HIGH VOLUME TRANSPORT
APPLIED RESEARCH

Disability Inclusive Public Transport

Practical steps to making public transport disability inclusive

Accessible Edition

TUMI
Transformative Urban Mobility Initiative

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from the British people

About This Document

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Foreword

Globally, persons with disabilities are often referred to as the largest minority, accounting for a total of over 1 billion or 15 percent of the world's population. Too often, they experience challenging poverty, marginalization and exclusion in society.

The existence of cultural and physical barriers, among other factors, are major contributors to the obstacles persons with disabilities, their families and communities face. Lack of inclusive environments often lead to deprivation of opportunities, such as education, skill training, work or income-generating business, access to health care or leisure activities. As a result, many persons with disabilities are unable to get out of their own homes and lead independent, productive and fulfilling lives.

Member States are making efforts to remove environmental barriers in compliance with international and domestic legal requirements. Accessibility is well-established by the United Nations Convention on the Rights of Persons with Disabilities as an obligation for States Parties to ensure equality and non-discrimination.

This commitment is further reinforced by the 2030 Agenda for Sustainable Development, and its 17 goals (SDGs) that pledges to leave no country and no one behind.

Therefore, accessibility should be promoted as a collective good. States and development agencies must better quantify and capture the socio-economic added value that benefits not merely a particular group of people, namely persons with disabilities, but the population at large. In this endeavour, Member States, the United Nations system, development institutions and other stakeholders, including the private sector, need to join hands in order to increase and improve availability of accessibility for achieving the SDGs for all.

This Policy Brief is a timely response to the growing demand for sound policy advice and practical toolkits. It provides policy-makers and

development professionals an effective lens to look at the barriers to mobility that persons with disabilities face, and more importantly, useful tools to advance and to implement accessible sustainable development for all people of all ages and abilities in all countries.

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Introduction

Safe, affordable, accessible and sustainable transport systems for all is a key target (11.2) of the United Nations Sustainable Development Goals (SDGs) [reference 1] for 2030. This target specifically includes public transport to meet the needs of people with disabilities as well as other vulnerable people.

Accessible public transport gives people with disabilities access to education, employment and healthcare, as well as social contacts with family and friends. The ability to move and travel independently is fundamental to breaking the downward spiral of dependence and poverty.

In line with the SDG target, this policy brief sets out practical steps to making the right choices to ensure public transport meets the mobility needs of people with disabilities. The brief has been prepared specifically for transport policy-makers and transport professionals in low-income countries in Africa and Asia, but is applicable to all countries of these regions. Better transport starts with their awareness and commitment to making public transport easier and safer for people with disabilities.

The starting point is to engage with people with disabilities and their representative organisations to understand the needs and priorities from their perspective. The steps to easier and safer transport for people with disabilities are based on best practices in countries worldwide.

Many obstacles to mobility can be overcome with simple, low cost solutions, such as removing obstructions on footpaths, designing bus stops without steps, and providing clear, easy to follow route signs. These relatively inexpensive measures can sustainably improve mobility and contribute to a better quality of life for people with disabilities.

New transport infrastructure and systems must be designed and implemented on the principles of Universal Design as set out in the UN Convention on the Rights of Persons with Disabilities [reference 2]

(2006) and ratified by many low-income countries. These principles are directed to ensuring that public transport meets the needs of everyone. In line with Universal Design principles, this policy brief sets out practical steps to use available resources most effectively for the benefit of all transport users.

Better mobility for people with disabilities starts with the awareness and commitment of everyone engaged in transport from policy-maker to bus driver to make changes. Because small, low cost solutions can make a very big difference.

People with disabilities in low-income countries

Disability covers a wide range of impairments including the following bulleted list:

- Physical impairment (difficulty with walking, balance, stamina, etc.)
- Vision impairment (ranging from low vision to total blindness)
- Hearing impairment (ranging from slight hearing loss to profound deafness)
- Cognitive impairment (learning disability)
- Mental health issues

World Health Organisation (WHO) [reference 3] estimates that one billion people, or 15% of the world's population, are living with some form of disability. And 80% of these people are living in low-income countries.

Estimates suggest that around 1 in 5 (20% of the population) of the poorest people in low-income countries have some form of disability that affects their daily lives. This means one household in four includes a person with a disability.

United Nations Convention on the Rights of Persons with Disabilities states:

"Persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which, in interaction with various barriers, may hinder their full and effective participation in society on an equal basis with others." (Article 1).

Estimates of people with disabilities are not robust

Lack of robust data means that disability is often not seen as a political priority and is viewed as a minority issue.

Estimates of the number of people with disabilities in many low-income countries vary considerably and the number is greatly underestimated in some countries. For example, the official government estimate of people with disabilities in Kenya is 1% of the population while an Australian survey has put this percentage at 14% [reference 4] .

These discrepancies in disability surveys result from a range of factors including differences in the definition of disability, reliability of data collected, and survey methods used. Another reason for unreliable survey data is the stigma associated with disability in some countries that often makes people reluctant to inform officials about their impairment.

The Washington Group on Disability Statistics [reference 5] called for a broader classification of disability that focuses on an individual's ability to tackle daily tasks rather than their disability. Using this functional classification, a study was conducted in 15 low-income countries [reference 6]. The percentage of people with disabilities varied greatly between countries, from 3% in Lao People's Democratic Republic to 16% in Bangladesh. These variations may also be explained by factors, such as cultural differences between countries and variations in underlying health conditions.

In each of the countries surveyed, disability was found to be more prevalent in women than in men. And in 11 of the 15 countries, disability was more prevalent in rural areas than in urban centres. Furthermore, loss of mobility had a greater impact in rural areas where people have to travel longer distances for work and for healthcare.

Multiple reasons for high rates of disability

A wide range of factors contribute to the high rate of disability in low-income countries, in which some 54% of the population are currently aged 15 to 64 years [reference 7]. In some countries, physical disabilities and mental health conditions are clearly traceable to prolonged periods of civil unrest and violence as well as to poor nutrition and limited healthcare.

A major cause of disabilities among young pedestrians is road crashes that have continued to increase in recent years. In many countries, such as Cambodia, road crashes are the main single cause of disability in young people under 17 years of age [reference 8].

A significant proportion of disabilities are caused by injuries including those which result from traffic crashes, falls, burns, and acts of violence, such as child abuse, youth violence, intimate partner violence, and war and conflict [reference 9].

This significant increase in road traffic crashes is attributable to a combination of factors including poor road conditions, inexperienced drivers, and inadequate traffic regulations and enforcement.

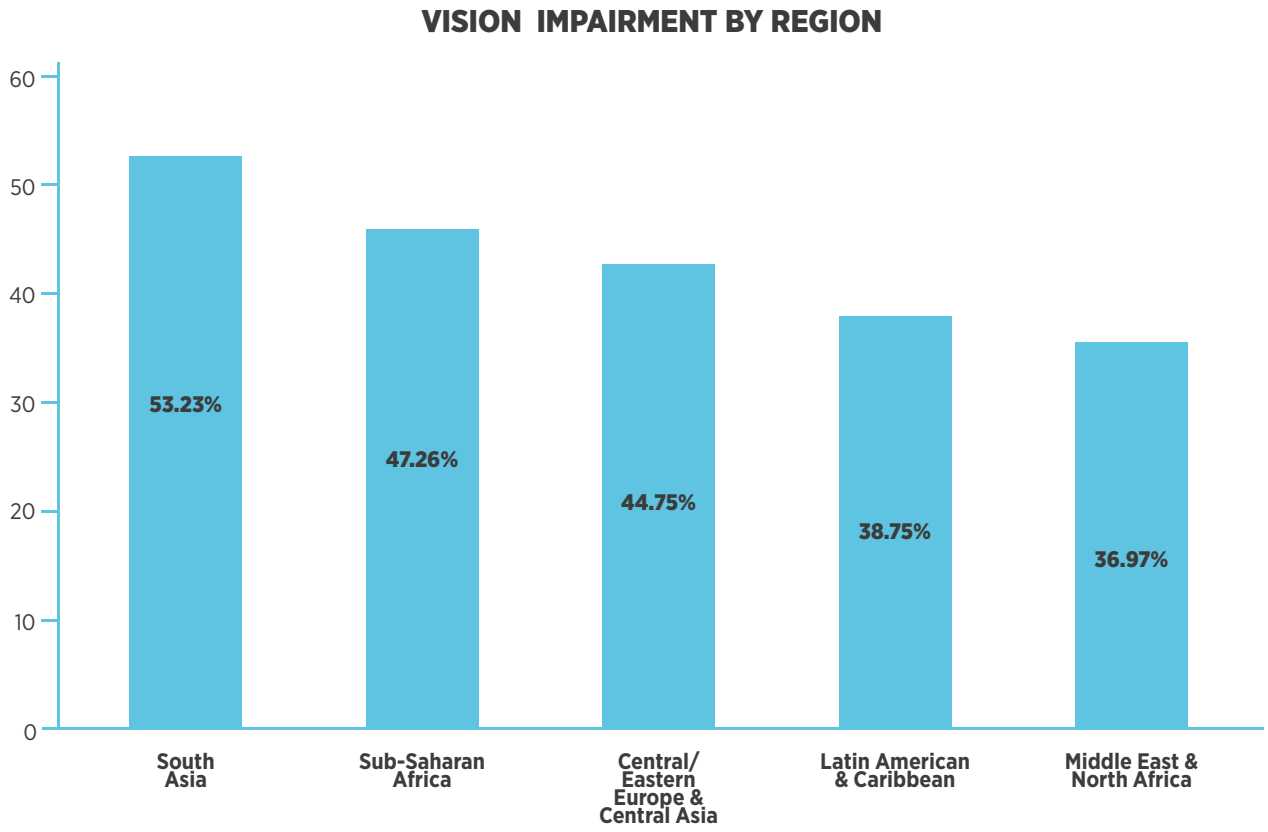
While few data are available on disability caused by injury, WHO suggests, for example, in Sierra Leone 14.3% of disabilities are caused by unintentional injury.

Higher rates of vision and hearing loss

While data are patchy on the prevalence of various types of disabilities in low-income countries, more reliable information is available on vision and hearing impairments.

Some 36 million people worldwide are blind, with the highest proportion of vision impairment in Sub-Saharan Africa and South Asia [reference 10].

Hearing loss is more prevalent in low-income countries, especially in Sub-Saharan Africa and in South and Southeast Asia [reference 11]. This may be caused by higher rates of pre- and post-natal childhood infections, such as rubella, measles and meningitis.



Disability affects social and economic mobility

All types of impairment have an impact on mobility, and may range from slight difficulty or pain in walking, climbing steps, balancing or gripping, to total inability to walk and dependence on a wheelchair.

Mobility is also affected by mental health conditions, intellectual impairments and other hidden disabilities. For instance, anxiety in crowded or noisy environments may be a major deterrent to mobility for people who are on the autism spectrum.

While the number of people with a permanent disability is high, many people are temporarily disabled as a result of injury.

Disability has high impact on the mobility of the poorest people

Disability can have a profound effect on the poorest in society and is a contributing factor to poverty. For instance, many children with disabilities

cannot get to school, so their educational attainments are low. Similarly, many adults with disabilities cannot get to work so their incomes are severely limited. Across all ages, many people with disabilities cannot get access to healthcare. The result is a spiral of dependency and hardship [reference 12].

A fundamental factor in the link between disability and poverty is limited access to transport or inability to use transport services. People with disabilities are also less mobile because of environmental and cultural barriers. For example, in some countries, mobility is severely impaired because wheelchair users, people who have difficulty in walking, or who are blind are not able to move from home to a bus stop because of poor road conditions. There are no sidewalks, surfaces are not level and there is no means to navigate traffic safely. Even if they can get to the bus stop, they are hampered by a high step onto a crowded bus.

Lack of mobility has economic and social consequences. In economic terms, a large number of people are lost to the workforce and so cannot contribute to the national economy. In social terms, poverty and ill health associated with disability affect quality of life, not only of the individual with a disability but also of their entire family and the wider community. For example, no accessible transport for children with disabilities to get to school has a significant impact on their life chances and on the family as a whole.

> The World Bank estimates losses of between 15 and 40% in gross domestic product due to disability in low-income countries [reference 13].

Economic costs [reference 14] to people with disabilities and their families include:

- loss of income because of lower pay and unemployment
- loss of education
- no access to credit schemes, such as loans and other financial support.

Economic costs to the state and society

- loss of productivity
- loss of taxes
- public spending on disability programmes

Further evidence to support enabling people with disabilities to join the workforce and become economically active comes from the 2017 Guide for Businesses on the Rights of Persons with Disabilities [reference 15].

> Respecting and supporting the rights of persons with disabilities is not only a matter of human rights but also of business success. Among other things, persons with disabilities represent huge potential and power as employees, suppliers, consumers, investors and business partners.

People with disabilities speak out in online survey

People with disabilities were asked about their mobility challenges in an on-line survey [reference 16] in 2014. The survey was conducted by the Global Alliance on Accessible Environments and Technologies (GAATES) [reference 17]. Responses came from people with disabilities in 39 countries.

Participants were asked about accessible public transport in their area and invited to identify the problems affecting their mobility. In the 257 responses received, by far the main issue identified was inaccessible public transport, followed by the attitude of drivers and other staff.

Respondents were asked to identify the main changes needed to enable them to move about the streets and to access public transport more easily. The most frequently identified priorities were:

- More accessible public transport, particularly buses;
- Better attitude and staff awareness;
- Support from the law to enforce and monitor access improvement;
- More attention to making the pedestrian environment accessible.

Implications for the transport sector

The needs and wishes expressed by people with disabilities in the Global Alliance on Accessible Environments and Technologies' survey have implication for the transport sector. These are summarised as follows:

1. Laws and regulations to make vehicles and systems accessible to people with disabilities are not adequate to ensure their mobility.
2. Mobility must be tackled at the most basic level by providing appropriate access for wheelchairs and other mobility devices, designing and constructing streets and sidewalks to ensure that people with disabilities can move about safely.
3. Standards must be set for the design and operation of accessible vehicles. These standards as well as overarching legal requirements must be monitored and enforced, with appropriate penalties and remedial steps to ensure that investment in disability inclusive transport is effective.

Essential steps to disability inclusive transport

Much can be done to address inequalities in the public transport system and pedestrian environment and so improve the mobility of people with disabilities. And what is more, many of these improvements are low-cost and easy to achieve.

Change attitudes and increase awareness

What people with disabilities want:

“Comprehensive national awareness campaigns to sensitise accessibility norms and regulations” (Sri Lanka)

“Disability awareness programmes to the public, particularly public transport operators” (Zimbabwe)

“Attitudinal changes of the drivers and the public in general” (Ethiopia)

“More community awareness about people with disabilities” (Bangladesh)

Improving the mobility of people with disabilities starts by increasing awareness and by changing attitudes. Changes are required at all levels from senior politicians and officials, to engineers and contractors who design and build roads, pedestrian facilities and public transport, to the operators of transport services, and to fellow travellers.

This quote [reference 18] from a deaf woman about her experience of bus travel illustrates the problems of attitude and discrimination that persists.

“Near the start of the bus route I climb on. I am one of the first passengers. People continue to embark on the bus.

They look for a seat, gaze at my hearing aids, turn their glance quickly and continue walking by.

Only when people with disabilities will really be part of the society; will be educated in every kindergarten and any school with personal assistance; live in the community and not in different institutions; work in all places and in any position with accessible means; and will have full accessibility to the public sphere, people may feel comfortable to sit next to us on the bus."

Nothing about us, without us

True to the slogan of the international disability movement, which is well known in many countries, Nothing about us without us, tackling universal accessibility means engaging with people with disabilities. Assumptions should never be made about what people with disabilities want. They have to be consulted and engaged in deciding on measures to improve their mobility.

Consultation with people with disabilities must be an essential component of training for bus drivers and road engineers. They must understand the meaning of disability inclusive transport and the part they must play in making it work. So, for instance, transport providers need to talk directly with people who are blind and those with walking difficulties to learn at a first-hand about their mobility difficulties.

There are many examples around the world of effective community-based engagement in inclusive mobility [reference 19], from countries as far apart as the Republic of China and South Africa. See, for instance, the mobility access audits conducted in Shanghai, China (next page).

Caption: In Johannesburg, South Africa, people with disabilities and transport professionals discuss how new services and facilities can be made fit for purpose and inclusive.
Photo: Rea Vaya System, Johannesburg, South Africa.

In Shanghai, older people and people with disabilities are engaged in auditing transport accessibility in the city and in reporting mobility issues to city authorities.

This World Bank funded project sets out to establish the issues of greatest concern to older people in the city, to prioritise problems, and to engage the public in delivering access improvements. Key accessibility issues identified are dropped kerbs and repair to damaged sidewalks. Addressing these issues is now a priority for city authorities.

This audit is repeated annually. It has helped to increase the awareness of city authorities and contractors of the needs of older people and people with disabilities, to focus attention on construction and maintenance and to bring access improvements into mainstream city planning.

World Bank 2010

Enact disability inclusive policies, laws and plans

What people with disabilities want:

Policy on road awareness targetting policy-makers/ Ministry of Transport in the Government (South Sudan)

Policy formulation, budget allocation and implementation wthin a given timeframe (Kenya)

Government and other stakeholders must implement inclusive development initiatives that include disability as a cross-cutting development issue (Kenya)

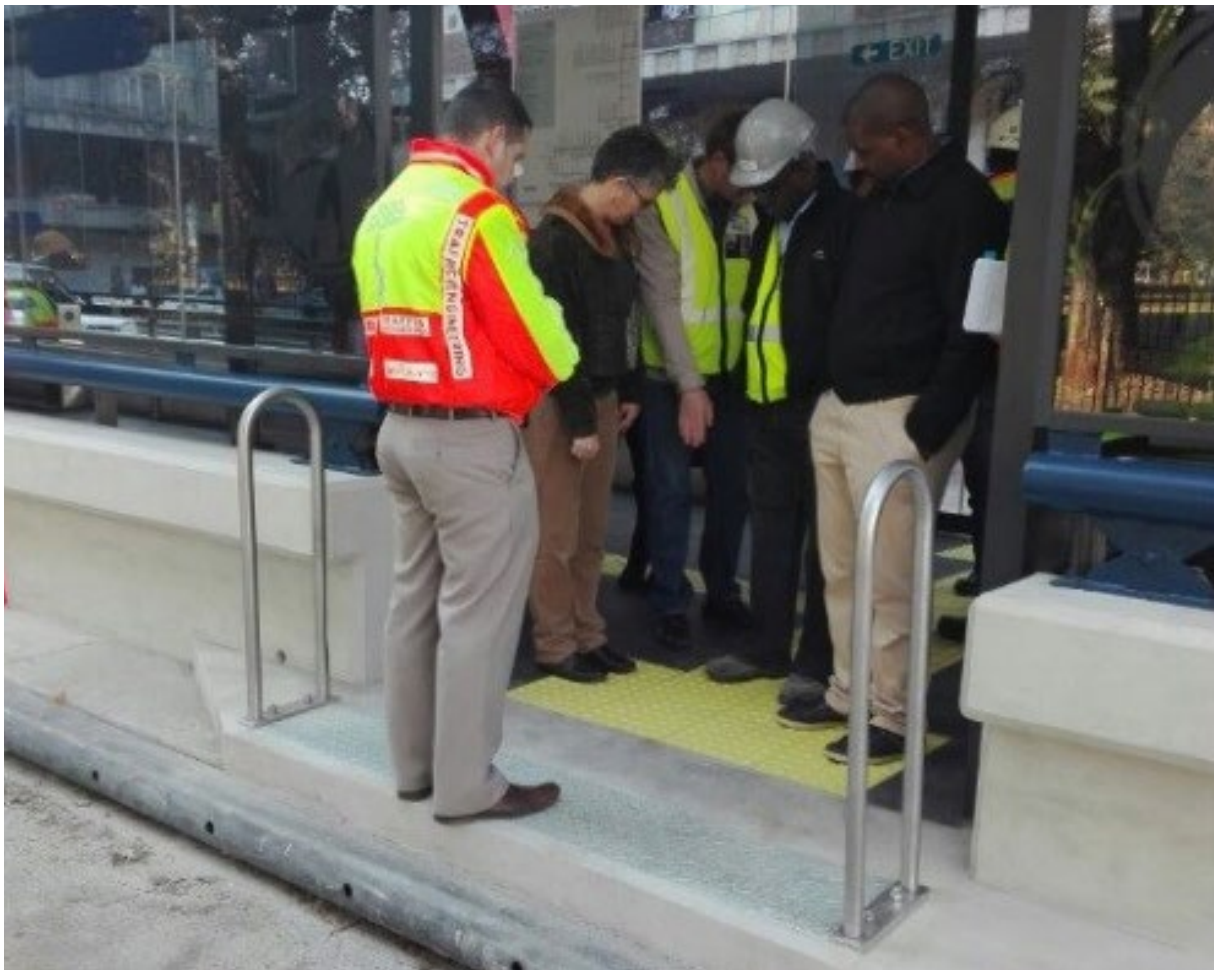
The mobility needs of people with disabilities must be factored into transport and city planning policies and into plans, designs and budgets right from the start. This is essential because retrofitting accessibility features is difficult and expensive.

A transport system that is well designed for people with disabilities is well designed for all users. For instance, it is easier for everyone to enter a building without steps; to read clear signs and hear clear announcements at railway stations and on trains; and to interact with bus drivers who are courteous and well trained about the mobility needs of all passengers.

Design transport for everyone

The concept of Universal Design [reference 20] or Design for All is well established in many countries and is increasingly being adopted in middle and low-income countries, such as India, South Africa and Zimbabwe. The Universal Design principles are directed at ensuring transport systems meet the needs of everyone because the systems are designed for:

- Easy and intuitive use, without causing confusion or anxiety for users;
- Minimum physical effort to use for everyone including children, older people and people with disabilities;
- Sufficient space for all passengers including wheelchair users and people travelling with small children or baggage.



Caption: Inspection of the Universal Design of the new low entry station in Johannesburg, South Africa. Photo: City of Johannesburg, South Africa

Many low-income countries have ratified the United Nations Convention [reference 21] on the Rights of Persons with Disabilities [reference 22] (2006) that sets out the principles of Universal Design. These countries are legally bound ‘to undertake or promote research and development of universally designed goods, services, equipment and facilities ... and to promote universal design in the development of standards and guidelines.’

The principles of Universal Design need to be incorporated in national legislation so that standards for disability inclusive design can be set, monitored and enforced. Furthermore, Universal Design does not cost more than designs that do not take account of the needs of all members of the community. See what has been done in the Republic of Ireland on the top of the next page.

Republic of Ireland

The Disability Act 2005 requires the design and composition of an environment to be accessed, understood and used to the greatest possible extent, in the most independent and natural way possible and in the widest possible range of situations. Without the need for adaptation, modification, assistive devices or specialised solutions, by any persons of any age or size or having any particular physical, sensory, mental health or intellectual ability or disability.

This legal requirement is further strengthened by regulations that all public-sector contracts must meet the inclusive design requirement.

“In awarding a public contract, a contracting authority shall, as far as practicable, ensure that the technical specifications for the contract take account of the need to prescribe accessibility criteria for all persons who are likely to use the relevant works, products or service, particularly those who have disabilities.”
- Irish Public Sector Procurement Regulations

Caption: In South Africa, a strong culture of disability inclusive design and engagement has developed through consultation on transport changes Photo: Polokwane Municipality, South Africa

Brazil: long established policy on disability inclusive transport

In 2003, the Ministry of Cities was created with the remit to establish guidelines for a national policy on public transport and urban mobility. Accessibility is seen as part of a set of urban mobility policies to promote social inclusion. National Secretariat for Transport and Urban Mobility developed an Urban Sustained Mobility Concept to stimulate and support city governments to develop actions to ensure public transport is accessible and to promote accessibility in the urban environment.

Cities are invited to develop a city accessibility plan with the support of National Secretariat for Transport and Urban Mobility. This plan comprises three phases. In the first phase, the Ministry of Cities and national partners ensure that local staff are trained to assess accessibility issues, and to analyse local conditions and challenges. In the second phase, cities develop their own mobility plans including changes to local legislation to ensure that new developments are barrier-free, and set out mid- and long-term action plans. In the third phase, all the elements of the plan are implemented.

Xavier J, Boareto R. The Implementation of Brazil Sustainable Urban Mobility Policy, Ministry of Cities, Brasilia, Brazil, 2005

People with disabilities need to be aware of their rights in law and be empowered to speak out for those rights. An important part of this process is engaging with them when transport systems are being designed, implemented and monitored, and when services are up and running.

The principles of Universal Design have to be applied to the built environment as well as to transport services and infrastructure so that people with disabilities can access public buildings and places of employment.

Educate and train for inclusive mobility

What people with disabilities want:

“Education and advocacy on rights of people with disabilities” (Ghana)

“Training of public transport drivers on disability related issue” (Zimbabwe)

“Training institutions to include disability studies as common unit to enable people understand disability” (Kenya)

Many people with disabilities around the world routinely experience discrimination and abuse when they use public transport. Such discrimination is often rooted in ignorance, fear and suspicion, especially in communities where people with disabilities are often not seen because they cannot get out and about.

Unfortunately, communities give little thought and attention to the mobility needs of people with disabilities. For instance, access to the sidewalk is blocked by bicycles, carts or motor vehicles. Insufficient time is allowed for people with disabilities to cross a road or to get onto a bus. All of these factors impact on their confidence and hamper their ability to venture out.

Access for people with disabilities has been tackled in Medellin, Colombia, under the Cultura Metro programme [reference 23]. This programme is designed to educate primary school children on how to use public transport and to respect the mobility needs of others.

To improve the mobility of people with disabilities, everyone engaged in the design, delivery, operation and use of transport and the pedestrian environment needs training. These people range from senior managers to transport employees in direct contact with the travelling public, including bus drivers and station staff.

Professionals from architects to road engineers need training to better understand the needs of people with disabilities so that these needs can be incorporated in the design and construction of transport infrastructure.

Many countries do not include training on disability issues as a condition of employment or qualification in the transport sector. Yet, this simple step can make a very significant difference to a large number of people.

Training should include the understanding of different types of disability and how it affects ability to travel. It must include hidden disabilities, such as autism and mental health issues, as well as the needs of those with mobility or sensory impairments.

Training in this area is fundamental to understanding what must be done and why. There are countless examples worldwide of well-intentioned accessible facilities and services that fail to meet the needs of people with disabilities. This is largely because these facilities were designed and constructed without awareness and understanding of the needs. This element of the training is best delivered by people with disabilities who can explain at first-hand what their needs are [reference 24].

In addition, training needs to cover any legal requirements under national or international law and any best practice guidance that is available.

Training should typically include action from the following list:

- A discussion of barriers faced by persons with disabilities, covering attitude, environment, and organizational barriers
- Information on all disabilities, including hidden disabilities
- Suggestions for removing barriers faced by people with disabilities (including changed driver behaviour to improve safety for passengers with disabilities), and the skills needed for serving passengers with disabilities (for instance, taxi drivers may need to learn how to fold a manual wheelchair by following the directions of a wheelchair rider who needs to transfer to a regular seat)

- Communication skills for communicating with people with disabilities, particularly those with a hearing impairment or with learning disabilities
- Enabling staff to deal with unexpected occurrences – to ‘think on their feet’ if a problem arises (e.g. what to do in case there is an accident or other emergency)
- Training is not a “one time only” event

Monitor and enforce compliance

What people with disabilities want:

“Legislative support & control mechanisms” (South Africa)

“Infrastructure improvement through stringent law enforcement mechanisms to penalize perpetrators at all levels.” (Sri Lanka)

The Laws and standards are essential to ensuring universal access to transport systems.

But to ensure the benefits are extended to everyone, mobility standards have to be monitored and enforced in the design and implementation of transport infrastructure and systems. As shown in this example from Mexico [reference 25].

Mexico

Some 81.2 million inhabitants in Mexico’s urban centres rely on public transport for up to 80% of their urban transit needs. But many features of these transport systems are non-inclusive and inaccessible for users.

El Poder del Consumidor commissioned an assessment of the accessibility of bus rapid transit systems in eight states in Mexico. The report highlights non-compliance of public transport systems, particularly the bus rapid transit (BRT) corridors, with current national and international technical standards on barrier-free accessible services. The 16 BRT corridors studied were assessed on five accessibility criteria:

- Interior features at the station
- Connectivity of stations to public space
- Operational features in relation to service
- Interior features of the buses
- Connection to intermodal transfer facilities

The assessment confirmed that none of the BRT systems in Mexico is fully accessible.

Although many countries have laws against discrimination on disability including public transport, there is little evidence that these laws are used to enforce compliance and to raise standards [reference 26]. One exception is South Africa, where there is evidence of progress towards disability inclusive transport by monitoring and enforcement of standards.

Compliance monitoring can be done in various ways, such as:

- People with disabilities can be invited to report on their travel experience to the responsible authority. This type of monitoring is very effective, simple and low cost.
- The relevant authority can carry out spot checks, for example, to ensure that equipment is working and that transport staff are behaving appropriately.

The requirements for disability inclusion must be part of the transport operator’s contract and a system of penalties must be in place for consistently poor performance as well as non-compliance of transport infrastructure and operation. The level of penalties should be decided

locally and be in line with other systems to ensure that public vehicles are roadworthy and operated in accordance with licences.

However, fines should be sufficiently high to deter repeat offence.

Another incentive to stimulate good performance might be the use of social and other media to publicise successes in disability inclusive transport and even to publicise poor performance as a means of stimulating action to make improvements.

See how Ghana is monitoring and enforcing accessibility standards [reference 27].

Ghana

Pedestrian walkways and obstacles on routes are major barriers to the mobility of people with disabilities.

In December 2016, the National Council on Persons with Disabilities published a document entitled Ghana Accessibility Standards in a Built Environment to ensure easy access to public buildings and facilities for people with disabilities.

The aim is to ensure that people in wheelchairs, those with limited walking abilities, vision loss, older people, children, pregnant women and temporarily disabled people have easy access to public places including walkways and parks.

The document serves as a tool to measure and audit universal accessibility and to increase awareness of accessibility standards and the need for barrier-free design.

Better mobility starts from home

What people with disabilities want [reference 28]:

“To have good wheelchairs which can be used on the pavement” (Somalia)

“Remove shops from footpath” (Nepal)

“Inappropriately designed wheelchairs cannot push over uneven ground to get to roads” (Kenya)

The starting points for personal mobility are the right equipment - a wheelchair, a long cane, crutches or a walking stick, and barrier-free streets and sidewalks. These basic requirements are the first priority before improvements to vehicles and transport infrastructure and services.

Transport planners and decision makers are not directly responsible for providing basic mobility aids. But they need to understand the importance of these aids before embarking on potentially complex and costly mobility and transport improvements.

Appropriate wheelchair and mobility aids

Wheelchairs must be appropriate to local conditions. For a person with a disability to be mobile with a wheelchair, every part of a journey from door to door must be barrier free. This means that mobility improvements must be planned for each individual route. Local people with disabilities should be consulted about the challenges along the route from their housing area to their shopping centre or bus stop.

WHO estimates that more than 70 million people need a wheelchair and that in low income countries only 5 to 15% have access to one.

Caption: (Left) Specially designed wheelchair to meet local conditions in Uganda. (Right) Specially designed wheelchair to meet local conditions in Afghanistan. Photos: David Constantine, Motivation

More accesible sidewalks and roads

Research in the UK [reference 29] has led to recommendations on the maximum travel distance for wheelchair users and others on a level surface without a rest as shown in table below.

Mobility limitations | Type of impairment	Recommended maximum distance on a level surface without a rest
Wheelchair user (manual wheelchair)	150m
Mobility impaired person using a cane	50m
Mobility impaired person without walking aid	100m

Table 1: Recommended maximum distances for wheelchair users on a level surface without rest

Common barriers that hamper the mobility of people with disabilities in towns and cities include:

- Poorly maintained streets
- Inadequate traffic management
- Insufficient physical segregation of pedestrians and cyclists, and motorised vehicles
- Few places for people with disabilities to pause and rest.

As well as contributing to road safety, the following road improvements contribute to the mobility of people with disabilities:

- Improved road and footpath/sidewalk layout
- Level access at crossing points
- Safe refuges (rest points) on busy roads.

Attention must be given to where and how mobility improvements are implemented. For instance, in Tanzania, a level surface over a drain creates access for wheelchair users, but without warning signals, the crossing is potentially dangerous for people with impaired vision.

A key aspect of accessible design is the gradient of wheelchair ramps. Ramp gradients should not exceed 1:12 (8%). For safe and independent use, aim for a maximum of 1:20 (5%) [reference 30].

Practical assistance for people with low vision should include colour contrast on kerb edges and tactile paving surfaces. These aids to safe mobility should be correctly installed by engineers trained in their use. Blind and partially sighted people in the area also need training to become familiar with these road safety guides.

The UK provides guidance [reference 31] on tactile paving surfaces, which were developed in co-operation with people with impaired vision and are now in common use. For instance, a warning surface at the top of stairs and a guidance/warning surface used in conjunction with a flush dropped kerb at a street crossing (see photos).

Caption (From left, clockwise): In Tanzania, a level crossing of a drain creates access for wheelchair users, but without warning signals, the crossing is potentially dangerous for people with impaired vision. Photo: Access Exchange International. Photo 2 (top right). London, UK, a warning surface at the top of stairs. Photo 3 (bottom right) London, UK, guidance/warning surface used in conjunction with a flush dropped kerb at a street crossing. Photos: John Frye Photography

Facilities to improve the safety of older pedestrians and those with disabilities have been introduced in many places. For instance, in Seoul, Republic of Korea, priority is given to the construction of mid-island refuges on wide roads to protect slower-moving older pedestrians [reference 32].

A good starting point for planning access improvements is an audit of current facilities and engaging local people with disabilities in the process. See what has been done in Penang, Malaysia [reference 33].

Access audits in George Town, Penang, Malaysia

Access audits have identified deficiencies in the pedestrian infrastructure in central George Town.

The accessible sections did not connect to create a network, many sections were not constructed to satisfactory standards, and potentially accessible sections were blocked by objects, such as signposts and flower pots. Motorists were parking on footways and motorcyclists riding on accessible footways.

The project identified footways and road crossings as first priorities to connect accessible sections to create a network of footways.


Photos: Dr Christopher Mitchell.

Demand responsive transport

What people with disabilities say:

“Lack of last mile connectivity and lack of reliable public transport connecting all destinations” (India)

“Exploitation with regards to discriminatory inflated prices in informal taxi sector” (South Africa)

In regions where even the most basic outdoor mobility is affected by poor pedestrian and street infrastructure, door-to-door transport may be the only viable mobility option for people with disabilities.

These options are simple and low cost, such as rickshaws and tuk tuks. However, demand responsive transport often requires advance notice (48 hours) that severely limits the ability for spontaneous travel.

Karachi, Pakistan

Photo: The Rickshaw Project

In Karachi, Pakistan, the Rickshaw Project is part of a network of organisations throughout the country working to create an inclusive society and welcoming people with disabilities. The Rickshaw project has developed an autorickshaw with hand controls to accommodate a disabled driver, and space to carry passengers with disabilities.

The prototype was developed with the help of crowd funding and the design has been given to a local rickshaw manufacturer. The Rickshaw Project has recently partnered with Careem (the Uber of the Middle East and Pakistan). Soon accessible rickshaws driven by people with disabilities will be part of their fleet.

Phnom Penh, Cambodia

In Phnom Penh, Cambodia, a wheelchair accessible tuk (mobilituk) has been developed that is opening up door-to-door transport to many people with disabilities. After a successful trial, 11 mobilituks are now operating in various part of Cambodia.

Photo: Ian Jones, Agile Development Group

Non-motorised transport

Non-motorised transport – rickshaws, trishaws and pedicabs – are the cheapest, most reliable, most widely available and consumer friendly forms of transport. They provide a valuable means of local mobility for those unable to walk long distances because the service is door-to-door. These services are also of great value to people with hidden disabilities, such as intellectual impairments or mental health issues, who do not have the confidence to use public transport.

Recent developments in renewable energy offer additional opportunities. For instance, in Bangladesh, solar-powered electric rickshaws are reducing the burden on young, fit rickshaw drivers and are opening opportunities for people with disabilities to become rickshaw drivers [reference 34].

In Luanda, Angola [reference 35], an auto rickshaw service is giving employment to amputees as well as providing a transport service for people with disabilities visiting local rehabilitation centres.

Public transport: Road transport

What people with disabilities want:

“The improvement of the transport system, proper consultations with disabled people in the initial planning phase” (South Africa)

In many countries, public buses have high steps with no aids to help wheelchair users and other people with mobility difficulties to board. The barriers and challenges to the mobility of people with disabilities and relatively simple means to overcome these barriers are presented in the table below.

Tackling barriers to mobility

Journey stage	Wheelchair user	Walking difficulty	Vision impairment	Hearing impairment	Learning disability	Mental health issue
Getting from home to bus stop/station	Appropriate wheelchair	Smooth surfaces; barrier free sidewalks; resting places	Barrier free sidewalks; tactile marking at crossing points	Visual directional signing	Clear signs	Clear signs
Smooth surfaces	Ramp or lift; raised bus stop; space on board	Handholds; raised bus stop or low floor bus	Colour contrast on step edges and hand holds	Visual information	Clear information, staff available to help	Clear information, staff available to help
Barrier-free sidewalks	Smooth surfaces	Easy access to seat; time to reach seat before vehicle departs	Easy access to seat; audible information on next stop	Visual information on next stop	Clear information on next stop	Clear information, calm environment
Barrier free sidewalks	Barrier free sidewalks	Barrier free sidewalks; resting places	Tactile guidance; designated crossing points	Clear information	Clear information and signage	Clear information and signage

Table 2: Tackling barriers to mobility

A key area of transport often neglected in many countries is transport for schoolchildren and young people with disabilities. There is an urgent need for liason between transport and education authorities to ensure that appropriate transport is available. This topic is covered in depth in Bridging the Gap: Your Role in Transporting Children with Disabilities to School in Developing Countries [reference 36].

Buses

Mobility can be greatly improved by implementing low-cost solutions. For example, a wayside platform with a ramp to aid bus boarding. Access to low entry buses can be greatly improved by raising the level of the bus stop to enable passengers to board the bus on the same the level. See George Municipality, Western Cape, South Africa.

Photo: George Municipality

An experiment in Maputo, Mozambique, using raised bus platforms to help people with disabilities to get on and off the bus was initially successful but was abandoned because the bus stop was constantly blocked by informal taxis and other vehicles [reference 37]. This provides a lesson for government and operators of the importance of training and enforcing appropriate traffic behaviour as part of access improvements.


Photo: Christo Venter

In Delhi, India, the Delhi Transport Corporation has introduced new accessible bus shelters with access ramps and tactile guidance.

Photo: Subhash Chandra Vashishth, Director, Svayam

In many low-income countries, small buses or jitneys are used which are more flexible and manoeuvrable than large buses but are generally not accessible to wheelchair users. Whatever the vehicle size and how ever difficult access for someone with walking difficulty, there are low-cost measures that can help many people.

For example, a clear colour contrast on step edges helps people with low vision to board and alight safely. Handrails in the entrance can make it easier to balance while climbing steps.

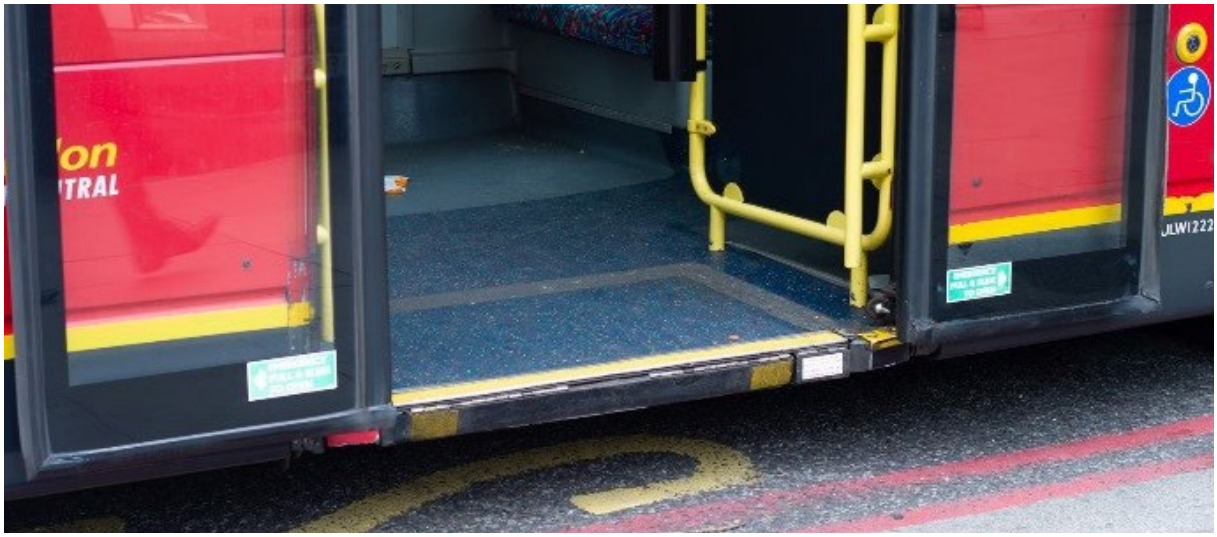


Photo: John Frye Photography

There are other features to help people with impaired hearing or vision to travel independently by bus including audible signals warning of doors opening and closing. Audible and visual real time systems at bus stops announcing time to next bus can also be very helpful to people with vision or hearing loss and are generally welcomed by all passengers.

They are also valuable on other systems such as Bus Rapid Transit and metro. Transport for London has visual announcements to help people with hearing loss (bottom right).

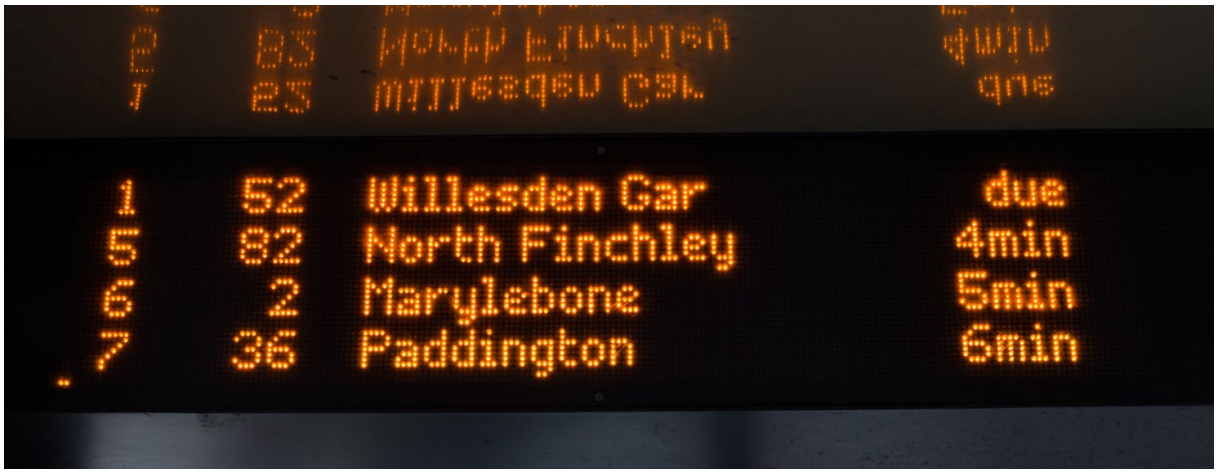


Photo (right): John Frye Photography

Hong Kong, China

Driver behaviour and overcrowding cause additional problems for people with disabilities in all parts of the world. Operational measures, such as management of priority boarding, can be helpful.

An example of a flexible bus service accessible for people with disabilities is the Public Light Bus service in Hong Kong. Two accessible low entry minibuses have been added to the vehicle fleet on a trial basis.

The vehicles, which can be booked in advance by wheelchair users, take routes that link with major hospitals. If the trial is successful, further vehicles on hospital routes will be added.

Photos: Mr Leslie Chan CMILT, Hong Kong

Bus rapid transit

A popular public transport solution in many low- and middle-income countries is BRT, a means of transport often supported by multilateral lending agencies.

When designed well, BRT provides a high-quality service that meets the needs of people with a wide range of disabilities. But these features must be included in the design and construction to ensure the system can serve all public transport users. For instance, the BRT system in Lagos, Nigeria, was built without access ramps and handrails, and the Transjakarta busway in Jakarta, Indonesia, requires passengers to use long flights of steps at stations with no alternative means of access.

If access provisions are not built in right at the beginning – if possible, as a funding condition – it is extremely difficult and expensive to retrofit them. The World Bank have published guidelines on making BRT accessible for people with disabilities which includes information on getting the design right from the start [reference 38].

Here are examples from Dar es Salaam, Tanzania and Delhi, India of BRT systems that were well designed and operated for passengers with disabilities.

Dar es Salaam, Tanzania

A modern BRT system in Dar es Salaam, Tanzania, takes into account the needs of people with disabilities. At an early stage, the design team engaged with Comprehensive Community Based Rehabilitation in Tanzania (CCBRT) [reference 39], an advocacy group for people with disabilities.

Photo: CCBRT Advocacy Group

The design team took on board recommendations to improve access, including lower ticket office windows, braille on tickets, and colour contrasted rails to help people with low vision.

Photo: Tshwane Municipality, South Africa

BRT systems need to be viewed as part of a longer chain of accessibility starting with the surrounding streets and sidewalks and taking into account how people can reach BRT safely and with confidence. In some cities, passengers have to board BRT in the middle of a busy freeway, which is dangerous for everyone, especially people with disabilities.

Effective measures include pedestrian crossings with traffic lights to give priority to pedestrians and traffic calming. See the new station at the Tshwane Bus Rapid Transit System, Pretoria, South Africa with colour contrasted tactile guide strip to guide passengers with low vision.

Unfortunately, the Delhi BRT system, which was opened in 2008, has now been closed because of other transport planning issues and the dominance of the private car. This is a loss of a key means of independent mobility for people with disabilities.

Delhi, India

Samarthyam (Indian National Centre for Accessible Environments) [reference 40] intervened in the planning stage of the Delhi BRT to ensure level boarding from the platform to the bus; ramped access to the bus queuing area; tactile paving; and Braille route and information signs.

The ramp handrails and the configuration of tactile paving were worked out with BRT architects during the implementation. The ramp has level resting places that help wheelchair users to manage the long continuous slope.

Photos: Samarthyam

Public transport: Rail transport

Rail transport takes many forms, ranging from traditional heavy rail to light rail, tram and metro. Each presents different access challenges but increasingly rail systems can be designed and constructed to meet the access needs of everyone.

Mainline rail

In making mainline rail transport accessible to people with disabilities, careful consideration must be given to the design and operation of stations and trains. Railway stations in major cities are often large and complex, and are difficult for people with low vision, for example, to navigate with confidence.

Clear visual and audible information and tactile guidance are essential to help people access and use these stations. A mainline railway station in London has floor information trails that provide additional information to help passengers.

Photo: John Frye Photography

Many countries still have old, inaccessible rail services with high floor boarding from track level. While at least in the short term, wheelchair access may not be possible, people with other disabilities are helped by colour-contrast step edges and handholds (as shown in the below photos from Norway), and audible and visual passenger announcements on stations and trains.

A ramp or a lift is often required to enable wheelchair users to board trains but there can be a gap between the platform and the doorsill. There are examples around the world of boarding systems that are kept either on the station platform or on the train. This example from Norway shows a lift fitted in the train doorway. By far the preferred solution is to design and construct level access between the platform and station.

Photos: Ann Frye Ltd

In India, Samarthyam is working with the rail company to develop accessible on-board toilets and boarding devices to enable people with disabilities to travel with comfort and dignity. Disability experts were engaged from the start, existing facilities were audited and a series of mock-ups of new facilities were tested by people with disabilities.

Indian Railways plans to launch the new accessible Train with features including:

- GPS-based passenger information system
- Automatic doors

- Spacious connecting doors for wheelchair mobility
- Modular toilets with accessibility features
- Dedicated space for parking wheelchairs
- Braille features.

Light rail and tramway

Light rail and tramway systems are relatively new and should therefore incorporate accessibility as a non-negotiable design requirement. Because these transport systems travel at relatively low speeds, level boarding is easy to achieve. The gap between the platform and the train can be eliminated and manoeuvring space for wheelchair users provided. See the photos of Croydon Tramlink in the UK.

However, there are still examples of tramway systems in the middle of a major road requiring passengers to cross several lanes of road traffic to access them. This situation is dangerous for everyone and often impossible for people with low vision, for example.

Old tram systems with high floors and street level boarding present a much bigger challenge to accessibility. But access can be made easier for many people with simple low-cost improvements, such as colour contrast on step edges and handholds at the entrance.

Croydon Tramlink, UK. Photos: Rail Accessibility Ltd.

Underground rail and metro

Building accessibility features into new systems is relatively straightforward provided there is proper consultation and the engagement of people with disabilities. However, retrofitting accessibility provisions to old systems is more difficult and costly.
Therefore, new systems need to be carefully designed and constructed so that subsequent refits to make them accessible are not required.

However, old systems can be improved. As shown in the photo of the London Underground, one section of the platform has been raised to provide level boarding between platform and train. Clear colour contrast and a tactile warning strip along the platform edge are essential safety and guidance features for all passengers including passengers with disabilities.

Photo: John Frye Photography

As well as making trains and platforms accessible, access routes, entrances and exits must be barrier free, as well as the street environment around metro stations. When new schemes are proposed, full accessibility of trains and station infrastructure should be a non-negotiable funding condition.

Singapore

All Mass Rapid Transit (MRT) stations are equipped with barrier-free facilities, such as ramps, lifts and wheelchair accessible toilets. There are two wheelchair accessible carriages on each train.

Visually impaired travellers can use the braille plates in station lifts and follow the tactile ground indicators to guide them from the entrance to the platform. The indicators also serve as warnings near the platform edge. On board the train, station names and audio instructions for transfer are announced at every stop.

Platform indicators help people with hearing impairment to find arrival times and destinations of approaching trains on the Rail Travel Information System. On the North-South and East-West lines, the Singapore MRT Active Route Map Information system specifies the arrival station. Train doors have flashing red lights to warn passengers of doors closing.

Hyderabad, India

A report from Hyderabad, India [reference 41], illustrates the need for a wide-ranging approach to disability inclusion and highlights the need for a comprehensive approach to accessibility on metros.

The authorities have ensured that metro trains and stations, including lifts, fare gates and ticket vending machines, cater for the needs of people with disabilities. A test run with a small group of people showed they were able to buy tickets, cross the barrier gates, enter the lift, get to the station area, and board trains.

However, additional measures are needed to ensure the safety of people with disabilities. The entrances to Nagole, Miyapur and Parade Ground Stations are on roads with limited vehicle access

thus enabling easy navigation for wheelchairs. But the entrances to Rasoolpura, Ameer-pet and Secunderabad stations are on service roads that could be dangerous for people with disabilities.

A senior officer of the Hyderabad Metro Rail said “Our duty is to provide facilities for people with disabilities to travel comfortably. There will be people to help them at the street level. But with busy roads on both sides of some stations, it seems doubtful whether passengers with disabilities will be able to enjoy metro travel.”


BHASKAR ARTS
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River and waterborne transport

In some countries, waterborne transport is an essential and integral part of day-to-day mobility. In Bangladesh [reference 42], for example, 12% of the rural population rely solely on river transport to connect with the rest of the country.

There are few international standards and guidelines on access to waterborne transport but there are examples of good practice.

In Hong Kong, China, the Transport Department sets minimum access standards as a condition of tender for new ferries. This is an example of good practice that could be adopted in other countries for all forms of public sector tendering for transport vehicles and infrastructure.

Where there is little or no tidal or other movement, relatively simple low-cost ramps can be used to provide a level boarding platform. However, in places of tidal movement, additional boarding assistance will be needed because ramp gradients are too steep at low tide. In the UK, the Wheelyboat Trust [reference 43] has designed accessible boats suitable for canal and river transport.

Photos: The River Thames Boat Project (left), Local Solutions (right)

Next steps

This chapter brings together the issues discussed in the preceding chapters to provide practical steps in addressing the mobility needs of people with disabilities and making public transport more accessible for all users.

These practical steps are for everyone involved in decision making on planning, design, construction and operation of public transport infrastructure and services. The aim is to use available resources effectively to the benefit of all passengers including people with disabilities, older people, children and pregnant women.

Here are the practical steps to making public transport more disability inclusive:

Identify the mobility issues of people with disabilities

In many cases, public transport is a local matter involving local people. Thus, in planning and designing transport infrastructure and services - new provisions or facility/service upgrades - the mobility issues of the users, especially people with disabilities, need to be identified and taken into account.

The best and most effective way to identify the real issues is to talk to people with disabilities and their representative organisations. If possible and practical, visit the bus or train route together with disabled users so they can demonstrate their mobility issues at first hand.

For example, when planning and designing an accessible bus service, pedestrian access to the bus stops along the route may be a major mobility issue because footpaths are unsuitable, or even impossible, for wheelchair users to navigate.

The real mobility issues could well be outside your remit as a transport professional. In such cases, it will be necessary to co-ordinate with other government departments and organisations to develop sustainable mobility solutions.

Agree improvements that will make a difference

Once the mobility issues have been identified, agree with transport users the type of improvement that will make the greatest difference to their mobility. Often, substantial improvements can be achieved with simple, low-cost solutions, such as lowering the roadside kerb, painting pedestrian crossings on the road, raising the platform at bus stops to reduce the boarding height, or painting a contrasting colour on step edges.

Mobility aids have to be implemented right at the start when transport infrastructure and services are designed and constructed because retrofits are always more expensive.

The World Bank [reference 44] has produced a short checklist of relative low cost interventions to improve the mobility of people with physical or sensory impairments. The table below is based on that checklist.

Anticipated cost	Typical Intervention	Priority
Very low	Visual contrast; colour coding; clear intuitive signs	Essential
Low	Basic sidewalk; kerb cuts and crossing design; hazard markings; minimise steps and other hazards	Essential
Low	User awareness; priority seating; additional training for operational staff; tactile surfaces; kerb inserts	Very high
Medium to high	Raised pedestrian crossings; raised boarding platforms/bridges or low entry vehicles; general training for operational staff	High
High	Lifts (elevators) at stations; illuminated and audible signals; wheelchair location; special transport services	High

Table 3: Checklist of low-cost interventions for more disability inclusive transport

Raise awareness and commitment to people with disabilities

Initiatives have been taken in countries worldwide to make public transport more disability inclusive. As shown in the preceding chapters, there are numerous examples of bad and best practice. To make the right choices, everyone involved in public transport must be aware of, and understand, the mobility issues of people with disabilities. Because sustainable solutions require commitment by policy-makers and professionals who manage transport budgets at local, provincial and national levels.

Awareness and understanding of disability inclusive transport involves everyone who plays a role in designing, constructing and implementing public transport in your country. These people include engineers, planners, architects, designers, managers, operators, station managers, bus and train drivers. Everyone who deals directly or indirectly with passengers.

This policy brief is the starting point for raising awareness of the day-to-day mobility issues of people with disabilities. Further information is available in the publications listed in the Resources and Further Reading Section to gain deeper understanding of the mobility issues of vulnerable groups.

A very effective way to raise awareness and understanding is to meet people with disabilities and their representative organisations. Meetings could be organised on-site to enable politicians and transport professionals to see first hand the problems faced by transport users with disabilities.

Formal training in disability inclusive transport is needed for everyone, from senior managers to transport employees in direct contact with the travelling public, including bus drivers and station staff. Professionals from architects to road engineers need training to ensure the needs of people with disabilities are incorporated in the design and construction of transport infrastructure. Formal training must also cover legal requirements under national and international law, as well as best practice guidance.

Include universal design in all funding bids

When there are opportunities for new investment, public transport must be designed, built and operated on the principles of Universal Design to ensure that transport meets the needs of all users. These principles ensure that infrastructure and services are easy and intuitive to use, with minimum physical effort and provide adequate space for wheelchairs users.

Universal Design is incorporated in the United Nations Convention on the Rights of People with Disabilities (2006) and needs to be incorporated into national legislation so that standards for disability inclusive transport can be set, implemented, monitored and enforced.

Funding requests must incorporate Universal Design principles as an integral part of planning, feasibility studies and design. Making Universal Design a condition of contract and funding will ensure that any changes or cuts during the design and construction phases do not compromise accessibility for people with disabilities.

Monitor and enforce disability inclusive provisions

When accessible vehicles and systems are in service, their effectiveness needs to be monitored. A low-cost method would be to invite people with disabilities and their representative organisations to report on their travel experience to the responsible authority. For instance, they could be asked whether agreed improvements, such as a ramp for wheelchair users to cross a road or handholds at bus entrances, have been implemented and are effective in daily use.

The relevant authorities need to make spot checks for example, to ensure that equipment is working, and transport staff are behaving appropriately. In this respect, disability inclusion must be part of the transport operator’s contract and a system of penalties put in place for consistently poor performance. The penalties should be decided locally but fines should be sufficiently high to deter repeat offence.

Resources and further reading

This list of resources and further reading provides guidance and best practices in accessible transport for people with disabilities. While this list is not comprehensive, it does provide information on the lessons learned in various countries which address the mobility issues of people with disabilities.

General Guidance

Venter C, Sentinella J et al Overseas Road Note 21, Enhancing the mobility of people with disabilities: Guidlines for practioners, The Department for International Development (DFID) First Published 2004 | https://assets.publishing.service.gov.uk media/57a08ccce5274a31e0001458/R8016.pdf

Rickert, T. Making Access Happen: A Guide for Advocates and Planners, Access Exchange International, 2003 | www.independentliving.org/mobility/rickert200302.pdf

UNDP, Malaysia A Review of international best practice in accessible public transportation for people with disabilities, 2010 | https://drive.google.com/file/d/0B2c3Xbwb7aY3TlBwX0YyTTU4RU0/view

Venter C, Savill T et al. Enhanced Accessibility for People with Disabilities Living in Urban Areas, Cornell University, 2002 | https://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1258&context=gladnetcollect

Aragall F, Neumann P, Sagramola S. Design for All in progress, from Theory to Practice, European Concept for Accessibility, 2013 | http://www.eca.lu/index.php/documents/eucan-documents/29-eca-2013-design-for-all-in-progress-from-theory-to-practice/file

Cognitive Impairment, Mental Health & Transport: design with everyone in mind, International Transport Forum, 2009 | www.itf-oecd.org/sites/default/files/docs/09cognitive.pdf

Transformative Urban Mobility Initiative | https://transformative-mobility.org/

Accessible Urban Mobility, Sustainable Urban Transport Project, 2018 | https://linkprotect.cudasvc.com/url?a=https%3a%2f%2fsutp.org%2ffiles%2fcontents%2fdocuments%2fresources%2fL_iNUA%2fiNUA-6-AccessibleUrban%2520_SUTP_03092018.pdf&c=E,1,eMAexkSFrsALr34S9H6gy3bwZ69YUSdTYvMMUxkJvRFpZLDj9Cq7iXlXWduxDN-mxzO6LxiInVBEntV2L6chVzr4E1NtoqMoVlCr_sV15pBx&typo=1

World Bank Guidance Note “Improving Accessibility to Transport for People with Limited Mobility Cf. | https://sutp.org/files/contents/documents/resources/L_iNUA/iNUA-6-AccessibleUrban%20_SUTP_03092018.pdf

Infrastructure

Svayam, India Handbook on Barrier-Free Infrastructure | www.svayam.com/ConsoleAdmin/completeguidline/compilefile/9_CompileFile_Handbook%20on%20Barrier%20Free%20Infrastructure.pdf

Inclusive Mobility: A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure, Department for Transport UK, 2005 | https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/3695/inclusive-mobility.pdf

Bus Rapid Transit (BRT)

Rickert T, Technical and operational challenges to inclusive Bus Rapid Transit: A guide for practitioners, World Bank, 2013 | http://siteresources.worldbank.org/DISABILITY/Resources/280658-1239044853210/5995073-1239044977199/5995074-1239045184837/5995121-1239046824546/BRT_Challenges9-10.pdf

Menckhoff G. Inclusive Design of Bus Rapid Transit: Experience from Latin America, World Bank, 2005 | http://siteresources.worldbank.org/DISABILITY/Resources/280658-1172672474385/inclusiveDesignBus.pdf

Mainline Rail

Department for Transport UK. Accessible Train Station Design for People with disabilities: A Code of Practice, 2011 | https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/3191/accessible-train-station-design-cop.pdf

Paratransit/demand responsive transport

Rickert T. Paratransit for mobility impaired persons in developing regions: starting up and scaling up, Access Exchange International, 2012 | https://drive.google.com/file/d/0B2c3Xbwb7aY3MXFjUE1OMmhXdmc/view

School services for children with disabilities

Rickert T. Bridging the Gap: Your role in transporting children to school in developing countries, Access Exchange International, 2017 | https://drive.google.com/file/d/0B2c3Xbwb7aY3R1BGOTdHNGZRQ1E/view

Guidance on appropriate wheelchairs

Guidelines on the provision of manual wheelchairs in less-resourced settings | http://www.who.int/disabilities/publications/technology/wheelchairguidelines/en/

WHO Wheelchair Service Training Package for Managers and Stakeholders | http://www.who.int/disabilities/technology/wheelchairpackage/wstpmanagers/en/

Tactile guidance for people with vision impairments

Guidance on the Use of Tactile Paving Surfaces | https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/289245/tactile-paving-surfaces.pdf

Design standards and guidance

Oxley P. Department for Transport UK. Inclusive Mobility: A guide to best practice on improving access to public transport and creating a barrier-free pedestrian environment. First Published 2002 | www.gov.uk/government/publications/inclusive-mobility

Ministry of Urban Affairs and Employment, India Guidelines and Space Standards for Barrier-Free Built Environment for Disabled and Elderly Persons, first published 1998 | www.svayam.com/ConsoleAdmin/Publication/PublicationFile/2_Publication_cpwd%20guidelines%20on%20barrier%20free.pdf

Ministry of Social Justice and Empowerment, India, Planning a Barrier-Free Environment, first published 2001 | www.svayam.com/ConsoleAdmin/Publication/PublicationFile/1_Publication_PlanningBarrierFreeEnvironment-ccpd.pdf

Training

Rickert T. Transit Access Training Toolkit, World Bank, 2009 | http://siteresources.worldbank.org/DISABILITY/Resources/280658-1239044853210/5995073-1239044977199/TOOLKIT.ENG.CD.pdf

Acronyms

BRT: Bus Rapid Transit

CCBRT: Comprehensive Community Based Rehabilitation

DFID: Department for International Development

GAATES: Global Alliance on Accessible Environments and Technologies

MRT: Mass Rapid Transit

SDGs: Sustainable Development Goals

WHO: World Health Organisation

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Disability Inclusive Public Transport

Policy Brief

DFID High Volume Transport

The right choices for accessible transport for people with disabilities depends on the awareness and commitment of everyone engaged in transport, from policy-makers to bus drivers. This book draws on best practices worldwide to set out practical steps to making transport disability inclusive and more accessible for everyone.

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