

Addressing Traffic congestion in Lusaka District: Solutions for a Better Urban Future

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Abstract: *This article explores the causes and potential solutions for traffic congestion in Lusaka Central Business District (LCBD). It identifies increased vehicle volume and population growth as key contributors to the issue. Proposed interventions include restricting certain vehicle types to specific roads, implementing smart traffic light systems, establishing a ticketing office, and developing local shopping malls to reduce unnecessary trips to the CBD. These findings are expected to inform policymakers and stakeholders, leading to sustainable traffic management solutions for Lusaka and beyond.*

Keywords: Traffic congestion, Decongestion strategies, Urban policy, Lusaka, Smart Infrastructure

1. Introduction

According to the demographic profile 2024, Lusaka District is the largest in Lusaka Province. The district is the capital city of Zambia. The Surface area is 360 square kilometers. Its location is in the southern part of the Central African Plateau. And it is the most populated district in the country with a total population of 3, 275, 554 in 2024 and a population density of 5328 people per square kilometer. Its growth rate is 4.1% per year according to the CSO projection 2024.

Further, the district is divided into Seven (7) constituencies namely Munali, Mandevu, Matero, Kanyama, Chawama, Kabwata, and Lusaka Central. Further, the district is centrally located for business activities. In this regard, all provinces in Zambia depend on this district as a major source of business and this township houses Government line Ministries and other privately - owned companies and businesses. Therefore, daily, Lusaka's Central Business District (CBD) is congested with traffic in and out of town making it difficult to access some social amenities and any other business - related activities.

2. Problem Statement

The influx of vehicles and increased population growth tend to be the major attributes of congestion in Lusaka's Central Business District (CBD). To alleviate the traffic congestion problem, particularly during peak hours, in the CBD, the Government in conjunction with cooperating partners embarked on the Road Projects. These road projects included the creation of filter lanes, fly - over bridges, tarred roads in residential areas within the CBD, "and 70/70 ring road."¹ In addition, due to traffic congestion, the role of traffic police in the CBD has been misplaced towards guiding traffic during peak hours at traffic lights as opposed to maintaining order and inspections on adhering to road usage by the motorists to avoid accidents. Further, the mushrooming of motorcycles/bikes and the uncoordinated movement of wheelbarrows hired by traders across roads have brought further traffic congestion and accidents in the CBD. Despite government efforts, traffic congestion remains a persistent

challenge in the CBD. For instance, the issue was partially addressed by construction of the fly - over bridges, and yet after a few meters away from these bridges, traffic jams started and hence not solving a big problem. What this means, is that, if this problem is not solved, productivity will be lost since citizens or the workforce who are supposed to be at work timely contributing to the government's productivity will always be arriving late and getting tired of having prolonged stay on roads rather than usual daily. And consequently, the country might not develop.

3. Objectives

- 1) To offer suggestions on interventions that would probably lead to traffic decongestion in the Lusaka Central Business District.
- 2) To make policy recommendations on ending traffic congestion in the Lusaka City.

4. The Project Rationale

This study holds significance for policymakers and stakeholders by providing actionable insights to mitigate traffic congestion, ultimately enhancing productivity and quality of life in Lusaka. Therefore, this paper aims to produce findings on factors that could lead to the decongestion of traffic in the CBD. These suggestions could be useful to the Government and cooperating partners in their support towards a traffic - free - congestion in the Lusaka City Business District since they might think of prioritizing the current traffic problem as an issue that needs to be addressed amid climate change particularly drought and load shedding in which the country continue to grapple with. The Government probably through its local authority could also benefit, especially through its policy makers, in formulating and implementing better traffic decongestion policies to cover and benefit every person in society. These benefits are likely to be extended to other provinces. In turn, the information generated by this paper could be useful in other districts of Zambia where the problem of traffic may be prevailing. Lastly, the paper identified traffic gaps and made suggestions

¹Innerringroadproject.2010. Retrieved from <https://www.lcc.gov.zm>

as probable solutions to resolving the traffic congestion in the city of Lusaka.

Therefore, the efforts made in this paper could help close the gap in literature and practice by advocating for evidence-based approaches to the prevention of unplanned visits to the city that have the potential to cause further traffic congestion, especially the fact that the vehicle population has increased currently in the liberal society whereby any person can aspire to own a personal to holder vehicle as opposed to public transportation. Even though passively covered in this paper, the writer is not of the view that having an increased vehicle population is a bad thing, but could be perceived as a positive sign of economic growth on the assumption that there is an increase in household income leading to increased vehicle population and hence traffic congestion. However, what is important is to regulate the flow of traffic in the CBD to avoid congestion. And hence, the rationale for ending traffic decongestion in the CBD.

5. Conceptual Framework

In trying to understand the factors that could contribute to the decongestion of traffic in the Lusaka Central Business District (CBD), atomization was used. According to the Zambia Management Leadership Academy (ZMLA) Report of 2013, this is a process of breaking down an issue under consideration into variables to ensure the right issue is being addressed.² This provided a detailed, meaningful, and comprehensive analysis of factors contributing to the decongestion of traffic in the CBD.

5.1 Concepts

In this paper, the terms were explained not to be exact but to provide meaningful to the concepts under investigation. In this regard, it was easier to describe the process of

identification of factors that could probably lead to decongestion of traffic in the CBD.

In dealing with the problem of decongestion of traffic in Lusaka Central Business Center, a case of Lusaka District, the paper focused on the following factors as illustrated by the above diagram:

- 1) Trucks - refers to the duty vehicles such as heavy and abnormal trucks. There may be many descriptions of trucks, however, the focus in this paper was placed on heavy - duty and abnormal vehicles.
- 2) Delivery Vehicles – this entails any vehicle that transports commodities meant for either public or private consumption.
- 3) Other vehicles (Buses, SUVs, Cars, Vans, etc.) – these refer to vehicles that are either publicly or privately owned for carrying goods and people.
- 4) Motorcycles/Bikes and/or Wheelbarrows – In this paper, this refers to any means of transport that is two - wheeled or less commonly, three - wheeled usually propelled by an internal - combustion engine used on a small scale meant for transportation of human beings and some goods.
- 5) Infrastructure - this refers to the basic physical and organizational structures and facilities (e. g. buildings, roads, power supplies) needed for the operation of a society or enterprise. However, in this paper, infrastructure will be skewed towards buildings and road infrastructure.
- 6) Ticketing office – In this paper, an institution that issues out tickets and fines for would - be offenders. This office may comprise ZP officers, council, RTSA, Information Communication Technology (ICT) team from Smart Zambia to mention but a few.
- 7) Shopping Mall - refers to a business center with a variety of business activities earmarked to employ the citizenry and other foreign investors. In this regard, an investment in the creation of the shopping mall.

² Zambia Management Leadership Academy. 2013.

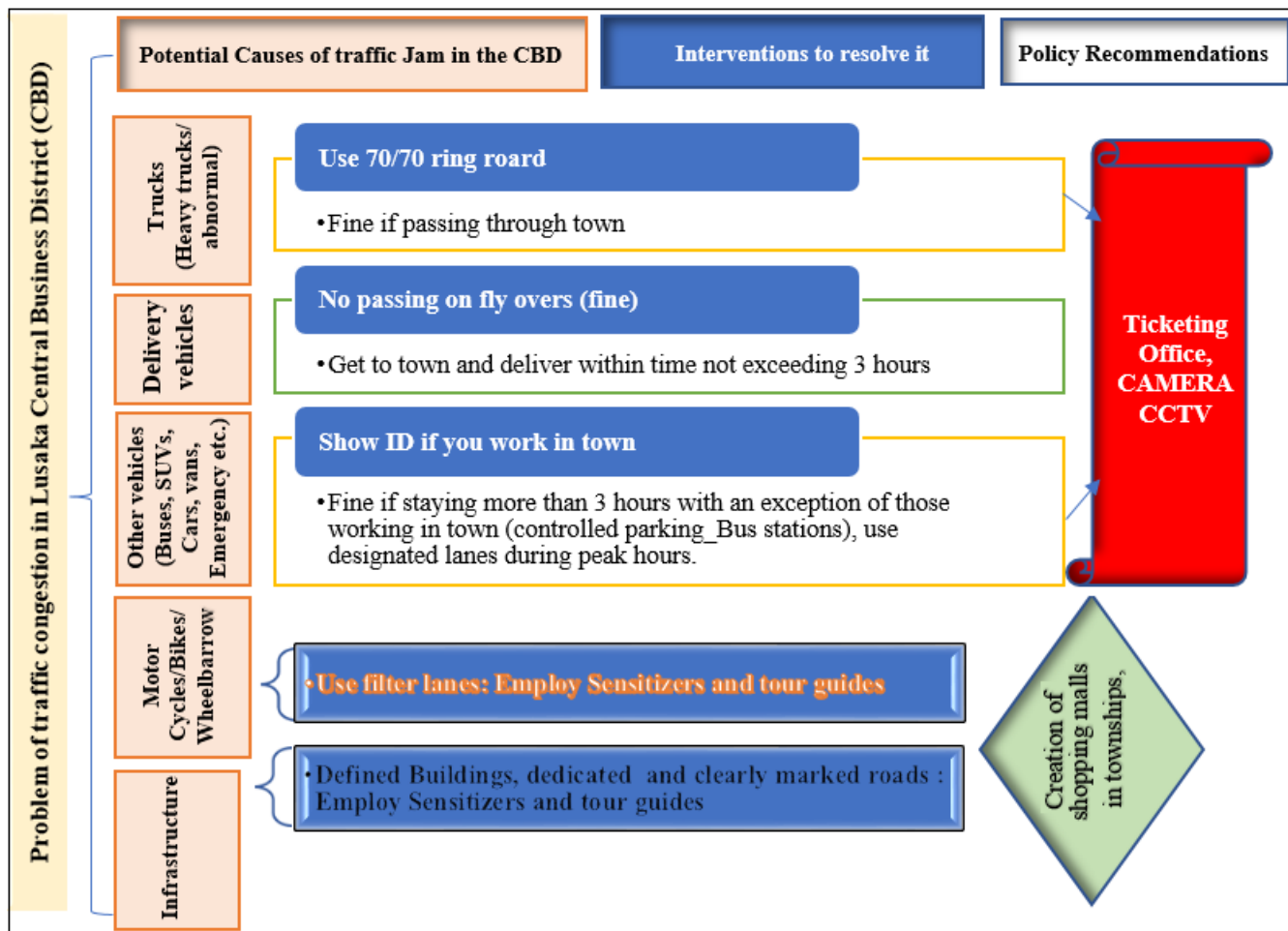


Figure 1: Atomization of factors identified as contributors to traffic decongestion in the Lusaka Central Business District (CBD)

6. Interventions

Criteria for a Factor (s) to contribute to the decongestion of traffic in the Lusaka Central Business Center (CBD)

In the paper, the factor (s) assumed to contribute to decongestion in traffic in the CBD were as indicated below:

Factor (s)	Criteria to contribute to traffic decongestion and Intervention
1) Trucks	<p>It is assumed that heavy and abnormal trucks cause traffic jams when they pass through the Lusaka Business Center, this could be attributed to their large size and the space they occupy on the infrastructure. Further, some road infrastructure by design may not necessarily be constructed to withstand the pressure exerted by these trucks and hence destroy the road network. An example of this is when the truck passes through the fly - over bridges.</p> <p>Intervention (s):</p> <ol style="list-style-type: none"> The flow of traffic in and out of the Lusaka Business Center should be restricted to only dedicated roads. In this regard, there is a need to strengthen the utilization of the already existing road infrastructure such as the 70/70 Ring Road constructed primarily for heavy and abnormal trucks. The trucks passing through the fly - over bridge and/or the CBD should be fined or prosecuted for committing an offense.
2) Delivery Vehicles	<p>It is assumed that the duration of stay in the business center by the delivery vehicles has a bearing on the social pressure in the business center especially about traffic and human congestion. What this means, is that prolonged stay of delivery vehicles tends to bring about traffic congestion in the township. The limited space that could have been left for occupancy of small vehicles is taken up by delivery vehicles and hence the cause of traffic congestion.</p> <p>Intervention (s):</p> <ol style="list-style-type: none"> The delivery vehicles should have dedicated roads and parking spaces clearly labeled for off - roading and once the off - loading is done, it should be clearly outlined that, in such a case, other vehicles might occupy the space once the delivery vehicle completes its delivery mission. To avoid bringing congestion in the CBD, the duration of stay by the delivery vehicles should be limited to a few hours within three (3) hours.
3) Other vehicles (Buses, SUVs,	<p>It is assumed that these vehicles use dedicated lanes and failure to stick to these road lanes would result in traffic jams whereby more increased drive hours and this has a negative impact on the economic growth. Further, for the vehicles used by the working class or commuters, there is a need to produce some parking proof of evidence in the form of a National Identification Card (Work ID). For other privately - owned vehicles, access to the CBD should be limited within a stipulated period and not during peak hours. This could be within three (3) proposed hours.</p>

<p>Cars, Vans etc.)</p>	<p>Intervention (s):</p> <ul style="list-style-type: none"> a) There should be avoidance by drivers especially for businesses from parking, picking up, and dropping off passengers along the main roads. Any violation against this regulation should attract a fine to the driver of the respective vehicle. b) Other privately - owned vehicles should have limited parking time within the CBD, and parking a vehicle beyond three (3) hours should attract a fine. c) Parking of vehicles in uncontrolled parking stations should attract a fine. d) There is a need to obtain an authorization slip to park a vehicle for a period exceeding three (3) hours.
<p>4) Motor cycles/Bikes and/Wheelbarrows</p>	<p>It is assumed that these means of transport should also use separate dedicated lanes to avoid traffic congestion. Similarly, motorbikes tend to be used as a delivery means of transport, especially during these times when there are mushrooming of delivery companies in the CBD. In addition, Wheelbarrows also tend to be used similarly to motorcycles. These are also a source of employment for the Zambian citizens. However, if these means of transport are left unchecked and unattended, they can become a nuisance and cause unwanted traffic jams coupled with accidents.</p> <p>Intervention (s):</p> <ul style="list-style-type: none"> a) This category of means of transport should use dedicated lanes during their delivery. b) The riders of these means of transport should stick to the traffic regulations and ensure that they park at the controlled parking areas.
<p>5) Infrastructure</p>	<p>It is assumed that the buildings and roads should be designed in such a way that they are resilient to the pressure of vehicles and people. If the opposite is true, then traffic congestion may occur. Therefore, ideally, the panacea to the traffic congestion problem could be building the necessary infrastructure to accommodate the increased vehicle and human population. However, even though buildings and roads are to be built in a manner to accommodate the traffic, the writer is cognizant of the fact that people are likely to make more movements when they are provided with infrastructure that makes driving easier. And this increase in movement therefore results in traffic congestion. From the preceding discussion, another of the most observable reasons behind the increase in traffic congestion could be attributed to an increase in Lusaka's population.</p> <p>Smart Traffic lights (STL): these are technologies that are supposed to signal the flow of traffic in the CBD placed in designated and strategic places at crossroads and sometimes in areas that do not require them. Further, SLT technologies can control the flow of traffic by having sensors to monitor the motion of vehicles and apportion the right amount, in this regard, more time to traffic - congested lanes, and the opposite may be true, allocation of shorter time to less congested lanes. In some instances, our traffic light sections are mainly mannered by Zambian Traffic Officers who tend to ease the flow of traffic especially during peak hours and or during the morning as people get to work. This, also presents a short intervention especially during the morning time but not a long - term measure of controlling traffic congestion, in the sense that, the police officers might not allocate an equal chance for the flow of traffic.</p> <p>Controlled parking: If vehicle parking is not controlled in the CBD, there might be a chance of creating traffic jams in the town center. This could be attributed to public buses and private vehicles parking along the routes, and not having adequate parking space in town is likely to result in traffic congestion in the CBD. In this vein, it becomes important that strict measures are put in place by local authorities, the Lusaka City Council to deter uncontrolled parking along the routes and ensure that enough parking space is provided for vehicles coming into the city. Further, the local council should take advantage by attaching a price or a fine on vehicles that park along the main routes and in undesignated parking lots.</p> <p>Fly - overs bridges: The initial plan was very important in that the construction of these bridges across the CBD could reduce traffic congestion. Indeed, this worked in a few places where these bridges were constructed as evidenced by less congestion along the roads around these flyovers. But a few meters away from these bridges, the problem of traffic congestion or jams starts, and hence need to find a solution to that.</p> <p>Intervention (s):</p> <ul style="list-style-type: none"> a) Based on the above, the buildings should be designed away from the road infrastructure to accommodate future road expansion to ease the flow of traffic and human beings. b) The implementation of Smart Traffic Lights: There is a need for the Government to invest in this technology implemented elsewhere in the world, and invest in solar energies to run STL technologies for 24/7. c) The Government should consider removing Zambia Traffic Officers from traffic light areas once the Smart Traffic Lights technologies are in place. d) The Government should consider investing in the creation of enough controlled parking space, especially in areas where the volume of traffic is huge, and this way, this might lead to traffic flowing quickly and faster even during peak hours. e) The Government through its local authorities should consider putting up road network mechanisms that would allow only public transport to enter the city and restrict movements of privately - owned vehicles from making unnecessary trips in town during peak hours but only permitted during certain periods other than rush hours.
<p>6) Ticketing office</p>	<p>It is assumed that the establishment of this office shall enforce regulations that will lead to the decongestion of traffic in the CBD. Among the many roles and functionalities of this office is to issue tickets on would - be offenders who violate traffic regulations. This could be through an automated payment online ticketing system or mechanisms that reduce overcrowding of people at the ticketing office. Further instances where wrongly parked vehicles or prolonged parking of vehicles beyond the stipulated period in time or unplanned vehicle movements, hence the ticketing officers using gadgets that are connected to the internet or online or use of CCTV shall capture the vehicle registration number and issue a fine. The use of receipt books in undesignated parking areas should be avoided since this could be a potential recipe for corruption. The gadgets to be used should have the ability to determine the timing or measure the time spent by a vehicle that has been parked from the time it entered the city till the time the offense is attached.</p> <p>Intervention (s):</p> <ul style="list-style-type: none"> a) The Government should consider the establishment of a ticketing office that can respond to emergencies timely and being able to network with other relevant ministries in events of accidents or security concerns. b) The Government should consider introducing an automated payment system that prevents overcrowding by people at the ticketing office. c) The Government should consider introducing an ICT infrastructure that would capture and issue fine tickets to vehicle owners that violates traffic regulations at Traffic Lights Areas, Along main routes and controlled parking spaces.

7) Shopping Malls	<p>It is assumed that if Lusaka's neighboring townships have shopping malls, the likelihood of traffic congestion will reduce since people will be visiting these malls in their respective areas rather than proceeding into the CBD. The strategic creation of shopping malls across the townships bordering the Lusaka Central Business District presents an opportunity for locals to do business activities within their proximity and avoid making trips to the city. And only proceeds to the city if some products or unique businesses are not common within their accessible and respective shopping malls and these can only be available in the city. Further, the Government could strategically plan for the land allocation in strategic points for ease of access by the locals and attract them to do their shopping within their catchment areas.</p> <p>Intervention (s):</p> <ol style="list-style-type: none"> The Government should consider the engagement of stakeholders and potential local or foreign investors for the creation of shopping malls in places without malls and/or encourage more investment in already existing infrastructures. The Government should consider the allocation of land in strategic points and clearly outline the guidance on the purpose of setting up the shopping malls and compliance in the allocation of jobs for the local people and the purpose of avoidance of tracking into the city. The Government should consider sensitization of the communities on the importance of shopping malls and the use of vehicles within these malls to avoid another problem of traffic jam. This suggestion will not only solve the local traffic congestion problem in the CBD but also sort out the future potential traffic congestion within the newly created shopping malls in respective townships. The Government should consider setting up committees with relevant stakeholders that will play a pivotal role in planning and implementation of the shopping malls' creation across different townships bordering Lusaka City.
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As illustrated above, if identified factors are addressed by Government and other key stakeholders within and outside the city, probably, a traffic congestion - free status in Lusaka Central Business District would be attained. Therefore, once the traffic problem has been resolved in the city, the Government could probably consider replicating this model in other provinces within the country with similar challenges. And proposed Stakeholders vital in the implementation processes toward ending traffic congestion in Lusaka Central Business District are as follows:

Stakeholders

- RTSA
- ZP - Enforce
- Ministry responsible for local government
- Ministry of Green Environment
- Local authorities_ Council etc.

7. Methodology

The study employs observational and descriptive methods, with data gathered through onsite assessments and stakeholder feedback. Conceptual frameworks were used to identify traffic decongestion factors. And these were proposal for course of action implementation process:

- Stakeholder mapping to execute the mandate.
- Stakeholder engagement meetings to draw a road map.
- Sensitization meetings, Setting up a ticketing office based on the already existing structures (ZP, Councils, RTSA).
- Investor confidence and engagement meetings, and Proposition to policy support on implementation.

8. Recommendations

8.1 Trucks

- The flow of traffic in and out of the Lusaka Business Center should be restricted to only dedicated roads. In this regard, there is a need to strengthen the utilization of the already existing road infrastructure such as the 70/70 Ring Road constructed primarily for heavy and abnormal trucks.
- The trucks passing through the fly - over bridge and/or the CBD should be fine, and the fine in this case, could be

attached to, not only the driver, but also the company where the driver works from. This offense might be in two folds namely: violation of the rule of passing through the fly - over bridge meant for small vehicles and also for non - compliance in avoidance of the Central Business Center.

8.2 Delivery Vehicles

- The delivery vehicles should have dedicated roads and parking spaces clearly labeled for off - roading and once the off - loading is done, it should be clearly outlined that, in such a case, other vehicles might occupy the space once the delivery vehicle completes its delivery mission.
- To avoid bringing congestion in the CBD, the duration of stay by the delivery vehicles should be limited to a few hours within three (3) hours. This period of stay is on the assumption that this will pave an apple time enough to off - load the delivery vehicle, and beyond this period, it should attract a fine.

8.3 Other vehicles (Buses, SUVs, Cars, Vans etc.)

- There should be avoidance by drivers especially for businesses from parking, picking up, and dropping off passengers along the main roads. Any violation against this regulation should attract a fine to the driver of the respective vehicle.
- Parking of vehicles in uncontrolled parking stations should attract a fine and only those vehicles parked in the right and recommended parking lot should not be subjected to a penalty.
- There is a need to obtain an authorization slip to park a vehicle for a period exceeding three (3) hours.
- The workforce or people conducting school kid pick - ups/drop - offs and/or any private errands should stick to traffic regulations by using the dedicated lanes and conducting their businesses within a stipulated period to avoid congestion.
- For the vehicles used by the working class or commuters, there is a need to park at controlled parking areas and evidence in the form of a National Identification Card (Work ID) so that there is no penalty attached to the parking.

8.4 Motor cycles/Bikes and/or Wheelbarrows

- 1) These transport modes should use dedicated lanes during their delivery to avoid fines.
- 2) The riders of these means of transport should stick to the traffic regulations and ensure that they park at the controlled parking areas.

8.5 Infrastructure

- 1) The buildings should be designed away from the road infrastructure to accommodate future road expansion to ease the flow of traffic and human beings.
- 2) The Government should consider implementing and investing in Smart Traffic Light technology with the capability of controlling traffic in real - time.
- 3) The Government should consider investing in solar energies or any of the renewal energies that will support sustainability of the implementation of Smart Traffic lights to function 24/7.
- 4) The Government should consider removing Zambia Traffic Officers from traffic light areas once the Smart Traffic Lights technologies are in place coupled with the installation of CCTV cameras that will issue a traffic violation committed by would - be offenders at traffic lights.
- 5) The Government should consider investing in the creation of enough controlled parking space especially in areas where the volume of traffic is huge and this way, this might lead to traffic flowing quickly and faster even during peak hours.
- 6) The Government through its local authorities should consider putting up road network mechanisms that would allow only public transport to enter the city and restrict movements of privately - owned vehicles from making unnecessary trips in town during peak hours but only permitted during certain periods other than rush hours.
- 7) The Government should consider introducing a measure that will deter privately owned vehicles gradually by paying an exorbitant price to all those intending to come to the city during peak hours.

8.6 Ticketing Office

- 1) The Government should consider the establishment of a ticketing office that can respond to emergencies timely and being able to network with other relevant ministries in events of accidents or security concerns.
- 2) The Government should consider introducing an automated payment system that prevents overcrowding by people at the ticketing office.
- 3) The Government should consider introducing an ICT infrastructure that would capture and issue fine tickets to vehicle owners that violates traffic regulations at Traffic Lights areas, main routes and uncontrolled parking spaces.

8.7 Shopping Malls

- 1) The Government should consider the engagement of stakeholders and potential local or foreign investors for the creation of shopping malls in places without malls

and/or encourage more investment in already existing infrastructures.

- 2) The Government should consider the allocation of land in strategic points and clearly outline the guidance on the purpose of setting up the shopping malls which in turn will create jobs for the local people.
- 3) The Government should consider sensitization of the communities on the importance of shopping malls. This suggestion will not only solve the local traffic congestion problem in the CBD but also sort out the future potential traffic congestion within the newly created shopping malls in respective townships.
- 4) The Government should consider setting up committees with relevant stakeholders that will play a pivotal role in the planning and implementation of shopping malls' creation across different townships bordering Lusaka City.

9. Conclusion

Lusaka traffic congestion remains a significant challenge. This article highlights key interventions, including smart infrastructure and policy reforms, as essential steps toward sustainable traffic management. The proposed solutions offer a replicable model for other cities in Zambia facing similar challenges. Therefore, concerted efforts by the Zambian Government through a multisectoral approach could be heightened to address this issue.

References

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