

REMOVING BARRIERS TO FOSTER DISABILITY-INCLUSIVE URBAN
TRANSPORT SYSTEMS (POLICIES AND REGULATIONS) IN ACCRA
AND NAIROBI (SITUATE-2)



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Main authors

Prof Enoch F. Sam (PI)	University of Education, Winneba, Ghana
Dr Elizabeth K. Wamuchiru	University of Nairobi, Kenya
Dr Prince K. Odame	University of Education, Winneba
Prof Samuel K. Hayford	University of Education, Winneba, Ghana
Prof (Mrs) Esther Yeboah Danso-Wiredu	University of Education, Winneba
Dr Adams Osman	University of Education, Winneba, Ghana
Dr Michael Munene	University of Nairobi, Kenya

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Executive Summary

Introduction

Africans account for over 80% of the world's 1.3 billion people with disabilities. Despite the large number of persons with disabilities (PWDs), most cities on the continent are extremely disability-unfriendly, limiting access to and enjoyment of critical services. The unfriendly urban settings can be ascribed to inappropriate physical architecture, orientation, morphology, and transit networks. The SITUATE-1 project was carried out to understand better the barriers people with disabilities face when navigating the urban landscape in Accra, Ghana, and Nairobi, Kenya. SITUATE-1 findings revealed that different types of PWDs in Accra and Nairobi have distinct mobility needs, which are critical for an inclusive urban transport agenda frequently overlooked by policymakers and urban planners in transportation and urban design. The weakness in the urban transport system was evident in the lack of assistive devices, high-floor public transport vehicles without ramps, poorly maintained or non-available sidewalks and bus stops, inadequate space for wheelchairs/crutches, and other disability-mobility devices. Also, PWDs experienced widespread discrimination from bus drivers, conductors, and other passengers, absence of dedicated seat(s) (even though prescribed in the law) and careless/reckless behaviour of motorists in traffic. Ghana and Kenya have adequate policies for the protection of PWDs, yet government institutions are poorly resourced to promote issues relating to the protection of PWDs.

SITUATE-2, guided by the findings of SITUATE-1, aimed to address some of the difficulties faced by PWDs in Accra and Nairobi. SITUATE-2 sought to identify the daily issues that mobility-related institutions face to promote socially inclusive urban transport. Also, it aimed to evaluate innovations (provision of boarding pads/steps, priority seats, push bells, etc.) on buses and transit terminals to improve access. The significance of SITUATE-2 was to move from problem cataloguing research to experimentation and implementation to enhance inclusive urban transport and mobility.

Methodology

The project adopted an action research approach to achieve its objectives. This involved pre-implementation, implementation and post-implementation stages. The pre-implementation stage involved stakeholder engagements with organisations for PWDs, government organisations and bus operators to identify a set of interventions needed to improve access. The stakeholder engagement produced about four primary interventions, which can be divided into 19 sub-interventions. Provision of navigation aids (provision of white canes), education and

sensitisation (embark on white cane day celebration at transport terminals, train drivers and conductors to improve attitudes towards PWDs, train drivers on parking arrangements at terminals, introduction of signage for car, MOU between PWDs and transport operators to adhere to disability laws, educating petty traders not to sell on walkways, education of legislators and city authorities, general public education on radio, video documentary), promotion of PWD friendly physical structures/facilities (covering of open drains, clearing of walkways, installation and repairs of traffic lights, repainting of pedestrian walkways, crossings and parking lots, provisions of ramps) and promotion of disability friendly car features (provision of priority seats, installation of push bells in buses, installation of hydraulic features in buses, provision of landing pads at transport terminals and advocate for the introduction of mass transport buses). These interventions and sub-interventions were further classified according to their practicality and financial resources for implementation. Each city chose actions that could be implemented within the project's timeframe and budget. As a result, Accra sought to implement white canes, educate and sensitise bus operators and conductors, and provide push bells, landing pads, and signage. Nairobi chose education and sensitisation, traffic light installation and repair, pedestrian walkway repainting, crossings, and parking lots. Nairobi planned to supplement its activities with piloting experiences for people with disabilities on Roam Electric Bus Company (Disability -friendly buses) to see how the features of push bells, hydraulics, and signage increase accessibility.

After the pre-intervention stage, the project moved to the implementation stage with stakeholders. A series of engagements were conducted to assess the best ways to implement the selected interventions. Accra and Nairobi conducted training workshops for city authorities to educate them on PWD challenges and conscientise them on inclusive urban transport. Also, training was conducted for bus operators on parking and managing bus terminal spaces to make them easily accessible. In addition, bus operators were trained on behavioural and attitudinal ways of interacting with PWDs to improve their experiences. The project team introduced and embossed buses with signages and priority seats at some selected bus terminals in Accra. The project piloted push bells on about three minibuses to help assess their usefulness in improving PWDs' experiences. Lastly, all selected bus terminals were provided with landing pads to aid boarding and off-boarding by PWDs. The evaluated buses (Electric buses) in Nairobi had these features pre-installed.

The post-intervention stage involved the exploration of the impact of the interventions implemented. The post-intervention took place three months after the implementation of all selected interventions. In Ghana, 90 PWDs, 45 transport operators and five government

officials were interviewed to explore their views on the interventions. Meanwhile, about 51 PWDs, two transport operators, and six government officials participated in the post-implementation phase in Nairobi. All interviews were recorded with the permission of participants and transcribed for analysis. The study used MAXQDA to generate a set of themes from the transcriptions to aid in understanding the impact of the interventions.

Key findings

- The project identified four primary interventions and 19 sub-interventions to improve inclusive urban transport systems in Accra and Nairobi.
- As reported by all PWDs interviewed, priority seats were the most effective implemented intervention. PWDs appreciated the priority seats because they didn't have to fight with other commuters for space on the bus. These seats were also more comfortable than the others they used. Also, most drivers left their PWD reserved seats until the bus was full before filling them.
- Interestingly, PWDs were taken aback by the changed attitude of transport operators, who spoke politely and assisted them with boarding and deboarding.
- The push bells were excellent, and they benefited both PWDs and non-PWD commuters by minimising the number of times they had to call bus operators to stop the bus when they arrived at their location.
- Signage was helpful since it helped speech-impaired people find buses to their destinations.
- Overall, officials of Ghana's National Council on Persons with Disabilities (NCPWD) praised the project interventions. They noted that their members frequently mentioned the new interventions at meetings and their value in reducing their mobility burden.
- In Nairobi, most people interviewed had firsthand experience with one or more treatments. The overall experience was similar to Ghana, with PWDs preferring priority seats mostly because persons occupying them were now willing to abandon the seat for them once they boarded the vehicle.
- Although the interventions relieved PWDs' mobility needs, they had some challenges that needed to be evaluated for future projects. For instance, the landing pads were only used at bus terminals, but PWDs considered them too rigid to be put into the vehicle to assist with de-boarding at various bus stops.
- Wheelchair users had difficulty boarding buses with the landing pads. As a result, they requested an inclined boarding platform as part of the future pad development.

- Some commuters found the push bells too loud and irritating for their ears. Some requested that the volume of the push bells be lowered, and persons with visual impairments requested interventions such as audio announcements or braille services.

Conclusions

- The agenda of an inclusive urban transport system is possible by implementing the numerous interventions identified with persons with disabilities and government authorities.
- Implemented interventions significantly improved PWD urban mobility in Accra and Nairobi, with priority seats and landing pads being the most popular among PWDs. However, they were insufficient given the project's time and financial resources.
- Implementing the interventions presented a few obstacles, particularly the push bell and wheelchairs requiring minor modifications.

Recommendations

- Interventions not covered by the project can be considered in subsequent projects or by other institutions to ensure total urban inclusive transport.
- The landing pads will need to be modified to accommodate wheelchair users. Audio announcements must also be used with signage at various bus terminals.
- Various transport unions should make it a norm to sensitise and educate new members on the characteristics and needs of PWDs to sustain the gains from the project.
- City authorities should continue sensitising and educating hawkers and sellers not to sell on sidewalks to make them accessible for all, particularly those with disabilities.

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LIST OF ACRONYMS

AMA	-	Accra Metropolitan Authority
AR	-	Augmented Reality
BVG	-	Berliner Verkehrsbetriebe
CBD	-	Central Music District
DVLA	-	Driver and Vehicle Licensing Authority
GFD	-	Ghana Federation of Disability Association
GPRTU	-	Ghana Private Road Transport Union
ICF	-	International Classification of Functioning
JKIA	-	Jomo Kenyatta International Airport
KENHA	-	Kenya National Highways Authority
KERRA	-	Kenya Rural Roads Authority
KNH	-	Kenyatta National Hospital
KURA	-	Kenya Urban Roads Authority
LI	-	Legislative Instrument
MMT	-	Metro Mass Transit
MTTD	-	Motor Traffic and Transport Department
NAMATA	-	Nairobi Metropolitan Area Transport Authority
NCC	-	Nairobi City Council
NCPWD	-	National Council on Persons with Disabilities
NGO	-	Non-Governmental Organization
NTSA	-	National Transport and safety Authority
PWD	-	Person with disability
SACCOS	-	Savings and Credit Cooperative Organisation
SDG	-	Sustainable Development Goal
SITUATE	-	Removing Barriers to Foster disability-inclusive Urban Transport Systems in Accra and Nairobi
STC	-	State Transport Company Limited
UN	-	United Nation
UNCRPD	-	United Nations Convention on Persons with Disability
VBB	-	Verkehrsverbund Berlin-Brandenburg
VREF	-	Volvo Research and Educational Foundations
WHO	-	World Health Organization

INTRODUCTION

Background

Currently, disability is one of the most significant health concerns globally, affecting around 1.3 billion people in a variety of forms and severity (World Health Organisation [WHO], 2022). Nearly 80% of the world's persons with disabilities (PWDs) live in developing countries (WHO, 2022). **Environmental hazards, traffic and industrial accidents, illnesses, malnutrition, conflicts, and limited access to health facilities are the factors that contribute to the high percentage of disability in most African countries** (Chibaya et al., 2021; Adugna et al., 2020). PWDs experience relatively worse socioeconomic outcomes and poverty than their counterparts without disabilities (Sam et al., 2022; Frye, 2013; WHO, 2011; Quinn & Degener, 2002a). The plight of PWDs in major African cities like Accra (Ghana) and Nairobi (Kenya) is exacerbated by disorganised urban forms and structures, unfriendly transport systems and public buildings that hinder access to all types of essential services (Odame et al., 2023; Chore et al., 2022).

To help improve the accessibility of PWDs in Africa through a disability-inclusive urban transport system, our previous project, SITUATE-1, examined the design of the urban transport system and form in Accra and Nairobi vis-à-vis the varied mobility patterns, needs, experiences, and challenges of different categories of PWDs (i.e., the hearing, visual and physical impairments) towards a policy and practice agenda. Notably, the project examined the impediments in PWDs' quest to be socially mobile and inclusive and how best they manage these impediments in the urban environment. In addition, the project also explored city authorities' and managers' knowledge and understanding of the mobility needs, experiences, and challenges of PWDs.

Key highlights from the SITUATE-1 project are as follows:

- *Different categories of PWDs in Accra and Nairobi have varied mobility needs, which are crucial for an inclusive urban transport agenda. Policymakers and urban planners acknowledged these unique PWD needs yet failed to implement them in transport and urban designs because of limited resources and technical know-how.*
- *Ghana and Kenya have relevant policies and institutions to safeguard the needs of PWDs [Ghana-Persons with Disability Act 2006 (Act 715) and the Disability Act 29 of the 1992 Constitution, and Kenya- Article 54 of the Kenya Constitution, 2010 and the Persons with Disability Act 2003 (Act 14)]. Unfortunately, the institutions (e.g., the National Council on Persons with Disability) do not fully understand the policies. **They are highly under-resourced to enforce the policy and advance the needs of PWDs.***

- *Physical planning institutions are yet to apply universal design principles to ensure accessible and inclusive transport systems for PWDs and all commuters.*
- *Accra and Nairobi had limited assistive devices, high-floor public transport vehicles without ramps, poorly maintained or non-available sidewalks and bus stops, and inadequate space for wheelchairs/crutches and other disability-mobility devices.*
- *PWDs experienced widespread discrimination from bus drivers, conductors, and other passengers, absence of dedicated seat(s) (even though prescribed in the law) and careless/reckless behaviour of motorists in traffic.*
- *Based on the physical morphology and challenges relating to the availability of assistive devices, PWDs classified the urban transport system as highly unfriendly, affecting their day-to-day survival and livelihood security.*
- *PWDs are willing to engage policymakers and institutions in the urban transport planning process at the local and national levels.*

These highlights from SITUATE-1 indicate the struggles of PWDs in Accra and Nairobi and the need to intensify the call for disability-inclusive urban transport systems. Also, the findings point to policy and practice (i.e., implementation) lapses of the local disability Acts, policies, and the United Nations Convention on Persons with Disability (UNCRPD), as well as efforts needed to achieve the Sustainable Development Goal (SDG) 11.2, requiring nations to provide access to safe, affordable, accessible transport systems for all improving road safety for vulnerable groups including PWDs, by 2030 (United Nations, 2015). Accordingly, Sietchiping et al. (2012) maintain that the solution to policy-implementation lapses is through a policy reorientation and enforcement strategy which seeks to re(design) the urban landscape through comprehensive stakeholder engagement aimed at improving the well-being of the socially disadvantaged, especially the PWDs. Sietchiping et al. (2012)'s solution demands a greater understanding of Ghana and Kenya's urban governance (institutions, policies, and regulations) systems per the UNCRPD, SDG 11 and other international laws and urban planning principles. In other words, the urban governance structures and systems for implementing and enforcing PWDs' rights and needs in both countries must be fully appreciated and engaged.

This sets the basis for the urban tinkering process and participatory approach between all stakeholders in devising strategies and solution-oriented programmes that enhance the inclusivity of PWDs in the urban transport environment. Hence, this new project, *SITUATE-2*,

aimed to build on the previous findings (i.e., challenges and policy-practice lapses) to unearth implementation barriers and challenges through *a stakeholder-led approach for attention and redress*. SITUATE-2 involved action research, where the team members served as facilitators between PWDs and city authorities (policymakers/planners, etc.) to kickstart the discourse of providing solutions to some of the identifiable challenges in SITUATE-1.

Objectives

SITUATE-2 addresses *Theme 1: User Needs and Practices, Equity Issues* and *Theme 3: Governance, Politics, Institutions and Finance*. From a broad perspective, *the study aimed to assess the barriers and challenges in implementing disability-inclusive urban transport systems in Accra, Ghana, and Nairobi, Kenya, comparatively*. The study hoped to enumerate the views and recommendations of relevant stakeholders and implementers on how best disability-inclusive urban transport systems, policies and institutions can be implemented in the two cities and, by extension, the rest of Africa. The project addressed the following specific questions related to the call:

- What *radical changes and approaches* do local stakeholders need to introduce in urban transport to enhance access and address the needs of marginalised groups, particularly PWDs with unique needs?
- How can the urban form and planning process be *participatory and inclusive of PWDs' representations and perspectives*?
- What characteristics of mobility-related institutions (e.g., their roles, responsibilities, rights, expertise, and financing capacity) at different levels and bodies of government can be considered 'best practices' in Africa?
- What challenges engulf mobility-related institutions in their daily activities to ensure a socially inclusive urban transport system?
- What factors are significant for building the institutional capacity of urban managers to develop and ensure equitable access and sustainable mobility?
- How can urban policy, governance, and democracy be further developed to explicitly address social equity issues, i.e., that are directed towards increasing the mobility and access of disadvantaged groups?
- How can new approaches beyond conventional government-dependant systems be adopted to develop and finance mobility-related institutions and provide solutions for sustainable urban mobility suited for African cities?

STATE-OF-THE-ART REVIEWS

Universal urban transport systems in Accra and Nairobi

In SITUATE-1, the project highlighted the state of the transport infrastructures in Accra and Nairobi. Among the salient issues highlighted were disability-related legislations within the transport sectors of the two cities, the nature of urban transport systems, agencies and institutions responsible for ensuring disability-inclusive transport systems, and transport systems and social inclusion. The project adopted the lens of the International Classification of Functioning (ICF), which situated disability in a 'bio-psycho-social-model' and hypothesised that if the design and construction of transport infrastructures and systems are universally designed, persons with disabilities in Accra and Nairobi would have access to the cities' transport systems on an equal basis as their counterparts without disabilities (Sam et al., 2022). In that circumstance, the human rights of persons with disabilities in the two cities would have been addressed, and the transformative global target of the United Nations in terms of transport would have been achieved.

However, the project revealed many gaps in the two cities' transport infrastructure, making the transport infrastructure highly inaccessible to persons with disabilities, which has prompted this intervention phase (SITUATE-2). As an **intervention and action research**, this review has been crafted around the significant findings from SITUATE-1. **Hence, the issues highlighted are policies promoting disability-inclusive urban transport systems in Accra and Nairobi, institutions ensuring disability-inclusive transport systems in Accra and Nairobi and implementation challenges in ensuring disability-inclusive transport systems in the two cities.**

Legislations and bylaws safeguarding inclusion of persons with disability in Accra and Nairobi

Ghana and Kenya are signatories to the UN Convention on the Rights of People with Disabilities (UNCRPD). The signing of the UNCRPD demonstrated Ghana and Kenya's commitment to upholding international standards that guarantee the human rights of persons with disabilities. Furthermore, the spirit of the constitutional provisions is reflected in Acts of Parliament, legalising and mainstreaming disability issues in specific legal statutes and establishing specific institutions to oversee the mainstreaming of disability issues. Specifically, Articles 29 and 54 of the Ghana Constitution of 1992 and the Kenya Constitution, respectively, make explicit statements on the issues relating to the protection of the socially disadvantaged, which includes persons with disabilities. Ghana's Persons with Disability Law (Act 715) of

2006 and Kenya's Persons with Disability Act of 2003 (Revised 2010) have transport-related and other key provisions, as well as specified provisions in the transport infrastructure to enhance access and promote the inclusion of persons with disabilities (Sam et al., 2022).

The project argued that physical mobility and accessibility are vital ingredients for building and sustaining social relationships and facilitating social inclusion; hence, restricted mobility and accessibility are indexes of social exclusion. Studies have suggested that user needs and behaviour have not been factored into transport infrastructure and planning in African cities (Diaz Olvera et al., 2013). Hence, there is a need for re-designing urban planning and transport infrastructure to focus on the well-being of the socially disadvantaged, including persons with disabilities (Sietchiping et al., 2012). Mindful of the propensity to ignore the well-being of the socially disadvantaged in planning and transport infrastructure design, the current project intends to explore the enforcement of the legal provisions of Ghana and Kenya on the rights of persons with disabilities in the urban transport systems of Accra and Nairobi.

For instance, in Ghana, the Law (Section 24) mandates importing non-conventional cars for use by persons with disabilities. It provides for a waiver of import duties on cars that are adaptive to one's disability type (Asante & Sasu, 2015). Nonetheless, as of 2022, the Driver and Vehicle Licensing Authority (DVLA) had no records of persons with disabilities registering such adaptive cars in the country. The cost of such adaptive vehicles is not affordable to ordinary citizens in both cities and not even the assurance of government support in terms of financial assistance has changed the situation. Notably, in response to Section 27, on February 22, 2023, at the second National Disability Summit organised by the National Council on Persons with Disabilities, the DVLA Policy for Testing and Training Drivers with Disabilities was launched alongside other policy-related documents. One might argue that the policy to support persons with disabilities in acquiring a driving licence to self-drive might serve as a catalyst for acquiring adapted vehicles for use by persons with disabilities.

Other provisions to improve disability-inclusive transport systems are guidelines on street-crossing by persons with disabilities (Section 25) and reserving designated space to be solely used by persons with disabilities at car parks (Section 26). There is also a provision for booking and reserving dedicated seats or space for persons with disabilities in commercial vehicles such as buses. The evidence was gross non-compliance with these directives (Odame, 2017, cited in Sam et al., 2022). Indeed, SITUATE-1 revealed that none of the city's transport operators knew the contents of the legal provisions on transport for persons with disabilities (Sam et al., 2022). The project also established the absence of bylaws or operational guidelines

enjoining public transport operators in the two cities to offer dedicated services to persons with disabilities.

Besides, both countries have supportive legislations and city bylaws for ensuring the procurement and operation of standard accessible vehicles; in reality, many commercial vehicles operating in the cities are primarily sub-standard and inaccessible to persons with disabilities (Sam et al., 2022). Hence, as part of the intervention proposed (SITUATE-2), the project teams in the two countries intend to collaborate with city authorities and urban transport operators to address this gap. The project would contribute immensely to creating disability-inclusive urban transport systems in Accra and Nairobi. It is essential to put it on record that the first question raised for the inception workshop (SITUATE-2), as quoted below, is indicative of the query above:

1. *What relevant disability policy provisions, standards and frameworks has the country adopted to achieve a disability-inclusive urban transport system? What is your institution/agency's mandate in safeguarding and mainstreaming the mobility needs of persons with disabilities and other vulnerable groups in the urban transport system?*

Institutions responsible for ensuring disability-inclusive urban transport systems in Accra and Nairobi

Many institutions and agencies collaborate to ensure disability-inclusive transport systems in Accra and Nairobi. **The National Councils on Persons with Disabilities** of both countries oversee the implementation of measures to guarantee the rights of persons with disabilities and mainstream these rights in all aspects of national development.

In addition to the National Council in Kenya, the city of Nairobi has the Nairobi County Board for Persons with Disabilities, which has, since its establishment in 2015, been overseeing the formulation and development of measures and policies to achieve equal opportunities for persons with disabilities. Accra and Nairobi observe policies and regulations from the National Transport and Safety Authorities to ensure safety. These authorities advise, recommend and make policies on road transport and safety. They inspect vehicles, report on road accidents, and research and audit road safety in cities and countries.

The highway authorities in both countries take responsibility for constructing, upgrading, rehabilitating and maintaining roads under their control. From their remit, it is essential to establish again the extent to which issues of persons with disabilities are addressed in plans and programmes of the Highways Authorities. Since the Highways are responsible for planning and advising the Ministers on all road matters, the authorities can contribute

immensely to developing disability-inclusive urban transport systems in the respective countries and cities. The source of regret is that the staff of these institutions and agencies do not have enough knowledge about providing the universal transport system or the needs of persons with disabilities (Sam et al., 2022).

Again, SITUATE-1 reported that the ministries and institutions responsible for the urban transport systems are less effective in incorporating disability issues in the planning, design, construction, and operations. Hence, the transport infrastructures in the cities of Accra and Nairobi fail to meet the needs of persons with disabilities to foster access, safety, and comfort for these individuals (Sam et al., 2022) and primarily international standards. Additionally, the report revealed the following cross-cutting issues for re-dress in future: weak implementation and enforcement of the policies and legal provisions; non-compliance of public transport operators to international and national standards; lack of mainstream public transport systems, which are composed of poorly coordinated private and semi-public arrangements; inadequate physical infrastructure and poorly designed transport networks that do not incorporate needs of persons with disabilities; weak capacity building and low level of awareness of universal design principles among critical agencies dealing with the urban transport system; lack of public awareness and education on legal transport-related provisions of persons with disability; and lack of inspection and monitoring of the operation of urban transport systems (Sam et al., 2022).

Implementation challenges in the provision of disability-inclusive urban transport systems in Accra and Nairobi

In Ghana, the Ghana Private Road Transport Union (GPRTU) is the key stakeholder in the transport service. It is estimated that GPRTU controls about 70 to 80% of public transport, especially intracity services (Abane, 2011). In intercity services, the GPRTU competes with the Metro Mass Transit (MMT) and the State Transport Company Limited (STC) (Sam et al., 2022), which are both public entities. In Ghana, studies suggest that GPRTU buses, particularly those operating within Accra (i.e., Kaneshie, Kwame Nkrumah Circle, and Accra-Central), are obsolete and outdated by nature (Mensah, 2010; Yobo, 2013). The inconveniences experienced in using such buses have contributed significantly to the declining preference for GPRTU services among persons with disabilities for intercity trips (Addo, 2014).

Additionally, the team identified that transport operators in both cities use high-floor vehicles without ramps, such as trotros, matatus, and buses. The non-availability of ramps or other assistive technologies at bus terminals exacerbates this challenge. In that circumstance,

persons using wheelchairs, crutches, callipers and tricycles are more restricted in using transport systems than their counterparts with hearing and visual impairment (Sam et al., 2022). In other countries, low-floor, disability-friendly vehicles have effectively addressed this challenge (Frye, 2013). Regrettably, some transport operators defended their unwillingness to comply with standards by claiming that **the poor state of the road networks makes it uneconomical to procure low-floor, disability-friendly vehicles** (Frye, 2013). It is noteworthy that, in Ghana, buses operated by intercity companies are pretty modern and possess some disability-friendly features; the state-owned transport agencies like the Mass Metro Transit (MMT) and the InterCity State Transport Corporation (STC) have also shown early indications of upgrading their vehicle fleet to modern standards that meet the needs of persons with disabilities.

The team discovered a lack of assistive devices at the various terminals, poorly maintained or non-availability of sidewalks, especially within residential areas, and the absence of traffic control measures such as traffic signals and dedicated pedestrian crossing lanes as barriers to the transport systems (Sam et al., 2022). Although the report did not find difficulty reading or understanding signs or lack of information a significant problem for persons with disabilities in both cities, the team believes signages are critical in disability-inclusive urban road transport systems. Other barriers to the urban transport systems in Accra and Nairobi were lack of access to designated bus stops, non-availability of spaces in the commercial vehicles for assistive devices like wheelchairs, crutches, and walkers, poor attitudes of bus drivers, conductors as well as other passengers contributed significantly to the exclusion of persons with disabilities (Sam et al., 2022).

In SITUATE-1, the team concluded that Ghana and Kenya have Ministries of Transport and institutions such as the National Highways Authority, Urban Roads Authorities, and National Transport and Road Safety Authorities. Staff of such institutions are highly trained personnel in their fields. What the project team found missing in terms of creating disability-inclusive urban transport systems in the cities was the **lack of knowledge about the legal provisions for persons with disabilities in transportation and the design of the transport infrastructure**. The team, therefore, **recommended well-designed sensitisation programmes** on the needs of persons with disabilities, workshops and seminars on **provisions in the laws** concerning the mobility needs of persons with disabilities (Sam et al., 2022) and monitoring to ensure that planning and design of the urban transport network respond to the needs of persons with disabilities and by extension other vulnerable groups.

The regulation of urban public transport operations is the responsibility of the local government systems, namely, Accra Metropolitan Authority (AMA) and Nairobi City Council (NCC). In reality, the institutions could be more effective in controlling the operations of the city transport systems. The two institutions are less effective in ensuring that the transport unions or operators provide ramps, priority seats, and ample space to keep mobility aids and other assistive technologies to facilitate easy mobility access to public transport vehicles such as trotros, matatus, taxis and buses (Ibid).

Global best practice: The case of the Berlin Bus system in Germany.

Berlin, the capital of Germany, is renowned for its cutting-edge advancements in urban infrastructure and social inclusivity. Its extensive public transportation network includes underground and light-rail trains, buses, and trams. The bus system in Berlin is handy for travelling on roads not covered by other forms of transportation (Rajesh et al., 2019) and provides a vital link between train stations. While buses are generally slower than other public transportation options, they can easily take you to virtually any area in Berlin. Most buses run throughout the day, with the letter "N" on the front of certain buses indicating that they operate at night and connect metro stations when trains are not running (Rajesh et al., 2019).

Berlin has a rich history as a global city, and one of the critical aspects of municipal planning has been inclusivity in the transportation sector. The city recognises the importance of providing equal access to public transport and has therefore taken steps to remove obstacles faced by persons with disabilities. This case study examines Berlin's efforts to create an inclusive bus system and how it has impacted the lives of individuals with disabilities, as well as the broader implications for urban mobility. The study explores different aspects of the city's inclusive bus system, including design features, community involvement, and technological advancements, to draw lessons that can be applied to other cities worldwide.

The achievement of the city of Berlin, Germany, did not occur in a vacuum; it evolved from concerted efforts from key stakeholders, including persons with disabilities. In 1987, disabled activists in West Berlin formed a movement to address the accessibility issues of public transport. This was in response to severe budget cuts to the special transport service for disabled persons (Sisnowski, 2021). The activists demanded their right to mobility and protested by disrupting the infrastructure. The following political engagement resulted in significant changes to the public transport system. Among the most notable changes were gradually rebuilding stations equipped with elevators, ramps, and tactile guiding systems on the ground. The bus fleet was also converted to low-floor buses (Sisnowski, 2021).

Germany has set a legal requirement for public transport to be made accessible by 2022 (BVG, 2024). However, there is some flexibility for public transport providers to implement this requirement. To bridge the gap, Berlin has a complex network of partially subsidised alternative transportation options, in addition to a service exclusively available for public transport, organised by the public transport association VBB (Verkehrsverbund Berlin-Brandenburg) (BVG, 2024). This service provides door-to-door accompaniment, with employees assisting customers while using public transport.

According to the facts and figures on accessibility by BVG (Berliner Verkehrsbetriebe), the public transit company that manages the U-Bahn, trams, and buses in Berlin, 85 % of Berlin's subway stations can be reached without steps, and 73 % have a guidance system for the blind. The goal was that by 2022, almost all stations would be barrier-free. There are 825 tram stops in Berlin, and more than 595 are barrier-free (BVG, 2024).

According to BVG, a barrier-free bus stop should have a minimum height of 16 cm and a guidance system for the visually impaired. Although not all of the almost 6500 bus stops in Berlin are yet barrier-free, passengers in wheelchairs can effortlessly board all buses as they have ramps. Since 2020, the agency has been testing a bus stop that is 22 cm high, which eliminates the need for ramps for wheelchair users. Many bus stops also have an orientation system designed for the visually impaired. To ensure visibility to the bus driver, wheelchair users should wait at a marked spot at the stop. A blue call button featuring the wheelchair symbol alerts the bus driver to fold out the ramp when boarding or alighting from the bus. Passengers with a valid ID card for persons with disabilities can travel for free, while those with the code "B" on their pass can bring an accompanying person at no cost.

Bus design and accessibility features

Berlin's commitment to creating an inclusive and accessible public transportation system is evident in the thoughtful design and incorporation of various accessibility features within its bus fleet. According to the BVG and VBB websites, the bus system accessibility features include, among other things:

- Low-floor design: Most of Berlin's buses have a low floor, ensuring easy boarding and alighting for passengers with mobility impairments, including those using wheelchairs or other mobility aids.

- Ramps and lifts: Berlin buses are equipped with ramps or lifts that can be deployed to facilitate boarding and disembarking for individuals with mobility impairments. These features contribute to an easy and independent travel experience.
- Priority seating: Marked priority seating areas within the buses ensure that individuals with disabilities, elderly population, or pregnant passengers have access to designated spaces, fostering a more comfortable and accessible journey.
- Securement systems for wheelchairs: Buses are often fitted with securement systems, allowing passengers using wheelchairs to anchor their devices safely during transit, enhancing both safety and accessibility.
- Real-time passenger information: Real-time information systems inside buses provide audible and visual announcements of upcoming stops. This benefits passengers with visual or hearing impairments, enabling them to independently navigate the public transportation system.
- Wide aisles and doorways: The interior layout of Berlin's buses includes wide aisles and doorways to accommodate the movement of passengers with various mobility aids and ensure a smooth flow of boarding and alighting.
- Contrast markings and signage: Contrast markings and clear signage are incorporated throughout the buses, aiding passengers with visual impairments in navigating space more efficiently and independently.
- Sensory features: Sensory features, such as colour-contrasted handrails and well-lit interiors, contribute to a comfortable and secure environment, benefiting passengers with sensory disabilities.
- Training for bus operators: Bus operators receive training to interact effectively with passengers with disabilities and to operate the accessibility features of the buses. This ensures a supportive and inclusive atmosphere for all commuters.

The intentional integration of these design features in Berlin's bus fleet reflects a comprehensive commitment to accessibility and inclusivity. This dedication goes beyond meeting essential standards, aiming to create an environment where persons with disabilities can experience public transportation with dignity, independence, and ease.

Community engagement and participation

Berlin's commitment to an inclusive bus system goes beyond physical infrastructure, emphasising active community engagement and collaboration with various stakeholders. The city recognises the pivotal role of persons with disabilities (PWDs) and community organisations in shaping its inclusive transportation initiatives. Berlin actively collaborates with disability advocacy groups, fostering partnerships that enable meaningful contributions in the planning, implementing, and evaluating inclusive transportation initiatives (Berlin.de, 2023).

The city employs a multi-faceted approach to community engagement, conducting regular workshops, forums, and accessibility advisory committees (BVG, 2024). These forums provide open dialogue between transportation authorities, city planners, and PWDs, encouraging the sharing of perspectives, concerns, and ideas to inform inclusive policies. Continuous user surveys, feedback mechanisms, and regular consultations with PWDs ensure a structured and ongoing dialogue, allowing the community to express experiences and preferences that directly influence decision-making processes (Sisnowski, 2021).

Berlin's inclusive design competitions and collaborative planning for new routes showcase a collective effort toward creating user-friendly spaces. The city utilises interactive digital platforms to engage with the community, providing updates on projects, seeking input on proposed changes, and fostering an inclusive discourse on social media channels and official websites. Education and training initiatives promote awareness about disability etiquette, empathy, and diverse accessibility needs for the public and transportation staff (Sisnowski, 2021). This robust community engagement and participation approach contributes to a responsive, user-centric, and equitable public transportation system that reflects Berlin's residents' diverse needs and experiences, including those with disabilities.

Technological innovations

The city's barrier-free bus system leverages cutting-edge technological innovations to enhance accessibility, improve communication, and provide an easy and efficient transportation experience for PWDs. These advancements contribute to the city's commitment to enabling barrier-free mobility and providing an inclusive and digitally empowered urban transit experience for persons with disabilities. The city's integration of these cutting-edge technologies illustrates its commitment to remaining adaptive and responsive to the evolving needs of all passengers. The bus system incorporates the following technologies and innovations:

- Real-time information apps: Berlin's bus system integrates real-time information apps that allow PWDs to access up-to-the-minute details on bus schedules, routes, and delays. This empowers individuals to plan their journeys more effectively, reducing uncertainty and improving overall convenience (BVG, 2024).
- Mobile ticketing solutions: Mobile ticketing solutions have been implemented, enabling passengers to purchase and validate tickets through their smartphones. This feature benefits PWDs by eliminating the need for physical tickets and providing a more streamlined and accessible payment process (BVG, 2024).
- Accessible journey planning apps: Journey planning apps with accessibility features help PWDs plan their routes by considering factors such as step-free access, low-floor buses, and the availability of elevators or ramps at different transit points (BVG, 2024).
- Smart bus stops: Some bus stops in Berlin are equipped with smart technologies, including digital displays that provide real-time bus arrival information. These displays are designed with accessibility features, such as high contrast and clear text, benefiting passengers with visual impairments.
- Inclusive digital signage: Digital signage within buses is designed with inclusivity, ensuring clear and easy-to-read information for all passengers. Features such as adjustable font sizes and high-contrast displays accommodate diverse needs, including those of PWDs (Berlin.de, 2023).
- Communication apps for bus operators: Bus operators have communication apps that facilitate real-time passenger interaction. PWDs can use these apps to communicate specific needs or request assistance, fostering a more responsive and supportive environment (BVG, 2024).
- Smart sensors for passenger counting: Smart sensors are deployed in buses to count the number of passengers accurately. This information aids in optimising service efficiency and ensures that buses adhere to occupancy limits, enhancing safety and comfort for all passengers, including those with disabilities (BVG, 2024).
- Wi-Fi and connectivity solutions: Buses are equipped with Wi-Fi and connectivity solutions, providing passengers with internet access during their journeys. This feature enhances the overall travel experience for PWDs who may utilise online resources or communication tools for assistance (BVG, 2024).
- Augmented reality (AR) navigation systems: Berlin experiments with a mobile augmented reality system that combines municipal public transport navigation

capabilities with augmented reality visualisation on a mobile device. The system can provide directions to tram and bus stops and monitor user journeys in real time using geolocation data and schedule information that assist PWDs in navigating bus stations and terminals. These systems offer real-time guidance through mobile devices, facilitating independent travel (Królewski & Gawrysiak, 2011).

- Digital accessibility training programs: Digital accessibility training programs are implemented for passengers and bus operators. These programs ensure that individuals are proficient in using and understanding the various technological features available, promoting an inclusive and tech-savvy community (BVG, 2024).

Sustainability and replicability

Berlin's inclusive bus system embodies a commitment to universal design principles, seamlessly integrating accessibility features into the overall design. This dedication enhances the system's usability for passengers with diverse needs, fostering a universally inclusive urban environment. The city's approach prioritises cost-effective solutions, making replicability feasible for other urban settings. The infrastructure is designed with modularity, allowing adaptable and scalable changes and easing replication without extensive overhauls.

Berlin actively engages in knowledge-sharing initiatives and international collaborations (Sisnowski, 2021). Demonstration projects showcase inclusive features, providing practical examples for other cities to study and replicate. Comprehensive guidelines are a roadmap for implementing inclusive measures in public transportation systems.

Public-private partnerships and inclusive transit-oriented development principles contribute to the sustainability of Berlin's inclusive initiatives. Regular impact assessments provide valuable data and insights for replication (BVG, 2024). Berlin's holistic approach, combining sustainability, cost-effectiveness, knowledge-sharing, and adaptable infrastructure, positions its inclusive bus system as a global model. The city's commitment underscores the notion that inclusive urban transportation is achievable, scalable, and adaptable to diverse urban landscapes. With commitment, dedication and careful planning, the researchers believe this best practice can be emulated in the two case study cities (Accra and Nairobi) and ultimately extended to other critical African cities.

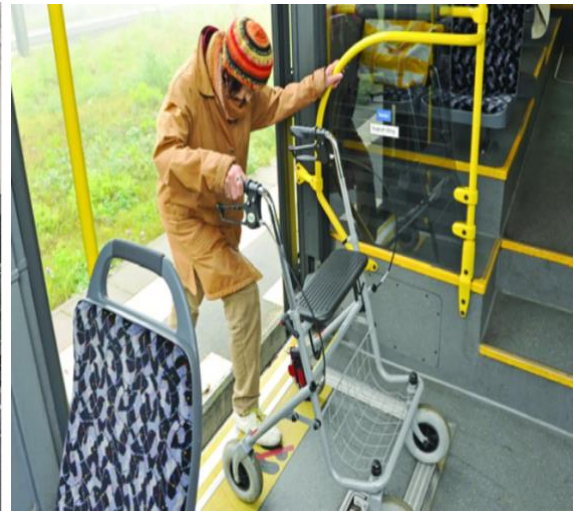


Figure 1: Barrier-free Berlin bus features.

METHODOLOGY

Introduction

The project utilised a **qualitative action research approach** to explore urban transport and city authorities' challenges in implementing disability-inclusive transport policies and regulations in Accra and Nairobi. Waterman et al. (2001: 4) define action research as "a period of inquiry, which describes, interprets and explains social situations while executing a change of intervention aimed at improvement and involvement". It is problem-focused, context-specific, and future-oriented, emphasising partnership, collaboration, and empowerment through participation (Parkin, 2009; Todhunter, 2001; Reason & Bradbury, 2001; Meyer, 2000). Action research has recently gained utility, including as a transport survey method (Lucas, 2013; Porter et al., 2010; Uteng, 2009). For instance, Porter et al. (2010) and Danieli and Woodhams (2005) employed the approach with children and PWDs, respectively.

Parkin (2009) and Meyer (2000) maintain that action research is apt for generating solutions to practical problems and empowering practitioners by engaging them in the research and subsequent development or implementation activities. Action research is also grounded in political activism. The study emphasised 'cooperation', 'co-learning' and 'collective action' (the highest level or spectrum of involvement) to involve the researched (PWDs) in enacting their agendas (Cornwall, 1996). The project involved pre-intervention, intervention and evaluation stages (discussed below).

Case study sites

The study was conducted in Accra Metropolis, Ghana and Nairobi, Kenya. Accra is the capital town of Ghana, with the highest number of PWDs and vehicular population in Ghana (Ghana Statistical Service, 2012). Kenya's capital city, Nairobi, has the country's most extensive public transport system. Accra and Nairobi house the head offices of various transport operators and PWD organisations (private and governmental).

Pre-intervention stage

SITUATE-2 began with participatory interactions with disability groups and government agencies in Accra and Nairobi. These discussions aimed **to develop a set of measures/interventions that would help improve urban transport inclusivity. Four (4) central interventions (provision of navigation aids, education and sensitisation, promoting disability-friendly structures/facilities and promoting disability-friendly vehicle features)** and 19 sub-interventions were collectively decided on (Table 1). The sub-interventions were analysed

regarding achievability based on time (long, medium and short-term), expected outcomes and available financial resources. In Accra, the sub-interventions selected were:

- Provision of mobility aids (white canes) to the visually impaired group.
- Education of transport operators at transport terminals during the White Cane Day, developing positive attitudes toward PWDs, and orderly parking of buses at the terminals.
- Education of city managers.
- Advocacy for priority seats for PWDs on buses.
- Installation of push bells.
- Provision of landing pads.

In Nairobi, the research team prototyped an electric bus provided by Roam Electric Bus Company with the following features:

- Reserved seats for the aged, pregnant women and PWDs
- Push bell.
- Space for wheelchairs.
- Display screen with bus route information.
- Signage for cashless payment.
- Low floor.
- A ramp for wheelchair users.
- A wide door.

The team also implemented the following sub-interventions:

- Repainting reserved PWD parking slots and signages
- Education of transport operators at transport terminals, developing positive attitudes toward PWDs, and orderly bus parking at the terminals.

Table 1: Proposed and implemented interventions worksheet.

Proposed interventions	Proposed Activities (sub-interventions)	Stakeholders/target group-number	Activity frame	Expected Outcome	Financial feasibility	Interventions selected Outcome	
			1-Long term 2-Mid term 3-Short term		Yes/No	Accra	Nairobi
Intervention 1: Provision of navigation aid for PWDs	Provision of navigation aids for PWDs	PWDs		Provision of about 20 white canes	Yes	Selected	Not Selected
Intervention 2: Education and sensitisation	White cane Day celebration at Transport terminals	Drivers and pedestrians	Mid-Term	i. Increase drivers commitment to support PWDs' at all times	Yes	Selected	Not Selected
	Training for drivers and bus conductors (Attitudes toward and handling PWDs)	Drivers and bus conductors	Short-Term	ii. Promote the non-payment of wheelchairs storage iii. Promote the usage of inclusive terms and positive attitudes towards PWDs.	Yes	Selected	Selected
	Parking arrangements	Drivers and station masters		Promote orderly parking of buses to facilitate PWDs' navigations at transport terminal	Yes	Selected	Selected

	Introduction of signage for cars	Drivers and bus conductors		Provision of clear signage with key information (origin, destination and fares) to over 30% of buses at bus terminals	Yes	Selected	Selected
	MOU between PWDs and Transport operators	MTU and PWD associations	Mid-Term	Adhere to all dictates of the disability act	Yes	Not selected	Not selected
	Educating market women not to sell on walkways	Market leaders/queens and AMA	Long-term	Removal of trading wares from walking pavements at all transport terminals	Yes	Not selected	Not selected
	Education of Legislatures and Directors on disability challenges	City authorities, government officials	Long-term	Engage all state parties to enforce the disability act	No	Selected	Selected
	General public sensitization and education: Radio programs	General public (Accra) Social Media-Twitter, TikTok	Mid-Long term	Have at least 3 radio sensitization programmes to educate the public on PWDs challenges	No	Not selected	Not selected
	Video documentary of the state of PWD access of transport systems			Develop a (one) video documentary of everyday challenges of PWD	No	Not selected	Not selected
Intervention 3: Promoting PWDs friendly physical structures/facilities	Covering storm drains	City administrators	Long term	Have all storm drains covered	No	Not Selected	Not Selected
	Clearing pathways/walkways			Have petty traders remove wares from walkways		Not Selected	Not Selected

Intervention 4: Promoting disability- friendly vehicle features	Traffic lights installation and repairs			Fix all traffic lights in the city		Not Selected	Not Selected
	Repainting pedestrian walkways			Repaint faded walkways		Not Selected	Selected
	Reservation of signage for priority seats	Drivers and conductors	Short term	50% of buses at terminals to have priority seats	Yes	Selected	Selected
	Installation of push bells	Bus owners and drivers	Mid term	Test push bells on 2 buses	Yes	Selected	Selected
	Hydraulics for buses	Bus owners and drivers	Long terms		No	Not selected	Not selected
	Landing pads	Bus owners and drivers	Short term	Provide 5 landing pads to each case study bus terminal	Yes	Selected	No selected
	Advocacy for reintroduction of Mass Transit Transport (e.g., Ayalolo)	Ministry of Transport	Long term	Reintroduction of the Ayalolo Bus service)	No	Not selected	Not selected

A collaborative approach was followed in selecting the sub-interventions to implement with the relevant stakeholders. The stakeholders agreed that the un-selected sub-interventions could be adopted and implemented later, given enough time and resources. The great thing about the sub-interventions listed in Table 1 is that they guide stakeholders, project members, and other researchers in adapting and improving.

Intervention stage

The project team sought to implement the selected interventions with the help of stakeholders. In Nairobi, the project team commenced educating city managers on inclusive urban transportation systems. With the help of PWD groups, the project team exposed city authorities to the state of the urban landscape and transport system. This was to educate and generate a sense of empathy from these authorities in being PWD-conscious in development. Project members embarked on repainting pedestrian walkways and PWDs parking lots. The essence was to demarcate these areas as most have faded. The team was able to paint 12 walkways and parking lots. In promoting PWD-friendly physical structures and facilities, the project team interacted with the Roam Electric Bus Company, which launched in August 2023, on an inclusive passenger bus model with in-built interventions to ease the mobility experience of persons with disability. It was agreed that this bus would form the prototype of interventions of a public service vehicle to be used by various categories of persons with disability for data collection and experience analysis. This bus was equipped with multiple features, including the following: a screen displaying the bus route information, a low floor, a wide door, a push bell, an entrance without any stairs, a reserved seating area for PWDs, the aged and others, a deployable ramp with wheelchair accessibility, a sign with information on the digital payment method (Mpesa) and fare chart indicating cost of travel.

In the case of Ghana, project implementation started with meetings with officials of the Transport and Physical Development departments of the Accra Metropolitan Assembly, Ministries of Roads and Highways and Transport, the Ghana Blind Union, Ghana Federation of Disability Group and the Ghana Private Road Transport Union (welfare executives of three chapters- Tema, Circle, and 37 Military). This initial engagement was to educate the invited stakeholders on PWDs' mobility challenges and brainstorm possible interventions.

To complement the education and sensitisation activity, the project team, with the help of the disability groups, organised three more workshops at the Tema, Circle and 37 Military bus terminals (Figure 2) to educate bus drivers and conductors on bus parking arrangements in

the bus terminals. PWD groups used the opportunities to educate bus operators on the challenges of accessing their services. The education and sensitisation were highly successful as most drivers expressed disgust at their colleagues' behaviour and attitudes toward PWDs and how it limited PWDs' access to urban transport and essential facilities. **Also, bus operators pledged to promote PWDs' interests always.** In addition, the bus operators affirmed their support for providing priority seats, landing pads, and bus route information signage.



Figure 2: Meeting with stakeholders on proposed interventions.

The project team pledged support in procuring the stickers/signages for priority seats, bus route information and landing pads. Project team members honoured their support by developing several signages and landing pads for the GPRTU. The team first visited GPRTU terminals and showed the initial signages to the bus operators and PWD groups for their input. A few modifications were suggested, and the project team redesigned the products (priority seat, bus route information signages and landing pads) to meet the specifications of bus operators and PWDs. Several of the modified products were developed for onward distribution to bus operators. For each bus terminal (Tema Station, Circle, Kaneshie and 37 Military), a minimum of 100 buses plying five (5) different destinations/routes were targeted. At each terminal, leaders of transport operators oversaw embossing these signages.

Post-intervention evaluation stage

After implementing selected interventions in both cities (Accra and Nairobi), the project sought to evaluate their success. The project team decided to leave a three-month interval before evaluation. This duration was sufficient for PWDs to identify or utilise all interventions at some or all study sites. Post-intervention activity involved data collection from PWDs and bus operators and data analysis.

Target population and sample

The population for this post-intervention assessment were PWDs in Accra and Nairobi who were 16 years and above (age for consent) and had used public transport at the study site (from September 2023 to the time of data collection).

Following these criteria, 90 PWDs were interviewed in Accra (Table 2), comprising 30 (visual impairment), 30 (hearing impairment) and 30 (physical disability). To offer variety, equal representation was given to gender (males and females). Also, age was further used to subcategorise participants into three age cohorts that reflect distinct life stages (*young* - 16 to 35 years, *mid-life* - 36 to 49 years, and age - 50 years and above). Despite the opportunity to truncate the sample using a saturation point, the project team engaged all 90 participants.

Table 2: Sample framework for Accra

	Visual Impairment		Hearing impairment		Mobility impairment	
	Male	Female	Male	Female	Male	Female
16-35	5	5	5	5	5	5
36-49	5	5	5	5	5	5
50 years and above	5	5	5	5	5	5
Transport operators				45		
Stakeholders				5		
Total				138		

For Nairobi (Table 3), 51 interviews were conducted with the following PWD categories: 19 physical impairments, 16 visual impairments, and 16 hearing impairments. The snowballing technique was employed to gather respondents up to saturation, where respondents would give similar experiences and recommendations. As such, the 51 respondents constituted persons who had previously used the Roam Electric bus since its launch in August 2023 up to the interview. This criterion was helpful for the project team to understand the real-life experiences of persons with disabilities using the bus, assess the usefulness of the intervention features of the bus, and suggest possible areas for further interventions to ensure total inclusivity and efficiency during their journey trips.

Table 3: Sample framework for Nairobi

	Visual Impairment		Hearing impairment		Mobility challenged	
	Male	Female	Male	Female	Male	Female
16-35	3	2	7	8	1	6
36-49	6	2	1	0	8	3
50 years and above	1	1	0	0	1	1
Transport operators				2		
Stakeholders				6		
Total				59		

Aside from the PWDs (demand side of transport services), public transport operators (supply side of transport services) were also sampled. In the case of Accra, 45 public transport operators

(15 each) were selected from the Kwame Nkrumah Circle, 37 Station and Tema Station. The Nairobi case utilised transport operators plying different routes with the Roam Electric Bus with built-in interventions. The Roam Electric Bus operated from the Kencom Terminal situated within the Central Business District of Nairobi and travelled to different routes such as the Kenyatta National Hospital (KNH), Upperhill, NgongRoad, JKIA, Mombasa Road, to mention but a few. This ensured that persons with disabilities living in different parts of the city would get in contact with the bus at any one point in time to capture their experience with the interventions.

The third group interviewed were stakeholders involved in public transport regulation and management. In Accra, we engaged a representative from the Ghana Police Service, the National Council on Persons with Disability, the Ghana Blind Union, the Ghana Federation of Disability Association and the Leadership of Transport operators. Unfortunately, the Accra city authority representative could not avail himself of an interaction. In Nairobi, representatives of the following stakeholders were interviewed: the National Council for Persons with Disability, Roam Electric Bus Company, County Bus Sacco, National Transport and Safety Authority, Traffic Police, and the Nairobi City County. Although the Kenya Bureau of Standards were identified as key informants, our efforts to access a resource person for an interview did not bear fruit.

Research instruments

In-depth, unstructured interviews were conducted for all participants to offer flexibility in asking questions without regard to the order of a set of predetermined questions. This approach also allowed researchers to probe unsatisfactory responses while deepening their understanding of issues raised. For PWDs, the instrument employed was characterised into three sections: the socio-demographic characteristics, awareness/use of interventions in selected terminals, and efficacy of interventions in addressing PWDs' mobility needs.

The instrument employed for transport operators had five sections: the first focused on basic demographics; the other sections covered drivers' knowledge of all interventions at each terminal, the efficacy of interventions in meeting PWDs' travel needs, challenges in implementing interventions and the likelihood of upscaling interventions across the country. Finally, the stakeholders' instrument also had three sections: current legislation on inclusive transport, stakeholders' responsibility in enforcing/implementing gaps in policy on disability-inclusive transport, and recommendations for the future. Interview sessions ranged from 32 to 153 minutes.

Pre-testing and fieldwork

Before the pre-test, the project team organised two training sessions (4th and 11th December 2023) on interview skills, transcription, and ethics in research to sharpen research assistants' skills in gathering relevant and valuable data for this project. At the end of these training sessions, the facilitator reviewed each question on the instrument while exploring various probing questions/ techniques that could elicit helpful information.

For each city, three research assistants were engaged. Pre-testing began with 18 students with disabilities (six persons with hearing, visual, and physical impairments) and six transport operators in Winneba. In Nairobi, the team engaged two persons with hearing, visual, and physical impairments and two transport operators of the Roam Electric bus (bus driver and conductor). This was intended to examine the research assistant's efficacy in collecting the needed information while adhering to all ethical issues discussed. The exercise allowed the research team to analyse transcripts and interview recordings and areas requiring improvement. The pre-testing activity also allowed the project team to appreciate the duration of each engagement and develop strategies to promote shorter but more effective interactions.

Data processing and analysis

In-depth interviews were first transcribed verbatim to capture the participants' words and the context of these words during the interview. To reduce systematic errors and ensure output efficiency, the research team relied on MaxQDA for transcription. To guarantee clarity in the transcribed data, the research team removed all redundant information like incomplete sentences, repetition of words/phrases/sentences, and non-relevant content that diluted the meaning of transcripts.

The research team read the transcripts as the basis for developing a coding framework that categorised common ideas into discrete themes or categories. Again, MAXQDA was employed to apply the codes to various sections of the transcript. The essence of coding was to enable two types of analysis viz the direct and the relational content analysis. In the case of direct content analysis, the focus was placed on word or phrase count and the number of times a concept or theme, like assistive technology or priority seats, is mentioned. Relational content analysis, on the other hand, was employed to establish a relation between codes and draw inferences from there. At all times, this was done to offer readers a mental picture of transport issues that affect the daily living conditions of PWDs in the case study cities.

Ethical considerations

Compliance with ethical principles was upheld before, during and after the data collection exercise. As Sullivan (2014) clarified in his manuscript on Philosophy, Ethics, and the Disability Community, vulnerable groups like PWDs deserve respect, dignity, and protection as research participants and human beings. Thus, in contact with potential participant(s), the research team members introduced themselves and presented an introductory letter from their respective partner institutions as proof of identity.

Consistent with research ethics, all participants who agreed to participate in this study gave verbal consent. At all levels, participants were informed of their right to terminate any interaction or decline a request to use an audio recorder during the interview session. Concerns of anonymity were also stressed, that no part of the study would link to participants' identity. For anonymity, all participants used pseudo names or aliases. In addition, other values like privacy and confidentiality were also explained and made clear to participants. All engagements were held in a convenient and safe place. Additionally, the estimated duration required to complete a question or interview was made clear ahead of each interaction to allow the research team and participants to plan. Participants (PWDs and transport operators) received some incentives as tokens for their time.

PROJECT FINDINGS

FINDINGS FROM ACCRA, GHANA

Persons with disabilities awareness of interventions in project sites

The project sought to explore interviewees' awareness of the interventions implemented in Accra. All 138 participants acknowledged seeing and experiencing all or some of the five interventions (*push bell, landing pad, signage, identification of priority seats and improved attitudes from Transport operators*) at the three designated bus terminals as highlighted below:

I remember using a landing pad for the first time at the Kwame Nkrumah Station. On the trip, the driver informed me of a reserved seat, which I found strange as this never happens on our trotro. That was a good feeling, and I hope it doesn't stop any time soon [28-year-old female visually impaired, unemployed]

'...I have seen some changes at the station, which will help the disability community. The interventions will help us a lot because some cars are very tall (high floor clearance), making entering difficult for someone like me with two crutches. All these things you are doing for us are very good ...' [52-year-old female seamstress – physically challenged]

On average, participants used these interventions for 6 to 8 weeks. However, people who frequented bus terminals were likelier to use/experience all the interventions. Participants who boarded buses at stops or en route were unlikely to see the landing pads.

PWDs' positive experiences and usefulness of the interventions

Priority seats

Figure 3 shows that priority seats were the most typical intervention enjoyed by participants. The priority seat was quickly adopted because transport operators saw the need to implement it as mandated by Ghana's Disability Act (section 28).

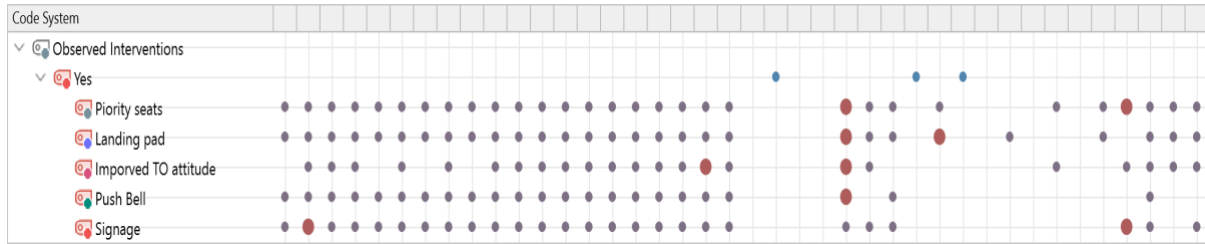


Figure 3: Intervention used by participants.

Despite this finding, the extent of usage differed among various disability groups. Persons with physical and visual impairment appeared to enjoy this intervention most, as the priority seat allowed them to join and disembark from the bus quickly. Beyond entry and exit, persons with physical impairment had other views of the priority seats.

I experienced the priority seat, which was very useful to me as a PWD because I did not have to compete with other passengers for seats on the bus. I saw a white sticker that indicated the priority seat, and its location was ideal for me since I could quickly enter and exit [48-year-old male, Self-employed and Physically Challenged]

I have used at least two buses with priority seats in them. As I waited for the bus, I was surprised when the driver asked a passenger to vacate a seat for me to occupy. I was slightly surprised, but when I asked why, I was informed that the seat was reserved for PWDs. [25-year-old male Musician with visual impairment]

From the above, most PWDs were delighted to witness a subtle change, as the absence of priority seats was topical during SITUATE 1 (a previous VREF-funded project). PWDs considered our intervention the right step to rectify a clear violation of Ghana's Disability Act by improving good mobility experiences. Also, the location of the priority seats offered an added advantage, facilitating participants' interaction with transport operators. Given that minivans (trotro) do not have an assigned priority seat, the project team and transport operators agreed to situate PWDs' on the seat behind the driver (Figure 4). Another advantage of the location of the priority seats was that it allowed PWDs to quickly relay their travel decision to the drivers or conductors without an intermediary.

Furthermore, the priority seat helped reduce unnecessary competition with other passengers, as previously, PWDs had to beg or appeal to other passengers to secure appropriate seats. Such appeals were made clear in narratives like '... *I have to beg the passenger to move*

backwards for me to sit at the first seat.’ and ‘The priority seat is good for us, as it avoids fighting and begging for a seat in a car...’.

Figure 4: Priority seats.

Landing pad

Landing pads were the second most cited and utilised intervention. Participants shared the following views on its utilisation.

‘I noticed there were landing pads at the terminal, and it was useful to me. Before boarding, the landing pad was affixed to the bus to enable easy access since the bus is higher from the ground.....I didn’t find the experience a challenge with my callipers’’ [48-year-old Self-employed male, physically challenged]

‘Well, like I was saying, these interventions will help us in many ways; for instance, the landing pad is perfect, and you can see how it helps me to enter the car easily and convenient, so I may say it is a helpful one of course’’ [46-year-old female, physically challenged female]

It was straightforward for me to get on board with the presence of the landing pad. But I noticed it was made of wood. Making it into foldable metal would help me as a visually impaired person, especially when exiting the bus. [27-year-old unemployed male with visual impairment]



Figure 5: Landing pads for the study sites.

From the narratives, participants' remark on the suitability of the landing pads to their needs stems from previous complaints of buses with high floor levels or clearance (as indicated in SITUATE 1). Specifically, trotro buses (commonly used in Ghana) have a floor height between 320 to 520 mm higher than the United Nations recommended height of 250 mm. In all respects, the landing pads reduced the clearance level and imposed little physical effort on PWDs to join or disembark from the buses. This implied that participants' constant requests for assistance in joining or disembarking buses would reduce significantly.

Push bell

The hallmark of all the interventions was the installation of push bells (Figure 6) on some public transport buses (trotro). Participants found the push bell a suitable replacement to other unconventional approaches like hand gestures and mummering (as in the case of people who are hard of hearing) to communicate with drivers and conductors. Participants described their experiences with this intervention:

One of the best innovations is this push bell. Calling the driver to draw his attention to a need is no longer a burden. I could quickly be attended to with a push, a relief. It's a laudable idea, and I am impressed with the independence it offers [69-year-old male pensioner with visual impairment]

The push bells are perfect for us because they replace hand signals and murmuring that the transport operators don't understand. With this, all I

did was press a button to alert the driver of my decision to get down at the next bus stop. It was nice to have this even though I didn't believe it when our leaders told us about it [37-year-old female trader with hearing loss]

Given that priority seats had been clearly labelled on buses, push bells were located along the priority seats accessible to PWDs. Amid its usefulness, some participants raised concerns as they found the audio signal from the push bell to be loud or annoying.



Figure 6: Push bell on bus.

Signage

Access to information on transport activities was a significant challenge for participants, as such information was either absent or difficult. Before our intervention, the primary source of information on critical services like transport routes, lorry fare and location of boarding buses was oral engagement with drivers and conductors. PWDs, especially persons with speech and hearing impairments, remained disadvantaged. On this score, a collaboration between the project team, transport operators and disability groups yielded a design concept for signage (Figure 7).



Figure 7: Signage on a bus.

To make our intervention unique/different, signage was printed on an opaque sticker and affixed on selected buses. Each bus had two signages, one on the windscreen and the other at the back of the vehicle, since passengers would easily see them. Participants shared their experiences/perceptions in the following remarks.

The signage helped me identify a car going in my direction, which can be difficult sometimes. One sad incident occurred when a deaf friend wanted to go to 37 from Circle and ended up on the wrong bus since there was no information to reduce the barrier to communication. This signage is beneficial [30-year-old male tailor with hearing impairment]

Two weeks ago, I noticed some buses had signage and information showing the terminal the bus was moving from and its destination. This has significantly helped me navigate and anticipate my stops better [42-year-old Female accountant with a physical impairment]

The signage information also assisted in knowing the bus terminal where the bus was moving from and where its destination was. Even though I couldn't see the information, my guide did not struggle to set a bus driving towards our desired location. According to my aid, some

of the buses have labels [25-year-old male musician with visual impairment]

All participants expressed a positive experience as the signage significantly reduced the stress of locating a bus or dealing with rude transport operators. This notwithstanding, visually impaired participants would need alternatives like the audio announcement or brail services to complement the signage.

Attitude of Transport Operators

The attitude of transport operators received mixed reactions. Generally, we observed significant improvements in PWDs' travel experience stemming from the many project team interactions with bus terminal executives and transport operators regarding the need to improve the relationships and experiences of PWDs. In various educational outreach with transport operators, the project team invited PWDs (Refer to Figure 2) to offer personalised accounts of their every challenge accessing transport services in the city. The engagement allowed transport operators to understand PWDs' struggles for reforms. PWDs expressed their opinion about the new attitude of some drivers:

Some are good; sometimes, when they know you are deaf, they tell the mate not to take money from you and make sure they will land you where you tell them. I have been in the car several times when some drivers didn't take money from me. [33-year-old female seamstress with hearing impairment]

I get more help than I used to experience. Last week, I joined the Trotro at Circle and noticed that the driver and his mate were more concerned about where I sat. They also ensured that they stopped the bus at my exact destination and asked if I had made arrangements to continue my trip. It's a nice feeling, but this experience has yet to be realised this week. Every driver should care more. [47-year-old unemployed male with visual impairment]

I have experienced a positive shift in attitudes. Bus conductors seem more willing to assist and are more patient with passengers with disabilities. I had a pleasant experience with the bus conductor at the terminal. I could recall a passenger shouting at me to hurry and get on

board, and in the heat of the situation, the bus conductor intervened and advised the passenger. In the end, I was impressed with the swift intervention from the bus conductor, but they can still do more [42-year-old female accountant with physical disability].

From the narratives, participants in all disability groups experienced an improvement in bus operators' attitudes. PWDs cited transport operators' willingness and readiness to exempt them from paying fares or joining queues, although such outcomes were not intended. It was fair to conclude that the additional outcomes were the product of transport operators' discretion (generosity) based on a series of education.

The interviewed participants keyed in on transport operators' concern for PWDs' well-being. For instance, transport operators' insistence on using priority seats and pursuit of offering assistance for PWDs to join/disembark from buses was vital. News of such activities is welcoming as it reassures the project team of transport operators' commitment to creating an inclusive service.

PWDs' negative experiences, adequacy and challenges of the interventions

Participants agreed on the usefulness of all interventions to their mobility needs since they were derived from participants and other stakeholder recommendations in SITUATE 1. The timing of the project interventions coincided with the National Council on Persons with Disability's (NCPWD) attempt to revise the current disability law as this law does not explicitly prescribe landing pads, signage, push bells and other assistive devices in public transport. Rather, Ghana's disability law only enjoins public transport operators to provide inclusive services without explicitly defining what inclusive services entail. This vacuum, in definition, resulted in transport operators' use of their subjective interpretation as seen in the use of 'common sense' or one's judgement in providing '*inclusive services*'. To the project team, these interventions may serve as a guideline in amending the current disability law, as indicated in the statement below.

The interventions brought great relief to me. To me (as a blind person), these stations will serve as a centre of attraction to prove what it takes to provide an inclusive transport service, particularly as we prepare to revise the current disability act [62-year-old pensioner with visual impairment]

It (the interventions) makes things easy and fast for us, like boarding a car. You know we find it too difficult to board a vehicle if the steps (landing pads)

are not there, but with the landing pads, I can quickly get on board, and, in the same way, I can alight from the car without facing any difficulty in doing so. [35-year-old female entrepreneur, Physically Challenged]

Besides, wheelchair users and those with hearing loss cited various benefits of using landing pads, priority seats, push bells, etc. The interventions have proven to serve a need and demonstrate the adoption of low-cost solutions to improve mobility needs.

Despite these, some participants felt the interventions needed to be revised as the scope and scale required to meet their expectations. Participants' remarks on the adequacy of project interventions are highlighted below.

The interventions are not adequate. I noticed the landing pad was not on board when I was about to deboard. The bus conductor reliably informed me that the ones at the terminal were insufficient. Hence, they could not carry it along. These made deboarding a bit difficult for me when I got to my destination [45-year-old female seamstress with a physical disability]

As it stands, the interventions are not adequate for my needs. More comprehensive and technology-driven solutions are required to enhance the mobility of visually impaired individuals in public transport [47-year-old unemployed male with visual impairment]

From the data, the scale/scope of the interventions ranked as the top item that influenced participants' position on their inadequacies. Participants opined that the interventions needed to be widespread and not limited to the case study bus terminals (Kwame Nkrumah Circle, Tema Station and 37 lorry station). Also, the project only engaged a section of drivers in each terminal, which was found to limit its ability to reach other drivers.

In other cases, intervention challenges also accounted for participants' impression of their inadequacy. Further reflection showed that providing each bus with a dedicated landing pad was practically impossible, hence the decision to share the five landing pads among buses at the study site. Even if the project funds could procure a landing pad for each bus, some buses needed more space on board to accommodate them. The project team may have to further engage transport operators and engineers to develop adaptable or foldable landing pads. For participants with visual impairment, the absence of audio/visual gadgets to announce bus stops highlighted views on the inadequacy of current interventions. This view was crucial to them since such gadgets would improve their ability to anticipate their next location while a bus is en route.

Finally, some participants expressed unhappiness with the attitudes of some transport operators, indicating that not all operators have been rehabilitated. Educational forums with transport operators on the need to develop a positive posture towards PWDs only occurred among a cross-section of transport operators in each terminal. Engaging all transport operators required much work, given their varying schedules and availability at the terminals. There is a need to engage the transport operators on an ongoing basis to consolidate the (positive attitudes of some drivers) gains made.

Participants recommendations

Using the code matrix systems, all three disability groups shared common recommendations in some respect. Among these, the need to improve educational outreach programs for transport operators accounted for 23 of the 60 child codes in all transcripts.

Code System	Hearing Impaired	Visually Impaired	Physically Challenged	SUM
Priority seats		•	•	2
Signage		•	•	2
TO behaviour	•	•	•	3
Collaboration for change	•	•	•	3
Landing pad	•	•	•	3
Education/Training	•	•	•	3
Σ SUM	4	6	6	16

Figure 8: Code matrix on participants' recommendations.

Key participant recommendations for transport operator educational outreach programs included the following:

I recommend that all drivers and their assistants be taught sign language to facilitate communication. Last year, when a deaf passenger fell ill, the inability to communicate with the driver and assistant caused delays. Learning sign language would enable them to assist in such situations more effectively [50-year-old Female shopkeeper with hearing impairment]

As a form of recommendation, I would like to educate the drivers to have love for us because we are all one people. We are pleading with them to have love for us anytime we come to the lorry station since we are also customers in the transport business. We deserve respect for our mobility issues [49-year-old female seamstress with a physical impairment]

From the aforementioned, participants called for an extensive educational approach to improve transport operators' perspective of persons with disability. If intensified and upscaled, such

educational forums would enhance the general outlook of PWDs, given the contributions of transport services to the enjoyment of various SDG goals. Beyond improved relations, persons with hearing impairment suggested basic lessons in sign language for transport operators.

With regards to landing pads, key recommendations included the following:

It was straightforward for me to get on board with the presence of the landing pad. But I noticed it was made of wood. If it could be made into foldable metal, it would help me as a visually impaired person, especially when I am exiting the bus [47-year-old unemployed male with visual Impairment]

The landing pad is very good, but I suggest you make it foldable and even with metal to last for a long time because some of us have a lot of weight, and the wooden one cannot last. [46-year-old Toll booth operator with physical impairment]

Other PWDs expressed their concern about the sustainability of this project. Some participants called for the following actions.

For these interventions to last, the authorities, like the police, should be part of it. As you know, in Ghana, our drivers do not respect those of us living with these conditions, and I think it is essential to involve the police [38-year-old unemployed female with visual Impairment]

Yeah, we should do quarterly monitoring of the interventions or engage in periodic inspections to determine if all these things have been used correctly. I recommend we sign some memorandum of agreement with drivers and the disabled groups or our organisations; if not, we may fail along the way [52-year-old male sports trainer with physical impairment]

To ensure sustainability or efficient use of current interventions, participants cited the role of the Ghana Police Service, disability-inclined NGO and opinion leaders in championing a full realisation of all benefits accrued from current interventions. Opinion leaders and disability-inclined NGOs were cited as a solid force to rally public opinion and draw attention to people whose activities impair the mobility of persons with disabilities. Here, such actors may carry

out public sensitisation programs on the state of public transport services or engage state actors to sign a memorandum with transport operators on best practices in public transport services.

The following suggestions were made regarding activities to ensure improved behaviour or reception from transport operators.

I recommend that all the drivers and their mates should respect us; likewise, some of the passengers need to be talked to so that the way they think about a person with a disability should stop [55-year-old unemployed female with hearing impairment]

I will recommend that there should be a way to report any driver or mates who may not reserve the seat for persons with disability to the authorities so that others could learn from and continue to do the right thing [29-year-old female shopkeeper with physical disability]

Firstly, a straightforward procedure to report recalcitrant transport operators who flout disability-inclusive bylaws for the disability community is apt. Such a procedure should prescribe a helpline for complaints and explicit punishment for all offences, as such information may deter transport operators from mistreating PWDs.

Visually impaired participants were concerned about the current signage solution in this study and called for an alternative solution:

The current visual signage does not directly benefit me when I am travelling alone; I would suggest the incorporation of braille information or audio announcing systems to enhance accessibility further [47-year-old unemployed male with visual impairment]

Participants' remarks on providing braille services to augment existing services offer further insight into improving our current interventions. Such services may require further engagement with the Ghana Blind Union's braille unit and transport operators to operationalise. Additionally, engaging audio equipment would be considered since such infrastructure exists within the study sites.

Key recommendations to improve priority seating included the following:

I think a law specifies reserved seats for persons with disability, but I think most people don't know, so I will encourage you (the research

team) to keep doing the right job. We need more information on this
[52-year-old male sports trainer with physical impairment]

*I recommend that all public transport should have priority seats clearly
labelled on all buses. I like what you are doing, but you need to do more
in other stations* [65-year-old male pensioner with visual impairment]

Participants wanted more attention on priority seats at a broader scale as the project teams' focus on three study sites did not seem enough for them. From the narratives, such attention is viewed from two perspectives: education on the need to reserve priority seats for the disability community and clarity on the position of priority seats. The earlier engagement resulted in the embossment of clear signage on the seat directly behind the driver since that reduced PWDs' stress in embarking and disembarking from buses. Further engagement to provide signage for priority seats is underway, given massive approval from transport operators.

TRANSPORT OPERATORS' (DRIVERS AND CONDUCTORS) PERSPECTIVE ON PROJECT INTERVENTION

Usefulness and adequacy of interventions

All transport operators engaged in this study indicated that they had witnessed commuters with disabilities utilise project interventions. Regarding their usefulness, transport operators unanimously confirmed the significant contribution of these interventions to PWDs' mobility experiences as they removed substantial barriers to accessing public transport in Accra. The following remarks were made on the interventions' usefulness.

It is beneficial because, as I said, it gives them (PWDs) priority. The landing pad helps those with difficulties boarding the bus, and the information signage helps commuters with hearing impairments identify and stop the car. These new tools make us more responsible to those with disability [52-year-old bus operator at the 37 bus station]

The interventions I have in my bus have proven highly useful in meeting the mobility needs of passengers with disabilities. They contribute to creating a more accommodating and inclusive public transport experience. For people who are blind, I try my best to provide seats for them behind me or in front to prevent continuous disturbance from other passengers [45-year-old bus driver at Tema Station]

As mentioned, these interventions elated transport operators, as they projected the GPRTU to be a more responsive transport operator. Additionally, transport operators credited these interventions with the increased patronage of their services by the disability community. The study shows that more inclusive trotro bus services expand PWDs' travel options through their convenient and cheaper service.

Regarding their adequacy, transport operators made it clear that current interventions were not sufficient to meet the needs of the disability community, as recounted in the following narratives:

The interventions are inadequate. I have a dedicated seat for PWDs in my bus, but four days ago, I picked four visually impaired persons along on my daily trip. Because your priority seat intervention sticker points to 3 seats, I wasn't sure what to do with the 4th blind passenger but had

to find other spaces of convenience for him [45-year-old bus operator at the Tema station]

While the current interventions are effective, there's always room for improvement. The introduction of landing pads at bus stops and enhanced communication methods, such as braille information and tactile markers, could further improve accessibility for individuals with disabilities [43-year-old bus operator at the 37 bus station]

The operators noted an absence of a detailed or explicit specification of various interventions in measuring the extent of progress made in providing an inclusive service. For instance, Ghana's Disability Act enjoins transport operators to reserve priority seats but does not specify the seats. Further, the Act also enjoins transport operators to provide inclusive services. Still, it remains silent on minimum vehicle requirements for public transport operators or a clear definition of what constitutes an inclusive service. To some transport operators, this gap in clarity makes it difficult to consider all project interventions as adequate since there is no straightforward approach to measure the success or failure of project interventions.

Supporting a call to make project interventions compulsory for transport operators

Amidst transport operators' perceived usefulness of project interventions, their commentary revealed an eagerness to upscale them. **However, they opposed a call to make the acquisition and use of these interventions mandatory.**

I fully support making these interventions compulsory for all transport operators in Accra since standardising these practices ensures consistency, making public transport more inclusive and accessible for everyone. My only issue is that making it compulsory may not get the desired result since most drivers do not even own the buses [38-year-old bus operator at Kwame Nkrumah Circle]

I support standard requirements for priority seating, ramps, written information, landing pads, and positive driver behaviour in all public transport. But if I compare our buses to what I see abroad, I don't think we can realise these interventions in my lifetime. Maybe the government should support us in buying newer vehicles as compared than forcing us to get these interventions [49-year-old bus operator at Tema Station]

From the narratives, transport operators' disapproval or uncertainty about the use of compulsion could be analysed from two perspectives. Firstly, most trotro drivers do not own their buses; hence, the decision to acquire such interventions solely rests on their employers (bus owners). From anecdotal evidence, bus owners oppose any action that increases their cost of operation. Secondly, no local policy instruments and bylaws have an explicit entry requirement for public transport operators beyond general statements on the state of vehicles in Ghana. This, therefore, creates a vacuum as transport operators may focus on meeting the minimum vehicular standards (lightning, tyre conditions, braking system, and others), which are crucial to attaining a roadworthy certificate (necessary condition to operate a vehicle in Ghana). As alluded to in the second narrative, transport operators consider disability-inclusive interventions to be a preserve for the global north, as seen in popular American and European movies. Financial support from the government to replace outdated, disability-unfriendly buses with disability-inclusive ones will generate the desirable. However, modern and inclusive buses may increase the cost of operation since these buses are much more expensive than second-hand buses from Europe and Asia that are commonly used by the informal transport sector.

Bus operator's perception of challenge(s) in implementing the interventions

On this theme, transport operators raised concerns about the 'un-adaptive' landing pad design and competition with the general population regarding the use of priority seats. The following remarks clarified these concerns.

The only challenge I can foresee is the landing pad. I have seen it, and it is very big and can be used in the car when you leave the station. The only option is to leave it at the station. So, only half of the problem is solved. But if the landing pad is small and can be folded, I think it will help because the conductor can fold it and put it at the back so that when those who need it to alight can use it [35-year-old bus driver at the 37 bus station]

In my vehicle, passenger attitude towards PWDs is a big problem. There have been several instances where I had to come in to settle minor misunderstandings between a PWD and a passenger. At times, it's about the seating position [29-year-old bus driver at Kwame Nkrumah Circle]

The design of the landing pads drew a lot of attention as transport operators always aspired to keep the landing pads in their vehicles to facilitate PWDs' entry/exit along a route. As indicated in the first narrative, the current landing pad solution only solves half the problem since it can only be deployed at the terminal. This situation is mainly due to inadequate storage space to keep the bulky landing pad in a bus. In other breath, the landing pads did not perfectly align with the entrance/exits of some buses as they were designed to suit commonly used buses like the Mercedes Benz 207 Sprinter and the Toyota Hiace. In such situations, commuters with disabilities still rely on external support (from transport operators or other passengers), which defeats our pursuit of an inclusive transport service. Perhaps future designs would factor these issues into consideration.

Secondly, the conflict between PWDs and other passengers for priority seats remained vital as the general population also preferred to enjoy such seats' benefits (swiftly joining/disembarking buses). The irony is that priority seats are clearly labelled (labels provided by the project team), but some people still prefer to use such seats while ignoring the transport operator's plea.

Since landing pads and other physical interventions were needed, hostile interpersonal relationships rendered such physical interventions useless since they discouraged PWDs from using trotro services. Unfortunately, transport operators appear powerless as they must contend with 'rude' passengers. Sometimes, transport operators are bold enough to evict such rude passengers, but this does not always happen. When unsuccessful, commuters with disabilities may have to adapt to the situation or find an alternative travel mode. In all cases, commuters with disabilities lose.

STAKEHOLDERS IN PUBLIC TRANSPORT REGULATION AND MANAGEMENT

Roles

The stakeholders offered insights on various activities and policies regulating disability and transport issues in Ghana. Yet the stakeholders' primary activities did not focus on realising an inclusive public transport system or improving the relationship between transport and mobility for vulnerable populations. Their core roles or activities focus exclusively on delivering transport services (for the general population) or non-transport services to the disability community (as the case for disability-inclined stakeholders).

The Ghana Blind Union is primarily an advocacy organisation; our target group is the blind and partially sighted in Ghana. Although we are critically an advocacy organisation, we are not limited to only advocacy; we also provide economic empowerment and self-empowerment training for blind persons. [Representative for Ghana Blind Union]

We are into serious transportation because GPRTU is undisputedly the leading transport operator in the country. We provide transport services for the entire nation since our services are cheap and readily available [Representative from Transport Service Providers- GPRTU]

As a police organisation, we only enforce compliance with laws about driving and other areas of life. We try our best to ensure respect for life, but with regards to transport, we are more interested in how people drive on the road [Representative from the Motor Traffic and Transport Department (MTTD) of the Ghana Police Service]

These remarks indicate the absence of a clear connection between various agents, even though each stakeholder plays a significant role in the transport and disability ecosystem. Transport issues were not prominently featured in the activities of the different disability stakeholders, as they tended to focus more on economic empowerment and social cohesion, which are crucial for PWDs' livelihood. The focus on social cohesion stems from the many instances of discrimination faced by the disability community.

On the other hand, some snippets of transport-inclined activities were realised in the activities of the Ghana Blind Union, which used the World White Cane Day Celebration to sensitise transport operators on the need to respect the virtually impaired. This, therefore, offered the platform to spearhead an engagement to provide priority seats and other services for persons with virtual impairment. The Federation of Disability organisations also engages transport operators on the need to provide services for the physically impaired. Funds for such engagements are borne by association members, which critically hampers the frequency of engagement and expected results.

Transport operators and the MTTD tend to provide mass transport services or enforce compliance with the Ghana Traffic Code (LI 2180), respectively. Unfortunately, both parties

do not target persons with disabilities. The Road Traffic Code LI2180 and other transport legislation need guidelines for creating inclusive services.

Support for the implementation of disability-inclusive services

As seen during the project interventions, the stakeholders supported the implementation of disability-inclusive services. While this support was reassuring, stakeholders' decisions were backed mainly by local policies or international regulatory frameworks that encouraged stakeholders to act as such.

Right now, as it stands, we still work with the Persons with Disability Act even though it's undergoing some modifications. However, we don't have any specific policy on mobility even though we've engaged some institutions to make sure we uplift the face of your project to make it very practical [representatives from the NCPWD]

As you know, Ghana has ratified the UNCRPD, and we are also doing the SDGs. These documents talk about the proper accessibility of the built environment. We have also been part of the development of the accessibility standards, the building codes and all that and this talk about public places, which includes our lorry parks [representative from the Ghana Blind Union]

No policy guidelines instruct us to exempt PWDs or offer any support service. I don't think I will also support any policy on fare exemptions. We are working, and I don't think I should lease seats because of PWDs. At times, I would even work for about two weeks or even a month without having a disabled person on board my vehicle. That would imply losses to us since we must lose about 5 cedis in and out because those seats are not occupied [Representative from the Transport Operators]

Challenges in ensuring inclusive mobility services

Many challenges impair the stakeholders' efforts to promote a disability-inclusive service. As shown in Figure 9, some challenges were common to most stakeholders, while others were unique to a few.

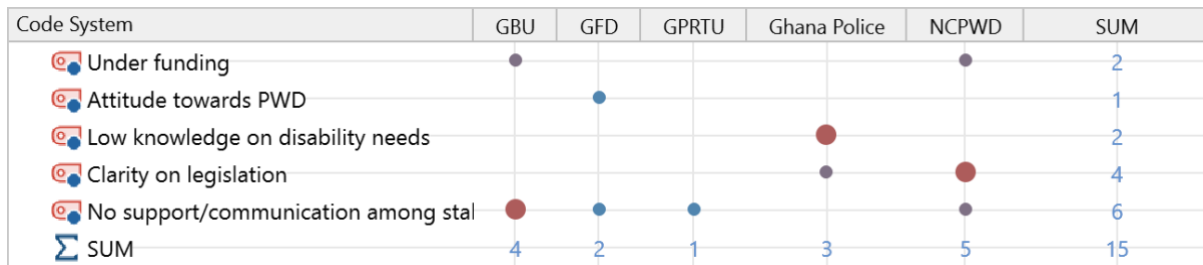


Figure 9: Challenges confronting stakeholders.

The project observed poor communication or engagement (i.e., synergy) among the stakeholders, who tended to focus on their areas of operation. For instance, the disability-inclined stakeholders complained of city planners' consistent neglect of disability-inclusive standards when planning in city and mobility planning: *'Some city planners claim ignorance of our existence and thus do not engage us in any inclusive planning [Representative from the Ghana Blind Union]'*.

On the other hand, transport operators were also cited for consistently ignoring requests for meetings or dialogue on mobility issues as they did not consider such invitations to be crucial for their operations, as seen in this narrative: *'This inclusive work requires many hands (PWDs, non-PWDs etc.) but we don't talk that often. Most of the time, it's the disability unions that engage the transport union on various subjects. Still, they don't invite us to dialogue on anything'* [Representative from the Ghana Federation of Disability Association- GFD]. This assertion was affirmed by the engaged transport provider's representative: *'For our business, we take instructions from the top, and these are our regional chairmen. I don't think we have ever invited the disability group except for the meetings you (the project team) organised for us. Well, this is not something we do; I will discuss the way forward with my leaders'* [Representative of the transport operators- GPRTU]. These narratives underscore the absence of a synergy and explain the actual state of public transport services to the needs of the disability community.

Ambiguity in Ghana's disability law was mentioned as another barrier that limits stakeholders' ability to enforce it. Unlike state laws like the Road Traffic Code, the disability act does not have an accompanying Legislative Instrument (LI) that prescribes punishment and penalties to individuals and groups that flout the law. This underscores the Police and other stakeholders' inability to enforce the current law. Concerns about the absence of a legislative framework were made clear in the following remark: *'One of our difficulties is the LI. Since we don't have the legislative instrument, right now, as it stands, if you even want to take anybody on, any lawyer can explain to fit his side of the argument...'* [Representative of the

NCPWD]. Representatives of the Police also cited their frustration in enforcing the disability act as the act does not offer specific details on critical activities to be done. The representative of the MTTD noted: *'I have looked at the disability act, and the issues are not sharp enough. For instance, the Traffic Codes forbid drivers to have a blood alcohol level of 0.08, but I don't even understand what it means to provide an inclusive service as the current law is not too clear on this'* [Representative of the MTTD]. Amidst these limitations, the NCPWD representative hinted at ongoing efforts to revise and clarify critical issues in the current disability law using lessons from our study and other best practices.

Low education on the PWDs' mobility needs further derailed stakeholders' ability to respond to PWDs' mobility in a timely and appropriate manner, as revealed by the representative from the MTTD. This conclusion was drawn as the stakeholders doubted the depth of transport operators' knowledge of Ghana's traffic code, which serves as the primary reference law for Ghanaian drivers. Further, the MTTD representative raised concerns about the quality of training offered at driving schools, which lack a curriculum addressing vulnerable populations' mobility needs. This assertion was made clear in the following narrative: *'...driver training is inadequate. As for disability issues, I don't think it's even mentioned there.'* This narrative offers an avenue to reform driver training in Ghana.

Finally, underfunding disability-inclined organisations significantly hampers their ability to execute current advocacy programs or develop new ones to reach different audiences. As such, the disability-inclined stakeholders resort to low-scale and zero-budget programs that limit their extent of engaging a wider audience. The GFD representative remarked: *'...the last time we did a large-scale educational program was seven years ago. Ever since, all the educational programs and audits have been from our own pockets. This prevents us from getting the desired results since most are not gainfully employed...'* Like many other state agencies, funding for activities is always in arrears. Still, for these stakeholders, such arrears could go as far as two years which significantly cripples them in all endeavours.

FINDINGS FROM NAIROBI, KENYA

Introduction

The study in Nairobi engaged a total of 51 participants. The participants were selected based on the criteria that they had initially used Roam Company's unique bus with built-in assistive technology before being interviewed about their mobility experiences. The average age of the participants was 37 years (the youngest was 21, and the oldest was 65). Of the total participants, 45 per cent were physically impaired, 29 per cent had hearing impairment, and 26 per cent were visually impaired. Table 4 below summarises the economic status of the participants (the majority were either self-employed or employed by someone else).

Table 4: Employment Status of the participants

Employment Status of the participants	
Employed	35.42%
Self Employed	39.58%
Student	4.17%
Unemployed	20.83%

Trip patterns

The study first established the duration of time that the participants have been using the specific route and the choice of mode of transport along the specified routes. From the data, most respondents had been using their route for 1 to 10 years, as shown in Figure 10 below.

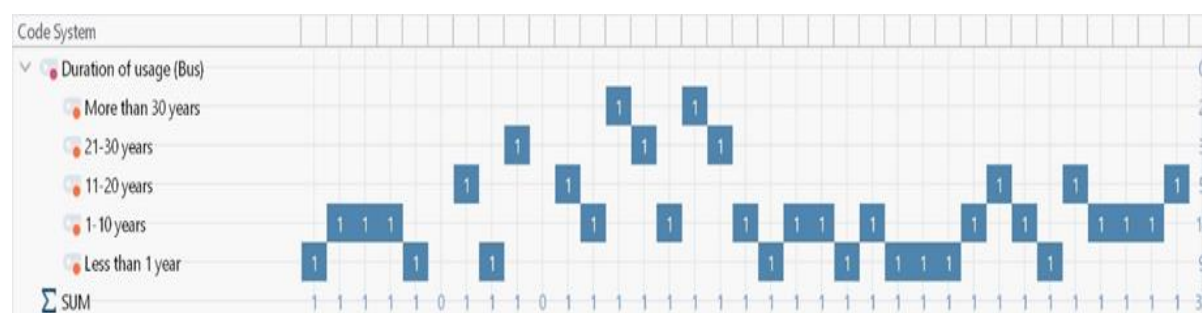


Figure 10: Code matrix browser of PWDs' trip pattern

The study also established the frequency of use of the public transport system by Persons with Disabilities. The frequency ranged from less than once a week to more than four times a week. From the data, 81 per cent of the participants with Hearing impairment recorded a frequency of more than three trips per week, whereas the physically and visually impaired recorded 59 and 40 per cent, respectively, for the same number of trips. Persons with visual impairment attributed safety as their main reason for not using public service vehicles, as quoted below:

“I was very well taken care of like a queen. I was so pleased because I felt we were being respected and treated with dignity; otherwise, public service transport was not for me. I had an encounter where I was harassed when I was dropped off at the wrong bus stop.” [53-years old Woman with visual impairment, KE-MM-008]

The participants made most trips for economic purposes, with work trips accounting for 35 per cent of all trips. Social visits to friends and family comprised 26 per cent of the trips, while recreational trips comprised only 1 per cent.

The Interventions: awareness of intervention features in Roam electric bus

As stated earlier, the Nairobi study engaged participants who had previously used a bus from Roam Electric with in-built assistive technology to assess their trip experiences. The interventions within the Roam electric bus included reserved priority seats, a landing pad, universal signage, wide doors, push bells, and improved attitudes of transport operators. As such, all participants demonstrated first-hand experience and knowledge of the bus with in-built features that constitute study interventions.



Figure 11: Roam electric bus in Nairobi.

The participants were the agents of awareness among their peers through their local networks and social media platforms on using the roam bus. Participants reported advising fellow persons with disabilities to use the Roam electric bus whenever they needed to make a trip due to its inclusive and friendly features. The awareness was also attributed to the fact that during the launch of the Roam electric bus in August 2023, the company invited persons with disabilities as stakeholders to enjoy the first ride and give feedback on their experience. Since then, awareness of the interventions in the form of assistive features in the bus became popular

among persons with disabilities, prompting the Roam bus to be their preferred choice of public transport while abandoning the inhibitive 14-seater para transit commonly referred to as *matatus*.

Participants across all categories of persons with disabilities most noticed the improved attitude of the bus operators. Wide doors and priority seats followed this in that order. Participants saw the lack of a communication aid, followed by the lack of (legible) signage, as missing interventions that would otherwise be useful to persons with disabilities.

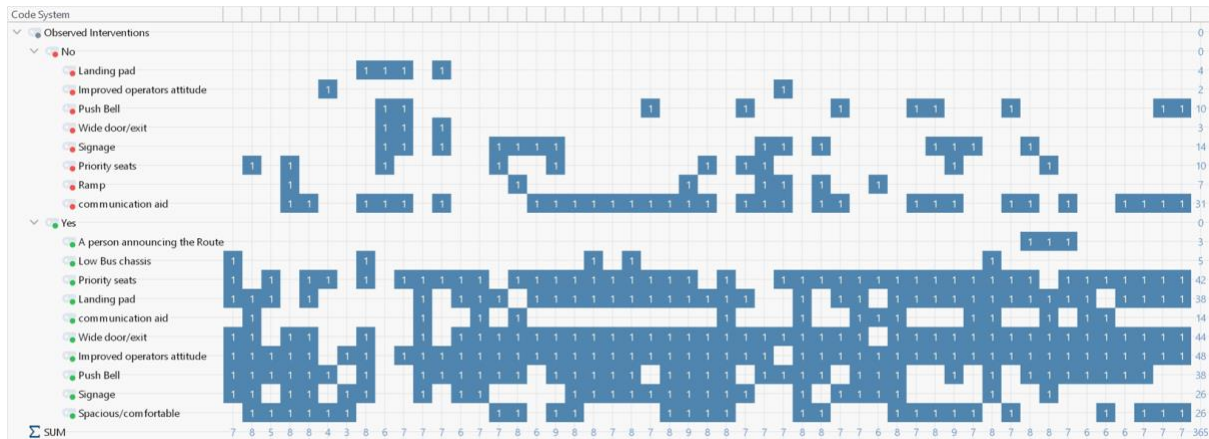


Figure 12: Observed Interventions

The Priority seats.

As earlier indicated, the Roam bus had a section of its seating area with reserved seats dedicated to Persons with Disabilities using the universal signage, as seen in the photos below. The seats are painted bright orange to be easily distinguished from the rest. Moreover, the reserved seats are well labelled with the words 'priority seat' to communicate their purpose.



Figure 13: Priority seats.

Most persons with disability appreciated such an intervention as they found the priority seating areas (i) are located conveniently to the entrance and about the entire body of the vehicle, (ii) are comfortable, and (iii) offer assurance and guarantee that they would find somewhere to sit despite the bus being full. The below interview excerpts demonstrate participants' experience of priority seats:

*"I loved the bus because **priority seats** were reserved. There was a day I boarded it while it was full, and the conductor told the person sitting on the seat to excuse me because that seat was prioritised for us. It is also accommodating because it's not very high, so it's easier to board with crutches"* [32-years old woman with a physical impairment]

However, a section of persons with hearing impairment felt the seat was not reserved for them and would refrain from using it or would be instructed not to use it. This was attributed to the fact that it is not apparent to recognise a person with hearing impairment compared to persons with physical impairment in a wheelchair or crutches. As such, the hearing-impaired category of persons with disabilities demonstrated unpleasant and unwelcome experiences with the use of priority seats.

"Yes, I noticed them, but I didn't use them. Unfortunately, the signage doesn't involve the deaf community." [34-years old Man with hearing impairment]

"The priority seat was there, but it is not for deaf people." [30-years old with Hearing impairment]

"I first saw the chair was free, and then I was like, do I sit? I felt it when I went in and sat on it. I felt comfortable, but later, somebody came and told me to walk out, so I left that seat because it looked like they felt I was not a person with a disability, so I had to walk out from the seat." [30-years old man with hearing impairment]

The respondents, especially those with visual impairment, did not notice the priority seats in some instances despite using them. This, however, can be attributed to a need for more information on the interventions provided.

"No, I did not notice, though. I don't know if they are the ones that were facing each other because there was such a setting." [53-years old man with visual impairment]

The participants, however, raised different concerns that hampered their use of the priority seats. First, there were some concerns about the arrangement of the seats. Still, the main problem was that the seats would occasionally not function as reserved seats, and other users would use them, hence denying the persons with disability the benefits of having such seats.

“Yes, I have used them. The priority seat arrangement is the first one for the elderly, the second one for pregnant women, and the third row for people with disabilities. I would like to see them rearranged so that the first row is reserved for people with disabilities.” [38-year-old man with physical impairment].

“Yes, they are working unless you realise someone ignorant sits on them. Yeah, because sometimes they are told like these seats are prioritised for persons with disability, and pregnant women, or even mothers with babies, mothers who are lactating, but because you feel like no other person is coming in, the bus is already full, you decide to sit there. So, when I board, you're not comfortable going behind. So, you want me to go behind. So, the priority seats are there. But I feel that the people, the society, still do not understand why they are priority seats.” [29-year-old Woman with a physical impairment].

Landing Pad/Ramp/Low floor

The bus was fitted with a retractable ramp that physically impaired persons in wheelchairs would use to board. The bus did not have stairs at the entrance. Additionally, the bus has an internal mechanism lowers the landing pad to the ground level during the boarding and alighting process, as demonstrated by the photos below.



Figure 14: Landing pads on board

From the previous study, Persons with Disability felt that their constant need for help when boarding or alighting from buses took away their dignity and contributed to some bus operators ignoring them when they tried to use their vehicles. Most Persons with Disability felt that the ramp, the low floor and the lack of stairs on the bus significantly improved their journey experience and eliminated the need to rely on others.

“The bus has a low floor design, which minimises the need for struggle while boarding it.” [26-years old Man with hearing impairment]

“The bus is slightly lower for disabled people in wheelchairs and crutches to board easily.” [36-years old Man with physical impairment]

“Yes, I noticed because when boarding the bus the first time, I thought I was still scaling up, but then I reached the end of the stairs very fast.”
[48-years old Man visual impairment]

All the participants felt the intervention was essential as it made their journey more accessible, as witnessed by the extracted testimonies. Respondents with Physical Impairment, however, were the most grateful category as they felt that the interventions addressed their needs directly, especially those using wheelchairs.

“The stairs would go very low to the ground, and it was easier to alight than other buses.” [32-year-old Woman with visual impairment].

“I want to appreciate that this bus is accessible when you want to board because it has a ramp.” [38-year-old man with physical impairment].

Communication Aid

The communication aid was the least observed intervention among the interventions that the study sought to investigate. The lack of a communication aid was a big challenge for most participants, especially those with hearing impairment, as they needed help communicating with the bus operators to understand the route information and fare or requesting the bus to stop. Respondents with Hearing impairment resorted to using their phones whenever they needed to communicate something to the bus operators.

“If I needed to go a certain route, I used my phone and asked the tout, “Are you going to Karen?” Then I boarded.” [30-year-old Woman with hearing impairment].

Some participants with physical impairment were not very concerned about the lack of a communication aid as long as their other needs were met, such as the presence of a ramp and a wheelchair space.

“I’m not very keen on what I don’t use. So, the communication aid, most of the time, I won’t concentrate on it because I’m already in a wheelchair. So, whatever I need to use is what I concentrate on. So, because I’m in a wheelchair, I will concentrate on the ramp and the place where I will stay with my wheelchair.” [30-year-old Woman with physical impairment].

Wide Door

The feedback on the size and design of the door was overwhelmingly positive. The participants felt that the door accommodated every person and significantly made boarding the bus easier. This was attributed to the larger design of the door, the grills on the door, and the door's proximity to the driver.



Figure 15: Buses with wider doors

“The doors are wide enough. They are very spacious. The door is also close to the driver, so he can see you, unlike those with the doors at the back, which is a risk.” [50-year-old man with physical disability].

“The door was good. It was straightforward to get into the bus, and the wideness of the door is good, and compared to other ones, it is better.” [47-year-old man with visual impairment].

Improved attitude of the Bus operators

The bus operators' positive attitude was the study's most recognised aspect. This was not a physical intervention, but other interventions catering to the Persons with Disability seemed to change the operator's view of the Persons with Disabilities. This can be attributed to the fact that Persons with Disability do not need as much help boarding and alighting. Therefore, the operators are less likely to feel inconvenienced by their presence.



Figure 16: PWDs receiving support from Transport operators.

“Moreover, there was a conductor onboard whom I informed of my intended stop. He kindly reminded me when we arrived, ensuring I alighted at the correct point. This level of assistance is particularly noteworthy, as it contrasts with the typical experiences in other public transportation settings where conductors can be less accommodating. Notably, the staff aboard the Roam Bus were attentive to my needs, recognising that I am hearing impaired, and provided appropriate guidance throughout the journey.” [31-year-old man with hearing impairment].

“Compared to other buses, their attitude was very good because they'll see that I have a disability and I'm struggling to board the bus, and they'll try to help me even before I ask for help. In other buses, the car starts moving even before I sit down; they don't wait for you to sit down and settle.” [25-year-old Woman with physical impairment].

However, there were some challenges, especially with participants with hearing impairment. The language barrier was a big challenge, and in some cases, it affected the relationship between the passengers and the bus operators.

“While most conductors treat me well, there was one instance where a conductor asked for the bus fare, but I couldn't hear what he was saying. I felt slightly offended, but their attitude has been good overall.” [34-year-old man with hearing impairment].

Push Bell

In most buses in Nairobi, passengers who wish to alight must move closer to the door while the bus is still moving and alert the conductor of their intention to alight. In smaller vehicles, the passengers are expected to shout to the conductor, who then bang on the vehicle's bodywork to alert the driver to stop the vehicle. The push bells allow the passenger to alert both the conductor and the driver of the intention to alight while still seated and without shouting.

Most participants felt the push bell was crucial and positively impacted their journey. However, some of the People with disabilities did not fully understand its functionality despite noticing it.

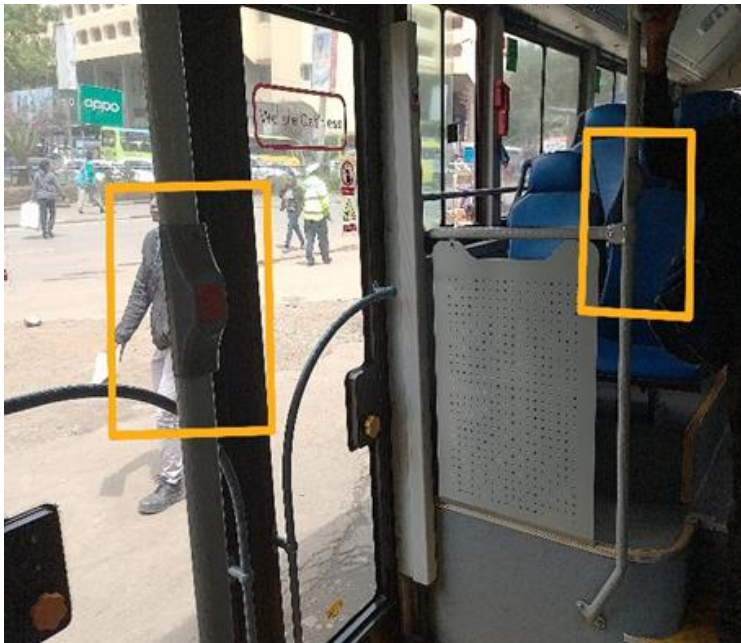


Figure 17: Push bells on electric buses.

“Yes. In other buses, we usually tap the taut to let them know we have reached our destination, but in the electric bus, I push the bell, and the bus stops.” [35-year-old man with hearing impairment].

“Yes, they are easily accessible, although I didn’t use them as I had communicated my stop earlier.” [42-year-old man with Physical impairment].

Some participants also felt that the push bells, despite being available, were not easily accessible and did not benefit their journey.

“Additionally, the presence of bell pushers, although not easily accessible for me, adds convenience.” [34-year-old man with hearing impairment].

“Okay, you see, the ones that I normally board, the bell pusher is somewhere up, so someone in a wheelchair cannot access it. Or someone with a short stature.” [29-year-old Woman with physical impairment].

Signage

Different types of signage provided information on the bus. The bus had screens at the front, back, and side showing the route it was following. There were also temporary signs showing the main bus stops and the trip fare. Inside the bus was a fare chart and the mobile money number to make the payment.



Figure 18: Signage on electric buses.

However, the data show that the participant feedback could have been more positive. This can be attributed to various factors, including the screen's brightness displaying the route information, the complex nature of the chart showing the fare amount, and the font size of the letters.

“Yes, yes. They have written boards on the stage. Before you board, there is a written board that reads where you are going; for example, if you're going to do Donhom, it is written Donhom, 60 or 30 or 40. Each stage has its price.” [29-year-old Woman with physical impairment].

Despite showing the necessary information, the screen provided needed to be more easily legible, as the testimony below indicates.

“Yes, I saw a display telling me where the bus was headed, but it was unclear and could only be seen when it was dark.” [32-year-old Woman with hearing impairment].

The signage interventions provided, despite being useful, were sometimes not available, given their temporary nature. The signage signs were printed on a piece of paper and laminated for protection from water and durability. They were then attached to the bus at the bus stop or given to a tout to hold while calling out for passengers in the station. This meant that they would not be available at the smaller bus stops.

“No, I did not notice something like that. The only thing I saw was when the touts were calling out for people to come in, so when I entered the bus, I told the conductor where I was alighting from, and that was the only communication I had. There was no signage or something like that to show me that information.” [22-year-old Woman with Hearing Impairment].

The most common signage noticed by the participants was the presence of the mobile money payment number. However, the signage could have been more helpful, as most participants stated that they still had to ask the tout for the amount to be paid.

“It had the M-Pesa till, and there was no way of knowing how much to pay. So, if I needed to know how much, I would have to ask the tout, and I used my phone.” [30-year-old woman with Hearing Impairment].

Usefulness of Interventions

The participants found the interventions to be extremely useful in improving their mobility. The priority seats were listed as the most helpful intervention, followed by the Landing Pad. However, the degree of usefulness of each intervention varied among the participants depending on their disabilities. Participants with Physical Impairment found the Landing pad/Ramp to be the most useful, while those with Hearing Impairment found the Push Bell to be the most useful. On the other hand, participants with Visual Impairment found the Priority seat to be the most useful.

“The presence of a landing pad significantly aids my mobility, and the conductors and drivers' assistance boost my confidence during travel.” [22-year-old man with physical disability].

“The presence of bell pushers did facilitate easier disembarking from the bus, but the lack of communication aids posed a significant challenge for me.” [21-year-old Woman with hearing impairment].

“Starting with the seating arrangement made me feel comfortable because the sitting allowance is okay. I think I noticed that we were sitting two-to-two, and the walking way is wider, so you don’t knock on seats. They are kind enough to wait for the bus to stop, and then I alight without rushing to alight when the bus is still moving.” [48-year-old Woman with visual impairment].

Adequacy of Interventions

Sixty-five (65) per cent of the participants felt the interventions were inadequate. The sentiment, however, differed from one disability type to another. Seventy-one per cent of the participants with visual impairment felt that the interventions were not adequate, while 66 per cent of the participants with hearing impairment felt the same. Additionally, 60% of participants with Physical Impairment felt the interventions were inadequate. This aspect can be attributed to how helpful the ramp was to the participants with Physical Impairment and its impact on their mobility. While the majority attributed the inadequacy of the interventions to the low number of inclusive buses, there were also concerns about the design of the bus, including the lack of space to place crutches, few wheelchair spaces and a lack of grills to guide Visually Impaired individuals when boarding or alighting the bus.

“The interventions are good, but what is lacking is the buses. The intervention is noble; it motivates other institutions and organisations to develop such buses. What is limiting is that few buses can accommodate People with Disabilities. And you see these few buses are allocated in different directions, meaning they might be on a different route when I go home. This means the more buses we have, the better we are at addressing some of these challenges” [38-year-old Man with physical impairment].

“I think they should improve because when I was getting into the bus, I could not feel the grill to help me climb up, and mostly, we, the visually

impaired, are guided by such grills.” [57-year-old man with visual impairment].

Participants Recommendations

#	Recommendation	Participants Recommending
1.	Provide more disability inclusive buses.	65%
2.	Provide education/Training.	43%
3.	Add communication aids in the buses.	22%
4.	Employ People with Disabilities in the transport sector.	20%
5.	Collaboration for change.	18%
6.	Improve roads.	16%
7.	Provide more wheelchair spaces.	14%
8.	Improve the terminals and stops.	12%

The recommendation made by most participants was to increase the number of disability-inclusive buses on various routes. This was expected as there is currently only one bus equipped with the necessary assistive technology enjoyed by the participants during the study. This means that the participants would encounter the bus occasionally, and most of their journeys were made on the traditional buses.

If such buses were available, we would use them for people with disabilities to go to town and all other places exclusively. So I feel there should be many such buses, especially in Kibera, because we have a lot of people with disabilities coming from Kibera. The cars that can accommodate them are not many, maybe just one, so if we got three vehicles, that would be a perfect option, and those cars would stop in different places, maybe one here, another one on the other side and perhaps another one on another side. [27-year-old Woman with a physical impairment].

Providing education and training was also a significant recommendation. Participants in all categories felt that there was a need to train them on how to use the bus so they could enjoy all the benefits provided by the assistive features of the bus.

“I would only want to know more about electric buses if there could be some training on how to use them, how to use the bell, and much more. I wish to get a lot more training on this. So, for example, if I use the bell, as a deaf person, it does not help me.” [30-year-old man with hearing impairment].

Participants with Hearing impairment felt that the bus operators should be trained in sign language to ease or eliminate the language barrier between them. They also felt that employing persons with disabilities in the sector would serve the same purpose while providing employment opportunities. This sentiment was echoed by other participants in the other two categories. The participants also felt that training the bus operators to treat persons with disabilities was crucial in improving how the operators handled them when using the buses. Additionally, participants recommended community sensitisation on both the use of the bus regarding priorities given to persons with disabilities and how to treat persons with disabilities.

“The staff could also learn sign language. It would be easy to communicate.” [35-year-old man with hearing impairment].

“The transport operators could be enlightened and empowered on understanding disabilities, a person with a wheelchair, a person with a visual impairment, they should be taught how to handle them better. Training them and letting them remember that we are still human beings, and our world is fragile.” [53-year-old Woman with visual impairment].

“Yes, I noticed it, but I don’t know whether the operators have been sensitised because I found it occupied by an abled person. The operators need to be trained so that they can understand that the priority seats are for people with Disabilities because I was forced to sit in a different seat.” [49-year-old man with physical disability].

The participants stated that collaboration among the stakeholders in the transport sector could improve it. Notably, they mentioned that the national government should work with other institutions, such as the SACCOS, which owns the buses, and the National Council of Persons with Disabilities, to effect positive change in the sector. They also felt that constant consultation with them is crucial in ensuring what is implemented is useful and caters to their needs.

“Yes, I think they can continue in the future. Inclusive transport can be done and is achievable if the government works closely with the transport sector and Matatu (Bus) owners, so it is not just for profit making.” [32-year-old Woman with a physical impairment].

“And of course, the interview you've given us 30 minutes it's not enough. Requested that we have a full day forum so that at least you could experience from all Persons with Disability every quarter where you could call these people like this is the plan we have, what we have put in place and then in the future what do you want us to change, what do you think is fine? In the future, getting feedback is the best way for me to improve regarding transport.” [37-year-old man with visual impairment].

The participants also called for improving the roads and terminals. Participants with visual impairments called for better roads, specifically better pavement, as smooth surfaces are crucial to their journey.

“You see the walkways; you must know where you are walking; otherwise, you'll be in trouble. The walkways are being reconstructed, and other things are being added, but the pavements are not prioritised. And it's because even if the bus is comfortable and such interventions have been implemented, we must come from somewhere. So, it would be okay if those walkways could be done and done with consideration.” [48-year-old Woman with visual impairment].

“The terminus should also be properly arranged so that as a person with visual impairment, I should know that this car goes to this location and the other car goes to the other location, and everybody should know where specific cars plying specific routes are usually located.” [47-year-old man with visual impairment].

There were other recommendations from the participants, including:

- i. Adding a talk-back feature for participants with Visual Impairment.
- ii. Adding grills for guidance and support for participants with Visual & Physical impairment.

- iii. Providing route and bus schedule information.
- iv. Giving priority to Persons with disabilities at the bus stops.

TRANSPORT OPERATORS' (DRIVERS AND CONDUCTORS) PERSPECTIVE ON PROJECT INTERVENTION

The study involved two transport operators fully utilising the bus's interventions. The driver and bus conductor had used the Roam electric bus for over six months. They were in an excellent position to provide a comprehensive perspective on the usefulness and possible challenges experienced. The operators pointed out that they are very patient with Persons with Disabilities, allowing them to board the bus at their pace and prioritising them whenever available. This was reflected in the PWDs' responses, who felt the attitude of the operators for this specific bus was significantly improved.

"Yes, in addition to the vehicle's features, we ensure they receive attentive and patient assistance, contributing to their comfort." [Bus Conductor]

Usefulness and adequacy of interventions

The operators felt the interventions were beneficial, especially to the elderly and people who would find stairs challenging. However, they faulted the adequacy of the interventions based on the number of priority seats. They felt that the priority seats needed to be more adequate and increased.

"They are adequate, but I still think they must be increased. The number of seats on the bus should be increased, especially the priority seats, so that everyone gets a seat and everyone's comfort level is improved." [Bus driver]

When asked whether additional facilities were necessary, the operators felt that the facilities already in place would fully accommodate the PWDs if they were increased in number.

"I don't think anything needs to be added because it takes care of everyone as is. It was designed to take care of everyone's needs. Much thought and care went into that design to make it adequate for every type of disability." [Bus driver]

Supporting a call to make project interventions compulsory for transport operators

The operators did support the call for the interventions to be made permanent. They felt that such a bus attracted more passengers and was very favoured by the PWDs who used it. This supports the responses from the PWDs, as some of them mentioned they felt more confident using public transport when such interventions and features were provided. The operators also felt that making such interventions permanent ensured equality in the transport sector as other buses discriminate in service for persons with disabilities.

“To sustain this intervention, we have proposed that the next batch of vehicles be exactly like this one so that they can take care of everyone’s interests. Inclusive vehicles attract more customers and make our clients happier with our services, which is good for business” [Bus Driver].

Challenges in implementing the interventions.

The operators encountered various challenges when implementing the interventions, most of which they attributed to a need for more awareness, especially from other passengers using the same bus. One of the main challenges was impatience from other passengers, especially at the bus stops. Most public vehicles must be faster when dropping passengers at various bus stops. From the PWD's responses, this was a challenge for them as some of them had gotten into accidents when vehicles started moving before they fully stepped out when alighting or got to their seats when boarding. However, the bus used in the study would come to a complete stop, and some passengers may have deemed this time-wasting. The operators also pointed out that some passengers would decline to prioritise persons with disabilities even in their designated seats.

“Sometimes you hear people complain that the vehicle is taking too long at the stops, but we try to educate them that everyone has a right to use it. Some motorists are impatient and don’t want to allow the PWD time to alight patiently. Some sit on the priority seats and don’t want to leave them for the PWDs, claiming they have paid the fare. We face the challenge of lack of awareness of the interventions from other passengers.” [Bus Driver]

STAKEHOLDERS IN PUBLIC TRANSPORT REGULATION AND MANAGEMENT

Six stakeholders were interviewed for the study. The stakeholders were from different organisations dealing with various aspects of the transport sector. They included stakeholders from the following organisations and institutions: County Bus Sacco, National Council of Persons with Disabilities, Roam Electric Bus Company, National Transport and Safety Authority, Nairobi City County Government, and the Traffic Police.

Roles

County Bus Sacco is responsible for providing transport services in the city, while Roam Electric is responsible for designing modern buses for the transport system. The Kenya team utilised the bus from Roam Electric for the study as it contained most of the assistive features and technology necessary for more effortless mobility of persons with disabilities. The National Council for Persons with Disability is responsible for creating awareness and advocating for the inclusion of persons with disabilities in various sectors, including the transport sector. The county government is responsible for the city's infrastructure and enforcing rules and regulations provided by county bylaws.

“We do support disability-friendly measures, especially through awareness and talking to the Matatu owner’s association, and we have been working with NAMATA to make sure that they put infrastructure in place that is disability friendly. We continually engage them, and we participate in most of the things that they do. We are key stakeholders, especially in developing their policy inclusion for persons with disabilities programs.” [NCPWD Representative]

“We are a product company, so we just design and develop based on the specifications; for example, the roaming bus was designed to the NAMATA’s specifications.” [Roam Representative]

The traffic police and the National Transport and Safety Authority enforce the rules and regulations the law provides. These organisations, therefore, are responsible for the safety of all road users and are not necessarily concerned with inclusivity and equality in the transport sector. This is also reflected in the implementation of their mandate. In some cases, they feel that ensuring inclusivity is a social obligation, not a legal one they must adhere to.

“We are more concerned with the road safety of every user. Our role is to look at what facilitates road safety for every user. We defend road

users, pedestrians, drivers, and passengers, among others, who look at the entire transport sector” [NTSA Representative].

“In traffic or when you are in transport space, enforcement will normally categorise road users. We have people we call vulnerable road users; these are children, people living with disabilities, older people, expectant mothers, and many others. We do not have a clear law on how to handle people living with disabilities, but when we bring them to the vulnerable Road user space now, we pick them from there”
[Traffic Police Representative].

From the above remarks, the institutions clearly understand and try to play their role in the transport sector but encounter various limitations in ensuring inclusivity. The National Council, although the most vocal on matters of inclusivity, needs more power to ensure that what it proposes is enforced.

“As a national council, we may not have a policy that will directly affect transport, but we always participate in the policy-making of transport sector state actors like KERRA, KURA KENHA, Kenya Airports Authority, and Kenya Civil Aviation Authority so that we can influence their policies to ensure that the entire public transport system is inclusive” [NCPWD representative].

Support implementation of disability-inclusive services

Institutions and organisations have taken various steps to improve inclusivity in the transport sector. They are also looking to collaborate with individuals to help them implement the necessary infrastructure for inclusivity. This is a very positive step as it shows that they recognise the diversity of the needs of people with disabilities and the need to involve them in the process.

The institutions are also trying to create awareness of various aspects of the transport sector that would enhance inclusivity. The County Bus Sacco is trying to create awareness of the uses of the bus with inclusive technology, although they don't feel they are very successful in that endeavour. The county government and the national council also create awareness by guiding the operators on treating persons with disabilities ethically.

“We have tried to create awareness to the public transport operators to make sure that they treat the PWDs with respect and decorum when

boarding and alighting from the public transport vehicles.” [Nairobi City County Representative]

“Yes, we support disability-friendly measures, especially through awareness and talking to the Matatu Owners Association. We have been working with NAMATA to ensure they put disability-friendly infrastructure in place” [NCPWD Representative].

The National Safety and Transport Authority also claimed to have a plan to launch very soon with various provisions for persons with disabilities.

“We have domesticated this action plan into our national road safety plan, which will be launched very soon. We are seeing proposals in the plan to ensure that every road now constructed has new approved designs with provisions for persons with disabilities. We are happy as authorities because we have a full-fledged department that looks at road audits and inspections, and there is so much information sharing among ourselves” [NTSA Representative].

The County Bus Sacco is developing an app that will allow commuters to track the location and route of their buses, helping them better plan their journeys.

Challenges and Barriers to Inclusivity

The study tried to establish the challenges and barriers plaguing implementing inclusive interventions in the transport sector. Some of the main challenges the stakeholders brought up include a need for more precise guidelines on what to implement, poor inadequacy of enforcement, lack of awareness, and high implementation costs.

Code System	[CBS]	[NCPWD]	[Roam]	[NTSA]	[County]	[Police]	SUM
Barriers/Challenges to inclusivity							4
Culture							5
Fragmented Nature of the transport sy							1
Lack of enforcement							2
Poor infrastructure							4
Lack of awareness							5
Lack of guidelines							8
The cost of implementation							4
Σ SUM	11	5	2	7	3	5	33

Figure 19: Challenges confronting stakeholders

The stakeholders quoted culture as one of the major barriers to implementing a disability-inclusive transport system. They attributed the culture to the expected behaviour of the various

actors in the transport industry and the public in general. The stakeholders were concerned about the security and longevity of the implemented interventions, such as the automated crossings with audio-visual features in the CBD. Vandalism was a concern as it would highly jeopardise the long-term usability of the interventions implemented. The Matatu operators were considered unfriendly to persons with disabilities, too. This attitude was partly attributed to the vehicles' nature, as highlighted by the traffic police representative below.

“I am telling you when you receive or see people living with disability, when they are on stage (Bus stop), they are being looked upon, and the tout is saying “No, you wait, I can't go with nobody with clutches to aboard the vehicle” and you can't blame that's conductor because there is no space in that vehicle to accommodate this person with special needs and before there was no law compelling that the person is carried.” [Traffic Police Representative]

The issue of lack of awareness was multifaceted. The stakeholders identified different areas where awareness was an issue. The SACCO representative felt that Persons with a disability were not aware of the various interventions that were provided to cater for them. This made the interventions they provided obsolete and even more expensive as the provisions for the Persons with Disability were costly to install and took up more space. The second aspect of lack of awareness was from the road users, the passengers and the institutions. The public is not fully aware of the needs of persons with disabilities. It is, therefore, incapable of assisting them where necessary or giving them the space required to practise their rights. The lack of awareness from other road users has also led to the abuse of infrastructure dedicated to Persons with disabilities. In contrast, in government institutions and other private institutions, it has led to complete disregard of the necessary infrastructure crucial to the mobility of persons with disabilities.

“Exactly, because when we took that data, how many disabled people could use the vehicle in ten hours was very discouraging. Either they don't know....and I went with it in Kawangware, I had to insist, stop and call people and tell them “it's okay, you can use the bus” So, I found that it either we are not able to reach that market or the people assume we are not for public transport because the numbers were discouraging for a whole week, I think one day we carried two people on a wheelchair, another day we carried seven of them. We had to

convince them that the bus was for them.” [County Bus Sacco Representative].

The lack of legal guidelines for the transport sector inclusion was a major challenge highlighted by most of the stakeholders. This barrier was significant, especially from the National Transport and Safety Authority, which inspects all motor vehicles to ensure they adhere to the country's legal provisions. Therefore, no law compelled the matatu operators and other actors to provide or equip their vehicles and infrastructure with features necessary for inclusivity. There were also no guidelines provided to the vehicle fabricators and the SACCO that provide the transport services in the city. From the remarks of the SACCO representative, they had to look elsewhere to understand what to implement regarding inclusivity. The ROAM and NTSA representatives also shared the same sentiment.

“I think it's because of information on what is necessary to accommodate the People with Disabilities. That information is very faint; on my part, as a business owner, I did not have that kind of information until I had to get on a plane and look for another country which has implemented it on their public transport. so here in Kenya, we don't have that information.” [County Bus Sacco Representative]

“We do not have obvious guidelines for designing very inclusive buses. It's not mandatory, so most of our buses here are made based on truck chassis” [Roam Representative].

“I even looked at our motor vehicle inspections, and I was faulting our engineers, what do you inspect, but then they took me to our regulations of inspections, and it is purely mechanical issues. Nobody seems to ask how your seats are. Do you have a seat for PWDs? Trust me, no. As we reviewed the Traffic Act and our NTSA Act, we want to add some of those regulations to the motor vehicle inspection regulations.” [NTSA Representative]

Enforcement was also a significant challenge to ensuring inclusivity in the transportation sector. The National Council, despite being the most critical institution in ensuring the inclusion of persons with disabilities, does not have the power to enforce its recommendations. The county government also cited the need for more personnel as a hindrance to its enforcement ability.

“Yes, because if you look at it in terms of personnel, we do not have enough personnel to train to enforce the same.” [Nairobi City County Representative]

“The council being an agency responsible for disability issues in the country, where it misses is the enforcement mechanism, that it cannot enforce that it cannot take any institution and say you have violated this when it comes to rights of people with disabilities. So, if the council can be given more power to enforce some of the things the entire transport sector needs to implement, it would be great. So, I'm talking about the gap in terms of legal, so we have a legal gap” [NCPWD Representative]

Other barriers identified by the stakeholders included the high cost of implementing the intervention, lack of collaboration between different sectors in the transport industry, and poor infrastructure. The SACCOs providing transport services in the city are profit-oriented and, therefore, are not likely to implement interventions that would reduce their earnings.

“As I mentioned, the public transport sector is now private, and interests control it. First, the bus's configuration has much to do with cost; the operators have requirements and look at affordability over inclusivity because the costs are very different. So, that is why I am saying that for a government project, we can do as much work with long-term spending rather than the short-term that we see in the Matatu industry” [Roam Representative].

Stakeholders' proposals

As shown below, the stakeholders made various proposals to make the transport sector more inclusive.

Code System	[CBS]	[NCPWD]	[Roam]	[NTSA]	[County]	[Police]	SUM
Proposals for Inclusivity							0
Finance inclusive transport projects			1				1
Adhere to inclusive designs	1	2	1	1	1	1	9
Enforcement		1		1	2		6
Collaboration	1	1		1			3
Education and Training	2	1					3
SUM	4	7	2	4	4	1	22

Figure 20: Stakeholders' proposal.

Adherence to inclusive design was the most prominent proposal. Every stakeholder involved in the interview proposed one way or another. Some stakeholders felt it was the government's burden to enforce this proposal and punish those who did not adhere to it. In contrast, other stakeholders felt it was up to the bus fabricators and designers to make this proposal a reality.

“Then number three is to the vehicle manufacturers that if the vehicle manufacturers can begin fabricating disability friendly vehicles, if we can begin there at the fabrication then all the vehicles that will be fabricated might be able to meet that principle of universal design that it is designed to be used universally and also making the terminals and the bus stops becoming disability friendly that will be able to help.”
[NCPWD Representative]

“Maybe to the government, if they were to direct that information to our sector, let's say public transport needs A...B....C.... D.... then it would be done because if you go to Europe, it comes from the governments. The government has said it has to be done like A.... B....C.... D.... so, if you are in public transport and do not have this, you do not get the license.” [County Bus Sacco Representative]

Enforcement was also identified as a significant driver for inclusivity. This was in terms of empowering responsible institutions like NCPWD with the power to enforce and equipping the existing enforcement agencies accordingly.

“Three is about enforcement mechanisms. We must develop an enforcement mechanism for those who will not provide for persons with disabilities, and then we must be able to make sure that there are penalties that can be implemented to enable them to adhere to the needs of persons with disabilities in their sector.” [NCPWD Representative]

“Some of the actions that can be taken from the county level, our enforcement team needs to have specific officers trained in that line just to deal with PWDs and their issues.” [Nairobi City County Representative]

The stakeholders had other proposals, including educating the public about People with disabilities and training matatu operators and enforcement officers on the needs of People with

disabilities, financing projects related to inclusivity in the transport sector, and collaboration among stakeholders and other individuals.

“Yes, implementing a disability-friendly transport system involving persons with disabilities is crucial. Involve them within the principle of nothing for us without us. It's about participation and inclusion for persons with disabilities in the process.” [NCPWD Representative]

“My core is we need to collaborate more and collaborate to support each other to achieve this. We always say issues around road transport is a shared responsibility; no one single agency can be able to achieve.”
[NTSA Representative]

COMPARATIVE ANALYSIS (ACCRA AND NAIROBI)

Introduction

This section compares the findings between Accra and Nairobi. It evaluates all the aspects studied, including the trip patterns of the PWDs, their experiences, and recommendations. It also evaluates the views of the transport operators and other stakeholders involved in the study.

PWD trip patterns

In both cities, participants with hearing impairment recorded the highest frequency of trips per week. This phenomenon can be attributed to the ability to travel with relative ease as the only difficulty for them is communicating with the transport operators. In the other categories, however, there was a difference: in Accra, participants with physical impairments recorded the lowest number of weekly trips, while in Nairobi, it was the visually impaired. This difference could be related to the fact that with the intervention bus used in Nairobi, it's easier for the physically impaired to move freely using the lower flooring of the Roam Electric bus than the landing pads intervention implemented in Ghana.

PWDs' awareness of interventions in project sites

PWDs in Accra and Nairobi demonstrated awareness and first-hand experience with the various interventions to enhance accessibility in public transportation. In Accra, the interventions were experienced at designated study sites, while in Nairobi, participants specifically experienced them within the Roam Electric bus. While participants in both cities were largely aware of the interventions, Nairobi highlighted a more proactive approach in spreading awareness among their friends, aided by the company's invitation of PWDs during the bus launch. Additionally, in both cities, PWDs indicated a positive reception towards improved attitudes of bus operators, wide doors, and priority seats. However, Nairobi stressed the importance of communication aids and legible signage, which were largely missing but necessary interventions, whilst those in Accra stressed more friendly landing pads, especially for the physically impaired.

Priority seats

Most participants were happy to witness and use the priority seats. In Accra, the participants appreciated the seat location as it made communication with the transport operators very easy and assured them of a reserved seat without begging for one. In Nairobi, the participants also appreciated the seat location, but in this case, it was due to its proximity to the entrance and the

associated feeling of comfort. Participants with hearing impairments were less excited about the priority seats in both cities than the visually and physically impaired participants. In Accra, the participants felt that there should be more focus on helping them communicate with the transport operators, while in Nairobi, they felt they did not necessarily qualify for the use of those seats or, in some instances, they were instructed not to use them by the transport operators.

Landing pad

Participants in Accra and Nairobi highlight the importance of the landing pads and ramps in improving accessibility for PWDs in public transportation. While landing pads in Accra were appreciated, concerns were raised about their inclusivity for wheelchair users. In contrast, the retractable ramp and low floor design of the Roam Electric bus in Nairobi were praised for their effectiveness in addressing the needs of PWDs and especially wheelchair users. Participants in both cases emphasised the significance of these interventions in enhancing their journey experience, with gratitude expressed by those with physical impairments. The Kenyan case demonstrates a more comprehensive approach to accessibility by including a retractable ramp and low floor design specifically tailored to meet the needs of PWDs. In contrast, the Ghanaian case highlights ongoing challenges and suggestions for improvement regarding landing pad design, materials, and inclusiveness.

Push bell

In both cities, most participants were grateful for the push bell, as hitherto indicating the intention to alight would involve shouting, hand gestures, or even standing in a moving vehicle, as in Nairobi. However, the participants encountered different challenges when using the push bell. In Accra, some participants found the Push bell loud and annoying, and this was attributed to its design. In Nairobi, however, participants raised some concerns over the accessibility of the bells, given their distance from the priority seats.

Signage

Some signage interventions were implemented in Accra and Nairobi to improve PWDs' access to transport information. In both cities, however, there was a challenge of inclusivity as current signage needed to address most visually impaired persons. Most participants in both cities appreciated signage for facilitating navigation and fare information, although difficulties such as readability issues were noted. In Accra, participants praised the opaque stickers affixed to

buses for indicating travel routes, while in Nairobi, various signage types were used, including screens and temporary signs. Both cities highlight the importance of accessible and permanent signage solutions to address the information needs of PWDs in public transportation, including the visually impaired.

Attitude of Transport Operators

In Nairobi, the attitude of the transport operators was the most positively recognised aspect of the study, while in Accra, there was a split opinion. In both countries, there were many positive instances where the participants were exempt from paying the fare out of generosity and accorded some level of assistance they were not used to. However, the main challenge in Nairobi was communication, especially among participants with hearing impairment. This was due to the operator's need for more understanding of the sign language. The difference in the change of attitude of the transport operators in the two cities can be attributed to the nature of the interventions (e.g., sensitisation workshops, etc.). The availability of more dedicated facilities in Nairobi could have heavily impacted the attitude of the transport operators positively, as it significantly reduced the effort required to get the participants to their destination. Such facilities could also have made the transport operators more conscious of the needs of persons with disabilities.

Usefulness and adequacy of interventions for PWDs

In both cities, participants highlighted the usefulness of the interventions in improving mobility for PWDs and addressed various challenges they face in public transportation. However, while the interventions were helpful in both cities, most participants felt that the interventions needed to be improved. For example, more than three lorry stations were needed in Accra to draw attention. Recommendations for improvement include increasing the number of inclusive buses, addressing design flaws, enhancing the design of buses to accommodate the needs of PWDs better, and providing better support and accessibility features in public transportation settings. Overall, participants in both cases underscored the importance of continuous efforts to enhance accessibility and inclusivity in urban transport systems to serve PWDs' needs better and ensure their independence and full participation in society.

Participants recommendations

In Nairobi, increasing the number of disability-friendly buses was the most popular recommendation. The participants' experience of the bus was relatively great, but their overall experience in the transport sector needed to be improved by the inadequacy of such buses. **The most popular recommendation in Accra was the provision of training and education. It was also the second most popular recommendation in Nairobi.** In both cities, the participants with hearing impairment recommended that transport operators be taught sign language to eliminate the communication barrier between them. In both cities, participants suggested that the operators should be trained on how to treat people with disabilities with empathy and to be reminded that we are all human. Furthermore, Accra participants requested an improvement in the design of the landing pad, suggesting that it should be foldable and made of metal. In Nairobi, however, the bus in-built landing pad was deemed adequate.

Collaboration was also a significant recommendation in both cities. PWDs in both cities felt that various organisations in the transport sector should work together to bring change. They also recommended constant consultation to assess whether the implemented interventions serve their purpose. In Accra, the PWDs indicated that the police were one of the major stakeholders to effect this change in conjunction with other disability-inclined NGOs. At the same time, in Nairobi, the participants cited the government as the organ to compel the transport sector and transport services providers to be more inclusive.

In both cities, participants with visual impairments were recommended to install devices with talkback features to improve their accessibility to transport services. Participants in Accra also requested braille services.

TRANSPORT OPERATORS' PERSPECTIVE ON PROJECT INTERVENTION

Usefulness and adequacy of interventions for Transport Operators

Transport operators in the two study cities acknowledged the usefulness of the interventions in enhancing accessibility to public transport, particularly for PWDs. However, they expressed concerns about the adequacy of interventions, albeit with slightly different focuses. Transport operators in Accra highlighted issues such as the lack of explicit intervention specifications in existing disability laws. At the same time, Nairobi focused on increasing the number of priority seats in inclusive buses. Suggestions for improvements were made in both cities, emphasising the importance of ongoing enhancements to create genuinely inclusive urban transport systems for PWDs.

Supporting a call to make project interventions compulsory for transport operators

In Nairobi, the transport operators interviewed supported the call to make the interventions permanent and compulsory as opposed to their counterparts in Accra, who endorsed the upscaling of the interventions but had doubts about making them mandatory. However, the transport operators in the two cities had different perspectives on the effects of making the interventions compulsory. The operators in Nairobi viewed such a measure as the right thing to do to ensure equality. Still, they did not necessarily give much thought to the cost implications of the same. In contrast, the operators in Accra heavily considered the cost implications of such measures and how they would affect the vehicle owners and the cost of operation.

Challenges in implementing the interventions

Transport operators in Accra and Nairobi expressed the challenges related to the awareness and attitudes towards people with disabilities among other passengers. Accra's challenges were primarily centred around the design and practicality of physical interventions like landing pads, while Nairobi's challenges focused more on impatience and refusal to yield priority seats. In both cities, addressing these challenges requires a multifaceted approach, including raising awareness among passengers, improving the design of interventions, and enforcing policies to ensure the rights and safety of PWDs are upheld in public transport.

STAKEHOLDERS IN PUBLIC TRANSPORT REGULATION AND MANAGEMENT

Stakeholders' role

In both cities, stakeholders involved in the study should have explicitly focused on making the transport system inclusive. The NCPWD in Kenya and the Ghana Blind Union focused on advocacy for People with disabilities. Traffic police in both cities are more concerned with enforcing the law and are not under any legal obligation to cater to inclusivity. The transport service providers were not mandated to provide an inclusive transport system in either city, as they are private companies concerned with profit.

Support for the implementation of disability-inclusive services

Stakeholders in both Accra and Nairobi demonstrated their support for implementing disability-inclusive services through policy adherence and advocacy efforts. Nairobi's approach includes collaborative efforts, infrastructure development, and technological solutions. At the

same time, Accra's stakeholders rely on existing frameworks but need more specific guidelines, resulting in a more discretionary approach among transport operators.

Challenges in ensuring providing inclusive mobility services

One of the significant challenges identified by stakeholders in both cities was ambiguity in the legislation on inclusivity in the transport sector. Representatives of the National Councils for persons with disabilities in both cities felt they could not enforce or penalise people who had broken inclusivity laws as the law did not give them or anyone else such powers.

Lack of awareness was also cited as a significant challenge in both cities. In Accra, these challenges were primarily associated with transport operators' low knowledge of the Traffic code and lack of training on the mobility needs of PWDs in driving schools. In Nairobi, however, the lack of awareness was attributed to the PWDs, passengers, other road users and institutions. PWDs were not familiar with interventions meant to serve their needs; passengers and other road users were not aware of the needs of PWDs, leading to misuse of infrastructure dedicated for PWDs and lack of awareness in institutions, leading to complete disregard of the needs of PWDs. In both cities, a lack of collaboration between different stakeholders in the transport sector was also identified as one of the challenges. Furthermore, stakeholders in Accra highlighted the underfunding of disability organisations and the attitude of the PWDs; in Nairobi, they included the high cost of implementing inclusivity interventions and poor infrastructure.

POLICY AND PRACTICE RECOMMENDATIONS

Introduction

This chapter offers various recommendations for making the transport system more inclusive. These recommendations apply to disability institutions, transport operators, and multiple stakeholders in the transport sector. However, their success depends on the government institutions' willingness to implement the legal, policy, and enforcement functions.

Recommendations

Policy enhancement: The government and relevant city authorities should develop and implement clear and comprehensive policies within the transport sector that specifically address the needs of persons with disabilities (PWDs) and provide detailed guidelines for inclusive mobility solutions.

Regulatory frameworks: The government and relevant city authorities should strengthen regulatory frameworks to ensure compliance with existing disability laws and international standards such as the UNCRPD and Universal Design principles, including enforcement mechanisms to hold stakeholders accountable.

Awareness and sensitisation: Relevant disability organisations and NGOs, such as the National Council on Persons with Disabilities, should conduct awareness campaigns targeting transport operators and the public to foster understanding and respect for the rights and needs of PWDs, emphasising the importance of inclusive practices in public transport.

Infrastructure improvements: The government should invest in infrastructure upgrades, such as installing accessible features like ramps, priority seating, tactile markers, and audio/visual announcements, to enhance accessibility at bus stops, terminals, and vehicles.

Technology integration: Transport operators and public transport regulatory authorities should embrace technological solutions like mobile apps for tracking bus routes and schedules, providing real-time information to commuters, including those with disabilities, to facilitate trip planning and navigation.

Capacity building: Disability organisations and NGOs should regularly provide training and capacity-building programs for transport operators and staff on disability awareness, etiquette, and assistance techniques to ensure respectful and dignified treatment of PWDs during travel.

Collaborative partnerships: Government agencies, disability organisations, transport operators, city authorities and other stakeholders should collaborate to leverage resources, share best practices, and coordinate efforts toward creating a more inclusive urban transport system.

Continuous evaluation and feedback mechanisms: Relevant city authorities and the National Council on Persons with Disabilities should establish mechanisms for ongoing evaluation and feedback from PWDs and other stakeholders to assess interventions' effectiveness, identify improvement areas, and adapt strategies to evolving needs and challenges.

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