

## Co-creating Inclusive Public Spaces. Learnings from Four Global Case Studies on Inclusive Cities

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### Abstract

This paper presents some of the findings from a global research study on inclusive infrastructure and city design (AT2030 - Inclusive Infrastructure) and will focus on inclusive public spaces.

Persons with disabilities can experience multi-dimensional exclusion from urban life, including but not limited to physical, attitudinal, and social barriers. Public spaces, including recreational and social spaces, are often not prioritised. Inclusive public spaces are fundamental to participation and inclusion in society. Including persons with disabilities in the design and planning of the built environment while applying an intersectional approach, supports equal rights and helps identify people's aspirations for inclusive environments.

Four city case studies will be discussed in this paper: Ulaanbaatar, Mongolia; Varanasi, India; Surakarta, Indonesia; and Nairobi, Kenya. Research participants and objectives are organised by three stakeholder groups:

- a) *People*: first-hand experiences of persons with disabilities living in the city and their aspirations for a more inclusive city
- b) *Policy*: the awareness and understanding of inclusive design among policymakers
- c) *Practice*: the awareness and understanding of inclusive design among practitioners including barriers to implementation, opportunities, and the relationship with assistive technology

Methods include document reviews, interviews, photo diaries and co-design workshops with participatory and inclusive engagement of persons with disabilities throughout. Findings on public spaces are discussed in three ways:

1. The types of public spaces valued by participants in each of the four cities.
2. The barriers and challenges experienced by persons with disabilities in the public realm.
3. Aspirations and opportunities for more inclusive public spaces

The paper concludes by discussing how the targeted stakeholder groups of people, policy and practice help represent three essential dimensions of inclusive city design and form a framework for successful implementation and delivery – that supports targets set out in the UNCRPD, New Urban Agenda and the UN Sustainable Development Goals (SDGs).

**Keywords:** inclusive design, urban planning, disability, accessibility, inclusive public space, inclusive cities

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## Introduction

This paper presents findings with a focus on inclusive public spaces from a global research study on inclusive infrastructure and city design. The research study is producing city case studies through participatory research with urban stakeholders on the challenges and opportunities for inclusive environments in cities in the Global South. Persons with disabilities can experience multi-dimensional exclusion from urban life, including but not limited to physical, attitudinal and social barriers (The World Health Organisation, 2011). The global population of persons with disabilities is over 1.2 billion, which constitutes around 15% of the population (WeThe15, 2021). It is essential that urban development initiatives are inclusive of this group. The targets set out in the UN Sustainable Development Goals cannot be met without genuine inclusion and participation of persons with disabilities. 80% of persons with disabilities live in lower-and-middle-income countries (Harper, Essig and Youssefian, 2021), where urban development can be more challenging due to limited resources and in many cases, a lack of climate and crisis resilience. People continue to migrate towards cities, and figures suggest that 60% of the infrastructure that will exist in 2050 is still to be constructed (C40 Cities, 2021). There is a great opportunity to influence this development to be inclusive for all. While definitions vary, public space is one of the fundamental mediators of urban life and to experience inclusion in urban life, public spaces must be inclusive and accessible to ensure persons with disabilities are not excluded.

Given the context set out above, this research project (AT2030) focused on cities in lower-and-middle-income countries, connected to other parts of the AT2030 programme, to understand the current state of inclusion and accessibility for persons with disabilities and what opportunities for inclusive design exist. The case studies discussed include Ulaanbaatar, Mongolia; Varanasi, India; Surakarta (Solo), Indonesia and Nairobi, Kenya. Each city case study is developed in partnership with local organisations including Organisations of Persons with Disabilities (OPDs), NGOs and research institutions and methods include interviews, photo diaries, workshops and document reviews. While the AT2030 research study focuses on the city as a whole, this paper will present analysis focused on the dimensions of inclusive public space only.

In this paper, public space is predominantly discussed in an urban context. Recognising that public space is a diverse, multi-faceted, contested and evolving term, we frame public space through Mehta and Palazzo's discussion of how access to public space is representative of the social, cultural and political life of a city:

*“The access and availability to public spaces can show how public spaces are, or not, an arena for public life: a place for individual and group expression; a forum for dialogue, debate, and contestation; a space for conviviality, leisure, performance, and display; a place for economic survival and refuge; a site for exchange of information and ideas; and a setting for nature to exist in the city and to support the well-being of its inhabitants.” (Mehta and Palazzo, 2020)*

In this definition, access to and availability of public spaces are part of defining public space – implicitly bringing forth concepts of inclusion and exclusion. Historically, literature on public space has focused on cities in the Global North, particularly North American and European cities, where Western ideologies and politics influence the production of the built environment to reflect prevailing narratives of inclusion and

exclusion (Jacobs, 1992; Gehl, 2011; Mogilevich, 2020). However, a positive turn towards recognising and embracing diversity in the built environment and a body of literature that explores perspectives of public space from historically excluded groups is evolving, including but not limited to: discussion of the right to the city (Harvey, 2012), public spaces and the feminist city (Kern, 2021), public spaces in Global South (Madanipour, 2010; Lemanski, 2019; Ye, 2019), public spaces and migration, public space and older people (Stahl, 2019), public space and disability (Imrie, 1996; Rebernik, Marušić and Bahillo, 2019; Pineda, 2020) and intersectional ideas of collective access (Hamraie, 2013). This work helps create space for a more inclusive and diverse understanding of public space.

There is often a disconnect between research and practice, with research translating to action on the ground only in limited circumstances. Equitable research, that is co-produced and locally-adapted, needs close participation between researchers and people on the ground (Marrengane, Croese, 2021) – in other words, a participatory and inclusive approach. Further, research and evidence must find its way back to local communities and practitioners on the ground, including local governments who have a key role in shaping the built environment (ibid). Including these stakeholders in research activities can ensure tangible and long-term impact. Inclusive design processes have value here, as an inclusive design approach is first and foremost a people-centred approach to research and design, where empathy, trust and building relationships form an essential part of knowledge production. Inclusive design is often discussed in purely technical terms, as a set of physical standards for designing spaces, but it is much more than that: it is a mindset, a way of thinking that champions inclusion and ensures that everyone can experience the world around them in a fair and equal way (Global Disability Innovation Hub, Queen Elizabeth Olympic Park and London Legacy Development Corporation, 2019).

These case studies are also grounded in inclusive design as a theoretical approach. Inclusive and accessible public spaces are not limited to the physical dimensions of urban form and design but are complex entities that integrate social, political, cultural, environmental and spatial factors. Understanding the wider contextual factors of how people inhabit space and what their aspirations are can identify design opportunities that will have greatest impact on people's day-to-day lives and ensure that persons with disabilities experience equity of rights, participation and inclusion on a par with their non-disabled peers.

From a policy perspective, inclusive design of public space can be guided by international, national and local legislation. Within international frameworks and contemporary urban development agendas, public space is commonly discussed as demonstrated in both the Sustainable Development Goals (SDG 11) and the New Urban Agenda (NUA):

*“By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities.”*

SDG 11.7 (UN, 2022)

*“We commit ourselves to promoting safe, inclusive, accessible, green and quality public spaces, including streets, sidewalks and cycling lanes, squares, waterfront areas,*

*gardens and parks, that are multifunctional areas for social interaction and inclusion, human health and well-being, economic exchange and cultural expression and dialogue among a wide diversity of people and cultures, and that are designed and managed to ensure human development and build peaceful, inclusive and participatory societies, as well as to promote living together, connectivity and social inclusion.”*  
(‘New Urban Agenda’, 2017, p.13)

Under the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), public space is not explicitly mentioned. However, under Article 9 (Accessibility) the UNCRPD stipulates the accessibility of all buildings, transport, facilities, services open to the public, including environments managed by *private entities* open to the public (United Nations, 2006). Furthermore, the Convention’s general principles set out the fundamental rights to dignity, equal participation and inclusion in society and accessibility. The Convention also recognises the diversity and intersectionality of disability, which the inclusive design of public spaces can celebrate. This paper will discuss findings of the AT2030 research study with a focus on public spaces and concludes by discussing the implications of the findings and how the targeted stakeholder groups of people, policy and practice also help represent three essential dimensions of inclusive city design and begin to form the basis of a framework for successful implementation and delivery, supporting inclusive global development targets.

## **Methodology**

Four city case studies, taken from the AT2030 research programme, will be discussed in this paper:

1. Ulaanbaatar, Mongolia – in partnership with AIFO, Universal Progress ILC, Tegsh Niigem and Asian Development Bank;
2. Varanasi, India – in partnership with the National Institute of Urban Affairs and Kiran Society, support by Varanasi Municipality and Smart City Mission;
3. Surakarta, Indonesia in partnership with Kota Kita;
4. Nairobi, Kenya in partnership with Kilimanjaro Blind Trust and Kounkuey Design Initiative.

A multi-city, global approach was chosen to be able to develop shared learnings and opportunities that can contribute to inclusive design practice internationally. The wider study aimed to identify what works for implementing inclusive design in different contexts. The cities were selected to represent a wide geographical region and were cities where strong partnerships were already in place through the wider AT2030 programme, to be able to develop insights on both assistive technology and inclusive design. In each city, local partners helped define data collection approaches and contributed to ‘Inclusive Design Research Guidelines’. Final project outputs were translated into local languages and presented back to communities and stakeholders. The research methodology for each case study is consistent to support comparison. Methods include semi-structured interviews, photo diaries, co-design workshops and document reviews. Inclusive design research guidelines were developed to support the research activities and these were co-developed with local partners with activities adapted to local contexts. In interviews participants were asked about their day-to-day experiences, their aspirations for change and their knowledge and understanding of

inclusive design and the policy landscape around disability inclusion. In the photo diaries, participants with disabilities were prompted to capture images of places they spend their time, how they move around the city, places they like to go and places they find challenging to visit. Participants were recruited from three key stakeholder groups:

- *People*: persons with disabilities living in the city
- *Policy*: policy stakeholders working in the country/city
- *Practice*: industry professionals including architects, urban planners, inclusive designers, project managers and engineers working in the city

These three groups also represent the three main objectives of the research and form the basis of a working framework for enabling inclusive environments:

- a) *People* – to understand the experiences of persons with disabilities living in the city and their aspirations for a more inclusive city
- b) *Policy* – to understand the awareness and understanding of inclusive design among policy-makers and the opportunities for inclusive cities
- c) *Practice* – to understand the awareness and understanding of inclusive design among built environment practitioners including barriers to implementation, opportunities and the relationship with assistive technology



Diagram 1. People, Policy and Practice Framework

Data collection took place between April 2020 and February 2022. Each case study began with participatory stakeholder mapping with local partners to identify key participants to be engaged. A total of 128 people participated in the case studies including 71 persons with disabilities and 57 policy and practice stakeholders, 12 of whom also identified as persons with disabilities. The following table illustrates the participant demographics across all three stakeholder groups. Participants were intentionally recruited from different parts of the city to help capture varying perspectives, with particular attention to also recruit participants living in informal settlements.

Table 1: Stakeholders participating in study research

Persons with Disabilities											
City	Participants	Gender		Disability			Age Range				
		Male	Female	Physical	Visual	Hearing	18-29	30-39	40-49	50-59	60+
Ulaanbaatar	15	8	7	8	1	1	4	4	1	1	0
Varanasi	21	15	6	18	3	0	8	12	1	0	0
Solo	15	10	7	6	5	4	4	9	1	1	0
Nairobi	20	12	8	9	7	4	7	8	3	2	0
<b>Total</b>	<b>71</b>	<b>45</b>	<b>28</b>	<b>41</b>	<b>16</b>	<b>9</b>	<b>23</b>	<b>33</b>	<b>6</b>	<b>4</b>	<b>0</b>
Policy and Practice Stakeholders											
City	Participants	Gender		Disability			Age range				
		Male	Female	Physical	Visual	Hearing	18-29	30-39	40-49	50-59	60+
Ulaanbaatar	15	9	6	0	0	0	0	5	6	3	1
Varanasi	11	11	0	1	2	0	1	3	4	3	0
Solo	16	6	10	1	0	0	1	4	9	1	0
Nairobi	15	9	6	4	4	0	*	*	*	*	*
<b>Total</b>	<b>57</b>	<b>35</b>	<b>22</b>	<b>6</b>	<b>6</b>	<b>0</b>	<b>2</b>	<b>12</b>	<b>19</b>	<b>7</b>	<b>1</b>

Thematic analysis was used to generate themes relating to inclusive environments following Braun and Clarke's approach (Braun and Clarke, 2006). Analysis was conducted in collaboration with local partners and findings were also presented to participants in multi-stakeholder workshops for validation. For this paper, a secondary analysis was conducted to examine the data with a particular view to findings specifically related to inclusive public spaces.

Limitations for the study include:

- Challenges due to the COVID-19 pandemic including remote collaboration and essential health and safety restrictions around face-to-face activities
- Diversity of disability representation, to ensure consistency across all case studies, participants were recruited to represent three impairment groups (mobility, visual and hearing) which does not fully represent the rich diversity of disability.
- Further research is needed to understand the specific experiences of neurodiverse people including people with intellectual disabilities. Participant recruitment was challenging at times and there is an overrepresentation of people with mobility impairments.
- Gender diversity, participant sampling aimed to represent an equal gender balance, but this proved to be challenging, particularly in Varanasi, India.
- A diversity of age ranges was recruited with the study focusing on adults and not children. However, there are limited numbers of older participants (50+). The specific experiences of children with disabilities and older people in public spaces warrants further study.
- It was challenging to recruit stakeholder participants (i.e. local government officials or practitioners) who also identified as a person with disabilities.

## **Case Studies Overview**

### **Case Study 1: Ulaanbaatar, Mongolia**

Ulaanbaatar is the capital city of Mongolia, home to around 1.4 million residents according to official statistics (Mongolian Statistical Information Service, 2016). Mongolia historically had a moving capital that reflected the country's nomadic culture. The city of Ulaanbaatar was created as a mobile monastery in 1639, with buildings primarily consisting of yurts or 'Gers' (Menard, 2020). The capital city of Ulaanbaatar has been sedentary since 1778 (Diener and Hagen, 2013) and the city is now located in a valley on the Tuul river. Its climate is harsh with prolonged winters that reach  $-40^{\circ}\text{C}$  while the summer can be hot ( $25-30^{\circ}\text{C}$ ). The harsh climate means the city has a short construction period throughout the year, with the majority of construction confined to summer months when the ground is not frozen (Patrick, McKinnon and Austin, 2020). This is reflected in the city's infrastructure where much of the built environment is built above ground. Substations and infrastructure often occupy the ground level with many buildings having raised main entrances creating immense accessibility challenges. Around 60-70% of the city's residents reside in unplanned settlements called the 'Ger Areas'. These areas are largely made up of Ger huts (yurts), the traditional dwellings of Mongolia's nomadic population. Some do not consider the Ger areas informal settlements as they have existed for a long time and are formed of a traditional vernacular architecture. However, these areas often lack access to basic infrastructure such as paved roads, running water and electricity.

With regard to disability inclusion, according to official statistics, there are 35,600 persons with disabilities living in Ulaanbaatar: 19,700 male and 15,900 female (Government of Mongolia and JICA, 2017). Mongolia ratified the UNCRPD in 2008 and developed its first accessibility standard MNS6055 in 2009. However, the accessibility standards are not mandatory and therefore building control enforcement is minimal. Mongolia's law to protect the rights of persons with disabilities was renewed in 2016 and the country is in the process of developing an accessibility law and reviewing its accessibility standards. OPDs are very active in Mongolia.

### **Case Study 2: Varanasi, India**

Varanasi is a city in Uttar Pradesh, India, with a population of circa 1.2 million people. However, the last census took place in 2011 and the actual population is estimated to be much higher. The city has great significance in Indian culture and is a site of pilgrimage and tourism for people from all over India and the world, with an estimated 5-6 million visitors per year (Patrick et al, 2021). The city is widely regarded as one of the oldest cities in the world (Singh and Rana, 2017) and its renowned heritage sites such as the riverfront Ghats present numerous accessibility challenges. There are many infrastructure challenges in Varanasi and it is estimated that 34% of its population live in informal settlements (Jha, Harshwardhan and Tripathi, 2016). Many residents lack access to basic infrastructure such as clean drinking water and rely on public sanitation facilities. Additionally, the old city suffers from extreme congestion with pedestrians and

motorised transport options often conflicting, particularly in the constrained and densely populated areas surrounding heritage sites in the old part of city.

In terms of disability inclusion, there are 96,924 citizens with disabilities registered in Varanasi, 54,297 male and 42,627 female (District Wise Population of Disabilities, Official Website of Empowerment of Persons with Disabilities Department, Government of Uttar Pradesh, India). India ratified the UNCRPD in 2007 and has national disability laws such as The Rights of Persons with Disabilities Act (2016). New guidelines for national accessibility standards have recently been published: 'Harmonised Guidelines for Universal Accessibility in India 2021'.

### **Case Study 3: Surakarta (Solo), Indonesia**

Surakarta, Indonesia, known as Solo to local residents, is a city in Java, Indonesia. The population of Solo is 557,606 and the city is widely regarded as a friendly place for persons with disabilities to live. Solo became home to numerous rehabilitation centres following the civil war (1946-1950) and is still a place people go to seek rehabilitation services (UNESCO and Kota Kita, 2018). This has created an urban environment where disability is more visible, and residents report lower feelings of stigma and better social inclusion in comparison to other Indonesian cities. On the policy level, the city is also considered progressive with strong city level regulations around accessibility. In terms of liveability and city infrastructure, many residents live in informal settlements, but there is a high level of planning and organisation at different scales in the city, with block and neighbourhood scale community representatives that feed into city planning. While disability is still not greatly represented at this level (Patrick et al, 2022), other aspects of social exclusion such as gender are addressed quite comprehensively through grassroots action.

In terms of disability inclusion, a survey conducted by AT2030 partner Kota Kita in 2018 determined there are 1,167 persons with disabilities in Solo, but it is likely the figure is higher. Indonesia ratified the UNCRPD in 2011 and has national disability laws: Law on Disabilities (No. 8/2016). City-level legislation pre-dates the ratification of the UNCRPD: 'Local Law No. 2/2008 on Disability Rights' and Surakarta City Regulation No 9/2020 concerning Protection and Fulfilment of the rights of persons with disabilities (2020). Since 2002 construction laws have stipulated the need for accessibility such as: Law No.28/2002 on the Construction of Buildings (ILO, no date). The most recent national regulations regarding accessibility are: Regulation of the Ministry of Public Works and Housing No. 14/PRT/M/2017 on Access Requirements for Building Facilities (2017). There are also very high numbers of rehabilitation centres and OPDs operating in the city relative to its size, which is one of the reasons given why residents feel it is an inclusive city.

### **Case Study 4: Nairobi, Kenya**

Nairobi, the capital city of Kenya was founded in 1899 and is now home to circa 4.4 million residents. The city has a challenging history of exclusionary development and is known for its numerous informal settlements that represent around 60% of its population. The city has grown rapidly and extremely high densities can be found in the city's informal settlements. Informal labour is common in the informal settlements in Nairobi and it is likely that figures on poverty are underestimated due to a lack of recognition of informal settlements and labour (Sverdlik, 2021). Temperatures are rising



in the city and informal settlements are particularly at risk due to the high density and lack of vegetation (Scott *et al.*, 2017). Infrastructure coverage varies but a study from 2019 found that Nairobi's sewerage reach was 51% and water supply reached 77% of households (Sverdlik, 2021). The city has a thriving technology sector, particularly within mobile technologies and is home to Africa's first Assistive Technology accelerator (Innovate Now - Africa's 1st Assistive Technology Venture Accelerator, 2019-present). Civil society is very active in the city and social media is popular for advocacy purposes.

In terms of disability inclusion, according to the most recent census, there are 42,703 persons with disabilities living in Nairobi, 19,374 male and 23,322 female (Kenya National Bureau of Statistics, 2020). Kenya ratified the UNCRPD in 2008 and has national disability laws including: the Persons with Disabilities Act (2003, revised 2010). Kenyan Building Code (2009) includes sections on accessibility and inclusivity and is currently under revision. As the capital city, Nairobi is the centre of policy-making and therefore also home to numerous OPDs that operate at a national level.

## Findings

In this section, findings from the case studies will be discussed across three categories:

1. The types of public spaces valued by participants in each of the four cities.
2. The barriers and challenges experienced by persons with disabilities in the public realm in cities.
3. Aspirations and opportunities for more inclusive public spaces, providing recommendations for policy-makers and practitioners.

### **Findings 1: The types of public spaces valued by participants**

Analysis of the case study data resulted in the following types of public spaces, as identified by participants:

- Social and familiar environments
- Communal spaces around housing, visiting a neighbour, community life
- Green spaces
- Healthy and hygienic environments
- Religious and cultural spaces, including festivals
- Markets and street vendors
- Places to eat and drink (restaurants, coffee shops)
- Recreational and commercial spaces – shopping malls, cinemas, food courts, nightclubs, karaoke bars
- Sports, recreational and leisure spaces and activities, including spaces to play
- Community spaces such as local Disabled Persons' Organisations or Neighbourhood Associations
- Safe spaces
- Tourist attractions
- Digital spaces, online fora and social media
- Temporary spaces such as 'happy streets' and festivals

The following table summarises these types of public spaces and includes examples of participant insights, including key accessibility features to consider in their design:

Table 2. Public space categories and key insights

Types of public spaces mentioned	Cities mentioned	Stakeholder groups mentioned	Examples	Examples of accessibility provisions suggested
Social, familiar, environments	Ulaanbaatar, Varanasi, Solo	Persons with disabilities, communities, friends, family	<p>“Basically, as humans, we are social beings, right?” <i>Participant in Indonesia</i></p> <p>“Everyone knows me, likes me, here they never show any kind of discrimination towards me, I get to equal participate in all activities like everyone else.” <i>Participant in India</i></p> <p>“Whether it be a stranger taking pity on me and offering me money, a passer-by asking God to perform a miracle and cure me, a gang harassing me on the street and trying to push me around for a laugh: people’s attitudes are the source of many issues for me” <i>Participant in Kenya</i></p>	Socially inclusive environments, awareness, inclusive and accessible housing
Communal spaces around housing, visiting a neighbour, community life	Ulaanbaatar, Varanasi, Solo	Persons with disabilities, communities, a neighbour with an illness, community leaders	<p>“I live in (through) a fence. The fence is not mine so I cannot tell them that it is difficult to go in and out” <i>Participant in Mongolia</i></p> <p>“It has a flat surface so it’s easy for me to stay here and do my work. I have proper light here and I can also stay in touch with other people so I don’t feel alone” <i>Participant in India</i></p> <p>“She had been stuck in her third-floor apartment building for four months because the building’s entryway was accessible only by stairs, and the elevator only worked sporadically.” <i>Participant in Kenya</i></p>	Individual interventions, good light, proximity to others, flat surfaces, places to sit
Green spaces	Ulaanbaatar, Varanasi, Solo, Nairobi	Persons with disabilities, children, families, sustainability stakeholders	<p>“And large trees in the middle of the sidewalk with the excuse of a green campus and so on but it’s difficult” <i>Participant in Indonesia</i></p> <p>“Mostly, I like to visit to national park, game centres and other public places with my girlfriend. Only difficulties are on the way to there and to home. It happens to go through broken road, sidewalk less streets and some stairs.” <i>Participant in Mongolia</i></p> <p>“I like nature so much. I like mountains, rivers, garden, forest, whenever I get free time, I go to such places with my family. Challenges are everywhere but with the support of family we can overcome any challenges.” <i>Participant in India</i></p>	Step free access and paved pathways, toilets, accessible and inclusive design of ‘green interventions’, accessible and affordable transport links

<p>Healthy and hygienic environments</p>	<p>Ulaanbaatar, Varanasi, Solo, Nairobi</p>	<p>Persons with disabilities, people living in informal settlements, people with health conditions, older people</p>	<p>“The city should not be as noisy as it is. If we look for perspective over visually impaired person this sound is a very important part. I have seen many cities and Varanasi is one of the noisiest cities” <i>Participant in India</i>          “During lockdown I stayed in my room for three months, never went out once, if they didn’t deliver food at home I could have died there”  <i>Participant in India</i></p>	<p>Good air quality, minimal noise pollution, open spaces, pandemic safety measures in place</p>
<p>Religious and cultural spaces including festivals</p>	<p>Ulaanbaatar, Varanasi, Solo, Nairobi</p>	<p>Persons with disabilities, older people, pilgrims</p>	<p>“From a long time ago, I wanted to do advocacy in religion issues, because the religion sector is currently still difficult to access.” <i>Participant in Indonesia</i>          “The culture of the people, now this is Javanese culture, like caring for one another and also kinship.” <i>Participant in Indonesia</i>          “There is a temple inside the village, I spend time there. Whenever I feel sad, I go there, spend some time there as it's very peaceful. That place is accessible for me I can go easily inside the premises on my tricycle.” <i>Participant in India</i></p>	<p>Level access, advocacy opportunities, accessible museum exhibitions with equitable user experiences, event accessibility, access to areas of religious importance</p>
<p>Markets and street vendors</p>	<p>Varanasi, Solo, Nairobi</p>	<p>Persons with disabilities, shopkeepers and informal workers</p>	<p>“The Gede Market already has accessibility, but there is no socialization to us. Continue to terminals, public places. The terminal has a road for the blind's accessibility, there are guiding blocks. It's just that, it's the lack of socialization.” <i>Participant in Indonesia</i>          “[streets are] Very shabby and broken and occupied by vendors” <i>Participant in India</i>          “People opposed it, they said if we build a footpath in front of their shops their businesses will get interrupted this is the thinking of the Varanasi public.”  <i>Participant in India</i></p>	<p>Good lighting levels, shelter from rain, accessible communication including sign language, good maintenance and regulation of space to remove hazards, negotiation with shopkeepers</p>
<p>Places to eat and drink (restaurants, coffee shops)</p>	<p>Ulaanbaatar, Solo, Nairobi</p>	<p>Persons with disabilities, business owners</p>	<p>“We should reserve the table before we go to restaurant, we cannot reserve by online or phone. The people in restaurant don’t know sign language. So, we meet at someone’s home.”  <i>Participant in Mongolia</i>           “But we gather at my house more often, because there is a Wedangan (in English Traditional Drink Stall) in my house. They also sell fried rice too. So, my friends usually like to buy drinks or food there.”  <i>Participant in Indonesia</i></p>	<p>Comfortable seating, proximity to home, step-free access, social inclusion, good lighting, noise levels, information on accessibility available, disability aware staff members, accessible booking systems, inclusive hiring programmes and training opportunities, proactive service providers</p>

			<p>"[giving feedback to a restaurant owner] 'Wow, this is a great place, it would've been better if you provide access for those who are in wheelchairs.' Then he went straight to build this access. A week later I was there and there is access for wheelchair users. So he really cares for his friends with disabilities."</p> <p><i>Participant in Indonesia</i></p>	
Recreational and commercial spaces – shopping malls, cinemas, food courts, nightclubs, karaoke bars	Ulaanbaatar, Solo, Nairobi	Persons with disabilities, business owners, staff	<p>"The malls here provide elevators, but I am surprised that when I go to the Mall, sometimes people don't want to prioritize people with disabilities."</p> <p><i>Participant in Indonesia</i></p> <p>"Yes, in the mall, usually, at the food court, it's like you can choose what to eat, right there, it's complete, not confused. Then after eating, for example, if I want to buy basic necessities, I go to Hypermart, right, there are also those, if I want to watch movies there is also a cinema too."</p> <p><i>Participant in Indonesia</i></p> <p>"They said there was no more space in the concert hall for wheelchair users, as they had exceeded their quota and there were two of us already."</p> <p><i>Participant in Kenya</i></p>	Variety of services/facilities available, physical accessibility is usually good, often built to international accessibility standards, accessible equipment (karaoke), Management of the space (i.e. priority use)
Sports, recreational and leisure spaces and activities, including spaces to play	Ulaanbaatar, Varanasi, Solo	Persons with disabilities, children, tourists	<p>Involvement and participation in sports can be motivating. In Mongolia in particular, sport is highly valued culturally so to be able to participate is important.</p> <p>"My kids have no place to play in the ger district" <i>Participant in Mongolia</i></p> <p>"I always wanted to learn swimming but till now I don't know any accessible place here in Varanasi where I can learn swimming. There's no swimming club here where people with disabilities can join too." <i>Participant in India</i></p>	Accessible sports infrastructure, inclusive culture, accessible boats
Community spaces such as local Organisations of Persons with Disabilities or Neighbourhood Associations	Ulaanbaatar, Solo, Nairobi	Persons with disabilities, community leaders, other marginalised groups such as women's associations	<p>"I like to visit Universal Progress ILC. When I go to other places people don't understand my speech. I have many friends here and I can freely talk with them. They can understand me."</p> <p><i>Participant in Mongolia</i></p>	Disability equality and awareness training, accessible community meetings, accessible communication and information
Safe spaces	Ulaanbaatar, Varanasi, Solo, Nairobi,	Persons with disabilities, women with disabilities, older people, people living in climate-vulnerable contexts	<p>"I am afraid of going alone when it is dark and taking a taxi, sometimes the drivers are violent, saying things like give me your phone number or I will not drop you off" <i>Participant in Mongolia</i></p>	Hazard-free good inclusive design, good lighting, access to emergency help, overall awareness from general public, accessible and safe public transport, passive surveillance when appropriate

Tourist attractions	Ulaanbaatar, Varanasi, Solo	Persons with disabilities, tourists, pilgrims, older people, people travelling with luggage	<p>“Well, I’m a bit afraid to go to Malang by myself. Because if there is information such as at the terminal or at the station, we must continue to test for COVID rapid test and so on, like that. Looks like it will be difficult.” <i>Participant in Indonesia</i></p> <p>“Not to mention if we travel with people who are not our family members, this becomes a problem, its privacy, right? The more disability a person has, the more discrimination and more losing of their privacy. And this becomes a potential of harassment if we depend on others too much.” <i>Participant in Indonesia</i></p> <p>“Getting the places worth visiting which you as a citizen would want to visit, want to see for yourself, those places need to be made accessible.” <i>Participant in India</i></p>	Step-free access, accessible toilets, clear information accessibility (both online and on-site), targeted support for persons with disabilities to support independence, fee concessions (including free personal assistant access)
Digital spaces, online forums and social media	Ulaanbaatar, Varanasi, Solo, Nairobi	Persons with disabilities, business owners, government stakeholders	<p>“We, blind people, have an association, if there is a complaint, it will be submitted via YouTube. So that it is known by the general public, it also can be conveyed via Twitter or something, so that shopper will know that this one lacks access.” <i>Participant in Indonesia</i></p>	Advocacy, social media, campaigning, digital accessibility, affordability
Temporary spaces such as ‘happy streets’ and festivals	Varanasi	Persons with disabilities, women, older people, children, pilgrims	<p>“I always want to go down there at riverbank and watch ganga arti too but there are so many stairs I cannot go there on my own. I need someone else help to carry me there.” <i>Participant in India</i></p>	Accessible events, access audits, inclusive activities

**Findings 2: The barriers and challenges experienced by persons with disabilities.**

“These public places are not accessible, we can manage but things need to change.”  
*Participant in India*

Persons with disabilities experience social, physical, economic and political exclusion. The following 11 categories of barriers to inclusive public spaces were identified through the case studies:

Social and attitudinal:

- Stigma and trauma: “I think inaccessibility is sort of stigma itself” *Participant in Mongolia*
- Awareness: a lack of education and training around disability including good disability equality and awareness training
- Reliance on support: “There’s no traffic light, so I have to rely on other people to cross the street. If other people are not there, I can’t cross or I take a risk.” *Participant in Kenya*

- Accountability: “it is better to provide a building that is accessible for disabilities, be it private or government owned. I have always wanted to convey that. Sometimes I upload on social media, then I tag the associated manager. “Please give access to friends with disabilities,” He doesn't know, maybe at any time, we (people with disabilities) will access that place.” *Participant in Indonesia.*

Knowledge and conceptual:

- Accessibility is generalised or limited to certain impairments: “When they look at accessibility, they look at people who are on wheelchairs...a person on a wheelchair is not the only person who is not able to access the building. We have people on crutches who can't use the ramp you've constructed.” *Participant in Kenya*
- Even within spaces labelled as accessible, there is a need for targeted research on specific needs to support genuine inclusion: “In terms of the building, to be honest, it is still not accessible. Because sometimes, their perspectives are different, with us, even those with disabilities themselves are different.” *Participant in Indonesia*
- Buildings in formal/planned settlements are not necessarily accessible and buildings in informal settlements are not necessarily inaccessible, inclusive design should be evaluated separate to these criteria
- Understanding of inclusive design is limited beyond common accessibility provisions

Physical and infrastructural:

- Poor drainage infrastructure can impede movement and independence, and reduce the quality of the environment
- Accessible design elements are present in some buildings but are not functional or practical in use due to technical specifications.
- A lack of end-to-end journey thinking impedes access as individual building accessibility is not sufficient for an inclusive experience
- Quality of materials and adherence to standards: “For example in rest area or gas stations, they provide toilet but not the toilet for disability. And even there's a mistake, the toilet door has a logo of a wheelchair, which says it is a toilet for disability, but it turns out to be a seated toilet to indicate it is not a squat toilet, and it is not accessible.” *Participant in Indonesia*
- Poor maintenance and misuse of space: “We live in a city where there are no rules, in the middle of the road you may find a barrier, you may find it anywhere.” *Participant in India*
- Problems of space: “Land tenure is not systematic, so it is difficult to free up land to build public facilities, which means things like roads missing sidewalks because they don't have enough space” *Participant in Mongolia.*

Environmental:

- Sensory factors including noise, smells, light levels: participants in Varanasi and Nairobi talked about the impact of noise on sense-making and navigation, and that noise pollution can increase a sense of anxiety in public spaces.

- Climate and environmental conditions including mud, rain, ice, wind, heat, cold: “In public places, I can't go inside, just stay outside, but people usually help. During rainy season it gets worse.” *Participant in India.*

#### Temporal:

- Spaces are used in different ways throughout the day, week, season which may alter their accessibility
- Festival and events or busy tourist periods can impact how inclusive a public space will be
- Changing weather conditions will temporarily alter accessibility, and in the case of extreme weather events or crises may have longer-lasting impacts and damage
- Urban development can progress at pace and changing infrastructures will alter accessibility and sometimes information services cannot keep up.

#### Mobility:

- Mobility: public transport can be inaccessible and chaotic, private transport can be a financial barrier: “The place that I would like to go is quite difficult, so I try not to go.” *Participant in Mongolia*
- Private transport can be expensive
- Lack of dedicated spaces for different transport modes, including pavements and cycle lanes
- Traffic congestion is an issue in all case study cities

#### Financial:

- Private transport, which is often the most physically accessible, can be expensive
- Government-provided assistive technology can be limited and poor quality, private solutions for quality AT that is fit for purpose can be expensive
- Informal labour opportunities often take place in public spaces, which if inaccessible is a barrier for persons with disabilities to access opportunities
- Some spaces that are treated as public spaces are privately-owned, such as shopping malls, where there can be expectations to buy things

#### Political:

- Lack of implementation of existing laws and regulation
- Siloed or fragmented national and local government departments
- Lack of dedicated funding/budget allocations for inclusive design
- Lack of local leadership on inclusive design
- Participation in civic life within communities and cities often dictates ability to vote, access to justice and participation in urban planning processes

#### Professional and practice:

- Lack of education on inclusive design
- No time provided for consultation within construction timelines
- Lack of in-country technical experts
- Need for clients to have knowledge of and advocate for inclusive design

- Privately-owned 'public' spaces such as restaurants or recreational spaces have a responsibility to ensure inclusion, this requires awareness and training among business owners
- Accountability, monitoring and evaluation to ensure consistency, good practice and innovation.

Information:

- Accessing information and services: "Where there is good design, the service and staff need to match it" *Participant in Mongolia*
- Communication: "When you need to speak with an official in a government building, the receptionist gives you a list of numbers to call. But if you can't use the phone, then you can't talk to anyone. So, you have to ask a guard to call for you, and they won't always do that. Or you just have to go to important places with your own sign language translator." *Participant in Kenya*.

Safety:

- Harassment and violence, particularly for women with disabilities
- Theft
- Fear of stampedes and safe navigation in crowds
- Assistive technology is not enough to feel safe, for example in Nairobi white cane users report still feeling they need a guide most of the time to feel safe.

These categories reflect the over-arching themes of physical, attitudinal, and social barriers that are commonly used to describe the types of exclusion persons with disabilities experience. However, they also capture a sense of the complexity of what constitutes an inclusive environment, including consideration of socio-economic factors. As poverty and disability are often linked, it is vital to consider affordability in the public realm. People's experience of a space is not only determined by its physical design but there are social, sensory and environmental factors that influence the feel of a space, as well organisational or institutional aspects such as the quality-of-service delivery. Conceptual and professional/practice barriers provide particular insights for practitioners and policymakers, that are often missed in physical audits of the built environment. Time constraints, use patterns or temporary barriers including changing weather conditions also affect accessibility and inclusion, as does urban development progression. Lastly, there is a clear need for an intersectional approach to designing inclusive public spaces as there is great diversity in people's access needs with many people experiencing multiple forms of discrimination, for example women with disabilities, who are more likely to experience exclusion, harassment or violence. Comparing the different cities shows that climate influences public spaces. In Ulaanbaatar there was less discussion of communal public spaces as considering the city's climate, these external gathering spaces would not be usable for much of the year. However, design and innovation can support creating more inclusive public spaces in this context. For example, 'GerHub' has designed a new community space, the Ger Innovation Hub, that provides different layers of interior space to try and address the lack of access to outdoor public spaces in colder climates (GERHub, 2022). In Varanasi and Solo, where climates are warmer, informal public spaces are often formed at the boundaries between public and private space around homes. Culture is also an important factor and in



Ulaanbaatar and Solo there is a particularly active community of OPDs that create spaces of social interaction and gathering. Local cultures and faiths influence the types of public spaces that people value and in all the cities there were participants who identified religious and cultural spaces as a key collective or public space.

The role of local government and planning is influential. In Solo, even within informal settlements there is a strong structure to planning and political processes through the city scales down the RTs (Rukan Tetangga – the smallest administrative division in city planning in Indonesia) that supports the creation of public space. The role of local governments is important and there was a clear distinction in the connection between national and local policies in the cities that are not capital cities (Solo and Varanasi), where there is arguably a need to operate somewhat autonomously.

### **Findings 3: Aspirations for more inclusive public spaces and opportunities for inclusive design**

Among all three stakeholder groups there is an aspiration for more inclusive city design. Participatory activities such as workshops were used to take a solutions-focused approach to discussing inclusive environments. Participants were asked to identify priority areas for intervention based on identified themes. In workshops, some policy stakeholder participants, reflected that the photo diary activities illustrated a more negative view of the state of inclusion in the city, and did not capture spaces that have made more progress on inclusion such as government buildings and commercial spaces in city centres, like malls and international hotels. This is significant as the photo diary task captured spaces where people currently spend and would like to spend their time. If these are not currently inclusive, then the day-to-day experiences of persons with disabilities will be overwhelming be of inaccessible environments. It also alludes to the fact that in many cases housing, informal public spaces and areas of informal settlements are not currently prioritised in inclusive city design. In some cases, these spaces are privately-owned which creates greater complexity for ensuring standards are met. Aspirations and recommendations for more inclusive public spaces included the views that integrated, holistic approaches are necessary. This includes contextualising inclusive environments with other global challenges such as climate and crisis resilience to ensure inclusive design solutions are sustainable and resilient well into the future. The role of policy is also important as it can provide the basis for multi-sectoral action. Effective implementation of those policies is necessary to achieve desired aims, which requires the commitment of *all* stakeholder groups.

Engaging diverse stakeholders is important, including representation of all disabilities, ages and genders. Among policy and practice stakeholders, all government sectors should be engaged in supporting inclusive public spaces, such as a suggestion in Kenya to engage the National Environment Management Authority (NEMA) with regards to noise control and regulation to support independent mobility for visually impaired persons. Participation and inclusive processes must be embedded in urban development interventions, from conception to completion to monitoring and evaluation to embody the aim of, 'nothing about us without us'. Participatory mapping could also be developed to provide live data on the state of inclusion and accessibility, a system to support ongoing participatory processes which would contribute to a sense of participating in public life and citizenship for persons with disabilities.

There must be continuous efforts to generate data and evidence to support inclusive city design and in particular to advocate for the inclusive public spaces that people want.

Accountability is an essential component to ensure the maintenance of existing inclusive public spaces and continued progress towards more inclusive environments.

Accountability can take many forms including: accountability in implementation processes across infrastructure, urban design, and architecture; access to complaints systems to report problems; access to justice systems to address grievances and report violence, harassment or human rights infringements. Social media and other digital spaces can also create accountability, improve awareness, and contribute to data and evidence that can be used by local governments.

All stakeholder groups can contribute towards the creation of a more inclusive urban life. For example, collective action from the disability community, with OPDs working together to agree priorities could amplify impact. Inclusive public spaces should also consider the wider benefits inclusive design brings by supporting other under-represented groups including women, children, older people and indigenous people. Community leaders have a role to play engaging all citizens and mediating conflicting needs and aspirations as they arise.

Inclusive public spaces can have far reaching benefits within and beyond the local community, from improving general well-being to generating employment opportunities and facilitating more positive social interactions. This will be of particular relevance in the ongoing recovery from the COVID-19 pandemic. Recreational spaces are as much a part of public life as any other space. To create genuinely inclusive cities, everyone should be able to experience the environment around them in a fair and equal way – creating accessible and welcoming spaces people can enjoy and want to spend their time.

Awareness and education at different scales, from primary to tertiary education, will help support a culture of inclusion. Practitioners must be equipped with inclusive design skills to design for all and all citizens should be able to participate, to create a culture of inclusion.

Continued innovation and best practice in inclusive design will support long-term sustained urban transformation. Aspects of best practice include a continuous desire to innovate and a reflective approach to project delivery processes and best practice guidance. Grassroots innovation and informal public spaces should be embraced. Consistency can be achieved through robust inclusive design standards and delivery processes and would benefit from the development of a standardised evaluation system to better assess outcomes and support future progress.

Assistive technology can be an enabler. However, inclusive public spaces need to enable AT users. Targeted interventions or support can sometimes be necessary to ensure everyone has equal rights to access and experience the public realm. Such interventions must be developed in a way that does not increase stigma for persons with disabilities. This can be achieved through awareness raising, educating people about the potential of AT to transform people's lives.

Attention to inclusive mobility is urgently needed to make public spaces more inclusive. Creating spaces for active modes of transport in the city such as walking and cycling, will generate more opportunities for people to participate in public life. Good city planning is needed to implement inclusive transport infrastructure and ensuring urban planners have good inclusive design training will support this.

These findings illustrate that the aspirations around inclusive public spaces are varied, as are the typologies of public spaces identified. The barriers people experience are complex and it can be challenging for stakeholders to know where to start. A focus on

actions and processes is valuable as it can be adapted to specific local contexts and collect relevant local data when necessary, avoiding solutions that are not fit for purpose or desirable.

## Conclusion

The analysis of inclusive public spaces through case studies on the cities of Ulaanbaatar, Varanasi, Solo and Nairobi identified a diverse type of public spaces for consideration. Mehta and Palazzo's description of public spaces as '*a place for individual and group expression; a forum for dialogue, debate, and contestation; a space for conviviality, leisure, performance, and display; a place for economic survival and refuge; a site for exchange of information and ideas; and a setting for nature to exist in the city and to support the well-being of its inhabitants*' is reflected in the public spaces discussed, with perhaps the addition of sites for exploration (tourist attractions), a setting for livelihood activities (eating, studying), a setting for social relations (familial and neighbourhood interactions) and a setting for solidarity and empowerment (OPDs and community organising).

The physical design of a public space, its physical attributes, can enable or disable activities such as:

- facilitating social interaction
- access to outdoors, time in nature, feeling of wellbeing
- access to culture and religion
- access to recreation, enjoyment
- access to food, sustenance, and enjoyment
- access to civic and community engagement

Inclusive and accessible public spaces allow independence, respect and dignity, safety, enjoyability, and good use of time for all, ensuring people's human rights are upheld in the public realm. While the geographic and cultural contexts of each of the cities studied are diverse, there are common threads and shared aspirations for inclusive environments, demonstrating that global guidance that can be locally adapted will have value.

Tangible design elements were suggested by participants that demonstrate how the factors to create an inclusive environment must go beyond basic physical design elements. They must consider the sensory environment, how the space functions, what services are provided within, how people get there and how they can access information about the space both in advance and during their visit.

This study demonstrates the value of co-design and participatory processes to research, illustrating how the genuine participation and inclusion of persons with disabilities in research, facilitates in depth insights that can help prioritise actions towards more inclusive environments. The barriers and challenges described by participants illustrate the complexity of access challenges and exclusionary factors people encounter in the built environment. As human beings are diverse and individual, there is rarely one ideal design solution, and considering the pace at which cities evolve, ongoing processes that commit to the sustained inclusive design of the built environment will be fundamental, particularly as cities continue to be impacted by climate change. Therefore, we must embed inclusive design approaches in how we shape the public realm to ensure robust, inclusive, participatory processes for urban development that include persons with disabilities and other disadvantaged groups.

Standards, regulations and policy frameworks also have a responsibility to commit to inclusion. Having good standards that are legally mandated supports the creation of inclusive environments. However, attention must also be given to the implementation processes that ensure delivery while also ensuring that national standards translate at the regional level. .. Many public spaces are not regulated by conventional building standards, especially when constructed or formed within informal settlements or within privately-owned spaces. This requires broader advocacy and education to ensure clients and built environment practitioners uphold inclusive design standards in their work.



Diagram 2. People, policy and practice framework: focal areas

We propose that the framework of ‘people, policy and practice’ is useful for navigating the complex dimensions of inclusive public spaces and inclusive environments. First, we start with people: persons with disabilities must be involved in the process, from the start and throughout. This is the best way to actively create an inclusive space and requires consultation processes to be inclusive and accessible. Even better, employing persons with disabilities across government and built environment sectors will ensure both diversity in our workforce and result in more inclusive project delivery and reduce stigma. Secondly, we must uphold legislation and standards, including international, national and local ones, and strive to go beyond minimum standards to innovate and champion best practice. Policy stakeholders must be committed to shaping inclusive environments as they lead decision-making, have influence or control over funding and

lead overall urban development and planning. Lastly, we must commit to inclusive practices, and this applies to all stakeholders, but specifically built environment practitioners. They must have training and a good awareness and understanding of the benefits of inclusive design and a people-centred approach. Professional training and education through colleges/universities should ensure diversity and inclusion are fundamental aspects of educational programmes for the built environment. By taking this three-fold approach of first including people, secondly being aware of what policies, frameworks and power structures guide us and thirdly ensuring good inclusive design practice and implementation we can embed inclusive design into the core of city planning and design, ultimately creating public spaces that work better for all.

### **Implications**

A framework like this would have most impact at the local government level, where it can be embedded in city planning and design, supporting any existing legislation and standards in place and help set local targets to address the SDGs and NUA. The framework should be complemented with inclusive design training and a monitoring system that evaluates progress and reflects on the practices being employed at regular intervals.

Practitioners can engage with such a framework in their work as it provides a starting point for embedding inclusive design in their practice. There is also a role for advocating for more inclusive public spaces and inclusive environments more broadly, as it is an ongoing process with significant effort required to meet the SDG targets by 2030.

There remains a critical role for research, with data needed at the local government level to prioritise interventions. Stakeholders often prefer quantitative data to provide measurable data, but qualitative data has a significant role in good inclusive design practice as it is grounded in people's experiences and aspirations. Furthermore, as the limitations in this study have identified, there are many facets of the experience of persons with disabilities in the built environment. Research with an intersectional approach and research across a wider spectrum of persons with disabilities is needed. Lastly, there are implications to consider regarding other global challenges such as the increasing impacts of climate change and the ongoing recovery from the COVID-19 pandemic. Inclusion and resilience are increasingly linked as persons with disabilities are often more vulnerable to the impacts of climate change (Kett and Cole, 2018) and efforts to create inclusive infrastructure must consider long-term resilience and sustainability. Good health and wellbeing is critical to people's lives and the impacts of COVID-19 have shown that healthy and safe environments are critical for public spaces in the future, to allow persons with disabilities to participate in society on an equal basis and in order to safeguard against future pandemics.

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