrix** which gives an analytical approach towards the factors influencing Road Safety.

Phase	Human	Vehicles/Equipment	Environment
<i>Pre Crash (Crash Prevention)</i>	<ul style="list-style-type: none"> • Information • Attitude • Impairment • Police Enforcement 	<ul style="list-style-type: none"> • Roadworthiness • Lighting • Braking • Handling • Speed Management 	<ul style="list-style-type: none"> • Road Design and Road Layout • Speed Limits • Pedestrian facilities
<i>Crash (Injury Prevention during the crash)</i>	<ul style="list-style-type: none"> • Use of Restraints • Impairment 	<ul style="list-style-type: none"> • Occupant Restraints • Other Safety Devices • Crash Protective Design 	<ul style="list-style-type: none"> • Crash-protective Roadside objects
<i>Post Crash</i>	<ul style="list-style-type: none"> • First-aid skills • Access to Medics 	<ul style="list-style-type: none"> • Ease of Access • Fire Risk 	<ul style="list-style-type: none"> • Rescue Facilities • Congestion

1.4 Key Messages

The key messages have been segregated in two parts, namely, those that can be implemented within the existing resources (or with a small dose of additional resource) and those that require substantial additional resources. However, even those shown as

being implementable within existing resources do have financial implications in the long run.

(A) Those that can be implemented within existing resources

1.4.1 Resources – Funding

1.4.1.1 A perusal of all the reports shows that there is very little that can be done with the existing resources. Most of the suggestions involve substantial expenditure. This has been specifically recognised by the Working Groups on Engineering – Roads; Education and Enforcement. These Groups have identified various sources for raising funds to meet expenses (please refer to 6.2).

1.4.1.2 The problem of funding is paradoxical – on the one hand the allocations are meagre as compared with other killer diseases and on the other even the meagre allocations remain under-spent. The two tables below further clarify the paradox.

Disease-related Mortality and Plan Allocation

Diseases	Number of deaths	Centrally Sponsored Schemes	Outlay Xth Plan (2002-2007) (Crores Rs.)
Tuberculosis	37,639 (2004)	National TB Control Programme	680
Malaria	638 (2005)	National Vector Borne Diseases Control Programme (including Malaria, Kala-Azar, Filariasis, Dengue and J.E.)	1370
AIDS	1094 (8286 cumulative till 2005)	National AIDS Control Programme including Blood Safety Measures and National S.T.D. Control Programme	1270
Road Crashes	92,618 (2004)	No significant scheme	187

Sources: <http://www.indiastat.com/India/ShowData.asp?secid=16&ptid=0&level=1m>; Ministry of Shipping Road Transport and Highways (2006) & 10th Plan Document (http://planningcommission.nic.in/plans/planrel/fiveyr/10th/volume2/v2_app.pdf)

Funds Allocated and Spent on Road Safety Activities (Crores Rs)

Year	Funds Allocated	Funds Spent (in figures and percent to total allocation)
2004-05	39.70	34.99 (88%)
2005-06	43.05	29.70 (69%)
2006-07	47.00	43.25 (92%)
2007-08	52.00	42.87 (82.4%)
2008-09	73.00	54.89 (75.1%)
2009-10	79.00	22.39 (28.3%)
2010-11	81.00	58.06 (71.68%)

Source: Road Safety Cell, MoRTH

1.4.1.3 In the recent budget for 2011-12 the Government of India has proposed about Rs 27,000 crore for road transport, up from Rs 20,000 crore in the previous year. Amount earmarked for road safety, in comparison, appears miniscule.

1.4.1.4 The Committee on Infrastructure had suggested that a Road Safety Fund be created by earmarking one percent (to be collected as a cess) on total proceeds on sale of diesel and petrol to be used for road safety and this be shared with the states on the basis of performance (as in the case of electricity and urban development). Other suggestions include budgetary allocations, private sector contribution (maybe under corporate social responsibility) including from the automobile manufacturers, oil companies, insurance companies, etc. Part of the fines collected for traffic violations could also be earmarked for road safety.

1.4.1.5 Much of what has been proposed can at least be put in place for implementation within the existing resources.

1.4.2 National Road Safety Policy

International best practices reveal that most countries have a stated policy to reduce road accidents, fatalities and injuries. A Road Safety Policy approved by the

Cabinet is in place. However, since Road Safety is a State subject its implementation rests with the respective State Governments.

1.4.3 Nodal Agency

1.4.3.1 The section on ‘Cross Linkages with other Working Groups’ throws up a wide spectrum of issues that extend beyond the remit of the Working Groups. 6.7 and 6.9 of this synthesis report details the large number of ministries, departments (both Central and state level) and other institutions working (in an uncoordinated manner). Creation of more such individual agencies/bodies have been suggested by the Working Groups. Creation of a centralised nodal agency has been long pending like the one proposed under the National Road Safety Policy. Resolution 60/5 of the UNGA and agenda item 12.7 of the 57th World Health Assembly (international agencies of which India is a member) have also recommended this.

1.4.3.2 The authors of a seminal work on the subject conclude that ‘the experiences of many countries at various levels of motorisation suggest that strategies for reducing traffic injuries will be effectively applied only if there is a separate government agency which is given not only the responsibility, but also the authority and level of funding necessary to plan and implement its programme.’² This has also been cited in the Sundar Committee report.

² Trinca, GW, Johnston, IR, Campbell BJ, Haight FA, Knight PR, MacKay GM, McLean AJ and Petrucelli E (1998) *Reducing Traffic Injury – A Global Challenge*. Royal Australasian College of Surgeons, Melbourne.

Actions for road safety: What governments can do

- Make road safety a political priority.
- Institutional development.
- Appoint a lead agency for road safety, give it adequate resources, and make it publicly accountable.
- Develop a multidisciplinary approach to road safety.
- Set appropriate road safety targets and establish national road safety plans to achieve them.
- Support the creation of safety advocacy groups.
- Create budgets for road safety and increase investment in demonstrably effective road safety activities.

1.4.3.3 The Standing Committee on Transport, Tourism and Culture (Chairperson: Shri Sitaram Yechury) tabled its 160th Report on “The National Road Safety and Traffic Management Board Bill, 2010” on July 27, 2010. The Bill had been introduced in the Lok Sabha on May 04, 2010.

1.4.4 Legislative Reforms

1.4.4.1 This issue has been discussed in detail in 6.3 of this report. Reforms are needed in the Motor Vehicles Act (MVA), 1988; Central Motor Vehicles Rules (CMVR), 1989; Damage to Public Property Act and State-level legislations. The amendments can be carried out within the existing resources.

1.4.4.2 Suggestions for amendments in the MVA, 1988 mainly propose higher fines and compensation with regard to injury, death, hit-and-run cases, increase in limits of notional income, compensation to gratuitous passengers, etc. Insurance against third party has been recommended to be made one-time with stricter requirements for issue of driving licences.

1.4.4.3 CMVR also needs amendments with regard to fitness certificate of both transport and non-transport vehicles, registration of only those ambulances and rescue vehicles that meet the national ambulance code, etc.

1.4.4.4 The Damage to Property Act should be amended to include provision of registering mandatory criminal cases against transporters, the consignor and the consignee found guilty of overloading commercial vehicles thereby damaging public roads.

1.4.4.5 State Motor Vehicle Taxation Rules need to be amended to accommodate the need for periodic fitness certificate of personal vehicles instead of the one-time tax for life.

(B) Those that require additional resources for implementation

1.4.5 Road Accident Data and Use of Technology

Improvement and computerisation of accident-related data, data management and use of technology admittedly require high investments and development of related infrastructure, yet recognition of this essential inter-disciplinary solution should be driven by the government at the national level with centralised and common software. Improved collection of accident data, its analysis and disaggregation is needed to address scientific strategies. Technology also needs to be relied upon for traffic management through CCTVs, variable messaging, video analytics, interaction with traffic police, use of GPS for speed monitoring etc. The Intelligent Transport System (ITS) has also been referred to for adoption. A well thought out strategy is called for.

1.4.6 Issuance and Renewal of Driving Licences

A high percentage of road accidents have been diagnosed as occurring due to the drivers' fault (78 %). This needs a two pronged approach: a) controlling and monitoring issuance and renewal of driving licences is the most potent singular

action that can drastically reduce road accidents and needs to be strengthened. Two-wheelers account for about 23.8 percent of all road accidents followed by trucks, tempos and tractors at 23.3 percent and cars, jeeps and taxis at 21.8 percent. Driving licences for these categories of vehicles need to be prioritised.

However, solutions have financial implications including the need for rigorous implementation and enforcement. A more comprehensive test of skills before issuance (and renewal thereafter); making it mandatory for first-time applicants to have received basic training for driving from approved institutes; digitisation of driving licences at national level to prevent multiple issue of the same from different authorities; severe deterrent action against drunken driving by suspension of licences, etc are some of the measures that have been specified. Many of these are connected with the need for upgrading technology referred to above.

The second approach should be to target well designed and relevant awareness campaigns on drivers to change their habits and be aware of the damage that they are causing to themselves and the society. This aspect has been dealt with in some detail in the Working Group on Road Safety Education at para:

1.4.7 Inspection of In-use Vehicles

There is a thin line between driver's fault and mechanical malfunction/failure. Inspection of in-use vehicles periodically and issuing certificates (for even personal vehicles) and setting up end of life and waste management thereafter has been proposed. The institutional structure required calls for mammoth investments. The structure has been detailed in 4.2.3 of this report.

1.4.8 Miscellaneous

1.4.8.1 Measures such as road marking and signages, road safety audits, review of standards/guidelines, modification of bid documents to include safety-related

actions as paid rather than incidental, etc need to be extended to all national and state highways.

1.4.8.2 Enforcement measures like checking of overloading in commercial and passenger vehicles, use of safety devices such as helmets and seat belts, speed calming measures, development of wayside amenities, etc have also been mentioned.

1.4.8.3 Emergency medical care solutions centre around review and extension of existing schemes such as National Highway Trauma Care Project, National Highways Accident Relief Services Scheme, Incident Management and Emergency Medical Services with a long term goal of assured essential emergency care to all citizens of India.

1.4.8.4 Research and development activity has been proposed by a number of Working Groups to cover various areas of road safety.

1.4.9 Education – the Common Thread

A major cross-cutting requirement in most solutions that have emerged pertains to Education on various aspects of road safety. The Strategic Framework for Road Safety document of the Department for Transport, UK – a country which has an enviable record in road safety – concentrates on developing solutions best suited for their communities by empowering citizens.

While the Working Group on Education (4.4.1) has specified short term/immediate actions that can be taken, long term measures include:

- strengthening the institutional setup;
- involvement and cooperation between insurance, automobile manufacturers and the government;
- promoting public-private partnerships;

- promoting public transportation;
- developing school curriculum on road safety skills as a part of package on life/value education;
- community education and media sensitisation and
- dissemination of information.

1.4.10 Conclusion

Much of what has emerged is already available with the MoRTH through preceding studies, committee reports, etc. Clearly, the demand is for action.

Synthesis Report

- 2.1 In pursuance of the decision taken in the meeting of the 12th National Road Safety Council held on March 25, 2011, it was decided to constitute separate Working Groups on each of the 4Es of Road Safety, namely, Engineering, Enforcement, Education and Emergency care. The Road Safety Cell of the MoRTH, vide its order number RT-25014/3/2011-RS dated April 11, 2011 constituted the said Working Groups, the details of which can be found in the individual original reports of the Working Groups annexed.
- 2.2 All the four reports of the Working Groups were eventually received on October 21, 2011. Chairman of one of the Working Groups (on Education), Shri Pradeep S Mehta of Consumer Unity & Trust Society (CUTS) suggested to the MoRTH that a meaningful way forward would be to consolidate the four reports. Such a synthesis report would be needed to facilitate discussions and chalk out an action plan. This report is an outcome of this background.
- 2.3 The common Terms of Reference (ToR) drawn up by the MoRTH for all the Working Groups in its order cited above, *inter-alia* laid down:
- 2.3.1 Each Working Group will define the respective problematic area (with reference to road safety) and layout the macro and micro dimensions with potential solutions.
- 2.3.2 Suggest strategic steps for immediate implementation.
- 2.3.3 To identify critical issues.

2.3.4 To fix targets and goals, both short term and long term ones, which could be implementable within the available manpower, resources and existing system.

2.3.5 To suggest best practices being followed by various organisations, NGOs, state governments or abroad in effectively controlling road accidents for their implementation in the country.

2.3.6 Cross linkages with other Working Groups.

**Problematic Areas and Critical Issues:
Micro and Macro Dimensions with Solutions**

3.1 Engineering (Roads)

3.1.1 Accidents and fatalities on roads are the result of interplay of a number of factors. Road users in India are heterogeneous in nature – ranging from pedestrians, animal-driven carts, bicycles, rickshaws, handcarts and tractor trolleys to various categories of two/three wheelers, motor cars, buses, trucks and multi-axle commercial vehicles, etc.

3.1.2 The vehicle population has been steadily increasing with the pace picking up significantly since the 1980s. Limited road space has further exacerbated the problem.

3.1.3 During the year 2010, 1,34,513 persons were killed and 5,27,512 persons were injured in 4,99,628 reported road accidents in the country. These numbers translate into one road accident every minute and one road fatality every four minutes. In terms of road fatalities, India has the dubious distinction of being at the top amongst all nations.

3.1.4 Data in respect of accidents is initially reported to the Police station concerned and subsequently compiled for the district and the state. The states compile the same annually (January to December). At present there is no system of scientific investigation, recording, and analysis of database related to accidents in the country. Therefore, the efficacy of improvement measures taken up are at times difficult to prioritise and the matter assumes even more significant in the light of budgetary constraints.

- 3.1.5 An analysis carried out for the year 2010 shows that the main causes of road accidents are: drivers fault (78.0 percent); pedestrian fault (2.7 percent); mechanical defect in vehicles (1.7 percent); bad roads (1.2 percent); and other factors (16.4 percent).
- 3.1.6 A Working Group set up by the Planning Commission in 2000 had estimated the cost of road accidents at Rs 55,000 crore, which constituted three percent of the GDP for the year.
- 3.1.7 India's somewhat indifferent record of road safety is due to several factors. The road network has developed historically from the point of view of providing accessibility rather than mobility. Attendant road deficiencies make it extremely difficult to provide all the desired safety features on the existing network.
- 3.1.8 The difficulties are compounded due to deficient funds. Annually available funding for maintenance and repair of National Highways is only about 30-45 percent of the estimated fund requirement in terms of the norms for maintenance of National Highways. The situation is perhaps worse for the majority of state roads that fall in the jurisdiction of state governments.
- 3.1.9 As far as requirement *vis-à-vis* available resources for the National Highways Network and maintenance and repair thereof are concerned, the situation throws up massive deficits. The estimated deficit in allocation under NH(O) for the financial year 2011-12 is about Rs 1,600 crore. Availability of allocations annually for maintenance and repair are of the order of 35-40 percent of the actual requirement.

3.1.10 Suggested Policies/Solutions

3.1.10.1 Standards and Guidelines for Highways and Urban Roads

Highway and urban road design standards and guidelines will be made consistent with the safety requirements and in tune with the international best practice.

- All existing standards/guidelines/ manuals/codes, etc., of IRC/MoRTH will be reviewed for their specific relevance with road safety, and deficiencies/shortfalls identified in relation to safety.
- New standards and manuals will be prepared for filling the gaps in the current standards.
- All road projects being delivered at present (either at planning stage, design stage, construction stage, or even at implementation stage), whether on BOT or as EPC Contracts, will be reviewed at each stage to identify any issue related to road safety.
- All State Highways and National Highways are to be provided with both pavement markings and road signs as per the requirements specified by the standards of IRC/MoRTH. These shall be mandatory requirement for road safety.
- For ensuring the construction zone safety for traffic operation, there should be proper estimate prepared at the stage of Detailed Design, and it should be part of the total project cost like any other item in the form of BOQ items.

3.1.10.2 Monitoring and evaluation of road designs and traffic management strategies

- Encourage Institutionalisation of conducting Road Safety Audits by certified Road Safety Auditors.
- An accreditation body is required to be created for Road Safety Auditors, which will control the utilisation of these trained auditors and will maintain the

register of certified auditors. Such auditors will have to undergo training and retraining as per a set of guidelines to maintain a high standard of auditing.

- Capacity for Road Safety Audit works in the country is to be enhanced by training and conducting certifications courses for Road Safety Auditors.
- Road Safety Audit is to be carried out for the roads using the trained auditors available in the country and in accordance with the manual of Road Safety Audit adopted by IRC. All steps of audit delivery including the initial meeting and audit completion meeting with the Client must be completed with submission of audit report and exception report etc for every road assigned for audit. This will bring out what all is required to be done for the road ensuring highest level of safety.
- The entire network of NH and SH are to be subjected to Road Safety Audit (RSA) in a planned manner over next three years. The RSA shall identify all the potential hazards in terms of deficiencies observed in the network, which are required to be corrected on continuous basis for making the road network safe.
- The States and MoRTH will prioritise the network to be audited, and will implement the improvements recommended by RSA. The priority roads with high accident records are to be taken up first within the first six months.
- To carry out RSA for the entire primary network, required capacity is to be developed through proper training of qualified engineers, who are eligible for training. For this purpose, a special committee will be set up to draw up guidelines for a RSA procedure suitable for Indian traffic and safety issues with special reference to vulnerable road users. Teaching and research institutions including IITs, NITs, CSIR, etc. will be identified for establishing training programmes for RSA professionals.

3.1.10.3 *Accident Investigation*

- Accident data recording system is to be adopted uniformly across all states for roads in urban and non-urban areas in a standard format. This standard format is to be evolved with national consensus and should include all rational data that are required for accident investigation, accident reconstruction, and also adjudication of the accident cases.
- The data collection should be tech-savvy with hand-held GPS and computer interface so as to collect all data with highest precision.
- There will be standard accident analysis module for accident investigation and adjudication uniformly to be used across the country without any exception.
- Only a few specialised centres shall study selected accidents, using the accident reconstruction technique, etc. and the same data system.
- Institutionalised system of Database storage shall be developed.

3.1.10.4 *Training*

The engineers involved in planning, design, construction and operation of roads and highways in the country are to be trained on road safety aspects covering engineering measures, safety at construction sites and hands-on experience in road safety audit.

3.1.10.5 *Research & Development*

- To establish about five to seven Centres of Excellence for Road Safety Research and Accident Analysis in Academic Institutions across the country in addition to the existing research institutions.
- The capacity in road safety research and accident analysis is also to be developed, for which bright young professionals are to be identified for specialised training.

3.1.10.6 *National Road Safety & Traffic Management Board*

The government has already initiated the process of approving the Bill for creation of a Road Safety & Traffic Management Board. This Central Body is an urgent requirement along with the counterparts in the States.

3.1.10.7 *Availability of Resources*

Adequate funds should be made available commensurate to the requirements, especially for development and maintenance of non-NHDP National highways Network. Similarly resources provided for State roads shall commensurate with the estimated requirements.

3.2 Engineering (Vehicles)

3.2.1 Vehicles are the most important elements of roads and transportation. Vehicular and occupant safety has been the focus area of most regulations. With the globalisation of the automotive sector, in India, too, the vehicle designs have more or less assumed standardised practices. However, in India the total useful life of vehicles is very high and, therefore, periodic inspection of in-use vehicles for compliance to safety and emission norms is very important. A beginning has been made but we still have a long way to go.

3.2.2 Accident data generation and analysis is vital for vehicle designers and others and the existing manpower, skill sets and infrastructure should be upgraded.

3.2.3 In spite of large number of safety regulations, implementation on the roads is still lagging, more specifically those related to occupant safety and crashworthiness that are still to be implemented.

3.2.4 India contributes to eight percent fatalities with only one percent vehicle population. 75 percent of the victims are vulnerable road users such as pedestrians and two-wheeler riders. Age profile of the accident victims in

2010 showed that the 25-65 year age group accounted for 53.1 percent of total road accidents followed by 15-24 year age group with a share of about 32.4 percent. Amongst the vehicle category – two wheelers accounted for the highest share of accidents – 23.8 percent followed by trucks, tempos, tractors and other articulated vehicles at 23.3 percent, cars; jeeps and taxis 21.8 percent; buses 9.5 percent; auto rickshaws 7.3 percent and other motor vehicles 7.8 percent.

3.2.5 The vehicle inspection system is inefficient as at present only visual inspection is carried out by the inspectors, which is mandatory only for commercial vehicles as personal vehicles owners are required to pay only a one-time tax at the initial registration of vehicles. The existing vehicle inspection centres do not have any instrumentation/equipment and staff thereat, besides being short, is not given regular training. There are no set procedures for inspection of vehicles; mechanism for auditing or monitoring; analysis of data or existence of an organised industry for repair and maintenance of vehicles.

3.2.6 Suggested Solutions

3.2.6.1 Establishing Safety Vision and Goals

At the macro level, establishment of a Safety Vision in three stages is proposed. At the first stage (2011-2020), reduction in the rate of road accidents is sought and in the second stage (2020-2030) reversal of the trend of fatalities and injuries. In the 3rd stage (2030 onwards) ‘Vision zero’ to pursue no road injuries or fatalities is proposed.

3.2.6.2 Implementing vehicle engineering solutions

Implementing vehicle engineering solutions already drawn up by the Government of India by updating the same and by mandating step by step the new safety standards should be considered. The requirements related to passive safety, active

safety and general safety should be introduced in a planned manner over short, intermediate and long term.

3.2.6.3 Control of in-use vehicles

Introduce mandatory Inspection and Certification (I&C) requirements for all categories of vehicles in a phased manner. Computerised I&C centres should be established across the country and policies and procedures for 'end of life' and scrapping of unserviceable vehicles by encouraging investments from the private sector put in place. Establishing control mechanisms for spurious parts and independent testing agencies are also required.

3.2.6.4 Road Accident Data Analysis

By developing strategic alliances with international organisations/experts for effective planning and execution, there is a need for a National Accident Research Centre with data collection at State Accident Research Centres. There is a need to develop human resources and formulate Accident Investigation Teams.

3.2.6.5 Effective Use of IT and Electronics

We should not wait for the market forces to usher in technology which should be driven by the government itself after reviewing globally available options towards transport management. A task force should be appointed to establish a comprehensive action plan by identifying priority areas.

3.2.6.6 Research Activity in Vehicle Engineering

There is a need to undertake and support projects for standardisation of bus designs, truck bodies, trailer designs, etc which would help the unorganised sector to bumpless transition to new safety regulations. India-specific vehicle and laboratory test data keeping in view international regulations and feasibility studies for advanced technology safety requirements is also required.

3.2.7 Micro level solutions are depicted in the table below:

Engineering Solutions and Enabling Technologies for Improving Safety

Timeline	Passive Safety	Active Safety and General Safety
<p>SHORT TERM (3-5yrs)</p>	<p>Two Wheelers</p> <ul style="list-style-type: none"> ○ Setting and enforcing mandatory use of crash helmet- Bicycle and Motorcycle Helmets. ○ Development of lighter and ventilated Helmets to increase the usage. ○ Use of Proper Rider Gear <p>3 Wheelers</p> <ul style="list-style-type: none"> ○ Improve Driver seat ○ Occupant safety and comfort <p>Passenger Cars & Utility Vehicles</p> <ul style="list-style-type: none"> ○ Safety Belts for all vehicle occupants ○ Safety Belts Reminders ○ Crashworthy vehicle structures ○ Car occupant protection ○ Frontal and side impact protection ○ Occupant restraints like Airbags, Air-curtains, and Head Restraint with controlled backset for avoiding whiplash injuries. <p>Commercial Vehicles</p> <ul style="list-style-type: none"> ○ Retrofitting Under Run Devices for in-use Heavy Commercial Vehicles ○ Bus code implementation and accreditation of Bus Body Builders to bring uniformity in the bus body design and enhance safety and comfort to the passengers. ○ Mandatory use of Tachographs ○ Fire protection in buses 	<p>Visibility & Conspicuity of Vehicles</p> <ul style="list-style-type: none"> ○ Night Vision ○ Visibility Enhancement by use of cameras ○ Daytime running lights ○ Use of reflective tyres ○ High-mounted stop lamps in cars ○ Improving the visibility of non-motorised vehicles ○ Improving visibility for 3 wheelers ○ Conspicuity of Pedestrian and Vulnerable Road Users ○ LED technology with less power consumption allowing daytime running of head lamps ○ Use of automatic dippers when approaching another vehicle at night <p>Stability & Braking</p> <ul style="list-style-type: none"> ○ Anti-Skid braking (ASB) ○ Tire Pressure Monitoring <p>Use of Speed Limiting Devices and Functions</p> <ul style="list-style-type: none"> ○ Setting and enforcing speed limits ○ Speed enforcement on rural roads ○ Speed governors in heavy goods and public transport vehicles ○ Electro-magnetic Compatibility (EMC)
	<ul style="list-style-type: none"> ○ Component CoP testing for all safety critical components 	
	<p>Pedestrian Safety</p> <ul style="list-style-type: none"> ○ Safer car fronts to protect pedestrians and cyclists ○ Safer bus and truck fronts <p>Child Restraint Systems</p> <ul style="list-style-type: none"> ○ Safer Child Seats for children of all age groups <p>Commercial Vehicles</p>	<p>Use of Speed Limiting Devices and Functions</p> <ul style="list-style-type: none"> ○ Speed Gun ○ Speed Cameras <p>Crash Avoidance Systems</p> <ul style="list-style-type: none"> ○ Collision Avoidance Techniques like lane departure warning, Adaptive Cruise Control,

Timeline	Passive Safety	Active Safety and General Safety
INTERMEDIATE (5-10yrs)	<ul style="list-style-type: none"> ○ Truck Code Implementation ○ Trailer Code Implementation <p>Agricultural Tractors and Construction Equipment Vehicles</p> <ul style="list-style-type: none"> ○ Rollover Protective Structure along with Safety Belts for Tractors ○ Falling object protective structures With enclosed cabin. ○ To enhance safety requirements for Constructions Equipment Vehicles and Off Road Vehicles under CMVR certification. 	<ul style="list-style-type: none"> ○ Adaptive Front Lighting ○ Advanced Vehicle Stability Control technologies like Electronic Stability Control (ESC) <p>General requirements</p> <ul style="list-style-type: none"> ○ Alcohol interlocks ○ Safety against displaced luggage
	<ul style="list-style-type: none"> ○ Quality marking for Safety critical vehicle components. ○ CoP of all safety critical components based on volumes of production 	
LONG TERM (>10yrs)	<p>Vehicle Compatibility</p> <ul style="list-style-type: none"> ○ Design of the vehicle structure for colliding partners' safety <p>Advanced Restraint Systems</p> <ul style="list-style-type: none"> ○ Adaptive Head Restraint ○ Smart Restraint Systems sensitive to occupancy and its Anthropometry <p>Vehicles to Road Furniture Interaction</p> <ul style="list-style-type: none"> ○ Protection against roadside objects like Poles, Trees and narrow objects ○ Development of road Restraint Systems <p>Indian NCAP System- beyond regulations</p> <ul style="list-style-type: none"> ○ Introduction of Indian NCAP for evaluation and overall safety rating of vehicles 	<p>Driver Assistance Systems</p> <ul style="list-style-type: none"> ○ Drowsiness Alarm ○ Vehicle to Vehicle Communication ○ Intelligent Transport Systems for better traffic management
	<ul style="list-style-type: none"> ○ Whole vehicle CoP implementation 	

3.3 Enforcement

3.3.1 The figure of accidents has been climbing up consistently. In the year 2001, there were 4,05,637 accidents out of which 71,219 were fatal. In these accidents 80,888 people were killed and 4,05,215 injured. Provisional figures of 2010 record 4,99,628 accidents of which 1,19,558 were fatal and 5,27,512 people were injured.

3.3.2 While India used to be behind China in number of accidents and fatalities, now India has the dubious distinction of having the largest number of accident fatalities on the roads. This trend needs to be reversed with all round improvement in the way the traffic and transport is managed in the country.

3.3.3 Solutions Suggested

- *Amendment of Motor Vehicles Act 1988* by increasing penalties/fines.
- *Checking Overloading of Commercial Vehicles* by mandatory registering of criminal cases and by empowering the police to check the loads in addition to the Transport Department.
- *Use of Road Safety Devices* such as seat belts and helmets
- *Drunken Driving* needs to be controlled by heavier penalties such as imprisonment and suspension of the driving licence in case of conviction under Section 185 of the MV Act.
- *Database* for recording traffic violations by drivers is needed to make use of the provision in the MV Act for different punishments for the first violation and for subsequent ones.
- *Overcrowded Passenger Vehicles* should result in cancellation of permits.
- *Improvement in Road Engineering* is needed particularly on roads where frequent accidents are happening by mandatory inspection by the transport department, traffic and local police and road maintaining agencies.
- *Use of Technology* should be encouraged for constant interaction between road users and police through the internet and mobile phones.
- *Institutional Changes* are also required, such as, comprehensive test of skills of applicants before issuing of driving licences; digitisation of driving licences to curb the prevalence of multiple licences; issuance of fitness certificates to commercial vehicles; upgradation of traffic management system in the cities by installation of CCTVs, speed and red light cameras, etc.; introduction of speed calming measures on highways; development of wayside facilities on the highways for rest and recuperation of long-distance drivers; compulsory

installation of GPS in commercial vehicles; sharing of a part of fines for road safety measures/improvements and creation of Road Safety Boards at the State and District levels.

3.4 Education

3.4.1 The year, 2011 marks the beginning of the Decade of Action for Road Safety (2011-20) as proclaimed by the United Nations General Assembly in March, 2010. The proposals emanating from the international community seek concerted efforts across all societies to address the growing road safety crisis. It proclaimed, “the period 2010-2020 as the Decade of Action for Road Safety with a goal to stabilise and then reduce the forecast level of road traffic fatalities around the world by increasing road safety activities conducted at the national, regional and global levels.”

3.4.2 The guiding principles for the Decade of Action for Road Safety are those espoused in the “safe system” approach. This approach aims to develop a road transport system that is better able to accommodate human error and take into consideration the vulnerability of the human body. The goal of a “safe system” is to ensure that accidents do not result in fatality or serious human injury. Road users, vehicles and the road network are addressed in a holistic manner through a wide range of traditional and newer approaches.

3.4.3 There are many solutions to the problem of unsafe roads. Road accidents are not random events and can be contained by preventative and remedial action. The most effective way to achieve the road safety is to integrate the driver, the vehicle, the road, the road-user and the environment for a holistic approach to the problem.

3.4.4 India is a country of continental dimensions encompassing diversity in terms of geography, terrain, climate, language, rural urban divide, language and culture. Therefore, “one size fits all” approach may not be appropriate in

addressing the road safety issues. Developed countries with high levels of urbanisation, education and common language are more suited for a uniform approach and strategy. In India, Road Safety Awareness and RSE have to shed its urban-centric bias and should address the issues and challenges in the rural and remote areas as well. Therefore, the content, emphasis, medium and focus have to be different across regions.

3.4.5 In a nutshell, the reasons for RSE are:

- Roads in developing countries are often more unsafe than roads in developed countries and the traffic safety problems faced by children is often greater in the developing world. Absence of traffic education can leave children exposed to unnecessary risks.
- To provide the necessary framework for the acquisition and percolation of safety knowledge and skills. These include decision-making skills, and the identification and assessment of risks and strategies to reduce these risks.
- To prepare children for different tasks at each stage of their increasingly independent use of the road network and, later, as adults.
- To provide the basis for improving road user behaviour over time.

3.4.6 Solutions Suggested

These can be best illustrated through the matrix below:

<i>Serial No</i>	<i>The Problem</i>	<i>Suggestions proposed</i>	<i>Macro or Micro Issue or Critical</i>
<i>Policy Issues</i>			
1	Absence of Road Safety Policy and Law	This document, when ready and comes into existence, will address all the four Es: Education; Enforcement; Engineering and Emergency Care of road safety significantly.	Critical
2	Lack of coordination among departments whose work relates to road safety issues.	The four Es of road safety should be considered holistically by	Macro and critical

Serial No	The Problem	Suggestions proposed	Macro or Micro Issue or Critical
		strengthening the inter-linkages between the four Es. The Government to monitor enforcement and engineering, the vehicle manufacturers to stress on safer vehicle design and the police, medical personnel and other stakeholders who play a role during emergency care should all be educated on all the cross linking issues which will enhance road safety in real life. <i>Therefore, Education and Coordination amongst Government Departments, Manufacturers, Police, Medical personnel and Road users is a must.</i>	
3.	Lack of political will/low priority on government agenda and Inter-Ministerial Coordination	Both the Central and the State governments should take initiatives to make RSE on all Es and cross linking issues of all stakeholders a high priority. <i>Politicians also need to be sensitised.</i>	Macro and critical
4.	Lack of financial support/ Paucity of Funds: Support for educational activities on road safety is minimal either from government or from private agency. Absence of financial support further discourages the innovations in RSE.	All the concerned state departments and the central government should chalk out and set a time plan by involving NGOs and NRSC members.	Critical
5.	Absence of Nodal agency/ Monitoring Committee/ Road Safety Councils at state or regional levels		Micro but critical
6.	Strengthening of Data Reporting System and of	The data collection and reporting system needs to	Macro and critical

<i>Serial No</i>	<i>The Problem</i>	<i>Suggestions proposed</i>	<i>Macro or Micro Issue or Critical</i>
	Systemic data generation and interpretation	be strengthened, which will enable recommendation and implementation of analytical solutions.	
<i>Engineering and Implementation Issues</i>			
7.	Poor condition of roads: Road construction, development and designing are done without taking the views of common commuters, which brings chaotic situation on roads. Simultaneously, people are not part of such development and/or involved on technical grounds.	Here, the engineering aspect of road safety has a role to play and a direct linkage with education, where people should be educated and ample space should be provided for awareness activities for participation of common road users.	Macro
8.	Poor implementation of Road Safety Standards: Mass educational activities on the site are required for uses of zebra, stop/slow line, signals and signage. In general, road users take these as a ritual or just ignore them, whereas, improper and invisible road safety standards should be repaired/renovated on a timely basis, which can only happen when people start using them.	Here, engineering and enforcement both play an equal part, besides education. The government has to ensure that traffic signage should be properly displayed and zebra crossings are built as speed checks and painted visibly. Secondly, “stop, look and go” signs should be put up and users educated through persuasion and penalties.	Macro
9.	Unsafe Vehicle Design and Speed: Most of the time, awareness activities revolve around behaviour change. Vehicle design and speed are considered to be a part of engineering.	Again though, the engineering aspect has a great role to play, yet the law should ensure that vehicles are designed as safe vehicles, and people should be educated about such issues and how to use them optimally so that they can demand safe vehicles. Small measures can be adopted to impact road	Macro

<i>Serial No</i>	<i>The Problem</i>	<i>Suggestions proposed</i>	<i>Macro or Micro Issue or Critical</i>
		safety also, such as automatic head light dippers when another vehicle comes across the road with high beam.	
10.	Lack of Prioritisation and Ignorance in the enforcement and engineering team (Prioritising road safety): RSE is last in priority on the list of construction and traffic management because of lack of awareness towards road safety issues.	Engineering and enforcement teams should also be educated about the criticality of the situation and encouraged to imbibe best practices from across the world. For example, how the drunken drivers' cases are handled in other countries instead of letting them free due to complications of Third Party Insurance.	Micro but critical
Systemic Issues			
11.	Information dissemination	Information dissemination about road safety programmes need to be increased significantly, as most road users and managers are quite ignorant about them.	Macro and critical
12.	Attitudinal Problems: In a country like ours, people consider it their 'right' to use roads as per their individual convenience. People often do not respect laws and thus, create hazards for themselves and other road users. For example, there is a huge resistance to wearing helmets by two wheeler riders. Immense awareness activity coupled with enforcement is required to sensitise and bring about an attitudinal change.	Here, besides education, strict enforcement and improving emergency care systems are equally important. Only then will attitudinal problems change. Self-discipline needs to be inculcated in road users which will require constant reminders through public service communication strategies.	Critical
13.	Absence of routine training programmes for traffic	Traffic police personnel and other stakeholders	Critical

<i>Serial No</i>	<i>The Problem</i>	<i>Suggestions proposed</i>	<i>Macro or Micro Issue or Critical</i>
	police/drivers: Traffic police and drivers spend maximum time on road but they hardly receive trainings. Lack of upgradation and exposure creates impact on other road users like arrogant behaviour, speed driving, signal jumping, lane driving, etc.	should be educated on the other three aspects of road safety. If, they have anything to suggest/advise to the government regarding engineering or enforcement, they are the best persons to do that as they see/witness incidents on roads regularly. Similarly, they should be given education and training on emergency care and on provisions of law such as Section 134 of MV Act.	
14.	Rural Urban Divide	Generally, road safety programmes are designed on the basis of experiences in urban areas and are city-centric. In rural areas many of the accidents are not even reported. This problem will have to be addressed through tailor-made programmes which will take care of the rural-urban divide.	Macro
15.	Absence of space for participation: Road users in general are unaware of which department to approach. At the same time traffic and transport departments do not have ample space for interaction with common road users nor do they permit others to participate in their work.		Micro but critical
16.	Lack of ownership: Not only organisations, but also departments such as education, traffic, transportation, state		Micro

<i>Serial No</i>	<i>The Problem</i>	<i>Suggestions proposed</i>	<i>Macro or Micro Issue or Critical</i>
	roadways, etc. do not own the responsibility of safety education, except once in a year. Organisations have their excuses and priorities		

3.5 Emergency

3.5.1 Few events are more distressing than an unexpected loss of life or permanent disability caused by accidental injury. Particularly tragic is the injured but potentially salvageable patient who dies needlessly through delay in retrieval, inadequate assessment or ineffective treatment.

3.5.2 As per latest data published by the Transport Research Wing of Ministry of Road Transport & Highways, road accidents in India have increased by 2.7 percent during 2010 compared to 2009. A review of the incidence of casualties due to road accidents in India during the past five years presents a disturbing trend:

Incidence of Casualties

Year	Number of deaths	Number of injuries
2005	94,968	4,65,282
2006	1,05,749	49,6,481
2007	1,14,444	5,13,340
2008	1,19,860	5,23,193
2009	1,25,660	5,15,458
2010	1,34,513	5,27,512

Source: Transport Research Wing, Ministry of Road Transport & Highways

3.5.3 Thus, it is necessary to look at the Emergency Care or Trauma Care System as a whole rather than just piecemeal at its components.

3.5.4 The problems at the site of impact arise from lack of awareness about Emergency Medical Service (EMS) System; lack of basic first aid skills; non

availability of standardised toll free national access number to call for medical help; lack of adequate number of first respondents/ambulances and lack of standardised protocols and medical directives for EMS.

3.5.5 The problems in transit to a definitive healthcare facility revolve around non availability of appropriate and safe transport of the injured in the form of ambulances, air ambulances, etc; lack of the real concept of an ambulance in India which are bereft of patient care, comfort and ergonomics and are merely like transport vehicles; absence of National Ambulance Code specifying minimum requirements namely ALS, BLS, First Responder, etc; ill equipped ambulances; lack of trained emergency medical technicians (EMTs); lack of standard operating procedures (SOPs) and inadequate remuneration to paramedical staff and drivers.

3.5.6 The problems encountered at the healthcare facility are numerous, namely, non-availability within reasonable distances; overcrowding at the limited number of such facilities; deficient infrastructure at such facilities; inadequately equipped facilities due to absence of National standards and guidelines; sub-optimal quality care and inadequate skilled manpower; lack of SOPs at the facilities and lack of accountability and monitoring mechanisms.

3.5.7 Other miscellaneous problems revolve around lack of documentation and foolproof reporting mechanism; reform of the MV Act, 1988 and CMVR 1989; lack of coordination among agencies related to road safety; lack of appropriate database; deficient post trauma rehab facilities; inadequate awareness of the directives of the Supreme Court regarding Right to Emergency Care and legal protection of Samaritans who offer help to the victims; inadequate compensation to victims and non-availability of personal mediclaim to drivers.

3.5.8 Solutions Suggested

3.5.8.1 Modification/extension of existing schemes

- The National Highway Trauma Care Project (NHTCP) should be extended to cover all national highways in all states with initial emphasis on states with difficult terrains. State governments should be encouraged to replicate similar schemes on the state highways. '102' should be adopted as the Toll Free National Medical Distress Call Number across the country on the lines of '100' for the police, '101' for fire, etc.
- National Highways Accident Relief Services Scheme (NHARSS) should be modified to include a periodic audit of the available ambulances and cranes; a monitoring mechanism to ensure proper implementation of the scheme; providing versatile 'crash rescue vehicles' (CRVs) with hydraulic rescue tools for extrication etc. and ensuring synchronised action between CRVs and ambulances by ensuring their integration under a National Highway Accident Relief Network linked with state EMS number.
- National Highways Authority of India – Incident Management System (IMS) should be extended to all national highways in all states with initial emphasis on states with difficult terrains; replication thereof in all state highways; periodic audit for awarded contracts; reduction of response time of 30 minutes for ambulances, cranes, etc. to 10 minutes over a period of 10 years; providing hydraulic rescue tools, CRVs; upgrading specifications for ambulances, patrol cars; ensuring synchronisation of all accident relief measures, etc.
- Implementation of the Emergency Medical Services (EMSS) Systems can be left to the States/UTs.

3.5.8.2 Other Measures

- It is imperative that a National Accident Relief Policy be adopted with the objective of providing free trauma care services; ensuring adequate and prompt relief to trauma victims; undertaking such measures as are necessary to prevent or reduce disability of accident victims; training police, teachers,

students and drivers in accident prevention and management; furthering research; creating community awareness and defining a broad framework for the National/State Trauma System Plan within which the states could build their EMS systems.

- In order to achieve an efficient and cost effective inclusive trauma system, the above mentioned National/State Trauma System Plan should emphasise on pan-India pre-hospitalisation emergency medical services network; hospital-based emergency care; health facility networking; capacity building and training and research and development in post-crash response.

Comprehensive Plan of Action: Short and Long Term Steps

1.1 Engineering (Roads)

4.1.1 Short Term

4.1.1.1 Improving Safety on National and State Highways

- Road Marking and Signages

All national and state highways should have signs and road markings as per IRC standard. This work for national highways should be taken up on priority to be completed in two years. The MoRTH, NHAI and state PWD should be responsible for the same. The IRC standards on signs, markings and safety measures should be hosted on the website.

- Road Safety Audit and Implementation of Recommendations

RSAs should be applicable to all national and state highways and the work should start for the former within three months and for the latter within six months. The MoRTH, NHAI and state PWD should be responsible for the same. Implementation of RSA recommendations by devising a safety measures plan should be put in place.

- Standards and Guidelines

Within a period of two years, all standards and guidelines should be reviewed alongwith evolving new ones. These should be reviewed with safety focus for national and state highways. Developing of manuals on traffic control devices should also be put in place. The responsibility of this work should rest with MoRTH.

- Modification in Bid Documentation

Within three months policy guidelines should be issued laying down that all safety related items including those during construction should be paid items and not incidental. The responsibility of this work should rest with MoRTH.

- Other Road Safety Engineering Measures

These measures span both short and long term and are being reported together at one place in this report. These include speed management measures (100 settlements/year); providing for service roads (100 settlements/year); providing for pedestrian/cattle crossings (50 locations a year); improving inter-state border check points on national highways (20 in the first year and 30 each in subsequent years); providing truck lay bays along national highways (100 in first year and 200 each in subsequent years) and providing bus bays and bus shelters along national highways (100 in the first year and 200 each in subsequent years). The responsibility for these actions should rest with MoRTH/NHAI.

4.1.1.2 Road Safety Audit

With the long term goal of training 1000 safety auditors over a three year period, in the short run the training providers should be identified and the training course started.

4.1.1.3 Institutional Arrangements

- National Road Safety and Traffic Management Board

The Bill for creation of a National Road Safety and Traffic Management Board had been introduced in the Parliament but has been returned by the Standing Committee. The constitution of the Board should be finalised soon after enactment of the Bill and the states should be advised to set up state boards. The responsibility of action would rest with MoRTH and the state governments. The funding of this exercise could be decided after enactment.

- Accident Recording System

The system of accident recording should be strengthened. Automated data recording system should be in place, the aspect of training of police personnel would be in the long term. MoRTH and state governments would be

responsible for monitoring thereof. Accident analysis for corrective actions is a continuous process.

4.1.1.4 Training for Road Safety

Engineers involved in planning, design, construction and operation of highways need to be trained on road safety. In addition, consultants, contractors and concessionaires also need to be trained. The responsibility for monitoring should rest with the Indian Academy of Highway Engineers (IAHE). This is both a short and long term measure and is being reported at one place in this report.

4.1.2 Long Term

4.1.2.1 Improving Safety on National and State Highways

- Road Marking and Signages

In respect of State highways, the work should be completed within four years.

- Road Safety Audit and Implementation of Recommendations

This work should start in the short term and be completed within three years for national highways and within four years for state highways.

4.1.2.2 Research on Road Safety

In three years time, it is essential to establish a Centre of Excellence under the aegis of MoRTH for which public-private partnership (PPP) arrangements should be explored.

1.2 Engineering (Vehicles)

All the steps proposed visualise a period of three years or more for implementation. Short term measures have been pegged at two years and, therefore, all suggestions are reported under long term. The report covers five topics, namely, safety vision and goals; safety standards – roadmap; safety of vehicles on road; accident investigation and intelligent transport system.

1.2.1 Safety Vision and Goals

The Vision is ‘to reduce the fatalities and injuries due to road traffic accidents by 4E (Engineering, Enforcement, Education and Emergency Medical Services). The Goals proposed are as under:

- Stage I (2011-2020): Reduce the increasing rate of fatalities
- Stage II (2020-2030): Reverse the trend of fatalities and injuries over the next decade
- Stage III (2030 and beyond): ‘Vision Zero’ to pursue no road fatalities or road accident injuries.

1.2.2 Safety Standards Roadmap

Besides continuing with actions already initiated in respect of safety regulations relating to two and three wheelers, four wheelers, agriculture tractors, automotive and agriculture trailers and construction equipment vehicles, future safety standards should carry category-wise vehicle norms that could be implemented in the next five years. Work should be taken up to address safety standards for future technology vehicles including construction equipment vehicles (CEVs), special purpose vehicles, hydraulic trailers, multi-modal transport vehicles, intelligent transport system and testing of in-use vehicles, etc. Future action should also address standards relating to recycling and re-usability of vehicles.

1.2.3 Safety of in-use Vehicles – Inspection and Certification (I&C)

1.2.3.1 I&C Regime Implementation

- Institutional Structure

The State Government should identify the agencies to carry out setting up, operations and monitoring of inspection centres such that no vehicle is registered/re-registered unless it possesses a valid vehicle inspection certificate.

- Programme Content

The I&C regime should cover both safety and emission parameters and include compressed natural gas/liquid petroleum gas (CNG/LPG) safety inspection. For this, detailed vehicle inspection manuals need to be developed for different categories of vehicles covering methods and reasons for failure. A separate manual for administrators also needs to be prepared specifying roles and responsibilities.

- Safety Inspection

The safety inspection should include both visual and automated equipment tests. The visual inspection could include legal documents, insurance and identification of the vehicle; steering play; chassis/frame integrity; CNG/LPG safety; fuel tank and piping; exhaust pipe and catalytic converter; engine mounting; battery; seat belts; condition of tyres; lighting and signaling devices; oil leakages; leaf spring integrity and shock absorbers; wind screen, wipers, mirrors, doors; rear under run; horn; availability of tool box, first aid kit, fire extinguisher, warning triangle and registration plates. Automated tests should be conducted for testing brakes including parking brakes, speedometer, headlight, slide slip and suspension.

- Emission Inspection

The present PUC emission testing should continue with improved test procedures and audit systems and by studying international systems and their applicability to Indian conditions.

- Phasing of the Regime

Since significant investments are required, the phasing should be prioritised according to vehicle population.

- Phasing of vehicles

Due to cost implications, the phasing of vehicles should begin with commercial vehicles with high utilisation followed by increased inspection of older vehicles and then private vehicles and finally two wheelers. The concept of end of life vehicles (ELVs) and waste management thereof has also been suggested.

- Auditing Vehicle Inspection Centres
I&C programmes are often associated with fraudulent practices and corruption and the state transport department would have to outsource auditing of such centres to renowned automotive testing centres like Automotive Research Association of India (ARAI). Severe deterrent action should be initiated against offenders.
- Enforcement on Roads
Responsibility with traffic police for checking valid certificates is proposed.
- Data Collection and Analysis
Centralised common software is required for data storage, transfer, analysis, uploading, etc as the overall success of the I&C programme depends on ensuring that all vehicles are inspected. Experience from Asia and outside has demonstrated that the most effective I&C programmes are those that are linked to vehicle registration.
- Human Resource Development
Training modules need to be developed targeting staff, attendants, inspectors, auditors and mechanics.
- Public Awareness Campaign
Awareness of the public is essential for the success of the programme involving schools, NGOs, CBOs, automobile associations and research institutes and involving cable/TV network.
- Maintenance Programme
Facilities for maintenance need to be developed for vehicles diagnosed with faults during inspections.
- Legislative reforms
At the Central Government level, the validity for the fitness certificate, details of parameters to be checked including items of safety and environment and a Code of Practice need to be amended/incorporated. At the State level, the concept of one-time tax should be modified and made periodical and subjected to fitness certificate renewal.

1.2.4 Accident Investigation

Road Safety is directly quantifiable with accident data. Its collection in India is based on the police records only. In developed countries this activity has become a well-established science. It is suggested that National Level Accident Research Centres be set up to give inputs for formulation/amendment of various safety standards; help decide priorities in implementation of regulations; improve vehicle design and upgrade road infrastructure. The data so collected should be available to all stakeholders. This needs to be fully integrated into national road safety plans after having established a strategic alliance with one or more international organisations/government bodies that have successfully implemented accident investigation networks in their countries.

1.2.5 Intelligent Transportation Systems (ITS)

ITS include a wide and growing swathe of technologies and applications such as real-time traffic information systems; in-car navigation; vehicle-to-infrastructure integration; vehicle-to-vehicle integration; adaptive traffic signal control; ramp metering; electronic toll collection; congestion pricing; fee-based express (HOT) lanes; vehicle usage-based mileage fee and vehicle collision avoidance technologies. World-wide some of the technologies already in use include Global Positioning System (GPS – on-board units to calculate positions); Dedicated Short Range Communications (DSRC); wireless networks (both for communication channel between the vehicle and roadside equipment); mobile telephony; radio-wave or infra red beacons (for real time traffic information); roadside camera recognition (for charging on specific roads) and probe vehicles (government owned vehicles equipped with wireless technologies that report speed, traffic operation, etc).

4.2.6 Research Activity in Vehicle Engineering and Regulations

Efforts should be directed towards supporting research activity in standardisation in design, evolving India-specific vehicle and laboratory test, harmonisation with international regulations and undertaking feasibility studies.

1.3 Enforcement

1.3.1 Amendment of Motor Vehicles Act, 1988

At present, prosecution of traffic offences is enforced as per provisions of MV Act, 1988. The low fines structure has had a bad impact on road safety scenario. There is an urgent need to increase penalties and fines. It may be added that in the national capital during the Commonwealth Games when there was Rs 2000 fine for lane violation, the traffic moved smoothly. Needless to point that in 1988 the income of the people was low and the fine of Rs 100 for red light jumping, lane discipline, etc had some impact on improving the traffic management. In 2011 when income levels have grown substantially, the fine structure is not proving to be a deterrent. While revising the penalties for traffic offences, a clause to be inserted in the Amendment Act itself that every three years there should be revision of fine based on consumer price index. There should be no need of going to the Parliament for fine/penalty revision.

1.3.2 Overloading of Commercial Vehicles

The following measures should be taken:

- a) As overloading leads to damage to the roads, in cases where it is discovered that the commercial vehicle is overloaded, there should be mandatory criminal case under the provisions of Damage to Public Property Act against the transporter, the consignor and the consignee. If properly implemented, this will lead to a quantum jump in road safety scenario in the country and reduce accidents.
- b) As per MV Act provisions and rules, police is not empowered to check overloading as Transport Department is the only competent agency to check

overloading. All state police forces need to be empowered to check overloading and for this a large number of weighing machines should be installed so that no overloading takes place.

1.3.3 Use of Road Safety Devices like Helmet, Seat Belt

Wearing of helmet both for the driver and the pillion rider must be made mandatory. At present, some state governments have not enforced wearing of helmet and in some states women have been exempted from wearing helmets. There should be no exemption in wearing of helmet and awareness should be created that helmet should be properly strapped by the road users. Similarly, wearing of seat belt should be compulsory for the driver and the front passenger and on national highways it should be compulsory for even the passengers in the back seat.

1.3.4 Drunken Driving

According to Section 185 of MV Act, the penalty for violation of this rule is punishable with a fine of Rs 2,000 or six months imprisonment or both for the first offence. It is experienced throughout the country that drunken driving is being punished by fine only. The practice of awarding imprisonment in drunken driving is prevalent in the city like Mumbai. All enforcement agencies may impress upon the courts of the concerned cities/states that in grave cases of drunken driving, imprisonment must be provided to discourage drunken driving. There is also a provision under MV Act wider Section 20 that if there is conviction under Section 185, the driving licence of the offender must be suspended. It has been seen that in most of cities/states this provision is not being enforced.

Similarly, databases should be created by all the state police forces and Transport department to ensure enhanced punishment for drunken driving for the second or subsequent offence.

1.3.5 Database of all Traffic Violations

At present, there is no interlinked database for recording of traffic violations by drivers of the vehicles. According to MV Act provision, there is different punishment for first traffic rule violation and for subsequent offences. As most of the states do not have database of traffic rule violation prosecution, enhanced punishment is not possible for most of the traffic offences. There is urgent need that database should be created for every vehicle, every driver and every offence for interlinking the habitual offender and there being enhanced punishments for second and subsequent offences.

1.3.6 Strict Checking of Overcrowded Passenger Vehicles

It is common experience in all major cities and towns that commercial passenger vehicles are heavily overloaded which lead to frequent accidents with multiple deaths. All Transport and Traffic Police have to come down heavily on overloading of passenger vehicles. In case of overloading of passenger vehicles, there should be provision of cancellation of permit. Presently, there is only a provision of fine which is not deterrence for checking of overloading of passenger vehicles.

4.3.7 Improvement of Road Engineering

There are certain stretches on the highways and in cities where accidents happen because of faulty road engineering. It must be made mandatory for all concerned departments to inspect the roads where frequent accidents are happening. There should be compulsory inspection by Transport Department officials, Traffic Police, local police, road maintaining agency officials of scenes of multiple deaths or multiple accidents on particular stretches of roads to effectively improve road engineering on these stretches.

4.3.8 Use of Technology for Interacting with Road Users

Delhi Traffic Police has pioneered its interaction with inter-road users by social networking sites like Facebook. More than 80,000 are connected to Delhi Traffic Police through its Facebook. This has acted as empowerment of road users, sharing of information by Traffic Police and the road users and improvement in traffic and road safety through interaction. Every city police should start interacting with road users through proper mediums. It is suggested that all public utility department like Transport Department, Traffic Police must have constant interaction with road users. If transparency in the working of public utility department is ensured, this improves the road safety scenario. Similarly sharing of information through facilities like SMS alert service, 24x7 helpline can be effective instrument for improvement in road safety.

4.3.9 Institutional Changes Required to Enhance Road Safety

It was felt by the Working Group that road safety is compromised by basic issues like faulty issuance of driving licences, issuance of multiple driving licences, fitness certificate for commercial vehicles and other similar issues. The Committee suggests some fundamental changes as regards these and the recommendations are:

4.3.9.1 Issuance of driving licences

It has been felt by all enforcement agencies that the present system of issuance of driving licence is not upto the mark. There is an urgent need to have a comprehensive test of the skills of applicants before driving licence of any category is issued to the applicant. It is suggested by the Working Group that the Transport Department of all states must encourage establishing a large number of training institutes which can impart basic training for drivers before the applicant comes for driving licence. These driving institutes and Transport Department may also use simulators, actual driving tracks to ensure that applicants for a driving licence must be fully conversant with the driving skills before getting licence.

4.3.9.2 Digitisation of Driving Licenses

It has been experienced by all enforcement agencies that people have been getting multiple driving licences from different transport authorities. There is urgent need of linking up of transport authorities to ensure that no person is able to get a driving licence from more than one authority. There is also need of digitisation of the existing driving licence holders. With the launch of Sarathi, a software package introduced in 2011 by National Informatics Centre and Ministry of Road Transport & Highways it would be possible to create a complete computerized database of driving licenses, conductors' licenses, driving school licenses and fees.

4.3.9.3 Issuance of fitness certificate by Transport Authorities

It has been felt by Working Group that a large number of accidents on roads happen because many of the commercial vehicles are not in good condition. Fitness certificate for commercial vehicles are being issued in a routine manner and there should be stringent checks of commercial vehicles before fitness certificate is issued to the vehicle. At present, a large number of breakdowns are happening on city roads and highways because of which a large number of people lose their lives in accidents. Stringent fitness certificate issuance will ensure enhanced road safety.

4.3.9.4 Modernisation of Traffic Management System in cities

The Working Group was of the view that with the introduction of latest technology in traffic management like CCTVs, speed cameras, red light cameras, variable messaging, video analytics and other systems of intelligent traffic system, we can reduce dependence on manpower and can have an effective traffic management system. Bangalore Traffic Police has shown the way by having most of the components of intelligent traffic system functional in the state. It was felt by the Working Group that other states should also induct, technology for regulation and enforcement. This will increase road safety scenario all around.

4.3.9.5 Speed Calming measures on Highways near inhabited areas

It was felt by the Working Group that on both sides of highways including National Highways, a large number of habitants are there requiring facilities to crossover from one side to other. At present, there is insufficient facility for people to crossover from one side to other as a consequence of which large number of pedestrian deaths are taking place in these areas. During construction of highways, there should be sufficient provision of crossover for pedestrians and safety devices like central verge, railing, grills on both sides of the highways. Wherever there is speedy traffic on highways sufficient security measures should be taken. There is also need for speed calming measures like table top speed breakers, rumble strips on highways particularly on vulnerable locations so that vehicles slow down at appropriate places.

4.3.9.6 Wayside amenities for long distance drivers

It was felt by the Working Group that a large number of accidents happen because long distance drivers do not have wayside amenities for rest and recuperation. There is urgent need to establish these amenities on roadsides at national and other highways because accidents generally happen due to fatigue and over work. Transporters need to be educated to have a reasonable schedule of movement of vehicle which will not force drivers to drive long hours without sleep and rest.

4.3.9.7 Compulsory installation of GPS in Commercial Vehicles

It has been the view of the Working Group that there is tendency of over speeding and dangerous driving by commercial vehicles. As an enhanced safety measure, there should be compulsory GPS device installation in all commercial vehicles. By installing GPS, there can be a check on which roads these vehicles are travelling and to find out their locations at any particular time. The vehicle owner will be much better off as they will be able to locate their vehicle through the length and breadth if the GPS systems are installed in commercial vehicles. This will check misuse of commercial vehicles, facilitation in locating them in case of untoward accidents.

4.3.9.8 Part of fine being made available for Road Safety Improvement

Many members of the Working Group was of the view that the part of fine collected by the Traffic Police for traffic violations should become available to them for effective road safety improvement in the areas like education to students, road users and other stakeholders.

4.3.9.9 Apex Road Safety Body at the State and District Level

The Working Group was of the view that at present state and district level road safety committees are not effective. There is urgent need that a State Level Road Safety Committee headed by a senior functionary of government and should have representative from all stakeholders so that road safety scenario is reviewed periodically. Similarly, there should be District Level Road Safety Committee having members from all concerned units to review safety scenario in the District. There should be compulsory meeting of these committees and issues must be discussed threadbare.

If the above mentioned measures are implemented in a time bound basis, this will go a long way for improving road safety scenario in the country. The present track record of road security of the country is not at all satisfactory and everything which need to be done to improve the road safety scenario has to be done on priority to have a good safety scenario.

1.4 Education

1.4.1 Immediate/Short Term – The initiatives enumerated below are to be taken up by the State/UT government in partnership with local authorities.

S.N	Activity proposed	Time Plan
1	Targeting illiterate heavy vehicle drivers, as nearly 78.0 percent accidents are caused by drivers' fault, while 54.5 percent of accidents take place on national and state highways. To be done along with enforcement activities as a disincentive measure.	Programmes to be prepared and <u>launched</u> through cooperation with truck drivers and fleet owners

S.N	Activity proposed	Time Plan
2	Review and research of current RSE practices and responsibilities. RSE provided by schools, police, or NGOs should be assessed in the light of accident data and recent trends to identify priority areas and opportunities for improvement.	2 months to identify 4 to 5 sites in one town/city. To begin with, 35 cities in the country which have population of over one million would be taken up.
3	Identification of immediate improvements required in the current system by the education and implementing agencies. To enable RSE to continue in a more effective manner, while more number of new and substantial programmes are needed, short-term improvements to the existing system should be undertaken.	For example, visit of the road safety victims to the schools and lectures by them could be one immediate activity - one week per school. One better example is training of senior school students and college students on 'administration of first aid' to accident victims. But this should not be confined only to schools and colleges.
4	Introduction of RSE pilot projects in rural areas. Areas where road accidents are a serious problem should be targeted first. Local expertise should be developed. Villages near National Highways and State Highways which are accident-prone should be selected under these pilot projects.	One month in one village---in 144 districts
5	<p>Development of RSE school curriculum as part of a package on Life/Value Education. To ensure that relevant road safety skills are taught to each age group in a structured way, schools could develop their curriculum and plans in association with other part of the package, such as environment, consumer and health issues.</p> <p>Since the traffic circumstances and problems faced by children of localities and states are very different, local material need to be developed. Although these may be based on principles and materials from developed countries, they will need to be adapted to reflect the needs, problems, and circumstances relevant to local children.</p>	<ol style="list-style-type: none"> 1. Six months for development of curriculum 2. Field testing--six months
6.	Development of basic classroom materials and teachers' guides.	<ol style="list-style-type: none"> 1. Six months for development of classroom material based on curriculum developed 2. Field testing-- six months
7	Improvement and inclusion in teacher training. Improvement and inclusion of road safety lessons in teacher training courses with separate programmes for teachers training. Also need to target nursing	

S.N	Activity proposed	Time Plan
	schools to impart education on life saving practices.	
8	<i>Introduction of community education initiatives.</i> To ensure road safety and other socially relevant messages reach children, who are unable to attend school on a regular basis, and to educate the community, the parents and older generations, community education programmes such as rallies, street plays, puppet shows, etc. need to be developed to be part of RSE.	One month in each village in 144 districts.
9	<i>Formation and involvement of Community Groups:</i> These Community groups could be involved to identify places for constructing footpaths and medians on important roads, local residential areas, near schools and hospitals. Enforcement could be made more effective by encouraging voluntary organisations and their involvement.	One month at each point of city
10	<i>Media Sensitisation workshops:</i> Promote Media co-operation and participation to disclose the pathetic road scenario and highlight outstanding road safety initiatives through responsive and objective reporting.	1. Yearly 2. Half-yearly
11	Health checkups: Periodic eye/health check-ups of drivers should be conducted.	Six camps in a year in each state.
12	Appointing Road Safety Ambassadors from celebrities. Preparing campaigns in line with “Polio Eradication Programme” or “Jago Grahak Jago” or Blood donation or male sterilisation	Continuing
13	Involving schools and colleges in traffic management, targeted at plus-1 stage at schools and first and second year college students as they do not face the burden of appearing for final exams.	Continuing
14	Sending messages to mobile users	Continuing
15	Organising quiz/road show/rallies etc.	Continuing
16	Using popular medium such as electronic media	Continuing
17	All States to appoint a Road Safety Commissioner	One time
18	In MORTH, to appoint a Joint Secretary to oversee all programmes on Road Safety to oversee the implementation of the Comprehensive Plan of Action	One time

1.4.2 Long Term

S.No.	Activity	Time Plan
1	<i>Prioritising Road Safety</i> To prioritise road safety in enforcement, engineering and emergency care, regular sensitisation activities should be undertaken for all stakeholders as given in the recommendations.	On a quarterly basis
2	<i>Periodical Review of Statistics</i> Accident statistics should be periodically reviewed and made public to understand the impact of actions taken. Corrective steps should be taken based on these reviews.	Half-yearly
3	<i>Involvement and Co-operation between Insurance Corporates and Government</i> Insurance agencies to be involved in rewarding, and penalising the vehicle owners, which will change the driver behaviour. At the same time, it could provide feedback to government on regenerative crash trends and outcomes to assist in the further development of road safety policy.	Continuing
4	<i>Promote Public-Private Partnerships between Manufactures, Insurance Companies, Private hospitals, and Governments</i>	Continuing
5	<i>Promoting Public Transportation</i> Increase slow/no vehicle zone in cities, which are a part of JNNURM and promote means of public transportation.	Continuing
6	<i>Adopting IT related approach in changing scenario.</i>	Continuing

Given the magnitude of the task related to road safety, it would be appropriate to allocate adequate funds from the Central Government for the road transport sector towards road safety and road safety related research studies.

1.5 Emergency

4.5.1 Immediate and Short Term

4.5.1.1 Review and Audit of the Existing Schemes

- National Highway Trauma Care Project (NHTCP)

The scope of the scheme should be expanded to cover all the national highways in all the states with initial emphasis on states with difficult terrains. State governments should be encouraged to replicate similar schemes on the state highways.

'102' should be adopted as the Toll Free National Medical Distress Call Number across the country on lines of '100' for Police, '101' for Fire, etc. and should be used by all State & Highway EMS Networks.

- National Highways Accident Relief Services Scheme (NHARSS)

A periodic audit for the already supplied ambulances & cranes should be done with reference to their location, availability, utilisation, efficacy, manpower, uptime, etc. A monitoring mechanism to ensure proper implementation of this scheme should be institutionalised.

Instead of providing small/medium cranes alone, versatile crash rescue vehicles (CRV's) equipped with 'hydraulic rescue tools for extrication', fire extinguishing equipment (ABC Type), hydraulic towing arm and road clearing equipment should be provided. The same should be staffed with trained manpower.

The CRV's & ambulances should operate in sync as a crash rescue unit and their operations should be integrated.

All CRV's & ambulances should be integrated under a National Highway Accident Relief Network which should be accessible by a single Toll Free Number across the country.

The National Highway Accident Relief Network should be closely linked with the state EMS Network and the Toll Free Number should be same as the state EMS Number (102).

- Incident Management System (IMS) NHAI

This scheme should be rapidly extended to all the national highways in all the states with initial emphasis on states with difficult terrains. State governments should be encouraged to replicate similar schemes on the state highways.

A periodic audit for the already awarded contracts should be done with reference to the quality of service being rendered, quality of vehicles being used as patrol cars, ambulance and cranes, their utilisation, linkages, uptime, etc. to ensure they are meeting with the terms and conditions of the contract in letter and spirit. NHAI should institutionalise this activity by establishing an IMS monitoring unit staffed by skilled manpower.

The response time of 30 minutes for ambulances, cranes, etc. to reach the site needs to be reduced to 10 minutes over a period of 10 years. To ensure this, a close liaison with the corresponding State's EMS Network is obligatory.

The specifications for ambulances, patrol cars & CRV's should be revised, updated and standardised to remove ambiguity and ensure uniformity in form and function.

The National Medical Distress Call Number (102) should be well advertised by displaying prominent signage at every 5kms.

- Emergency Medical Services (EMS) Systems

National Framework for the EMS System with the aim of providing effective and economical emergency care should be developed so as to maintain uniformity and continuity across the country.

This framework should specify the broad specifications, guidelines and protocols for the various components of EMS System viz. Ambulances, Trauma Centres, Emergency Departments, Emergency Medical Technicians, Communication, Dispatch Centres, Command & Control Posts, etc.

All the states should develop their respective EMS Systems within this predefined framework.

4.5.1.2 *Short term Measures (one two years for realisation)*

- National Accident Relief Policy & a National Trauma System Plan

Deployment of a Pan-India Pre-Hospital Emergency Medical Care Network is necessary to ensure a primary crash response time of 8 to 10 minutes. This network should be adequately supported by a unified toll free number, seamless communication, centralised dispatch, medical direction, triage protocols and crash rescue units.

To verify and designate the existing healthcare facilities along the Highways and upgrade those found deficient to minimum defined levels and to plan for new facilities where there is a deficit so as to ensure the availability of one emergency care facility at every 50km along the national highways.

Plan for seamless networking amongst health facilities, rescue services, existing fleet of ambulances, etc. should be drawn up.

Capacity building and regular training in EMS to all involved in trauma care supplemented by training in First Aid to the public is needed.

Encouraging research and development into post-crash response is recommended.

Appropriate changes in the Motor Vehicles Act, 1988 and CMVR, 1989 are called for.

4.5.2 Long Term

Assured essential emergency care to all citizens of India should be ensured.

Augmentation in capacity and resources of available medical establishment is urgent.

Setting up of Regional Referral Trauma Centres across the country supported by a heli-ambulance network to ensure speedy care to the severely injured would be needed along with a plan for rehabilitation centres for the trauma victims.

Standardisation of minimum national specifications for various types of Emergency Response Vehicles viz. First Responders, Patient Transport Ambulances, BLS Ambulances & ALS Ambulances, Crash Rescue Vehicles, Dispatch Centres, Command & Control Centres, etc. so as to bring homogeneity in the system across the country is needed.

Best Practices in Road Safety from Around the World

5.1 Engineering (Roads)

The report does not cover this term of reference. Out of the solutions suggested, it cannot be discerned whether these emanate from ‘best practices’ elsewhere in the country/world. The nearest the report comes to in citing examples from elsewhere is in point number 3.4 under the sub-heading ‘Education’ where it mentions that ‘...experience both in India and elsewhere shows that such increase in speed and traffic often lead to more severe accidents, and at times, also an increased number of accidents.’ Further in point number 4.1 under the heading ‘Standards and Guidelines’ it mentions that ‘highway and urban road design standards will be made consistent with the safety requirements and in tune with the international best practices.’

5.2 Engineering (Vehicles)

5.2.1 Safety Vision

Most of the safety regulations have been implemented in Europe and in the US. Advanced countries have gone ahead with consumer-driven safety ratings like New Car Assessment Programmes (NCAP). European New Car Assessment Programme (Euro NCAP), Australian New Car Assessment Programme (ANCAP) and Japanese New Car Assessment Programme (JNCAP) are the prominent ones. In India most of the regulations have been aligned with ECE regulations.

- Vision Zero is a road traffic safety project started in Sweden in 1997 which aims to achieve a highway system with no fatalities or serious injuries. Many other countries have a definite target to reduce fatalities and road accident injuries.

- In Japan, a succession of five-year fundamental traffic safety programmes and targets, the first of which began in 1971, has reduced the number of road traffic fatalities from 16,765 in 1970 to 6,871 in 2005.
- In the Republic of Korea, national road safety campaigns have reduced the number of road traffic fatalities from 13,429 in 1991 to 6,563 in 2004.
- In 1972, Australia became one of the first countries to introduce compulsory seat belts in passenger vehicles. This resulted in a 40 to 60 percent reduction in the risk of injury/death.

The future focus of highly motorised countries is on

- Vehicle-to-vehicle compatibility where it has been found that in crashes one vehicle sustains greater damage resulting in greater injury to its occupants because of differences in mass, size and geometry – including among others, body shape, ride, height and bumper height.
- Intelligent traffic systems to improve the traffic situation.

5.2.2 Safety of in-use Vehicles – Inspection and Certification

- The system of Inspection and Certification of vehicles has had a good impact on containing road accidents in Germany as the following table would show:

Frequency of road-safety related faults in percentage (Germany)

Particulars	For 3-4 year old vehicles		For over 8 years old vehicles	
	Those Inspected	Not Inspected	Those Inspected	Not Inspected
Exhaust gas behaviour	1.5	28.5	4.6	36.1
Exhaust systems	5.2	54.5	10.9	47.1
Director Indicators	2	18.8	5.4	10.0
Tail/Brake lights	2	15.5	5.4	20.5
Dipped light	4.5	52.7	10.6	34.5
Headlamp glasses/reflector	3.5	12.7	10.3	18.0
Brake drums/discs	1.2	1.3	3.1	7.0
Brake lines/hoses	9.4	28	15.8	54.2
Parking Brake	7.6	67.5	15.7	84.1
Ser. brake 1-sided at rear	2.5	18.2	7.1	26.9

Particulars	For 3-4 year old vehicles		For over 8 years old vehicles	
Ser. Brake 1-sided at front	1.5	1.6	3.7	7.5
Loss of oil/Drive shafts	5.2	23.01	13.6	34.5
Steering joints/turnable	1.4	12.7	5.2	32.3
Steering gear	1.2	5.2	3.1	12.1
Wheel Suspension	1.8	16.5	7.0	38.8

Source: TUV NORD

- It has also been suggested that while the present PUC emission testing would continue, improvements therein could be undertaken by studying other international systems and their applicability to Indian conditions.
- Experience from both outside and within Asia has demonstrated that the most effective I&C programmes are those that are linked to vehicle registration.
- For waste management of =ELVs, lessons from timelines have been drawn from the EU, Japan, China, the US and the UK and it has been suggested that India should also plan for rapid implementation of these regulations.

5.2.3 Accident Investigation

- In developed countries, this activity has become a well-established science which is carried out jointly by specialised agencies of accident investigation, police, hospitals, vehicle manufacturers, NGOs, etc. Based on database and analysis, techniques have been developed (with the help of computerised software) for accident reconstruction. Please see the table below for details:

Country/Organisation	Contact Details
US 1. Fatality Analysis Reporting System (FARS) 2. National Accident Sampling system (NASS)	http://www-fars.nhtsa.dot.gov
Great Britain 1. Department for Transport (DFT)	www.dft.gov.uk
Sweden STRADA – Swedish Traffic Accident Data Acquisition	http://www.transportstyrelsen.se/en/road/STRADA/

Germany 1. German In-Depth Accident Study (GIDAS) 2. Federal Highway Research Institute (BAST)	http://www.gidas.org/ http://www.bast.de
Japan Ministry of Land, Infrastructure and Transport (MLIT)	http://www.milt.go.jp/en/index.html
Australia Department of Infrastructure and Transport	http://www.infrastructure.gov.au/roads/safety/
Netherlands Institute for Road Safety Research (SWOV)	http://www.swov.nl
New Zealand Crash analysis system (CAS)	http://www.nzta.govt.nz/resources/
Other International Organisations	
International Traffic Safety Data and Analysis Group (IRTAD)	http://internationaltransportforum.org/irtad/index.html
Asia-Pacific Road Accident database (APRAD)	http://www.unescap.org/ttdw/data/aprad.aspx
Community database on Accidents on the roads in Europe (CARE)	https://webgate.ec.europa.eu/carebo/

- The road accident data is always referred for any improvement in vehicle regulation. Further, there are national targets both short and long term to reduce fatality. With focused efforts, these countries show a reducing trend in the number of fatalities. (for details, please see graph in the original report in the chapter of accident investigation)
- The report refers to an example of Tamil Nadu which recently conducted accident data investigation carried out by JP Research with the support and cooperation from the Kanchipuram district police and the Tamil Nadu police from September 01, 2008 to October 15, 2008. It conducted detailed investigation of accidents occurring on national highway 45 over a 60 km stretch. The primary objective was to collect and analyse traffic crash data to initiate and create a sound basis for decision making for improving road safety. Detailed information on the work is available at the following links:

<http://www.tnpolice.gov.in/trafficimprove/e-TrafficMag.pdf>

5.2.4 Cost-Benefit Ratio and Economic Assessment – ITS

- Most advanced countries are in some way, shape or form deploying ITS. About 10 countries are taking moderate to significant steps, including: Australia, France, Germany, Japan, Netherlands, New Zealand, Sweden, Singapore, South Korea, the UK and the US. A number of developing countries, notably, Brazil, Thailand and Taiwan are also increasingly deploying sophisticated ITS with China having committed to make rapid leaps in the same. Japan, South Korea and Singapore stand out as world leaders in ITS. It is a cost-intensive intervention.
- Japan started with a Vehicle Information & Communications System (VICS) in 1996 and effective 2003 began to make extensive use of probes to capture real-time traffic information. Japan is now moving to Smartway which would provide users: 1) information and direct driving assistance including safety; 2) internet connection services; and 3) cashless payment services at toll booths, parking lots, gas stations, convenience stores, etc. ITS is also used for assistance on high-speed highways, electronic toll collection, monitoring and evaluating transportation system, addressing traffic congestion on three-dimensional maps, etc. The importance ascribed to ITS in Japan is at the highest levels of the government, the number of citizens benefiting from use of an impressive range of ITS applications.
- South Korea classifies ITS as a national priority since the late 1990s to address traffic operations and management; electronic payments; information integration and dissemination; public transport quality enhancement; enhanced safety and automated driving; efficient commercial vehicles and pollution control.
- Singapore collects real-time traffic information through a fleet of 5,000 taxis which act as vehicle probes feeding the Traffic Operations Management Centre. Soon it plans to bring location-based services through in-vehicle devices.

- The US has pockets of strength in particular regions for highway and electronic tolling, ramp metering, etc. However, unlike Japan, the system is not connected into a nationally integrated ITS.

5.3 Enforcement

The report mentions that ‘while India used to be behind China in the number of accidents and fatalities, now India has the dubious distinction of having the highest number of accidents and fatalities on the roads.’ It also cites the successful example of higher fines imposed by Delhi police for lane violation during the recent Commonwealth Games and use of Facebook and the Bangalore police in implementation of intelligent traffic systems.

5.4 Education

- The Working Group has identified best practices as shown in the table below:

Country	Good Practices
Bangladesh	The Centre for the Rehabilitation of the Paralysed, has begun sending current and former patients who were hurt in road accidents to visit schools and discuss their tragic experience. The centre has also produced road safety advice leaflets, which it distributes to schools. Promotion of road safety through NGOs is the objective of a recent World Bank initiative in Bangladesh.
Fiji	Has recently introduced traffic safety in the curriculum. A teachers' guide is being developed and the NRSC in association with the Department of Education is introducing a number of initiatives, including inviting drama groups to present plays for school children and development of a road safety character called "Road Ranger" to provide safety advice.
Kazakhstan	The traffic police are active in the organisation of road safety lessons by teachers in the schools. Parents are also involved by being tested on their road safety knowledge. Parents are requested to help their children identify and map out a safe route to school.
Nepal	A RSE project funded by the Overseas Development Administration (ODA) of the UK has produced local RSE materials, including readers, workbooks, posters, and teachers' guides. Puppet shows are used to introduce the topic of RSE in primary schools as well as women's groups and roadside communities.

Country	Good Practices
Denmark	A team of people crippled in road accidents visit schools as part of an RSE programme.
US	Mothers Against Drunk Drivers often send representatives to schools to speak, especially to students in the age groups where they are starting to drive.
Sweden	Fleet safety is part of quality management of the transport component of the enterprise (whether government or private). Quality assurance of transport aims to ensure that people and goods arrive at the right place, at the right time and in the right way (i.e. without danger of serious injury or damage to the goods or the environment). Thus, there is a linking of road safety and environmental outcomes. There is an emphasis on ensuring through education the quality of outsourced transport as well as the use of owned vehicles.
Austria	Awareness activities along with political will have created several no-vehicle zones.

- The Working Group also makes a reference to an initiative of the Government of Maharashtra to curb road accidents. In 1997, the Government of Maharashtra appointed the Accident Prevention Committee to reduce road accidents occurring due to shortcomings in roads by suggesting remedial measures. For each accident case recorded in police stations, the exact location of the accidents, the type of vehicles involved in accidents, the number of persons killed and injured in the accident and the probable causes of accidents are studied. The spots where accidents occur frequently are identified as accident-prone spots. These spots are inspected by the Committee, the probable causes of the accidents are analysed and preventive remedial measures are suggested. For suggesting remedial measures, the view points of the local people and also those of PWD members are incorporated. Further, any spot which appears dangerous is also identified by the Committee. Despite the Committees' terms of reference being limited to overcoming deficiencies in roads as a cause of road accidents, the Committee made recommendations spanning across all four Es. The recommendations pertaining to education related to road safety involve laying down that uniform of school children should be in bright colour so that they can be seen from a distance by drivers and that students should be advised on road safety for 5-10 minutes everyday in school.

- The Government of Tamil Nadu has constituted a 19-member apex body known as “State Road Safety Council”, entrusted with the policy making in the year 2007. This high level body meets once in three months and advises the Government on Road Safety related issues. Transport Commissioner/Road Safety Commissioner is the Member Secretary. In addition, Government of Tamil Nadu has constituted district road safety councils since 1989 in each District under the Chairmanship of the district collectors under Section 215 of Motor Vehicles Act, 1988. It is a 13 member body. Two representatives from reputed NGOs working in the field of Road Safety; One Representative of Consumer Action Groups; and MLAs representing the District. Besides, Government of Tamil Nadu has set up a Road Safety Fund administered by an Inter-Departmental Committee on Road Safety Fund with the Principal Secretary to Government, Home Department as its Chairperson and other members.
- Another initiative of the Government of Tamil Nadu relates to Road Accident Data Management System (RADMS). With the Police, highways and transport departments as its stakeholders, RADMS has become a successful software being used by the State Government/Transport Commissioner for analysing data and offering suitable remedial measures to avoid road accidents in the future.
- The Foundation, Kumari Rajashree Parmar Memorial Foundation, Pune, considering the reluctance and uncooperative attitude of society in helping road accident victims has started to encourage the society by giving awards to those members who act as good Samaritans by helping accident victims in the hour of need. These Samaritans are people who provide help to the road accident victims by taking them to the nearest hospital and providing immediate medical assistance and helping in saving the life of the victim. Every year on 17/18 November the Samaritan is felicitated with an award and a citation. In the citation, the work done by the Samaritan is read out to the society for his/her excellent services. This encourages the society. So far, the Foundation has given 98 awards.

5.5 Emergency

The report does not cover this term of reference. The only mention it has stated that the ‘Trauma Care Facilities’ should be set up in accordance with the World Health Organisation (WHO) Guidelines for Essential Trauma Care.

Cross Linkages with other Working Groups

6.1 Background

6.1.1 Addressing the 4Es has been accepted as the preferred holistic strategy to tackle the growing menace of road accidents. It is only natural that there would emerge an extensive and intricate inter-woven set of actions. Though the ToR had specified identification of such cross linkages by each Working Group, only the Education and Emergency Groups have done so.

6.1.2 What is collated below has, therefore, been extracted from relevant portions across individual reports. While doing so, it was found more expedient to club such cross linkages topically. At the end of each item, explanation within parenthesis the particular Working Group that has brought up the issue has been mentioned followed by cross linkage with other Group(s).

6.2 Resources – Funding

6.2.1 A perusal of all the reports shows that there is very little that can be done with the existing resources. Most of the suggestions involve substantial expenditure. This has been recognised by the Working Groups on Engineering – Roads; Education and Enforcement. These Groups have identified various sources for raising funds to meet expenses. Funding, clearly, is the most important cross linkage between all the Working Groups.

6.2.2 Annually available funding for maintenance and repair of National Highways is only about 30-45 percent of the estimated fund requirement in terms of the norms for maintenance of National Highways. The situation is perhaps worse for the majority of state roads that fall in the jurisdiction of the state governments. It is estimated that an annual average of Rs 300 crore would be

needed for Engineering (Roads) towards road safety that could be sought from: 1) one percent cess for road safety (Rs90crore annually); 2) contribution from NHAI Rs50crore annually; 3) earmarking of 10 percent of annually available allocation National Highway (Original); and 4) private sector contribution in the form of fully funded driver training institutes, centres of excellence, etc. Such generation of funds be utilised by all 4Es. (Engineering – Roads with cross linkages with all Groups).

6.2.3 MoRTH has an annual allocation of Rs 45 crores for road safety while Tamil Nadu alone allocates Rs 40 crore for this purpose. Contributions from relevant businesses such as automobile manufacturers, insurance companies, fuel suppliers can be sought along with a small cess on highway toll charges and setting up of a Road Safety Fund by earmarking one percent of the total proceeds of cess on diesel; and petrol. Fines collected by states should earmark a fixed percentage thereof for road safety. An estimate shows that a total of over Rs 2,500 crores was collected by all the states in 2009-10. Half of this if allocated to road safety would fetch Rs 1,250 crores. Expenses of such budgets should be monitored under the Results Framework Management System. (Education cross linked with all the Groups)

6.2.4 A part of the fine collected by the Traffic police for traffic violations should be earmarked for road safety improvements in areas like education of all stakeholders. (Enforcement cross linked with all the Groups)

6.3 Legislative Reforms

6.3.1 Changes in the Motor Vehicles (MV) Act, 1988

Many Working Groups have proposed various changes in the MV Act, the CMVR and state-level legislations. Another Bill has since been introduced and the idea of bringing piecemeal legislative proposals to the Parliament needs to be further examined. However, this is a cross linkage across all

Working Groups except in a few specific areas. Action thereon can be initiated right away within the existing resources.

6.3.1.1 There is a need to revisit the MV Act which was introduced in the year 1988 when the per capita income was Rs 4,232 whereas the same has gone up to Rs 46,492 in the year 2010-11. Section 140 relates to liability to pay compensation in certain cases on the principle of no fault. The amount of compensation for death at present is Rs 50,000 which should be increased to Rs 2,00,000 and in case of injury the same should be enhanced from the present level of Rs 25,000 to Rs 1,00,000. (Emergency cross linked with all Groups)

6.3.1.2 Section 146 which pertains to necessity for insurance against third party should be amended to make it one-time insurance for third party on the lines of road tax. (Emergency cross linked with all Groups) It may, however, be noted here that the Working Group on Engineering (Vehicles) casts doubts (see 3.2.6) over the system of one-time payment of road tax.

6.3.1.3 Section 163 should be amended to increase compensation in case of hit and run accidental death from Rs 25,000 to Rs 2,00,000 and for injuries from Rs 12,500 to Rs 1,00,000. (Emergency cross linked with all Groups)

6.3.1.4 Section 163 A limits notional income to Rs 15,000 for computing annual loss of income for the non-earners, which should be enhanced to Rs 1,00,000. (Emergency cross linked with all Groups)

6.3.1.5 While advocating for a higher fine structure (without specifying amounts) and citing the improvements in road traffic management during the Commonwealth Games (New Delhi) by levying fine of Rs 2000 for lane violation, it has been suggested that a clause needs to be inserted in the MV Rules for revision in fines based on the consumer price index every three

years without the need for seeking approval of the Parliament for such revisions. (Enforcement cross linked with all Groups)

6.3.1.6 The MV Act should include compensation for the gratuitous passengers. (Emergency cross linked with all Groups) and empower police to check overloading of commercial vehicles (Enforcement cross linked with all Groups). At present Transport Department is the only competent agency to check overloading.

6.3.1.7 An enabling provision under the MV Act for the cess to be collected at the rate of one percent on sale of diesel and petrol towards the Road Safety Fund should be moved that should also cover state's responsibility to create a state level fund by crediting half of the amount of fines collected. Voluntary contributions should be accepted and the Law Commission's Report number 234 should be referred to. (Education cross linked with all Groups)

6.3.1.8 Section 130 needs to be amended to make it mandatory to produce all records of the vehicle (registration, insurance, fitness, permit, PUC, etc) at the time of demand by enforcement officers. (Engineering – Vehicles cross linked with Enforcement)

6.3.1.9 Section 09 relating to driving licences should make it mandatory for all applicants to possess training in first aid and medical insurance policies and the availability of both should be ensured at the time of renewal of the licence. (Emergency cross linked with Enforcement).

6.3.2 Changes in Central Motor Vehicles Rules (CMVR) 1989

6.3.2.1 Ambulances and Rescue Vehicles meeting the National Ambulance Code should only be registered as an Ambulance or a Specialised Rescue Vehicle. The CMVR should be amended to accommodate this suggestion. (Emergency cross linked with Enforcement)

6.3.2.2 Rule 62 should be amended to prescribe fitness certificate both for transport and non transport vehicles. Details of parameters to be checked at the time of fitness check need to be modified to include more items concerning safety and environment. A Code of Practice needs to be prescribed for maintenance centres under Rule 63. (Engineering – Vehicles cross linked specifically with Enforcement and generally with all Groups)

6.3.3 Damage to Public Property Act

The Damage to Property Act should be amended to include provision of registering mandatory criminal cases against transporters, the consignor and the consignee found guilty of overloading commercial vehicles thereby damaging public roads. (Enforcement cross linked with all other Groups)

6.3.4 Miscellaneous

6.3.4.1 Section 185 of MV Rules states imprisonment as one of the punishments against drunken driving and under Section 20 provides for suspension of driving licences where there has been conviction under Section 185. These provisions are not being adequately invoked by enforcement agencies before the concerned courts, which ought to be made use of. (Enforcement and cross linked with all other Groups)

6.3.4.2 Under the MV Rules there is a provision for different punishment for the first traffic rule violation and for subsequent ones. As most states do not have a data base for traffic rules violations, enhanced punishment is not possible. (Enforcement cross linked with all Groups)

6.3.4.3 State Motor Vehicle Taxation Rules need to be amended to modify ‘one time tax for life’ in respect of personal vehicles and should be made payable after a fixed period and synchronised with the fitness certificate.

Insurance companies should not accept premiums of personal vehicles unless it has a valid fitness certificate. (Engineering – Vehicles cross linked with Enforcement)

6.4 Road Accident Data/Use of Technology

6.4.1 Improvement and computerisation of accident-related data management and use of technology for improving road safety have also been referred to by all Working Groups in one way or the other. Most of these suggestions being technology based would not only require high initial capital investment but also recurring costs of providing attendant infrastructure such as trained staff, proper environment, power backup, and so on. There is a need to frame a long term strategy at the national level. Technology-driven solutions as evidenced by examples from across the world lead to better road safety and instead of waiting for the market to usher in such solutions, the need ought to be driven by the government. To start with, recognition of this essential solution as being inter-disciplinary would lead to a logical conclusion that a task force should be created to prepare a comprehensive action plan and to identify areas where immediate penetration would be easy. The cross linkage is across all Working Groups.

6.4.2 At present there is no system for collection, scientific investigation, analysis and maintaining of database in the country. There is an urgent need to strengthen the system, which at present, involves transmission of road accident data by the concerned police station, to its district HQs and then to the state police HQ. Such compiled data is then sent annually to the Transport Research Cell of MoRTH. Institutionalised system of database storage needs to be developed to record accident data uniformly across the states. (Engineering – Roads cross linked with all Groups)

6.4.3 Data reporting system needs to be disaggregated to address causes of mishaps which would need a multidisciplinary approach for initiating corrective action

and to ensure that there is no under reporting. A reference may be made to the RADMS adopted by Tamil Nadu and discussed elsewhere in this report. The Working Group on Engineering - Vehicles has also annexed the forms from the US Department of Transportation. (Education cross linked with Engineering – Vehicles and Enforcement)

6.4.4 Collection of accident data has not been backed by scientific comprehensive study of the available data. Centralised data collection and analysis with centralised and common software is required for data transfer, storage and analysis. (Engineering – Vehicles cross linked with all other Groups)

6.4.5 Under the MV Rules, there is a provision for different punishment for the first traffic rule violation and for subsequent ones. As most states do not have a database for traffic rules violations, enhanced punishment is not possible. There is an urgent need to create a database for every vehicle, every driver and every offence. (Enforcement cross linked with all Groups)

6.4.6 Every city police should start interacting with road users through mediums such as facebook, SMS alerts, 24x7 helplines, etc. (Enforcement cross linked with all Groups)

6.4.7 To check multiple issuance of driving licences from different transport authorities, there is an urgent need to digitise driving licences that would also prevent issuance of a driving licence where the same has been suspended by another transport authority. (Enforcement cross linked with all Groups)

6.4.8 Introduction of latest technology in traffic management like CCTVs, speed cameras, red light cameras, variable messaging, video analytics, etc. would reduce dependence on manpower and can be effective. It refers to the Bangalore police in implementation of intelligent traffic systems. (Enforcement cross linked with all Groups)

6.4.9 To check the tendency of over speeding, GPS should be installed in all commercial vehicles. (Enforcement cross linked with all Groups)

6.4.10 Intelligent Transport Systems (ITS) include a wide and growing swathe of technologies and applications such as real-time traffic information systems; in-car navigation; vehicle-to-infrastructure integration; vehicle-to-vehicle integration; adaptive traffic signal control; ramp metering; electronic toll collection; congestion pricing; fee-based express (HOT) lanes; vehicle usage-based mileage fee and vehicle collision avoidance technologies. World-wide some of the technologies already in use include Global Positioning System (GPS – on-board units to calculate positions); Dedicated Short Range Communications (DSRC); wireless networks (both for communication channel between the vehicle and roadside equipment); mobile telephony; radio-wave or infra red beacons (for real time traffic information); roadside camera recognition (for charging on specific roads) and probe vehicles (government owned vehicles equipped with wireless technologies that report speed, traffic operation, etc). (Engineering – Vehicles cross linked with all other Groups)

6.5 Public Education and Training

6.5.1 Public Education emerges as another area that cuts across all Working Groups and is pivotal for the success of any road safety regime. All Working Groups have made reference to its need in various areas. While full-fledged public-oriented campaign would require meticulous planning, effective implementation, yet there are action points that have emerged and can be implemented within existing resources and with a little financial support.

6.5.2 The Hon'ble Supreme Court while disposing writ petition no. 270 of 1988, dated 28.08.1989 observed that all injured in road accidents, when brought to a hospital/medical centre, have to be offered first aid, stabilised and then

shifted to a higher centre, if required. It is only after this that the hospital can demand payment or complete police formalities. If a bystander wishes to help somebody in an accident, his responsibility ends as soon as he leaves the person at the hospital. He will not be questioned by the police. The hospital has the responsibility to inform the police and provide first aid. Awareness of this need to be spread. (Emergency cross linked with Education)

6.5.3 It has been felt by all enforcement agencies that the extant system of issuance of driving licences is not up to the mark. There is an urgent need to establish large number of training institutes that could impart basic training for drivers before issuance of licences. This recommendation assumes a special status given the fact that about 80 percent of road accidents are attributable to the fault of the driver. (Enforcement cross linked with Education)

6.5.4 Considering the need to address road safety issues, part of the World Bank loan under GTRIP was utilised to design and implement an effective public communications strategy. The engineers involved in planning, design, construction and operation of roads and highways need to be trained on road safety aspects and hands-on experience in road safety audit. (Engineering Roads cross linked with education)

6.5.5 Often the fear of a stick works wonders; hence enforcement activities should be linked with incentivising road users to be disciplined. (Education cross linked with Enforcement)

6.5.6 Using reflectors on slow moving vehicles often becomes vital in avoiding accidents, but the tendency is not to use them because of lack of enforcement. (Education cross linked with Enforcement)

6.5.7 Helmets for riders and pillion riders too can save many lives, but owing to the lack of enforcement the rule is often practiced in the breach. Similarly,

overloading of two wheelers and use of mobile phones while driving are other problems. (Education cross linked with Enforcement)

6.5.8 Allowing the right vehicles for transportation of passengers is also a crucial issue. In its absence, all types of unfit vehicles ply on our roads overloaded with passengers, which often result in accidents. (Education cross linked with Enforcement and Engineering Vehicles)

6.5.9 A one-time third party insurance premium can be collected on the lines of life-time road tax. (Education cross linked with Enforcement, Emergency and Engineering Vehicles – see also 6.3.1.2)

6.5.10 Public awareness needs to be prioritised. (Engineering – Vehicles cross linked with Education)

6.5.11 Set up a board for speedy resolution of claims. (Education cross linked with Enforcement)

6.5.12 Swift relief for ‘hit and run’ cases. (Education cross linked with Enforcement and Emergency – see also 6.3.1.5)

6.5.13 For effective implementation of I&C regime, training and capacity building of staff, attendants, auditors, mechanics, accident data investigators, etc by preparation of training manuals and of public through awareness campaigns is necessary, (Engineering – Vehicles cross linked with Education)

6.6 Research and Development

6.6.1 A standardised signage system should be introduced across all highways in the country for uniformity and to enhance visibility thereby ensuring safety. (Emergency)

6.6.2 The capacity in road safety research and accident analysis is to be developed.
(Engineering Roads)

6.6.3 Efforts should be directed towards supporting research activity in standardisation in design, evolving India-specific vehicle and laboratory test, harmonisation with international regulations and undertaking feasibility studies. (Engineering – Vehicles – cross linked with all other Groups)

6.7 Creation of Specialised Agencies/Adoption of Policies

The reports of the Working Groups together suggest an attractive menu for creation of various new agencies in road safety. No Working Group has touched upon the existence of a plethora of agencies already set up and working without coordination. Sundar Committee report has already suggested limiting such additional agencies and creating a Coordinating body.

6.7.1 The present state and district level road safety committees being ineffective, there is an urgent need for a state and district level road safety committee headed by a senior government official with representation from all stakeholders. The committees should compulsorily meet periodically.
(Enforcement)

6.7.2 An accreditation body is required to be created for road safety auditors.
(Engineering Roads)

6.7.3 Need to establish 5-7 Centres of Excellence for Road safety research and analysis in academic institutions across the country. (Engineering Roads)

6.7.4 The government has initiated the process of approving the Bill for creation of a Road Safety & Traffic Management Board. This should have counterparts in the states. Please read the introduction to Section 7 in this context.
(Engineering Roads)

6.7.5 The government made a public commitment to adopt a National Road Safety Policy in the year 2006-07. Alas, there is no sign of this crucial document as the political will was absent. A Policy Statement by the government is a resolution of the government to promote its intent to do something. Such a specific policy then becomes the backbone and a sounding board for measures to be taken to fulfill the objects of the policy. Hence, it is urged that a time bound plan be adopted by the government to design and adopt such a policy through wide consultations. Once this is done then legislative backup should be provided to implement its recommendations, rather than be left as best endeavour measures. Notably, the Government of Tamil Nadu had adopted a State Road Safety Policy which can be looked at for being scaled up as a National Policy. (Education)

6.7.6 Accident Research Centre has been visualised but work has to commence. National Level Accident Research Centres are sorely needed in the country for analysis of data, for feeding policy initiatives, for sharing experiences with sub centres to create synergy, for archiving, etc. (Engineering – Vehicles cross linked with all other Groups)

6.7.7 Setting up of Regional Referral Trauma Centres across the country supported by a heli-ambulance network to ensure speedy care to the severely injured. (Emergency)

6.8 Other

6.8.1 Providing immediate succour to road accident victims during the first hour is crucial and hence application of medico-legal provisions should be done in a friendly manner. (Education cross linked with Emergency)

6.8.2 Availability of ambulances, treatment facilities and cranes to remove wrecked vehicles can also be a contributory factor in saving lives. (Education cross linked with Emergency)

6.8.3 Where on either side of highways, there is habitation, provision for safe cross-over should be provided for pedestrians. There is also a need for speed calming measures such as table top speed breakers and rumble strips at vulnerable locations. (Enforcement)

6.8.4 There is an urgent need for providing wayside amenities for long distance drivers for rest. (Enforcement)

6.8.5 In spite of large number of safety regulations notified, implementation is lagging. (Engineering – Vehicles cross linked with Enforcement)

6.8.6 The road safety working groups around the country have started activities in pockets. (Engineering – Vehicles cross linked with all other Groups)

6.8.7 The traffic police should be responsible for checking vehicles for valid fitness certificates by providing them mobile vans. (Engineering – Vehicles cross linked with Enforcement)

6.9 Coordination amongst Ministries/Departments

The cross linkages as detailed above extend beyond the four Working Groups to a much wider spectrum. There is a need for effective coordination between the Centre and the states; MoRTH, NHAI with the state police and PWD, Regional transport authorities and the transport departments of states, finance department of states with the Ministry of Finance at the Centre, educational institutes and NGOs across the country, Information Technology Department of the State with the Centre; the Ministry of Law and Justice and so on.

The institutional framework also includes National/State Road Safety Councils, Transport Development Council, Indian Road Council, National Crime Records Bureau, Central Road Research Institute, Central Institute of Road Transport, Automotive Research Association of India, Vehicle Research and Development Establishment, NATRIP, Border Roads Organisation, National Institute of Training of Highway Engineers, Consultants & Contractors, Health Department at the Centre and states, etc.

Conclusion – A Time for Action

Clearly, it is time for action and not paper work. Underlying assumptions, model specifications and type of policy interventions yield varying estimates of road accidents, road fatalities and injuries and their trajectories over time. For example, if one were to extrapolate the present level of road accident deaths (1.3 lakh in 2010) based on current underlying trend, the morbidity number would be in excess of 2 lakh by 2020.

This Report offers contours of policy action to tackle the rising menace of road accidents and fatalities in India.