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EVALUATION OF LEVEL OF NON – MOTORIZED TRANSPORT (NMT) INFRASTRUCTURE ACCESSIBILITY, SAFETY AND ENVIRONMENT ON SELECTED ROADS IN KAMPALA CITY – UGANDA

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ABSTRACT

With the escalating urbanisation and motorization rate of Kampala City, pedestrians have encountered a number of challenges which include; high levels of traffic mix between motorists, cyclists and pedestrians; aggressive way of driving by some motorists; enormous obstructions along walkways like street vendors in addition to poor and dangerous pedestrian infrastructure. Furthermore, the road user's incompliance with the traffic rules and regulations like driving beyond speed limit has made walking unattractive. The study aimed at assessing the state of non-motorized transport infrastructure in Kampala City, Uganda and come up with the necessary interventions for its improvement. In this research, an assessment of the current physical state of pedestrian infrastructure facilities was conducted and the level of accessibility, safety and environmental dimensions of the Non – Motorised Transport (NMT) infrastructure against pedestrians, NMT policy formulators, regulators, funders and promoters was evaluated. Data was collected by use of questionnaires which were prepared differently for each group specifically to test whether these groups were aware of the challenges the pedestrians face while using the

NMT facilities. Questionnaires for the pedestrians were multiple choice questions while the ones for the policy maker`s group were open ended. The research focused on 13 roads with in the central division of Kampala City targeting 135 pedestrians and 50 other respondents who included NMT policy formulators, implementers, funders and promoters. The primary data was sourced by administering questionnaires, interviewing of key informants and use of observation checklist. Secondary data was collected through reviewing published materials, government reports, print media and internet sources. It was revealed that all walkways and crossing facilities had no consideration for people with limited mobility like wheel chair users and the visually impaired. The research also observed that NMT projects developments had not been incorporated into the land use plans. An integrated planning, upgrading and reconstruction of all walkways and crossing facilities were suggested as remedies as well as allocation of more funds to NMT projects, massive public awareness campaigns about the law and strict enforcement of traffic rules and regulations.

KEYWORDS: Pedestrians, NMT infrastructure, accessibility, safety, environment.

1.0 INTRODUCTION

Uganda's Capital Kampala covers an area of 197 Square Kilometres with a population of approximately 2.5 million inhabitants. Out of the 1.5 million people who commute to the city every day, 60% use Non – Motorised Transport (NMT) with the rest using motorized transport. However, most roads in Kampala are only designed for motorized transport with the walkways, cycle lanes and crossing facilities almost being non-existent in most areas.[1,2,3] The most common transport modes used in the city include public transport (PuT) widely composed of 14- seater minibus, which are popularly known as "Taxis / Matatus", Passenger cars and Motorcycles (locally referred to as "Bodabodas").

Kampala experiences a comparably high motorization rate. Of the 80,000 vehicles registered countrywide (excluding motorcycles), over 60% are concentrated in Kampala which only covers 0.083% of the total land area in Uganda. The vehicle ownership is estimated to be about 15 cars for every 100 people which is far higher than the country`s average of 2.4 per 100 people.[1,2] This makes it hard for pedestrians to use the road space due to a number of hindrances such as; high traffic jams during peak hours; high levels of traffic mix and sharing of road space between cars, pedestrians and "Bodabodas'' (Fig.1) hence making the walkways inaccessible and unsafe.

According to statistics from Uganda Police, over 40% of accident fatalities in Uganda are pedestrians (far above the world average of 22%,[3]), 26% passengers, 22% motor cyclists, 8% pedal cyclists and 4% drivers.[4] For Kampala alone, 50% of accident fatalities are pedestrians, 23% motor cyclists, 18% passengers, 6% pedal cyclists and 3 % drivers.[1] Of all the pedestrian fatalities 94 % are caused by the driver´s fault.[2] This is higher than a Transport Research Laboratory analysis of pedestrian accident data of 1980 that indicated driver's fault at 41%,[5] hence making walking unsafe. This is worsened by taxi drivers who have a tendency of driving beyond prescribed speed limits and not following the traffic rules and regulations. It has been noted that a pedestrian hit by a car moving at a speed of 64.4km/h has 85% chances of being killed compared to 45% and 5% for speeds of 48.3 km/ h and 32km/h respectively which increases the likelihood of fatalities.[3]

In addition to congestion and safety challenges, walking comfortably along the roads has been affected by the existing hilly gradient, noise emissions, presence of obstructions and numerous broken sidewalks. Furthermore, most walkways are dirty, with nearly nonexistence of tree sheds, kiosks where people can buy refreshments in case they get tired, street furniture, fountains, nice landscape /planters, seats for relaxing and functioning street lights during night.[1,2] These challenges have made walking unattractive.

Though walking has numerous health, environmental and economic benefits, as well as the majority of trips to Kampala being made by walking, it is still perceived as a transportation mode for the poor. This reduces the likelihood of having people shifting from motorised to non-motorized mode of transport. Compared to the average population, poor people in Kampala City make more than 50% of their trips by walking.[6,1] They are forced to walk because they cannot afford to use public transport or private cars. They spend 22% of their available income on transport as opposed to 10% recommended by the World Bank.[1,7] This reduces their possibility in accessing opportunities to participate in social life activities.

In an effort to make NMT more attractive and safe, the Government of Uganda through the Ministry of Works and Transport developed an NMT policy in October 2012.[6] Though the policy and its implementation plan have been developed and are in place, they don't incorporate the assessment of the existing infrastructure which is a key component in coming up with a sound implementation plan. This virtually makes policy implementation impossible as evidenced in the numerous failed attempts for example Namirembe Road NMT pilot project which was meant to have started in 2015 is still on the shelf as of April 2017.

Therefore, this research aimed at assessing the state of non-motorized transport infrastructure in Kampala City in relation to accessibility, safety and environmental aspects. The study proposes the necessary interventions to provide a safe and attractive NMT network in Kampala City.

2.0 METHODOLOGY

This research adopted a cross sectional research design which was both qualitative and quantitative in nature. It also adopted a descriptive and explanatory approach to clearly assess the NMT infrastructure in Kampala City. Both qualitative and quantitative data was collected to adequately analyse the state of the non-motorised transport infrastructure in Kampala City.

The study was carried out in Kampala Capital City on the five main routes connecting to the City centre. Some access roads and junctions at the periphery of the city centre with high number of pedestrians commuting from the low-income settlements to the city centre were also considered.

The study population included NMT policy formulators, policy regulators, NMT infrastructure funders, NMT promoters and the road users / pedestrians. The policy formulators were the Ministry of Works and Transport (MoWT). Policy regulators included KCCA and the Police. The NMT funders included Government of Uganda (GoU) through Uganda Road Fund (URF), World Bank (WB) and UN- Habitat. The NMT promoters included First African Bicycle Information Organisation (FABIO), United Nations Environment Organisation (UNEP), UN-Habitat and Goudapel Africa.

The study covered a total sample size of 185 respondents. Apart from pedestrians, purposive sampling was used as sampling techniques because of the nature of technical information that was needed. Simple random probability sampling of the pedestrians was used during roadside pedestrian counts.

Self-guided questionnaires were administered to the respondents who included the funders, policy formulators, policy regulators and promoters. Interviews were also conducted to complement on questionnaires especially for people who were too busy to fill in the questionnaires. Observation checklists were also used in assessing the physical condition of the existing pedestrian walkways and crossing facilities.

3. ANALYSIS AND DISCUSSION OF RESULTS

3.1 Current Traffic situation

According to physical observations, the road user behaviour in Kampala is characterised as reckless and careless driving. Everybody minds their own business, and many road users are literally unaware or deliberately neglect traffic rules and regulations. Speed limit signs and red traffic lights are ignored, people park their cars on walkways. A number of "bodabodas" also ride on walkways to beat traffic congestion, ignore traffic lights and also drive in the opposite direction. The aggressive taxi drivers have no respect for other road users and traffic rules.

The moment a passenger says "stage" meaning point of destination, the taxi driver will halt the vehicle as quickly as possible, not minding about other road users and whether the place is appropriate to stop or not. Regularly pedestrians literally have to jump out of the way of taxis following the hierarchy of 'presumed rights'. On the different roads, the right of way belongs to whoever claims it, and pedestrians cross wherever it is convenient for them.[10]

Furthermore, the lack of appropriate infrastructure, poor crossing facilities and the presence of obstructions along the roads often forces pedestrians to walk on the carriageway, which makes them even more vulnerable to accidents. On roads where there are no raised walkways like Kisenyi road and Sir Apollo Kagwa Road (Fig.2), pedestrians have to walk on the road shoulders, making them vulnerable to other road users who often use the same shoulders as well, especially "bodabodas" and pedal cyclists.

Figure 1: Traffic Mix at Shoprite Road Junction

Figure 2: Pedestrian walking across an open drain along Sir Apollo Kagwa Road

Although pedestrian signals are present at some signalised intersections, they are not very effective due to the little signal time given (30 seconds) compared to the number of pedestrians crossing. At signalised junctions, pedestrians are always endangered by oncoming

traffic as red lights are extremely often neglected, especially by "bodabodas". Due to missing or defective street lighting, walking is especially dangerous at night, as obstructions and pedestrians themselves are not visible. Most pedestrian zebra crossings are invisible, others are placed at inappropriate locations and at times also wrongly designed.

Another challenge of walking at night are attacks from thugs and pickpockets on the streets, especially when it is dark. Lastly open manholes that are not attended to have also left a number of pedestrians injured (Fig.3). Though KCCA has tried a number of times to close them, manhole covers have always been stolen. KCCA has now come up with an innovative way of covering manholes though by use of concrete flower pots though this technique compromises on the space of the walkways.

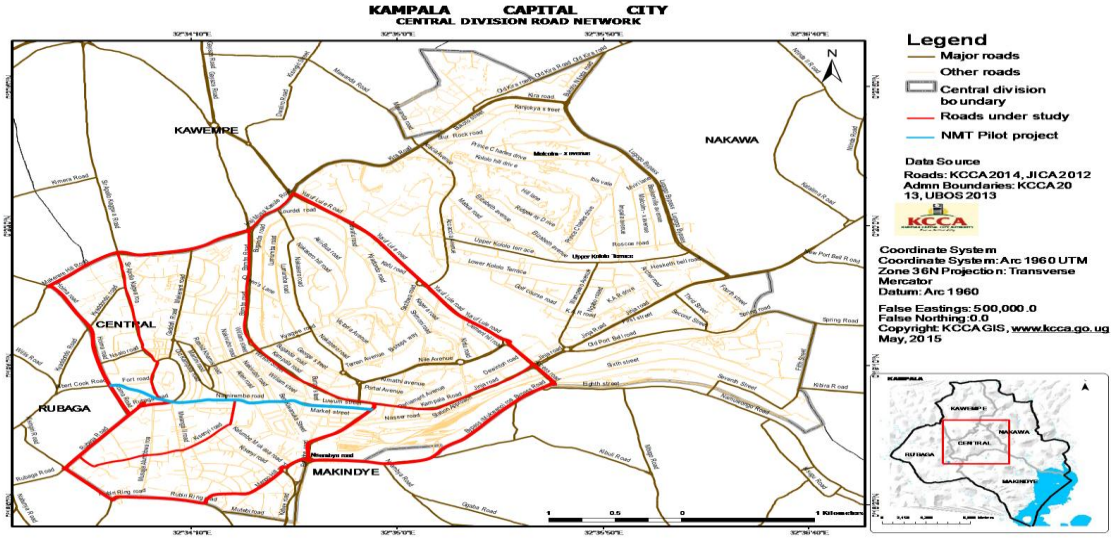
Figure 3: Risky open manhole along Luthuli Avenue and flower pots along Yusuf Lule Road.

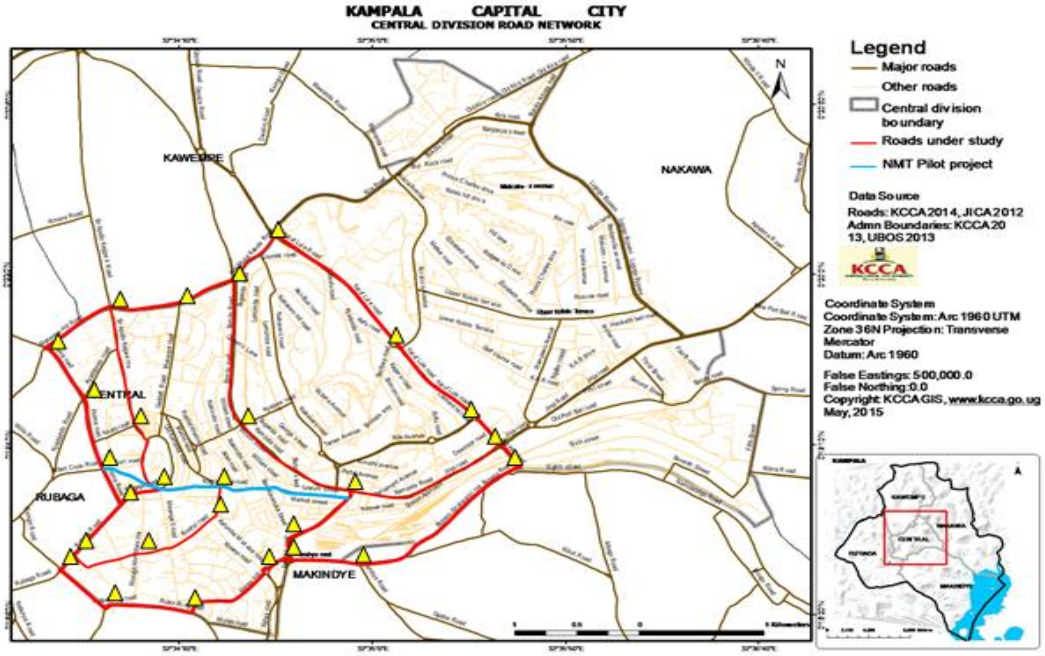
3.2 Background characteristics of the respondents

3.2.1 Pedestrians

A total of 135 pedestrians responded to questionnaires served to them along 13 roads as summarised in Figure 4. Out of the 135 respondents, 94 (69.6%) were male and 41 (30.4%) were female. In the five age groups, the respondents within the age of 18 to 25 years had the highest number of respondents (37.8%) and closely followed by the age group of 26 to 35 years (36.3%). This was later followed by the 36 - 55 years group with 20% respondents. Pedestrians below 18 years and those above 55 years had the least percentages of respondents as shown in Table 1. With the percentage of respondents of the age below 18 being as low as 3.7%, the reasons and ideas given by the respondents were considered to be genuine and mature in nature making it reliable and significant.

Appendix 1: Map showing NMT network under study.





Appendix 2: Pedestrian count points

Table 1: Sex of respondents and Age group.

Sex of Respondent	**Frequency**	**Percentage**
Male	94	69.6
Female	41	30.4
Age Group		
Below 18	5	3.7
18 - 25	51	37.8
26 - 35	49	36.3
36 - 55	27	20.0
Above 55	3	2.2

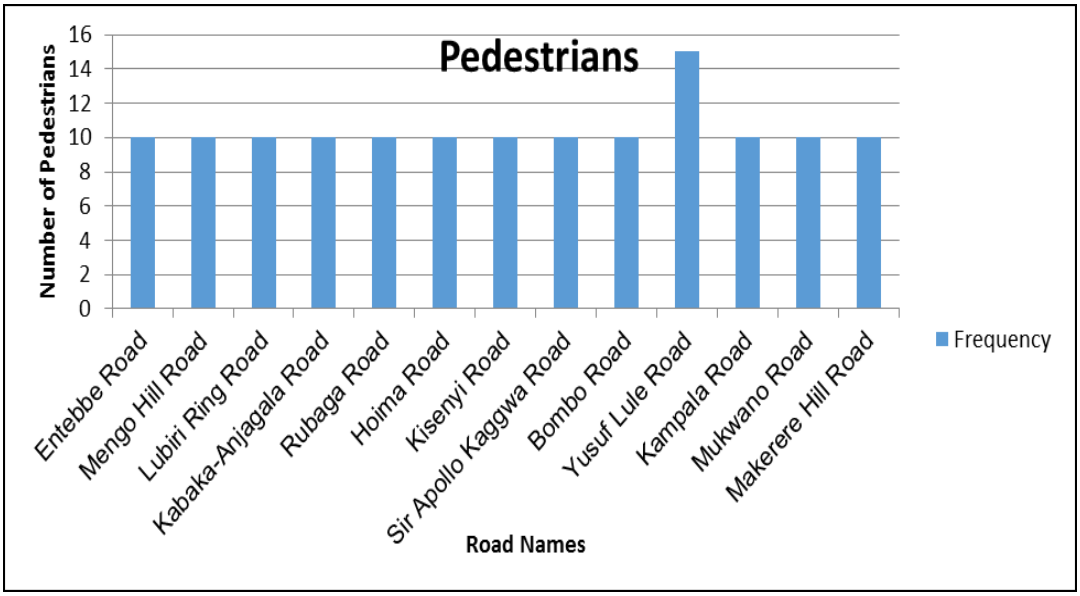


Figure 4: Number of Pedestrian Respondents.

Table 2 Presents the level of education of respondents where 48 (35.6%) had attained secondary level of education followed by 37 (27.4%) who acquired university education. Only 7 people (5.2%) had stopped in primary level. This implies that the questions asked were understood by the respondents and that the answers given were reliable. This is because the level of understanding can also be related to the level of education.

Table 2: Respondent`s Level of Education.

Level of Education Attained	**Frequency**	**Percentage**
Primary	7	5.2
Secondary	48	35.6
Certificate	16	11.9
Diploma	27	20.0
University	37	27.4
Total	135	100.0

3.2.2 Type of occupation of respondents

The results in Table 3 indicate that the highest number of respondents were employees (34.1%), self-employed (30.4%); students contributed (25.9%) and lastly 9.6% were unemployed. The percentage of the unemployed is 2.5 times higher than the 2013 unemployment rate of Uganda (3.8%) according to World Bank (http://data.worldbank.org/indicator/SL.UEM.TOTL.ZS). This means that there is no relationship between the results obtained and WB statistics. Another observation is that since the biggest percentages of occupational types were self-employed and employees, working trips contributed the biggest percentage of the respondents (52.6%). These were 3.5 times

higher than the study trips (14.8%), followed by shopping and visitation trips, all at 11.9% and 11.1% respectively. Party and leisure trips were almost negligible (1.5% and 2.2% respectively), which affirms the statement that walking is considered as a transportation mode for the poor in Kampala. On the other hand, the reason of having more working trips may probably mean that people cannot afford or don't want to overspend on transport as highlighted by WB that Ugandans need to spend 22% of their available income on transport as opposed to 10% recommended by the World Bank.[1] Lack of standardised public transport costs for shorter trips may also be the other factor, though this was not tested in this research.

Table 3: Type of occupation * Purpose of the Trip Cross tabulation.

Type of Occupation		Purpose of the Trip								Total
		School	Work	Shopping	Visiting	Hospital	Meeting	Party	Leisure	
Student	Count	15	4	8	4	1	1	0	2	35
	% of Total	11.1%	3.0%	5.9%	3.0%	.7%	.7%	.0%	1.5%	25.9%
Self Employed	Count	1	32	2	3	1	2	0	0	41
	% of Total	.7%	23.7%	1.5%	2.2%	.7%	1.5%	.0%	.0%	30.4%
Employee	Count	2	34	5	2	1	0	2	0	46
	% of Total	1.5%	25.2%	3.7%	1.5%	.7%	.0%	1.5%	.0%	34.1%
Not employed	Count	2	1	1	6	1	1	0	1	13
	% of Total	1.5%	.7%	.7%	4.4%	.7%	.7%	.0%	.7%	9.6%
Total	Count	20	71	16	15	4	4	2	3	135
	% of Total	14.8%	52.6%	11.9%	11.1%	3.0%	3.0%	1.5%	2.2%	100.0%

3.3 Evaluation of level of NMT accessibility, safety and environment as viewed by the NMT policy makers and pedestrians

3.3.1 Perception of pedestrians about challenges they meet while walking

When pedestrians were asked about the challenges they meet while walking, the biggest number highlighted “bodabodas” (24%). This was followed by attacks from thieves while walking (15.1%), Careless Taxi drivers (13.3%), Lack of security lights (8.8%), Open side drains (7.8%), Obstructions by street vendors (7.2%), Brocken sidewalks (6.2%), Narrow walkways (4.8%) and Inexistent walkways (3.6%) among others (Table 4). It should be noted that the first four challenges were safety and security related, followed by the five which are access related. This implies that the pedestrians were more concerned about their safety because they are vulnerable road users.

Table 4: Walking challenges faced by pedestrians.

Walking Challenges	Type of Challenge	Percentage
"Bodabodas"	Safety	24.1%
Thieves	Security	15.1%
Taxi drivers	Safety	13.3%
Security lights	Security / Safety	8.8%
Open side drains	Accessibility	7.8%
Street vendors	Accessibility	7.2%
Brocken sidewalks	Accessibility	6.2%
Narrow walkways	Accessibility	4.8%
Open manholes	Safety	4.2%
No walkways	Accessibility	3.6%
Difficulty in crossing	Accessibility	2.2%
Terrain	Accessibility	1.0%
Fatigue	Environment	1.0%
Hot weather	Environment	.4%
Total		100.0%

"Bodabodas" have caused a lot of accidents and havoc in the city as explained earlier. That`s why it has become one of the priorities for KCCA to regulate all Bodaboda activities within the City. This is in line with the 1980`s local policies of Netherland where they limited cars from accessing the city centre.[8] According to the Supervisor for Transport Planning and Traffic Management in KCCA, the institution ggazetted no go zones for "bodabodas" on some roads like Yusuf Lule road and some parts of Jinja road. In an attempt to implement this regulation, KCCA installed road signs of "No "bodabodas"" in June 2015 but within one night, all the sign posts had been removed by the "bodabodas".

The views of policy makers are tabulated in Table 5. When the policy makers were asked about the major challenges reported by pedestrians while walking, the highest percentage of respondents said inadequate infrastructure (27.2%), followed by congestion/ traffic mix (11.2%), Accidents and inconsiderate motorists (10.4%), dilapidated infrastructure (9.6%), encroachment of infrastructure (8.8%), inadequate security lights (8%) and indiscipline of road users (4.8%) among others.

Comparing the results from the two groups of respondents, it can be observed that the policy makers were more inclined to provision of infrastructure challenge (accessibility) which is their area of interest well as the pedestrians were inclined to safety, which is also regarded as their area of concern. This may be so because the biggest percentage of the policy maker`s group do not use walking as their mode of transport. But generally, the challenges from both

groups of respondents are majorly safety, followed by accessibility and lastly the environment.

Table 5: Walking challenges reported by pedestrians to policy maker`s group.

Challenges reported by pedestrians	*Type of Challenge*	*Percentage*
Inadequate infrastructure	Accessibility	27.2%
Congestion, traffic mix and conflict in road space usage	Safety	11.2%
Inconsiderate motorists who disregard pedestrians	Safety	10.4%
Accidents and vulnerability to road crashes	Safety	10.4%
Dilapidated Infrastructure	Accessibility	9.6%
Abuse / encroachment of NMT infrastructure	Accessibility	8.8%
Inadequate security like lack of security lights	Security	8.0%
Indiscipline of road users	safety	4.8%
Speeding motorists	Safety	4.0%
Heat and fatigue	Environment	1.6%
Hierarchy of presumed rights	Safety	1.6%
Dirty walkways	Environment	.8%
Flooding on walkways	Environment	.8%
Disorganised public transport	Accessibility	.8%
Total		100.0%

3.3.2 Suggested Strategies

Some of the suggestions that were made by the policy maker`s group to address the challenges faced by the pedestrians include: improvement of existing / dilapidated NMT infrastructure, constructing more NMT infrastructure, stringent enforcement of rules on use of NMT facilities and improvement of street lights among others. Details of the respondents' views and their percentages are shown in Table 6.

Table 6: Respondent suggested strategies that can solve the walking challenges.

Strategies to solve walking challenges	**Percentage**
Improve existing / dilapidated infrastructure	27
Construct more NMT infrastructure and facilities	16
Stringent enforcement to curb challenges and proper use of NMT facilities	16
Improve street lights	10
Massive public awareness campaigns	8
Park and ride share strategy	5
Introduce pedestrian zones	5
Reorganisation and Promoting use of PuT	3
Provide adequate funding for NMT infrastructure development	2
Punish errant drivers and riders heavily	2
Introduce more speed humps	2
Advocate for equal rights of road usage	2
Proper drainage	1
Installation of traffic intelligence systems	1
Total	100

3.4 Condition of walkways and crossing facilities

3.4.1 Views by pedestrians

When the pedestrians were asked to evaluate the state of the walkways and crossing facilities, 41.5% indicated that walkways were in a poor state while 28.9% and 22.2% said that they were satisfactory and good respectively as indicated in Table 7. Only 5.2% responded that the walkways were in an excellent state. This percentage corresponds to the percentage of pedestrians with the lowest level of education, implying that the result is questionable. It can be observed that the trend of the frequency of respondents kept on rising as the condition of the walkways worsened. The same trend happened with crossing facilities where the highest percentage of pedestrians (48%) said that the facilities were in a poor state, 24.4% satisfactory, 20.7% good condition and only 3% said that the facilities were in an excellent state. 1.5% of the respondents said that the crossing facilities were inexistent. This is in line with the problem statement and the existing traffic situation as stated before, where the crossing facilities are seemingly inexistent. It should be noted that the pedestrians had a multiple choice question which did not consider safety, accessibility and environment dimensions in the assessment. This was because the pedestrians were expected to have found a problem in differentiating these dimensions and giving appropriate answers. Additionally, the work would have been so much for them since they were to be stopped abruptly and it would also have been so hard for them to fill a detailed questionnaire hurriedly.

Table 7: Condition of walkways and crossing facilities by Pedestrians.

Condition	***Walkways***		***Crossing facilities***	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Excellent	7	5.2	4	3.0
Good	30	22.2	28	20.7
Satisfactory	39	28.9	33	24.4
Poor	56	41.5	65	48.1
Not Available	-	-	2	1.5
No Response	3	2.2	3	2.2
Total	**135**	**100.0**	**135**	**100.0**

3.4.2 Perception of policy makers about condition of walk ways and crossing facilities

When the policy maker`s group of respondents were asked to describe the condition of walkways and crossing facilities in Kampala City Centre, results showed that the trend of the frequency of percentage responses kept on rising as the condition of the walkways and crossing facilities worsened (Table 8). This trend is true for safety, accessibility, comfort and

management where the highest percentage of respondents said that the walkways and crossing facilities were poor. For the case of attractiveness and environment, the biggest percentages of respondents indicated that the conditions of walkways and crossing facilities are satisfactory. The trend for these two cases follow a descending order from Satisfactory, good, poor and then excellent. This is opposed to the other cases which follow the descending order from poor, satisfactory, good and then excellent. In general, the state of walkways and crossing facilities is poor.

Table 8: Condition of walkways and crossing facilities by Policy maker`s group.

	Condition of Walkways (%)				Condition of crossing facilities (%)			
	Excellent	**Good**	**Satisfactory**	**Poor**	**Excellent**	**Good**	**Satisfactory**	**Poor**
Safety	0	20	28	50	2	8	32	56
Accessibility	0	20	26	52	0	10	36	52
Comfort	2	10	30	56	0	22	36	38
Attractiveness	0	34	36	26	0	28	40	26
Environment	6	30	30	28	0	28	36	28
Management and Usage	2	18	34	44	2	20	30	44

Areas of improvement of NMT infrastructure by policy makers are presented in Table 9. They have been broadly categorised into six fields: Safety, Accessibility, Comfort, Attractiveness, Environment, Management and Use and the specific areas to be improved have been highlighted.

Table 9: Suggested areas of improvement of NMT infrastructure by Policy maker`s group.

Field	Improvement
Safety	✓ Separating traffic e.g. pedestrian flyovers (Overpass and underpass) ✓ Road marking and signage ✓ Demarcation of zebra crossings and remark them when old ✓ Actuated lights for crossings ✓ Street lights should be improved and properly maintained ✓ Remove “bodabodas” from town / regulate Bodaboda movement in City centre ✓ Covering up of open manholes
Accessibility	✓ Constructing more walkways ✓ Improve Connectivity of walkways (links) ✓ Increase number of zebra crossings ✓ Widening of walkways ✓ Provide walkways on all roads
Comfort	✓ Paving walkways with environmental friendly material ✓ Providing sitting benches and recreational areas along walkways ✓ Utility poles (e.g. telephone poles) should be removed from walkways
Attractiveness	✓ Proper and proactive maintenance ✓ Better landscaping and greening (Planting more trees and flowers) ✓ Regularly clean the roads and remove all obstructions

	✓ Improved visibility
Environment	✓ Continued greening
Management and Usage	✓ Need for more enforcement of laws (use more traffic police) ✓ Streamlining policies for better management of walkways and regulations ✓ Protect walkways from intrusion by motorists ✓ Need to prioritise NMT among road users ✓ Functioning and Effective traffic lights at crossings ✓ Public awareness campaigns / sensitisation of pedestrians on usage of road

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

There is no databank for roads that need improvement and the ones that don't need it in the road network. This has been attributed to budget constraints and lack of manpower to do this job. Furthermore, NMT projects development have not been incorporated in the land use plans and most of the land in Kampala is privately owned which has made it almost impossible to make roads and other related transport infrastructure. Also, most housing developments along the roads have not left enough space for NMT infrastructure.

The state of walkways and crossing facilities is poor and all roads have no consideration for people with limited mobility like wheel chair users and the visually impaired except at junctions with traffic lights which include Nsambya road, Shoprite, Clock tower, Bakuli and Jinja road junctions.

The NMT infrastructure challenges that are of concern to Pedestrians are safety related well as the ones for the policy formulators and implementers are accessibility related.

The strategies that should be used for integrating NMT network into other modes of transport are integrated land use planning and development, building segregated / continuous walkways with good connection to PuT and use of proper road designs.

4.2 Recommendations

- Transport Master Plans must be incorporated in the land use plans and should also be well coordinated with development plans among the responsible government agencies.
- Independent funding should be set aside for construction, expansion and promotion of NMT infrastructure use.
- All walkways along Kisenyi road, Hoima road, Rubaga road, Lubiri road, Makerere hill road, Mukwano road and Sir Apollo Kagwa road should be raised, paved and regularly maintained. Provisions for crossing facilities should also be done.

- Widening of walkways should be done on Kisenyi road, Yusuf Lule road (one side), Mukwano road, Mengo hill road, Entebbe road, Rubaga road, Makerere hill road and Lubiri hill road to accommodate the pedestrian traffic volume.
- Introduction of zebra crossings, speed humps, road safety signs and road marking should be done on all roads.
- Existing walkways should be reconstructed to cater for people with limited mobility like wheel chair users and people with visual impairment.
- Installation of security lights and other pedestrian facilities that are lacking on different roads should be done.
- Landscaping and greening should be done along the walkways to make them more attractive. Seen furniture and seatings should also be fixed.
- There should be strict enforcement of the law by implementing authorities on people who misuse NMT facilities and promotion of its compliance.
- There should be improved / massive public awareness campaigns and education about NMT infrastructure planning, construction and use.
- "bodabodas" should be restricted from the City centre.
- KCCA should re-plan the allocation of different PuT stops in the City centre and standardisation of PuT fares should also be done.
- Creation of pedestrian zones in some areas of the city should be done.
- Promotion of NMT use should be done through massive awareness campaigns of all road users.
- Innovative caps should be introduced to help in recognising walking.
- Assessment of existing condition of pedestrian infrastructure in the entire city centre should be done and a database prepared.
- NMT infrastructure analysis with a gender [8]perspective should also be done.

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