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ACCESS FOR ALL SERIES

POLICIES FOR INCLUSIVE TOD

Access and Persons with Disabilities in Urban Areas

Executive Summary

ITDP

World Enabled+

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ITDP and World Enabled would also like to acknowledge the following experts who generously provided their time for this report:

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Diana Sandoval, Inter-American Development Bank
Gerhard Menckhoff, Emeritus Board Member, ITDP Board of Directors
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Jon Froehlich, Cofounder, Project Sidewalk
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Persons with disabilities[1] make up nearly 15 percent of the global population, and in low- and middle-income countries (LMICs), that number is nearly 20 percent.[2] More than half of all people with disabilities live in towns and cities, yet our cities rarely address mobility needs across the full spectrum of people's abilities. Most cities are designed from the perspective of people without disabilities and for the convenience of people in motor vehicles rather than people walking, cycling, or using public transportation. Within this context, it's clear that cities need to reframe who they are planning for.

When cities plan access for people with disabilities, those cities are better for all. Cities all over the world—and particularly in Latin America, Africa, the Middle East, and Asia—are experiencing increasing motorization, severe congestion, pollution, safety concerns, insufficient transport supply for travel demands, and socioeconomic exclusion, among other problems.[4] These issues especially affect marginalized groups, including people with disabilities. Studies demonstrate that transportation barriers and exclusion are a predominant obstacle to personal autonomy, education, employment, economic activities, emergency evacuation, and social participation for people with disabilities. [5 6 7] The inclusion of universal design criteria in designing spaces allows everyone to enjoy them on equal terms.[8] Universal design that makes trips easier for people with disability also gives easier travel access to people with limited mobility, such as older and pregnant people, young children, and caregivers. In fact, urban areas built with people with disabilities in mind help everyone to have equitable access to social, health, and economic opportunities; stimulate economies; engage citizenship; and promote thriving communities.

Bus stops designed to be shaded, with see-through walls for visibility and unobstructed walking paths improves the feelings of safety for all riders Source: Shutterstock

1 We use the terms 'persons with disabilities', 'people with disabilities', and 'people with disability' interchangeably throughout this paper, following the language of the United Nations Convention on the Rights of Persons with Disabilities (UN CRPD), and international organizations such as the World Health Organization (WHO).
2 Pineda, V., et al. (2016). The Inclusion Imperative: Towards Disability-Inclusive and Accessible Urban Development.
3 Ibid.
4 IDB and ADB. (2014). Sustainable Urbanization in Asia and Latin America.
5 Pineda, V., & Dard, B. (2016). The Inclusion Imperative: Towards Disability-Inclusive and Accessible Urban Development.
6 Naami, A. (2019). Access Barriers Encountered by Persons with Mobility Disabilities in Accra, Ghana.
7 Christensen, K.M. (2014). Socially Equitable Community Planning: Including Individuals with Disabilities in the Democratic Association of Place.
8 Federación Española de Municipios y Provincias (FEMP) y Fundación ACS. (2014). Guía Dinámica en Accesibilidad. Acción a 360º. Federación Española de Municipios y Provincias (FEMP) y Fundación ACS.

In this paper, the Institute for Transportation and Development Policy (ITDP) and World Enabled[9] explore accessible transit-oriented development and sustainable urban mobility (walking, cycling, and public transport) through the lens of people with disabilities. In particular, the paper examines how land use and transportation planning have failed to account for diverse mobility patterns, lifestyles, and needs among persons with disabilities, creating dynamics that widen gaps in societies around the world. It provides key stakeholders from national governments, civil society, subnational authorities, and donor organizations with a brief overview of the aspects of sustainable mobility that affect society as a whole and in particular those living with disabilities. It also offers a set of recommendations to promote responsive actions.

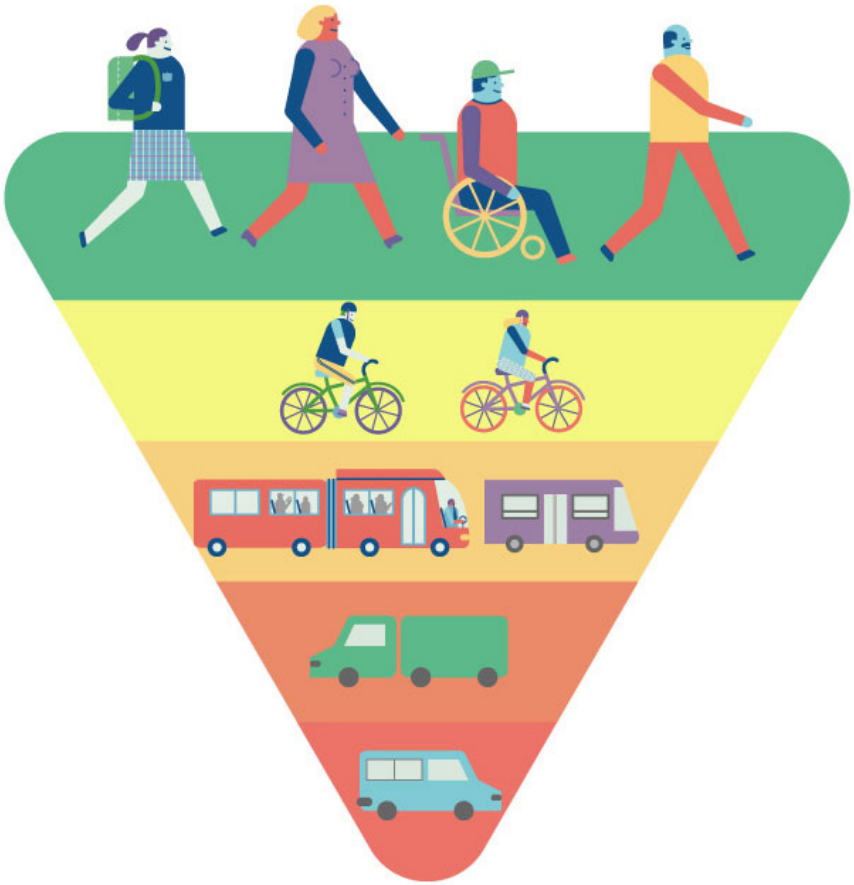


Figure 1: The Mobility priority pyramid. Pedestrians and cyclists are the highest priority, followed by people riding public and shared transportation, trucks and freight, and finally private, low-occupacy and high-polluting vehicles. Adapted from: ITDP Mexico

9 The Victor Pineda Foundation (d/b/a World Enabled) is a 501(c)(3) nonprofit organization based in California.

Key Concepts of Accessibility in Urban Mobility

Accessibility describes the degree to which an environment, service, or product allows people to reach their destination, particularly persons with disabilities or others with impediments to mobility such as older and pregnant people, caregivers, youth, and children. Physical accessibility (i.e., the degree to which the physical environment enables a person to reach their destination), economic accessibility (degree of affordability), and social accessibility (degree of social safety and acceptance) all factor into accessibility.

A **complete trip** includes all aspects of a person's trip from the time they begin to plan the trip to arriving at the final destination. This may include: pre-journey planning; access to information and communication technologies (ICTs); payment; access to and from a public transport stop; waiting, boarding; travel inside the vehicle; transfer; return journey planning; and disruptions in the journey. Each complete trip is the sum of its parts, yet each one is different. True accessibility ensures equitable access for each part of a complete trip.

Inclusive design is a methodology that enables and draws on the full range of human diversity (considering ability, language, culture, gender, age, and other forms of human difference) and includes and learns from people with a diverse range of perspectives and needs to serve as many people as possible.[10]

Barrier-free, accessible transportation in Kaohsiung City, Taiwan Province, China. Image credit: ITDP China.

10 Inclusive Design Research Centre, OCAD University. (n.d.). What Is Inclusive Design?.

Key Concepts of Accessibility in Urban Mobility

Service quality includes the perception of the reliability, durability, convenience, comfort, and security of transportation infrastructure and services from the perspective of the owners, operators, and riders of transport systems, as well as the travel behavior of riders. [11] [12] [13] Even if a city has multiple public transportation options to complete trips, if these services have poor quality due to low frequency, overcrowding, or other factors that reduce the perceived quality of the services for riders, these transport services are not improving urban accessibility in practice. As such, service quality has a direct relationship with transport ridership and perceptions of accessibility.[14]

A **twin track** approach is a two-pronged strategy that includes systemic change and individual accommodation to secure the highest degree of accessibility possible.[15] The first approach, systemic change, includes mainstream strategies such as universal design standards and regulations in policy. The second approach, individual accommodation, is targeted and secures accessibility for persons with disabilities through individual-level initiatives, such as 'reasonable accommodation' in the United States.[17]

Universal design is defined by the United Nations as the "design of products, environments, programs, and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design... [it] shall not exclude assistive devices for particular groups of persons with disabilities where this is needed."[17] The seven principles of universal design are: equitable use; flexibility in use; simple and intuitive use; perceptible information; tolerance for error; low physical effort; and size and space for approach and use.[18] "Design for all" and "inclusive design" are also popular terms.[19]

11 Tabi, C. & Adams, S. (2016). Service Quality and Customer Satisfaction in Public Transport Operations. International Journal of Services and Operations Management 25(4).
12 Fritman, M., Lattman, K., and Olsson, L. E. (2020). Public Transport Quality, Safety, and Perceived Accessibility. Sustainability, 12(9).
13 Litman, T. (2021). Evaluating Accessibility for Transport Planning: Measuring People's Ability to Reach Desired Services and Activities. Victoria Transport Policy Institute.
14 Fritman, M., Lattman, K., and Olsson, L. E. (2020). Public Transport Quality, Safety, and Perceived Accessibility. Sustainability, 12(9).
15 United Nations. (2019). United Nations Disability Inclusion Strategy.
16 US Department of Labor, Office of Disability Employment Policy. (n.d.). Accommodations.
17 United Nations. (2019). United Nations Disability Inclusion Strategy.
18 Disability Resource Center, University of Arkansas. (n.d.). Universal Design.
19 WHO and World Bank. (2011). World Report on Disability.

UNDERSTANDING DISABILITY

Two women cross the street in Guadalajara, Mexico. Source: ITDP Mexico.

Most people will experience some form of disability in their lifetime. [20] Disability may be temporary or permanent and can include difficulties seeing, hearing, walking, climbing, remembering, concentrating, completing self-care/washing all over, communicating, or being understood. People with disabilities are a diverse group with a wide variety of experiences who face a multitude of barriers to equitable participation and inclusion in societies around the world.[21]

While disability was previously understood using a medical model, in which an impairment is the disability, the concept of disability is now understood using a social model instead, which does not center on individual functionality but rather focuses on disability as being an interaction of health, functioning, environmental, and personal factors.[22] Expressed in a different way, disability is not an attribute of a person but rather an interaction between a given person's difficulty seeing, hearing, walking, climbing, remembering, concentrating, completing self-care, communicating, or being understood, with an unaccommodating physical, social, and/or institutional environment.

20 WHO. (2020, December 1). Disability and Health.
21 WHO and World Bank. (2011). World Report on Disability.
22 Center for Disability Rights. (n.d.). Disability Writing & Journalism Guidelines.

For example, a person with a visual impairment who is using a transportation system to travel to a local healthcare clinic may experience challenges such as a lack of audio format travel information in the transportation environment, which restricts their ability to use the transport system. The lack of inclusive information in the transportation system is a socially created problem, not an attribute of the individual.[23] Understanding this complex and social aspect of disability is essential for creating more-inclusive urban environments.

Persons with disabilities are likely to face discrimination from individuals, institutions, and society based on their disability. This may be compounded by discrimination due to age, gender identity, sexual orientation, race, ethnicity, class, nationality, and citizenship status.[24] These intersections of identity affect how people with disabilities are able to use, be perceived in, and move around in public space. Discrimination and lack of access to affordable, secure, and inclusive mobility (through walking, cycling, and transport infrastructure and services) pose significant challenges for the social and economic livelihoods of persons with disabilities. This can include higher barriers to education and employment as well as the higher likelihood of poverty.[25] [26] Women, persons of lower socioeconomic status, and those living in low- and middle-income countries are more likely to be or become persons with disabilities within their lifetime.[27] [28] In low- and middle-income countries, women are estimated to comprise up to three-quarters of persons with disabilities.[29]

Good examples of tactical wayfinding signage and tactical paving for the MyCITI rapid transit system in Cape Town, South Africa. Image credits: Susan Smit, Angela Gilbert, and Pierre Smit from Smit & Davies, 2012.

23 Ibid.
24 Pineda, V., et al. (2016). The Inclusion Imperative: Towards Disability-Inclusive and Accessible Urban Development.
25 UN. (2018). Disability and Development Report: Realizing the Sustainable Development Goals by, for, and with Persons with Disabilities.
26 WHO and World Bank. (2011). World Report on Disability.
27 UN Women. (2017). Making the SDGs Count for Women and Girls with Disabilities.
28 UN. (2018). Disability and Development Report: Realizing the Sustainable Development Goals by, for, and with Persons with Disabilities.
29 UN Women. (2017). Making the SDGs Count for Women and Girls with Disabilities.

LAND USE PLANNING AND TRANSIT-ORIENTED DEVELOPMENT FOR PEOPLE WITH DISABILITIES

A child with a disability rides a tricycle comfortably in Vietnam. Image credit: Richard Nyberg, USAID, via Wikimedia Commons.

Land use planning affects all aspects of daily living. It determines where goods, services, education, healthcare, housing, social activities, areas for leisure, and housing are available in cities. The quantity, location, and distance between these uses all influence how people feel, operate, and interact in cities. People with disabilities can face greater challenges traveling between urban locations, so reducing the length of trips and improving the accessibility of the built environment is essential.

Persons with disabilities and their families need land use planning to provide:

- The ability to form social ties and be a part of community-engagement activities (such as through community centers and local groups);
- A sense of belonging and inclusion;
- Calm environments that do not cause undue stress; and
- An assurance of safety and security.

In addition, inclusive, transit-oriented land use planning brings together key destinations for daily, weekly, and monthly needs for any given person in a city with the knowledge that these goods and services may be more frequently needed by people with disabilities. These key destinations and mobility options include:

- **Water, sanitation, and hygiene (WASH) locally;**
- **Affordable supportive and/or mixed-income housing;**
- **Affordable transportation;**
- **Local fresh food sources, including grocery stores, small shops, and informal fresh produce stands;**
- **A variety of open spaces, including parks, plazas, green spaces, and playgrounds;**
- **Healthcare services and pharmacies;**
- **Education options;**
- **Employment options; and**
- **Cultural and community centers, including social services.**

COMMON CHALLENGES FROM LAND USE

The layout of most cities today prevents many people from accessing the goods, services, and opportunities they need. This is true of both car-oriented, low-density urban contexts as well as dense, walkable urban areas if they are not planned for inclusive, mixed-income housing and accessible mixed uses.

When urban areas are sprawled and do not have a good density of mixed uses for diverse incomes, people travel farther distances for daily necessities such as jobs, education, healthcare, and food. Sprawl results in motor vehicle usage, increases greenhouse gas emissions, decreases air quality, and increases inequalities and social exclusion through segregation of urban areas.[30] These negative effects of low-density development can especially impact people with disabilities, children, and older people, who are already more limited in their mobility and tend to rely more on walking, cycling, and public transportation. As cities move toward building more dense, walkable, and cyclable neighborhoods, this only achieves goals of increasing access if social and economic inclusion are part of this planning.

30 ITDP. (2019). Final Report High-Volume Transport: Urban Transport Theme 2.

DISABILITY-INCLUSIVE LAND USE

Transit-oriented development (TOD) can provide a mix of these key destinations within walkable, cyclable distances that enable everyone to reach necessary social, economic, educational, and healthcare destinations. However, if TOD is not enacted via inclusive policies and planning, it can displace people with disabilities who are already disadvantaged by having lower average incomes. Cities must understand both the potential problems as well as the possibilities that TOD offers people with disabilities.

Inclusive policies that create better TOD include those that target:

- **Universal accessibility standards** for urban design, development, and transportation infrastructure;
- **Social housing** and low-income housing for persons with disabilities and older persons;[31]
- **Diverse services** for people of all incomes;
- **Local businesses** (and local business retention); and
- **Community-engagement spaces**, programs, and accessible public spaces.

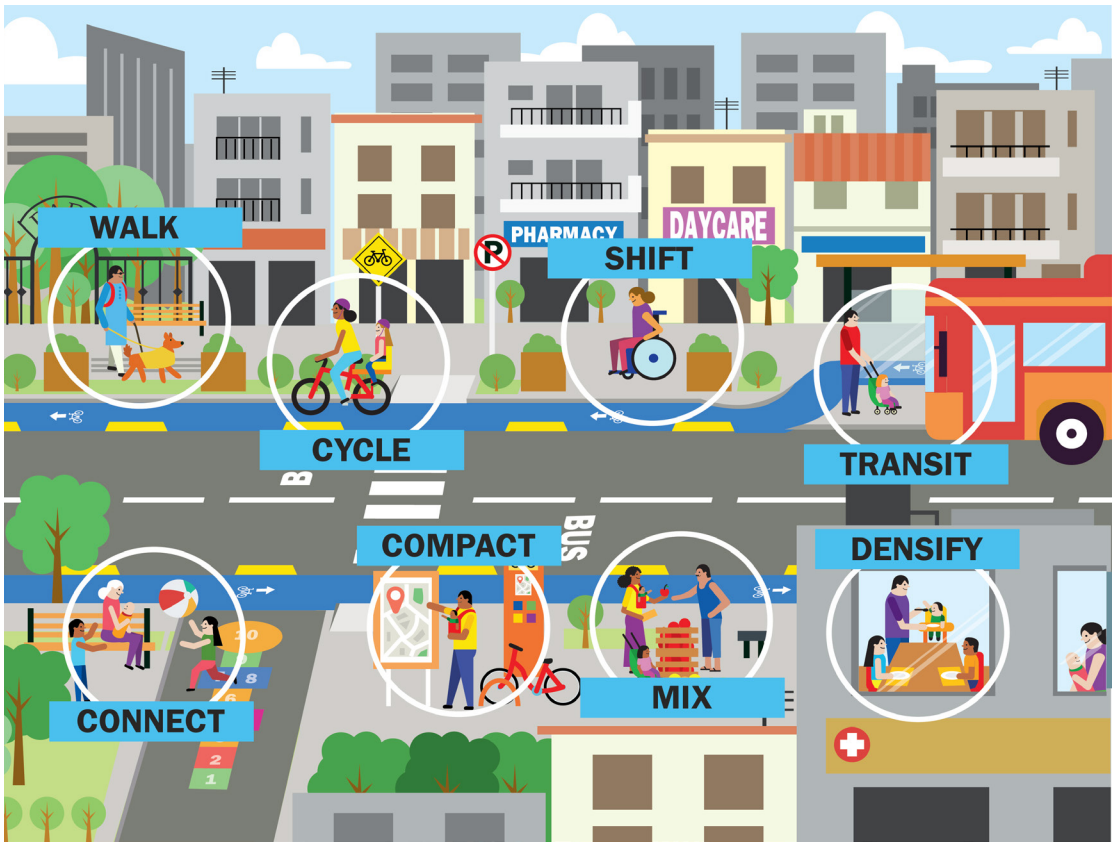
A man using a wheelchair boards an electric bus with an extending bus floor that eliminates the vertical and horizontal gap between the ground and the bus floor. Image credit: 94FM, Brazil

31 WRI. (2017). Governance of Inclusive Transit-Oriented Development in Brazil.

Urban design standards should address physical, sensory, cognitive, and social barriers for physical and social environments. Inclusive land use design should include:

- **Strong walking and cycling networks** featuring a connected grid of streets and paths that supports short trip distances between diverse land uses and accessible design between goods, services, education, and social/economic opportunities.
- **Compact, diverse developments** well connected through universally accessible 10-minute transit, walking, and cycling networks.
- **Public and green spaces** widely available in every neighborhood, and accessible through walking, cycling, and transit.
- **Urban design that ensures public spaces** and commercial/residential developments are accessible to everyone, and that there are clear inclusion policies specifically targeting people with disabilities and those with limited mobility for urban development and housing standards.

Inclusive TOD enables equitable access to opportunities and services through eight core principles of sustainable access and mobility, urban design, and land use: **WALK, CYCLE, CONNECT, TRANSPORT, MIX, DENSIFY, COMPACT,** and **SHIFT.** To learn more, please go to **todstandard.org.**



TRANSPORTATION PLANNING AND MOBILITY FOR PEOPLE WITH DISABILITIES

A woman using crutches exits a bus rapid transit (BRT) station in Guadalajara, Mexico. Source: ITDP Mexico.

Universally accessible walking, cycling, and public transportation should be the backbone of urban mobility, providing the key to access employment, education, healthcare, and other social and economic opportunities in cities. At present, public transport often inadequately serves people with disabilities. Persons with disabilities are a diverse group of individuals with distinct travel characteristics and needs based on the types of trips they need to take, when they take them, and under what conditions. These mobility characteristics may include:

Adaptive cycles enable persons with disabilities to move around, but these bicycles are wider than some infrastructure minimums require. It is important that minimum standards consider adaptive cyclists movement in public spaces, cycling paths, and cycle parking areas. Source: Shutterstock

Use of assistive devices or animals.

Need for shorter trips, given increased discomfort, stress, or difficulty to travel.

Slower travel speeds. Persons with disabilities may need wider walkways for passing and longer boarding times to accommodate slower movement.

More frequent stopping, given increased fatigue, confusion, or stress in travel.

Need for calmer environments, including low noise levels, reduced crowding, and ample access to green spaces.

Higher risk aversion. Persons with disabilities are more likely to choose travel options they perceive as safer, despite increased costs or restricted schedules.

Common Barriers to Urban Mobility for People with Disabilities

People with disabilities can face a multitude of barriers for a complete trip. These can be barriers from the physical environment that prevent mobility; barriers from the social environment that do not provide comfortable, secure, and equitable social interactions; and barriers from the institutional environment such as a lack of institutions/dedicated experts to improve disability accessibility or a lack of universal design guidelines.

Disability-Inclusive Sustainable Mobility

Walking, cycling, on-demand shared services like ride-hail and taxis, and public transportation (both formal and informal) can be safe mobility options for people with disabilities. However, for this to be true, universal design measures in walking, cycling, and public transportation systems should not only be fully accessible but comfortable to use. For example, it is not enough to simply provide an accessible gate entrance alongside inaccessible turnstiles in a transit station if the gate can only be opened and operated by staff—this takes an extended period of longer, is inconvenient, and can increase the psychological pressure or feeling of insecurity for persons with disabilities traveling independently. In the same way, it is not a holistic solution to have staff assist people with disabilities instead of providing an autonomous solution. In both cases, dependence on others for access can deter persons with disabilities from frequently using an area or service. Cities must prioritize universal design measures that are not only accessible but convenient, comfortable, and independent.

Two elderly individuals use walkers in a commercial area. As populations continue to increase in age with improving quality of life and medical technology, the number of persons with disabilities and limited mobility increases globally. Source: Shutterstock.

Urban design standards should address physical, sensory, cognitive, and social barriers for physical and social environments. Inclusive sustainable transportation and mobility planning should include:

- **Walking, cycling, and 10-minute public transportation** that is convenient, accessible, and comfortable;
- **Universally accessible design** for all aspects of transport systems, such as well-maintained, unobstructed walking and cycling paths in and around stations/stops, as well as entrances to stations that do not require an attendant for assistance;
- **Travel-demand measures** to reduce private motor vehicle use, and traffic-calming measures to create slow traffic and a comfortable environment;
- **Public spaces and streets that feature lighting, shade, shelter,** places to rest, and publicly accessible toilets;
- **Public spaces that are active and vibrant** (including streets with a mix of business with building frontages that you can see through as well as populated and animated sidewalks, green spaces, or other areas);
- **Clear information for wayfinding,** available in accessible formats (e.g., braille, audio, high contrast and tactile paving); and
- **Permission for guide dogs to access** all public spaces, facilities, and transport systems.

It is important to meet the needs of people with sensory impairments, cognitive impairments, and mental health conditions, which can be overlooked in transport planning. Above, a woman with a visual impairment uses an informational technology machine in a transit station in Bruges, Flanders, Belgium. Image credit: VISITFLANDERS, Flickr.

KEY TAKEAWAYS FOR CREATING INCLUSIVE AND ACCESSIBLE ENVIRONMENTS

Curitiba's bus tubes with platform-level boarding and lifts are a best-practice example for accessible stops and stations for public transport. The raised stations and extensions from the buses eliminate vertical and horizontal gaps. Image credit: Mariana Gil, EMBARQ Brasil | WRI Brasil Cidades Sustentáveis, Flickr.

Inclusive transit-oriented development—by providing a mix of goods, services, people, and opportunities within short enough distances to complete daily trips by walking, cycling, or transit —is an important approach for improving accessibility of cities for people with disabilities and those with limited mobility. Alongside TOD, universally accessible walking, cycling, and public transportation facilities improve the access and inclusion of persons with disabilities in urban areas. By reducing the financial and psychological burden of car-oriented travel as well as the distance between key daily destinations and housing, accessible TOD and urban mobility systems enable more independent mobility and increased access to goods, services, and social and economic opportunities, as well as an increased sense of security and belonging and a higher quality of life for people with disabilities and their families.

32 The Disability Convention Policy Framework (DisCo framework), as proposed by Pineda (2020), provides five evaluation criteria for assessing barriers to disability inclusion and accessibility in cities. These five evaluative criteria are: laws, leadership, institutional capacity, attitudes, and participation.
Pineda, V.S. (2020). Building the Inclusive City Governance, Access, and the Urban Transformation of Dubai.

Key recommendations for accessibility in urban land use and transport planning, using the DisCo[32] framework of laws, leadership, institutional capacity, attitudes, and participation, summarized below.

LAWS

Laws include national and international rights and norms alongside local and national policies, standards, and regulations for infrastructure and services that support disability rights in urban and transportation development.

Key recommendations

- **Integrate universal accessibility i**n policies, legislation, regulations, and standards (including for housing, transportation, and other developments) in order to establish universal design and disability rights as a necessity rather than something of cyclical interest.
- **Implement policies** that support the use of transit and reduce the financial burden of mobility for persons with disabilities.
- **Establish technical standards** and regulations for accessibility in urban and transport planning to enforce disability rights.
- **Create minimum data requirements** for local population mobility patterns so accessibility progress can be measured with comprehensive, quality data.

Spotlight on Mexico: Guidelines and regulations enacted for accessible environments for persons with disabilities

Spotlight on the Republic of China: Accessibility regulations passed for barrier-free urban environments

LEADERSHIP

Leadership includes executive leaders and policymakers, and specifically the degree to which they prioritize disability rights in land use and transportation planning and whether budget allocation aligns with this prioritization.

Key recommendations:

- **Elect and appoint persons with disabilities to powerful leadership positions** related to transport and land-use planning. Create educational and leadership opportunities for people with disability to lead organizations, governmental bodies, and agencies to inclusivity and accessibility.
- **Educate leaders and policymakers** on why prioritizing universal accessibility and allocating sufficient budget to implement universal design is important. Dedicate public subsidies to accessibility priorities, and ensure accessible services and pricing (e.g., low-to-no-fare, fare integration) at the inception of projects and programs.
- **Take advantage of collaboration** with national and international partners to foster leadership, policy, and adequate funding for universal accessibility.

Spotlight on Ecuador: Creation of the Disability National Policy leveraging international support

Spotlight on Curitiba, Brazil: Improving attitudes through planned evaluations and targeted training

INSTITUTIONAL CAPACITY

Institutional Capacity includes the administrative, technical, and coordinating abilities of local institutions and the degree to which they are able to carry out disability-inclusive land-use and transportation planning.

Key recommendations:

- **Create an institutional body or dedicated accessibility officers/experts** to mainstream universal accessibility, collect quality data, monitor implementation, and evaluate outcomes using quality data.
- **Establish technical and capacity-building training on the accessibility and treatment of people with disabilities.** This should be oriented to decision-makers and planners who make decisions that directly impact the mobility of people with disabilities and those with limited mobility in cities.
- **Build administrative capacity with information and communication technologies (ICTs),** such as platforms or applications, for coordination, efficiency, and communication on the back end between transit operators and staff, and on the front end to improve transit service experience through improved trip planning, payment, and real-time information about services.
- **Ensure the maintenance and management of pedestrian, cyclist, and public transport spaces** and other urban facilities with dedicated funding and personnel.

Spotlight on New York City, USA: Institutional coordination for mobility programs improving accessibility for all people

ATTITUDES

Attitudes include beliefs and behaviors of the general population toward targeted groups—in this case, persons with disabilities.

Key recommendations:

- **Provide continuous training for transport personnel** who directly interact with and impact the mobility and treatment of persons with disabilities in cities.
- **Build general public awareness** through education and campaigns about the rights and equitable treatment of persons with disabilities and people with limited mobility in cities.
- **Use data to create compelling narratives** about how people with disabilities are not included in societies and the positive benefits for communities if they are universally accessible to people with disability and those with limited mobility.
- Uncover and **spotlight successful accessibility stories.**
- **Conduct advocacy campaigns** to create visibility for persons with disabilities and encourage adoption and implementation of universal design. Transmit high-impact messages through communication strategies that make visible the benefits of accessibility and universal design.

Spotlight on Jakarta, Indonesia: Inclusive walking tours for data collection, education, and awareness building

Spotlight on Vangani, India: Successful citizen advocacy for creating an accessible railway bridge

PARTICIPATION

Participation includes substantive engagement and representation by targeted beneficiaries and relevant stakeholders, and the degree to which their input informs actions in urban and transportation planning for a given area.

Key recommendations:

- **Require public participation** and ensure that it is an inclusive process. Promote the integral, equitable participation of a diverse and representative group of local residents in all phases of programs, policies, and projects.
- **Create public engagement** meetings and participatory workshops that are accessible to all people, including accessible formats, timing, locations, and ways to provide feedback.
- **Use planning and evaluation tools** such as accessibility audits and focus groups aimed at assessing public space and transport systems so institutional, legal, physical, and digital barriers can be eliminated.
- **Leverage public participation** through accessible (ideally open-source) platforms and technologies to improve data collection and access for persons with disabilities.

Spotlight on Wheelmap, Project Sidewalk, and AXS Map: Open-source data collection technologies for improving accessibility in cities.