

## Road Safety Initiatives in Bangladesh

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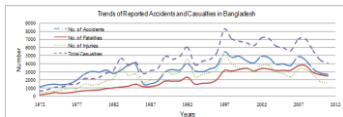
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### Graphical abstract



### Abstract

In combating the man-made epidemic on road by traffic accidents and injuries, some major initiatives have been undertaken in Bangladesh in the past decade including policy formulation, research, education, legislation & sanctions, and engineering intervention. In comparison to the magnitude of the problems, the progresses are very slow due to enormous constraints at different levels. In this paper, the authors briefly reviewed some major road safety initiatives in recent years in Bangladesh taken by different government and private organizations. The key issue of this paper is to evaluate the initial impact of some of those interventions.

*Keywords:* Safety; problems; initiatives; evaluation; impact

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## 1.0 INTRODUCTION

Like many other developing countries, road safety problem is an emerging and challenging problem in Bangladesh. Many countries of the world comprising developed and developing have reduced or controlled road traffic accidents and injuries by the means of scientific and pragmatic policies, strategies, guidance, intervention and evaluation in spite of the enormous increase in travel demand and mobility. It is predicted to decrease by 30 percent in high income countries whereas it will increase by nearly 90 percent in low and middle income countries in the coming decade unless any effective measures are taken.

Worldwide, the number of people killed in road traffic crashes is estimated at almost 1.3 million and at least 50 million are injured each year. More than 85 percent of these casualties including 96 percent of child deaths occur in low and middle income countries. It is predicted that the number of people killed on roads will rise by at least 80 percent over the next 20 years in developing countries like Bangladesh whereas it is expected to decrease by 30 percent in high income countries.<sup>1</sup> Sustained declining trends of road fatalities in the developed countries have been attributed to concerted efforts in many sectors including effective coordination, community involvement, well researched road safety initiatives, road safety good practices and improved targeting of resources. In developing countries like Bangladesh major considerations of such approaches are required with due urgency and commitment.

The statistics revealed that Bangladesh has one of the highest fatality rates in road accidents with over 50 fatalities per 10,000 on-road motor vehicles.<sup>2</sup> Vulnerable Road Users (VRUs) viz.

pedestrians, children, bicyclists, cycle rickshaw occupants and pullers are the worst affected victims and account for nearly 80 percent of road traffic accidents fatalities in Bangladesh.<sup>2</sup> The Government of Bangladesh is being concerned about the growing road safety problems to combat against such trauma. As a part of Government's as well as private initiatives, some pragmatic programs have been taken to ensure safer transportation. Efforts are underway for integrating different organizations both at public and private sectors, civil societies, communities and individuals towards identifying their specific roles and responsibilities and thereby developing effective measures to tackle road safety problems in Bangladesh.

In this study, an attempt has been made to briefly review some major road safety initiatives in recent years to control and reduce road traffic accidents and injuries in Bangladesh by different government and private organizations, institutions, agencies and individuals and their effectiveness of the overall safety performance of the country.

## 2.0 MAGNITUDE OF THE ROAD SAFETY PROBLEMS IN BANGLADESH

Accident Statistics: Police are officially responsible for reporting and recording of road accidents and casualties in Bangladesh. According to the police reported official statistics, there were at least 3764 fatalities and 3284 injuries in 4426 reported accidents in 2008.<sup>3</sup> Reported road traffic accidents statistics of the last decades

are given in Table 1. A study on Bangladesh Road Crash Costing conducted by the Transport Research Laboratory (TRL) funded by the United Kingdom (UK) Department of International Development (DFID) in 2003 showed that there was 885,056 accidents and among them 10,692 were fatal, 106,062 were grievous, 147,660 minor and 442,981 were property damage accidents.<sup>5</sup> This study also estimated that the total casualties resulting from road traffic accidents were 529,880, among them 12,792 fatalities and 165,464 seriously injured.<sup>5</sup>

Recently the World Health Organization (WHO) estimates that the actual number may be in the order of 20,000.<sup>6</sup> Significant fluctuations in the numbers of fatalities and injuries as reported by police clearly reflect the problems of reporting and recording inconsistencies. It can be noted here that this reporting inconsistencies might be attributed for the different methodological system of data collection and accident fatalities defining criteria but this fluctuation could be same level in the previous year and gradually reduces in the recent year because of various positives responses which will be discussed in the succeeding sections.

## 2.1 Fatality Rate

The ‘fatality rates’, i.e. the estimated number of road traffic accident fatalities per 10,000 on road motor vehicle for Bangladesh (over 50) is very high by international standards, as the fatality rates for motorized countries is usually less than 2 (2 in the United States of America and 1.4 in the United Kingdom of Great Britain and Northern Ireland). “A Review Of Global Road Accident Fatalities” conducted by Jacobs and Thomas showed that the Bangladesh has one of the highest fatality rates in road accidents, over 40 deaths per 10,000 registered motor vehicles.<sup>7</sup> Table 1 shows the trends of fatalities per 10,000 on road motorized vehicles in Bangladesh.

## 2.2 Vehicle Statistics and Their Involvement in Road Fatalities

The total motor vehicle population has increased from about 94,960 in 1972 to about 871,853 in 2008. The number of motor vehicle is about 30% lower than the number of registered vehicles as many of the vehicles are out of service or under maintenance (BBS, BRTA, 2008).<sup>8,9</sup> Table 1 shows the yearly fatalities contributed by specific vehicle types along with fatality rates per 10000 vehicles of those categories. The involvement of heavy vehicles in particular bus/minibus in accidents and fatalities is disproportionately higher both in all fatalities and pedestrian fatalities.

**Table 1** Number of vehicles, fatalities and fatality rates

Vehicle Types	Number of Vehicles (Registered) <sup>1</sup>	Number of Vehicles (On Road) <sup>2</sup>	Avg. Fatalities per Year <sup>3</sup>	Avg. Pedestrian Fatalities per Year <sup>3</sup>	Fatalities per 10000 Vehicles <sup>4</sup> (on Road)	Pedestrian Fatalities per 10000 Vehicles <sup>4</sup> (on Road)
Bus/Minibus	40469	29717	1005	545	338	183
Trucks	65239	48753	673	426	138	88
Jeep/Car/Taxi	189287	78236	133	63	17	8
Microbus/Pickup	18492	14743	193	112	132	76
Auto rickshaw/Tempo	116242	77700	246	58	31	8
Motorcycle	328294	220225	147	45	7	2
Rickshaw/Rick. Van	N/A	N/A	129	3	N/A	N/A
Bi-cycle	N/A	N/A	105	4	N/A	N/A
Others	26324	15854	172	89	108	56
Total	784347	485228	2805	1346	57	28

\*Note:

1. Total number of vehicles registered is 784347 up to 2003
2. Total number of vehicles on road is 485228 in (2001-2002)
3. Traffic fatalities with known vehicle involvement in the period of 1998-2005. There were a total of 23194 fatalities out of which vehicle involvement were known for 22442 (97%) fatalities.
4. Fatalities per 10,000 respective vehicles (Source: Country Paper, 2007)<sup>4</sup>

## 3.0 TRENDS OF ROAD TRAFFIC ACCIDENTS AND FATALITIES IN BANGLADESH

### 3.1 Total Number of Accidents and Fatalities

According to the police reported accident records, the number of fatalities has been increasing from 187 in 1972 to 3764 in 2008, nearly 10 percent per year in the total 37 years life of Bangladesh but in the last decade this numbers are not equally increased (3314 in 1999 to 3764 in 2008, 2% per year)(Figure 1). However, from this figure it is evaluated that there are no significant increase of accidents, fatalities, injuries and casualties have taken place in the last decade in Bangladesh in spite of increase of huge number of population, personal trips, vehicles (formal, informal; motorized, non-motorized), road network as well as increase of level of understanding on the necessity of accident reporting and recording

particularly for the continuous monitoring of media personnel and introduction of formal accident reporting system. This is attributable partly to an improvement of road condition (in the form of curve straightening, carriageway widening, black spot treatment etc.), construction of new national and regional highway with the help of foreign consultants incorporating pre-safety auditing approach, increase in the number of high standard vehicles on the road (like Volvo, Hino etc.), improved road users education and awareness level and partly to the enhancement of a coordinated official policy to control the problem and police enforcement.

In the Figure 1, it is also seen that there is a decreasing trend with some fluctuation in the year of 1997 to 2007. This may be attributed for the introduction of newly developed accident reporting form and organizing series of training program for the police personnel in particular aims to enhance their capacity regarding proper way of reporting and filling up of different

attribute data in the Accident Report Form (ARF) under the Institutional Development Component (IDC) of South-West Road Network Development Project (SRNDP) project. After 2007, the figure is representing a continuous downward trend. This could be the outcome of the road safety initiatives taken by the government

agencies and other relevant organizations and institutions. Level of underreporting might also be one of the major factors for the declining trend of the recent years.

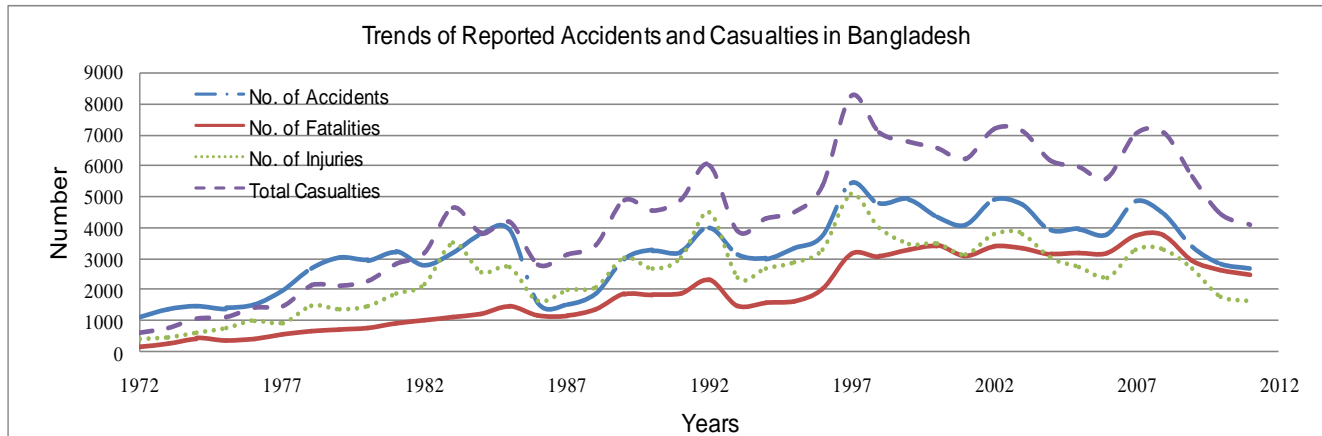


Figure 1 Traffic Accidents, Fatalities, 1972 through 2008

**3.2 Fatalities per Million Persons and per 100 Km RHD Roads**

Table 2 shows the number for fatalities per million persons and per 100 km Road and Highways Department (RHD) roads in Bangladesh. Fatalities per million persons indicate the national health burden of traffic crashes. For Bangladesh, the fatality rates have increased from 2.74 fatalities per million persons and 4.48 fatalities per 100 RHD roads in 1972 to 29.8 and 17.83 respectively in 2008 but in the last decade it has also not significantly increased (15.81 to 17.83 and 26.91 to 29.81 respectively). In addition, the overall fatalities per 10,000 on road motor vehicles have increased from 40 in 1972 to 53 in 2008, it has decreased in the last decade by about 31 Percent (78 to 53). Both the figures show the same fluctuation in the same period, may be attributed from the same reason.

From these figures it can also be concluded that as the degree of exposure in the form of number of trips, number of vehicles, road users as well as amount of road network are ever increasing, this trends show a positive and hopeful sign.

**3.3 Fatalities per 100 Million Vehicle Kilometers**

Accident and Fatality rates with respect to vehicle kilometer are calculated based on vehicle Operation Survey data conducted by

Roads and Highways (RHD) department in different years. Table 1 represent the total vehicle kilometer travel by motorized vehicles and the accidents and fatalities per 100 Million vehicle kilometers over a period of 5 years (1999 to 2004).

The above table shows that in a span of five years total annual vehicle kilometers driven by motor vehicles have increased by 57 percent. The corresponding accident and fatality rates have decreased by 49 percent and 43 percent respectively per 100 million vehicle kilometers of vehicles plying on road. Significant reduction in accident and fatality rates per 100 million vehicle kilometers also indicate a positive approach towards traffic safety improvements in the country.

**4.0 MAJOR ROAD SAFETY INITIATIVES IN BANGLADESH**

In order to improve the road safety situation as well as to minimize the recurrent losses of valuable lives and properties, several initiatives have been taken by the various government, non-government and donor agencies in Bangladesh in the form of policy implementation, institutional development, geometric improvement of roads, sanction of legislation and enforcement, capacity building of professionals and academician and awareness

Table 2 Accidents and fatalities per 100 million vehicle kilometers

Year	Total veh-km	No. of accidents	No. of accidents per 100 million veh-km	No. of fatalities	No. of fatalities per 100 million veh-km
1999	13,419,385,000	4,916	37	3,314	25
2000	12,719,533,000	4,357	34	3,430	27
2002	14,125,435,000	4,918	35	3,398	24
2004	21,042,770,900	3,917	19	2,968	14

Source: RHD (1999, 2001, 2003, 2005a)<sup>11, 12, 13 & 14</sup>

development of mass people. Some of the major initiatives are briefly summarized below:

#### 4.1 Adoption of National Land Transport Policy (NLTP)

National Land Transport Policy (NLTP) has been adopted in 2004 by the Planning Commission of Bangladesh, which sets vision for "providing safer roads" and policies there-for, such as (i) road safety auditing at all phases of road projects, road construction & maintenance, (ii) speed restrictions on roads, (iii) safety improvement of existing roads etc. which are needed to achieve the vision.<sup>15</sup>

#### 4.2 Preparation of Safety Manual, Hand Book and Guidelines

RHD has prepared different Manual, Hand Book and Guidelines for road safety such as the Guidelines for Road Safety Audit, Road Safety Improvement Works Manual, Road Safety Users Guide, Road Geometric Design Manual, Police Training Handbook, Road Safety Engineering Toolkit, Pavement Design Guide, Guidelines for Identification of Sites for Road Safety Improvement Works, A Guide to Safer Road Design, among others with the help of development partners under different projects. In addition, Traffic Sign Manual has been developed by Bangladesh Road Transport Authority (BRTA) in 2000.<sup>15</sup> Revision of the Traffic Training Syllabus & Curriculum (incorporating road safety related issues and role of Police) Police Department has been approved and adopted on the Revised Traffic Training Syllabus & Curriculum and since 2004, all traffic training courses are being as per revised syllabus and curriculum. This is an activity accomplished under the road safety initiative with SRNDP project funding and consultant's services.<sup>16</sup>

#### 4.3 Establishment of National Road Safety Council (NRSC)

The National Road Safety Council (NRSC) was established in 1995 under the Ministry of Communications. Initially with support of WB funded road improvement project of RHD; now a unit of BRTA. The Secretariat severely lacks in man-power, logistics and facilities; hence is yet to become fully functional. The NRSC comprises of representations from all key agencies including transport owners, workers association, professionals in the field, transport regulator, law enforcers and road authorities.<sup>17</sup> The NRSC acts as apex body for approving and driving forward the national policy and plans. The NRSC also formulated the National Road Safety Action Plan. Besides, the NRSC is responsible for holding periodic meetings to provide policy level guiding decisions and directives to road safety related stake holder organizations - RHD, BRTA, Bangladesh Police, Dhaka Transport Coordination Board (DTCB), City Corporations & Local Governments etc.

#### 4.4 Establishment of Road Safety Cell and District Road Safety Committee

An independent organization called Road Safety Cell (RSC) was setup and acts as secretariat to NRSC at the Bangladesh Road Transport Authority (BRTA) carries out preparation of plans, coordination, monitoring and evaluation of planned activities assigned to different agencies and implementation of some program assigned to it. It also disseminates information on road safety and road accident to all relevant organizations and members of the public. Besides NRSC, District Road Safety Committees (DRSCs) at the district and metropolitan levels have been formed by the involvement of DC and SP along with BRTA, road authority and other transport / road user agencies, which implement programs and policies of NRSC and will undertake local road

safety programs according to local needs. There is an Executive committee headed by the chairman BRTA to co-ordinate NGO regarding road safety issues.<sup>17</sup>

#### 4.5 Establishment of Accident Research Institute (ARI) at BUET

In response to the growing accident problem in Bangladesh, the concerned authorities have started to realize the need for scientific study and research regarding the causes of accident and commensurate remedial measures. The highest level of commitment in this regard came from the Honorable Prime Minister to establish an independent Accident Research Centre (ARC) within the top priority programs of the government. Accordingly, the ARC has been established at Bangladesh University of Engineering and Technology (BUET) in 2002 to carry out scientific research for clear understanding of the road safety problems and ascertaining the underlying causative factors, which contribute to accidents on roads, railways and waterways. After the successful completion of the project period, ARC becomes an institute named Accident Research Institute (ARI) under education ministry at BUET in 2007.

#### 4.6 Development of Road Safety Unit at RHD and LGED

With the technical assistance of DFID, RHD has established road safety division in January 1999 with a view to deal with the safety aspects of national, regional and feeder roads.<sup>17</sup> There are severe lacks in man-power, logistics and facilities; hence yet to become fully functional. Recently, MoC approved proposed upgrading of the Unit, its roles and functions and procedures for implementing roles and functions. LGED has also created Road Safety Cell within LGED; and undertaking activities in this regards.<sup>16</sup>

#### 4.7 Establishment of Highway Police

With the aim of increasing of the safety and improving traffic management on highways, the Government of Bangladesh created the Highway Police in 2005 with a view to maintain and ensure discipline, enforce traffic rules and regulation on the highway, traffic management, prevent highway crime, collect and disseminate of intelligence, police patrolling as well as ensure safety on road etc. To achieve these goals, the highway police are working under two units namely Traffic Unit and Investigation Unit. Currently the Highway Police comprises 2042 personnel and is headed by a Deputy Inspector General (DIG).<sup>17</sup>

#### 4.8 Formation of Road Safety Voluntary & Advisory Group

In addition to government organizations, many road safety non-government voluntary or advisory groups have been formed at national, regional as well as local levels in Bangladesh. Nirapad Sarak Chai, Work for Better Bangladesh (WBB), Safe Community Foundation, Poribesh Bachao Andolon etc. are pre-dominant at national level.<sup>17</sup>

#### 4.9 Approval of Speed Limit Zoning and Speed Restriction Rules

Excessive and inappropriate speed is the most important factor contributing to the road injury problem faced by many countries. Many low and middle-income countries have a serious, and in some cases worsening, road safety problem. A number of research projects have clearly identified inappropriate speed as being a particular problem.<sup>18</sup> Incognizance with these facts Speed Limit Zoning & speed restriction rules have been developed for different

highways in Bangladesh. It has been approved and published in a gazette by BRTA in 2005 for Dhaka-Jamuna Bridge National Highway (N4), Daulatdia-Faridpur-Jessore-Benapole National Highway Route (N7), Dhaka Mymensingh National Highway Route (N3), and Dhaka Aricha National Highway Route (N5), Dhaka Chittagong Coxbazar National Highway Route (N1), Nabinagar, Kaliakoir regional Highway (R505).<sup>19</sup>

#### 4.10 Preparation of National Road Safety Strategic Action Plans

From the establishment of The National Road Safety Council (NRSC) in 1995, drew up first National Road Safety "Strategic Action Plan" covering the period from July 1997 to June 1999 and subsequently 2000 to 2002, 2002 to 2004 & 2005 to 2007 have developed. Subsequently the National Road Safety Council (NRSC) of Bangladesh formulated an updated "National Road Safety Strategic Action Plan 2008-2010" with the hope that it will provide an important opportunity for improving safety in a comprehensive way and makes an effort to approach the issue holistically. A vision and goal for road safety improvement was stated in the plan.

- The vision- fifty percent reduction in the annual number of fatal road accidents within the next fifteen years.
- The goal- ten percent reduction in the annual number of road accident fatalities by the end of the year 2007.<sup>20</sup>

The Road Safety Action Plan identified the nine priority sector activities for improvements. The action plans, with the actions in nine sectors are further classified into several sub-sectors. Indeed, the activities for the focus of the strategic action plan are similar to those covered by the ADB/ESCAP road safety guidelines.<sup>21</sup> It is increasingly apparent that non-governmental groups have a key role to play in dealing with road safety problems.

#### 4.11 Development of Accident Database

A standard format for accident information recording was designed in 1995 as an initiative under Institutional Development Component (IDC) program was adopted by Police Department and promulgated appropriate rules for mandatory use as part of "First Investigation Report" of accident cases by Police. Besides, MAPP5 software based accident database system has been developed and data has been being stored in this software since 1998. In addition, Under Institutional Development Component (IDC), RHD has conducted road inventory survey and has prepared inventory book to identify the accident locations and find out Black spot on the road as well as to treat that location through different site-specific intervention. Computerized data base for recording registered motor vehicle and officially licensed driver's data have also been established at BRTA by the Dhaka Urban Transport Project (DUTP) funding under IDC program.<sup>16</sup>

#### 4.12 Preparation of RTA Annual Report

The Bangladesh Road Transport Authority (BRTA) has been collecting and analyzing road traffic accident statistics since 2001. Since its inception in January 2001, BRTA has been preparing reports based on the National Road Traffic Accident (RTA) database. The system of accident data collection and analysis was set up at that time with assistance from the Institutional Development Component (IDC) program which was funded by the UK Department for International Development. Since 2005, the Bangladesh Road Transport Authority (BRTA) has been

continuing this process of data collection and analysis independently, without international assistance.

#### 4.13 Training of Road Safety Professionals

Efforts are underway for strengthening the capabilities of the key agencies through organizing different long and short term training program both local and overseas for the professionals and providing facility to participate different workshops, seminars and conferences on road safety.

#### 4.14 Safety Awareness and Training

Different safety awareness campaign and training programs have been taken at different levels in the country including professionals, transport owners & workers, students, cadet, BNCC, mass people by different government and non-government organizations under different projects and by individual initiative.

#### 4.15 Implementation of Road Safety Audit

Road safety audit as an accident prevention tool is a relatively new and highly cost-effective approach to improving road safety. Road safety audit is of particular importance in the developing world because countries are still developing their basic national road networks, and unless safety checks are undertaken this will result in unsafe networks in the future.<sup>22</sup> Incognizance with these facts, RHD road safety unit has introduced formal road safety audit on the different locations or spot of national highway from the past few years under different projects.

*NGO Initiatives towards Road Safety:* The Non-governmental Organizations (NGOs) are becoming active in the area of road safety in Bangladesh. The activities of two leading NGOs such as BRAC and Center for Rehabilitation of the Paralyzed (CRP) are quite noticeable in this regard.<sup>23</sup> The major programs being undertaken include are Community Road Safety; Training of Students; Road Safety Training for Office Staffs; Community Road Safety NGO Network; Publicity and Awareness; Research; Driver's Training; Treatment and Rehabilitation of Paralyzed People.

#### 4.16 Geometric Improvement of Roads

Significant improvement works have taken place on the national highways as well as regional and feeder roads of all over the country in the past decade by RHD and LGED with the support of Government of Bangladesh and donor agencies. Construction of new and strategic road, realignment of existing road, widening of road, surface treatment, road and roadside improvement like shoulder improvement, removal vision obstruction, providing loading and unloading facilities were the major link improvement work among them. Besides, some of the hazardous road locations both spots and links have been improved with the prime objective of safety improvement on the different national highways in Bangladesh.

#### 4.17 Procurement of Safety Equipment and Logistics

Different types of enforcement and road safety equipment have been procured by the concerned agencies including police, BRTA in different times under different projects in particular SRNDP funding. Besides, office equipment and logistics also have been procured to setup and organized of Road Safety Unit of RHD and LGED.

#### 4.18 Establishment of International/Regional Cooperation Regarding Road Safety

Various concern organizations of Bangladesh have developed effective linkages with different institutions, organizations, universities etc. at local, regional and international levels viz. GRSP, VTI, ESCAP, ADB, WB, REAAA, TRL, TRIPP and other international aid agencies and the specialized institutes in order to facilitate exchange of knowledge and technologies regarding road safety. There are also initiated professional exchange programs with similar overseas organizations and institutions for updating and sharing of knowledge. Efforts are underway in establishing a real network of road safety researchers, professionals, academicians, practitioner and the world leading organizations and agencies (e.g. GRSP, WB, WHO, UNICEF, VTI) for mutual benefits in specific aspects of road safety, particularly towards support and exchange of new knowledge, ideas, measures, technologies and good practices.

#### 4.19 Progresses in Road Safety Research

Parallel with the operational work on improving traffic safety in Bangladesh road system, long term research and specific development work have been started particularly in recent years. The Government of Bangladesh has realized the need of safety research and established accident research institute at BUET and was given the responsibility for a substantial part of traffic safety research. During the 1990s, the number of research program in the field of traffic safety was conducted by individual initiative under the university guidance and assistance.

Financing of traffic safety research is at present fully the responsibility of the Government of Bangladesh. The administration does not carry on research of its own, but both research institutes and universities can apply for funds for research projects. No industry or private organization has focused on safety research issues and funding support yet. Work on a joint traffic safety research program is trying to carry out at present in cooperation between the donor agencies like the World Bank, UNICEF and the other government organizations and institutions.

### 5.0 MONITORING AND EVALUATION OF THE IMPLEMENTED ROAD SAFETY MEASURES

Since 1995 a significant number of road safety measures have been taken on the Road Network of Bangladesh, unfortunately, no major or comprehensive evaluation study has been conducted as part of the donor-funded new/rehabilitation/maintenance projects to assess the effectiveness of the implemented measures. A few studies have been conducted on individual scale by students as part of their research dissertations. More detailed evaluation is necessary to determine the effectiveness and applicability of the measures to our traffic, land-use, social and behavioral characteristics. It is believed that the continuous monitoring and evaluation will lead to better design of roads, reduction of accidents and ultimately lead to the creation of a road safety manual for Bangladesh. Preliminary impact of those implemented & ongoing initiatives is valued below:

#### 5.1 Development of Awareness and Understanding

Under Southwest Road Network Development Project (SRNDP), RHD has prepared a report on titled “Road Safety Initiatives in Bangladesh – A Brief Report” in collaboration with FINNROAD in April 2005. This report points out some impact of the initiatives particularly related to development of awareness and

understanding. Based on their finding, some impact are pointed below:

- At Government (MOC, Planning Commission etc.) policy level - significant level of awareness and recognition of the road safety as a national problem is observed.
- At planning and policy level of stakeholder agencies (RHD, Police, BRTA etc.) - Significant level of awareness and recognition of the road safety is observed. However, still there are needs for clearer understanding of what has to be done in future.
- Among road engineering community - some awareness and understanding is observed. Road safety improvement is often confused and mixed up with capacity improvement of road infrastructure. Mainly due to lack of traffic engineering practices.
- Among field level staff of other stakeholder agencies & road users - No awareness and recognition of the road safety as a national problem is observed.
- The impact of general public awareness activities, being implemented along the road projects by BRAC etc. is not conclusive for the lack of monitoring & impact assessment study.

#### 5.2 Institutional Development/Performance

According to that report and observations particularly in recent years, the following impact are evaluated:

- Activities for capacity building and strengthening of the NRSC Secretariat (Road Safety Cell of BRTA) and Road Safety Unit of RHD were not significant. Lot more has to be done for making these two vitally important units functional.
- Activities on training of local engineers were very minimal, engineers were not trained on use and application of standards, manuals and guidelines, even local consulting engineers are not trained
- Activities on training of police has been negligible, and no initiative undertaken to strengthen Traffic Training School of Police.

#### 5.3 Safety Manual, Hand Book and Guidelines

Almost all of the manuals and guidelines are prepared by the foreign consultant under different project jointly funded by Bangladesh government and different donor agencies. Local engineer or professional were not involved in the preparation or compilation process and there had been no training workshops, which resulted in non-acceptance by local engineers in most cases.

#### 5.4 Evaluation of Geometric Improvement

There is no study by the implementing agencies to evaluate the performance of the geometric improvements measures on different road under different project as discussed earlier. A study has been conducted by Muniruzzaman in 2004 titled “Performance Evaluation of Road Safety Measures in Dhaka-Aricha Highway” to evaluate the effectiveness of physical improvement of black spot on Dhaka-Aricha Highway corridor.<sup>24</sup> This improvement work has been conducted by RHD under JBARP project. The major improvement measures included the widening of the carriageway along with alignment correction, construction of bus bays, installation of concrete guard posts, warning gates with speed reducing signs at both entry and exit points, etc.<sup>24</sup>

The study revealed that the limited site-specific safety improvement measures undertaken along the Dhaka-Aricha highway were very effective in reducing the frequency as well as

the severity of accidents both before-after and control-site methods of analyses. However, in a few instances the implemented accident countermeasures did not produce the desired level of positive effects because of number of reasons like presence of intense roadside hawking and non-motorized activities, conflicting use such as drying paddy and jute in marginal areas and the absence of enforcement measures. Further details can be seen in Transport and Communications Bulletin for Asia and the Pacific, ESCAP, No 74, 2005.<sup>24</sup>

### 5.5 National Road Safety Council and National Road Safety Strategic Action Plan

Though the NRSC was established as an apex body for approving and driving forward the national policy and plans and holding periodic meetings to provide policy level guiding decisions and directives to road safety related stake holder organizations. Unfortunately, due to lack of sustained and concerted efforts, no meeting has been held since last two years and almost inactive at present.

From the establishment of The National Road Safety Council (NRSC) in 1995, NRSC has been preparing and publishing National Road Safety Strategic Action Plan for three years period and subsequently it has published fifth version of that. But, the use of this plan is very insignificant because of the following major drawbacks:

- The action plan is just the compilation of some activities of different organizations on road safety or related issues. This plan is not prepared on the basis of priority needs to achieve a certain goal.
- There has not monitoring mechanism and concern body or stakeholder for monitoring and evaluation
- Have not feasible and strategic visions and targets
- Has not any indication on budgetary requirements and way of funding support
- Though the plan is prepared for a certain year, there has not any time frame to complete the tasks results same activities and tasks of a particular organization are repeated in different plan.

*Accident Research Institute (ARI):* ARI is carrying out its activities in two broad areas viz. road safety research and training.

- **Road Safety Research and Investigations:** ARI has conducted road safety research and investigation, which are useful in documenting the accident problem characteristics and would provide the means to develop and evaluate effective countermeasures including road traffic accident database development and updating, identification of hazardous road locations (HRL) and accident black-spots analysis in Bangladesh, investigation of major fatal accidents and accidents during festivals, understanding heavy vehicle drivers' behavior and their attitudes, effects of vehicular defects and vehicle modification on road traffic accidents, involvement of children, pedestrian on road traffic accident in Bangladesh, recording and analyzing of inland water transport accidents etc.
- **Road Safety Training and Awareness Programs:** Accident Research Institute has organized a series of events to provide a platform to share and transfer of knowledge and experiences in road safety developments and good practices among them training for professionals, road safety practitioners, students, cadets and scouts; training for heavy vehicle drivers in different district level; organization of international conference on road safety, national and regional workshops, seminars, policy discussion meetings and rallies and established a co-operative linkage network with various

departments, institutions and organizations of Bangladesh in promoting road safety which has creates a significant impact on policy maker, professional and academicians both in local and international level.

ARI is expected to play major role to develop pragmatic, cost-effective scientific solutions and bring about significant improvements in the capability of the professionals and workers in the field of transportation to a meaningful level of expertise for accident prevention and injury control and thereby contribute to the safer road environment for all users and operators. Efforts are underway for integrating different organizations both at public and private sectors, civil societies, communities and individuals towards identifying their specific roles and responsibilities and thereby developing effective measures to tackle road safety problems. ARI is also exploring avenues for exchanging knowledge and technologies through collaboration with an extensive number of renowned overseas institutions, organizations and universities etc. at local, regional and international levels.<sup>4</sup>

### 5.6 Road Safety Cell and District Road Safety Committee

After formation of these cells and committees in 1995, initially significant impact particularly in the awareness development at local level was made. But with time, for the lack of co-ordination, integration between local and central committees and for the lack of internal communication among the members of the committee who were designated from different local organizations as well as shortage of resources, they are not properly functioning. Recently, initiatives are undertaken again to make these local safety committees active and functional by the newly formed NRSC Committee.

### 5.7 Road Safety Voluntary & Advisory Group

These groups are undertaking road safety campaign programs at private initiative within different groups of road users throughout the country and helping in creating massive safety awareness particularly at the local areas. It is expected that if organizational and planning supports are given these voluntary groups could play a vital role in this awareness building campaign due to their proximity with mass people of the society.

### 5.8 Highway Police

Though the Highway Police has started their activities in 2005 but at present their function and scope of involvement are very limited as the Highway Police Act has not been ratified yet by the Government. Right now, most of the staffs of the Highway Police are working on deputation. They have acute mobility problems due to unavailability of vehicles and other transport facilities including fuel cost. In the absence of 'Highway Police Act' they have not any executive power to prosecute the violators. Until now, for not being an independent entity, the Highway Police is compelled to render their duties getting help from the police department. They have also shortage of qualified and capable manpower, logistics and equipment.

### 5.9 Speed Limit Zoning and Speed Restriction Rules

In 2006, with the technical and financial assistance of Finnroad and TRL, the promulgation of speed limit zoning was made by Gazette notification. Subsequently, speed limit signs and marking were posted along these corridors. The before-after evaluation study conducted by the ARI and other organizations shows that most of the drivers do not have sufficient understanding of the appropriate meaning of these traffic signs and markings. It is also revealed that

even if those who understand do not comply with these signs and markings. Besides, due to high opportunity cost of steel posts and plates, theft problems is acute which poses a serious setback in maintaining the road traffic signs. Moreover, ill maintenance practice and covering up of the traffic signs by different types of poster are a serious problem in Bangladesh.

### 5.10 Traffic Accident Database

It is recognized by road safety practitioners in Bangladesh, including the BRTA and the Police, that this Road Traffic Accident database is neither complete nor entirely an accurate record of all road accidents. Since the end of the technical support by DFID to BRTA in early 2005, the BRTA has not had the means to continue with the training of the police on the collection and entry of road traffic accident statistics. Due to lack of continued training and monitoring, the level of under reporting has increased particularly injury and property damage only (PDO) accidents which are occurring on the newly constructed remote areas' road network and the quality of the reported data also has deteriorated. In this stage, ARI is continuously making its efforts to reduce this problem through training of police personnel particularly who are responsible for the data recording and storing in different police ranges and stations, providing technical support and continuous monitoring and guidance. Different electronic and print media are also playing a significant role in this regard.

## 6.0 CONCLUSION

Addressing road safety problem is a big challenge for the transport professionals in Bangladesh. In order to combat the problem there is a need for close coordination and collaboration among public and private agencies using a holistic and integrated approach across many sectors and many disciplines. Appropriate resources need to be allocated to improve safety which is currently far below than the magnitude of problems. There remains much scope for improving road safety and for that known and proven interventions need to be implemented with due urgency, ranging from education, engineering and enforcement. It also believed that regular and sustained monitoring and evaluation of safety initiatives will help in determining appropriate and proven measures which can be incorporated into the design and planning of transport infrastructures.

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