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AGONY OF CIRCULATION IN THE BAMENDA METROPOLITAN AREA OF THE NORTH WEST REGION OF CAMEROON

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Abstract

In most third world countries the roads are substandard characterized by the absence of service lanes, deteriorating pavements, minimal street lighting and frequent accidents. The roads in Bamenda are aging and in a deplorable stat. Potholes have developed into an endemic problem exacerbated by the absence of drains and culverts. Poorly constructed and delayed maintenance of these roads constitute a nightmare for vehicle owners due to their deplorable surface state, which often leads to congestion, frequent breakdowns and accidents. The objective of this study was to examine the state of roads in Bamenda, guided by the hypothesis that poor and untimely road maintenance leads to its rapid degradation. The study employed a face to face interview approach with related public and private institutions in 2019 and 2020. Over 186 respondents were selected from neighbourhoods such as Metta Quarter, Ntarinkon, Atuazire, Ntamulung, Ntabang and Nkwen which falls within the Central Business Area using the stratified sampling, simple random and systematic sampling techniques. Findings reveal that the absence of a sound sustainable measure to monitor the roads and ensure effective maintenance gives rise to an agonising population that has to deploy additional costs and time lost in attaining its socio-economic objectives.

Keywords: Bamenda, degradation, infrastructure, stakeholders, pedestrian path

1.0 INTRODUCTION

Transportation systems serve as a major instrument in every society's economic growth and development. In urban areas, roads generally comprise the most important part of the transport infrastructure system and access to roads by people depends chiefly on its availability, their condition, design and the means by which they can be accessed and utilized. According to Litman (2013), one of the problems facing urban roads in Africa is that most access roads are often in a poor state, characterised by serious flooding, large potholes creating hazards for road-users and residents. Municipal Councils rarely have the capacity or the resources to address these problems and limit their work to the more heavily trafficked urban roads. This study is hinged on the hypothesis that poor and untimely road maintenance in Bamenda leads to its rapid degradation.

According to Chen et al, (2012), most access roads within low-income settlements of larger cities are often in a poor state, characterised by serious flooding, large potholes creating hazards for road-users and residents. One of the problems facing the urban road sector in East Africa is the lack of a clearly-agreed classification system for urban roads which specifies the function, use and design standards of the various road classes (Litman, 2013). Without it, there are problems in planning for road rehabilitation and in the management and maintenance of rehabilitated roads. For instance, in Tanzania the national road classification system comprises trunk roads, local main roads, regional roads, district roads, major feeder roads and minor feeder roads; a system which does not easily apply to urban roads. Most urban roads have not been designed to set standards. In addition, the expenditure required to construct and maintain urban roads is significant but often inadequate in practice.

Within the Bamenda Urban space, most of the bitumised roads in the 80s are now in a dilapidated state. The roads have not been redeveloped in the past four decades (Bamenda City Council Report). Potholes have become an endemic problem at T-Junction, Ngeng Junction, City Chemist Roundabout and neighbourhoods such as Metta Quarters, Ntarinkon, Ntamulung covering 80% of the urban road network. The main roads within the Bamenda Urban space are very narrow to ensure fluidity for all road users. These roads are not developed as multiple lanes, consequently, the degree of traffic congestion is high and has caused many accidents and delays in

the demand and supply of economic activities especially during rush hours. One- way streets tend to provide less direct access to destinations. This therefore hinders circulation, leading to their inaccessibily.

2.0 The Study Area and Methodology

Bamenda is the capital of the North West Region of Cameroon. It is located between Latitude $5^{o}57^{1}34^{11}$N and Longitude$10^{o}08^{1}45^{11}$E and situated at an elevation of 1413m above sea level (Fig. 1).

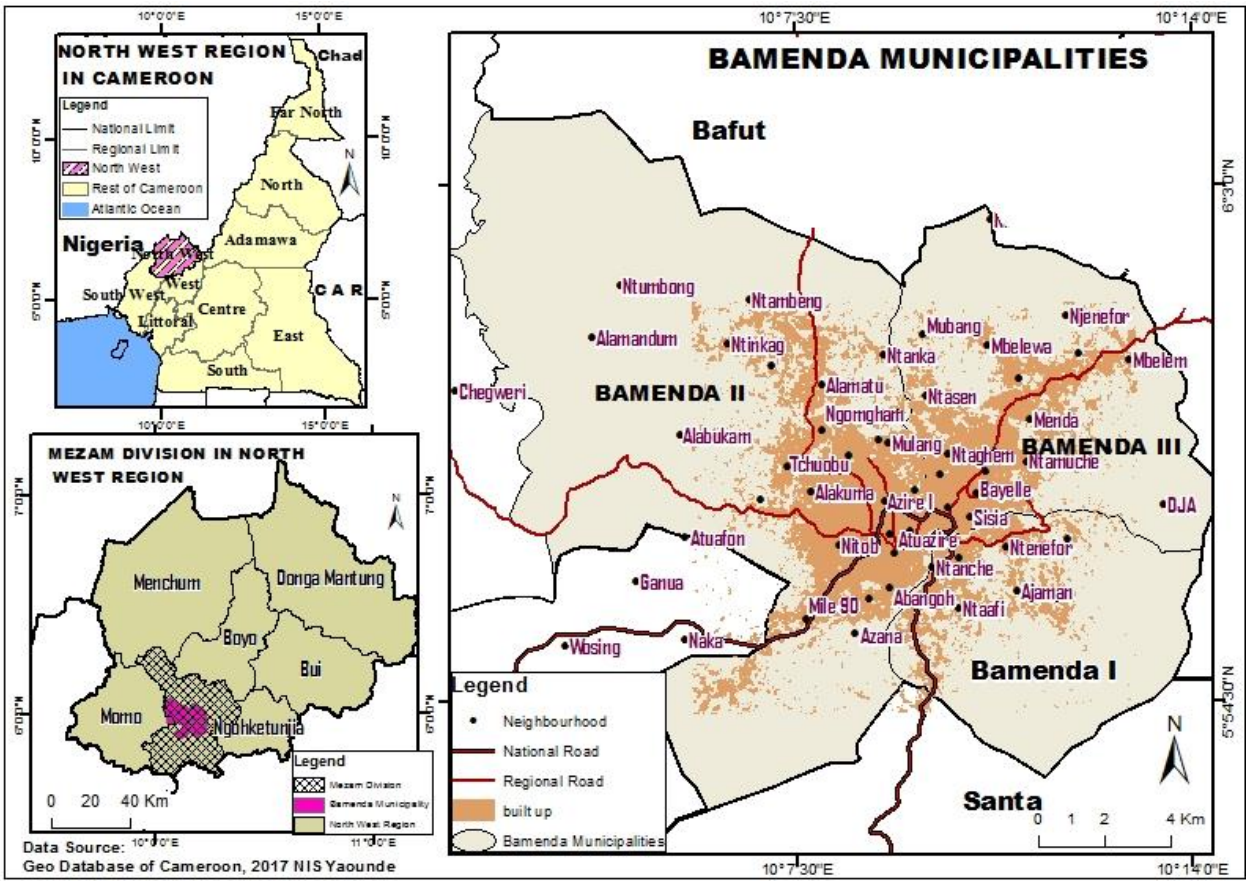

Figure 1: Road network of Bamenda in Mezam Division of the N.W Region of Cameroon

This study was conducted using the correlation research design. The methodology involved the collection and treatment of primary and secondary data for quantitative and qualitative analyses. Primary data collection involved observation and measurement of depth/diameter of potholes as well as sampling through the use of questionnaires in a randomly stratified technique where the target population was divided into neighbourhoods (Azire, Ntarinkon, Meta Quarters, Old Town and Nkwen) and each neighbourhood represented in the sample in a proportion equivalent to its size in the accessible population of the three subdivisions in 2019 and 2020. The systematic sampling technique was used where every 5^{th} respondent (5% systematic sampling) was selected and no individual was picked more than once in the different neighbourhoods. Observations on the state of roads and degradation were made in March (dry season) and October (rainy season) of 2019 and 2020. Direct personal interviews were made with stakeholders of urban road network such as the Regional Delegation of Transport, Regional Directorate of Roads, Delegation of Public Works as well as the Department of Traffic at the Bamenda City Council. The Geographic Position System (GPS) was used to develop a spatial map of degraded spots along selected streets for significant difference using Chi-Square Goodness-Of-Fit Test.

3. FINDINGS

This sub section presents the results on the state of roads (wideness, safety conditions, state of storm drains, availability of pedestrian paths and parking lots) and maintenance and degradation of the urban roads (thickness of ashalt or tar and spatial distribution of surface state of roads).

1. State of roads in Bamenda

This section is based on the extent of road usability by the population. The population's perception on the wideness of the roads/streets was sought. This was in order to find out if inaccessibility of roads resulted from its narrowness to contain all categories of road users at the same time as indicated in Figure 2.

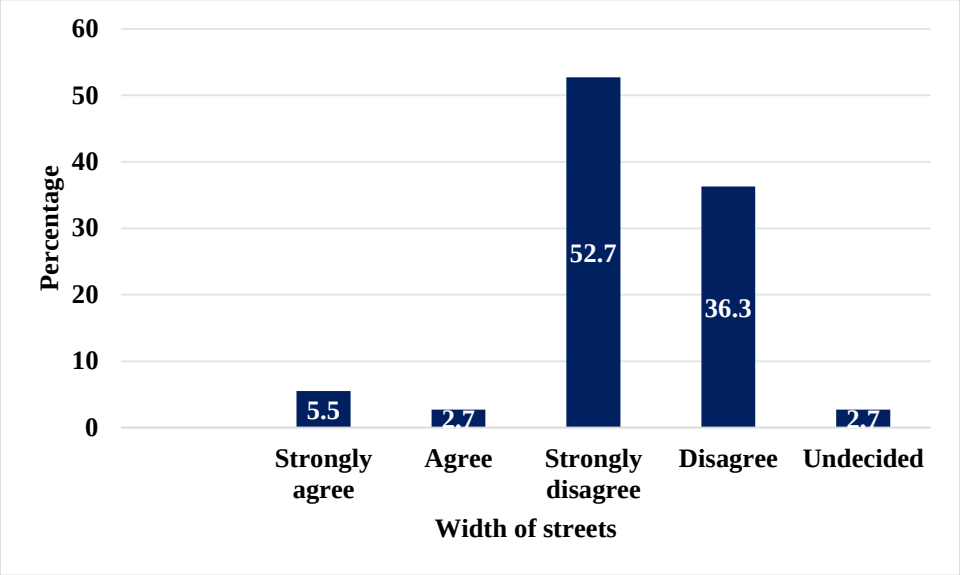

Figure 2: Perception of road users on the wideness of streets

Streets were wide enough for all road users with a proportion of 89% among which 52.7% strongly disagreed and 36.3% disagreed.

The condition of the roads was investigated to find out if they were safe for use by vehicles, bikes, pedestrians and handicaped. Stakeholder perception of the safety conditions of roads was assessed as indicated in Figure 3.

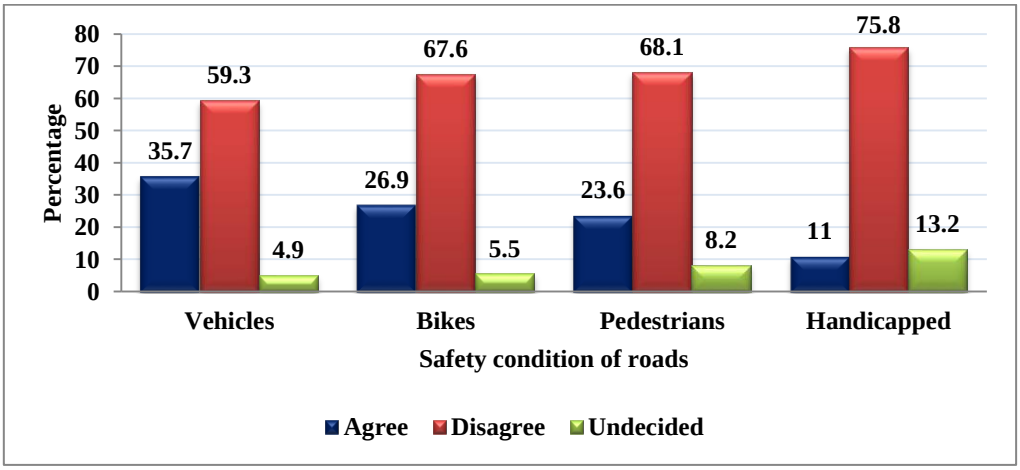

Figure 3: Safety condition of selected roads based on stakeholder perception

Over 59% of stakeholders declared that the roads were not safe for the users, 59.3%% indicated that the roads were not safe for vehicles, 67.6% stated that the roads were not safe for bikes, 68.1% indicated that the roads were not safe for pedestrians and 75% indicated that the roads were not safe at all for the handicapped.

The study also sought to assess the availability and state of gutters which represent important infrastructures that determine the sustainability of the roads as shown in Figure 4.

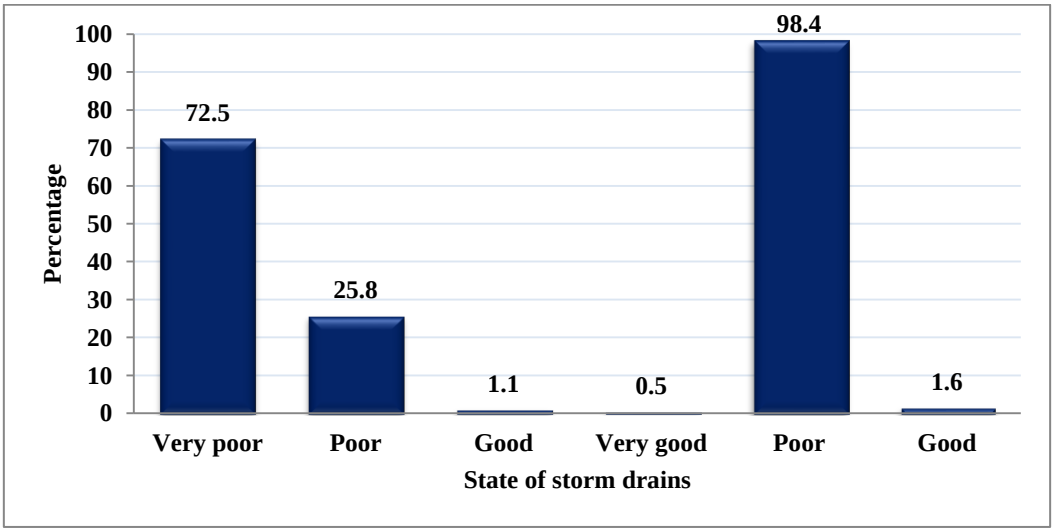

Figure 4: Opinion on the current state of storm drains along selected roads

Over 98.4 % of residents generally perceived that the state of storm drains were poor, 72.5% perceived it as very poor and 25.8% as poor. Findings reveal that the unavailability of pedestrian paths and parking lots is invaluable for major streets within neighbourhoods in order to ease accessibility as shown in Figure 5.

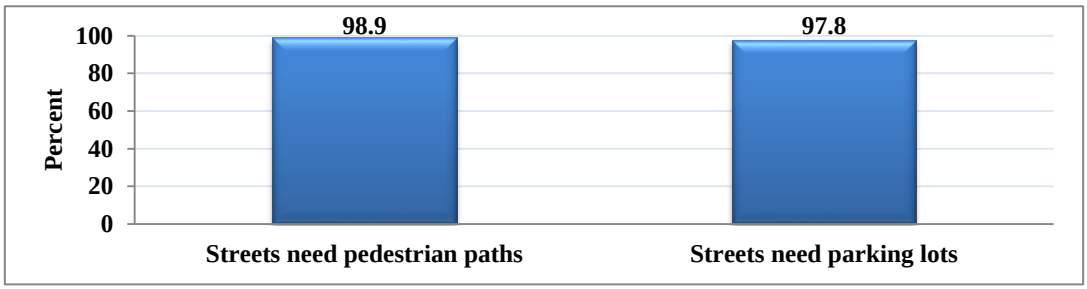

Figure 5: Availability of pedestrian paths or parking lots

From Figure 5, 98.9% indicated that roads need pedestrian paths while 97.8% indicated the need for parking lots. Field work also assessed the conformity of roads with construction and engineering norms. Findings reveal that roads are not in conformity to the norms hence degrade faster. Engineer Ngwakongoh (2019) highlighted that a road has to last for at least 15 years. But the roads in Bamenda depreciate after two or three months preceding maintenance since sustainable materials such as bituminous sphelt or tar macadam are not used. Lack of human resources or unqualified personnel, limited funds for the maintenance and construction of roads and inadequacy of preliminary studies are some of the problems they encounter with respect to road maintenance. They highlighted repetitive investment and agony faced by people in their daily mobility from one part of the town to another. The absence of road signs/markings, narrow width of streets are some planning lapses identified as shown in Figure 6.

Figure 6: Absence of pedestrian paths, road signs/markings and parking lots along Mile 3 Bridge in Bamenda II
Source: Ntumngia, 2019

2. Maintenance and Degradation of urban roads

This section seeks to affirm the hypothesis that poor maintenance of roads in Bamenda leads to its rapid degradation. The surface state of roads is correlated with the depth/width of potholes as illustrated in Table 1.

Surface State of road	Frequency	Percentage
Very poor	138	75.8
Poor	39	21.4
Adequate	4	2.2
Good	1	0.5
Total	182	100.0

Table 1: Thickness of asphalt and surface state of selected roads

Source: Field work, 2019

The surface state of roads was generally perceived as very poor 75.8% (138) while cumulatively, 97.3% perceived it to be very poor or poor.

It was therefore obvious that residents of the Bamenda urbanscape perceived the state of their roads as deplorable and linked it to inadequate maintenance. The premise that poor maintenance of streets leads to its rapid degradation is therefore accepted. This poor surface state of the roads can further be seen in Figure 7.

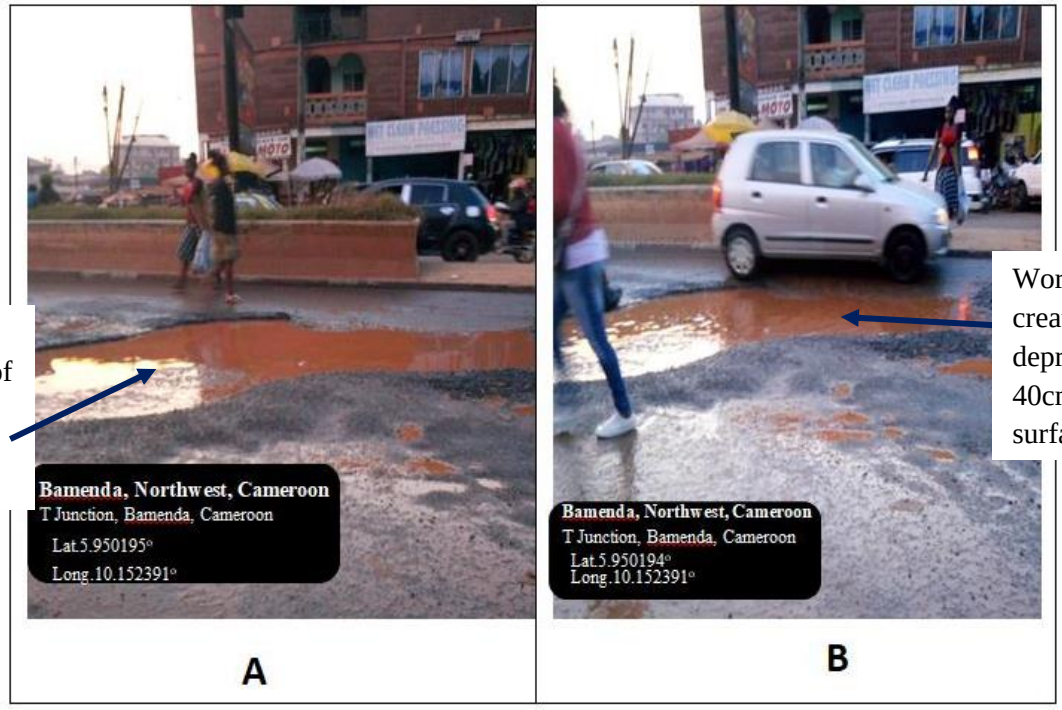

Figure 7: The poor surface state of most streets characterized by potholes

Photo by Ntumngia, August 2019

Figure 7 shows how potholes have become an endemic problem at T junction. Abrupt development in gradient due to degraded asphalt as shown in Figure 8 is a very common occurrence along most streets leading to pressure exerted on the springs/shocks and bumpers of vehicles and other fleets using such tracks.

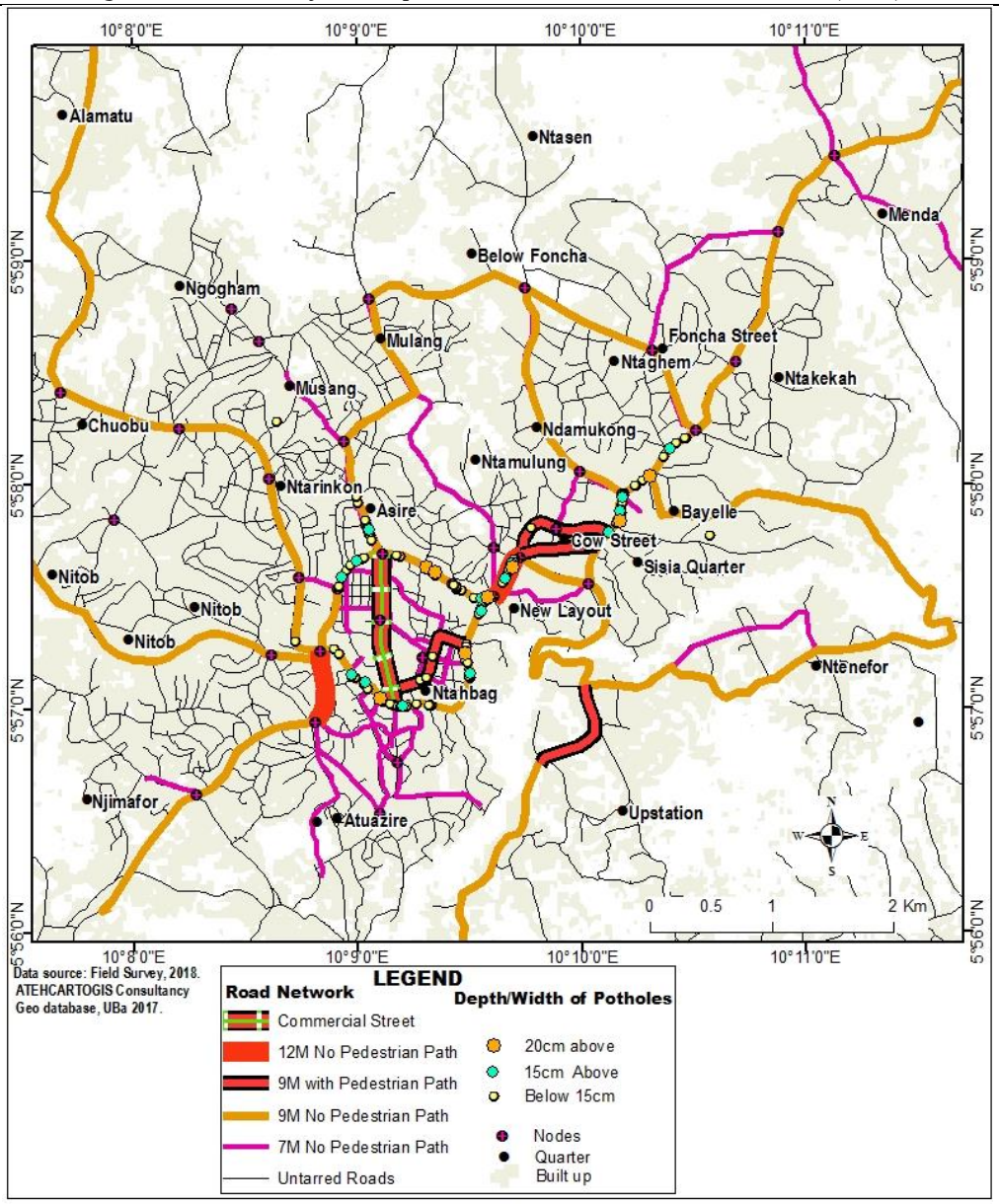

Figure 8: Spatial distribution of the surface state of streets in Bamenda

Figure 8 is illustrative of the poor surface state of roads measured in terms of the number of potholes especially at crossroads. Roads were also assessed based on their engineering characteristics considering pedestrian track, depth of potholes and wideness. In the study area, 97 % of potholes were observed at road junctions such as Foncha Junction, Mile 2 Junction, Veterinary Junction, City Chemist roundabout and at T-Junction. Some potholes were also observed along streets such as Ndamukong, Sonac, Food market streets and streets along neighbourhoods such as Old Town, Ntarinkon, Small Mankon and Meta Quarters.

3. DISCUSSIONS

According to Litman (2013) most access roads within low-income settlements of larger cities are often in a poor state, characterised by serious flooding, large potholes and open holes (e.g. manholes) creating hazards for road-users and residents. Municipal Councils rarely have the capacity or the resources to address these problems and limit their work to the more heavily trafficked urban roads.

Findings reveal that potholes, width of streets, pedestrian paths and parking lots are correlated to accessibility and fluidity of circulation. An increase in the occurrence of potholes with depths ranging from 15cm to 20cm, in some neighbourhoods reduces accessibility since fluidity of traffic will be obstructed because of slow speed while a decrease in the occurrence of potholes increases accessibility and flow.

In the Bamenda urbanscape, most of the roads are dilapidated and in a deplorable state. Potholes have developed into an endemic problem such as at T- Junction and City Chemist Roundabout, Sonac Street and in neighbourhoods such as Meta Quarters and Ntarinkon. Over 80% of the roads in Bamenda are very narrow, lack pedestrian paths, road marks/symbols and parking lots are insufficient as they have been provided only along the Commercial Avenue Street which is the main thorough way though highly obliterated/faint.

Oluwatobi (2010) opines that bad supervision and workmanship leads to poor state of roads and consequently rapid degradation. A good pavement design with good detailing without a good supervision by the designer is equally useless as this could lead to road failure. Supervision ensures that the road construction is rightly executed and that good equipment and materials are used which is hardly the case in Bamenda. Bad workmanship is therefore the consequence of inadequate supervision.

The bad surface state of roads has some negative effects such as delay in travel time which is converted into opportunity cost and entails a lot of financial losses, exposure to accidents, traffic congestion, exhaustion and tiredness, stress, wear and tear of vehicles, more fuel consumption and more energy expended in travel time which all leads to a slump in the economy.

5. CONCLUSION

The roads in Bamenda are in a very poor state as seen with the frequency and occurrence of potholes with depths and widths ranging from 7- 9m though heavily plyed by vehicles, motorbikes and pedestrians on a daily basis. The roads hardly conform to construction and engineering norms since most have not been equipped with road signs/symbols, pedestrian paths, zebra signs, parking facilities and gorge drains. Low grade/quality materials have been used in road construction and maintenance. The study impinges on problems that arise from poor transport network and management and its impacts on the population of Bamenda. The roads in Bamenda should be regularly maintained through the constant filling of potholes. Where there are large concentrations of pedestrians around markets and at crossroads, complete separation of vehicles from pedestrians should be encouraged to reduce traffic congestion and greater impact along specific road stretches. This could be achieved by creating pedestrian paths and off- street parking facilities. The width of the roads should be expanded and if possible the construction of double lanes to reduce traffic congestion along these roads.

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