ADDIS ABABA UNIVERSITY

ADDIS ABABA INSTITUTE OF TECHNOLOGY

SCHOOL OF CIVIL AND ENVIRONMENTAL ENGINEERING

EVALUATION OF THE TRANSPORTATION SYSTEM FOR DISABLES VERSUS POLICY IMPLEMENTATION IN ADDIS ABABA CITY

A Thesis in Road And Transportation Engineering Stream

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A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Science

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DECLARATION

I certify that research work titled "Evaluation of the Transport System for Disables' Versus Policy Implementation in Addis Ababa City" is my own work. The work has not been presented elsewhere for assessment. Where material has been used from other sources, it has been properly acknowledged / referred.

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APPROVAL

As member of the board of examiners, we certify that we have read, evaluated the thesis prepared by **Rahel Abebe Tilahun**, and examined the candidate. We recommended that the thesis is accepted as fulfilling the thesis requirement for the degree of Master of Science with specialized in Road and Transport Engineering Stream.

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ACRONYMS

AA	Addis Ababa
AACA	Addis Ababa City Administration
AACATA	Addis Ababa City Administration Transport Authority
AACG	Addis Ababa City Government
AAU	Addis Ababa University
ACAA	Air Carrier Access Act
ADA	Americans with Disabilities Act
ADB	Asian Development Bank
AODA	Accessibility for Ontarian with Disabilities Act
APS	Accessible pedestrian signals
AU	African Union
CBO	Community Based Organizations
CIB	Citizens Information Board
CSA	Central Statistical Agency
CRPD	Convention on the Rights of Persons with Disabilities
DPTAC	Disabled Persons Transport Advisory Committee
ECDPM	European Centre for Development Policy Management
ECSU	Ethiopian Civil Service University
ENAD	Ethiopian National Association of the Deaf
ENAPAL	Ethiopian National Association of Persons Affected by Leprosy
ENAID	Ethiopian National Association on Persons with Intellectual Disabilities
ENADB	Ethiopian National Association of the Deaf-Blind
ENAB	Ethiopian National Association of the Blind
ENAPD	Ethiopian National Association of Persons with physical Disabilities
FDREMT	Federal Democratic Republic Of Ethiopia Ministry Of Transport
FENAPD	Federation of Ethiopian National Associations of Persons with Disabilities
FHWA	Federal Highway Administration

GDP	Gross Domestic Product
GTP	Growth and Transformation Plan
H	Horizontal
HCM	Highway Capacity Manual
ICLEI	International Council of Local Environmental Initiatives
MOLSA	Ministry of Labor and Social Affairs
MoWUD	Ministry of Work and Urban Development
MRT	Modern Railway Truck
MUTCD	Manual on Uniform Traffic Control Devices
NCOSS	Council of Social Service of NSW (NCOSS)
NCTCOG	North Central Texas Council of Governments
NMT	Non -Motorized Transport
NPA	National Plan of Action
NGO	Non-Governmental Organizations
NSW	New South Wales
NUTP	National Urban Transport Policy
OECD	Organization for Economic Co-operation and Development
ORAAMP	Office for the Revision of Addis Ababa Master Plan
PT	Public Transport
PWDs	People with Disabilities
RNIB	Royal National Institute for Blind
SEU	Social Exclusion Unit
SNE	Special Needs Education
SPSS	Stats Practically Short and Simple
Sq.Km.	Square Kilometer
SWOT	Strength, Weakness, Opportunity and Threat
TCRP	Transit Cooperative Research Program
TVET	Technical and Vocational Education and Training
TTC	Temporary Traffic Control
U.E.C.T	Urban Energy Conservation & Transportation

UNCRPD	UN Convention on the Rights of Persons with Disabilities
UNDP	United Nations Development Program
UNECA	United Nations Economic Commission for Africa
UNEP	United Nations Environmental Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNHABITAT	United Nations Human Settlement Program
V	Vertical
WHO	World Health Organization
WSDOT	Washington State Department of Transportation

ABSTRACT

The purpose of this study is to evaluate the transport system for disables' regarding related policy implementation in Addis Ababa City. The paper has administrative, policy and academic significances. This research covers spatially those organizations working in Addis Ababa, Ethiopian National Association of the Blind, the Ethiopian National Association of the Physically Handicapped and the Ethiopian National Association of the Deaf. Thematically the research limited to the evaluation of the road transport system for the people with disabilities against the related policy implementation. Both qualitative and quantitative approaches were used and descriptive research method. These Participants of the research were selected randomly using small population size sampling method, and from the selected sample first hand data collected through questionnaires, semi-structured interview, focus group discussion and observation. Secondary data were collected from published and unpublished, hard and soft copy documents. After collecting primary and secondary data, both qualitative and quantitative data analysis methods were used to analyze the data and presented in tables, figures and in text forms.

The researcher found and concluded that the transport system for disabled people in Ethiopia is inaccessible and the causes for inaccessibility are lack of infrastructure provision, environmental barrier, non-existent Law enforcement and lack of public awareness, poor design of flow entities or public transport, are identified as causes for transportation system problem for disabled people. Moreover, Addis Ababa transport policy has limited emphasis for disable and the policy is not implemented. Finally, the researchers recommend that infrastructure should be accessible, the vehicle design should be accommodative and the government should implement the international agreements related with disables. More over the policy should be revised and participatory.

Key words: Transport, Policy, Disables, People with Disable

CHAPTER ONE

1. INTRODUCTION

1.1 General

The study carried out on the evaluation of the transport system for the disabled versus policy implementation in Addis Ababa City. The study focused on four organizations, namely; the Ethiopian National Association of the Blind, the Ethiopian National Association of the Physically Handicapped, the Ethiopian National Association of the Deaf and the Ethiopian National Association of Women with disables. Hence, this chapter consists of the background of the study, a statement of the problem, objectives, significance, scope, and limitation of the study; a description of the study area, operational definition of key words, and how the paper is organized.

1.2 Background of the Study

The total population of Ethiopia was 73,750,932, according to the report from the Central Statistics Agency (CSA) (2007). From this number people with disabilities (PWDs) were 864,218 which was about 1.2% of the total population. Based on the growth in population, it can be estimated that the national population in 2010 could increase to over 80 million people, of which nearly 1 million are PWDs (MoLSA, 2012).This number could be inadequate because of misconception in defining as to what constitutes disability, omission of persons with certain types of disabilities, unwillingness of parents to disclose that they have a child or family member with disability, as well as the exclusion of some geographical areas in survey reasons (MoLSA, 2012). According to BoLSA (2012) the number of PWDs in Addis Ababa counts 18,076.

Since Addis Ababa is the capital as well as the earlier city of the country, a large number of people under different categories prefer and liv in it. There is a mismatch between the number of people, that is, the demand and supply (adequate transport facilities). The city is rapidly growing into a major urban area but lack of adequate transport and traffic management system have adverse affected pedestrian mobility, acute traffic congestion and increased accident rates. The movement of people and goods into and out of the city is restricted due to the deteriorating

traffic condition and walk distance; hence having a direct negative impact on the economic performance of the city and the nation as a whole.

Mobility and safety are basic human need, everyone travels for different purpose. Public transport has a key role in ensuring accessibility to activities and services. There are many influences on the use of public transport, including special access, cost, physical accessibility, information and attitudes which all contribute to people's ability and motivation to use those transportation systems.

The urban transport service is believed to consider the social needs and obligation as related mainly to education, health, and the conditions of the people with disability. Contrary to the normal expectations, the urban transport system of the city of Addis Ababa is unable to fulfill the special needs through the private or the public sector, though traffic management and control remain poor. Many people with disabilities do not have equal access to health care, education, and employment opportunities, do not receive the disability-related services that they require, and experience exclusion from everyday life activities.

Disability is also an important development issue with an increasing body of evidence showing that persons with disabilities experience worse socioeconomic outcomes and poverty than persons without disabilities. Despite the magnitude of the issue, both awareness of and scientific information on disability issues are lacking. And policy design does not always take into account the needs of people with disabilities, or existing policies and standards are not enforced. Examples include, a lack of a clear policy of inclusive education, a lack of enforceable accessibility standards in physical environments, and the low priority accorded to rehabilitation (Inadequate policies and standards).

The urban transport management system provides inadequate opportunities for the special needs of the disabled, children, women and the elderly. Therefore, understanding this major challenge and giving special attention to the issue is necessary.

Therefore, in order to clearly identify those continuously increasing basic challenges, indicate clear direction and identify measures to be taken and to optimally utilize those positive experiences, it has been found important to formulate the Addis Ababa transport policy.

Evaluation of the transport system for disables' versus policy implementation for addressing the needs of the disables and created conducive environment so that the vulnerable section of the society gets comfortable service in Addis Ababa is very crucial. Because the people of Addis Ababa who suffered a lot with casualty and fatality number is increasing from time to time in relation to poor treatment, facility and safety mechanism to address the needs of the disabled, children, the elderly and women. Because of this, the issue raised needs consideration.

1.3. Research Problem Statement

The proportion of disable people in Addis Ababa city as per the CSA 2010 report estimated at 32,630 (CSA, 2010). Most of the transportation routes in Addis Ababa city lack a proper system for people with disability, for example, the intersection light signals are for those who can see the light. Whereas for visually impaired people there is a limited facility aided with sound. The other major challenge is at zebra crossings where the roads have a continuous median, which is a serious problem for physically disable specially for those using wheelchairs. The presence of unfinished pedestrian walkways in the city is becoming a bottleneck for disabled people mobility due to the presence of uncovered manholes, unpaved surface and poor linkage between roads of different hierarchy, damped soils and stones.

Urban transport serves as veins to accelerate developments in industry, trade, education, health and other services. One aspect of this development is inclusiveness particularly disabled people. However, there is no compatible urban transport supply and transport policy to meet the need of the Addis Ababa disabled people, which resulted in the seriousness of the issue.

Among the challenges of the urban transport for disables include:

- Poor access to workplace, education, health and other services due to lack of public transport service;
- Inconvenient infrastructure for Non-Motorized Transport (NMT) (for pedestrian and bicycle);

Unless these challenges and other associated problems are addressed in time, they will have a negative impact on the socioeconomic development of the city which directly affects the livelihood of the disabled residents.

Therefore, the increased risks of the disabled are multi-factorial events in both their causes and outcomes. These require a systematic analysis to evolve possible solutions and their counter measures to solve the problem. The most important element of problem analysis is to evaluate the transport system for disables versus policy implementation in Addis Ababa City. This thesis is, therefore, an attempt to address these issues.

1.4 Objectives of the Study

1.4.1 General Objective

The general objective of this study is to evaluate the transport system for disables' versus policy implementation in the Addis Ababa city in order to minimize the risks and maximize benefits associated with the transport system and recommend a possible solutionto the problems raised.

1.4.2 Specific Objectives

Based on the aforementioned general objective the specific objectives areto:

- Assess the existing transport system available in the Addis Ababa city for people with disability;
- Assess the existing challenges of transport system for disables;
- Identify major causes of current transport system problems related to people with disability;
- Evaluate the implementation of transport system policy for disabled people;
- Recommend possible solutions to improve the transport system for the betterment of people with disability.

1.5 Significance of the Study

The output of this research will have administrative, policy and academic significances. Hence, it provides first-hand information on existing transport system available in Addis Ababa city for people with disability, major causes for current transport system problems related to people with disability, the stakeholders role, and based on that the alternatives to the Federation of Ethiopian National Associations of People with Disabilities, especially the Ethiopian National Association of the Blind, Ethiopian National Association of the Physically Handicapped, Ethiopian National

Association of the Deaf and Ethiopian National Association of Women with disability ;to look for innovative approaches in order to solve the problems and improve the transport system for the better life of the people with disability. Other urban centers in Ethiopia will also gain experience and will take the findings as an input in their effort to provide better transport system for the people with disability.

Academically, the research output will complement other studies in the area of transport system for the people with disability; and it will also be utilized as initial information for further detail research works. It is an initiative for other researchers on the issue of transport system for disables' versus policy implementation and related problems by contributing some findings that can possibly serve as spring board.

1.6 Scope of the Study

This research is all about the evaluation of the transport system for disables versus policy implementation in Addis Ababa City. Because of the time and financial constraints, both the thematic and spatial scope delimited considering the above constraints.

Spatially, the research limits itself only in those organizations which are under the umbrella of the Federation of Ethiopian National Associations of People with Disabilities that incorporates the Ethiopian National Association of the Blind, Ethiopian National Association of the Physically Handicapped and Ethiopian National Association of the Deaf and Ethiopian National Association of Women with disability. All the organizations are working in Addis Ababa.

There are different categories of transportation modes and they are; Road transport, Rail transport and Air transport in Addis Ababa but in this research for this research only road transport is considered. The people with disabilities who were included in this study are those who belong to the physical category which imposes restrictions on a person's physical mobility. It also includes other physical impairments such as blindness and deafness.

Thematically, the study is limited to evaluation of road transport system for the people with disabilities considering the related policy implementation. Specifically, the study deals with the

existing transport system for the people with disability, the major causes for current transport system problems related with people with disability, and examine stakeholders' role in relation to transport system for people with disability and finally based on the findings, to recommend possible solutions as policy implication to solve the problems.

1.7 Description of the Study Area

Addis Ababa is the largest and capital city of Ethiopia. The city has served as the major administrative, political, economic and diplomatic center. The establishment of the city dates back to the late 19th century during the reign of Emperor Menelik II. Since the first settlement, the city has grown spatially and demographically. The population of Addis Ababa in 2008 was estimated at four million with annual growth rate of 2.1 percent and covers an area of 540 sq. km (UN-HABITAT, 2008). Since the city is capital, transport system is crucial to move from one corner to another. Even if there are some improvements in the transport system in the city, in reality, there is a big gap between the demanded of the people and the actual transport system. The situation is even worse for those with disability.

Therefore in this study, the researcher will evaluate the transport system for disables' regarding policy implementation in Addis Ababa city will be evaluated and pertinent solutions will be recommended.

1.8 Limitation of the Study

It is unthinkable for any research process without limitations or challenges; the situation is similar to this research too. The process was not smoothly accomplished. There are different and many challenges the researcher faced while doing this research, especially during data collection period. In this regard, the major limitations are:

- Absence of well-organized secondary data;
- Problem of willingness of some respondents;
- Challenges to communicate those who are deaf which needs mediator at the time of data collection since they are vulnerable groups, they were aggressive and were exaggerating some of the information; and Financial problem

So, the aforementioned challenges limited the researcher to address more issues and study areas, and finally accomplish on time.

1.9. Operational Definition of Key Terms

- **Disable person**: a person either blind, deaf or physically disable,
- **Deaf:** a person who were not able to hear by both ears and also who have totally los hearing in one ear and partially hear by one ear.
- **Blind**: aperson who totally lost his/ her vision.
- **Physically disable**: a person who has a problem in his/ her leg, hand and back, and which restrict a person movement.

1.10. Organization of the Paper

This study organized into five chapters. The first chapter focused on the introductory part of the study, which includes background of the study, statement of the problem, objectives, significance, scope and limitation of the study, description of the study area and operational definition of key terms. The second chapter contains literature review part of the study in which theoretical and empirical literatures related with the issue were incorporated. The third chapter deals with the research methodology: research design, approach and method; sampling design, sources of data, data collection methods, analysis and presentation were incorporated. The fourth chapter is all about the data analysis and interpretation, and finally the fifth chapter winds up by conclusion and gives recommendations as possible solution to improve the transport system which is crucial for the mobility of the people with disability.

CHAPTER TWO

2. LITERATURE REVIEW

2.1 Introduction

This chapter consists of basic definition and concepts of the transportation system, disability, accessibility, reviewing studies which were conducted by different researchers on transport accessibility for people with physical impairment, challenges and opportunities of access and mobility in the case of people with motor, visual impairments, and deaf transport sector strategy.

Besides that evaluating of the transport system for disables' versus policy implementation as clearly stated on the objective of the research through assessing existing transport system in relation toa disabled person, assessing the existing challenges of transport system for disables and the cause of the transportation system problems with its recommended solutions. Therefore, the chapter will try to review theories to give information and knowledge about the transportation system in relation with disables.

2.2 Definitions and Concepts of Transportation System

The way in which cities facilitate accessibility through their urban forms and transport systems also impacts directly on other measures of human development and well-being (Rode et al. 2014).

Transportation system: is a system consisting of the fixed facilities, the flow entities and the control system that permits people and goods to overcome the friction of geographical space efficiently in order to participate in a timely manner in some desired activity. Also a transportation system provides access to business, social and recreational opportunities, which is fundamental to experiencing a good quality of life. This is especially important for the poor and the fight against poverty (EThekwini's Public Transport Plan, 2005).

According to Urban Transport Planning Manual (2006**)** urban transport system consists basically of four major component parts:

A. Infrastructure:

- **The physical passages**: lines, routes, conduits, tunnels through which mobile matter moves.
- **Terminals:** service stations, spaces and the accompanying physical infrastructure where moving matter stop to load and/ or unload, make transit and get services.
- **Traffic signs:** the physical structures placed in an urban transportation network to caution of or to prohibit the traffic from a certain (mobility) activity.
- **Curb ramps**: are small but important parts of making sidewalks. Street crossings, and the other pedestrian routes that make up the public right-of -way accessible to people with disabilities (FHWA, 1999).

B. Transport Modes: Moving equipment's, machineries or animals or pedestrians that carry other matter (goods/ or passenger) through (transport, network) the goods/ or passenger carried by equipment machineries or animals.

C. Network: a system of transport lines, junctions and terminals integrated with their interrelations in terms of hierarchy, size, function, typology, etc. so that smooth and efficient traffic flow is secure.

D. Services: the soft components expressed mainly through traffic management and enabling support activities.

The urban transport system in Ghana is characterized by the congested central areas of the cities, poor quality of service from public transport operators, high exposure to road accidents, and poor environmental standards. These have resulted from the following factors:-

- Poor terminal and management, which restricts the optimum use of the available public transport capacity.
- Unable to replace their existing vehicle stock with more modem, efficient and comfortable buses.
- The low capacity of the existing road network, and its inefficient use.
- Poor planning and control procedures for land use development, resulting in additional traffic congestion and safety hazards.

- The low standards of road traffic awareness, vehicle maintenance, and driver behavior (E A Kwakye and P R Fouracre, 1998).

2.3 Definitions and Concepts of Accessibility and Mobility

Accessibility

Accessibility is the degree of ease with which people can access the full range of urban facility spaces, shops, employment, and leisure (Fanaye, 2015).

Geurs and van Wee (2009) broadly defined accessibility as the extent to which land-use and transport systems enable individuals to reach activities or destinations by means of a transport mode. According to WHO (2011) accessibility is the ability to reach, understand, or approach something or someone. Laws and standards on accessibility, it refers to what the law requires for compliance.

In addition, EThekwini's Public Transport Plan (2005) accessibility is a basic, daily need for almost all the residents of a city.

Mobility

Hillman et al (1973) defined mobility as 'the capacity that a person has for getting around; also Tolley, R and B Turton (1995)noted that mobility depends on personal factors such as health and financial resources and upon the range of transport facilities that are available. Hence mobility is individual and particular, and changes throughout a person's lifetime, requiring different types of transport services.

In addition, Misrak (2006) states that, access is important to reach services such as education health and employment. Mobility and access are important to realize one's potential in terms of learning, getting a job, entertainment etc. However, people with disabilities face barriers that inhibit them from enjoying the above mentioned important aspects of urban life.

The American Disability Act 1990 (ADA) is an enactment that urges all parties to have access and universal design, so that disabled persons can have free access and mobility in the built environment.

2.4. Disability

Defining disability has been a very controversial issue through out any disability affiliated discussions. It has been defined in different ways by different disciplines, organizations and different scholars. The most widely used definitions are those used by the World Bank and the United Nations, as detailed below. These definitions will be elaborated on, after which the SA Census definitions will be detailed.

- **Physical Disability**: Physical disability refers to damage to muscles, nerves, skin, or bones that leads to difficulties in moving about, in performing activities of daily living (such as dressing, eating, cleaning etcetera). It is often, but not always, associated with general weakness or long lasting or acute pain. People with physical disabilities experience different barriers that limit their participation in ordinary activities, for example, in the built environment, where steps might prevent a lawyer using a wheelchair from entering a court building, thereby preventing him from practicing as a lawyer. Assistive devices are very important tools that are used by people with physical disabilities to overcome barriers, for example wheelchairs, walking frames, crutches and prosthetics (splints, calipers, special shoes and artificial limbs), communication devices such as communication boards and specialized computers, and adjustments to motor vehicles.
- **Visual Disability**: The loss of sight may be total or partial. “Blind” refers to the total loss of eyesight. Blind persons might experience difficulty in moving around and knowing where things are, doing some activities of daily living, writing, reading and following visual signs or commands.
- **Hearing Disability**: Hearing loss may be mild, severe or total. Children may be born Deaf, or people might become Deaf later in life. Hearing loss usually results in difficulties in learning a spoken language, following verbal instructions, making friends in the neighborhood, behavioral problems due to frustration, accidents because the warning signs were not heard.
- **Mental Disability**: Mental disabilities include cognitive, psychiatric and learning disabilities as well as physical head trauma. Particular attention needs to be given to the

right of people with mental disabilities to advocate for their own rights, and not to always be 'spoken for'.

- **Intellectual Disability**: People with intellectual disabilities find it difficult to learn and retain new information, and often to adapt to new situations. Communication tools for people with moderate or severe intellectual disabilities, and include special communication boards, adapted computers, etcetera.

- **Multiple Disabilities**: Multiple disability means having two or more of the disabilities already described, for example, people who are deaf-blind(Melissa White head U.E.C.T, 2004).

Disability: A person who was unable to carry out or limited in carrying out activities that others can do due to congenital or long term physical/mental disabilities was identified as a disable person disability can occur at any time in a person's life. For example:

- People with vision impairment have difficulty with visual cues and need a strong contrast/delineation between the road and pedestrian areas, usually a physical guide. Obstructions in their path, such as street furniture and sign posts, can cause difficulties.
- People with a hearing impairment will rely on seeing vehicles to cross safely and therefore need a clear view.
- Wheelchair users need continuous, even, and hard surfaces. Ramps need to have a low gradient, and curb edges need to allow roads to be easily crossed (FHWA, 1999).

On the other hand the 2007 Ethiopian Population and Housing Census Defined and classified disability as follows:

- **Seeing difficulty:** - persons with two eyes and with partial seeing abilities were considered in this category.
- **Blind**: - Persons who totally lost their vision.
- **Deaf:** - Persons, who were not able to hear from both ears, but can speak were grouped under this category.

- **Hearing difficulty:** - Persons who totally lost hearing in one ear and partially hear by one or those who were able to hear partially with both ears were considered as persons with hearing difficulty.
- **Speaking difficulty**: - Persons, who were not able to speak as a healthy person could speak or persons whose speech couldn't be understood clearly to others were considered as having speaking difficulties.
- **Disability in Hands:** - (Nonfunctional upper limbs) Loss of one hand or both hands, paralysis of one hand or both hands or any other disability in one hand or both hands were taken as a disability in hands.
- **Disability in Legs:** - (Nonfunctional lower limbs) Loss of one leg or both legs, paralysis of one leg or both legs, or any other disability in one leg or both legs were taken as a disability on legs. Persons having completely lifeless or inactive leg/legs were considered as paralyzed in leg/legs.
- **Physical Organs Movement Difficulty:** - Any other specific physical organ movement difficulties (such as difficulties in seating, keeping balance, severe shaking, and coordinated organs' movement) other than the disabilities of seeing, hearing/speaking, disabilities in hands or disabilities in legs were taken as physical organ movement difficulty CSA (2007).

Needs for Disable

- **Mobility access**
  - Wheelchair accessible transportation
  - Reserved parking
  - Barrier-free meeting rooms / restrooms / podium/speaker's platform
  - Compliant Ramp Access to businesses and public places
  - Accessible lodging
- **Hearing access**
  - Advance copies of papers
  - An assistive listening system
  - Sign language interpreters

- **Sight access**
  - Large print/ Braille copies of the program and papers
  - A student volunteer to guide and describe the artwork, computer work, etc.
  - A tech to help with assistive devices and screen readers
  - Gloves to touch three dimensional work (where permissible)

- **Other issues**
  - Notification if social events include flashing lights and noises (these can cause seizures, so either avoid them or announce them ahead of time).
  - Notices asking participants to refrain from allergy-producing problems (Example perfumes).
  - Inform food providers of food allergies (Example, peanuts and shellfish).
  - Referral information for local personal care attendant agencies.
  - Referral information for veterinarian care for service animals.
  - Access to a place to rest during the day (if the conference venue is far from the lodgings) (Fanaye, 2015).

According the guide book incorporating pedestrian in to Washington's transportation system that the report prepared by attack Inc. (1997) the needs of pedestrians with disabilities can vary widely depending on the type of disability and level of impairment. People with disabilities, including those using special walking aids or wheelchairs, need carefully designed facilities that eliminate barriers. In the report, there are also Elements that are helpful to people with disabilities are as follows (Otak Inc., 1997).

- Curb cuts and ramps;
- Tactile warnings;
- Easy-to-reach activation buttons;
- Audible warnings and message systems;
- Raised and Braille letters for communication;
- Roadway crossing refuges;
- Reduced roadway crossing distances (bulb-outs and curb extensions);and
- Smooth surfaces and unobstructed travel ways.

Immobile persons need an easy access to get into the means of transport. Therefore, barrier- free entrants, and stations need to be developed. Currently, not all stations, trains and buses are barrier-free; however the present developments are positive. In addition, many train stations have been restructured to fulfill the needs of immobile people. Nevertheless, revising and adapting all stations, trains and buses in Europe would require giant investments (Kritzinger al., 2013).

In addition, Naomi M. Armenta (2014) stated that, people with disabilities have traditionally faced a number of challenges accessing transportation options. A universal concern seems to be a need for more transportation access; there are no sources that say people with disabilities have completely sufficient or appropriate transportation. Quality of life for people with disabilities is often linked to transportation access.

Pedestrian bridge

Pedestrian bridges are structures which cross highways, roads, railroads, waterways, and other features, also Pedestrian bridges are primarily designed for pedestrian, bicyclists, equestrian and light maintenance vehicle traffic but not designed for typical highway traffic (MEMO TODESIGNERS12-8 • NOVEMBER2009).

Overpasses and bridges should be easy and convenient for pedestrians to access. If a grade separated crossing would be less convenient than the at-grade condition, some pedestrians may try to cross at grade, which is not desirable when the purpose of the crossing is to increase safety. Pedestrian bridges can vary in their structure and may be constructed of cast-in-place concrete, pre-stressed concrete, steel, or wood. Choosing the appropriate type of structure requires knowledge of the conditions of the proposed location. Consideration should be given to cost, constructability, maintenance, aesthetics, and physical site constraints.

Women with disabilities often suffer a double discrimination, both on the grounds of gender and impairment. In developing societies generally they compounded for women with disabilities, as they have lower access to credit, education, and even the recourse of marriage. Asian Development Bank (2013) sets some issues to consider when conducting gender analysis in transport operations.

- **Policy:** integrate a gender perspective into transport sector policy and institutions, and increase consideration of transport in national and sectoral gender policies. Design and implement gender responsive monitoring and evaluation systems for the transport sector and projects.
- **Participation:** adopt proactive approaches to improving the gender balance in policy development, project planning, implementation and monitoring, as well as project-generated employment.
- **Accessibility:** use gender analysis to inform the selection criteria for road sections and design of urban transport services. Consider and address gender barriers across the entire network of travel, including attention to intermediate means of transport.
- **Affordability:** consider gender issues in tariff policy, cost recovery schemes, flexible tickets, and cost of transport services.
- **Acceptability:** -address, gender implications of physical designs (universal access in vehicle and station designs, women-only spaces, sidewalks, streetlights) and service timetables (ADB, 2013).

2.5. Definitions and Concepts of Transport and Mode of Transport

Mode of Transport for Disables

Transport

According to the New Zealand Transport Agency research report(2012),transport refers to the means by which people gain physical access to the goods, services and activities they need for their livelihoods and wellbeing. Therefore transport is a key means by which people and communities acquire the means of their existence and access other needs (Fitzgerald. G, 2012).

Mode of Transport

In most developing economies like Ethiopia road transport is one of the most popular and important modes of transport. In the case of Ethiopia, the physical and economic features as well as economic status of the population, make road transport the most viable mode of transport, the country must give priority to develop its socioeconomic infrastructure. At present Ethiopia has no option but to develop and improve the quality and accessibility of its road network (Asnake, 2006).

Transport facilities offer people choice of travel mode and route throughout the day. Many scholars identify 'option values', defined as: 'People's willingness to pay for the continued availability of a transportation facility, to preserve the option of using this facility in the future'. A common example is the willingness of car owners to have access to public transport facilities for those situations in which car access or use is compromised (Geurset et.al., 2006).Option values are further recognized as most likely having a role when transport modes or infrastructures are either significantly diminished or improved (Geurset et.al., 2009).

2.6. Public Transport system

Public Transport

Public Transport (PT) refers to passenger transport that is shared with other members of the general public (Fitzgerald, G, 2012).

In addition, the New Zealand Public Transport Management Act 2008 determines the accessibility of a Public Transport service for particular users, i.e. access to information, the identifiability of the service, ability to get on and off the vehicle, availability and usability of seating and facilities, and ability to identify the right place to alight(Fitzgerald, G, 2012).

Department of Transport (2006) aspects of disability transport policy are covered in the plan such as disability awareness training, the establishment of consultative disability user groups across the transport sectors, accessibility audits, integrated ticketing, and with disabilities in Ireland. A process of national consultation took place with all of the key stakeholders and a

report was published in 2004, towards best practice in the provision of transport services for people with disabilities in Ireland (National Disability Authority 2004) (CIB, 2009).

The KwaZulu-Natal vision is strongly aligned with the National vision of South Africa, with added emphasis on improved quality of life for public transport users, along with sustainability and support for economic and social upliftment. Collectively, these perspectives on transport give direction to local authority's vision, goals and policy for transport within the context of public transport. KZNDOT public transport vision "To improve the quality of life of public transport users and to enhance the viability of all sectors reliant on public transport within KwaZulu-Natal, through the development of a safe, efficient, effective, economically and environmentally sustainable public transport system which drives the economic and social upliftment of the Province" (Thekwini's Public Transport Plan, August 2005).

National Urban Transport Policy NUTP (2014) Public Transport consists of mass rapid transit (MRT); Para-transit and personalized PT. MRT, both rail and road based including city bus is the backbone of city transport as they are the only models that carry a very large number of people using minimum space. Para- transit Modes i.e. tempos and mini buses supplement MRT in large cities and can be the main mode of PT in medium and small size cities. Personalized PT i.e. autos and taxis and cycle rickshaw cater to the demand of commuters seeking a substitute for personal transport. The Government of India would support cities to plan a citywide integrated multimodal public transport network comprising all three modes of PT along with first and last mile connectivity for easy access to MRT stations/stops (NUTP, 2014).

Public Transport for Disabled

Good quality public transport can provide significant benefits for disabled people, who often face significant transport barriers to employment, in accessing employment opportunities (Beard, et al., 2013).

Findings from a 2009 poll, again commissioned by disabled persons Transport Advisory Committee (DPTAC) showed clearly that disabled people are more dependent using buses approximately 20% more frequently than non-disabled people.

Research by the Royal National Institute for Blind People (RNIB) shows that blind people in particular are active bus users, with 41% of blind and partially sighted people currently using bus transport; due to this reliance on public transport RNIB runs a campaign for bus concessions for disabled passengers over and above the statutory minimum(J Beardet al., 2013).

Access to local public transport is identified by the National Disability Authority (2007) as a key issue and incorporates consideration of the physical environment, including footpaths and other aspects of the route to and from the first point of use, type of vehicles, interchange facilities, information and customer care. "Experience in Ireland and elsewhere has shown that this is also the aspect of the public transport system which is hardest to 'get right'. It requires the most attention from planners and operators, as well as the most operating funding" (National Disability Authority 2004(CIB, 2009).

The bus is the most common form of urban public transport in most parts of the world. The trend towards low floor buses in developed countries has transformed the accessibility of public transport. The pace of change has been rapid in many European cities. In the UK, the proportion of the national bus fleet that was low floor and accessible rose from 53 per cent in 2004/2005 to 89 per cent in 2009/2010.

Additional accessibility features– such as color contrast to help people with low vision and grab handles for those unsteady on their feet – are not widely available in either developing or developed countries even though they are cheap and easy to install. More costly facilities such as audible and visual 'next stop' information for those who are blind or deaf are available only in the major cities in some developed countries (Ann Frye, 2013).

Gender equality for smarter cities, women are more exposed to violence than men, bothduring use of public transport as well as walking on the street. In Mexico City, 39.4% women metro users declared that they were touched by men during the trip. Some policy responses: implementation of spaces which are exclusively for women both in the metro and bus (although these solutions tackle the manifestation of the problem and not the root)UN-HABITAT (2010).

Safe Public Transport for Women

- Ensure that the planning process incorporates a gender perspective;
- Ensure to involve women as active participants in the planning process;
- Ensure that public/government sector institutions prioritize gender equality and violence against women in their policies and programs;
- Recognize barriers against safe, efficient and affordable transport for women;
- Include security services; encourage public and private transport agencies to incorporate a gender perspective into the daily operations of the transport service (UN-HABITAT, 2010).

2.7. Challenges facing disables when using different mode of transport

Transportation is an extremely important policy issue for those with disabilities. People with disabilities has consistently described how transportation barriers affect their lives in important ways. In a survey undertaken in 2004, inadequate transportation was a major problem for people with disabilities. Also, people with disability often experience isolation as a result of the poor physical accessibility of transport modes (SEU, 2003).

Disabled people often find public transport inaccessible. In addition to availability of bus services, physical accessibility is important to disabled people. They can also experience a lack of flexibility in their travel choices: often travelling involves planning ahead (for example, booking assistance for rail travel, or booking community transport 48 hours in advance), making it difficult to be spontaneous (Centre for Research in Social Policy, 2007).

- Some disabled people may have difficulties getting on and off vehicles, up and down steps, and reaching handrails and bells.
- People with learning disabilities such as dyslexia may have problems reading timetables or signage correctly, making bus and trams stops and stations difficult to negotiate (Department for Transport, 2000).

Accessibility problems include: lack of parking facilities for bicycles at many destinations; transfer to motorized transport for cyclists is difficult because there are no provisions for storage in urban public transport; the gradients of the footbridges are often too steep and do not allow continuity of movement. In addition, people with disabilities require larger dimensions to accommodate wheelchairs and crutches, continuous sidewalks and way finding options for the blind or visually impaired (Kidero, 2015).

According to the UNESCO sponsored report (March 1995), no access to transport has serious effects on disabled people's integration and economic activity. It prevents disabled people forming self-help groups or taking control of their own lives. The provision of public transport is seen as an essential requirement for even the least developed countries. Failure to provide an accessible means of transport is highly discriminatory in its effects and presents a considerable obstacle to independent life for disabled people, leaving them segregated or excluded from education, employment and social and political life (UNESCO sponsored report, March 1995).

2.8. Causes for the Challenges Faced by Disables on Transport System

According to Otak Inc.(1997), accessible gateways are often glaringly absent and sorely needed in cities in developing countries. Walking is the main mode of transport in many low-income countries, so some of the biggest infrastructural barriers to accessibility are places where sidewalks, roads and road crossings are inaccessible or unsafe. Moreover, disabilities hinder people’s equal participation in society because of overwhelming environmental barriers, including inaccessible transport systems with poor infrastructure, vehicle design and information provision. And accessibility of the disabled person or the movement of a disabled person is affected by various reasons such as:

- The location and distribution of uses and facilities,
- The physical design of places and pedestrian circulation systems such as: Zebra cross, roundabout,
- Choice in the means of transportation, including facilities for less mobile people such as non-car users,

- Information access and the ability of a place to accommodate the needs of people with a disability,
- The design of flow entities like design of public transport,
- Inaccessible signage and sign,
- Good Legislation and Poor Enforcement, and Environmental barriers to accessibility.

As we observe in Figure 2.1below, there are construction materials, solid wastes and obstacles on sidewalks without any reservation; therefore it becomes a barrier for pedestrians especially for disables.

Figure 2.1: Environmental Barrier to Accessibility
Source: Victoria Broadus, 2010.

According to Tokuda (2001), road transport barriers encountered by people with travel difficulty in Japan include; as we observe in Figure 2.2 below, parked on sidewalks were among the greatest inconveniences Photo (a). Cars parked on textured paving blocks are also major obstacles Photo (b). This is caused by drivers not realizing the significance of these blocks.

Figure 2.2: Travel difficulty due to parking on sidewalks

Source: Victoria Broadus, 2010

2.9. Solution for the Challenges Faced by Disables regarding Transportation

2.9.1Accessibility of Design Standard

According to the Manual on Uniform Traffic Control Devices (2003),matched, Federal Highway Administration (FHWA) Department of Transportation (DOT) United stat of America (USA) Government (Gov) Standard: the needs and control of all road users (motorists, bicyclists, and pedestrians within the highway, including persons with disabilities in accordance with the Americans with Disabilities Act of 1990 (ADA),Title II, Paragraph 35.130) through a TTC zone shall be an essential part of highway construction, utility work, maintenance operations, and the management of traffic incidents.

Guidance: The design and application of TTC devices used in TTC zones should consider the needs of all road users (motorists, bicyclists, and pedestrians), including those with disabilities.

According to the World Bank (2008), accessibility in design standards is manifested in a number of different ways, many of which are imperceptible to the general public. The following are some of the examples of public transport.

- **Pedestrian environment:** Curb cuts, Braille markers, traffic signals with sounds for the blind;

- **Designated Areas:** On buses and metros designated areas for wheelchair users, special seats for elderly and people with disabilities;
- **Audible and Tactile Features:** Tactile guide paths at metro stations, audible; and use of accessibility instruments of public transport; and
- **Improved Sizing:** Increased width and heights, improved signs and information.

Adapted automobiles for persons with disabilities refer to ease of use by disabled people. Automobiles, whether a car or a van, can be adapted for a range of physical disabilities. Foot pedals can be raised, or replaced with hand-controlled devices. Wheelchair hoists, lifts or ramps may be customized according to the needs of the driver.

A significant development in transportation and public transport in particular, to achieve accessibility, is the move to "low-floor" vehicles. In a low-floor vehicle, access to part or the entire passenger cabin is unobstructed from one or more entrances by the presence of steps, enabling easier access for the infirm or people with push chairs.

Sawyer and Bright (2007), discussed that the provision of appropriately designed, constructed and managed ramps is of importance to all users, but especially those using wheelchairs, pushing buggies or trolleys, and people using walking frames. The above idea is supported by figure 2.3 below.

Figure 2.3: Low floor vehicle and wheelchairhaveaccessible taxi with a rear ramp, accessby a ramp in the program.

Source: Tom Rickert, 2007

Paths free obstructions

A good means of access would be a route that does not incorporate obstacles and hazards, and it's not problematic for people, including those who have impaired sight, impaired mobility use walking aids or use wheelchair (Smith, 2006).

According to the United Nations Affairs Division (2003-04), obstructions include street furniture, traffic signs, direction signs, street plants, bollards, shop awnings and advertising signs. The following are stated:

- Obstructions should be placed, easily detectable by cane, aligned along continuous line and provide a minimum clear unobstructed path of 90 cm.
- A 10cm raised platform.
- Ground tactile warning marks should extend over a width of at least 60cm outside at the base of an obstacle,
- Overhanging signs, tree branches on pathways should provide a minimum clear height of 200cm.
- Undetectable obstacles lower than 200cm can project a maximum distance of 10cm into the pathway. A straight shape rising from the pathway surface (Sisay, 2008).

Figure 2.4: Obstruction Free Path

Source: Sisay, 2008.

- **Fixed poles:** Fixed poles should have contrasting durable color marking strips of at least 0.30 m in length, placed with the centerline at a height between 1.40 m and 1.60 m, to warn pedestrians with limited vision.
- **Garbage bins:** Garbage bins attached to lampposts should not face the line of pedestrian flow so as to minimize collisions and should be painted in a contrasting color so that people with limited vision may easily identify them
- **Roadworks:** Excavations and roadworks, from temporary obstructions within the route of travel. They should be protected by easily detected continuous barriers, scaffolding, and fences for safety reasons Barriers should be identified by stripping color markings and should be lit at night, to guide people with limited vision. The barrier height should be between 0.75 m and 0.95 m. The distance between the bottom of the barrier and the pathway surface should not exceed 0.10 m
- **Signage**: includes direction signs, signs of locality, street names and numbering, information signs, etc. All types of signs should be visible, clear, simple, easy to read and understand, and properly lit at night.
- **Direction signs:** Graphic or written directions should be used to indicate clearly the type and location of the available facility.
- **International symbol of accessibility:** Accessible spaces and facilities should be identified by the international symbol of accessibility. The symbol is composed of a wheelchair figure with either a square background or a square border**.** Below are some symbols which represent accessibility for disables.

Figure 2.5: International symbols with directional signs

Source: UN; Division for Social Policy and Development, 2003

- **Curbs:** The height of a curb should be between 0.07 m and 0.15m. Stepped curbs should be avoided, as they are hazardous to all pedestrians, especially in darkness. Figure 2.6 and Table2.2 below show that the standard curb alignment and typical ramp dimension between landing areas respectively.

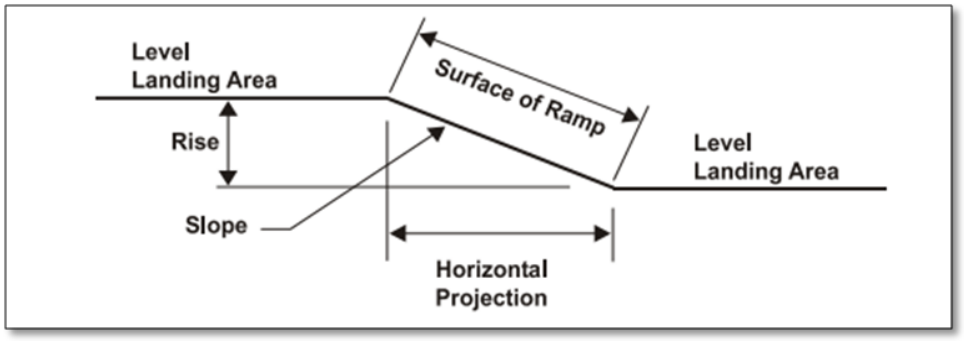


Figure 2.6: The standard curb alignment

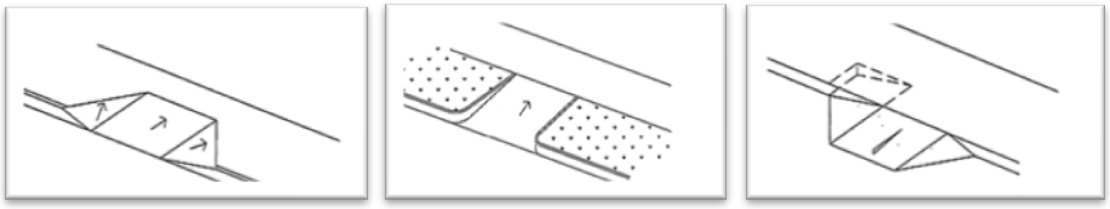
Source: UN; Division for Social Policy and Development, 2003

Table2.1: Typical ramp dimension between landing areas

Typical Ramp Dimensional Elements Between Landing Areas		
Slope	Rise (Maximum)	Horizontal Projection(Maximum)
1V : 12 < 1V : 16H	760mm (30 in)	9 m (30 ft)
1V : 16 < 1V : 20H	760mm (30 in)	12 m (40 ft)

Curb ramps are used wherever there is a difference in level on pedestrian paths or cross paths. To avoid confusing sightless pedestrians, curb ramps should be positioned out of the usual line of pedestrian flow. The unobstructed width of the pathway should be not less than 0.90 m. Curbs should not obstruct the free passage of people with physical disability, mainly wheelchair users. Curb ramps should be located away from places where water accumulates.

❖ **Types Curb ramps**



a) Standard curb ramps b) Returned curb ramps c) Built-up curb ramps

Figure 2.7.Different types of curb ramps

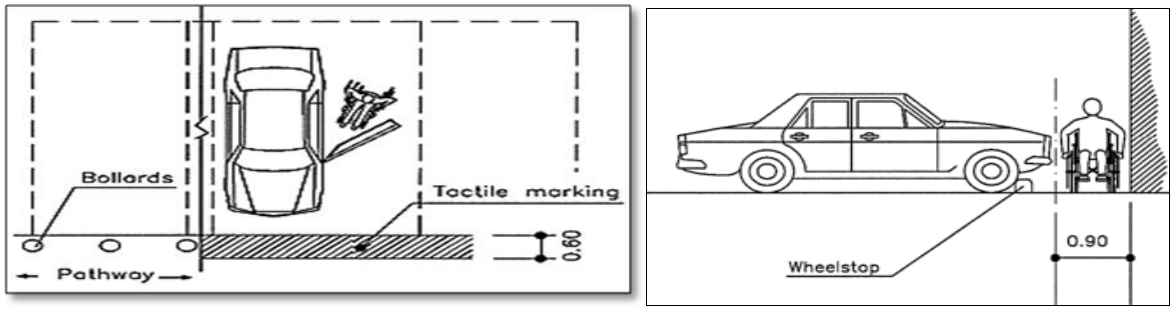
Source: (UN; Division for Social Policy and Development, 2003).

a) Standard curb ramps: Cut back into the pavement with flared sides providing transition in three directions.

b) Returned curb ramps: providing slope in one direction. This could be a dangerous measure if the sides are not protected.

c) Built-up curb ramps: usually with flared edges.

- **If no curb exists**, a textured surface at least 0.60 m wide is needed to separate the pathway from the vehicular area; otherwise bollards should be used, Pre-cast wheel stops can also be used to set apart a passage at least 0.90 m wide.Figure (a) and (b) below shows Textured surface and wheel stops width respectively.



a) **b)**

Figure 2.8. (a)Textured surface and (b) wheel stops width

Source: (UN; Division for Social Policy and Development, 2003).

Width: The minimum width of an unobstructed pathway should be 0.90 m. The minimum width of a two-way wheelchair traffic passage is 1.50 m, however the preferable width is 1.80 m.

Slope: The slope of an accessible path should not exceed 1:20. Pathways with a slope of more than 1:20 should be designed as ramps. The slope across a path should not exceed 1:50.

Parking: For parking facilities of less than 50 cars, at least one accessible parking space should be provided in every parking facility. For parking facilities of a maximum number of 400 spaces, accessible parking spaces should at least be provided in the ratio of 1:50.Figure 2.9 below shows Common access aisle of 1.20 m between two parking spaces.

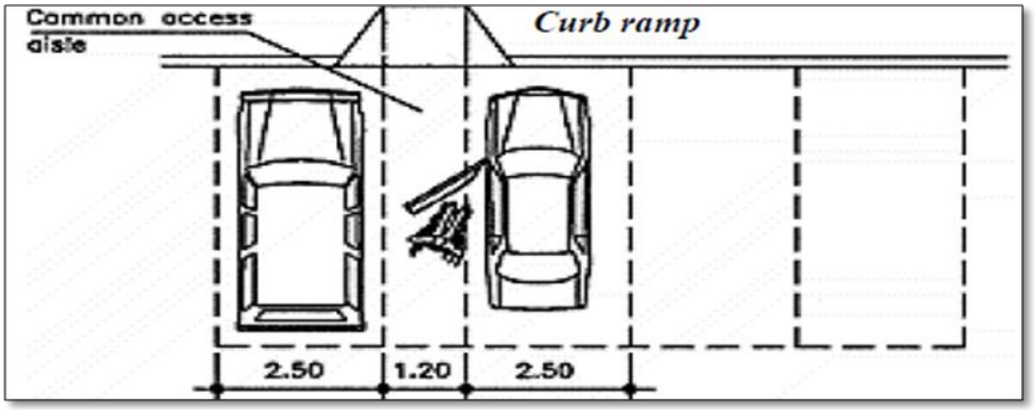


Figure 2.9: Common access aisle of 1.20 m between two parking spaces.

Source :(UN; Division for Social Policy and Development, 2003)

Pedestrian Crossing: Visually impaired pedestrians, wheelchair users and people with walking difficulties will require longer gaps of around 10-12 seconds**.**

Raised pedestrian crossings: Across lightly used side roads, or at full-stop intersections leading into larger corridors, raised crossings (also known as "continuous sidewalks") can assist all pedestrians and especially help those who are frail or otherwise require more time to cross the street.Figure 2.10below shows Raised Crosswalk.

Figure 2.10: Raised Crosswalk

Source: Sisay, 2008

Side Walk: Persons with mobility and sight impediments especially benefit from even and smooth pedestrian pathways with non-skid surfaces. Sidewalks should be level, well paved, well drained, and well-lit when possible, with a maximum side-slope ideally of 1 to 2 percent and not more than 2.5percent. Surface textures used in public space should not confuse persons with disabilities nor inconvenience persons riding wheelchairs. Obstacles such as street furniture should contrast with their surroundings and be off to the side to permit a straight and clear pathway for all pedestrians.(UN; Division for Social Policy and Development, 2003).

At least one accessible route shall be provided within the site from accessible parking spaces and accessible passenger loading zones; public streets and sidewalks; and public transportation stops to the accessible building or facility entrance they serve (ADA, 2004).

M.Cullen (2006), pointed that at least one accessible route for people who are blind or who have little residual vision, tactile surfaces are essential for the safe progress through the street environment.

The following considerations for pedestrians should be made when designing bus stops and pullouts as provided by Otak Inc. (1997).

- Sidewalks should be provided within designated bus zones with a landing area for wheelchair access to transit services,
- Avoid locating bus stops where there are curbs of varying heights.
- Curb heights should never be higher than the height of the bus step to prevent falls during passenger boarding and departing. Older buses tend to have a bottom step that is 0.4 to 0.5 meters (14 to 18 inches) above the roadway. Newer buses can have bottom steps as low as 0.3 meters (11 inches) above the roadway
- Avoid locating bus stops where there are curbs of varying heights.

2.9.2 Signing and Other Communication Aids

Signing is an essential aid to negotiation for all pedestrians, including people with disabilities. Signs should be readily observable, with clear and precise information. For the sight-impaired, Braille strips can be added to the edges of signs that are reachable and located for that purpose. Raised or routed letters may be desirable since not all sight-impaired people are able to read Braille. Audible messages, chirping devices, click, and tones can be strategically located to warn sight-impaired pedestrians of condition along a route, particularly at street crossings, or to notify them of important information. Push buttons at signal locations need to be installed at heights easy to reach by people in wheelchairs. Accessibility for disabled people does not only mean physical access to vehicles and systems. It includes information in forms that are useable by everyone, training of transport staff to understand the needs of disabled, and design and layout of urban areas to enable people to move about safely and confidently **(**Ann Frye, 2013).

According to Kunieda and Roberts (2006)a successful strategy for accessibility and mobility problem of disabled people are the macro and micro strategies by stakeholder category. Macro strategies include mainstreaming equal access for all as a basic human right, through policies, legislation and programs supported by information and technology transfer. Micro strategies focus on service delivery at the local level, such as implementing universal design plans, better coordination and accessibility audits.

2.10. Transport policy

2.10.1 Definition and concept of policy

Fanaye (2015) stated regarding policy as the word policy is not a defined concept but a highly flexible one, used in different ways on different occasions. "A policy is a deliberate system of principles to guide decisions and achieve rational outcome. Policies are generally adopted by Boards of or senior governance body. A policy is a statement of intent, and is implemented as a procedure or protocol within an organization whereas procedures or protocols would be developed and adopted by senior executive officers. Policies can assist in both subjective and objective decision making. Policies to assist in subjective decision making would usually assist senior management with decisions that must consider the relative merits of a number of factors before making decisions and as a result are often hard to objectively test. Webster's dictionary has a number of closely related definitions. They are:

- A definite course or method of action selected (by government, institution, group or individual) from among alternatives and in the light of given conditions to guide and, usually, to determine present and future decisions.
- A specific decision or set of decisions designed to carry out such a course of action.
- A projected programmer consisting of desired objectives and the means to achieve them.

Transport policy

The principal objective of the National Transport Policy is to develop a reliable, cost effective, safe facility oriented and sustainable transport system that promotes and sustains the economic, social, cultural and tourism development of the Kingdom of Nepal as a whole, Ministry of Physical Planning and Works (2001/2002).

Transport policy making and implementation in Kenya has been sporadic and inconsistent, with studies showing that until 2004 there was no comprehensive transport policy for both road transport and the entire transport sector (Asingo, 2004).

According to Wasike (2001), basic objectives of roads policies in Kenya generally, commitment to a strategic and broad-based approach to transport planning is often measured by examining the extent to which a country's roads policies are based on the following fundamental criteria:

- Integration**:** ensuring that all roads decisions are taken in the context of a coherent, integrated transport policy covering all modes
- Accessibility**:** making it easy to reach the places we wish to get to
- Safety:-making travel safer
- Economy: getting good value for money and supporting sustainable economic activity in appropriate locations
- Environmental impact both positive and negative, on both the built and the natural environments, and at the global, regional and local levels

2.10.2. Policy Instruments

Public ownership: is an extremely important instrument. Most common is the provision by public agencies of transport infrastructure such as roads, ports, airports, and canals. Public ownership also extends to include the operation of transport modes. In many countries, airlines, railways, ferries and urban transit are owned and operated by public agencies.

Subsidies: represent an important instrument used to pursue policy goals. Many transport modes and services are capital intensive, and thus services or infrastructure that the private sector is unwilling or unable to provide may be made commercially viable with the aid of subsidies.

Regulatory control: represents a means of influencing the shape of transportation that is very widely employed. By setting up public agencies to oversee particular sections of the transport industry, governments can influence the entire character and performance of the industry. The agencies may exert control of entry and exit, controlling which firms can offer transportation services, at what prices, to which markets, etc. Other policy instruments are less direct, although in many cases can be equally as important as the three discussed above.

Research and development in transportation: Research is a vital source for innovation and the development of new technologies such as intelligent vehicles and intelligent highway systems.

Labor regulations pertaining to conditions of employment, training, and certification may not be directed purposefully at influencing transport, but as a policy they may exert significant effects over the industry.

Safety and operating standards, such as speed limits the restrictions on limiting the number of hours a truck driver may work may be instituted for safety reasons and to enhance the working conditions of drivers, but they shape the economics of truck transport(Fanaye, 2015).

2.10.3 Policy Framework Analysis about Disables

National Physical Rehabilitation Center, July 2011 analyzed the policy framework in the following way.

International Policy

The UN has made several wonderful human rights treaties. One of them is the UN Convention on the Rights of Persons with Disabilities (UNCRPD) that was adopted in March, 2007. It is the most recent and an integral part of the core human rights treaties. Persons with disabilities were denied of their rights and were kept on the margins of society in many parts of the world. This continued discrimination against persons with disabilities highlighted the need to adopt a legally binding instrument which set out the legal obligations on states to promote and protect the disability rights. While setting out much greater clarity on the obligations of states to promote protect and ensure the rights of persons with disabilities. Thus, the convention not only clarifies that states should protect discrimination against persons with disabilities, but also sets out many steps that states must take to create an enabling environment so that persons with disabilities can enjoy real equality of life in society. Moreover the Government of the Federal Democratic Republic of Ethiopia has ratified the Convention and the development of this strategy is one of the initiatives to fulfill the needs of PWDs.

Continental Policy

One of the different continental and cegional agreements is the "Continental Plan of Action for the African Decade Persons with Disabilities (1999-2009)" proclaimed in July, 1999 in Algiers, Algeria. The major objectives of this Action Plan are:

- Formulate or reformulate policies and national programs that encourage the full participation of persons with disabilities in social and economic development,
- Support community-based service delivery in collaboration with international development agencies and organizations,
- Develop programs that alleviate poverty amongst PWDs and their families,
- Prevent disability by promoting peace and paying attention to other causes of disability

National Policy

Recognizing the rights of PWDs and creating an enabling environment has immense economic and social benefits for PWDs themselves and a nation at large. Realizing this fact, the Government of the Federal Democratic Republic of Ethiopia has made the rights of PWDs an integral part of its Constitution under Articles 25 and 41. Article 25 states that "All persons are equal before the law and are entitled without any discrimination to the equal protection of the law." And, Article 41 "The state shall, within available means to allocate resources to provide rehabilitation and assistances to persons with disabilities." Based on this constitutional policy framework, the government has adopted the Developmental Social Welfare Policy in November 1996, clearly stating the priority areas for PWDs to:

- Create a conducive environment for the effective participation of persons with disabilities in the society,
- Provide formal education, training, and gain full employment opportunities, and
- Provide medical/health services and support appliances.

Moreover, for the effective implementation of the priority areas, the policy recognizes the creation of support mechanisms to provide the services. The support mechanisms include;

- The establishment of special centers where persons with disabilities will be taken care of;
- Awareness raising to the public concerning the determinants and consequences of disability and combating discriminatory attitudes;
- Designing and implementing strategies and programs to prevent the prevalence of disability and mitigate its effects;
- Ensuring barrier free or physical access in residential areas, workplace and elsewhere.
- Provision of support and assistance to community action groups, nongovernmental organizations and to voluntary associations engaged in the provision of services to PWDs.

The Ministry of Labor and Social Affairs has prepared 10 years National Plan of Action (NPA) for 2010-2020.The objectives of the NPA are:

- Take measures to prevent disability and promote the participation of PWDs in communities
- Create enabling conditions for achieving a better standard of living by building their capacity
- Ensure the equal rights and full participation of PWDs in society.

Apart from government commitments in signing and ratifying declarations, developing policies and plans of actions in general to benefit PWDs; Thus, the service requires well planned use of resources, coordination of the efforts of both governmental and non-governmental organizations, clear and comprehensive strategy, monitoring and evaluation and proper data management in order to bring about meaningful results.

2.11 The Existing Situation of Disability in Ethiopia

According to Country Profile on Ethiopia (2002) even though there are a large number of disables in Ethiopia, some of the community association disability (handicap) with spiritual evil and do not let disabled persons to go out in public. This leads to families hiding a disabled family

member which leads to inaccurate information and statistics on disabilities. Due to this lack of awareness and various reasons the disables faces various problems in their life.

2.11.1 Major current problems concerning disability

- Lack of public understanding;
- Lack of information on the number and status of disabilities; and
- Inaccessibility to assistive devices.

To alleviate the problems of disability, the Ethiopian Federal Democratic Government has organized a Rehabilitation Department under the Ministry of Labor and Social Affairs (MOLSA). The main activities of the department are to realize rehabilitation, capacity building, and awareness raising. The government administration has been decentralized from the central to regional levels with structures extending from the zones to the "Woreda" districts. With respect to organizations, persons with disabilities have formed five associations and one federation to advocate their rights. Figure 2-11 below shows local agencies responsible for disability-related issues.

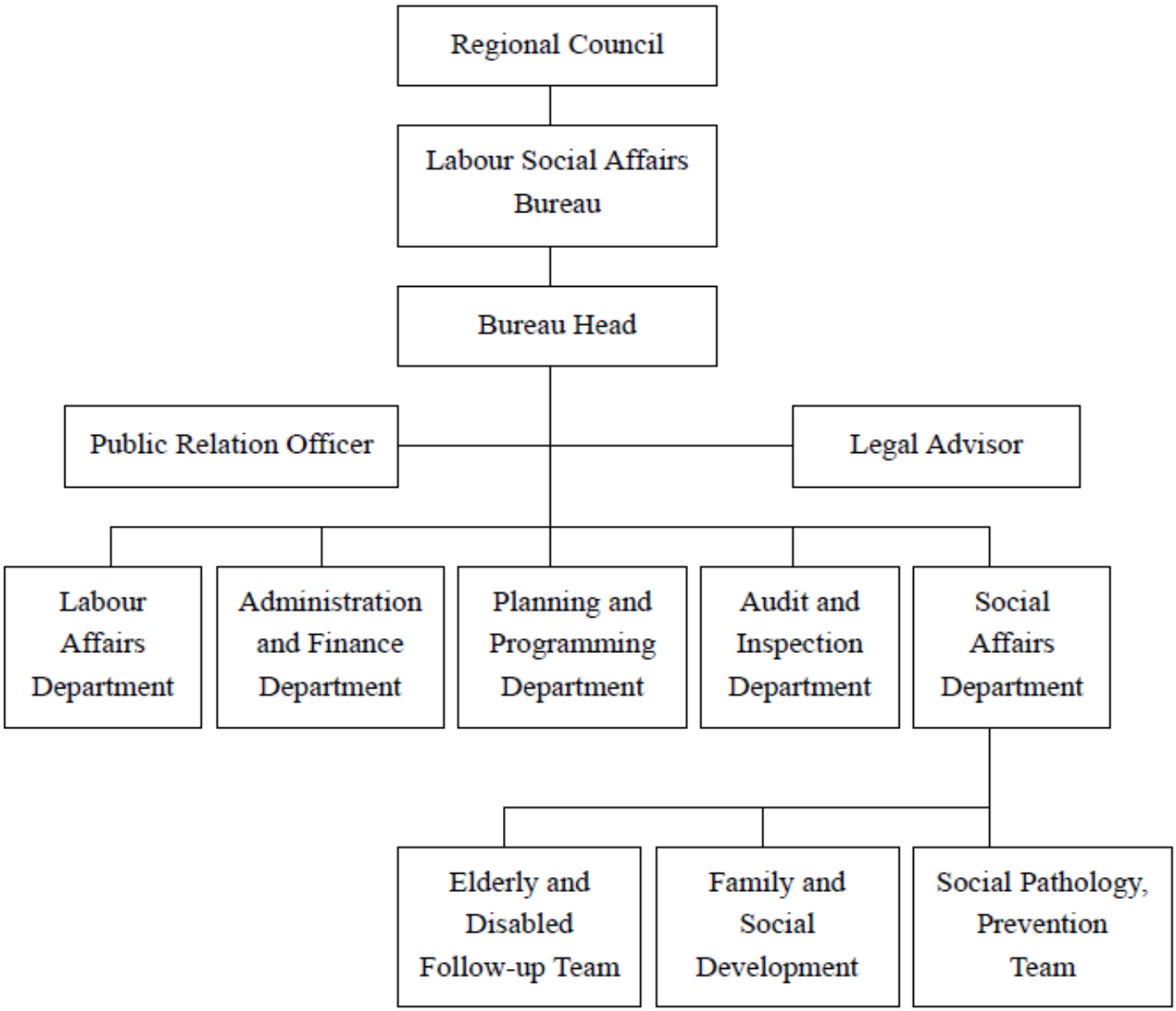


Figure 2-11: Local Agencies Responsible for Disability-Related Issues

Source: Country Profile of Ethiopia, 2002

There are nine regional states, one special administration (Dire Dawa), and one capital city of the Ethiopian Federal Democratic Government. Each regional council has a Labor and Social Affairs Bureau, which handles all social affairs matters, including disability-related welfare. The

structure at the regional level is more or less similar to that of the federal government. Rehabilitation, integration, prevention, and placement are handled by bureaus at the regional level, headed by a team leader. The Elderly and Disabled follow up team is comprised of one team leader, two senior experts, one assistant for disability-related matters, and one typist.

2.11.2 Measures Taken on Disability Related problems on Transportation system

Persons with disabilities have been unable to participate in national developments due to lack of assistance, the attitudes of society and inaccessibility of the transport system. The following policies have been drawn up to increase the participation and integration of persons with disabilities by improving ease movement.

Accessibility

Roads, buildings, transport facilities and other public recreational areas have limited participation and integration of persons with disabilities in society. The following are strategies to alleviate these problems.

- Establish laws and regulations to construct buildings and roads that are accessible by persons with disabilities;
- Instruct public transportation to make special considerations for persons with disabilities;
- Have a disability-related associations participate in construction designs;
- Use of Braille and clearly written alphabets; and
- Promote sign language use for deaf.

Mobility Options

In Canada, there are various strategies that improve travel options, particularly for people who are physically, economically or socially disadvantaged.

- Transportation service improvements, including improvements in regular transport service, redesigning regular transport facilities and vehicles to better accommodate people with disabilities, and special mobility services (such as door-to-door para-transport services).

- Universal design, which means that transport facilities and services to accommodate a wide range of users, including people using wheelchairs or have other disabilities.
- Travel information improvements, such as more convenient bus and taxi information, and direction services for people with visual disabilities.
- Taxi service improvements, may include increasing the number of taxis in a community, setting higher standards for taxi service, allowing more flexibility (such as shared rides to reduce fares), and specifying taxis that accommodate wheelchairs and other people with special needs.
- Address security concerns, which mean increased efforts to reduce risk of assault to pedestrians, cyclists and transit riders (Todd Litman, 2003).

Henok Tesfaye(2014), describes inaccessibility of the transport environment PW Ds, is more worsened because of lack of awareness, the absence of legal frameworks, standards and guidelines; and most importantly ignorance of international instruments to which Ethiopia is a signatory, such as the Convention on the Rights of Persons with Disabilities.

Organizations of Persons with Disabilities

It is important for persons with disabilities to organize and associate in order to participate in day-to-day activities and make equal decisions in life. Polices are being devised to support organizations of persons with disabilities and their activities.

There are five associations of persons with disabilities and one federation of which the five associations are members. Each association has an office and managing director which is responsible to a board of directors. The board of directors is appointed by and from the executive committee, which is appointed by the general assembly.

Its member national associations are:

- Ethiopian National Association of the Deaf (ENAD)
- Ethiopian National Association of Persons Affected by Leprosy (ENAPAL)
- Ethiopian National Association of Persons with Intellectual Disabilities (ENAID)
- Ethiopian National Association of the Deaf-Blind (ENADB)
- Ethiopian National Association of the Blind (ENAB) and

- Ethiopian National Association of Persons with physical Disabilities (ENAPD) (FENAPD, 2015).

From the literature what we are learning the existence of large numbers of disables in Ethiopia with severe cases of inaccessibility related with disables. But the Ethiopia government started developing various policies and strategies for improvement of accessibility for disables.

2.11.3 Historical Development of Policy for Disabilities in Ethiopia

The definition and policy of Ethiopia for disability has improved from time to time to assure the inclusiveness of disables. Disability was formally defined for the first time in Ethiopia in 1971 under an imperial order issued to establish an agency on disability. Emperor Haile-Selassie I gave order No. 70/1971 to provide for the establishment of the rehabilitation agency for the disabled.

This Imperial Order defines a person with a disability as, "Any person who, because of limitations of physical or mental health, is unable to earn his livelihood and does not have one to support him and shall include any person who is unable to earn his livelihood because of young or old age." (FDRE Ministry of Foreign Affairs, 2012).

Secondly disability was defined in another piece of legislation issued in 1994. This was a proclamation of the employment right of persons with disabilities No.101/1994.The main concept of this definition is persons with disabilities were taken to mean people who have no capability to make life and need persons to be supported.

The 1994 proclamation disability refers to:

A person who is unable to see, to hear, to speak or suffering from injuries to his limbs or from mental retardation, due to natural or man-made causes; providing however, the term does not include persons, who are alcoholic, drug addicts and those with psychological problems due to socially deviant behaviors (FDRE Ministry of Foreign Affairs, 2012).

Thirdly, the traditional definition given under the Imperial Order of 1971. Yet, even this time, persons with disabilities were presented in terms of their physical, metal and sensory incapacities with little association with the external barriers.

Fourthly, the definition is slightly more functional with no reference to the question of inability to support oneself, it was a definition based on the individual model of understanding disability, which focus simply on impairments or physical features.

The recent definition of the concept Disability in the Ethiopian Context can be observed in the National Plan of Action of Persons with Disabilities 2012-2021.

Persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others (UN Convention on the Rights of Persons with Disabilities, 2006 art. 2).

2.11.4. Governmental Support for People with Disabilities in Ethiopia

According to inclusion of people with disabilities in Ethiopia (2013), the Government of Ethiopia has adopted and implemented a number of laws, policies and standards pertaining to people with disabilities, including their right to produce and decent work. The main ones are:

- **Constitution of the Federal Democratic Republic of Ethiopia, adopted in 1995**. Article 41 (5) of the Constitution sets out the State's responsibility for the provision of necessary rehabilitation and support services for people with disabilities.
- **Proclamation concerning the Rights in Employment for Persons with Disabilities, No. 568/2008**, makes attitude and other discriminatory situations that limit equal opportunities for persons with disabilities. It also requires employers to provide appropriate working and training conditions; take all reasonable accommodation measures and affirm active actions, particularly when employing women with disabilities; and assign an assistant to enable a person with disability to perform their work or follow the training.
- **The Federal Civil Servant Proclamation No. 515/2007** provides for special preference in the recruitment, promotion, and deployment, among others, of qualified candidates with disabilities. This provision is applicable to government offices only.

- **Labor Proclamation, No.377/2003, amended by Labor Proclamation No. 494/2006,** makes it unlawful for an employer to discriminate against workers on the basis of nationality, sex, religion, political outlook or on any other conditions.
- **Proclamation on Definition of Powers of Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia, No. 691/2010,** provides for conditions of equal opportunities and full participation of persons with disabilities and those living with HIV/AIDS.
- **Building Proclamation, No. 624/2009**, provides for accessibility in the design and construction of any building to ensure suitability for physically impaired persons.
- **Proclamation No. 676/2010** on the Ratification of the "UN Convention on the Rights of Persons with Disabilities" (UN CRPD) by Ethiopia.
- **Framework Document 2009,** provides for Special Needs Education (SNE) in Technical and Vocational Education and Training (TVET).
- **Growth and Transformation Plan (GTP) 2010-2015,** establishes disability as a cross cutting sector of development where focus is given to preventing disability and to providing education and training, rehabilitation and equal access and opportunities to persons with disabilities.
- **National Plan of Action of Persons with Disabilities (2012-2021)** aims at making Ethiopia an inclusive society. It addresses the needs of persons with disabilities in Ethiopia for comprehensive rehabilitation services, equal opportunities for education, skills training and work, as well as full participation in the life of their families, communities and the nation (According to Inclusion of People with Disabilities in Ethiopia, 2013).

2.11.5. Addis Ababa Transport Policy

The need for the policy

There is no clearly defined transport policy for the city of Addis Ababa before the formulation of the 2011 transport policy. It is rather based on and led by different proclamations, regulations and directives issued by the federal government and the city administration; which renders difficult for harmonized and coordinated actions. The importance of the promulgation of the policy paper for Addis Ababa is necessitated due to factors listed below:

- Enable the transport services of the city assist the national effort to reduce poverty and accelerated development programs;
- Realize infrastructure and transport service based on development in the city, based on accessibility and mobility of the urban population and ensures that different institutions and stakeholders play key roles in a coordinated and cooperative spirit;
- Integrate the city's land-use and transport planning;
- Provide efficient, coordinated and improved transport service;
- Since funding urban transport development requires huge financial demands, set a favorable condition to finance the development of urban transport through revenues generated from different sources of the sector;
- Capacitate the principal stakeholders in their institutional structures, enhance human resource development, management, application of 15 technologies, promote for coordination and provide for the private sector participation to enhance safety, and effective transport services.
- The needs to capacitate urban transport planning practices, develop qualified human resources, enhance experience, advanced skills in information dissemination and research in the field of urban transport (FDRE Ministry of Transport, 2011).

The goal of the policy is providing comfortable, safe, dependable, efficient, equitable transport service for the city of Addis Ababa. Also, it is a condition to accelerate the development of the city, and make a competent city on regional, continental and international levels. The provision of implementable policy and strategy is a key factor to the stated needs. In order to accomplish

these needs, the transport policy of Addis Ababa FDRE Ministry of Transport (2011),has outlined eleven key policy issues and implementation strategies:

i. Integration of Land-use and Transport Plan;
ii. Expansion of transport infrastructure;
iii. Enhance transport service provision;
iv. Ensure traffic safety;
v. Employ integrated and modern traffic management system;
vi. Improve environmental protection and energy use;
vii. Focus on social issues;
viii. Strengthen financial capacity;
ix. Capacity Building and coordination of transport services providing institutions;
x. Equipping with the necessary legal framework; and
xi. Establish regional and international partnership.

2.11.6. Addis Ababa Transport Policy on Social issues

The role of transport infrastructure and services play an important function in the improvements of social development. Development in transport helps in creating strong ties between economic and social interaction leading to strong unity between people and further enhances good governance and addresses human right issues.

Nevertheless, the current transport service and infrastructure development seldom addresses and access to health and educational issues. It lacks consideration to the disabled, children, the elderly and women. This policy paper has been formulated to address basic social issues.

Objective

- The transport infrastructure and service to address and play a vital role in improving basic education and health development issues and support for comprehensive social developments.
- The transport service to address disadvantaged section of the society who as a result of natural or human problem was not able to benefit from the transport system and provide

affordable transport services and enable their participation in the development and good governance of the city.

Policy

- The transport infrastructure and service shall address basic social issues and ensure accessibility to educational and health facilities.
- Based on the objective of government's responsibility to address vulnerable section of the society exposed due to natural or man-made calamities, the transport and traffic management system shall address the needs of the disabled, children, women and the elderly.

Strategies

- To deploy transport service appropriate, vehicles should be provided to meet the social needs in the educational and health sectors with the necessary execution guidelines.
- In order to minimize the risks of vulnerability in the vicinities of schools and health facilities, complement special traffic management system and install appropriate traffic signage indicating such institutions.
- Prohibit noise pollution and religious posters, stickers and audiovisuals in all public transport service vehicles.
- In order to address the needs of the disabled, children, the elderly and women, road designs, vehicle's height and seats in public transport shall be considered. Mass-transport vehicles shall also address the special needs of these categories of the society.
- Ensure that the transport providers have created a conducive environment in transporting the elderly so that the elderly gets comfortable service.
- Provide separated parking facilities and clearly mark with the necessary signs to the disabled persons, so that they can be served conveniently on a phase by phase basis.
- Ensure special support and care for vulnerable sections of the society in traffic management (FDRE Ministry of Transport, 2011, P. 35-37).

2.12 Country Experiences

2.12.1 Indian Transport Policy

The Indian transport policy arises from dissatisfaction of pedestrian and cycle users. The design intention was maximizing safety by construction of segregated rights of way for bicycles and pedestrians; the segregation of vehicles moving at different speeds to improve traffic flow, increase the average speed of traffic and reduce emissions resulting from sub-optimal speeds. More over Creative facilities like shade giving landscaping, provision of drinking water and resting stations along bicycle corridors would also be encouraged as they can mitigate, to a large extent, adverse weather conditions.

However, such facilities are designed badly and without fully recognizing the limitations and problems faced by cyclists or pedestrians; so cycle tracks and pedestrian paths do not get used as initially envisaged. Moreover, Pedestrian safety is also adversely affected by the lack of safe crossing facilities at busy intersections of even high traffic corridors (VivekKele, Hon, 2010).

They believed it is essential that such facilities be constructed after an open debate on the designs by experts and the community that is expected to use them. It is expected that such public appraisal would lead to designs that enable greater use by the potential beneficiaries.

Institute of Urban Transport (IUT) in India a professional body promoted by MoUD has undertaken a comprehensive review of NUTP (2006), to bring about comprehensive improvements in urban transport services and infrastructure to make this revised and reorganized NUTP 2014 user friendly and easy to implement. Then, this policy was to plan for the people rather than vehicles by providing sustainable mobility and accessibility to all citizens to jobs, education, social services and recreation at affordable cost and within reasonable time. This will involve:

- Bringing about a more equitable allocation of road space with people, rather than vehicles, as its main focus;
- PT should be citywide, safe, seamless, user friendly, reliable and should provide good ambience with well-behaved drivers and conductors;

- Walk and cycle should become safe modes of UT;
- Introducing Intelligent Transport Systems for traffic management;
- Addressing concerns of road safety and trauma response;
- Establishing institutional mechanisms for enhanced coordination in the planning and management of transport systems; and
- Building capacity (institutional and manpower) to plan for sustainable urban transport and establishing a knowledge management system that would service the needs of all urban transport professionals, such as planners, researchers, teachers, students, etc.

The objectives of this policy would be achieved through comprehensive approach including Urban Transport Planning, Infrastructure Design, Public Transport, Non-Motorized Transport, Traffic Management, Financing, Governance and Capacity Building (NUTP, 2014).

2.12.2. USA Transport Policy

As stated by Harold G. Moulton (1933) access means being able to use, enjoy, and participate in the many aspects of society, including work, commerce, and leisure activities. Transportation is a vital link that allows full participation. The U.S. Department of Transportation is fully committed to building an accessible transportation system that provides equal access for all Americans and prevents discrimination against persons with disabilities.

North American transport professionals struggle with social exclusion issues, although few are familiar with the term. They are more likely to talk about the need to provide basic mobility to transportation disadvantaged groups, such as people with physical or mental disabilities. There is a strong commitment to universal design that is, designing transport facilities and services to accommodate people with disabilities and other special needs. The U.S. American with Disabilities Act (ADA) establishes strict standards and requirements for governments and businesses to accommodate the needs of people with disabilities. Similar standards and design guidelines have been adopted by the state, provincial and local level by many North American jurisdictions (ToddLitman, 2003).

Generally, Disability issues have gained momentum in several developed countries and countries have taken several measures to improve the qualities of the lives including providing accessible transport system of their citizens with different impairments. In this regard, the Americans with Disability Act of 1990 (ADA) and the UK Disability Discrimination Act of 1995 (DDA) can be mentioned.

2.12.3 Hong Kong

Hong Kong selected by initiative as a good practice example by giving equal opportunities for the improvement of accessibility, connectivity and interface with the surrounding environment and user friendly management practices for publicly accessible premises. The Government's established policy objective to provide a barrier-free environment for persons with disabilities. Process/strategy to implementation is to accelerate its retrofitting program for the provision of barrier-free access (lift or ramp) at public footbridges, subways or elevated walkway structures that are without such access or alternative at-grade crossings, where technically feasible; moreover footbridges, subways or elevated walkway structures, already commenced planning and investigation for retrofitting works. Also, departments having frequent interface with the public in their service delivery. Furthermore, the Labor and Welfare Bureau, in collaboration with the Hong Kong Council of Social Service, organized the first series of sign language training workshops for frontline staff of government departments in August 2011 to enhance their knowledge in basic sign language and awareness of the deaf culture, thereby facilitating the hearing impaired in their access to government services(UN DESA/DSPD Forum, 2015).

In order to develop an inclusive public transport system it is necessary for accessibility, safety and comfort in transportation modes to become a priority in transport policy. This means improving**:**

- All stages of the journey, including the walking environment, so that people with mobility impairment can reach and use public transport services;
- The design of transport facilities, addressing the specific needs of vulnerable groups;

- Safety and security in public transport, crucial issues which disproportionately affect women and the elderly. The issue of `safety should also be considered with regard to the design of car parks and transport stations;
- The capacity of the public authorities to find innovative solutions for transport services,
- Technological devices to support networking and coordination activities and improve transport efficiency and flexibility in responding to different mobility needs (Manuela Samek Lodovici, Nicoletta Torchio, 2015).

2.12.4 Johannesburg

The possible intervention required to begin to address the needs and requirements of Joburg's disabled population; is the immediate / short term priorities or addressing the quick fix immediate solutions that do not require substantial funding but rather a policy shift and commitment are generally centers around providing the "voice" for those with disabilities, establishing the parameters for interventions and raising awareness.

1.Awareness Raising: Guidelines should be developed in consultation with organizations of disabled persons; to encourage the news media to give a sensitive of reporting on, disabilities and disabled persons in radio, television, film, photography and print.

In addition to the regular media and other normal channels of communication, attention should be given to:

- The preparation of special materials to inform disabled persons and their families of the rights, benefits and services available to them and of the steps to be taken to correct failures and abuses in the system. Such materials should be available in forms that can be used and understood by people with visual, hearing or other communication limitations;
- Facilitate change in attitudes through policy dialogue, and understanding of the legislative framework, capacity development and validation.

2. **Disability Charter:** which include a comprehensive public information programmed about the rights, contributions and unmet needs of disabled persons that would reach all concerned,

including the general public is developed and implemented in partnership with the disabled needs to be developed to map out the plan of action.

3. **Accessibility**: The system of services must take into account problems of transportation and communication; the need for supporting social, health and education services; the existence of primitive and often hazardous living conditions.

One of the biggest problems facing those who are disabled in the City of Johannesburg is lack of access. The City has a public transport service for persons with disabilities. This service should be expanded in two ways including extension of the mainstream service as well as the special dial-a-ride service. The City's newly purchased buses are equipped to address the needs of the disabled and ten are equipped to handle wheelchair services. The City of Joburg needs to show its commitment to people with disabilities through accommodating them within the day-to-day municipal services.

Initiate measures to remove the obstacles to participation in the physical environment. Such measures should be to develop standards and guidelines and to consider enacting legislation to ensure accessibility to various areas in society, such as housing, public transport services and other means of transportation, streets and other outdoor environments.

Ensure that architects, construction engineers and others who are professionally involved in the design and construction of the physical environment have access to adequate information on disability policy and measures to achieve accessibility. Melissa Whitehead (U.E.C.T, 2004).

2.13. Impact of Inaccessible Transport Disability Transport

Transport disability has a major impact on the lives and life choices of many disabled people. Transport is essential for disabled people to access education, employment, health services, social events and leisure pursuits. A lack of accessible means of independent travel creates social exclusion for many disabled people (Hesier, 1995; Alsnih and Hensher, 2003; SEU, 2003).

2.14. Lesson Learnt from Literature Review

The literature review revised definition, concepts and country experiences to develop the knowledge about transportation system, disabilities, accessible transportation, and policies related to disables.

Transportation system is a system consisting of the fixed facilities, the flow entities and the control system that permits people and goods to overcome the friction of geographical space efficiently in order to participate in a timely manner in some desired activity. The efficiency of the system is depend on the quality of infrastructure, the quality of flow entities such as automobile, pedestrian, cycle and wheelchair, with appropriate services through traffic management.

There are large portion of disabled person or person who was unable to carry out or limited in carrying out activities in Ethiopia. These disables have various type of impairment like: blind, seeing difficulty, deaf, hearing difficulty, dumb, and speaking difficulty, disability in hands, disability in legs, physical organs movement difficulty, mental retardation, mental problem. Due to their impairment life is not easy for these disable person.

In addition to that, the location and distribution of uses and facilities; the physical design of places and pedestrian circulation systems such as: zebra cross, roundabout; choice in the means of transportation; information access and the ability of a place to accommodate the needs of people with a disability; the design of flow entities like design of public transport; inaccessible signage and sign; good legislation and poor enforcement; and environmental barriers to accessibility are some of transport facility problems by people with disability.

Even though there are various problems related with movement of disables, we learnt from the literature how improve accessibility of disables by improving the physical environment such as design and implementation of paths free obstructions, proper zebra cross, proper pedestrian walkway, proper ramp and accessible parking; providing accessible design of public transports such as wheelchair accessible public transport with ramp, low floor vehicle and flexible chairs with in public transport; providing accessible sign and signals such as direction signs, signs of

locality, street names and numbering, information signs should be visible and understandable at night and day time.

The issue of disability is not only country level issue instead it is global issue. Due to this reason there are various policies and agreements on international level. Therefore the Government of Ethiopia has adopted and implemented a number of laws, policies and standards pertaining to people with disabilities, including their right to productive and decent work to improve inclusiveness and accessibility of disables. Following that theAddis Ababa transport policy tried to address the issue of disability in the social issues as strategy. In order to address the needs of the disabled, children, the elderly and women, road designs, vehicle's height and seats in public transport shall be considered. Mass-transport vehicles shall also address the special needs of these categories of the society.

According to the Ethiopian constitution, Article 9 sub article 4, all international agreements ratified by Ethiopia are an integral part of the law of the land. Therefore, Ethiopia should implement the international agreements related to disables. Even though Addis Ababa transport policy is not give emphasis for disables at the time of policy formulation, the transportation system is not accessible for disables due to poor implementation of the existing policy.

There are various researches related to transport system of Addis Ababa and policies related with disables. But there is a gap of research on evaluation of the transport system for disables' versus policy implementation in Addis Ababa city. Therefore the study is interested to fill this gap.

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides how doing the research with appropriate methods, which includes the research approach, method, sampling design, sources of data, how to collect data from the target population, analyze and present the analyzed data, to address the set objectives.

3.2 Research Design

The research design is the arrangement of conditions for the collection and analysis of data in a manner that aim to combine relevant to the research purpose with economy in procedure C. R. Kothari, (1990) to achieve the overall and specific objectives of the research that generate from the statement of the problem, the researcher design the suitable methods in order to collect the reliable and valid data to analyze and present scientifically. Therefore, descriptive research design is the best design to meet the research objective. And the research approach, data collection and analysis methods are included.

3.3 Research Approach

The research employed were both qualitative and quantitative research approaches, which enable the researcher to collect both qualitative and quantitative data. The qualitative approach is important for collecting the attitude and experience of the respondents about the facilities of transport for them and related issues, whereas the quantitative approach is important for obtaining numerical data by using a questionnaire, so that enable the researcher to generate statistics through the use of large scale survey research.

3.4 Research Methods

For this research descriptive survey method was employed. The descriptive survey method is important for gathering primary data on a one-shot basis based on communication with a large sample of individuals, allows the researcher to generate qualitative and quantitative data that are

important for addressing the objectives, and also enables the researcher for direct and close contact with the respondents. Both quantitative and qualitative data analysis methods were also used to analyze the collected data.

3.5 Research Population and Sampling

In order to address the objectives of the study, the researcher determined the target population, sample unit and sampling technique. The main purpose of this study was to evaluate the transport system for disables' versus policy implementation in the Addis Ababa city.

- **Questionnaire:** It has the advantage to cover a large population easily and quickly. Both open and close-ended questionnaires were developed and distributed to the sample individuals. The sample unit of this study was blind, deaf and physically disabled individuals who were living in Addis Ababa city. The defined populations were those who registered on housing and census of Ethiopia in 2007(see Annex A1). These Participants of the research were selected randomly using small population size sampling method. According to C. R. Kothari(1990), the appropriate formula derived in the determination of sample size based on small population is as follows:-

$$n = \frac{Z^2 pqN}{e2(N-1)+Z^2 pq} \quad \text{---------- [Eq3.1]}$$

Where: n= size of sample

N= size of population / Number of disables / each category

e= Sampling error (the precision) taken 3percent.

Pq= Degree of variability, p = sample proportion, P= 0.012 and q= 1 – p;

Z= Level of confidence considers 95 percent and the reading result taken from the Z chart is1.96

So that the desired target populations of this study were determined using the above formula and table 3.1 below presented selected sample size.

Table 3.1: Selected sample size.

No.	Disables category	Calculated (n)	Sample taken(n)
1	Blind	49.7	50
2	Deaf and unable to speak	48.7	50
3	Physically disable (body movement difficulty)	49.3	50

In order to support the issues questionnaires were also distributed to officials purposefully. Accordingly, five questionnaires were distributed to: Addis Ababa City Road Authority, five questionnaires Addis Ababa City Roads and Transport Bureau and five questionnaires to Addis Ababa City Transport Authority.

- **Semi-structured Interview:** it was prepared for the concerned and selected two officials as a checklist by arranging an interview schedule. These checklists are important to remember the issues or questions should ask the key informants and not to miss important information to address the study objectives.

- **Focus group discussion:** focus group discussion was held with women, disabled group in a meeting at a coffee ceremony in Amharic 'Buna Tetu'. The discussants were 9 in number, one translator and the researcher was the moderator of the discussion as promoted by Tom Rickert (2007).

- **Observation:** non participant observation used in order to acquire information how the disable people suffered to access road transport, and also the transport system for the people with disability through naked eyes and camera.

3.6 Source of Data and Research Instrument

In this study both primary and secondary data sources were used. Primary data were collected directly from the respondents: blind, deaf and physically disabled people, and officials as key informants, through questionnaires, semi-structured interview, focus group discussion and non-participant observation. Secondary data were collected from published and unpublished both

soft and hard copy documents utilized to supplement the primary data obtained from the respondents, which include relevant related studies, internet, books, policy documents and other related office reports.

The answers to the structured part of the questionnaire are based on a Likert - scale of five ordinal measures of agreement towards each statement (from 1 to 5). The reasons for adopting this scale are: a) to provide simplicity for the respondent to answer; and b) to make the evaluation of collecting data easier.

3.7 Method of Data Analysis

Finally, the results of the questionnaires, interviews, focus group discussion and observation were analyzed using quantitative data analysis software known as SPSS version 20.The statistical packages for the social sciences was employed to analyze the frequency and the relationship among different variables and MS Excel(Micro soft excel) 2007. Frequency tables and descriptive statistics were constructed to display results with respect to each of the questions about general information, challenges and causes of the problems. Ranking analysis was used to prioritize types of modes of transport and its problems for PWDs, for the officials the involvement of PWDs on the preparation of policy and implementation activities to overcome the transport system problems using mean score value.

Besides, correlation analysis (Spearman's rank correlation coefficient) was used to identify the significance of the relationship between the mean responses of the respondents in this research. The Spearman (rho) rank correlation coefficient for any two groups of ranking is given by the following formula.

$$\text{Rho (rcal)} = 1 - \frac{\left(6*\left(\sum di^2\right)\right)}{N(N^2-1)} \text{---------- [Eq. 3.2]}$$

Where: Rho (rcal) – Spearman rank correlation coefficient

di – Difference between ranks given by two respondents for each variable

N – Number of pairs of values in the data set.

3.7.1 Questionnaire Design

A questionnaire was developed to assess the perceptions of blind, deaf and physically disabled individuals according to the importance index of type of mode of transport and infrastructure facilities for PWDs. The need for distributing questionnaires, to the officials were to identify the involvement of PWDs on policy making and implantation as well as factors for not to be involved in it. Causes and impact of transport system problems for PWDs were first examined and identified through relevant literature reviews and then based on the questionnaire data review the perceptions of blind, deaf and physically disabled. Finally, possible measures to minimize the problem were assessed by the officials.

The questionnaire for blind, deaf and physically disabled includes six types based on modes of transport that People with disability frequently use. Generally33 types of transport system challenge for disables in the city were considered: 6 types on Infrastructure provision related problems, 20 types on challenges of transport system related to provision of service, and 7types on vehicle design related problems, The questionnaire for officials included5 types on major causes of current transport system problems related with people with disability,9 types on factors contributing for poor transport system policy implementation and 6 types on measures taken to minimize problems related to transport policy for disables. The respondents were asked to fill the questionnaire and it was promised that any information they provided would be treated in a highly confidential way and used only for academic purposes (see Annex A2).

For the interview, checklist consisting 7 types were developed. Then, observations were done on different sites in Addis Ababa (The checklist is included in Annex A3).

3.7.2 Respondent Profile

Six items were prepared for a PWDs and Government officials to obtain information on the respondents' organizations such as sub-city, age, sex, employment status, nature of disability and two items were prepared for residents (The Respondent profile is included in Annex A2).

3.7.3 The existing mode of transport

This part of questionnaire consists 6 types of mode of transport, these categories are city bus, mini-bus, lada taxi, mid bus, own car and travel on foot frequently (The questionnaire is included in Annex A2).

3.7.4The existing challenges of transport system

This part of questionnaire consists generally 33 types of transport system challenges for disables in the city: 6 types on infrastructure provision related problems, 20 types on challenges of transport system related to provision of services, 7 types on vehicle design related problems (The questionnaire is included in Annex A1).

3.7.5 Causes for current transport system problems

This part illustrates 5 types of major causes for current transport system problems related with people with disability included in this part (The questionnaire is included in Annex A1 and A2).

3.7.6Evaluating the implementation of transport system policy

This part illustrates evaluating the implementation of transport system policy for disabled people by considering of previous studies and literatures written in similar areas. A total of 9 types of factors contributing for poor transport system policy implementation for disablesof questions were included in this part (The questionnaire is included in Annex A2).

CHAPTER FOUR

4. DATA ANALYSISAND PRESENTATION

4.1 Introduction

This Chapter describes the analysis of the data collected through questionnaires, site observation and literature review concerning the existing transport system, the existing challenges of transport system, and major causes of current transport system problems, to evaluate the implementation of transport system policy and recommend possible solutions to improve the transport system.

Quantitative and qualitative data analysis used triangulated information using data from primary and secondary sources. Related literatures were used to support the analysis of issues raised with relevant context. The data presented using tables, graphs, and pictures taken by the researcher. Pertinent transport issues that are highly sensitive to gender also part of the data collected.

4.2 Response Rate

Profiles of respondents were crucial for the analysis of the paper and clearly reveal the reliability of data. Data were collected from three types of disability targeted that is physical disability, blind and deaf. A total of 150 questionnaires were distributed to a selected sample of respondents. From those questioners 41 blinds, 35physically disables' and 33deaf' responded and analyzed. The responses rates of blind were 82 percent, 70 percent and 66 percent were that of physically disable and deaf respectively. The response rate of this study considering questionnaire distributed and collected from people with disabilities was 72.67 percent. A total of 9 officials from the Addis Ababa City Roads Authority, Addis Ababa Roads and Transport bureau and Addis Ababa Transport Authority forwarded their opinion through questionnaire with a response rate of 69.2 percent. An interview session was organized for the expert’s of the Addis Ababa Transport Authority. From the Ethiopian National Association of women with a disability, 9 women took part in the focus group discussion while they organize a coffee ceremony in the association bureau. The research, analysis and discussion was done based on

the responses on the distributed questionnaire representing 72.3 percent response rate that indicates a good confidence limit; as shown below in Table 4.1 and Table 4.2.

Table 4.1 Response rate of the questionnaire of disables

No	Respondents Disables category	Questionnaire Distributed	Returned Questionnaire	Un responded Questionnaire	Analyzed Questionnaire	
		No.	No.	No.	No.	Percent
1	Blind	50	41	0	41	82
2	Physically Disable	50	39	6	35	70
3	Deaf	50	38	3	33	66
Total		150	118	9	109	72.67

Note: No. = number

Table 4.2 Response rate of the questionnaire of officials

No	Respondents Officials	Questionnaire Distributed	Returned Questionnaire	Unfinished Questionnaire	Analyzed Questionnaire	
		No.	No.	No.	No.	Percent
1	Addis Ababa City Road and Transport bureau	5	3	-	3	60
2	Addis Ababa City Road Authority	5	4	-	4	80
3	Addis Ababa City Transport Authority	3	2	-	2	66.67
Total		13	9	-	9	69.2

Note: No. = number

4.3 Sex, Age, and Educational status of Respondents

4.3.1 Sex Distribution of the Disables Respondents

The overall sex distribution of respondent according to their disability category as presented in Table 4.3 below, there were 61.5 percent male respondents and the remaining 38.5 percent were female, in addition to that Figure 4.1 shows below the percentage of male and female for each type of disability based on sex. Both genders were included in the three disability types to obtain balanced information.

Table 4.3 Disable respondent distribution based on sex

Sex		Frequency and Percentage Of Disability types						Total Frequency and Percent	
		Physically Disabled		Blind		Deaf			
		Fre.	%	Fre.	%	Fre.	%	Fre	%
	Male	22	58.5	24	62.9	21	63.3	67	61.5
	Female	13	41.5	17	37.1	12	36.4	42	38.5
Total		35	100	41	100	33	100	109	100.0

Note: Frequency (Fre.)

Source: Field survey, 2016

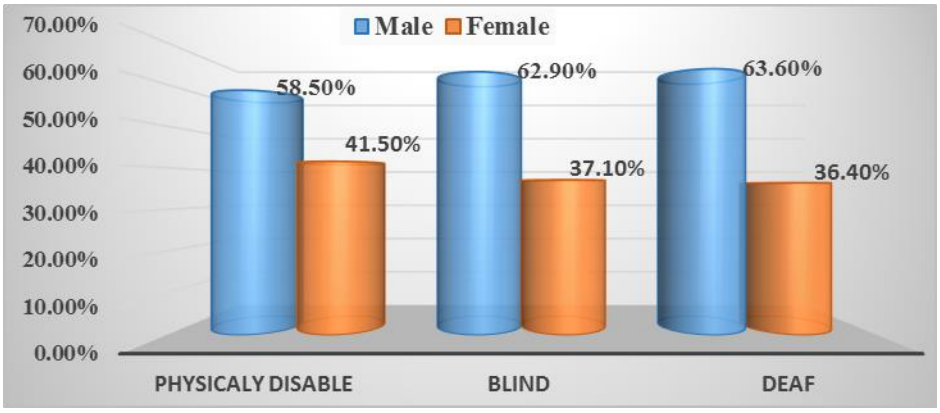


Figure 4.1 Disable respondent distribution based on sex

4.3.2 Age Distribution of the Disables Respondents

The distribution of respondents' age is shown in Figure 4.2 and it illustrates that from 109 respondents, 45.9 percent of them fall in the range of 26 - 45 year and 42.2 percent of the respondents were in the range of 18 – 25 years. This indicates that 88 percent of the disables participated in the study were part of active and productive society who are able to contribute in the national development of the country. Teenagers and elderly age groups were outliers with less than 12 percent.

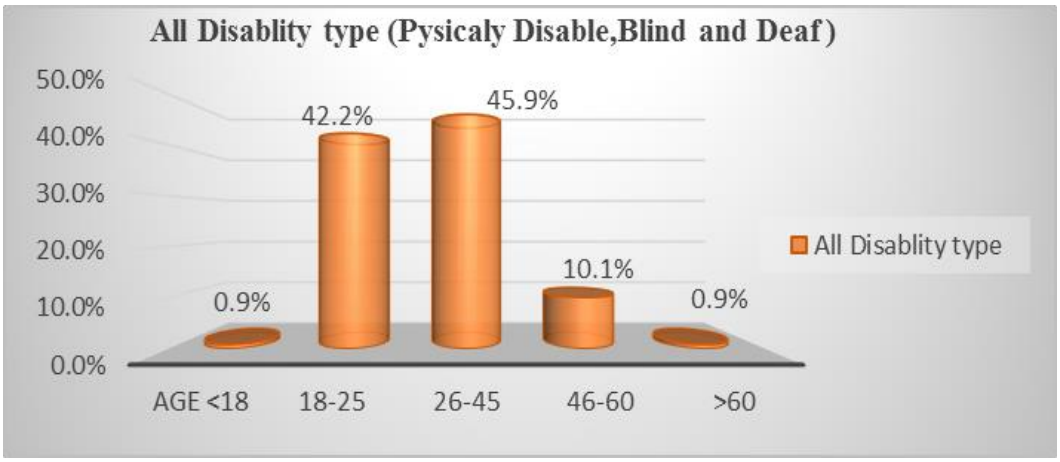


Figure 4.2 Age category of Respondents

Source: Field survey, 2016

4.3.3 Educational Level of the Disables Respondents

Table 4.4 below reveals that only 2.8 percent of the respondents did not get opportunity for formal education and they were blind. They respond to questionnaires from their experience with the assistance of a helper. About 51.3 percent of the respondents had educational qualification ranging from grade 10+1 to Masters Level. This indicates that the response from the group is highly reliable as they are capable of analyzing issues under the study.

Table 4.4 Educational level of the respondents

Educational level	Disability type			Frequency	Percent
	Physical disability	Blind	Deaf		
Illiterate	0	3	0	3	2.8
Read and Write	6	3	4	13	11.9
1-6	3	9	0	12	11.0
9-10	10	11	4	25	22.9
10+1	2	1	2	5	4.6
10+2	3	2	3	8	7.3
Certificate	4	0	4	8	7.3
Diploma	4	4	3	11	10.1
Degree	3	7	13	23	21.1
M.A /MSC	0	1	0	1	0.9
Total	**35**	**41**	**33**	**109**	**100**

4.4 Existing Transport System for Disables

The existing transport system assessed by looking at the road infrastructure from the built up environment described by the road design and zebra crossings. The flow entity presented by mode of transport and facility on the vehicle. The traffic light, audio signals and traffic police analyzed under system control.

The questionnaire of this study considered six types of mode of transport used by people with disables and respondents were required to determine how frequently were used those modes of transport system in Addis Ababa City.

4.4.1 Responses regarding the mode of transport system

The most frequently used mode of transport in Addis Ababa is identified from the returned questionnaires based on the mean scores (MS) of the three groups of respondents; blind, physically disable and deaf. In this research, mode of transport which have a mean score of greater than 3 (MS >3) are considered as the most common types of mode of transport.

FromTable4.5 below, the aggregate results of blind and physical disability, the most frequently used mode of transports are city buses and ranking first (mean value, 4.3).The second and the third most frequently used mode of transport or mid bus and mini bus (mean value of 3.95 and 3.39) respectively. Also from the aggregate result of physically disabled and deaf, the city bus,

mid bus and mini bus are the three most frequently used mode of transport with a mean score of 4.03, 3.73 and 3.25 respectively. While the correlation result of the blind and deaf were presented separately, because their mobility vary considerably according to their disability; People with hearing disabilities appear to be the most mobile, while people with vision impairments are often able to use specific modes to travel between familiar places. The natures of handling them are different depending on their disability types. Also, it shows that the most used type of mode of public transport are city bus, mid bus and mini bus for mobility of disables. As indicated inTable4.5 below, the use of a rental car as well as private car by disables people were very rare.

The result indicated that most of the disables preferred to use public transportation and foot. Therefore, the responsible body should give emphasis for the design and implementation of comfortable pedestrian walkways with street furniture. Moreover the government should give emphasis for accessible design of public transport that is a low floor public bus, entrance ramp and flexible seat especially for wheelchair users. Table 4.5 below shows the common types of modes used by the disabled.

Table 4.5 Common types of mode of transport

No.	Types of Mode of Transport	Blind		Physically Disabled		Deaf		Total (blind and physically disable		Total (Physically disable& Deaf)	
		MS	Rank	MS	Rank	MS	Rank	MS	Rank	MS	Rank
1	City bus	4.63	1	3.97	1	4.09	1	4.3	1	4.03	1
2	Mid bus	3.31	3	3.48	3	3.03	4	3.39	3	3.25	3
3	Mini bus	4.02	2	3.88	2	3.58	2	3.95	2	3.73	2
4	Lada taxi	1.63	4	1.97	5	2.84	5	1.8	5	2.40	5
5	Own car	1.02	5	1.65	6	1.90	6	1.33	6	1.77	6
6	Travel on foot	0.97	6	2.68	4	3.54	3	1.82	4	3.11	4

4.4.2 Tests for Agreements on Types of Mode of Transport by Disables

One of the purposes of this thesis is to investigate whether there is an agreement or not on the attitudes of disables towards the types of mode of transport in Addis Ababa City. Hence, in this section respondents responses were tested for correlation using Spearman rank correlation

coefficients, to see if there is difference in ranking between two groups of respondents; these are blind versus physically disabled; blind versus deaf and physically disabled versus deaf, on the different variables of mode of transport and their rate of occurrence. The purpose of a hypothesis test is to avoid being deceived by chance occurrences. The tests also helped to evaluate whether the consensus of opinions exists among respondents.

The Spearman Correlation Coefficient (ρ) is calculated and tabulated as shown below in Table 4.6and this allows to state whether or not there is "agreement" between respondents' responses. In order to decide, the level of significance, 95% (P = 0.05) was used. If the calculated value of ρ is greater than the critical value, there is evidence of a statistically significant agreement between the groups. If the calculated value of ρ is less than the critical value, there is no evidence of a statistically significant agreement between the two groups.

Table 4.6 Summary of correlation test on the ranking types of mode of transport

Respondents	**Rho (ρ) = 1 - $\frac{6(\Sigma di^2)}{N(N^2-1)}$**	**A Critical value of r (Appendix B)**
Blind Vs Physically Disable	0.828	0.826
Blind Vs Deaf	0.628	0.826
Physically Disable Vs Deaf	0.942	0.826

In this case, with a significance level of 95% (P = 0.05), the calculated value of **ρ** (rho) for the first and last group cases are greater than the critical values of **r**, so there is significant agreement between the respondents and for the second group case the calculated value of **ρ** (rho) is less than the critical values of **r**, there no significant agreement between the respondents. So it can be concluded that there is a strong correlation between the attitudes of blind and physically disabled and also physically disabled and deaf respondents while the result of the blind and deaf was presented separately. This means that the mode of transport that used by the deaf are not interrelated with that of blind peoples.

4.5 Challenges of Transport System for Disables

4.5.1 Related to Infrastructure Provision

4.5.1.1 Problems related to Infrastructure from questionnaire survey

The questionnaire of this study considered 6 common types of infrastructure related problems were seen and the respondents were required to determine how frequently the listed problem occurred road transport system for disables in Addis Ababa.

As indicated in Table 4.7 below, the most frequently occurring problem for physically disabled and blind were cracked and dangerous pavements (mean value, 4.34); respondents acknowledged that this problem were being frequently seen in the infrastructure related problems. The second and the third most common problem reported by respondents were difficulty in crossing roads and intersections without curb ramps (mean value, 4.23 and 4.21) respectively.

While for deaf difficult crossing roads, unsuitable street crossings and pedestrian signals and cracked and dangerous pavements were the three most challenges related to infrastructure provision (mean score of, 3.42, 3.40 and 3.38) respectively. Table 4.7 below shows Problems related to infrastructure provision

Table 4.7 Problems related to infrastructure provision

Related problems	Types of problems	Blind		Physically Disable		Deaf		Total (Physically disable& Blind)	
		MS	Rank	MS	Rank	MS	Rank	MS	Rank
1. Provision of Infrastructure	Cracked, and dangerous pavements	4.75	1	3.94	1	3.38	3	4.34	1
	Difficult in crossing roads	4.65	2	3.82	3	3.42	1	4.23	2
	Intersections without curb ramps	4.60	3	3.83	2	3.32	5	4.21	3
	Unsuitable street crossings and pedestrian signals	4.29	5	3.77	4	3.40	2	4.03	4
	Barriers such as telephone poles, solid waste	4.39	4	3.54	5	2.81	6	3.96	5
	Passengers that do not let to pass	4.26	6	3.45	6	3.35	4	3.85	6

4.5.1.2 Tests for Agreements on Challenges of Transport System related to Infrastructure Provision

Table 4.8 Summary of correlation test on the ranking types of problems related to Infrastructure

1. Respondents	Rho (ρ) = 1 - $\frac{(6\ (\Sigma di^2))}{(N\ (N^2-1))}$	A Critical value of r (Appendix B)
Blind Vs Physically Disable	0.8285	0.8260
Blind Vs Deaf	0.3714	0.8260
Physically Disable Vs Deaf	0.7142	0.8260

From Table 4.8 above, it can be concluded that there is a strong correlation between the attitudes of physically disable and blind respondents. This means that the respondents on these groups have the same perception about the types ofproblems related to infrastructure. It can also be concluded that there is no correlation between the attitudes of blind and deaf and deaf and physically disable. This means that blind and deaf and deaf and physically disable have different perception about the types of problems related to infrastructure.

4.5.1.3 Problems related to Infrastructure from Field Survey

Lack of wheelchair ramps, intersections without curb ramps, poor street crossings and pedestrian signals, cracked and dangerous pavements (see Figure 4-3 and Figure 4-4) are some of the indication for poor implementation of urban road design in the city. Moreover, all of the interviewed officials agreed about the poor urban design, preparation and implementation in the city. These officials have agreed on the inaccessibility of the built environment due to the existence of inappropriate network of routes, lack comfortable parking spaces for disabled people, limited traffic signs and signals.Figure 4-3 and 4-4 below shows Cracked and unsafed pavement and Passengers that do not let to pass and Barriers (telephone poles, solid waste) respectively

Figure 4-3: Cracked and unsafedpavement

Source: Field Survey, 2016

Figure 4-4: Passengers that do not let to pass and Barriers (telephone poles, solid waste)

Source: Field Survey, 2016

According to the respondents challenges to their movements are: cracked and dangerous pavements, crossing roads, intersections without curb ramps, street crossings and pedestrian signals that are not audible to individual with visual disabilities, telephone poles, solid waste, street traders, and street children blocking sidewalks. In addition to that, at focus group discussions most of the participants complain about the existing environmental barriers, especially solid waste, liquid waste open ditch and open manhole have a huge contribution to their inaccessible movements.

4.5.2 Related to Provision of Transport Service

4.5.2.1 Problems related to the provision of transport services based on questionnaire survey

Table 4.9 below shows problems related to the provision of service of road infrastructure, zebra crossing, lack of provision of parking spaces and assistance providers abuse them due to their gender are the three most challenges for both types of disable peoples with a mean score of 4.25, 4.04and 3.90 respectively. Physically disabled and deaf people frequently cross roads at zebra crossings better than the blind one. This can be due to two reasons; the first one is related to difficulties to identify zebra crossing when want to cross. The second was the suitability of the road crossing by blind people and this is linked to other soft components of intersection facility like sound based traffic signals and pavement surface treatment. The surface treatment can be done in terms of texture and level difference provision.

Table 4.9 Problems related to the provision of transportation service

Related problems	Types of problems	Blind		Physically Disable		Deaf		Weighted average	
		MS	Rank	MS	Rank	MS	Rank	MS	Rank
2. Providing Service	Using Zebra crossings	1.75	18	4.05	6	4.45	1	4.25	1
	Asking others for help	4.78	1	3.51	13	2.96	13	3.23	15
	Cross any place in the street without help	1.60	20	2.51	19	2.60	17	2.55	19
	Lack of provision of parking space	4.19	10	4.40	1	3.69	5	4.04	2
	Inconveniently located parking spaces	3.92	14	4.11	4	3.00	12	3.55	11
	Illegitimate use of disabled parking space	3.78	16	4.22	2	3.48	7	3.85	4
	Lack of wheelchair ramps	3.68	17	4.20	3	3.24	11	3.72	5
	Assists providers can abuse them due to their gender	4.41	4	4.08	5	3.72	4	3.90	3
	Lack of cooperation from drivers and coordinators	3.87	15	3.45	14	3.81	3	3.63	7
	Short stop leading to passing one stop	4.34	6	3.85	9	3.60	6	3.72	6
	Lack of information on destination	4.48	3	3.77	11	3.33	10	3.55	10
	Mental spatial picture	4.19	11	3.22	17	3.96	2	3.59	8
	Asking others to tell us the stop	4.60	2	3.22	18	2.45	18	2.80	18
	Audible information	1.65	19	2.00	20	1.69	20	1.85	20
	Getting to bus station stop	4.34	7	3.85	10	2.36	19	3.10	16
	Getting on/off bus	4.39	5	4.00	7	2.90	14	3.45	12
	Changing modes of transport	4.09	12	3.88	8	2.78	15	3.33	14
	Getting from the bus stop / station	4.29	8	3.45	15	2.72	16	3.08	17
	Getting information about accessible transport	4.21	9	3.34	16	3.36	9	3.35	13
	Booking tickets	4.08	13	3.71	12	3.48	8	3.59	9

4.5.2.2 Tests for Agreements on Challenges of Transport System related to Provision of Service

Table 4.10 Summary of correlation test on the ranking provision of transport service

2. Respondents	Rho (ρ) = 1 -$\frac{(6\ (\Sigma di^2))}{(N\ (N^2-1))}$	A Critical value of r (Appendix B)
Blind Vs Physically Disable	0.0413	0.3805
Blind Vs Deaf	0.0842	0.3805
Physically Disable Vs Deaf	0.6015	0.3805

From Table 4.10 above there is no correlation between the attitudes of blind, physically disabled and deaf respondents. It shows that those disables faced for the different Provision of Service problem with different level of severity. But it does not mean that the above problems were not the issue of disability.

4.5.2.3 Problems related to Provision of Service from Field Survey

Figure 4.5 presents very good experience observed around 6 kilo, a road with comfortable crossing at median for wheelchair users as well as other physically disable. Such kind of modified right-of-way elements both at medians and curb ramp pedestrian edge needs to be provided especially at zebra crossings giving much emphasis at road intersections.

Figure 4-5: Comfortable crossing at median for wheelchair users as well as other physically disable
Source: Field Survey, 2016

Figure 4.6 taken at one of taxi and bus terminals around "Mexico" (a) and "Merkato" (b) respectively show there was no waiting seat or shade and it was a challenge for disabled people. Long queue waiting for taxi or bus observed in the terminal where physically disabled people facing multi-dimensional problem.

.

(a) **(b)**

Figure 4. 6: Inaccessible Public Transport Terminal around "Mexico" and "Merkato" bus station

Source: Field Survey, 2016

4.5.3 Related to Vehicle Design

4.5.3.1 Problems Related to Vehicle Design based on Questionnaire Survey

The existing situation of public transport vehicle design together with driver behavior in helping disable people while boarding considered under three categories of disabled people is presented in Table 4.11 below. The blind were facing serious problem in using public transport due to high entry steps, not available as they demand assistance from passengers, lack of seat and overcrowding were the three most challenges related to vehicle design(mean value 4.75,4.63 and 4.41).Physically disable responded that high entry steps were the first challenge related to vehicle design (mean value 4.51) while lack of specialized space and narrow seating space are the second and third vehicle design problem (mean value 4.48 and 4.45) respectively. On the other hand, deaf respondents better help themselves in entering and getting off from the vehicle,

but lack of seating, overcrowding and lack of specialized space were the serious problems to them (mean score of 3.96,3.63and 3.60) respectively.

Relatively, the deaf are not as such vulnerable in very narrow door opening and high entry steps not suitable, instead they feel on a lack of communication in public transport. These results show that the disability types need different vehicle design to get the service compatible to them, this idea also supported by (Otak Inc. 1997). The needs of pedestrians with disabilities can vary widely depending on the type of disability and level of impairment. This issue was also raised during focus group discussion with 9 disable women and participants identified entry steps with high risers particularly the first step from the ground –step heights in buses; narrow aisles and seat spacing, are major obstacles which can affect all users of public transport, even non-disabled passengers and all agreed on the need of strengthening the existing practice in giving priority, accessible vehicle design and public awareness towards disables. There was a clear indication of the need of improved vehicle design and awareness creation to ensure convenient public transport for disabled people. Table 4.11 below shows Problems related to Vehicle Design

Table 4.11 Problems related to Vehicle Design

Related problems	Types of problems	Blind		Physically Disable		Deaf	
		MS	Rank	MS	Rank	MS	Rank
3. Vehicle Design	Lack of seat	4.63	2	4.22	5	3.96	1
	Lack of specialized space	4.09	4	4.48	2	3.60	3
	Narrow seating space	4.00	7	4.45	3	3.60	4
	Overcrowding	4.41	3	4.42	4	3.63	2
	Slippery or not level floor	4.07	5	3.45	7	3.03	5
	High entry steps not suitable	4.75	1	4.51	1	2.72	6
	Very narrow door opening	4.04	6	4.08	6	2.69	7

4.5.3.2 Tests for Agreements on of Transport System related to Vehicle Design

Table 4.12 below shows summary of correlation test on challenges of transport system related to vehicle design

Table 4.12 Summary of correlation test on challenges of transport system related to vehicle design

3. Respondents	Rho (ρ) = 1 - $\frac{(6\ (\Sigma di^2))}{(N\ (N^2-1))}$	A Critical value of r (Appendix B)
Blind Vs Physically	0.3928	0.7143
Blind Vs Deaf	0.3214	0.7143
Physically Disable Vs Deaf	0.0714	0.7143

From Table 4.12 above there is no correlation between the attitudes of blind, physically disabled and deaf respondents. It shows that those disables faced for different vehicle design problems with different level of severity. But it does not mean that the above problems were not the issue for all types of disables.

- **Suitability of vehicle accommodations for PWDs**

Lesson learnt from some developing and developed countries on the need of vehicles steps and rumps, seat and support facility inside the public transport for disabled passengers becomes apparent to let them contribute in various national development efforts. The two pictures below were taken at “Merkato", Ambesa bus station" showing one disabled person was also blind came to take the bus. Difficulty in entering the public bus as observed in Figure 4.7 (a) byblind, disabled people is a multi-dimensional problem. In the area, the road surface was not convenient for wheelchair to travel on the pedestrian due to unfinished surface and continuous curb shown in figure 4.7 (b). The condition force disabled people to travel with an assistant for practical reason. Good experience observed in some part of the city need to be replicated at bus and taxi terminals besides zebra crossing at road intersections.

Good personal behavior and better cooperation from ticketer, bus driver observed, especially at bus terminals where people also gave them priority in the queue and let them take a seat. The problem is the absence of appropriate seat in our public vehicles.

Figure 4.7: Unsuitable vehicular design for wheelchair users

Source: Field Survey, 2016

A good experience in Addis Ababa city public transport regarding improved vehicle design shown in the case of "Sheger" bus is shown in as Figure 4.8 below. The ramp at the bus entrance gave comfort for disabled passenger using a wheelchair. In this particular case, the bus driver were helping for entrance and exit from the bus.

As it can be clearly seen from the lower part of the bus, the level is very close to the road surface and become more convenient for any disabled passenger. This vehicle also had a special space within the bus reserved for wheelchair. Moreover, there is audio visual information within the bus for blinds and written information for deaf. The presence of such kind of facility in any flow entity means a lot to encourage disabled person's mobility

Figure 4.8 Convenient vehicular design for disabled people using wheelchairs

Source: Field Survey, 2016

- **System Control**

System control consists of the means that permit the efficient and smooth operation of streams of vehicles and reduction of conflicts between vehicles. Therefore, this system includes signing, marking and signal system in the city. There is starting to use better technology to improve the accessibility of disabled. For instance, during site visit it has been observed a recently implemented audio signal of traffic light locations at Mexico intersection and the other at Legahar intersection. Such audio signals help a lot for blind passengers as explained by blind women over the coffee ceremony. But on the other side, most of the street was overcrowded due to a weak control system of the traffic, some of the traffic lights are not functional, some zebra crosses are not visible, poor information system for disables are some of the existing situation in the city.

4.6 Major Causes for Current Transport System Problems by People with Disability

In this section, response of officials and focus group discussion on causes of current transport system problems of people with disability was analyzed. Moreover, the researchers also triangulated by observation on the existing environments supported by figures from field survey.

Hence, this part of the analysis indicated that there are various causes of the current transportation system problem. From these design of flow entities, environmental barrier or

obstruction, urban design, law enforcement and public awareness are some of the causes. Therefore, each cause was ranked by officials as depicted in Table 4.13 below.

Table 4.13 causes of current transport system problems

No	Major causes of transport system problems	Mean scores	Rank
1	Design of Flow Entities	4.09	3
2	Infrastructure provision	4.25	1
3	Environmental Barriers	4.18	2
4	Public Awareness	3.65	5
5	Law Enforcement	3.88	4

4.6.1 Infrastructure provision

One of the principles of urban design is accessibility or the degree of ease with which people can access the full range of urban facility's spaces, shops, employment, leisure, social services and so on. Within this principle the built environment should be accessible for all people including disables. But according to data collected through questionnaires from official depicted in Table 4.13 above, infrastructure provision were the first causes of challenges for PWDs (mean score of 4.25).This was supported by physical observation during field survey. As presented in Figure 4.9 below, some of the streets were not paved, ditches are open, solid and liquid wastes are not properly disposed of, the manholes are uncovered. As the results of poor implementations of urban design, the disabled become poorly mobile or they prefer to stay at home. Moreover, they lack confidence, curbed from working and have limited social interaction and the majority of them are with low income. This indicates that the urban design of Addis Ababa is not comfortable for disables or it is totally inaccessible for all types of disables.

4.6.2 Environmental Barriers

As presented in Table 4.13 above, environmental barriers were the second most causes of transport system problems with a mean score of 4.18. The respondent officials agreed that barriers such as telephone poles, solid waste, street trader, and street children blocking sidewalks were the most types of barriers existing along the road. In addition as understood during the focus group discussion, most of the participants were complaining about the existing environmental barriers, especially solid, and liquid wastes open ditches manholes have a huge contribution to their movements. Therefore, the physical and infrastructural barriers to accessibility should be minimized as much as possible. Sidewalks, roads and road crossings should be free from barriers and minimize inaccessible or unsafe environment for disabled persons. This is supported by picture in Figure 4. 9 below.

Figure 4.9 Environmentalbarriers, especially solid waste, liquid waste, opened ditch and opened the manhole

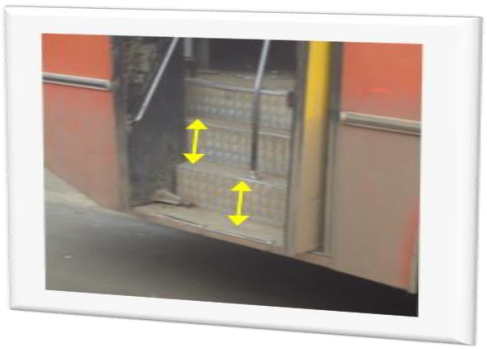
Source: Field Survey, 2016

The researcher clearly observed the pedestrian walkway is full of barriers because of street trades, solid waste, street children and open ditches. Therefore, the researcher confirmed that the physical barrier is one of the causes for inaccessibility of disables. In addition, it has its own contribution to the economic, social disadvantages of the disabled person by hinder in their nobilities.

4.6.3 Design of Flow Entities

As we learnt from the literature, the public transportation system should have an adaptive design to improve the movement of disabled peoples. From the designs; wheelchair accessibility of public transport, low floor public transport, flexible chair are some of the adaptive strategies. Moreover, wheelchair hoists, lifts or ramps may be customized according to the needs of the driver. As presented in Table 4.13 above, design of flow entities were the third causes of transport system problems with a mean score of 4.09. The officials agree that the design of the public transport available on the transport system is totally different from this adaptive technology of public transport design.

In addition to the above, the officials interviewed and at focus group discussion the participants agreed on non-suitability of the public transport due to the reasons like non comfortable public transport, entrance height, fixed vehicle seat which were designed out of over considerations of disables, inconvenient vehicle entrance handrails, overcrowded public transport of travelers and lack of comfort and flexible chair for disable. Moreover, the researchers also triangulated by observation on the public transports. Figure 4.10 below presents **(**a,b,c) Unsuitability of public transport, entrance, chair, step and height from the ground and (d) difficulties to enter.



The Stair Height

Height from the ground

(a) (b)

Fixed Chair

Entrance Difficulties

(c) **(d)**

Figure 4.10 (a,b,c) Unsuitability of public transport, entrance, chair, step and height from the ground and (d) difficulties to enter

Source: Field Survey, 2016

As presented in Figure 4.10(d),the entrance of public transport is inappropriate for disables because of narrow doors, Figure 4.10 **(**a, b, c) shows outsized height of floor from the ground, and there is no alternative stair or ramp for disables, especially for wheelchair users. In addition to that the chair is fixed on the floor so there is no opportunity to seat for wheelchair users.

Lastly the research findings clearly show the design of flow entities such as public buses, taxis are hindrance to the movement of disabled persons due to their inconvenient design. Therefore, it is called for providing accessible public transport for disables like “Sheger” bus.

4.6.4 Law enforcement

Even though; the policy, regulation and directives support the right for accessibility with relation to disables, it is however serious problem for the disabled due to poor implementation of policy. The detail is discussed under sub- section 4.7.

4.6.5 Public Awareness

Even though a considerable number of disabled people contributed to various social and economic developments in the country, most of the people have no awareness about the capability of disables. Lack of awareness starts by discouraging the disables by naming them" Handicapped". Besides that, the community is not committed to supporting the disables, lack of commitment to prioritize the issue of the disables, lack of drivers and tickets to support for disables. Therefore, they obliged to suffer from overcrowding of people in public transport; sometimes ,they are not punctual at work places due to lack of support for crossing, inconvenience at transport terminal and lack arrival for transport. As presented on Table: 4.14 below, the weighted average given by PWDs indicated that public awareness towards PWDs “disabled people are less capable than non-disabled people” were the most negative attitudes and ranked first (mean score of 4.27). In addition viewing disabled people as less productive than non-disabled and aggressive or hostile behaviors were the second and third negative attitude of PWDs (mean score of 4.06 and 4.02 respectively). The results indicated from the focus group discussion, there were limited cooperation of drivers and tickets for disabled. In addition to that, most of the females are losing support due to limited awareness of the public. Women respondents feel difficult to ask help from other people due to abuse of driver’s fear of assistants ’because of their gender. Moreover, the community is not ready to give support to PWDs before asked for support. Therefore, the results of the finding clearly show lack of awareness by the public is one of the problems.

Table: 4.14: Public awareness to help disabled from questionnaire survey

No	Attitudes of peoples towards PWDs	Blind		Physically Disable		Deaf		Weighted average	
		MS	Rank	MS	Rank	MS	Rank	MS	Rank
1	Disabled people are less capable than non-disabled people	4.63	1	4.22	3	3.96	1	4.27	1
2	Disabled people are less productive than non-disabled	4.09	2	4.48	1	3.60	2	4.06	2
3	Disable people have aggressive or hostile behavior	4.00	3	4.45	2	3.60	3	4.02	3

4.7. Implementation of Transport System Policy for Disabled People

4.7.1. UN Convention on the Rights of Persons with disabilities in comparison to the Addis Ababa transport policy

According to the Ethiopian constitution, Article 9 sub-article 4, all international agreements ratified by Ethiopia are an integral part of the law of the land. Therefore, because of the agreement of Ethiopia with UN Convention on the Rights of Persons with disabilities, the policy related to disables is taken as policy for Ethiopian disabled person.

Article 4 (1 c) states the protection and promotion of the human rights of persons with disabilities in all policies and programs.

The Addis Ababa Transport Policy was proclaimed in 2010 with a clear reference to the issue of disability, showing the effort currently made to consider disability in mainstream policies and strategies as required by 4 (1c) of the convention. Besides, the draft regulation on the use and operation of vehicle 2011 and the draft national transport policy accommodates disability interest (FDRE Ministry of Foreign Affairs, 2012).

According to the archival analysis of Addis Ababa transport policy developed in 2011 has merged policy as a social issue; moreover, it has no issue about mainstreaming policies. In

addition to use information collected from officials in transportation office, they fully agree on the lack of mainstreaming of disability is one of the main causes of limited implementation of inclusiveness of disables.

Article 9 – Accessibility

The issue of accessibility does not seem to have a long history in Ethiopia. For this reason, not many physical structures or informational services are disability friendly. Yet, the government of the Federal Democratic Republic of Ethiopia recognizes the importance of accessibility in the life of persons with disabilities. It is understood that independent living and full participation is hardly possible in the circumstance that environmental and informational barriers continue to challenge the lives of persons with disabilities (FDRE Ministry of Foreign Affairs, 2012).

The Addis Ababa transport policy states disables as a social issue with the following policy strategies:

- In order to minimize the risks of vulnerability in the vicinities of schools and health facilities, complement special traffic management system and install appropriate traffic signage indicating such institutions.
- In order to address the needs of the disabled; children, the elderly and women, road designs, vehicle's height and seats in public transport shall be considered. Mass-transport vehicles shall also address the special needs of these categories of the society.
- Ensure that the transport providers have created a conducive environment in transporting the elderly so that the elderly gets comfortable service.
- Provide separated parking facilities and clearly mark with the necessary signs to the disabled persons, so that they can be served conveniently on phase by phase basis.
- Ensure special support and care for vulnerable sections of the society in traffic management.

As policy strategy, it is a very good starting point for implementation of accessibility for disables. But on the ground, the reality is totally different; the infrastructure is not accessible there are a lot of improvements that can be done to accommodate their needs in the current

facilities for disables, the flow entity especially design of public transport is not accessible, and also poor system control. (See the detail in section4.4: Existing Transport System for Disables). Even though the policy strategies appreciate accessible transportation for disables, it lacks implementation of policy appropriately.

4.7.2 Factors Contributing to Poor Transport System Policy Implementation for Disables

According to the data collected from the officials through questionnaire and interview, there are various factors which contributed to poor implementation of the transport system policy of Addis Ababa; some of the results are depicted below in Table 4.15.

The Addis Ababa City Road and Transport Bureau and Addis Ababa City Transport Authority rank first the limitation on the availability of organized transport plan (mean score of 4.49).This issue is also a concern to the Addis Ababa City Roads Authority (mean score 4.45). In addition to the above interviews with transportation office officials, lack of main streaming of disability in transport, office grounds of limitation on the implementation of the policy because disability was not cross cutting issue. Moreover disables are not owner for planning and implementation of an accessible transport system and are neither considered as stakeholders. They have no room in transportation office either to plan, and implement the accessibility design in the city transport system.

Legal enforceability of the on-board policy and lack of poor capacity of organization /departments to implement were ranked as the second and third most factors for poor transport system policy implementation for disables (mean score of 4.44and 4.41) by the Addis Ababa City Roads and Transport Bureau and Addis Ababa City Transport Authority respectively. While the Addis Ababa City Road Authority agreed that the implementing ability of the transportation plan and coordination of the urban transport plan and land development plan were the second and the third factors for poor implementation of transport policy (mean score of 4.47 and 4.43) respectively. In principle for effective implementation of policy, the process of policy formulation should be participatory. According to the interview and focus grouped discussion with disabled, in Addis Ababa transport policy formulation the disables are not participating. Therefore, they have no information about the transport policy. Moreover the officials agreed on

the reasons for lack of participation, such that disables are less in numbers than others, participating disables is not found to be important, policy formulated is not specified for disables only (merged) are some of the reasons for limited participation. Therefore, a lack of information about the policy and limited belongings on the policy has its own contribution for limited implementation policy.

According to the interview with government Transport officials and experts at the Federation of disabled, there is an association who can support the disables according to their interest. For example, they provide wheelchairs and pointer by collaboration of various NGOS; but they had limited integration with other organizations. And also they have no integration with transport office to improve accessible transportation system for disables. The respondents also agreed on the lack of coordination of design of transport vehicles and re-habilitation of the city. So, there is a demand of accessible design of public transport like “sheger” bus, but the design of newly coming public transport is not accessible to the disabled. Therefore, the result concludes that lack of coordination between different offices and associations of disables contributed to poor implementation of transport policy.

Table: 4.15 Factors contributing to poor transport system policy implementation

No	Major Determinant	A.A. City Road and Transport Bureau		A.A City Transport Authority		A.A. City Road Authority		A.A. City Road and Transport Bureau vs A.A City Transport Authority	
		MS	Rank	MS	Rank	MS	Rank	MS	Rank
1	Limitation on the availability of organized transport plan	4.57	1	4.42	1	4.45	1	4.49	1
2	Implementing ability of the transportation plan	4.33	6	4.40	2	4.47	2	4.36	5
3	Legal enforceability of the on-board policy	4.52	2	4.36	3	4.25	5	4.44	2
4	Coordination of urban transport plan and land development plan	4.32	7	4.25	8	4.43	3	4.28	7
5	Lack of Poor Capacity of the organization /Departments to implement	4.50	3	4.33	4	4.25	6	4.41	3
6	Poor Coordination across the organization/Departments	4.42	4	4.32	5	4.25	7	4.37	4
7	Limitation to Build the capacity of concerned institutions	4.40	5	4.00	9	4.41	4	4.20	8
8	The design of transport vehicles and re-habilitation of the city may not integrate	4.31	8	4.29	6	4.25	8	4.30	6
9	Lack of trained manpower	4.00	9	4.27	7	4.00	9	4.13	9

4.7.2.2 Tests for Agreements on Factors Contributing to Poor Transport System Policy Implementation

From Table 4.16 below, there is a strong correlation between the respondents of Addis Ababa City, Addis Ababa City Roads and Transport Bureau and Addis Ababa City Transport Authority. This means that the respondents on these groups have the same perception about the factor for poor implementation of transport policy for disables. But the perception of the Addis Ababa City Roads Authority is different from the two bureaus. It can also be concluded that there is no correlation between the attitudes of the Addis Ababa City Roads and Transport Bureau and the Addis Ababa City Roads Authority, Addis Ababa City Transport Authority.

Table: 4.16 Tests for agreements on factors contributing to poor transport system policy implementation

Respondents	Rho (ρ) = 1 - $\frac{(6\ (\Sigma di^2))}{(N\ (N^2-1))}$	A Critical value of r (Appendix B)
A. A Road and Transport Bureau Vs A. A Transport Authority	0.6333	0.6000
A. A Road and Transport Bureau Vs A. A Road Authority	0.4500	0.6000
A.A Transport Authority Vs A. A City Road Authority	0.4166	0.6000

4.7.3 Measures taken to Minimize Problems related to Transport Policy for Disables

As presented in Table 4.17 below, different sector officials suggested various solutions. So according to them, revising the transport policy and strategy and participating disables on policy formulation was ranked first and second highest (mean score 4.30 and 4.17) respectively. Assure legal enforcement to be practical is the third important with mean score of 4.14,this shows that formulating different mechanisms to measure the policy implementation performance (for disables) is important. Therefore improvement of formulation and implementation of transport policy and incorporate issues of the disables in transportation policy and developing different mechanism to implementation of the policy are solutions suggested by the officials for better improvement.

Table 4.17solutions regarding transport policy relating problems

No.	Possible solution	A.A.City Road and Transport Bureau		A.A.City Transport Authority		A.A.City Road Authority		Weighted average	
		MS	Rank	MS	Rank	MS	Rank	MS	Rank
1	Revise the transport policy and strategy	4.31	1	4.27	1	4.33	1	4.30	1
2	Building the capacity of the institutions	3.88	6	3.97	5	3.85	5	3.90	5
3	Assure legal enforce to be practical	4.18	3	4.06	4	4.16	2	4.13	3
4	Conducted urban transport plan	4.03	4	4.15	3	4.05	4	4.07	4
5	Participating disables on policy formulation	4.22	2	4.21	2	4.10	3	4.17	2
6	Setting priorities for follow-up to assure on the policy implementation	4.00	5	3.74	6	3.63	6	3.79	6

4.7.3.1 Tests for Agreements on Measures taken to Minimize Problems related to Transport Policy for Disables

In a similar way the correlation test was done, whether there is an agreement or not on the attitudes of the respondents towards the rate of occurrences on measures taken to minimize problems related to Transport Policy for Disables. The Spearman correlation coefficient (ρ) calculated values are shown in Table 4.18 below.

Table: 4.18 Tests for Agreements on measures taken to minimize problems related to transport policy for disables

Respondents	**Rho (ρ) = 1 - $\frac{(6\ (\Sigma di^2))}{(N\ (N^2-1))}$**	**A Critical value of r (Appendix B)**
A. A. City Road and Transport Bureau Vs A. A Transport Authority	0.8857	0.8260
A. A. City Road and Transport Bureau Vs A. A. City Road Authority	0.8857	0.8260
A. A. City Transport Authority Vs A. A. City Road Authority	0.8285	0.8260

In this case, with a significance level of 95percent (P = 0.05), the calculated value of **ρ** (rho) for all the three group cases is greater than the critical values of **ρ**, so there is an agreement between the respondents. Thus, the responses of both groups of respondents were combined for the descriptive analysis. In this study, the responses of the officials were strongly correlated with one to the other. This means that the respondents on these groups have the same attitude regarding the solutions of transport policy related problems for disables and possible solution or measures taken with mean score value of 3.0, and above indicating that they have significant effects on minimizing problems related to transport policy for the disables.

CHAPTER FIVE

5. CONCLUSION AND RECOMMENDATION

5.1 Conclusions

In conclusion, the disables have right to get access to transport system. So all stakeholders in transport system are responsible to provide appropriate transport policy, strategies and regulations. Moreover, the disabled association should have contributed to the accessible transportation for disabled; but practically, it is different from the principle written in the document or international agreements ratified by Ethiopia. In this study the following major conclusion was drawn based on findings in line with each specific objective:

- The existing transportation system in Addis Ababa is not accessible for disables.
    - The most frequently used mode of transports are city buses and ranking first with a mean score of 4.3.The second and the third most frequently used mode of transports are mid bus and mini bus with a mean score of 3.95 and 3.39respectively.
    - Also from the aggregate result of physically disabled and deaf, the city bus, mid bus and mini bus are the three most frequently used mode of transport with a mean score of 4.03, 3.73 and 3.25 respectively.
- Major challenges of transport system for disables.
    - In relation to road infrastructure the most frequently occurring problem for,
        - Physically disabled and blind Prior challenges were cracked and dangerous pavements with a mean score of 4.34, the second difficulty in crossing roads with a mean score of4.23 and third most common problem were difficulty of intersections without curb ramps with a mean score of 4.21.
        - While for deaf difficult crossing roads, unsuitable street crossings and pedestrian signals and cracked and dangerous pavements were the three most challenges related to infrastructure provision with mean score of, 3.42, 3.40 and 3.38 respectively.

- Regarding transport service provision,

  - Zebra crossing related problem were Prior challenges with a mean score of 4.25 of physically disabled and deaf people.
  - Next to this, lack of provision of parking space identified with a mean score 4.04 as concerns of for physically disabled with personal vehicle.
  - The third problem was related to the bad attitude of service and support providers with a mean score of 3.90 in public transportation entities.

- Vehicle design related limitations,

  - Blind were facing serious problem in using public transport due to high entry steps, not available as they demand assistance from passengers, lack of seat and overcrowding were the three most challenges related to vehicle design with a mean score of 4.75,4.63 and 4.41) respectively.

  - For physically disable high entry steps were the first challenge related to vehicle design, while lack of specialized space and narrow seating space are the second and third vehicle design problem with mean value of 4.51,4.48 and 4.45 respectively.
  - On the other hand, lack of seating, overcrowding and lack of specialized space were the serious problems with mean value of 3.96, 3.63 and 3.60 respectively.

- Major Causes for Current Transport System Problem for disables

Depending on the response of officials and focus group discussion on causes of current transport system problems of people with disability there are five main causes for current transport system problems of disability and presented in order below.

- Infrastructure provision were the first causes of challenges for PWDs with mean score of 4.25,that shows there is poor Urban Design preparation and implementation in the city: there is very limited experience in raised pedestrian crossings, there is no accessible parking for disables, limited sign and signage, and there is no separation of lane for pedestrian.

- The Environmental barriers were the second most causes of transport system problems with a mean score of 4.18.Like solid and liquid waste on the pedestrian walkway, opened ditch and opened manhole, street children and street traders on the pedestrian walk way hindered the easy movement of disables.
- Design of flow entities were the third causes of transport system problems with a mean score of 4.09, poor design of flow entities or public transport such that entrance with inappropriate height from the ground, narrow opening of public transport, rigid seating area, and lack of ramp for wheelchair users are causes for in accessibility.
- Law enforcement and lack of public awareness are also identified ascauses for transportation system problem for disabled people with mean value of 3.88 and 3.65 respectively.

- According to the Ethiopian constitution, all international agreements ratified by Ethiopia are an integral part of the law of the land, but the agreements are not incorporated in transportation policy and none of them are implemented related to disables.

  - There is an agreement between Ethiopia and the UN convention on the Rights of Persons with disabilities.
  - Even though Ethiopia and the UN convention agreed to provide accessible transport system for disables, the transport policy of Addis Ababa is not incorporated into this agreement
  - The formulated transport policy related with disables is merged with other social issues or not, was emphasized; however it is not implemented properly.
  - The absence of mainstreaming of disables in transport organization, lack of integration of disabled association with transport offices and lack of participation in policy formulation was analyzed as the factors for the limited implementation of the transport policy related with disables.

5.2 Recommendations

Based on various related literature, and expert opinion; the following measures are recommended to bring inclusive transport system for disables.

- The need to revise the existing transport policy with participation by different stakeholders for ease of implementation.
    - Inclusion of international agreement related with disables
    - Active participation of disables in policy formulation and implementation process
    - Giving clear emphasis for disables separately instead of a subpart of social issues,
    - Consider disability as a cross cutting issue in all organizations related to transport services; and
    - Legal enforcement during design, construction, supervision and maintenance.

- The infrastructure should be accessible for disables**:** Sidewalks and paths should be properly paved, the lane should be separated; curb ramp should be designed for wheelchair users.
    - The street should have proper street furniture such a street chair, bus stops, street lights, greeneries for shelter and waiting areas.
- The vehicle design should be accessible for disables: the public transport should have ramps, lower floors, the opening should be wide, should have a flexible chair for easy movement of wheelchair users; more over public transport should give information to make the transport more accessible for blind and deaf.
    - Improved facilities at “Sheger” bus with a ramp for wheelchair users, audio information for blind, written information for the deaf should be strength and the other public transport provides should be share the experience from this bus company.
- The control system should be accessible to disabled: the crossings should be accessible by providing raised pedestrian crossings, zebra crossing; the traffic light should have sound

signal to make it more accessible for blinds; the parking should have reserved parking for disables and it should have signs of disabled either in symbol or written.

- Appropriate administration measures should be taken at municipality level
    - The city administration should emphasis on proper urban design and its implementation to provide free path, proper sidewalk, proper positioning of street furniture.
    - The municipality should give emphasis to minimize the physical barriers to make the transportation system more accessible.
    - The disabled association should work together with transportation officials to improve the accessibility of disables.

5.3 Proposed Future Research Areas

This study identifies areas requiring further studies; as planning transport system on accessibility of disables and transport policy is an essential study and even the country formulate transport policy; no detail implementation strategy is being conducted regarding to all disables types. Therefore, detail research is critical on solution of transport system problems for disables that incorporate all types of disables like those people who are deaf and blind.

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APENDIX

Annex 1: Central Statistics Agency (2007), Reports of Population and Housing Census of Ethiopia

Table 4.2 Disabled Persons by Type of Disability and Sex: 2007

Sex	Total Disabled Persons	Type of Disability											
		Blind	Difficulty Seeing	Deaf	Difficulty Hearing	Unable to Speak	Difficulty speaking	Deaf and unable to speak	Non-functional upper limbs, gripping, handling	Non-functional lower limbs, standing, walking	Body movement difficulty	Learning difficulty	Other
ADDIS ABABA CITY ADMINISTRATION													
Both Sexes	32,630	3,090	4,149	600	2,929	309	475	1,273	224	11,820	2,404	2,550	2,807
Male	17,931	1,732	1,844	283	1,272	183	270	679	114	7,227	1,322	1,520	1,485
Female	14,699	1,358	2,305	317	1,657	126	205	594	110	4,593	1,082	1,030	1,322
AKAKI KALITI SUB CITY													
Both Sexes	2,289	167	348	31	283	25	37	79	12	828	147	164	168
Male	1,263	91	142	15	132	14	17	36	5	531	93	93	94
Female	1,026	76	206	16	151	11	20	43	7	297	54	71	74
NEFAS SILK-LAFTO SUB CITY													
Both Sexes	3,511	293	438	56	319	33	54	132	31	1,310	244	220	381
Male	1,856	158	196	33	133	22	35	70	18	752	124	122	193
Female	1,655	135	242	23	186	11	19	62	13	558	120	98	188
KOLFE KERANIYO SUB CITY													
Both Sexes	4,628	344	551	85	351	45	67	220	38	1,832	367	320	408
Male	2,563	185	256	44	160	24	41	123	15	1,114	193	200	208
Female	2,065	159	295	41	191	21	26	97	23	718	174	120	200
GULELE SUB CITY													
Both Sexes	3,738	683	469	66	274	29	46	117	28	1,182	217	321	306
Male	2,061	370	222	25	120	19	26	66	11	707	123	217	155
Female	1,677	313	247	41	154	10	20	51	17	475	94	104	151
LIDETA SUB CITY													
Both Sexes	3,288	310	421	58	321	38	28	114	16	1,272	249	228	233
Male	1,868	179	182	24	121	28	15	66	8	839	135	135	136
Female	1,420	131	239	34	200	10	13	48	8	433	114	93	97
KIRKOS SUB CITY													
Both Sexes	2,525	179	287	43	193	20	51	96	19	979	213	223	222
Male	1,388	89	115	22	85	10	27	49	11	614	122	129	115
Female	1,137	90	172	21	108	10	24	47	8	365	91	94	107
ARADA SUB CITY													
Both Sexes	2,720	288	300	56	220	17	36	100	20	990	230	211	252
Male	1,517	167	136	32	99	8	26	49	11	601	127	124	137
Female	1,203	121	164	24	121	9	10	51	9	389	103	87	115

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Annex2: Questionnaire for Disables

The questionnaires are prepared as part of a study to obtain necessary data for the partial fulfillment of MSc thesis in Road and Transport Engineering at Addis Ababa University. The study is about the evaluation of the transport system for disables' versus policy implementation in Addis Ababa City. The general objective of the study is in order to minimize the risks and maximize benefits associated with the transport system and recommend a possible solution for the raised problems (Especially policy for disables). In order to attain the stated objectives, collecting relevant and genuine data is highly significant. So, dear respondents you are kindly requested to give the reliable and genuine information for the successful accomplishment of the research. Finally, I would like to assure you that all your responses will be kept confidential and used only for academic purpose.

Thank you in advance for your valuable cooperation!!

Part One: General Information

1.Sub city	tick (X or √)
Arada	
Kirkos	
Yeka	
Bole	
Gullele	
Nefas silk/Lafto	
Addis Ketema	
Akaki/Kaliti	
Kolfe/ Keranio	
Lideta	

2.Age	
Below 18 years old	
18-25 years old	
26-45years old	
46-60 years old	
Over 60 years old	
3, sex	
Male	
Female	

3.Employment Status	tick (X or √)
Employed	
Unemployed	
Retired	
Student	
Unpaid family worker	
Living with aid of relatives	
Getting aid from NGOs	
Getting aid from government	

Other, please specify_____

4. Educational level	tick (X or √)
Illiterate	
Read and Write	
1-6	
9-10	
10+1	
10+2	
Certificate	
Diploma	
Degree	
M.A /MSC	

Other, please specify_____

Please indicate the nature of your disability (tick in the table below)

5. Nature of Disability	tick (X or √)
Mobility (physical disability)	
Blind/partially sighted	
Deaf/hearing loss	

Other, please specify_____

Part Two: - What are Common modes of transport that People with disabilities frequently use? Below are the common modes of transport observed, Please respond to each item by encircling the number on the scale.

No.	Mode of transport	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	City bus	1	2	3	4	5
2	Minibus	1	2	3	4	5
3	Lada taxi	1	2	3	4	5
4	Mid bus	1	2	3	4	5
5	Own car	1	2	3	4	5
6	Travel on foot frequently	1	2	3	4	5

Other, please specify_____

Part Three: - What are the existing challenges of transport system for disables in the city?Below are some of the problems related to: Infrastructure provision, provision of transport Service and Vehicle design, Please respond to each item by encircling the number on the scale

I. Infrastructure provision related problems

No.	Types of problems	Strongly disagree	Disagre	Neutral	Agree	Strongly agree
1	Cracked, and dangerous pavements	1	2	3	4	5
2	Difficult in crossing roads	1	2	3	4	5
3	Intersections without curb ramps	1	2	3	4	5
4	Unsuitable street crossing and pedestrian	1	2	3	4	5
5	Barriers such as telephone poles, solid waste	1	2	3	4	5
6	Passengers that do not let to pass	1	2	3	4	5

Other, please specify_____

II. Challenges of Transport System related to Provision of Service

No.	Types of problems	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	Using Zebra crossings	1	2	3	4	5
2	Asking others for help	1	2	3	4	5
3	Cross any place in the street without any help	1	2	3	4	5
4	Lack of provision of parking space	1	2	3	4	5
5	Inconveniently located parking spaces	1	2	3	4	5
6	Illegitimate use of disabled parking space	1	2	3	4	5
7	Lack of wheelchair ramps	1	2	3	4	5
8	Assistant providers can abuse them due to their	1	2	3	4	5
9	Lack of cooperation from drivers and coordinators	1	2	3	4	5
10	Short stop leading to passing one stop	1	2	3	4	5
11	Lack of information on destination	1	2	3	4	5
12	Mental spatial picture	1	2	3	4	5
13	Asking others to tell us the stop	1	2	3	4	5
14	Audible information	1	2	3	4	5
15	Getting to bus station stop	1	2	3	4	5
16	Getting on/off bus	1	2	3	4	5
17	Changing modes of transport	1	2	3	4	5
18	Getting from the bus stop / station	1	2	3	4	5
19	Getting information about accessible transport	1	2	3	4	5
20	Booking tickets	1	2	3	4	5

Other, please specify_____

III. Vehicle design related problems

No.	Types of problems	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	Lack of seat	1	2	3	4	5
2	Lack of specialized space	1	2	3	4	5
3	Narrow seating space	1	2	3	4	5
4	Overcrowding	1	2	3	4	5
5	Slippery or not level floor	1	2	3	4	5
6	High entry steps not suitable	1	2	3	4	5
7	Very narrow door opening	1	2	3	4	5

Other, please specify_____

Part Four: - Gender problems and Attitude towards to disables . Below are some of the problems related Gender and negative Attitude to disables: Please respond to each item by encircling the number in the scale.

I. What are the reasons for women face different problems compared to men? (With respect to transport issue)

No.	Reasons	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	They find difficult to ask for help	1	2	3	4	5
2	Assistant providers can abuse them due to their gender	1	2	3	4	5
3	Lack of cooperation from drivers and coordinators of	1	2	3	4	5

Other please specify_____

II. What are the negative attitudes towards disabled people? (With respect to transport issue)

No.	Negative attitudes	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	Disabled people are less capable than non-disabled	1	2	3	4	5
2	Disabled people as less productive than non-	1	2	3	4	5
3	Aggressive or hostile behavior	1	2	3	4	5

Other, please specify_____

Part Five: Open Questions

1. What are the problems of disableperson's face in terms of mobility and transport accessibility in Addis Ababa?

……
……
……

2. Do you think disable group satisfied with transport facilities in Addis Ababa? Yes/ No

If your answer is no, please write your reasons or problems on the space given below.

……
……
……

3. What do you think the solutions or measures have to be taken to improve the problems?

……
……
……

4 General comments about any other issues in relation to transportation for disable group in the city of Addis Ababa?

……
……

Thank you for your cooperation!

Annex 3: Questionnaire for Disables (Amharic)

አዲስአበባዩኒቨርሲቲ

የአዲስአበባትራንስፖርትአገልግሎትለአካልጉዳተኞችበአዲስአበባየትራንስፖርትፖሊሲማእቀፍለመገምገምየሚደረግጥናታዊፅሁፍመጠይቅ

ይህመጠይቅየተዘጋጀውበአዲስአበባዩኒቨርሲቲለማስተርስድግሪማሟያመመረቂያጥናታዊፅሁፍሲሆንየጥናቱትኩረትምየአዲስአበባትራንስፖርትአገልግሎትለአካልጉዳተኞችበአዲስአበባየትራንስፖርትፖሊሲማእቀፍለመገምገምሲሆንበተለይምየአካልጉዳተኞችንከትራንስፖርትፖሊሲጋርተያያዝችግሮችንአደጋዎችንበመቀነስተጠቃሚነታቸውንለማጎልበትሲሆንበፖሊሲውላይየተጠቀሱትንዓላማዎችለመጎናጸፍአግባብነትናትክክለኛመረጃመሰብሰብአስፈላጊሆኖበመገኘቱነው፡፡

ስለዚህውድየመጠይቁመላሾችይህጥናታዊፅሁፍውጤታማይሆንዘንድእርስዎትክክለኛናተገቢየሆነመረጃይሰጡንዘንድበአክብሮ ትእጠይቃለሁ፡፡በመጨረሻምየሚሠጡኝንማንኛውንምመረጃበተመለከተለዚህጥናትናምርምርብቻአገልግሎትየምጠቀምሲሆን ሚስጥርነቱምየተጠበቀስለመሆኑከወዲህላረጋግጥልዎእወዳለሁ፡፡

በቅድሚያአመሰግናለሁ !!

ክፍልአንድ-ግላዊመረጃ

1. ክፍለከተማ	(×/ ✓) ምልክትይጠቀሙ
አራዳ	
ቂርቆስ	
የካ	
ቦሌ	
ጉለሌ	
ንፋስስልክላፍቶ	
አዲስከተማ	
አቃቂቃሊቲ	
ኮልፌቀራንዮ	
ልደታ	

2. ዕድሜ	(×/✓)ምልክትይጠቀሙ
ከ 18 በታች	
ከ18-25	
ከ26-45	
ከ46-60	
ከ 60 በላይ	
3. ጻታ	(×/✓)ምልክትይጠቀሙ
ወንድ	
ሴት	

4.የስራ ሁኔታ	(×/ ✓)ምልክትይጠቀሙ
ተቀጣሪ	
ሥራአጥ	
ጡረታ	
ተማሪ	
የቤተሰብስራተኛየማይከፈል	
ከዘመድጋርበድጋፍየሚኖር	
ከመ.ያ.ድ. ድጋፍየሚያገኝ	
ከመ.ድ. ድጋፍየሚያገኝ	
ሌላካለይጠቀስ	

5የትምህርትደረጃ	(×/✓)ምልክትይጠቀሙ
ማንበብመፃፍየማይችል /ትችል	
ማንበብመፃፍየሚችል/ምትችል	
1-6	
9-10	
10 + 1	
10 + 2	
ሰርተፍኬት	
ዲፕሎማ	
ድግሪ	
ማስተር	
ሌላካለይጠቀስ	

እባክዎንየአካልጉዳተኝነትአይነቱንይጥቀሱ

6.የአካልጉዳተኝነትአይነት	(×/✓)ምልክትይጠቀሙ
የእንቅስቃሴ(አካላዊጉዳት)	
ማየትየተሳነው/በከፊል	
መስማትየተሳነው	
ሌላካለ	

ክፍልሁለት፡-አካልጉዳተኞችበተደጋጋሚየሚጠቀሙትየትራንስፖርትአይነትምንድንነው?
እባክዎንከዚህበታችለሚገኙለእያንዳንዱጥያቄዎችቁጥሩንበማክበብመልስዎንይስጡ

የትራንስፖርቱዓይነት	በከፍተኛአልስማማም	አልስማማም	መሃከለኛ	እስማማለሁ	በከፍተኛእስማማለሁ
የከተማአዉቶብስ/አንበሳ	1	2	3	4	5
አነስተኛአዉቶብስ/ሐይገር	1	2	3	4	5
ላዳታክሲ	1	2	3	4	5
መለስተኛአዉቶብስ/ቅጥቅጥ	1	2	3	4	5
የግልዎትመኪና	1	2	3	4	5
በተደጋጋሚበእግር	1	2	3	4	5

ክፍልሶስት፡-

<u>የአዲስአበባከተማበ</u>አካልጉዳተኞችላይያሉትነባራዊየትራንስፖርትችግሮችምንድንናቸዉ::ከታችየመሰረተልማትችርጋታዎች፣የትራንስፖርትአገልግሎትአሰጣጥ፣እናየተሸከርካራዎችድዛይንበተመለከተየተዘረዘሩትንበማየትመልስዎንበማክበብያስቀምጡ::

***ሀ*) ከመሰረተልማትጋርበተያያዘያሉችግሮች**

ምክንያት	በከፍተኛ አልስማማም	አልስማማም	መሃከለኛ	እስማማለሁ	በከፍተኛ እስማማለሁ
የተቆራረጠናምቹያልሆነአስፋልት	1	2	3	4	5
መንገድለማቋረጥምቹአለመሆን	1	2	3	4	5
መስቀለኛመንገድላይመኖርየሚገባቸዉአስፈላጊነገሮችአለመሟላት	1	2	3	4	5
መንገድለሚያቋርጡማየትለተሳናቸዉየትራፊክምልክቶችበድምፅአለመገለፅ	1	2	3	4	5
በእግረኛመንገድላይየተተከሉየስልክእንጨቶችአንቅፋትመሆን	1	2	3	4	5
የእግረኞችመንገድመዝጋት	1	2	3	4	5
ሌላካለ					

ለ) ከትራንፖርትአገልግሎትአሰጣጥጋርበተያያዘያሉችግሮች

	መንገዶችንየመሻገሪያስልቶች	በከፍተኛ አልስማማም	አልስማም	መካከለኛ	እስማማለሁ	በከፍተኛ እስማማለሁ
1	የመንገደኛማቋረጫመስመር/ዜብራ/በመጠቀም	1	2	3	4	5
2	በመንገድላይየማገኛቸውንሰዎችድጋፍበመጠየቅ	1	2	3	4	5
3	በማንኛውምቦታላይያለምንምድጋፍጥየቃማቋረጥ	1	2	3	4	5
4	ለአካልጉዳተኞችመኪኖችየሚሆንየማቆሚያቦታዎችአቅርቦትእጥረት	1	2	3	4	5
5	ምቹያልሆኑየፓርኪንግስፍራዎች	1	2	3	4	5
6	የማይፈለጉቦታዎችንለአካልጉዳተኞችየፓርኪንግቦታ መስጠት	1	2	3	4	5
7	የዊልቼርመጓጓዣ/ራምፕ/አለመኖር	1	2	3	4	5
8	ሌሎችሰዎችንድጋፍለመጠየቅስለሚከብዳቸው/ስለሚፈሩ	1	2	3	4	5
9	ከጾታአንጻርድጋፍሰጪያቸውትንኮሳስለሚያደርስባቸው	1	2	3	4	5
10	ለአውቶብስማቆሚያውቅርበትስላለው	1	2	3	4	5
11	ከመጨናነቁየተነሳየመውረጃቦታመረጃእጥረት	1	2	3	4	5
12	በአይነህሊናዬበመሳል	1	2	3	4	5
13	ሌሎችንየትጋርእንደቆመአንዲነግሩኝበማድረግ	1	2	3	4	5
14	በመቅረጸድምጽመረጃ	1	2	3	4	5
15	አውቶብስፌርማታድርስመድረስ	1	2	3	4	5
16	ወደአውቶብስመውጣት/መውረድ	1	2	3	4	5
17	የትራንስፖርትዓይነትለውጥማድረግ	1	2	3	4	5
18	ፌራማታማጣት/አለማግኘት	1	2	3	4	5
19	የትኛውየትራንስፖርትአይነትመኖሩን/መገኘቱንአለማወቅ	1	2	3	4	5
20	ትኬትመቁረጥ	1	2	3	4	5

ሐ) ከተሽከርካሪዎችዲዛይንጋርበተያያዘያሉችግሮች

የችግሮችአይነት	በደንብአልስማማም	አልስማማም	መሃከለኛ	እስማማለሁ	በደንብእስማማለሁ
የመቀመጫወንበርዕጥረት	1	2	3	4	5
ለየትያለየመቆሚያቦታዕጥረት	1	2	3	4	5
ጠባብመግቢያናመቀመጫቦታዎች	1	2	3	4	5
ከመጠንበላይመጨናነቅ/መሙላት	1	2	3	4	5
ወለሉምቹያልሆነናአዳላጭመሆን	1	2	3	4	5
ምንምችግርየለም	1	2	3	4	5
ረጃጅምመወጣጫ/ደረጃ	1	2	3	4	5
የመግቢያበሮችጥበት	1	2	3	4	5
ሌላካለይግለጹልኝ					

ክፍልአራት፡-

ለሴትአካልጉዳተኞችያለየጸታዊአመለካከትችግር፡፡ከታችከሴትአካልጉዳተኞችጋርበተያያዘየጸታዊአመለካከትችግርበትራንስፖር ትአጠቃቀምላይተዘርዝሯል፡፡እበከዎየተዘረዘሩትንበማየትመልስዎንበማከበብያስቀምጡ፡፡

ሀ)ከወንዶችበተለየከሴትአካልጉዳተኞችንለምንተጨማሪችግሮችይገጥሟቸዋል?

ሌሎችሰዎችንድጋፍለመጠየቅስለሚከብዳቸዉ/ ስለሚፈሩ	በደንብአልስማማም	አልስማማም	መሃከለኛ	እስማማለሁ	በደንብእስማማለሁ
ከጸታአንጻርድጋፍሰጭዎችትንኮሳስለሚያደርሱባቸዉ	1	2	3	4	5
የሹፌሮችናትኬትቆራጮች/ ረዳቶችቀናትብብርአለመኖር	1	2	3	4	5
ሌላካለይግለጹልኝ					

ለ)ከአካልጉዳተኞችጋርበተያያዘትራንስፖርትንአስመልክቶያለየአመለካከትችግር

ተገቢያልሆኑ/አሉታዊአመለካከቶች	በደንብአልስማማም	አልስማማም	መሃከለኛ	እስማማለሁ	በደንብእስማማለሁ
አካልጉዳተኛሰዎችአካልጉዳተኛካልሆኑትያነሰብቃትአላቸዉየማለት	1	2	3	4	5
አካልጉዳተኛሰዎችአካልጉዳተኛካልሆኑትጋርሲነጻጸሩምርታማ/ ፍሬያማአይደሉምየማለት	1	2	3	4	5
አካልጉዳተኞችቁጡናትእግስትየላቸዉምብሎማሰብ	1	2	3	4	5
ሌላካለይግለጹልኝ					

ክፍልአምስት -ማብራሪያየሚሹተጨማሪጥያቄዎች

1. በአዲስአበባከተማከትራንስፖርትአቅርቦትናእንቅስቃሴአንጻርአካልጉዳተኞችንየሚገጥሟቸውችግሮችምንድንናቸው?
   _____
   _____
   _____::

2. በአዲስአበባከተማየሚሠጠውየትራንስፖርትአገልግሎትአካልጉዳተኞችንአስደስቷል/አርክቷልብለውያስባሉ?
   ሀ) አዎአስባለሁ ለ) አላስብም

ለጥያቄቁጥር 2
መልስዎአላስብምከሆነምክንያትዎትንያብራሩልን_____
_____
_____::

3. በጥያቄቁጥር 1
የሚዘረዝሩትንችግሮችለማስወገድሊወሰዱየሚገቡእርምጃዎንበተመለከተምንዓይነትየመፍትሔሃሳቦችንያቀርባሉ?_____
_____
_____
_____::

4. በአጠቃላይበአዲስአበባከተማትራንስፖርትናበአካልጉዳተኞችዙሪያአስመልክቶያለዎትንአስተያየትቢሰጡኝ?
   _____
   _____
   __::

ስለትብብርዎበድጋሚአመሰግናለሁ!!!

Annex 4: Questionnaire for Transport Officials

Dear respondents, this study areabout the evaluation of the transport system for disables' versus policy implementation in Addis Ababa City. The general objective of this study is in order to minimize the risks and maximize benefits associated with the transport system and recommend a possible solution for the raised problems (Especially policy for disables). In order to attain the stated objectives, collecting relevant and genuine data is highly significant. So, dearrespondents you are kindly requested to give the reliable and genuine information for the successful accomplishment of the research. Finally, I would like to assure you that all your responses will be kept confidential and used only for academic purpose.

Thank you in advance for your valuable cooperation!!

Part One: General Information

Location where the respondents were conducted _____

Date and time _____

Name (optional) _____ organization _____

Educational level_____

Duty (occupation) _____ Age _____

Sex: Female_____ Male_____

Part Two: Major causes for current transport system problems related to people with disability. What are the major causesof current transport system problems? Below are some major causes which results Transport systemproblem related to: Infrastructure provision, Environmental Barriers, Design of Flow Entities, Law Enforcement and Public Awareness, please respond and Rank on a scale of 1-5 for each item by encircling the number on the scale.

No	**Major causes of transport system problems**	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	Design of Flow Entities	1	2	3	4	5
2	Infrastructure provision	1	2	3	4	5
3	Environmental Barriers	1	2	3	4	5
4	Public Awareness	1	2	3	4	5
5	Law Enforcement	1	2	3	4	5

Other, please specify_____

Part Three: Factors Contributing to Poor Transport System Policy Implementation for Disables. What are the major determinants for Poor Transport System Policy Implementation for Disables? Below are some major determinant for Poor Transport System Policy Implementation for disables please respond and Rank on a scale of 1-5 for each item by encircling the number on the scale

No.	Major Determinant	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	Limitation on the availability of organized	1	2	3	4	5
2	Implementing ability of the transportation plan	1	2	3	4	5
3	Legal enforceability of the on board policy	1	2	3	4	5
4	Coordination of urban transport plan and land	1	2	3	4	5
5	Lack of Poor Capacity of the organization	1	2	3	4	5
6	Poor Coordination across the	1	2	3	4	5
7	Limitation to Build the capacity of concerned	1	2	3	4	5
8	The design of transport vehicles and re-	1	2	3	4	5
9	Lack of trained manpower	1	2	3	4	5

Other, please specify_____

Part Four: Measures taken to Minimize Problems related to Transport Policy for Disables

What solutions regarding transport policy relating problems taken to minimize problems related to transport policy for disables? Below are some measures taken to minimize problems related to transport policy for disables, please respond and rank on a scale of 1-5 for each item by encircling the number on the scale?

No.	Possible solution	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	Revise the transport policy and strategy transport	1	2	3	4	5
2	Building the capacity of the institutions	1	2	3	4	5
3	Assure legally enforce to be practical	1	2	3	4	5
4	Conducted urban transport plan	1	2	3	4	5
5	Participating disables on policy formulation	1	2	3	4	5
6	Setting priorities for follow-up to assure on the	1	2	3	4	5

Other, please specify_____

Part Five: Open Questions

1. Is the disable group of the society involved in the preparation of the transport policy as an integral part of the planning and implementation activities? Yes/No

a) If your answer "Yes", how?

_____
_____
_____

b) If "No", write the reasons?

_____
_____
_____

1. Is there an established controlling and monitoring mechanism for measuring the implementation performance of transport policy? (Especially policy for disables)

a) If your answer "Yes", what are the mechanisms used for measuring the implementation, performance? (Especially transport policy for disables)

_____
_____
_____

a) If "No" why?

_____
_____
_____

2. Transport providers have created a conducive environment in transporting so that the disable gets comfortable service, but do you think that disable gets comfortable service in the Addis Ababa City?

If "No", why (what are the reasons)?

_____
_____
_____

3. Is there any plan relating the transport policy and strategy implementation (Especially for disables)?

If "No", why (what are the reasons)?

_____
_____
_____

4. In general what are the issues considered in the future of Addis Ababa Transport policy and strategies for social issues implementation in the city? (Especially for disables)_____
_____

Thank you for your cooperation!!

Annex 5: Interview Guide for Transport Officials

Dear interviewee, thisstudy isabout Evaluation of the transport system for Disables' versus policy implementation in the Addis Ababa city**.** The general objective of this study is toassesstransport policy and strategies of Addis Ababa in order to minimize the risks and maximize benefits associated with transport policy. In order to attain the stated objectives, collecting relevant and genuine data is highly significant. So, dearrespondents you are kindly requested give the reliable and genuine information for the successful accomplishment of the research. Finally, I would like to assure you that all your responses will be kept confidential and used only for academic purpose.

Thank you in advance for your valuable cooperation!!

Name of Interviewer**:** _____

Location where the interview was conducted _____

Date and time of the interview _____

I. Respondents particulars

Name (optional) _____ organization _____ Educational level_____

Duty (occupation) _____ Age _____ Sex: Female_____ Male_____

II. General Questionnaires

1. Whataretheidentifiedneedsandobjectivesestablishedfor implementing transport policy and strategy inthecity?

2. Do you think that the transport infrastructure and service shall address basic social issues and ensure accessibility to disable group?

   a) If your answer is yes, how can you apply and evaluate?

   b) If your answer is no, what are the reasons?

   c) What can you suggest for the solution or methods?

III. Transport Policy implementation

1. In order to address the needs of the disabled, what can you say about road designs? Is that comfortable?
    a) If no, why (what are the reasons)?
    b) What do you think of the solution in the future?
2. What are the major problems on the part of the Addis Ababa Roads and Transport bureau in relation to access and mobility issues to disable group of the societyin the existing as well as under construction road networks?
3. Is there any difficulty in the implementation of the Transport Policy that focuses on social issues in Addis Ababa City? a) Yes b) No
    a) If yes, what are the reasons (problems)?
    b) What are the solution and methods to implement?
4. What are the possible alternatives to make disable group of the society get benefit from the transport policy?
5. In general can you give any idea on transport policy that focused on social issues, implementation in the City, especially the disable group?

Thank you for your cooperation!!

Annex 6: Questions for focus group discussion

The main questions addressed in a focus group were:

1. What are the most commonly used and reasons transport mode
2. What are the most commonproblems faced using different modes of transport
   - While getting into a particular mode,
   - High entry steps
   - Door openings
   - Getting a seat, and alighting
   - Entering and leaving different transport mode
3. What are the most commonproblems faced when travel on foot in Addis Ababa City?
   - Environmental barriers such as telephone poles blocking sidewalks
   - Road pavement and Zebra Crossing
   - Street crossings and pedestrian signals
4. What are the problems faced when using public transport in Addis Ababa City?

   Related to:-
   - Difficult to ask for help
   - Due to their gender
   - Cooperation from drivers and conductors
5. In general what are the improvements expectfrom the followingissues in the context of Addis Ababa City?
   - roads infrastructure,
   - Vehicle design and
   - Service providers

Annex 7: Focus Group Discussion Participants (ENAWD)

No.	Name	Nature of Disability	Sex	Remark
1	KidestG/Meskel	Mobility (physical disability)	Female	
2	SelamawitKindu	Deaf/hearing loss	Female	
3	MeseretLegesse	Mobility (physical disability)	Female	
4	ZerfeKinde	Mobility (physical disability)	Female	
5	LewegneshLegese	Blind /loss of sight	Female	
6	BanchayhuAnley	Deaf/hearing loss	Female	
7	Elsa Berhanu	Deaf/hearing loss	Female	
8	Medina Yasin	Deaf/hearing loss	Female	
9	NegstMebratu	Deaf/hearing loss	Female	
10	AsegedechBekele	Intimidator (translator)	Female	

Annex 8: Spearman's rank table

Sample size (n)	p = 0.05	p = 0.025	p = 0.01
4	1.0000	-	-
5	0.9000	1.0000	1.0000
6	0.2860	0.8857	0.9429
7	0.7143	0.7857	0.8929
8	0.6429	0.7381	0.8333
9	0.6000	0.7000	0.7833
10	0.5636	0.6485	0.7455
11	0.5364	0.6182	0.7091
12	0.5035	0.5874	0.6783
13	0.4825	0.5604	0.6484
14	0.4637	0.5385	0.6264
15	0.4464	0.5214	0.6036
16	0.4294	0.5029	0.5824
17	0.4142	0.4877	0.5662
18	0.4014	0.4716	0.5501
19	0.3912	0.4596	0.5351
20	0.3805	0.4466	0.5218
21	0.3701	0.4364	0.5091
22	0.3608	0.4252	0.4975
23	0.3528	0.4160	0.4862
24	0.3443	0.4070	0.4757
25	0.3369	0.3977	0.4662
26	0.3306	0.3901	0.4571
27	0.3242	0.3828	0.4487
28	0.3180	0.3755	0.4401
29	0.3118	0.3685	0.4325
30	0.3063	0.3624	0.4251
40	0.2640	0.3128	0.3681
50	0.2353	0.2791	0.3293
60	0.2144	0.2545	0.3005
70	0.1982	0.2354	0.2782
80	0.1852	0.2201	0.2602
90	0.1745	0.2074	0.2453
100	0.1654	0.1967	0.2327