CHAPTER-7
FINDINGS, RECOMMENDATIONS AND CONCLUSION

7.1 INTRODUCTION:
This research study is based on the basic conceptual framework of National Security which encompasses the Human Security its reference to Disaster Management and further extends to Road Safety. Thus the study has established the relationship between Human Security and the National security which has consider a new dimension of National Security. It has also analysed the statistical data of Road Accidents in Maharashtra and established ‘causes and effects’ relationship with human security further with National Security. The study has fill-up the gap between present Government policies and implementation strategies and indicated the need for better preventive, mitigation and response measures including awareness and capacity building of all the stakeholders.

In view of the objectives and hypothesis of this research work, a Road Safety model has been developed to carry out detailed study. This research study also obtained a stock of past and present status of disaster preparedness focused with Road Safety at various levels. This study have identified that prevention, mitigation and response measures are most important issues therefore it should be instituted to improve human security which will also enhance the level of National Security.

Sustainable Human Security is connected to the success of disaster management policies which also includes road safety strategies which is depend on the threat analysis, synergy of the supporting stake-holders and their synthesized actions. From the descriptions of the entire study, to deal with a new dimension of human security and in view of the aim and objectives of this present study; the following conclusions are drawn-

i) The first conclusion from chapter one is that the natural and human induced disasters have been affecting the mankind for centuries. All these disasters are seems to be a threat to Human Security, shake the very foundation of balanced social, economic and cultural life and challenge existence of the communities. With automation, the collateral threats of human induced disasters and road accidents have risen considerably, taking toll of human lives, causing serious injuries, creating economic and social criticality and offsetting the balance of individual lives, families, communities and even Nations.

ii) It has been noticed that Human security is an emerging paradigm for understanding global vulnerabilities and whose proponents challenge the traditional notion of National Security. Human Security argues that the proper referent for security should be the individual rather than the State. Human security holds that a people-centered view of security is necessary for National, Regional and Global stability. Security of Human resources i.e. Manpower is an important aspect of National
security. This loss of actively contributory Human Capital is a serious concern of every country. Protection of this human asset can be done through various measures in the form of preventing and mitigating mechanisms for risk reduction and efficient response regimes for arresting further losses. The loss of human resources due to any disaster or specially Road accidents adversely impacts Human Security as well as National Security which is unaffordable by any Country.

iii) It is perceived after assessing the facts in chapter three, it is noted that disasters are a regular syndrome throughout the world. A disaster occurs because of a Natural hazard or a Human Induced Hazard that activates and goes beyond a threshold and causes damage and loss to many elements like life, infrastructure and property, processes and environment. It is now evident that the establishment of a proper system of Disaster Management has become a prevalent issue with innumerable deaths and losses as a result of Disasters of different sorts. All this creates economic, socio-cultural and human security related imbalances adversely affecting on Nation in a comprehensive manner. The importance of a minimum level of preparedness and planning is used to realize only after the Disaster strikes. This requires exceptional handling, for which the authorities and the public have to be prepared well in advance.

iv) It has been observed that; in order to prevent this unnecessary loss therefore, Human Security should be assured through greater disaster management and road safety activities. Although various means i.e. strategic interventions by the respective Governments and all the stakeholders. These interventions are multi-faceted and span the preventive, mitigational and response mechanisms. These mechanisms are essentially in the form of legal provisions, implementation related monitoring, public awareness and discipline and a very high sense of social responsibility. These also include post-episode actionable systems to prevent losses.

v) It also realized that Disasters including road accidents have been occurring at higher frequencies, greater magnitudes and severe complexities as the world has switched over to fast track development. Road Accidents figure much higher in the realm of avoidable disasters, as a major cause of insecurity in India and Maharashtra which adversely affects on Human Security as well as National Security too. In our Country every year more than 1.3 lacs people die in road accidents. It is also detected from the study that road crashes often result from a chain of core causes such as - the vehicle which is accountable for 5 to 10 per cent of crashes; road infrastructure which contributes 5 to 15 per cent to the causes; behaviour of the road users that accounts for 75 to 80 per cent of road crashes. This preventable loss of National property i.e. man power and money is to the tune of sixty five thousand crores or even more. This statistics would provoke us to think about the seriousness of this subject and lead to consider the huge impact on economic, administrative and human security of the Nation.
vi) On the basis of actual observations, field visits and surveys it is apprehended that the continuum of Road Accidents includes causative factors and stakeholders and their interaction is quite complex. Road Accidents have been causing maximum deaths in the world and India takes nearly 10% of the share of deaths caused each year in road accidents. The various important elements has been detected that degree of negligence while driving or breaking of rules and norms by the active stakeholders has been very high. This aspect needs to be attended to for better control. Knowledge and awareness level of the active stakeholders is low and affects their standard of driving. Social sense, sense of responsibility and discipline of the road users is shockingly low and needs to be enhanced. The quality of humans in the country in this regard needs to be enhanced. Post accident response in terms of medical aid, legal procedures and compensation requires major improvement in quality and synergy. Road design and construction norms and upgrades deserve major attention. Presently, this aspect is only indifferently handled. From the above descriptions of the study to deal with; the following finding are emerged:

7.2 FINDINGS:

Beginning with the positive findings; although the Government has started adopting measures to make disaster management more result oriented and capable to cope-up with any unexpected incident. It is observed that hazard, vulnerability and risk assessment do not matched with the resource availability. At present no mechanism is available for synchronization, communication and support as pointed by the charter. India is a victim of an unfortunate legacy of a lack of investment in equipment, training and resources. Presently, the Government structures have been devised such that the Road Safety is not dovetailed into Disaster Management and functionally these two aspects are being dealt with in watertight compartments. It is essential to establish a unified regime of both these functions.

The problem of quality and standardization is another area where the DM and Traffic Management appear to fall short of the standards in vogue at international levels. The Law Enforcement agencies are reluctant to implement the standards, may be due to lack of resources and overburdening in performance of the tasks. This became evident through the questionnaire. The level of ethics also seems low at the disaster incident and accident time as fraud and corruption seem evident. The vehicle, road and driver related findings are exclusively applicable for road safety only.

7.2.1 Vehicles Relevant Findings: Vehicles are contributing about 5-10 % in total causes of road accidents. Under this criterion following are the major findings.
i) **Default Vehicles:** There is a compulsion on annual technological safety standards and yearly vehicle testing for heavy vehicles. But, implementation of this rule is very poor resulting in an inferior vehicle fleet leading to the road safety problem. Thus, substandard technical and operating conditions of vehicles happen to be some of the major causes of road accidents. Many vehicles are not roadworthy. Effectiveness of Brakes, tyres condition, headlights, signaling and parking lights, loose electrical connections, and lack of side and rear mirrors are some of the common defects widely seen. These may look minor defects but many major accidents have occurred due to these defects.

It is found in survey, that after purchasing new vehicle, Manufacturer Company offers some free servicing. Very few people maintain vehicle after the free servicing and they do not maintain their vehicle at time to time.

ii) **Overloading of Vehicles:** Another matter of concern in low- and middle-income countries is the overloading of commercial vehicles transporting goods or passengers; and it is a major cause of many accidents.

### 7.2.2 Road and Infrastructure Relevant Findings:

Roads are contributing about 5-15% in total causes of road accidents. Under this criterion following are the major findings.

i) **Inadequate Funds:** The quality of roads is not found as per the standards because the funds for the development are very inadequate. There are several key constraints are always faced by various Road construction related authorities in terms of lack of sufficient funds, inability to muster up resources adequately and insufficient control on pre-construction activities. Some issues are also observed that works being awarded without full land acquirement or shifting of utilities to alternate places or short of ecological or environmental clearances etc.

For the Government, safeguarding the population by preventive regimes of road accidents is not a priority area in their agenda for development. There is also a sign of a lack of political motivation as other areas of development get higher priorities and consequent greater attention. There is dire need to have budgetary allocation for taking up various disaster management and road safety related activities, which is grossly neglected till today. On the other hand it required spending billions of rupees in relief, which should indeed be the other way.

It is also noted that when budget is allocated for preparedness; it gets diverted to other heads which is not fair at all. Owing to this diverting of funds to another heads certainly it has negative implication.

ii) **Substandard Facilities and Poor Maintenance:** There is no another arrangements of different types of traffic, no better road markings and road signs, no safer paths available for pedestrians and two-wheelers, the construction of sidewalks or not accessibility of pavements and more invisible pedestrian crossings, and faster traffic speeds without the use of road humps, rumble
strips and roundabouts. Speed breakers were found at inappropriate places and without standard norms. Road symbols were found feeble and size of the symbols found generally small. The traffic sign boards were found placed at wrong places. Often, the hoardings on the roads and advertisements camouflaged the road signs. It was also observed that the bridge barriers were broken at many places and that the bridges were too narrow to handle both sided traffic.

Even today inadequate street lighting is common problem in the number of cities and even on the highways. Overhanging or over growth of branches over roads often blocked view. Invisible dead ground, absence of sign boards at blind spot, absence of sign boards at road crossings and turnings were common faults. Non-availability of service roads; inadequate underground subways or flyovers, narrow passageways at the bus stops in the cities and at highways, encroachment by hawkers at busy city roads were rampant. Pedestrians are usually the most vulnerable victims in relation to the recklessness of the motorized population especially with the lack of pedestrian lanes, high urbanization, poor city planning.

iii) **Heavy Traffic and Congestions:** A heavy quantum of fast moving vehicles generally passing through the cities through Highways. The through traffic plying on these roads puts a heavy load on the city roads, increases smog pollution, traffic blocking and road crashes. Traffic jamming and congestions results into high societal costs, higher operation costs of vehicles and also a loss in productivity to the employed.

iv) **Pedestrian and Animal Intrusion:** The sudden appearance of pedestrians or animal, on a highway where speeds are generally high, found major cause for loss of control, leading to an accident. Pedestrians tend to cross the road anywhere, anytime. They just rush out to cross roads; they are least bothered of the traffic situation.

7.2.3 **Findings Relevant to Knowledge, Skill and Behavior of Driver:** The human factor of error has a greater role to play in society’s present road safety problems. Passive human factors therefore have to be minimised as much as possible. Unfortunately these are the most ignored problems and contribute the most to the human losses. These primary risk factors contribute to causing 30 to 50 per cent of mortal or disable accidents. In addition to this, there are other substantial risk factors, such as driver fatigue, the use of mobile telephones while driving, failure to observe safety distances, lack of knowledge on the Highway Code, overloading of vehicles to maximise profit, and a lack of visual aids for drivers etc. However, the major findings which increased the risk level are as below.

i) **Casual Approach:** Driving required a certain amount of concentration on the job, if he fail to do then it will lead to an accident. It is due to disturbing talk, day-dreaming, scenic viewing, a habit of not keeping both hands on the steering wheel etc.
It is also found in many cases that cell phone being use while driving is associated with just about a quadrupling of crash risk. Cell phone conversation while driving increases driver reaction time. The use of handheld and hands-free phones also results in similar increases in reaction time. Nighttime driving is substantially riskier than daytime driving. It affects on the visibility and fatigue. It increases the greater risk on road.

In our country, helmet wearing is not enforced or mandatory in all the states. Even though, in which states it is mandatory; citizens wear helmets in various shapes and sizes and of poor quality just to avoid tribunal by law.

ii) Rash and Negligent Driving: In most cases speeding vehicles crush the pedestrians because faster the vehicle is traveling lesser is the time for the driver to take corrective action, and in such collisions chances of death are higher. Changing lanes or pulling out of parking places without due care, and weaving between vehicles in different lanes are the most common causes of accidents in the city traffic. Failure to give way and ignoring signs and lights, not conceding right -of -way as per the established practices are some of the other major reasons for accidents.

A large proportion of fatalities on divided Highways are from head-on collisions. It is found that such crashes accounted many fatalities on four-lane, divided highways due to failure to keep to proper lane, or driving outside your allotted area can cause serious accidents. Most of the attempt is made to overtake without safe clearance or on turns and bends often leads to dangerous situations. This type of Overtaking is found dangerous along ghats and on bridges.

iii) Alcohol Impairment: Most of the adult pedestrian's death occurs because of this reason. When under the influence of alcohol, drivers loose the ability to take any decisive action resulting in unfortunate crashes. Even in low- and middle-income countries the legislations exists but the problem is of effective implementation. In most such countries the police have no means to test the drivers on the spot for alcohol consumption. Thus, it seems that the laws are rendered ineffective.

iv) Invisibility and Impaired Driver’s Fatigue: Motor Cyclists in India don’t have any Powerful headlight system in their vehicle. This problem of visibility is more serious during night hours, where road lighting is insufficient. The another important issue is Driving continuously without taking adequate rest or sleep results in driver sleeping on the wheels with excess speed is the one major cause of road accident.

7.2.4 Other Important Miscellaneous Findings: Following are the common findings which are applicable to disaster management and road safety also. The main observation is that the Government of India has taken a top down approach of DM and has adopted the policies that focus on Prevention, Mitigation and Capacity Building. However, the subject is being in concurrent list, each state is required to implement the DM aspects according to their choice and this has resulted into the states continuing to adopt ‘Bottoms-up’ approach. Their conceptual idea projection is not in
line with the actual ground level implementation. This is true for all types of disasters including road accidents.

i) **Vulnerable and Hazardous Locations:** There are many vulnerable and hazardous locations in Maharashtra where disasters or accident can take place. The residents are much close to this vicinity of such places making community vulnerable. Invisible dead ground are responsible to increase vulnerability of road accidents. We can take another example of natural calamities that impact of a disaster varies based on the geographic location of the residence of the people. People living on unstable slopes or at their bases have greater vulnerability from landslides, in this regard the Malin episode (Pune District) can be consider as one of the example. Notwithstanding the coastal zone regulations, more the population living closer to the coastline greater is the impact of Tsunami. Same is true of flood-prone areas where, the population closer to the river-lines suffers the most.

ii) **Rapid Urbanisation:** Due to environmental degradation and increased pollution; the ecological balance is continuously being disturbed. Faster urbanization is one of the key factors for increasing vulnerability of the deprived population. An increased number of poor migrants results in a decrease in the existing recourses of the urban settlement. This, culminated increasing the slum population, indiscriminate house building without any regulation, and unplanned settlements and traffic congestions. This makes a city more vulnerable to adverse effects of road accidents as well as of Disasters.

iii) **Poor Law Enforcement:** Government policy does not give much weightage in this manner. It allows hazard urban growth, no act or regulations are being followed or negligence is another major factor for adding the grief. Government policy in this regard is reactive rather than proactive. Law enforcing agencies- use to take all these matters very casually. There is need to go for introspection and law enforcement agency has to become strong so as to minimize the disaster effects and accident ratio.

        No provision has been made yet to control the process and safety audits. The monitoring process does not have any significant without a controlling process. Systems do not have any provisions for safety audit such audit is required.

iv) **Age, Male and Female Ratio:** Young people have the highest percentage of fatalities in Road Accidents. The proportion of fatalities in the age groups 15-35 is greater. As well as, psychologically, these people are more prone to take risks on the road, naturally its affect on social as well as National security due to loss of human asset.

        Conversely, women, small children, old age people and sick people are more vulnerable in any natural calamity.

v) **Inadequate Institutions and Experts:** Existing administrative organizations and regimes are not completely operational to deal with any mishap or to adopt the advance techniques that
would promote road safety and disaster management. Responsibility for both road safety and disaster management is much diffused. There is no single agency to deal with a range of problems associated with road safety and disaster management. There is ineffectual mechanism for coordinating the activities of the different agencies dealt with. There are hardly any professionals, except the Armed Forces and paramilitary in this area. NDRF and SDRF focus only on response, the Revenue Department focuses only on rehabilitation. However, strategic expertise is lacking at decision-makers level. Even Home Guards and Civil Defence organisation yet to fully trained and equipped with required infrastructure to perform the expected role.

vi) **Isolated Responsibilities:** The stake holding agencies does not have an adequate constitutional backing, budgetary resources or the mandate to be an efficient organization for executing disaster management and road safety plans in a missionary mode. Presently, the responsibility for the same is highly fragmented. There is a large amount of deficiency of inter departmental coordination. It appears that the departments tend to work in isolation. The departments do not have a centralized view of DM and also of the Road Safety. Thus, centralized planning, goal setting and operational tactical roles are fragmented.

vii) **Inadequate Resources:** Adequate technology, machinery is required for result oriented Disaster Management and effective rescue operation. Either we do not have the essential equipments or even if it is having then it may not be in the working condition. It is like torch without battery, which is of no use. Timely warning, warning dissemination and response to warning are important factors to reduce vulnerability. There is no accurate warning system for any emergency. This makes population more vulnerable.

viii) **Insurance Unawareness:** It is observed that in many cases, medical attention, particularly in private hospitals, was unconcerned due to inability of the injured person to establish his capability to pay the hospital charges. The victims had inadequate insurance cover either for the vehicle or the affected party to cover the medical expenses. More ever, when accident occurs, people do not help to other party because they do not have any insurance policy. Due to this victim do not get any medical help in emerging period.

ix) **Media Ineptitude:** Media is not imparting their role effectively in this regard. The misfortune is that regularly occurring road crashes that are small in intensity involving lesser individuals draw less media attention. Media is having extremely less concentration towards disaster prevention, mitigation and response also. Media also fails to publicize possible causes and refrains from pointing to the need for certain preventive and response mechanism for awareness of the public.

x) **Health Services and Facilities:** Despite the improvements in medical services, the availability of emergency medical services closer to the place of disaster/ road accidents is still
grossly inadequate. Special teams for quick response have not been formed. The first responders do not have ability to offer First Aid immediately on occurrence of an incident. This leaves the victims at the mercy of their fate. Emergency ambulance based transportation is available only on express ways. Other places are not adequately covered. Also, not every rural hospital is equipped to handle serious casualties, in terms of expertise and equipment. It is also noticed that most traffic accidents form part of medico legal regime and as a result, the administration of medical aid to road accident victims is often differed. Private hospitals are mostly found unwilling to accept accident victims as they attempt to avoid legal repercussions. Though DM Act 2005 has attempted to remove this anomaly, in practice, the situation has not changed appreciably.

### xi) Community Participation:

Though community is the first responder in any emergency, but community could not perform the vital role due to lack of knowledge about casualty carriage, first aid, evacuation methods and simple rescue and resuscitation. The attitude of the community is of ‘Playing safe’ and not getting involved in any of the DM interventions. Particularly during road accidents, bystanders do not volunteer to help the victims with the fear that police will harassed. Thus, community’s participation in DM (including road accident) episodes is only symbolic and not vigorously. Although Government is taking lots of efforts to reach the masses, the outcome is far from the expected one. Participation of community in the disaster management and road safety activities is still low at level and there is kind of indifference towards this subject. In rural areas, superstitions are rampant. Thus, people attribute each emergency as an act of God and instead of taking proactive measures of prevention and mitigation, go through the post emergency suffrage.

### 7.3 RECOMMENDATIONS:

Disaster Management and Road safety being a common, multi-sectoral, responsibility of the Government and civil society, there is a need to establish synergy in both the fields. There is a need to recognize road safety as a part of larger DM regime. Present disaster management and road safety efforts should be based on long term objectives. But these goals for the future can only be well envisaged from the success in the implementation and effectiveness of short-term measures in taking care of the initial stages of the problem. Improvements in this area cannot be achieved through one administrative regime or discipline, they are a co-lateral responsibility and a synergy is required from all stakeholders to execute this task.

For the success of Disaster Management and Road safety; a various suggested actions are includes i.e. it should be treated as a political priority, Institutional mechanism needs to be developed, A lead agency needs to be appointed for coordination, Provision of adequate resources for control and response, Establish accountability of the public, Develop a multidisciplinary approach, Setting up proper targets and set up preventive plans, Support the creation of safety activities is still low at level and there is kind of indifference towards this subject. In rural areas, superstitions are rampant. Thus, people attribute each emergency as an act of God and instead of taking proactive measures of prevention and mitigation, go through the post emergency suffrage.
advocacy groups and Create budgetary provisions. These suggested actions will be very effective to enhance the human safety and security.

There is an urgent need to identify the significance of human security i.e. being adversely affected due to aggravated road safety situation in order to take corrective actions, following recommendation are given exclusively-

7.3.1 Vehicle Relevant Recommendations: Under this part it would like to make meticulous suggestions to improve road safety.

i) Ensure Vehicle Testing: Regulations about loading of the road carriers already exist. However, spot checks on the roads are not strictly been done. The flying squads should be deployed to check this aspect. Similarly, two-wheeled riders are also carrying heavy loads. This aspects needs to be checked on the roads. Tractors tow multiple trolleys with agricultural produce. This needs to be stopped and regulations should be passed. Similarly, load carriers carry loads that project outside their tail boards. This is highly dangerous and such acts should be made punishable.

ii) Vehicle Maintenance: Vehicle user i.e. Driver should timely maintain and repair own vehicle as per schedule. Regime of ‘Spot Technical Inspection’ should be instituted with adequate resources. This should also involve checking of emission norms. The automobile industries and vehicle operator should be encouraged to devise and implement safety norms. Vehicle discard system should be strictly implemented by vehicle owner and RTO to enhance Road Safety.

7.3.2 Road Infrastructure Relevant Recommendations: Under this aspect it would like to make specific suggestions to the threat of road safety. Well planned roads and equally maintenance of them to provide the base for safe driving. Road Maintenance needs to give significant priority. In this connection the following specific recommendations are made:-

i) Fund Allocation: It is necessary that budgets for road construction should be adequate in order to consider the road safety as a top priority. A specific percentage of budget should be allocated for maintenance. Superficial resurfacing does not solve problems and nor does pot hole filling.

ii) Road Design and Facilities: Safety measures have to be kept in mind while designing and constructing new roads. Continuous improvements should be carried out regarding existing roads through keeping statistical records of vulnerable accident prone spots. Vulnerability at crowded locations like the markets and near schools as well as traffic junctions should be dealt with appropriately through traffic calming measures like placing road signs, blinker lights, rumblers and placing traffic cops. Glow signs and warning boards should be placed at appropriate locations and marking road dividers with bright paint should be looked into. Trimming of road-side trees, removal of encroachments, ban on placing hoardings are some additional measures are required.

Right and sufficient lighting, Warning signs should be provided to avoid road accidents.
The lighting installations in motor vehicle should be of scientific standards considering the light conditions outside. Warning lights are important especially at dangerous intersections as well as warning signs at dangerous curves. A median safety barrier helps to stop vehicles travelling into opposing traffic lanes. The barriers can also be used to limit turning options for vehicles also. Median barriers can reduce injuries but their use must be considered carefully because they may increase speeds and reduce space for other road users, and it may be culminated an accident.

The above measures adopted liberally and adequately funded should result into reduction of road accidents. Also construction of bypasses will reduce the burden of traffic in the cities.

When dedicated carriageways are provided for public transport, the method of dispersal must take into consideration the bus stop location. If the center lane of carriageway is dedicated for public transportation grade separated pedestrian crossing facilities must be provided for bus-stops located away from major intersections. Bus stops should have wider road width for the buses to pull on the side and not to block traffic.

iii) Provision of Separate Footpath and Cycle Track: As per IRC (Indian Road Congress) guidelines sidewalks should be provided on both sides of the road and above the level of the carriageway separated by non mountable kerbs. While constructing footpaths should be followed strictly and preferably railings should be provided to prevent the entry of two wheelers. It has been observed that overhead bridges for pedestrian crossings are sparsely used. Especially the senior citizens are unable to use these and the pedestrians continue to cross roads haphazardly. Traffic control mechanism for allowing crossings by pedestrians should be intensively instituted at congested places in the cities.

It is very essential that cyclist should be dispersed from public transportation systems safely. The bicycle tracks should provide with barrier to dissuade its use by motorised vehicles. The Government may seek to disseminate ‘best practices’ in this regard to town planners, architects, and highway and traffic engineers. Use of bicycles should be promoted with incentives and separate bicycle tracks should be constructed.

iv) Strict Law Enforcement for Encroachments and Safety Audits: Effective road width reduces because of hawkers encroaching the roads. Giving allotted space to hawkers on footpath and separating them at the same time is essential. The encroachment by hawkers all over the footpath should be strictly prohibited and regular monitoring mechanism should be activated.

Highway safety standards should be set in consultation and guidance with experts for the design, construction and administrative operators of the highways, including road infrastructure, road signs and monitoring mechanism.

v) Alternate Transportation System: Supplementary provisions of local railway have to be done to ensure the smooth traffic. Improvement of an efficient public transport system holds the
key position to check the expansion of personalised vehicles as a long term policy and accordingly to reduce traffic congestions and road crashes.

7.7.3 Knowledge, Skill and Behavior of Driver’s Relevant Recommendations: It is required to upgrade driver’s behaviour, Knowledge and skills.

Behavior of the road users can be altered either through force or through changing of value systems. Some of the methods could be short-term, that can be introduce instantly, and some may be long-term that, though no less important, may take more time to execute and to bring about the desired outcome.

**Short-term measures:**

i) Speed limit must be enforced strictly.

ii) Agents who indulge in arranging driving licenses by mal practices must be discouraged, it may be considered on material facts only.

iii) Modern speed measuring equipments must be made available to police and motor vehicle department.

iv) The law on drunken must be strictly enforced.

v) Psychiatrist tests may also be introduced before issuing of heavy vehicle driving license.

vi) Electronic speed control devices may be made compulsory for all heavy vehicles.

vii) Involvement in road accident must be entered in the licences of the drivers involved. After specific number of involvements the licences should be permanently cancelled.

viii) Strict measures by law enforcers should be implemented on reckless driving as well as driving in drunken states. One of such measures should be on-spot confiscation of the licences of such drivers.

ix) Necessary provisions in the existing law should be enforced for controlling the political Processions and rallies along roads.

x) Medical fitness of drivers is very important aspect in this regard. The physical and mental status of the driver and his alertness has a lot to do with the accident as well as its timely prevention.

xi) CCTV cameras should be installed at vulnerable places and on signals to count offences, rash and negligence driving.

**Long Term Measures:**

i) **Education and Training:** Education of drivers and developing their sense of responsibility and behavior is an important aspect of road etiquette. This should be done during initial training. It is important to inculcate in them technical, social and psychological skills to make
them safe, responsible and professional drivers. All Heavy Motor Vehicle drivers should be made to join in refresher courses so that dreadful behavior can be eliminated quickly.

ii) **Appraisals and Incentives:** Owners of vehicles and public sector undertakings should provide financial incentives for drivers who have been ‘accident free’ during the previous 12-month period. Medical and health checks should be instituted as obligatory along with annual technical inspection of drivers and holding the medical certificate along with the license should be made mandatory. Drivers of public transport should be encouraged to work within existing permissible limit work hours. It is needless to mention that they should get good amount of salary and ensured that psychologically they are satisfied.

iii) **Wearing Helmet and Seat Belts Compulsory:** To reduce the risk of brain injuries, wearing of ISI mark crash helmets by motorcyclists and pillion riders should be made mandatory and enforced strictly. Use of seat belts by users of four wheeled vehicles should be made obligatory and enforced ruthlessly. Use of air bags should be made obligatory in vehicle designs

iv) **Attitude with Care and Courtesy:** Over speeding is an attitude. Ensuring that drivers adhere to speed limits could be through control measures that are short term and changing behaviour patterns through inculcating greater road sense could be a long term measure. They must be constantly repeated in public campaigns and drivers must be encouraged to behave courteously and non-aggressively. Speed humps can reduce over speeding. This would be one of the most effective tool for safety and security.

Nevertheless, unreliable evidence suggests that most of the crashes often involve drivers who take shortcuts, often with slow vehicles. In the short term, strict enforcement is the key approach for addressing this phenomenon. Additionally, collision warning systems would also contribute to a reduction of this type of crash.

Driving in inebriated state is responsible, for 30 to 50 per cent of road deaths and serious casualties. The maximum legal limit (0.5 grams per liter) beyond which drivers are liable to penalties, this should be strictly executed.

v) **Miscellaneous:** Stopping on express ways should be avoided and a hub should be created wherein long distance drivers can get place to rest. Here it would like to add that security should also be provided to protect the goods and drivers from the thieves.

Speed registering cameras should be installed to monitor speed. These Cameras should be functional and should be always under monitoring. Introduce “Demerit Point System” leading to cancellation of driving licenses while dealing with violators of the traffic rules.

Reflectors strips can be provided at toll plazas and petrol pumps. If vehicles do not having such reflectors they will restrict to getting such service on priority. For road accidents, there is a need to create synergized response teams that are deployed on highways at such distances that
response is generated within 15 minutes of receiving warning. The teams should consist of police personnel, emergency medical staff with ambulance equipped with life saving mechanism and also personnel who could be equipped with metal cutters and a crane.

7.3.4 Other Important Recommendations: Following are the important recommendations which are applicable for disaster management and road safety furthermore. Recommendations given in the succeeding paragraphs pertain to planning and actionable issues.

i) Target Based Financing: Like any other perspective plan, Capacity enhancement in DM has to be planned in the long term and broken into smaller segments. Budgeting should be done to enhance performance by acquisition of standard quality equipment. Equipment capabilities need to be laid down and provided for in the budget. In terms of road accidents, budgeting should be done for improved road designs and road safety aspects of road surfacing, construction of berms, broader lanes, construction of crossing points etc.

ii) Community Training: To inculcate the traffic sense and sense of responsibility, it is recommended that the students of the school and colleges should be made aware of road discipline, road etiquette, first aid and casualty evacuation. Teachers should be literate in order to conduct DM training in educational institutions. Private and Public sector organizations should be trained in safety and methods of immediate reaction during emergencies. Synonymously, industrial workers also to be trained.

iii) Research & Development: Planned allocation should be made and efforts directed towards upgrades in technological development and research. Professional training in disaster management should be built into the existing pedagogic research and education. Research on Preventive and Mitigation as well as Response mechanism through technological interventions are required to be instituted in Universities along with required funding.

To enhance the Road safety; systematic approach is required including recognition of areas of research on road safety. Now, It is necessary to establish Centres of Excellence for road safety research and education. It is also required to establish the methodology for multidisciplinary crash Investigation, data collection, reporting and analyses and maintenance of road safety related database. The Government should facilitate good practices through publication, training, conferences, workshops and websites.

iv) Role of Private Sector and Media: Projects should be executed through Public-Private-Partnership mode and the Private Sector should be encouraged to allocate funds through CSR (Corporate Social Responsibility) means. This will enhance capacity of implementing Government agencies. In order to enhance the competency of DM, contract or MOU can be sign with foreign agencies.
Role of various publicity media plays a vital role for welfare of people. Through the media i.e. daily newspapers, Radio and Television etc.; we can educate the community in this area. Voluntary organization can sponsor such programmes which would give priority to educate masses, for effective risk reduction and road safety.

v) **Environmental, Ecological and Social Aspects:** Environmental protection, afforestation programmes, Pollution control and construction of earthquake resistant structure should have the highest priority within the planning. The actions should bring long-term advantages in tackling the environment and social impacts effectively. Similarly, flood line management should be done and community within the risk zones should be gradually relocated. Land use planning should be given the highest priority.

vi) **Prevention and Preparedness Planning:** Risk assessment, vulnerability mapping, climate change adaptation, forecasting warning systems, Use of information technology, Strengthening of Emergency Operation Centers, Mass casualty management, Media partnership, Land use planning, Animal care are the main issues in disaster management which required due attention for better practices.

vii) **Command, Control and Co-ordination:** There is necessity of computerized data which should be produced by R.T.O and city Traffic Police through perfect coordination. The data should be transparent, mistake proof, avoiding blind-routine schedule.

Coordination between Insurance Companies-their involvement in Disaster Management, especially in Road safety is highly recommended because the various Insurance Companies like Motor Insurance Company, Life Insurance Company should contribute to the fund for implementation of road safety. These institutions should get actively participate in mass education. The Government and non Government organisation must adopt an integrated approach to ensure that the traffic management regime is in sync with the identified needs.

Collaboration of Government with the NGO’s and local community must be prepared well in advance to deal with any unexpected situation. The Civil Defence organisation is supposed to work during war or war like situation, so it should be merged with disaster management.

viii) **Health Services and Facilities:** Trauma-care facilities should be instituted in all private and public hospitals with bed strength greater than 10 beds that are in the vicinity of highways and in towns with population of 10000 and above. All these should have ambulance services and 24 X 7 medical services of competent doctors with life-saving trauma care available. This will enhance the post accident response mechanism and availability of medical service to bring down fatalities and disabilities.
First-aid training should be made mandatory to all adults as a part of formal education system during first year of services. It should also be made mandatory to all drivers and person of stake-holding departments.

ix) Insurance: It is highly recommended to introduce an insurance policy for housing, crops and accident at community level. This is also required to ensure that medical attention should not be delayed. If insurance cover of vehicles are made mandatory for comprehensive coverage and insurance of the drivers is made mandatory for an adequate sum, it could take care of immediate medical treatment.

It is also suggested that insurance companies could provide incentive by linking insurance cover with accident records of the drivers. Third party Insurance is mandatory but there is no special provision for insurance audit. Therefore it is recommended that at least third party insurance should be charge at one time like road tax.

x) Awareness Activities: Local Government and Non Government Organisations should make provision for Disaster Management and Traffic knowledge Parks. They suppose to display the boards and slogans in the premises of educational institutions, Gardens, play grounds which would enlighten importance of safety.

xi) Execution of Safety Laws: There are many loop holds in the present Disaster Management Act and Motor Vehicle Act. The Government should take appropriate measures to strengthen and improve the quality of enforcement in order to ensure effective and uniform implementation of laws. In order to implement the law effectively, there should not be any interference by the politicians.

There should be perfect transparency and stern rules for ensuring security on roads. Enforcement of traffic rules is not just taking penalty from the person who violated the rules. But the system should take a step forward. Demerit point system should be given connectivity with vehicle loan disbursement. Bank financer should check the violence record of purchaser while allotting a vehicle loan. For example if there are five demerit points in last one year; then they should provide only 75 percent loan amount.

7.4 CONCLUSION:

Road traffic safety is an outcome of interactions in integrated system of roads, road users, monitoring mechanism and vehicles. Whenever agreement among these sub-systems is distressed, the chances of accident occurrence increases. Road safety could only be enhanced by attending a harmony in the above sub-systems and for which an integrated approach for preservation and enhancement of functional balance in these sub-systems is warranted.
Disaster management and road safety requires multi-disciplinary and pro-active approach. In achieving our goal of moving together, towards safer India; the Governments, the community, civil society organisations and media also have to play crucial role. Our mission is vulnerability reduction and accident reduction to all types of hazards as well accidents; be it natural or manmade. Although it is not an easy task to achieve, but not impossible if we put our sincere efforts unanimously. It is high time that we acknowledge that road safety is a part of disaster management regime and the road safety trends are slipping out to acquire a giant proportion in terms of human losses and pressures on the administrative and social systems. We must bring the entire gamut of efforts under one umbrella of united thought and actions for benefit of human life. It is only then our future generations will be safe.

As per prediction, by 2030-2040 A.D; India will be having majority of young population. This younger population will play determinant role to become a Major Power. As we do consider youth is an asset of Country. This asset should be remain Safe & Secure for Nation building and further development of a Country. India will be the super power and we shall strive to achieve this goal with missionary zeal.