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Original Paper

Road Safety Policy and Surveillance in the City of Bamenda: Mechanisms of Intervention for Sustainable Development

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Abstract

Road safety improvement is becoming a major policy issue for road authorities in Cameroon as a consequence of the increasing number of traffic volume and accidents in cities and on highways. Road accidents create both social and economic costs on the country's economy in general and the city of Bamenda in particular. Road safety policy is a set of principles of behaviour and measures put in place to prevent road users from being killed or seriously injured in the course of using the road. An assessment on the level of implementation of the road safety policy and surveillance in the city of Bamenda was carried out over a period of six months (April to June and September to December, 2020) corresponding respectively to end and resumption of the academic year and December considered to be a festive period of the year. Data collection was achieved through observations of the behaviour of road users, questionnaires administered to drivers and stakeholders of the transport sector (especially on major thoroughfares), interviews with policy makers among others. Findings were complimented with secondary data sources and illustrate that there is a lack of collaboration among the stakeholders involved in the implementation of road safety measures in the city. There is limited trained policy makers, poor governance, lack of surveillance instruments, dilapidated road infrastructures and the non-respect of existing road signs by the road users. Mechanisms of intervention have been proffered to ensure road safety and surveillance through policy implementation; a proper technical supervision of the vehicle inspection centers, lead agency with dedicated and sufficiently trained stakeholders and the installation of surveillance cameras at strategic junctions among others.

Keywords: Road, Safety, Policy, Surveillance, Stakeholders and Bamenda

1. Introduction

Road crash is a growing problem in Africa resulting in close to 1000 deaths, tens of thousands of injuries and enormous amount of economic losses every day (African Development Bank Group [ADBG], 2013). Road is one of the most common modes of transportation used. This explains why there are a lot of road accidents happening daily, which could be as a result of lack of discipline of the drivers, refusal to follow traffic rules, poor road infrastructure, and poor policy implementation. The years 2011 to 2020 was declared by the United Nations as the Decade of Action for Road Safety in order to arrest the escalating levels of Road Traffic Crash (RTC), fatalities and injuries (United Nations Economic Commission for Europe [UNECE], 2011). The World Health Organization's report on Global Road safety (WHO, 2015) estimates that there were 6,136 road deaths in Cameroon in 2013, compared to 1,128 reported by the police. This puts Cameroon among the worst performing countries internationally when it comes to road safety. The increase in the rate of road accidents in Cameroon in 2020 and the early 2021 like the cases in Foumbot, Makenene, Dschang cliff, etc. is a call for concern. Comparing this analysis with the official data in Cameroon, it is apparent that there is significant evidence of under reporting of crashes, under recording of crashes, a lack of uniformity and

interpretation of the definitions of the various injury categories and generally poor quality of registered crash data, as well as poor enforcement of various road user behaviour. The control of driving schools and vehicle inspection centers, road accident sensitization and prevention have proven to be a difficult task as the personnel are few and not sufficiently trained (Bajia & Usami, 2018). It can be stated that the country currently does not have reliable databases on traffic crashes (Committee for Economic and Commercial Cooperation of the Organisation of Islamic Cooperation [COMCEC] 2016). Cameroon records an average of 16,583 road accidents each year, killing more than 1,000 people, according to official figures, and over 6,000 according to WHO estimates (UNECE, 2018).

Generally, the population in Cameroon is steadily growing likewise that of the city of Bamenda in the North West Region of the country in particular. This increase in population has led to rapid expansion of the economy and increasing motorization in the city which happens to be the regional headquarter. Urbanization is growing and road infrastructure is expanding in the city. Safety considerations in land-use planning and road design is expected to be commensurate to city growth so as to serve the mixed traffic that exists in the city, especially as road transport is the dominant mode of transportation for both persons and goods. In most parts of the city, there are significant shortcomings in awareness and capacity to promote road safety which refers to the measures and methods used to reduce or prevent road users from being killed or seriously injured in the course of using the road (Ako, 2019). The objective of this study is to evaluate the existing road safety policies and surveillance techniques in the city of Bamenda and also propose mechanisms of intervention to sustainably support the efforts of the stakeholders involved. The study is based on the hypothesis that sustainable road safety policies and surveillance instruments can invariably lead to effective and efficient use of the roads in the city. Consequently, good road safety policy and surveillance is important in the city of Bamenda especially for the safety of vulnerable road users who are the most affected.

2. Methodology

2.1 The Study Area

Bamenda city is found in Mezam Division of the North West Region of Cameroon and is located some 366 kilometers northwest of the political capital, Yaounde. It is the most populated in the Region with a population of over half a million in 2020 out of about 2,302,871 for the entire region (Country Profile, 2017- 2018). The areas covered for this study include Bamenda I, Bamenda II and Bamenda III subdivisions as shown in Figure 1.

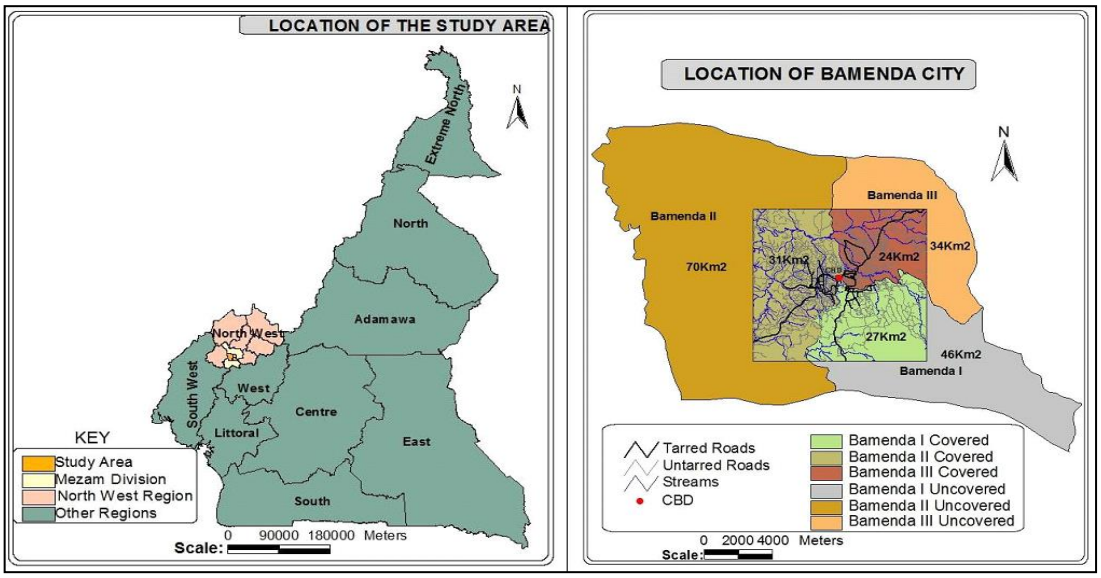

Figure 1. Location of Bamenda City in the North West Region of Cameroon

Source: Nyambod, September 2010, pp. 19-20

2.2 Methods and Techniques

Qualitative and Quantitative data were collected from primary and secondary sources for analysis from April to June and from September to December 2020. Primary data collection was based on random sampling and included interviews, observations and questionnaires. Data collection were based on the types of road safety facilities in the study areas, the existing road safety policy, the opinions of some road users and the stakeholders involved in the implementation of the road safety policy and surveillance in the city. Direct personal interviews were conducted with the Regional Chief of Transport for the North West, the service head of road safety department, the service head of driver's license department, the service head in charge of vehicle matriculation, the Chief of urban transport, the Commander of road safety brigade Bamenda, the Commander in charge of road accident at the Regional Unit for highway and traffic control, the Chief of service Planning, Architecture and Building Permit at the Bamenda city Council, the managers of vehicle inspection centers, 5 directors of driving schools and 80 road users as illustrated in Table 1.

Table 1. Response Rate of Interviewees

Variable	**Number Interviewed**	**%**
Government Authorities	8	8.4
Manager of Vehicle Inspection Center	2	2.1
Directors of Driving School	5	5.3
Vehicle owners	30	31.6
Bike riders	50	52.6
Total	**95**	**100**

Source: Field work, 2020

A total of 226 questionnaires were administered and 193 returned comprising 23 from policy makers (government authorities and commercial operators), 80 from vehicle owners and 90 from bike riders.

3. Results

3.1 Stakeholders Involved in Road Safety Policy

From the findings, the stakeholders in the field of road safety in the city of Bamenda can be categorized into three groups based on the role they each play. All these groups are considered as relevant in the context of this study and include Government authorities, Technical/Commercial operators and the Road Users. Policy makers especially Government authorities take the decisions, technical experts are concerned with the policy delivery and the road users who are supposed to strictly follow the policies can externally influence the decision making process.

3.2 Road Safety Infrastructures

80% of roads in the study area are poorly maintained, poorly signposted with very limited road improvement works as can be seen in Figure 2. It should be noted that even though some road safety infrastructures like pedestrian lanes and parking lots exist, they are very limited in the study area. Others like cycling tracks, zebra crossings and speed limit indicators do not exist. Due to the poor state of majority of the roads in the city, road users are sometimes forced to use the wrong track of the road so as to avoid potholes, gutters created by run-off or splashes by vehicles in the rainy season and excessive dust which impairs visibility in the dry season. This contributes negatively to road safety as it leads to an increase in the number of road crashes.

Veterinary Junction; Nature of road (LAT 5°57′8.76″N, LONG 10°9′26.18″E, Elevation: 1227m)

Just before New road Junction from Mile 2 Junction (LAT 5°58′0.89″N, LONG 10°10′16.75″E, Elevation: 1254m)

T Junction from Mitah Quarter; Nature of road (LAT 5°57′1.33″N, LONG 10°9′7.57″E, Elevation: 1249m)

Towards Total Nkwen from Mile 2 Junction; Improper signpost (LAT 5°57′50.60″N, LONG 10°10′9.40″E, Elevation: 1251m)

Figure 2. Nature of Some Roads in the City and damaged Road Signs

Source: Field work, 2020

Table 2. Stakeholders Involved in Road Safety Policy and Surveillance in the City of Bamenda

Government Authorities	Technical/Commercial Operators	Road Users
Delegations of Transport	Vehicle Inspection Centers	Motorist Associations
Delegation of housing and urban planning	Driving Schools	Trade Unions
Delegation of Public Works	Insurance Companies	Cyclists
National Gendarmerie		Pedestrians
National Police		
Heath Districts		
City Council		
Politicians		
Town Planners		

Source: Field work, 2020

The road networks that were surveyed for this study include Cow Street, Finance to Ngeng Junctions, and Veterinary Junction through SONAC Street to City Chemist Roundabout, Commercial Avenue and the highway from the Governor's Junction through MOBIL Nkwen to Mile Four Junction. The study matrix is illustrated in Figure 3.

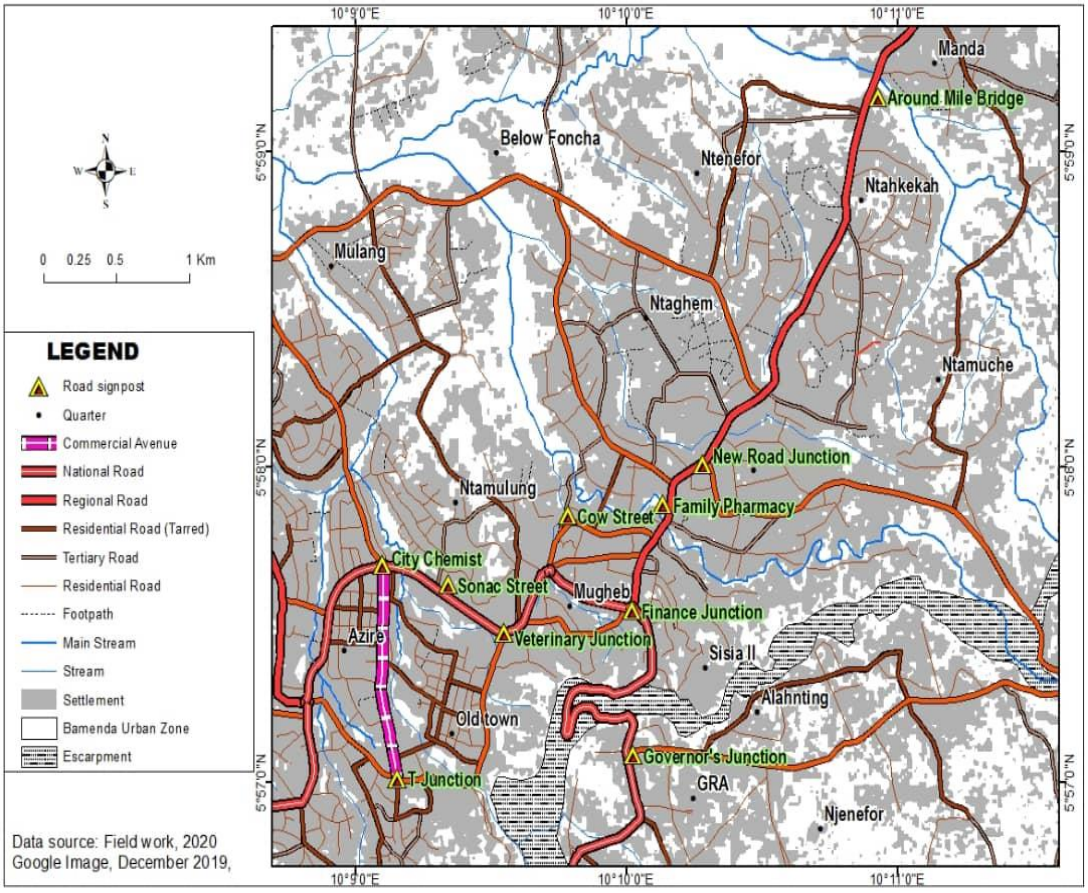

Figure 3. Bamenda Road Categories and Network Covered by the Study

3.3 Road Safety Policies and Surveillance Instruments

In order to reduce the number of road crashes and solve the increasing problems of road safety resulting from the increase in the number of vehicles and motorcycles in the city, road safety stakeholders of the public sector (government, the city council) and private firms have developed some road safety policies and surveillance instruments to guide the behaviour of road users. From the findings, the policy consists of legislations, rules, and strategies put in place to ensure the safety of road users.

3.3.1 Laws and Regulations

3.3.1.1 Driving Offences and their Corresponding Penalties

On the 19th of November 1997, the General Delegate of National Security through a memorandum (N° 01761/DGSN/DSP) listed driving offences in four different classes. They include: First, Second, Third and Fourth class with their respective fines of 600FCFA, 2000FCFA, 3000FCFA and 25000FCFA. Some of these offences are indicated in more detail in Table 3.

Table 3. Four Classes of Driving Offences

First Class Offences	**Second Class Offences**
-Absence of windscreen wipers	-Absence of number plate lights
-Absence of reverse device	-Absence of brake lights
-Absence of rear-view mirror	-Absence of direction indicator lamps
-Absence of speedometer	-Absence of number plate for vehicles
-Illegal parking	-Obstruction of traffic by animals
Third Class Offences	**Fourth Class Offences**
-Expired certificate of road worthiness	-Change of speed or direction without warning signals.
-Group of several trailers moving without authorization.	-Speeding (exceeding speed limit)
-Driver emerging wrongly from a minor road into the highway.	-Crossing on the left or overtaking on the right.
-Interrupting a military, police convoy or a procession in movement.	-Failure to yield right-of-way priority to users on a protected road or non-observance of a pause at the stop signal.

Source: Youssa, 2017, pp. 10-13

3.3.1.2 Accident Generating Infringements, Corresponding Fines and Potential Sanctions.

Table 4 illustrates findings on selected accident generating infringements, their corresponding fines and potential sanctions.

Table 4. Main Accident Generating Infringements and Corresponding Fines for Selected Infringements

Violation	**Fine (FCFA)**	**Other sanctions**
Clandestine(illegal) Transport	500 000	3 to 6 months in prison
Overloading	25 000	Possibility of license withdrawal
Driving without license	25 000	Immobilization of the vehicle
Absence of car registration document	25 000	Impoundment
Absence of road worthiness document	25 000	Impoundment
Absence of insurance coverage	25 000	Impoundment
Absence of CEMAC registration plate	3 600	Impoundment
Absence of motorway tax sticker	3 600	Impoundment
Refusal to comply	25 000	/
Drunk Driving offence	25 000	Immobilization and possibility of license withdrawal
Hazardous Activity (Usage de TPH au Volant)	25 000	License withdrawal

Source: Youssa, 2017, pp. 10-13

3.3.1.3 Surveillance Instruments

From the study, 151(88.8%) respondents out of 170 indicated that there are no surveillance instruments in the city and 165(97.1%) reiterated the necessity for such instruments to be installed in the city to facilitate road user behaviour. It was found that most of the few video cameras that were installed in the city to address the problems of insecurity with road safety included have been destroyed and none is functioning at the moment as can be seen in Figure 4.

Figure 4. Some non-functional Surveillance Instruments Identified in the City

Source: Field work, 2020

3.4 Road Safety Technology and Appropriateness

Field information indicates that the technology put in place to address road safety issues is far below the level of development to sustainably handle rapid urbanisation and motorisation in the city. The survey shows that out of 170 respondents, 129(75.9%) claimed there are limited parking facilities in the city for vehicles and 157(92.4%) indicated that no parking facilities exist for bikes. Pedestrians and roadside vendors most occupy a portion of the road and vehicle owners are forced to park along the roadside thereby reducing the width of the road and increasing the possibility of road crash between pedestrians, cyclists and vehicles. Fogwe and Ntumngia (2014) observed that such instances violate

Article 113 of regulation N^0 04/01-UEAC-089-CM-06 of the Road Safety Code which states that vehicles must be parked completely out of the road and definitely not on pedestrian path. Lack of these important road safety facilities in some parts of the city shows that the level of technology is very low when it comes to road safety in the city. It should be noted that if policy makers and city planners do not take these facilities into consideration, the cost of implementation will be more expensive in the future.

Out of 170 road users who took part in the study, 160 respondents (94.1%) considered the road signs in the city to be insufficient and 158(92.9%) indicated that they were not safe for all road users. It should be noted that 96(56.5%) of these respondents indicated that drivers do not even respect the few road signs that exist in the city. According to the respondents, this is due to the lack of awareness and ignorance of drivers on the one hand and the poor implementation and enforcement of the regulations on the other hand. Figure 5 illustrate some snapshots of road safety technologies in parts of the city.

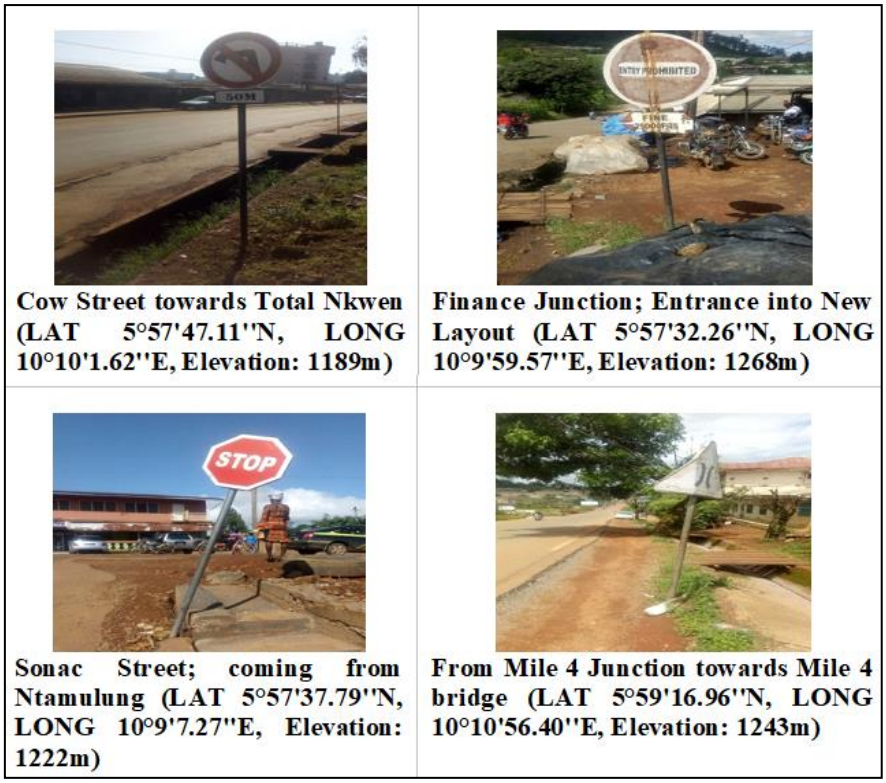

Figure 5. Sample of Road Safety Instruments in the City

Source: Field work, 2020

Table 5 presents the percentage of drivers of both private and commercial vehicles that violated the right-of-way in Figure 5 in the morning and afternoon over a period of five days.

Table 5. Drivers who Violated the Right-of-way from May 12 to May 16, 2020

Morning Periods			**Afternoon Periods**		
Time	**Frequency**	**%**	**Time**	**Frequency**	**%**
7:30-9:30	17	23.9	3:00-6:00	15	15.8
7:45-9:50	19	26.8	3:30-6:30	19	20.0
7:15-9:00	16	22.5	4:00-6:30	21	22.1
7:20-9:30	10	14.1	3:45-6:00	17	17.9
7:15-9:30	09	12.7	3:15-6:00	23	24.2
Total	**71**	**100**	**Total**	**95**	**100**

Source: Field work, May 2020

In five days, a total of 229 bike riders violated the right-of-way in Figure 5 in the morning and afternoon periods as seen in Table 6. This confirms the fact that 56.5% of the respondents indicated that drivers do not respect the few road signs that exist in the city.

Table 6. Bike Riders who Violated the Right-of-way from May 12 to May 16, 2020

Morning Periods			**Afternoon Periods**		
Time	**Frequency**	**%**	**Time**	**Frequency**	**%**
7:30-9:30	21	19.3	3:00-6:00	31	25.8
7:45-9:50	23	21.1	3:30-6:30	24	20.0
7:15-9:00	20	18.3	4:00-6:30	21	17.5
7:20-9:30	30	27.5	3:45-6:00	27	22.5
7:15-9:30	15	13.8	3:15-6:00	17	14.2
Total	**109**	**100**	**Total**	**120**	**100**

Source: Field work, May 2020

4. Discussion of Results

The stakeholders have a major role to play in ensuring safety on the city's roads. It is incumbent on all to respect roles and responsibilities. Minimum organizational, managerial and technical measures should be enforced to improve attitudes and behaviour towards road safety; including training, enforcement, incentive and disincentive programs, journey preparation, and driver's time-management. There is need for stakeholders to redouble their efforts in improving the safety of the vehicle fleet through its renewal, pursing the reform of the procedure to obtain and be awarded driving licence, and intensifying awareness-raising. According to Cameroon's Road Safety Performance Review (RSPR), related economic losses caused by road accidents are estimated at nearly 100 billion CFA francs per year. Compared to the country's urgent development needs, in terms of lost investment, each year these losses represent the equivalent of around 10,000 classrooms, over 250 kilometers of paved roads and 8 referral hospitals – enough to provide all regions of the country with referral hospitals within two years (UNECE, 2018)

Road safety infrastructures like perpendicular parking (90-degree parking) should be avoided in order to maximize the limited space in a city where there is an increasing use of automobiles. Angle parking with sufficient width have the great potential to reduce accidents caused by vehicles reversing or

maneuvering into or out of parking lots (UN Department of Safety and Security, 2018). Planning traffic routes so that drivers do not need to reverse, for example by using one-way systems do not exist. They should be implemented. Vehicle and pedestrian traffic should be physically separated, clearly marked and installing lighting in areas of concern is of avowed necessity for all road users.

Research in road safety policy in Cameroon is not effective due to the absence of scientific studies usually performed by research institutes or universities and performing multi-disciplinary road safety and related studies. According to Goldenbeld et al. (2019) there are no teams of road safety researchers in the country systematically requested by policy-makers to contribute knowledge for policy formulation. Coordination across agencies and departments should be strengthened coupled with a strengthened parliamentary engagement in road safety policy and surveillance matters. There is poor knowledge of road users as to the importance of surveillance equipment and road signs. This gives reasons for the non-functionality of the vital equipments that have been installed especially at crossroads; majority of which need to be redeveloped.

For road Safety technology to be appropriately implemented, it must be based on good Strategy. The development and implementation of the technology should be the product of both national and international policies on road safety strategy, lessons learnt from previous strategies as well as existing international best practices should be taken into consideration (Transport Department of South Africa, 2017).The technology should cover a long-term strategic approach towards the ultimate prevention of deaths and serious injuries (Breen et al, 2018). Emphasis should be placed on adopting best practices in road safety management systems and traffic safety management systems to be used by Government Departments, State owned Companies and the Private Sector.

5. Conclusion

The findings of the survey illustrate that the city is making efforts towards addressing road safety issues, but the extent and coordination of the responses do not correspond to the level required for averting the continuously increasing road safety problems of the regional capital. Road safety is multi-sectorial and different stakeholders are dealing with it. Due to this, the information required to be filled in the questionnaire could not be found from a single source. There is a high likelihood that these factors have affected the quality and reliability of information obtained from the survey.

The implementation of road safety policy in the city of Bamenda is not effective. The main reasons pointed out as the causes for the weak enforcement in the city are lack of enough trained personnel, awareness and commitment, vertical and horizontal road signs not sustainable enough, lack of ITS technologies like surveillance instruments, poor accident data recording, corruption and poor governance. The reasons advanced for this poor implementation and enforcement have led to the validation of the hypothesis on which this study is based. The survey points out the need for considering the design of comprehensive road safety programs to reduce road crash when preparing road projects in the city. The Policy should encourage and strengthen traffic enforcement, driver training, and appropriate vehicle safety inspection. Road safety interventions in the city should cover sensitization, provision of traffic signs, surveillance cameras, pavement markings, pedestrian facilities, speed calming measures, appropriate parking, and space for roadside vendors. Unless appropriate sustainable and effective actions are taken timely, the solution at a later date will be more expensive especially with the rapid motorization, urbanization and the deterioration of the road network in the city.

6. Recommendations

Road safety situation in the city can be improved if some proactive measures are taken by both policy makers and the road users. Some include the following:

6.1 Recommendations to Policy Makers

✔ A lead agency with dedicated and sufficiently trained stakeholders is highly recommended in the city to effectively define a comprehensive road safety strategy/program with time bound measureable targets and coordination for effective implementation.

✔ Proper technical supervision of the vehicle inspection centers and the sensitization of vehicle owners on the conditions for acquiring a road worthiness certificate are highly recommended especially with the new approach of vehicle inspection recommended by the Ministry of Transport in March 2020.

✔ The surveillance cameras that are non-functional in the city should be rehabilitated and more installed at strategic junctions and one-way street entrances with prohibited right-of-way to crack down violators.

6.2 Recommendations to Road Users

✔ All road users especially vehicle owners and bike riders should always undergo the training in a driving school before acquiring their driving licenses or endeavor to know the basic road safety policies put in place.

✔ All bike riders and drivers should always put on their helmets and seatbelts respectively and if possible with their passengers whenever they are on the highway.

✔ Motorists and cyclists should always avoid overloading as much as possible, respect speed limits, road signs, safety distance and have all the documents required to operate on the highway.

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