



## AN ASSESMENT OF NON-MOTORIZED AND PUBLIC TRANSPORT CHALLENGES FOR PEOPLE WITH DISABILITIES IN NAIROBI CITY

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## ACRONYMS

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ADA	-American Disability Act
AU	-African Union
BRT	-Bus Rapid Transport
CAD	- Computer Aided Design
CBD	-Central Business District
DETR	- Department of Transport Research- UK
DIFD	-Department of International Development-UK
GDP	- Gross Domestic Product
GIS	-Geographical Information System
GNP	-Gross National Product
ICT	-Information and Communication Technology
INTP	-Integrated National Transport Policy
IUDMP	-Integrated Urban Development Master Plan
JICA	-Japan International Cooperation Agency
KEBS	-Kenya Bureau of Standards
KENHA	-Kenya National Highway Authority
KERRA	-Kenya Rural Roads Authority
KES	-Kenya Shillings
KNBS	-Kenya National Bureau of Statistics
KNCHR	- Kenya National Commissioning for Human Rights
KNSPWD	-Kenya National Survey for Persons with Disabilities
KRB	-Kenya Roads Boards
KURA	-Kenya Urban Roads Authority
LRT	-Light Rail Transport
MOA	-Matatu Owners Association
MOTI	- Ministry of Transport and Infrastructure
MWA	-Matatu Welfare Association
NCC	- Nairobi City County
NCPWD	-National Council for Persons with Disability
NGO	- Non-Governmental Organization
NMIMT	-Non-Motorized and Intermediate Means of Transport

NMT	-Non Motorized Transport
NTSA	- National Transport and Safety Authority
OAU	-Organization of Africa Unity
PRM	-Persons with Restrictive Mobility
PSV	-Public Service Vehicle
PT	-Public Transport
PWD	-Persons with Disability
TRRL	-Transport and Roads Research Laboratory
UN	-United Nations
UNCHS	-United Nations Center for Human Settlement
UNCRPD	-United Nation Convection on the Rights of Persons with Disabilities
UNPK	-United Disabled Persons of Kenya
VAT	-Value Added Tax
WBI	-World Bank Institute
WHO	-World Health Organization

## ABSTRACT

Improving access to Non-Motorized Transport (NMT) facilities and Public Transport (PT) for people with disabilities is a necessary element of attaining urban sustainable accessibility among the Persons with Disabilities (PWDs) in developing countries like Kenya. This paper is based on a research study on the assessment of Non-motorized and public transport challenges for persons with disability in Nairobi City. The study's main objective is to further the understanding of the challenges experienced by people with disabilities in accessing non-motorized transport facilities and public transport in Nairobi, and identify specific steps that can be taken to improve the situation.

Premised on the urban mobility concepts and disability theories in understanding urban movements and social interactions of PWDs, the study seeks to look deep in to the different variable which determines the travel pattern of PWDs, the challenges they face and factors which contribute to these challenges.

This paper has provided a selected overview of progress that has been made and the gaps that still exists towards achieving improved access to NMT and public transportation for PWDs in Nairobi City. A generalized framework is suggested for describing the phase implementation of activities towards improving access for PWDs in Nairobi City. Some critical priorities for actors at various levels of development have been suggested to benchmark with the international best practices. It is indisputable that failure to respond to these needs on time can deteriorate the social efforts aimed at reducing the gap between the PWDs and the rest of the population.

**Key Words:** *Persons with Disability, Mobility, Access, Non-Motorized Transport, Public Transport.*

## TABLE OF CONTENTS

ACKNOWLEDGEMENT .....	ii
ACRONYMS .....	iii
1. INTRODUCTION .....	2
1.1. General Objective .....	2
1.2. Theoretical Concepts Of Urban Mobility .....	3
1.2.1. Types of Urban Mobility .....	3
1.3. Conceptual Framework of the Study .....	5
1.4. Study Method .....	6
2. RESULTS AND ANALYSIS OF FINDINGS .....	7
3. CHALLENGES FACED BY PWDS ON NMT AND PT TRAVEL ENVIRONMENT .....	10
3.1. Contributory Factors to the Challenges Faced by PWDs in Nairobi City .....	16
4. SPECIFIC PROPOSALS ON THE INTEGRATION OF DISABILITY SENSITIVE URBAN PUBLIC TRANSPORTATION GUIDELINES .....	17
4.1. Proposed general framework for accessibility provision for PWDs in Nairobi City .....	17
4.1.1. First stage responses: Basic rights and personal mobility .....	18
4.1.2. Second stage responses: Environmental access and special programs .....	19
4.1.3. Third stage responses: Improvements to NMT and public transport .....	19
4.2. Specific Proposal on Restructuring the Framework of Functions for Managing Urban Transport. ....	22
5. CONCLUSIONS .....	25

## 1. INTRODUCTION

Disability affects 10% of every population [about 650million people worldwide]. It is also estimated that 80% of the world's persons with disabilities (PWDs) live in low income countries where they experience social and economic disadvantages and denial of rights (WHO, 2011). The United Nations estimates that between 6 and 10% of the population in developing countries has a disability (600 million people worldwide). In 1981, UN declared as the International Year of the Disabled and [1983-1992] -United Nations Decade of Disabled Persons

In 2006-The United Nations Convention on the Rights of Persons with Disabilities (UNCRPWD) concluded, as part of Article 4 General obligations: "That, Governments should undertake or promote research and development of universally designed goods, services, equipment and facilities, which should require the minimum possible adaptation and the least cost to meet the specific needs of a person with disabilities, to promote their availability and use, and to promote universal design in the development of standards and guidelines". Kenya ratified this Convention on 19 May 2008 (the focus of this paper is on Article 9 on Accessibility)

The Overall disability rate in Kenya was 4.6% in 2007, which translates to 1.6 million people living with disability countrywide. Of this, the largest proportion was physical impairment (1.6%, or 554,440 people). Of these only 31% had access to mobility device in the urban areas while 42% had mobility assistive devices in Nairobi County (2007 KNSPWD.) Persons with disabilities are not a homogeneous group but are varied in terms of the nature of their disability and their mental, physical and social needs, and majority live in extreme poverty. According to the national population and housing census 2009, persons with disabilities constitute 3.7% of the population which translate to 1.3million Kenyans. The world health organization and the Kenya Demographic and Health Survey (KDHS 2008/9) estimate that about 10% of Kenya's population has some form of disability.

### 1.1. General Objective

The paper aims to assess the challenges experienced by people with disabilities in accessing non-motorized transport facilities and public transport in Nairobi, and identify specific steps

that can be taken to improve the situation.

## **1.2. Theoretical Concepts Of Urban Mobility**

Rapid urban development occurring across much of the globe implies increased quantity of passengers and freight moving within urban areas. Movements also tend to involve longer distances, but evidence suggests that commuting times have remained relatively similar through the last hundred years, approximately 1.2 hours per day. This means that commuting has gradually shifted to faster transport modes and consequently greater distances could be travelled using the same amount of time.

In the majority of cases fast urban growth led to a scramble to provide transport infrastructure, often in an inadequate fashion. Each form of urban mobility, be it walking, the private car or urban transit, has a level of sustainability to fill mobility needs. Motorization and the diffusion of personal mobility has been an ongoing trend linked with substantial declines in the share of public transit in urban mobility. (J.P Rodriguez et al, 2010)

### **1.2.1. Types of Urban Mobility**

Movements are linked to specific urban activities and their land use. Each type of land use involves the generation and attraction of a particular array of movements. This relationship is complex, but is linked to factors such as recurrence, income, urban form, spatial accumulation, level of development and technology. Urban movements are either obligatory, when they are linked to scheduled activities (such as home-to-work movements) or voluntary, when those generating it are free to decide their own scheduling (Such as leisure). The most common types of urban movements are as in **Table 2.4**



- **Pendular:** These are obligatory movements involving commuting between locations of residence and work. They are highly cyclical since they are predictable and recurring on a regular basis, most of the time a daily occurrence, thus the term pendulum.
- **Professional:** These are movements linked to professional, work-based activities such as meetings and customer services, dominantly taking place during work hours.
- **Personal:** These are voluntary movements linked to the location of commercial activities which includes shopping and recreation.
- **Touristic:** These are important movements for cities having historical and recreational features. They involve interactions between landmarks and amenities such as hotels and restaurants. They tend to be seasonal in nature or occur at specific moments. Major sport events such as the World Cup or the Olympics are important generators of urban movements.
- **Distribution:** These are movements concerned with the distribution of freight to satisfy consumption and manufacturing requirements. They are linked to distribution centers and retail outlets.

**Table 1-1: Types of urban movements**

<i>Movement type</i>	<i>Pattern</i>	<i>Dominant time</i>	<i>Destination</i>
<b>Pendular</b>	Structured	Morning and afternoon	Localized (employment)
<b>Professional</b>	Varied	Workdays	Localized
<b>Personal</b>	Structured	Evenings	Varied with some foci
<b>Touristic</b>	Seasonal	Day	Highly localized
<b>Distribution</b>	Structured	Night-time	Localized

*Source: Rodrigues et al (2010)*

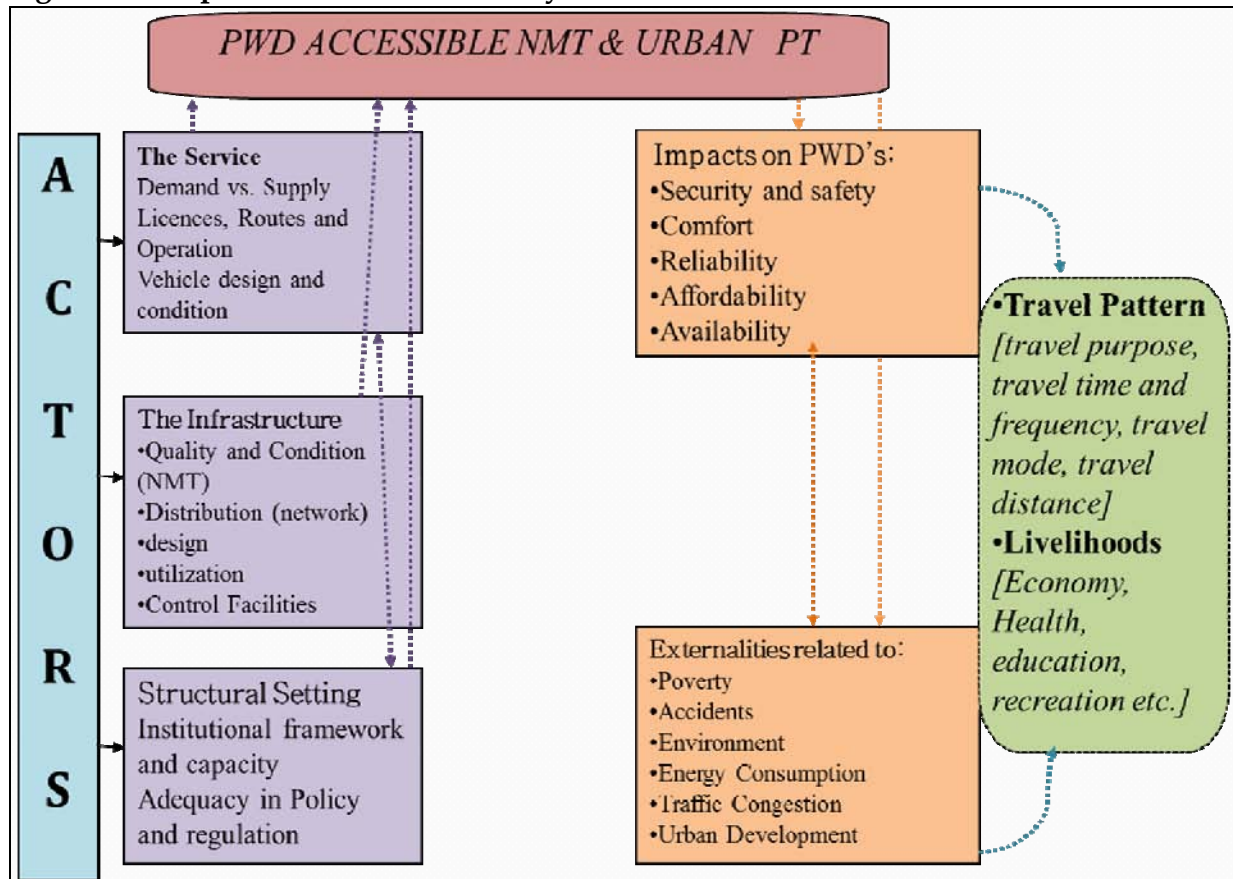
The consideration of urban movements involves their generation, the modes and routes used and their destination:

The share of the automobile in urban trips varies in relation to location, social status, income, quality of public transit and parking availability. Mass transit is often affordable, to several social groups, such as students, the elderly, PWDs and the poor as a captive market. There are important variations in mobility according to age, income, gender and disability. The so-called disability gap in mobility is the outcome of socio-economic differences as access to individual transportation is dominantly a matter of income and physical ability. Consequently, in some instances modal choice is more a modal constraint linked to economic opportunities.

In central locations, there are generally few transport availability problems because private and public transport facilities are present. However, in locations outside the central core that are accessible only by the automobile, a significant share of the population is isolated if they do not own an automobile. Limited public transit and high automobile ownership costs have created a class of spatially constrained (mobility deprived) people. They do not have access to the services in the suburb, but more importantly to the jobs that are increasingly concentrated in those areas.

### 1.3. Conceptual Framework of the Study

Fig 1-1: Conceptual Framework of Study



Source: Odak P. (2014)

Transportation must be fast, reliable, safe, and comfortable if the goals are to be achieved, which are to offer customers the best possible service, and MUST accommodate all social groups with varied and different mobility needs.

In conceiving this conceptual framework, the issues of PWDs are central since they are the

people who experience these challenges day to day. The overarching goal is to achieve an accessible urban public transport for PWDs. This only happens when the institutional and policy frameworks are in place, infrastructure and other facilities are provided such that they comply with the basic requirements of PWDs and the service parameters are designed to operate optimally for use by PWDs. [*these factors are considered the determining causes*].

The establishment of these policies and frameworks will have an overall impact on the accessibility, reliability, security and safety, comfort and affordability of public transport for PWDs. These effects will be negative when the same is inaccessible. When they are negative, the externalities that are likely to be generated include poverty, increased accident rates, environmental degradation, unsustainable energy use, traffic congestions and poor urban development in general.

All these have a general effect on the travel patterns of PWDs which influences their participation in the economy, health, education, recreation and other related activities of persons with disabilities. Human activities, PWDs included are directly influenced by the level of integration between land use planning and transport planning.

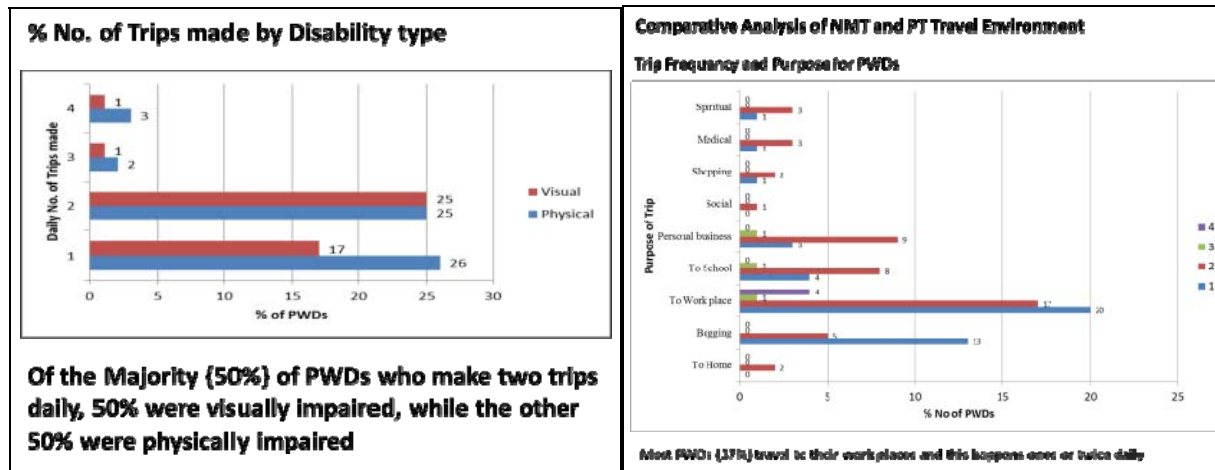
#### **1.4. Study Method**

The study method advanced for this paper involved a logical plan of activities and process of research that addressed credibility of the study findings. The questionnaires, field observations and in-depth interviews formed major research instruments. Data for the study was obtained through primary and secondary sources. Secondary data was obtained from various extensive literature- published and unpublished materials, technical reports and thesis and journal articles. Digitized maps were also be used for description of spatial characteristics of the study area.

## 2. RESULTS AND ANALYSIS OF FINDINGS

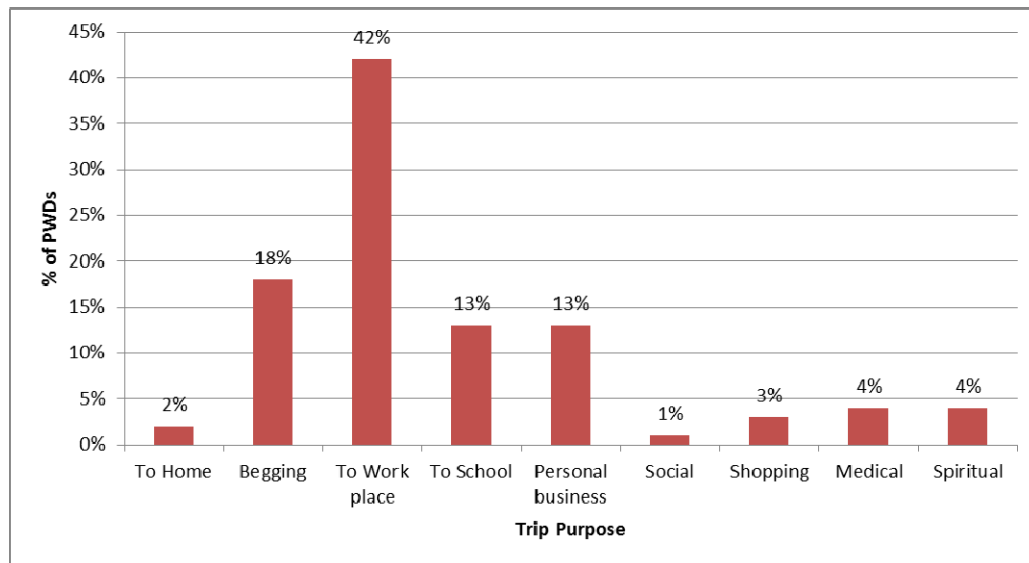
This section shows some of the results of the sample data analysis of different aspect of travel considerations of PWDs correlated with disability types.

Figure 2-1: Number of Trips made vs type of disability and Trip Purpose



Source: Odak (2014)

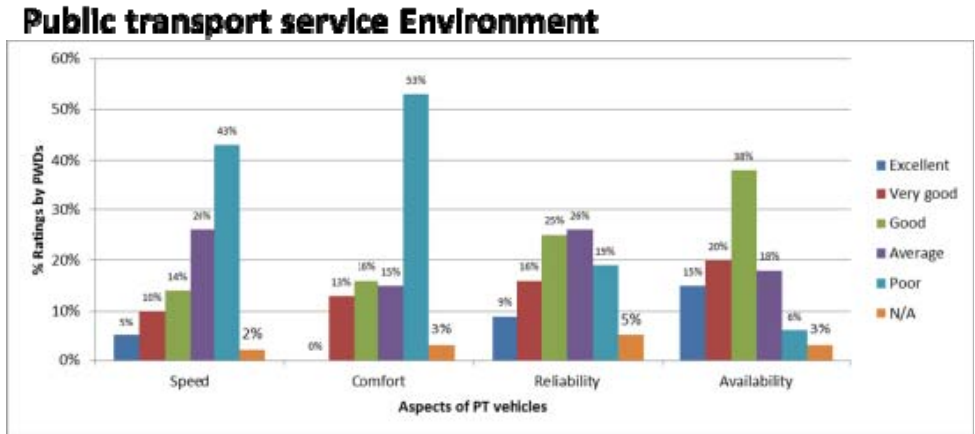
Figure 2-2: Percentage Trip purpose of PWDs in Nairobi City



Source: Odak (2014)

About 42% of the trips made by PWDs who were interviewed were to the work places followed by a worrying 18% who goes to beg on the streets of Nairobi.

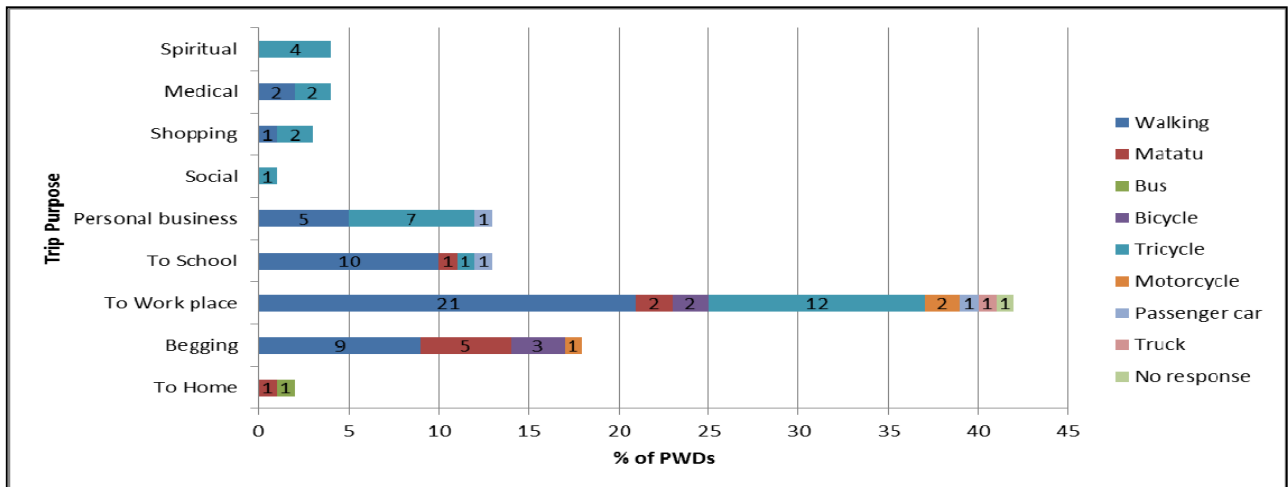
Figure 2-3: Ratings of different aspects of Public Transport Service by PWDs



- **Low ratings by the PWDs on speed and comfort as most of them considered them poor**
- **High ratings on Reliability and availability as considerable number rated them good**

Source: Odak (2014)

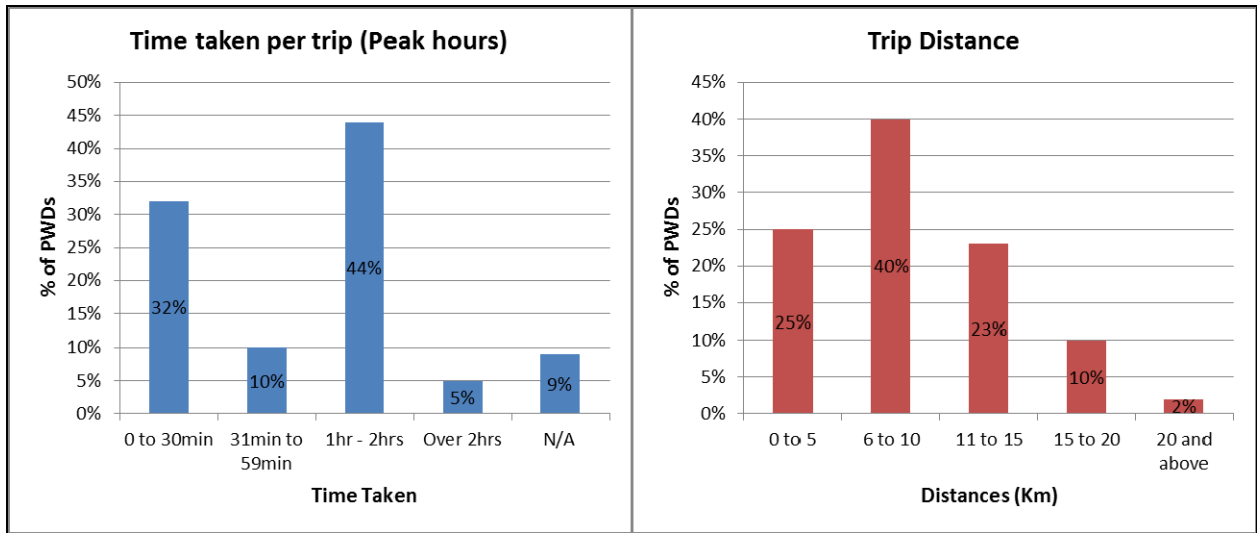
Figure 2-4: Trip Purpose Vs. Mode of travel



Source: Odak (2014)

Of the Total majority of 42% of PWDs who travel to their workplaces, 21% proportion travel by walking while about 12% of them use tricycle. This is also true for the school goes where a proportion of about 10% travel by walking.

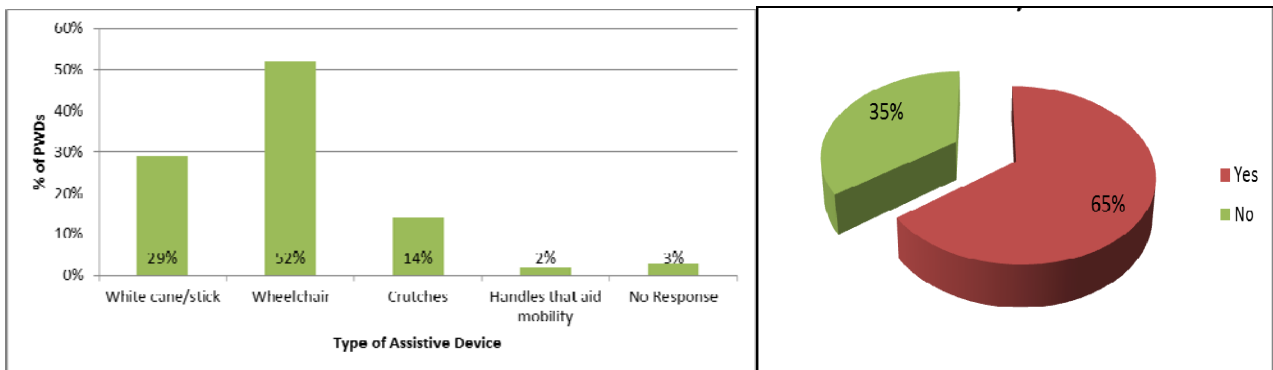
**Figure 2-5: Travel time with distance of Travel**



Source: Odak (2014)

Most PWDs who were interviewed indicated that they prefer to live within shorter distances (between 6-10km) from their normal destinations to save on time and cost of travel. The longer travel time is largely due to traffic congestions experienced in the city.

**Figure 2-6: Types of Disability Assistive Devices**



Source: Odak (2014)

A third of PWDs use an assistive device or Support service. PWDs with Physical disabilities were more likely to possess a personal mobility device than their visually disabled counterparts.

### 3. CHALLENGES FACED BY PWDS ON NMT AND PT TRAVEL ENVIRONMENT

A summary of the salient areas of NMT facilities and Public Transport facilities as they exist currently in Nairobi is shown in Table 3-1 and Table 3-2 respectively.

**Table 3-1: Challenges for PWDs on NMT Travel Environment**

Facility	Aspect	Challenges
<b>FOOTPATHS</b>	Safety	<ul style="list-style-type: none"> <li>▪ About 80% of the surfacing is rugged and more often poorly maintained.</li> <li>▪ Some sections are not properly separated from vehicular traffic by either kerbs or drains.</li> <li>▪ Most sections are characterized with open utility covers, and street works especially by service providers, making them potential accident areas.</li> <li>▪ Most sections not well lite.</li> </ul>
	Accessibility	<ul style="list-style-type: none"> <li>▪ Full of obstacles, including parked vehicles on the footways.</li> <li>▪ In some sections the gradients are too steep.</li> <li>▪ Lack of strategic and well placed resting places along routes.</li> <li>▪ For the visually impaired people, the layouts are complex and do not accommodate adequate signals.</li> </ul>
	Reliability	<ul style="list-style-type: none"> <li>▪ In most of the Footway observed, there was no provision for uninterrupted access between designated points.</li> </ul>
	Affordability	<p>To the provider:</p> <ul style="list-style-type: none"> <li>▪ Most access improvements in regular maintenance and new construction have not included NMT.</li> <li>▪ upgrading is not prioritized on high pedestrian areas</li> </ul>
<b>STREET CROSSINGS</b>	Safety	<ul style="list-style-type: none"> <li>▪ Crossing markings are faded and not clear on the surface of the road.</li> <li>▪ There are no advance warnings to vehicles to stop or give priority to pedestrians.</li> <li>▪ Currently in Nairobi, there are no warnings to visually impaired pedestrians that they are approaching street crossing.</li> <li>▪ Again in Nairobi, there are no methods of informing visually impaired pedestrian when it is safe to cross.</li> <li>▪ In places where junctions or crossings are signalized, traffic is not stopped long enough to allow slow walkers to cross.</li> <li>▪ Some sections traffic calming are needed to reduce vehicle speeds for safety.</li> </ul>
	Reliability	<ul style="list-style-type: none"> <li>▪ Warnings, information and traffic signals are not well-maintained and in constant bad working order.</li> </ul>

Facility	Aspect	Challenges
	Accessibility	<ul style="list-style-type: none"> <li>▪ There are no provisions for kerb ramps to provide level crossing from footway to road.</li> <li>▪ In some sections, the crossing distances are too long for PWDs to comfortably cross.</li> </ul>
	Affordability	<p>To the provider:</p> <ul style="list-style-type: none"> <li>▪ Most access improvements in regular maintenance and new construction have not included proper crossings.</li> <li>▪ Street crossings have not prioritized well the high pedestrian areas.</li> </ul>
<b>FOOTBRIDGES</b>	Safety	<ul style="list-style-type: none"> <li>▪ Where such facilities exist, they are unsafe and insecure for use. This course for limited usage</li> <li>▪ Poorly lit posing unsafe environment for use</li> </ul>
	Reliability	<ul style="list-style-type: none"> <li>▪ Poorly maintained with most of them assuming residence for street families</li> <li>▪ Some of them are roofless making them difficult to use especially during rainy seasons</li> </ul>
	Accessibility	<ul style="list-style-type: none"> <li>▪ Some have Very steep (high gradient) ramps on foot over bridges rendering them unsuitable for use by PWDs</li> </ul>
	Affordability	<ul style="list-style-type: none"> <li>▪ Footbridges have not prioritized well the high and difficult pedestrian crossing areas. e.g. T-mall area in Langata Road</li> </ul>

Source: Odak, P (2014)



Figure 3-1: Picture of a poorly designed and maintained sections of a footpath in Nairobi city

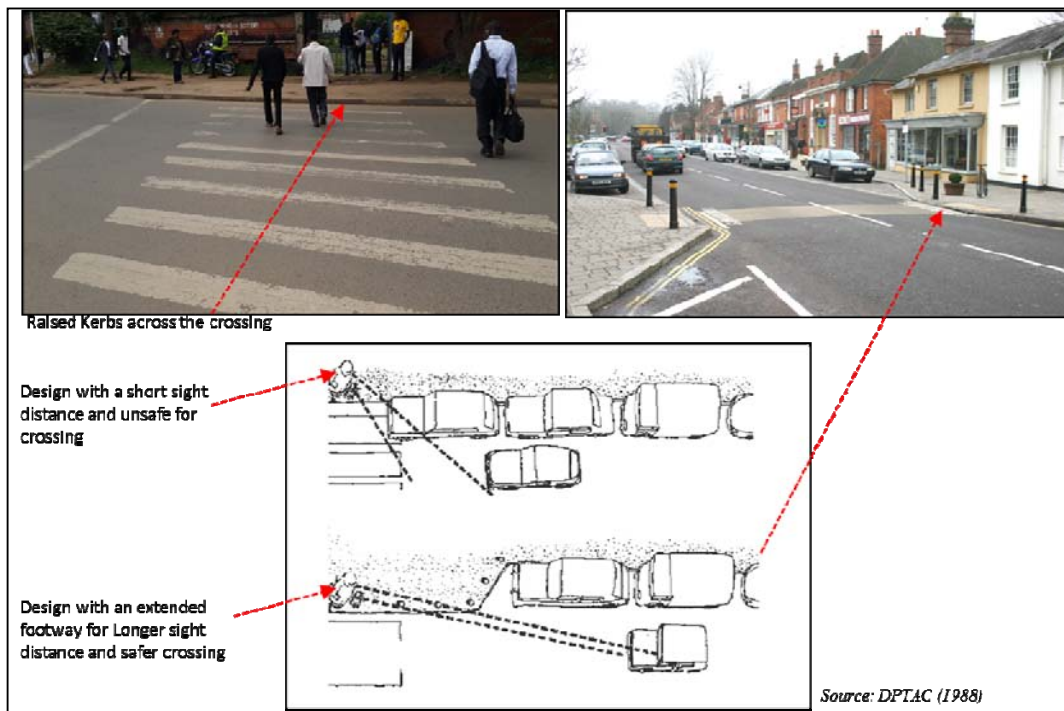


Source: Odak, (2014)

Figure 3-2: Picture of a well-designed section of a footpath in Nairobi City

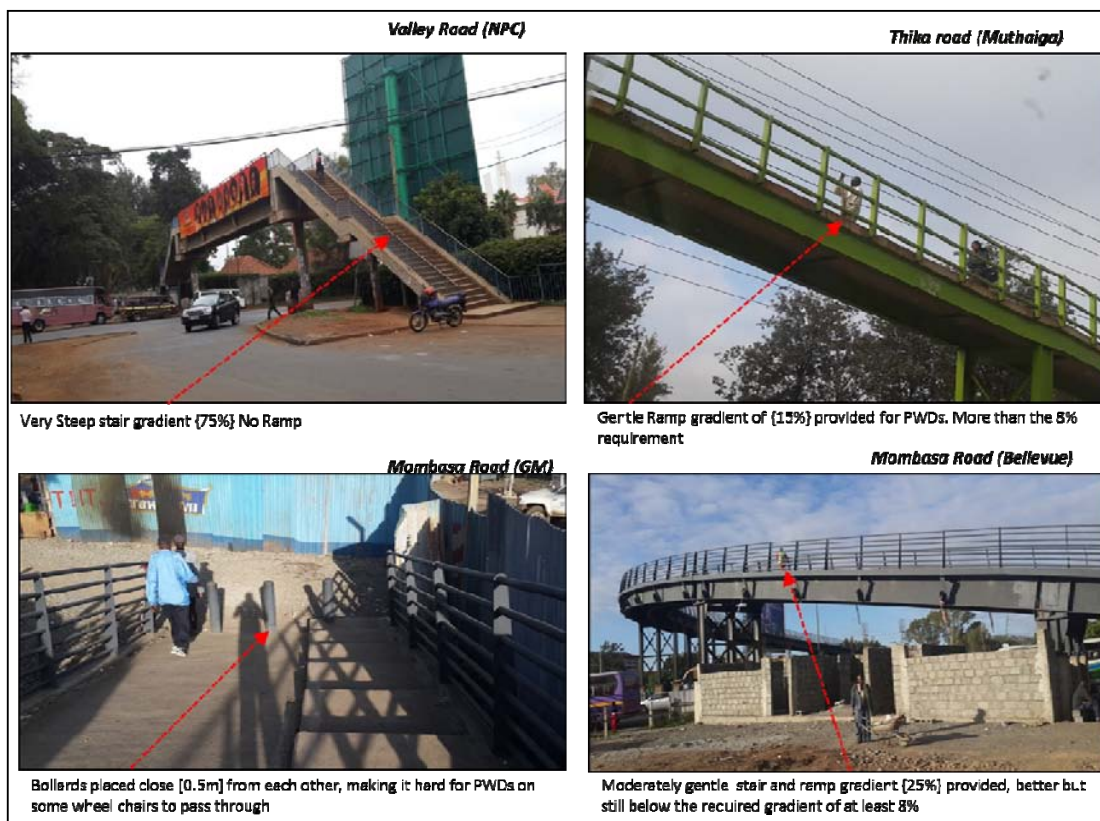


Figure 3-3: A typical Street Crossing design



Source: Odak (2014)

Figure 3-4: Typical foot Over Bridges in Nairobi City



Source: Odak (2014)

**Table 3-2: Challenges for PWDs in PT Travel Environment**

Facility	Aspect	Existing Situation
<b>BUS AND MATATUS</b>	<i>Safety</i>	<ul style="list-style-type: none"> <li>▪ There were no wheelchair spaces for wheelchair users to remain seated in their wheelchairs.</li> <li>▪ There were incidences of rough driving and braking that can cause injury to PWDs.</li> <li>▪ Where buttons exist to request a stop, the same were placed too high requiring the passengers to leaving their seats.</li> <li>▪ Handrails and stanchions for boarding, alighting and standing passengers were designed without considerations for PWDs requirements.</li> </ul>
	<i>Accessibility</i>	<ul style="list-style-type: none"> <li>▪ For buses and mini buses, boarding via steps was notably very difficult for PWDs.</li> <li>▪ Level boarding for wheelchair users into bus was not provided.</li> <li>▪ Step noses and hazards were invisible.</li> <li>▪ Priority seats near entrance were not available for disabled passengers.</li> <li>▪ Stowage of mobility aids (wheelchairs, walking sticks) was notably difficult</li> <li>▪ There were no clear signage indicating bus route/ destination, fare, and other relevant information as required</li> </ul>
	<i>Reliability</i>	<ul style="list-style-type: none"> <li>▪ Bus routes and schedules were not predictable.</li> <li>▪ In some cases there were no clear announcements of major stops.</li> <li>▪ Bus driver and conductor were not providing helpful service and assistance to PWDs as required</li> </ul>
	<i>Affordability</i>	<p><b>To the Provider</b> Affordable and functions solutions have not been considered by the providers citing high investment cost that may need to be passed again to the consumers.</p>

Source: Odak, P (2014)



Figure 3-5: Different types of body designs for PSV vehicles in Nairobi



Source: Odak (2014)

Figure 3-6: Space use conflict, A PWD on a Tri-cycle forced to use the main carriage for motorized traffic



Source: Odak (2014)

### 3.1. Contributory Factors to the Challenges Faced by PWDs in Nairobi City.

This study further analyzed the main contributory factors explaining the reasons for the current situation with the steps that can be taken to address the situation. Availability of resources to upgrade public transport infrastructure is a major contributory factor where the national government through its road transport infrastructure providers and Nairobi county government are experiencing the greatest pressure on resources in meeting their obligations to provide accessible public transport. Lack of urban streets/roads design standards/manual to address mode specific issues and the effectiveness of governance and administration of the transport regulations and standards were some of the major issues that were identified as key contributors to this situation. The passenger vehicle body construction standards issued by KEBS, as a single document applied across the public transport sector, struggle to pick up various mode-specific issues and exceptionally ignore the needs of PWDs. For example, there exist very critical gaps and challenges in implementation of the Person with disability act. e.g., in section 23 of the act;

(1) On **Public service vehicles**. The act states: “an operator of a public service vehicle shall adapt it to suit persons with disabilities in such manner as may be specified by the Council.

(2) All operators of public service vehicles shall comply with subsection (1) within two years after this section comes into operation.

It is clear that the Council has not been able to obtain access to the necessary technical capacity to formulate the specifications mentioned above. The same have not been codified into manuals and standard specifications which practitioners can implement. This research attempts therefore to provide the foundations from which the specifications can be developed.

It is important also to note that the management of urban transport is highly fragmented in Nairobi city. Too many institutions are involved in dealing with the different aspects of it. There is little coordination among them. Further, in Kenya, the focus of public transport governance has been on inter-regional transport, which is very different from urban transport. It is essential, therefore, to have institutions that are dedicated to urban transport.

#### **4. SPECIFIC PROPOSALS ON THE INTEGRATION OF DISABILITY SENSITIVE URBAN PUBLIC TRANSPORTATION GUIDELINES**

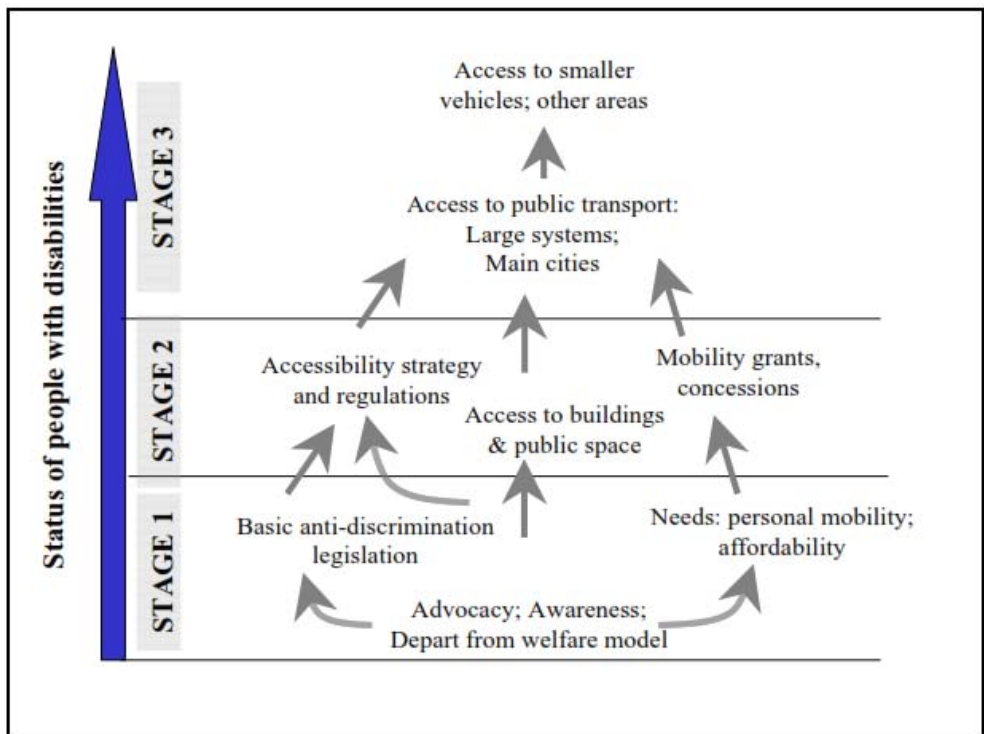
The following aspects have been mainstreamed in to the day to day design, construction, and maintenance of roads infrastructure to ensure that PWDs are able to access the facilities.

- On road sections whose cross section includes raised kerbs or traffic islands, kerb cuts and sloped ramps are installed at crossing points
- For new overhead pedestrian bridges such as Thika Road, access ramps with relatively gentle slopes are being installed to facilitate movement by wheeled devices and persons for whom stairs are not appropriate
- On all new roads or roads for which rehabilitation is being undertaken, shoulders are being widened and bituminized unlike the earlier practice of having unpaved shoulders. The sealed shoulders can accommodate wheeled devices and are in general much easier to use.
- The Ministry is also aware of the provisions of subsidiary legislation in the Act which requires provision of audible signals at traffic lights and is working towards attaining this.

##### **4.1. Proposed general framework for accessibility provision for PWDs in Nairobi City**

When reviewing the progress made on accessibility, a progression of approaches becomes evident. **Figure 3-1** is a schematic representation of the main aspects of this progression. The pattern of development described by this framework applies perfectly to Kenya and Nairobi City in particular; yet, it could be helpful in describing the general trends observed.

Figure 4-1: Proposed General Framework of Progress in accessibility provision for PWDs in Nairobi, Kenya.



Source: adopted from Venter, Rickert, Maunder (2002)

According to Venter et al, (2002), in general, the level of response to access and mobility issues is closely related to the status of people with disabilities in a society. More mature transport responses are generally accompanied with greater public and political awareness of the issues affecting people with disabilities. This is indeed the result of a mutually reinforcing cycle (**Figure 3-1**): Greater awareness and political influence create greater pressure for transport improvements; and improved mobility creates greater visibility which in turn reinforces public awareness. (ibid; 2002)

#### 4.1.1. First Stage Responses: Basic Rights and Personal Mobility

To begin to address access to NMT and Public transport in Kenya , access to personal mobility devices (such as wheelchairs and white canes), which is constrained both by poverty and by inadequate social service delivery, a proper strategy that will see all those who do not have but need a wheelchair need to be formulated by all actors responsible. On the positive side, Kenya

being on the second stage of development has started to take legislative action by enacting basic anti-discrimination legislation such as the Persons with Disability Act of 2003. These efforts are putting into place a legal framework on which further action can be leveraged. Given the severe shortage of resources and the competing objectives for development in Kenya, more rights-based disability legislation may be particularly important in ensuring that disability issues become mainstreamed into government programs.

#### **4.1.2. Second Stage Responses: Environmental Access and Special Programs**

In the second stage of actions, more detailed regulations and strategies should be developed and enforced to address particular mobility problems; these will include the development of an urban roads design manual, which among others should give specific standards for design of NMT facilities. Kenya has particularly adopted national accessibility standards for buildings, but not to NMT or Public transport. However the degree to which these standards are actually being followed is not always clear.

In this stage also, Government's deliberate efforts need to be realized in the form of fare concessions and mobility grants to start addressing problems of affordability of transport. Responses in this stage will tend to stop short of physical improvements to the public transport system. These trends should mirror to some extent the introduction of concessionary schemes in Nairobi City to make bus travel more affordable, which preceded many of the access improvements to vehicles and infrastructure that are likely to be adopted with the new BRT and LRT programs proposed for the Nairobi metro development strategy.

#### **4.1.3. Third Stage Responses: Improvements to NMT and Public Transport**

At this point a sufficiently large number of people with disabilities are economically empowered and mobile enough to effectively advocate for accessibility. Steps that extend accessibility interventions to systems within and outside the city, and to systems that are less well regulated, are where major needs currently lie. Some of the most functional recommendations that can be presented as starting point include:



### **3-1.3.1 IMPROVEMENT TO NMT**

#### **A. Pedestrian footways:**

The most common barriers to safety, accessibility and reliability of pedestrian footways and footpaths in Nairobi city are bad surface quality and obstructions in the form of poles, kerbs, parked vehicles or traders. Infrastructure agencies can start by taking the following steps:

- When doing regular maintenance, upgrading or construction of roads and footways, ensure that accessibility guidelines are followed. Access improvement can be achieved in this way at minimal cost.
- Start by identifying high priority pedestrian routes used by many people (including many people with disabilities), for upgrading first. The travel patterns, the origins and destinations of people along this route, should be considered in order to ensure that reliable, uninterrupted accessibility is provided between these points.

#### **B. Street crossings and footbridges.**

Whenever new street crossings and footbridges are constructed, or existing ones are upgraded, the opportunity should be taken to install at least kerb ramps and gentle ramps respectively, even if other features are only to be added at some future date. The decision could be guided by factors like:

- Prioritizing street crossings that are part of accessible networks and are thus important for completing an origin-to-destination travel chain for disabled people;
- Prioritizing crossings with high pedestrian volumes (like in CBD) or near major public transport stops, if no accessible networks have been identified in the city;
- Prioritizing crossings where vulnerable pedestrians like children, disabled people, or patients would benefit from improved safety and accessibility. Examples include crossings near schools, hospitals/clinics, or sheltered homes/workshop for disabled people. A typical example being the crossing at the Association of Physically Disabled of Kenya (APDK) headquarters in Wetlands areas which houses major PWD advocacy offices including NCPWD and is regularly crossed without a proper infrastructure.

Minimum requirements for these crossings will be dictated by what is needed to ensure satisfactory levels of safety for pedestrians. Usually this will include at least clear markings, signage and/or traffic calming measures to warn motorists of the crossing and to slow down vehicles; central pedestrian refuges are extremely helpful, especially for streets that are wide,

carry traffic in two directions, or carry fast traffic. High pedestrian volumes and high vehicle speeds may require traffic signals to be installed if affordable. It must be remembered that, without signal control, many visually impaired people will be unable to use crossings on busy roads without help.

### **3-1.3.2 IMPROVEMENT ON THE PUBLIC TRANSPORT SERVICE**

#### **A. Incremental and Full wheelchair access on buses**

The most inexpensive way to incorporate best practice features into buses is to include them as specifications when new vehicles are ordered. Bus manufacturers should be able to include at least adequate handrails and stanchions, correctly designed route number and/or destination display, color contrasted step noses and handrails, bell pushes, and a well-designed priority seating area at marginal cost. Every effort should also be made to improve the design of entrances and steps to better serve all ambulant passengers, especially with regard to steepness and the height of steps.

Bus operators can install very useful features even on existing vehicles, at low incremental cost. The features mentioned above can improve the ability of many ambulant disabled people to travel by bus, even if the bus still has a very high floor. As a starting point, the features above could be concentrated around the front entrance/exit door, extending only as far as the priority seating area behind the driver – this will not serve all passengers, but at least target those who could benefit most. As a measure to overcome overcrowding that is endemic on many bus systems in Nairobi, the reserving of priority seats and the use of a priority entrance by disabled and older passengers can be considered.

#### **B. Improving operating practices**

This is another low-cost intervention – but it will need some retraining and supervision of drivers and conductors. Practices such as the calling out of major stops, consistently drawing up close to kerbs (where possible), considerate driving habits, and generally cultivating awareness of the needs of passengers with disabilities, will work best in the context of a general improvement in customer orientation in bus services.

Finally, full access, including for wheelchair users, can incrementally be achieved through a

combination of better bus design, on-board equipment, and infrastructure upgrading. Whichever options are appropriate for wheelchair access, these could first be deployed along major corridors (or accessible networks) with the highest potential for serving people with disabilities, and later extended as funds allow. This would allow time to ensure that bus stops and the infrastructure surrounding them also do not present barriers to wheelchair users. Making one route fully accessible is preferable to having every second or third bus being accessible on a variety of routes. Disabled persons may take a few months to become accustomed to accessible public transport and, as with all passengers; reliability is needed in order for passengers to gain confidence in the service and for usage to grow.

### **3-1.3.3 Specialized transport services**

#### **A. Door to Door Service**

Providing subsidized door-to-door services should be considered if funding can be raised. Specialized services for disabled people is the most common first step to serve people who are excluded from using other forms of transport, especially wheelchair users who do not have access to private vehicles. Door-to-door services can often be initiated more quickly than upgrading bus and rail services. Door-to-door services do not rely as much on accessible footways and other infrastructure as do bus and matatu services.

#### **B. Service Routes**

Service Routes are also more expensive than regular bus and matatu transport, though not as expensive on a per passenger basis as door-to-door services. This may be an approach particularly suited as an interim solution in Nairobi, where accessibility of the mainstream public transport system is poor. Starting by funding well-designed Service Routes may ensure that funds are spent where they can best be used in terms of transporting passengers who cannot use other modes. But Service Routes alone are usually not sufficient, and as a second stage the rest of the transport system should be upgraded and made accessible. In the long run this will serve the most passengers (disabled and other) at minimum cost.

## **4.2. Specific Proposal on Restructuring the Framework of Functions for Managing Urban Transport.**

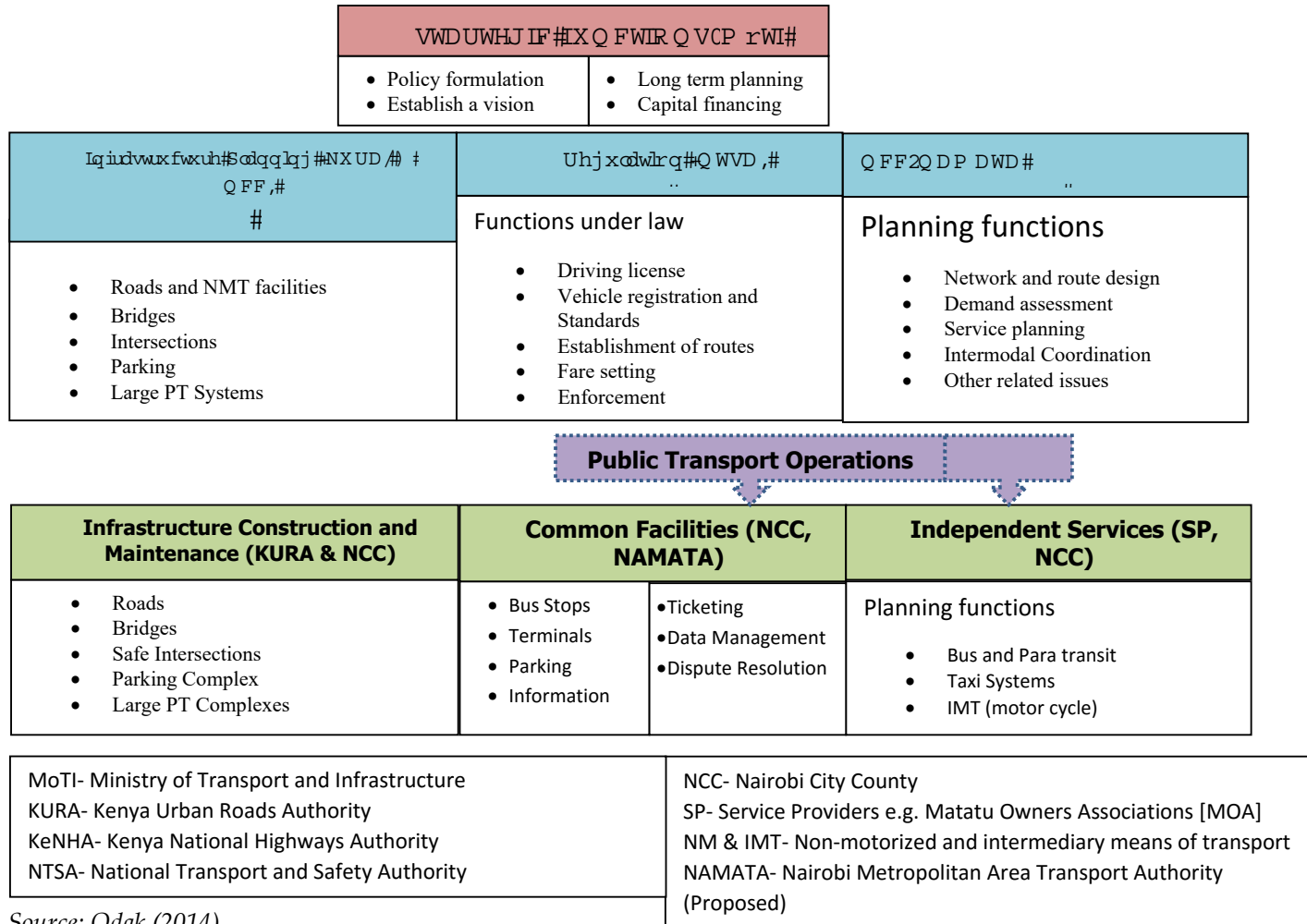
It is important to note that the management of urban transport is highly fragmented in Nairobi

city. Too many institutions are involved in dealing with the different aspects of it and there is little coordination among them. Further, in Kenya, the focus of public transport governance has been on interregional transport, which is very different from urban transport. It is essential, therefore, to have institutions that are dedicated to urban transport.

Functions that need to be performed in managing and ensuring good urban mobility can be divided into three levels: **strategic functions; infrastructure planning, regulation and service planning functions; and infrastructure construction and maintenance and public transport operations.**

According to the study, the proposed categories and levels functions that can optimally be applied within the current policy and legislative frameworks for Nairobi city are outlined on the structure on **Figure 3-2** below:

Figure 4-2: Proposed Framework of Functions for Managing Urban Mobility for PWDs in Nairobi City, Kenya



Source: Odak (2014)

## 5. CONCLUSIONS

The paper aims were to asses and presents the challenges that remain to be studied empirically to achieve a complete understanding of the travel environment for people with disabilities; to assess the challenges they face and to identify industry best practices, models, emerging technologies, and barriers to transportation for PWDs; and inform policymakers, law makers, transportation providers, and individuals with disabilities on the way forward.

To achieve these objectives, the study has appraised the experiences of PWD public transport users and the challenges they face in their travel environment. The study found out that currently it is challenging for a majority of PWDs to travel using public transport vehicles in Nairobi city. The challenges are varied and range from reduced accessibility to the public transport vehicles due to poor designs, irregular reliability of these vehicles on their operation schedule and routes, poor safety of PSVs engendered by the poor body and interior designs as well as the driving skills of operators and finally, the ever rising exorbitant cost of public transport that consume in to the competing needs of most PWDs, of who majority are in the informal sector earning lower than the average national minimum wage and in most cases have more social and financial requirements that their non-disabled counterparts. It has been noted also that The KS 372-2011 standard guideline for PSV body design is lacking and non-inclusive in the general principles of inclusion and therefore needs to be revised to cater for the needs of persons with reduced mobility.

It has also been demonstrated that NMT facilities in Nairobi city are not optimally designed for use by PWDs. Most footbridges are designed without due regard to their accessibility by PWDs, and where they are provided; they are more often poorly maintained and unsafe. The street crossings are also not designed with proper accessible specifications for PWDs especially those on wheelchairs. The most notable was the huge disparity in the provision of accessible footpaths within the city. In areas where they are provided, the designs were exclusively catering for only the needs ambulant pedestrians. This scenario was again notably due to lack of standard urban roads design manuals to guide the geometric designs of NMT facilities. An inclusive NMT policy guide is therefore

a necessary tool if this is to be achieved.

Finally, it is worth remarking that there are also capacity gaps for Key institutions dealing with issues of for people with disability in creating awareness and implementing structures for their rights under the constitution of Kenya 2010 and the Persons with disability Act 2003.

## REFERENCES

1. Antika Sawadsri, (2010), "Accessibility and Disability in the Built Environment: negotiating the public realm in Thailand". PhD Thesis. Faculty of Humanities and Social Sciences. School of Architecture, Planning and Landscape. Newcastle University.
2. Armstrong-Wright, A. (1987), "Urban transport-the World Bank, a review", In: Heraty, M.J. (Ed): Developing world transport. *Grosvenor Press International, London, pp.302-305.*
3. Department of the environment, transport and the regions. (DETR), (1998), "Sustainable development: opportunities for change", DETR, London
4. Dimitriou, H, (1992), "Urban transport planning" Routledge London
5. Government of Kenya, (2007). Kenya National Survey for Persons with Disabilities. KNSPWD. Nairobi. Kenya
6. Government of Kenya, (2010). Integrated National Transport Policy. Government Printers. Nairobi Kenya
7. Government of Kenya (2003): Persons With Disabilities, Act No 14, 2007, Government printer
8. Government of Kenya (2007): Kenya Roads Act, 2007
9. Government of Kenya (2010): Laws of Kenya: The Constitution of the Kenya, 2010. Government Printer
10. Government of Kenya (2013): Policy statements and guidelines on Mainstreaming Cross-cutting Issues in the Roads sub-sector. Ministry of Roads
11. JICA, (2013). Interim report for The Project on Integrated Urban Development Master Plan for the City of Nairobi in the Republic of Kenya (IUDMP). JICA. Nairobi office.
12. Mairura O, (2011). Integrated Transport System for Livable City Environment: A Case Study of Nairobi Kenya, Paper presented on the 47th ISOCARP Congress 2011
13. Odufuwa, B. (2006), "Enhancing Mobility of the Elderly in Sub-Saharan Africa Cities through Improved Public Transportation", *IATSS Research*, Vol.30, No. 1, pp.60-66.
14. The Allen Consulting Group (2009) Review of the Disability Standards for Accessible Public Transport, accessed online from: [www.allenconsult.com.au](http://www.allenconsult.com.au).
15. United Nations (2006): United Nations Convention on the Rights of Persons with Disabilities. UN Headquarters, New York
16. World Health Organization, WHO, (2011).World report on disability 2011.