





Inclusive Infrastructure and Cities: A Global Comparison Report



Executive summary

Today, estimates suggest 56% of our global population live in cities, projected to rise to 68% by 2050. Persons with disabilities represent 16% of our global population, but are often left behind when it comes to the design and planning of cities and infrastructure. Cities are facing increasing pressure due to global challenges and resource constraints, and resilient, sustainable development is more crucial than ever. However, this cannot be delivered without inclusion, or persons with disabilities will be left behind,

Between 2020 and 2023, four years of research in six cities in lower-and-middleincome countries, led by the Global Disability innovation Hub (GDI Hub) under the UK Aid funded AT2030 programme, has explored the current state of accessibility and inclusion in cities, with the intention of understanding how inclusive design can deliver more inclusive and accessible cities. Collaborative and participatory in nature, the research engaged local partners, local persons with disabilities and local urban stakeholders (representing the domains of policy and practice). 104 persons with disabilities and 92 stakeholders representing national and local governments, the urban, built environment and global development sectors and civil society participated in the research.

The six cities, Ulaanbaatar, Varanasi, Surakarta (Solo), Nairobi, Freetown, and Medellín are all unique but also share common challenges and aspirations for more inclusive and accessible environments. The findings cover key themes or areas of intervention that impact the daily lives of persons with disabilities from housing to transport to recreation, insights on the current policy landscape and current practice in the design and delivery of urban and built environment projects. As well as discussing challenges, the research aimed to capture examples of what works, to inspire positive change and demonstrate how it is possible to get started.

Key findings include:

- Persons with disabilities must be included in city design and planning.
- While policies exist and there can be good political will, implementation is a major challenge for the delivery of inclusive cities and infrastructure.
- The infrastructure that is prioritised by policy stakeholders does not always align with what matters most to communities, emphasising the importance of inclusive design and participation.
- Localisation and community-led solutions are key to creating inclusive cities.
- Cities will never be truly inclusive without addressing inequality and considering marginalised communities and informal settlements.
- Education is fundamental, from early years through to higher education and professional development.
- Awareness of inclusive design is limited, and the minimum standards of accessibility are often still not met.

- Innovation can be a driver of inclusion, and there is great appetite for examples of good practice and innovation.
- Inclusive cities must be resourced, and financing and sustainability of interventions needs further attention.
- Inclusion is key to resilience, futureproofing our cities to global challenges such as climate change, and meeting global goals such as the Sustainable Development Goals and New Urban Agenda. Inclusive design can offer practical tools to deliver this.

The research in six cities was complemented by research on the global picture of current evidence, knowledge and practice in disability-inclusive infrastructure which suggests that certain sectors more commonly integrate accessibility or disability inclusion in infrastructure delivery, such as transport, public and green space, and public infrastructure. Key sectors such as housing, climate resilience and education seem to be falling behind. However, there are also questions of what good practice is written and published and though a validation process with partners in the six cities, a disconnect between available evidence on inclusive infrastructure and priority areas for action (such as housing) was identified.

Using a framework of people, policy and practice throughout, these three domains are explored as enablers of inclusive cities and infrastructure, detailing both current barriers and areas of opportunity for these diverse stakeholder groups. The findings have been used to identify recommendations and areas for action to inform a 'Global Action Report on Delivering Inclusive Design in Cities' which is published as a companion piece to this report.

Ultimately, people must be at the centre of how cities are planned, designed and built, and persons with disabilities, who often face the most significant barriers in accessing day-to-day life in cities, must be able to participate in city design on an equal basis with others. The challenges are well known. What is needed now is more action to shape inclusive cities, continuing to learn what works and driving progress to ensure persons with disabilities can thrive in the cities of the future.

"Persons with disabilities should be included as active agents of urban development" Participant in Surakarta, Indonesia

To find out more, you can access the individual city case study reports and the Global Action Report here:

www.at2030.org/inclusive-cities



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National Institute of Urban Affairs



"TEGSH NIIGEM"

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Contributing organisations

Global Disability Innovation Hub

www.disabilitvinnovation.com

GDI Hub is a research and practice centre driving disability innovation for a fairer world. Our vision is of a world without barriers to participation and equitable opportunity for all. We believe disability innovation is part of a bigger movement for disability inclusion and social justice. GDI Hub works across 5 domains, research, innovation, programmes, teaching, and advocacy. We are solutionsfocused experts in; Assistive & Accessible Technology; Inclusive Design; Inclusive Education Technology; Climate & Crisis **Resilience and Cultural Participation. Based** in East London and a legacy of London 2012 Paralympic Games, we deliver world-class research, ideas and inventions, creating new knowledge, solutions and products, and shaping policy through co-creation, participation and collaboration. An Academic Research Centre (ARC) and a not-for-profit Community Interest Company (CIC) we are quided by an Advisory Board of disabled people. We are operational in over 35 countries and have reached 12 million people since our launch in 2016.

AT2030 Programme

www.at2030.org

The UK Aid-funded AT2030 programme aims to explore 'what works' to increase access to life changing assistive technology (AT) for all. The World Health Organisation (WHO) estimates that there are currently 1.2 billion people around the world who would benefit from assistive technology, but 90% of them do not have access, and this figure is project to rise to 2 billion by 2050.

The programme has reached 35 million people so far through activities that cut across the domains of data and evidence, innovation, country implementation and capacity and participation. The programme is currently operational in over 41 countries and works with more than 70 delivery partners.¹

AT2030 inclusive infrastructure partners

This research was delivered in collaboration with local partners in each city including: Universal Progress ILC, AIFO, Tegsh Niigem, Asian Development Bank, Kiran Society, National Institute of Urban Affairs, Kota Kita, Kilimanjaro Blind Trust Africa, Kounkuey Design Initiative, Sierra Leone Urban Research Centre (SLURC), and El Comité.

Foreword

The UK Aid funded AT2030 programme tests what works to enable access to lifechanging Assistive Technology (AT) for all. Having access to high quality, affordable and appropriate AT is important. So too, is being able to use it. Barriers exist to its use, including negative attitudes and stigma around disability and AT use and of course an inaccessible built environment. This research, under the AT2030 sub-programme 'Inclusive Infrastructure' acknowledges the importance of an inclusive and accessible built environment to facilitate AT use and effectiveness.

Starting in March 2020, on the cusp of the discussed and agreed. Covid-19 global pandemic, six city case studies were undertaken to build a global This report presents the comparison study picture of inclusive design of the built outcomes that will go on to inform the final environment, with a focus on developing output from this research, a 'Global Action countries. The cities were strategically chosen Report' that will distil these findings into to align with wider aspects of the AT2030 clear, actionable recommendations. It programme, in line with FCDO priorities therefore represents the culmination of and to represent a genuinely global study. almost 4 years of research activity involving Between March 2020 and August 2023 the 11 research partners, 92 urban and local six city case study reports were co-produced government stakeholders and 104 local working closely with local research partners, persons with disabilities. local governments and local persons with disabilities. Each report was then formally This research is unique. No research of this launched, in-country, with local and often nature, on this scale has been done before national government representation. They on inclusive design of the built environment. provide a bespoke set of recommendations for That makes the findings all the more exciting each city to take forward as they develop their as we can present it in a way that will have a own plans to become a more inclusive and significant, positive impact on how we plan, accessible city for all. design, build and manage our global cities. We believe the diversity of the six case study This 'Global Comparison Report' consolidates cities and the comprehensive nature of this the learning across all six city case studies, study will ensure we produce outcomes allowing us to extract the common themes, relevant to all cities, helping create a more barriers and opportunities. In preparation inclusive future for all of us.

for this report, all six cities, including our local research partners and government representatives, were brought together to learn from each other and look across the other city reports and experiences. Online workshops were held with a focus on the three key research areas of People, Policy, and Practice. This comparative work then culminated with all six city partners and representatives coming to GDI Hub's **Disability Innovation Summit in London** in September 2023 to present the work and also take part in a final, in-person validation workshop where key outcomes and conclusions from the research were

Jain McKinnon

CEO, Global Disability Innovation Hub

Glossary of key terms

Inclusive Design: Can help all human beings experience the world around them in a fair and equal way by creating safe and accessible environments, services and products for all members of the community. Inclusive design is a mindset and a methodology that embraces diversity to create a world that is more intuitive, elegant and usable for all of us.

Infrastructure: Is the physical and organisational structures, services and facilities that support society. Good infrastructure should contribute to inclusive prosperity, including health and wellbeing. The term often refers to; transport, water and waste-water systems, energy and telecommunications industries, and social welfare structures such as health, education and social support systems. ² For the purpose of this report all structures (whether physical, institutional or digital) that contribute to the participation of persons with disabilities in daily life and society fall under the remit of infrastructure.

Inclusive and Accessible Infrastructure and Environments: Promote access, opportunity, participation and equity in society. They take into account the principles of inclusive design, embracing diversity and acknowledging that designing with people who experience the least equity in the built environment, such as persons with disabilities, has the potential to benefit all of us.

Persons with Disabilities: Throughout this report the term 'persons with disabilities' is used as it is more commonly used internationally including in the UNCRPD. However, we acknowledge that in the UK the term 'disabled people' is preferred. At GDI Hub we prefer to use 'disabled people'.

Participants: Local persons with disabilities who took part in the research study.

Stakeholders: Other stakeholders who took part in the research study such as local government representatives, policy makers and practitioners in the urban and built environment sectors.

Accessibility: Refers to enabling access to infrastructure, products, services, and facilities for all people including persons with disabilities. Accessibility is driven by technical standards or design guidelines for the physical and digital infrastructure.

Inclusive: Refers to environments, products, services, facilities and experiences that address the needs of all users irrespective of their age, gender or abilities.

Resilience: The UNDRR define resilience as the ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management. ³

Implementation: For this report, implementation is the stage that follows the city planning process for creating an inclusive built environment. It is the stage where planning and policy commitments are executed on the ground.

"Persons with disabilities should be included as active agents ofurban development."

Research participant, Indonesia

Acronyms and abbreviations

ADB: Asian Development Bank

AIFO: Associazione Italiana Amici di Raoul Follereau

AT: Assistive Technology

AT2030: UK Aid-funded programme, 'Testing what works to enable access to life-changing assistive technology for all'

DPO: Disabled Persons' Organisation

FCDO: UK Government's Foreign, Commonwealth and Development Office (incorporating what was formally known as DFID)

GDI Hub: Global Disability Innovation Hub

ILC: Independent Living Centre

ISO: International Standards Organisation

LMICs: Lower-and-Middle-Income Countries

KBTA: Kilimanjaro Blind Trust Africa

KDI: Kounkuey Design Initiative

NUA: New Urban Agenda

OPD: Organisations of Persons with Disabilities

PwD: Persons with Disabilities

SDGs: the UN's Sustainable Development Goals

SLURC: Sierra Leone Urban Research Centre

WASH: Water, Sanitation and Hygiene

WHO: World Health Organisation

UN: United Nations

UNCRPD: United Nations Convention on the Rights of Persons with Disabilities **UNDESA:** United Nations Department for Economic and Social Affairs **UNDRR:** United Nations Office for Disaster Risk Reduction **UNOHCHR:** United Nations Office of the High Commissioner for Human Rights VCSL: Varanasi Smart City Ltd



Introduction

The inclusive design of the built environment and cities is fundamental to the inclusion and independence of persons with disabilities and assistive technology (AT) users in cities. The built environment and infrastructure mediate how we interact with the world. The extent to which those environments are accessible will determine whether we can go to school, work, socialise and live well at home.

Where there is a lack of access, such as access to employment, access to essential infrastructure such as water or electricity, or access to safe spaces for women; inequality and social exclusion will increase. This can be both a cause or effect of either disability or poverty and is described as a 'vicious cycle', ⁴ reinforcing the relationship between disability and poverty.⁵ Article 9 of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) states that:

"To enable persons with disabilities to live independently and participate fully in all aspects of life, States Parties shall take appropriate measures to **ensure to persons** with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communications technologies and systems, and to other facilities and services open or provided to the public, both in urban and in rural areas." In 2012, the World Report on Disability specified the importance of enabling environments for persons with disabilities, framed through physical, social and attitudinal environments. ⁷ Policy implementation and compliance were highlighted as issues, but still prevail today. More than ten years later, the same issues remain and action is urgently needed.

More and more people are moving to live in cities, but cities' infrastructure is not keeping pace with their growth. By 2050, 66% of the world's population will live in cities; 90% of which will be in lowmiddle-income settings. ⁸ In lower-income settings, informal settlements, where many persons with disabilities live, are growing cities and severely lack the infrastructure people need. To address this challenge requires innovation and engagement with communities. The built environment has huge potential to propel inclusion for persons with disabilities, but it will require collaboration.

'The distribution of space is an important aspect of realising justice for disabled persons' ⁹ - Victor Pineda

Cities are key to the success of the Sustainable Development Goals (SDGs). Evidence shows that isolated interventions for urban development have limited success. To improve quality of life in cities, interventions and urban programmes need to be holistic and sustained over long periods of time. ¹⁰ City planning and strategies need to reflect a deep understanding of context-based planning and design, by bringing together the people with the most intimate knowledge of the challenges to be solved with the people to enable that change. Inclusive, sustainable cities will not exist without design that includes persons with disabilities on an equal basis with others.

Inclusive design is one of the tools that can help and is instrumental to meet targets such as the SDGs and deliver on the New Urban Agenda (NUA). The opportunity for inclusive design in disability inclusive infrastructure does not just lie in technical design solutions but in how its practice could facilitate multi-sectoral and collaborative approaches to pressing urban development challenges for and with persons with disabilities. Through inclusive design, cities can design from the perspective of their citizens and the reality of their daily lives, delivering cities that work, where people can thrive.

"Inclusive Design can help all human beings experience the world around them in a fair and equal way by creating safe and accessible environments for all members of the community."¹¹

- UNCRPD ⁶

Inclusive design goes beyond minimum standards for accessibility, it is about meaningful engagement and innovation, listening and making space for people. It is a practice that embeds participation and embraces diversity in solving design problems. Inclusive design can help to minimise social exclusion ¹² and the inclusive design of the built environment has the potential to embed the principles of access, opportunity, participation and equity in the lived experience of cities, contributing to spatial, economic and social inclusion for persons with disabilities.

Inclusive design was highlighted by the former UK Department for International Development (now FCDO) as one of six key opportunity areas for 'delivering disability inclusive infrastructure'. ¹³ However, uptake varies, calling for research on the drivers and challenges of delivering inclusive design in practice.

Current knowledge around disability inclusion and inclusive design is largely limited to high income settings. ¹⁴ This research will address this gap through localised knowledge of what constitutes and how to deliver an inclusive environment in diverse, lower-and-middleincome countries (LMICs) by engaging directly with communities, policy makers and industry (people, policy and practice). This will build knowledge and generate actions around inclusive design that is adaptive to these diverse contexts. **This research has the ambition of bridging the gap from knowledge to action.** "Inclusive Design can help all human beings experience the world around them in a fair and equal way by creating safe and accessible environments for all members of the community."

Queen Elizabeth Olympic Park in East London developed Inclusive Design Standards to create a park that is enjoyable by all.

Jati

Centre



LIFT to Stratford Waterfront



Who this report is for

This report is primarily directed at local This report provides a global comparison of government representatives, including those the state of inclusive cities in lower-andin leadership and in technical roles, urban middle-income countries through research undertaken in six cities in Asia, Africa and and built environment sector professionals, Latin America. The report can be used public sector service providers and disability inclusion practitioners looking to engage in as evidence for why inclusive design and urban projects. It is also aimed at: persons disability inclusion are important in cities. with disabilities and all city inhabitants, It also provides important evidence for users of assistive technology; organisations why global and local action is important, of persons with disabilities (OPDs), academic by celebrating the diversity and unique institutions; communities; the private sector stories from each city while highlighting the (including information and communication common challenges and aspirations that technology (ICT) companies); investors; and can be applied to other cities. development organisations.

How to use this report

This report, and the six individual city case study reports are the evidence base that inform the Global Action Report on Delivering Inclusive Design in Cities. Evidence-based action is vital to ensure the cities of the future are fit-for-purpose and creating environments where everybody can thrive. Readers can use this report to provide context and further information to the recommendations made in the Global Action Report.

Inclusive infrastructure and assistive technology

This research is part of the UK-Aid funded AT2030 programme, testing 'what work' to enable access to life changing assistive technology (AT) for all. Enabing access to AT requires inclusive environments. The built environment, infrastructure, services and culture must be inclusive and accessible to enable AT users to thrive. When the built environment is not fit for purpose, it creates barriers to AT use including physical barriers to mobility, safety risks, damage to AT, reduction of independence, stigma and additional financial burdens associated with inaccessibility.

The ways in which inaccessible infrastructure impact AT use are numerous, from a lack of paving making wheelchair use challenging, to missing auditory cues on transport systems, through to inconsistent power supplies limiting the use of any AT that relies on it. This report will delve deeper into how AT and infrastructure interact, making the case for disability-inclusive infrastructure that enables AT users to thrive living in cities.



For AT to be usable and fulfil its aim of enabling independence, the surrounding infrastructure must support its use. In this case, the lack of dedicated pedestrian space could be a hazard for many AT users.

11 Inclusive infrastructure and assistive technology



Research overview

Between May 2020 and August 2023 research on inclusive design and accessibility took place in six cities:

- and Asian Development Bank (ADB).
- Varanasi, India: in partnership with Kiran Society and National Institute of Urban Affairs (NIUA).
- Surakarta (Solo), Indonesia: in partnership with Kota Kita.
- Initiative.
- Freetown, Sierra Leone: in partnership with Sierra Leone Urban Research Centre (SLURC).
- Medellín, Colombia: in partnership with El Comité, Corporación Social.

In Solo, some accessible infrastructure has been provided in the city, such as tactile paving, however, correct implementation, use and maintenance can be a challenge.

• Ulaanbaatar, Mongolia: in partnership with Universal Progress ILC, AIFO, Tegsh Niigem

Nairobi, Kenya: in partnership with Kilimanjaro Blind Trust Africa and Kounkuey Design

"What is the current state of inclusive and accessible environments and infrastructure in LMICs and what is the role of inclusive design in creating an enabling environment for persons with disabilities?"

Research questions

The over-arching research question for the research was:

'What is the current state of inclusive and accessible environments and infrastructure in lower-and-middle income countries (LMICs) and what is the role of inclusive design in creating an enabling environment for persons with disabilities?'

This was broken down into four sub-research questions to cover specific areas of inclusive environments and form the basis of a theoretical framework.

- What legislation, policy, regulation and guidance currently exist to protect the rights of persons with disabilities in the built environment in each case study city? (Policy)
- design in built environment policy, planning, design and construction among key stakeholders in each case study city? (Practice)
- for persons with disabilities in each case study city? (People)
- How can inclusive design contribute to creating enabling environments for AT and AT users? (Practice)

Location

Cities were selected to represent regional, geographic, and cultural diversity. Some cities were selected to align with existing AT2030 programme activities and support live projects.

The selection criteria included the availability of at least one local partner, a relationship or link to the local government and diversity in relation to the existing case studies. While the early case studies were decided from the outset, the latter case study cities were recruited on a rolling basis to support reflection and learning through the delivery of the programme.

What is the current awareness, understanding, acceptance and application of inclusive

What are the current barriers to and opportunities for inclusion in the built environment

Participants

A total of 104 persons with disabilities and 92 local government and built environment stakeholders (20 who also identified as a person with disability) participated in the study.

Across all six cities, 57.2 percent of participants with disabilities were male, and 42.8 percent were female (see table above for city breakdown). Gender parity was intended for participant recruitment and this slight gender imbalance amongst participants can be seen as a limitation of this study. There is scope for further research challenges of recruiting female participants as well as into the specific experiences of women with disabilities in these cities.

Participants across the cities represented a range of disabilities, 69 participants had

City	Number of Participants	Male	Female	Physical Disability	Visual Disability	Hearing Disability	Cognitive Disability	Albinism	18 to 29 years old	30 to 39 years old	40 to 49 years old	50 to 59 years old	60 years old or more
Ulaanbaatar	10	5	5	8	1	1	0	0	4	4	1	1	0
Varanasi	21	15	6	18	3	0	0	0	8	12	1	0	0
Solo	17	10	7	8	5	4	0	0	5	10	1	1	0
Nairobi	20	12	8	9	7	4	0	0	7	8	3	2	0
Freetown	18	11	7	13	4	0	0	1	6	4	1	5	2
Medellín	20	12	8	13	3	2	3	0	4	5	5	5	1
Total	104	65	41	69	23	11	3	1	34	43	12	14	3

Persons with Disabilities

a physical disability, 23 participants had a visual impairment, 3 participants had a cognitive impairment, 11 participants had a hearing impairment and there was 1 participant with albinism. These figures do not add up to the total number of participants as as some participants identified with more than one type of disability. Another limitation in the research is that the diversity of disability types could be improved as recruitment included a higher number of participants with physical disabilities than all other disability types combined. This was due to challenges in recruitment.

Global snapshot









Theoretical framework

A theoretical framework was developed for the analysis of data on the basis of the research questions. This framework suggests that delivering inclusive design in cities is a collaborative endeavour that requires a multi-stakeholder approach.

This framework is intended to drive proactive stakeholder engagement in research and delivery of inclusive infrastructure by demonstrating evidence of responsibilities across diverse stakeholder groups and communities.



Delivering inclusive infrastructure:

- People the community experience of disability and the built environment;
- Practice industry focused research with urban and built environment stakeholders on the awareness and application of inclusive design and successful delivery in practice; and
- Policy research with local government stakeholders on the governance, strategy, guidelines and protocols of accessibility and inclusive design at local, regional and national levels of government.

AT, cities and infrastructure interact with the domains of people, policy and practice and when working together, are most likely to produce more inclusive outcomes.

Existing publications

This report is accompanied by a number of existing publications, including the six city case studies journal articles and influencing papers.

These reports can be found here.



The six individual city case studies are:

- Inclusive Design and Accessibility in Ulaanbaatar, Mongolia
- Inclusive Design and Accessibility in Varanasi, India
- Inclusive Design and Accessibility in Surakarta (Solo), Indonesia
- Inclusive Design and Accessibility in Nairobi, Kenya
- Inclusive Design and Accessibility in Freetown, Sierra Leone
- Inclusive Design and Accessibility in Medellín, Colombia





Methodology: Inclusive design research

This research was developed following academic standards and combines a mixture of qualitative, participatory and design-led research approaches to develop six city case studies. To support inclusive research, the methodology is designed to be adapted to the local context in collaboration with local partners.

The study has ethics approval from University College London (UCL Rec Committee, project 18511-001) and local ethical approval in 5 of the 6 cities - where it was required.

Local partners were provided with training and support which included comprehensive research guidelines and protocols. These materials covered details regarding; principles of inclusive research, participants to be recruited, how to work with participants, information on the data collection process, ethics and consent, the interview process including topic guides, a guide to remote interviewing, how to co-design and lastly how photo diaries and workshops should be conducted. These guidelines were reviewed for each case study and adapted as appropriate to the local context.

Analysis was led by the GDI Hub team and validated in sessions with local partners and research participants.



Due to the pandemic, hybrid research methods had to be developed.

Phase 1 - Understanding current accessibility

The first phase focused on understanding the current state of accessibility in the built environment. This included scoping research for each city and the global policy landscape. Activities included desk-based research, document reviews, working sessions, and stakeholder interviews. These interviews involved key stakeholders such as government officials and technical officers, architects, urban planners, project managers, academics, entrepreneurs, and representatives from various organisations relevant to the domain of disability inclusion, accessibility, and the built environment.

Summary of activities

The research activities set out to assess the state of accessibility in the built environment and the lived experiences of persons with disabilities living in each city. Due to the COVID-19 pandemic, the research team collaborated closely with local research partners who led research delivery in-country. This supported greater local capacity building and leadership which was a positive outcome.

The study followed a structured three-phase approach for each city case study, combining virtual and face-to-face research activities adhering to local COVID-19 protocols as appropriate.







Kota Kita developed a tactile map to enable participants with visual impairments to engage in participating mapping exercises in new ways.

Journey mapping is a tool use to understand positive and negative experiences of moving through as city.

Phase 2 - Capturing lived experiences

The second phase was dedicated to capturing the experiences of persons with disabilities in the respective cities, with a focus on their interaction with the built environment and infrastructure. Researchers conducted interviews, collected photo diaries and engaged in codesign activities with participants. These methods supported identifying the specific challenges and barriers encountered by persons with disabilities in each city, areas where positive practices were in place and insights on the aspirations for a more inclusive city.

Phase 3 - Synthesising findings and identifying actions

The third phase involved synthesising the findings from the first two phases and translating them into actionable steps towards creating more inclusive environments. Workshops were organized to discuss and validate the initial research findings. These workshops brought together diverse stakeholders from government and policy, industry, and the disabled community, enabling them to collaborate on identifying shared challenges and opportunities.



Priority setting is a workshop exercise used to allow all pa terms of importance to them.

The workshops employed participatory inclusive design techniques to gain insights and prioritise areas for action. They also provided participants with practical experience in inclusive design methods that could be applied to their work.

Methods included:

- Photo diaries
- Journey mapping
- Card sorting
- Participatory Mapping
- Priority and Action Setting Exercises

Priority setting is a workshop exercise used to allow all participants to rank different challenges and aspirations in



In Nairobi, card sorting of various accessibility features and access barriers was used as a tool to further discussion on what inclusive environments would look like and rank priorities.

Phase 4

To consolidate and validate evidence across This phase concluded with a three day, the six cities, a series of collaborative in-person workshop in London, UK at GDI workshops with all partners were held, Hub's Disability Innovation Summit held in informed by the theoretical framework September 2023. City partners attended in of 'people, policy and practice'. Three person, accompanied by local government virtual workshops were held, with all of the representatives. The Summit workshops research partners issued tasks to undertake and panel session was the culmination in advance. This city-to-city exchange was of almost four years of engagement and necessary to identify common challenges collaboration and allowed a final validation and opportunities, as well as unique of the research findings in person. As well aspects of each city. as learning across the six cities, partners were also able to learn about the inclusive In parallel, an additional piece of desk design work that took place on Queen research was undertaken that responded to Elizabeth Olympic Park in east London, the appetite for good examples identified in home of the 2012 Games, home to GDI Hub the research. A scoping search of inclusive and the venue for the Summit.

In parallel, an additional piece of desk research was undertaken that responded to the appetite for good examples identified in the research. A scoping search of inclusive infrastructure projects took place with the findings analysed to draw out common themes and gaps in evidence. The results of this work was then compared to each of the case study cities.

Activities unique to specific cities

It was important to adapt the research methodology to the local context and in each city, there were some unique activities that were undertaken.

City	Unique Activities
Ulaanbaatar	Conducted meetings with seven organizations in the field to inform the research.
	Conducted capacity building activity with local Global Development Organisations.
Varanasi	Conducted the research in parallel with activities under NIUA's BASIIC program, including a city audit and assessment study on Varanasi.
	Under the BASIIC project, cartoons were also created to communicate ideas about inclusive cities in India.
	Achieved a balanced gender distribution among stakeholders.
Solo	Created and used a tactile map of the city for participatory mapping exercises
Nairobi	Used card sorting methods with images of access barriers to rank priorities.
Freetown	Used illustrated journey maps to tell stories.
Madallía	Ensured a diverse representation of disabilities, including physical, visual, hearing impairments, and neurodiversity.
medellin	Conducted workshops with caregivers and the research team to validate findings.

See the video produced of the activities in London <u>here</u>.



Dissemination and advocacy

Throughout every case study and on publication of each case study final report, awareness raising, training and launch events were held to inform people about the research and disseminate the findings. Interim findings have also been presented at key, flagship conferences including COP26, WUF11, COP28 and COSP15 and 16.

The findings of this research have also contributed to events, advocacy papers, reports and policy papers from other organisations such as World Health Organisation, C40 cities, UCLG and NIUA.

Raising awareness on the importance of inclusive cities was key to the BASIIC project activities that accompanied the Varanasi Case Study. NIUA worked with Leewardists to produce these cartoons.





Inclusive city stakeholders

To identify who has a stake in a more inclusive and accessible built environment in each city, the in-country teams in all six cities conducted stakeholder mapping sessions to identify key stakeholders. The initial insights were synthesised with the findings from the primary data collection to build a picture of all the key stakeholders, including those who benefit most from a more inclusive environment, and those that shape it, resulting in a stakeholder map.





Global picture on inclusive infrastructure

Following the completion of the six city case studies, and to help understand some of the data gaps, a fourth stage of research was conducted, a search for infrastructure practices and projects that specified having a focus on disability inclusion.

Global inclusive infrastructure projects scoping search

Following the completion of the six city case studies, and to help understand some of the data gaps, a fourth stage of research was conducted, a search for infrastructure practices and projects that specified having a focus on disability inclusion.

This search primarily targeted lower-and-middle-income countries (LMICs), aligning with the geographical locations of our case study research. Utilising detailed Google search terms, 15 searches were executed, yielding 800 results. From this pool, 354 results were identified containing references to infrastructure projects that incorporated disability inclusion.

The graph above illustrates these searches over time, revealing a positive trend with the number of projects referencing disability inclusion increasing.

Infrastructure projects that cite disability inclusive by date of completion



However, a categorical analysis (graph below) highlighted certain gaps. While sectors like transport (88/354 projects) and public open spaces (72/354 projects) boasted extensive documentation, areas like climate (5/354 projects), tourism (8/354 projects), and retail spaces (4/354 projects) exhibited a lack of publications.

Additionally, there seemed to be a lesser emphasis on documenting the inclusivity of essential services such as healthcare (23/354 projects), education (27/354), and housing (25/354). The priorities for action identified through case study research challenge the findings of the scoping search, demonstrating a disconnect between what is published or showcased, and where action is needed as identified by urban residents.

Infrastructure project categories that cite being disability inclusive



The line graph illustrates a positive trend with projects that cite being disability inclusive increasing over time. With the majority of projects (55-60%) from 2020 onwards.

The horizontal bar graph above shows infrastructure project categories that cite being disability inclusive. The bar length represents the entries with different bar lengths to represent each category such as transport, public open spaces, climate, tourism, retail spaces, healthcare, education and housing.



Limitations of the projects scoping search

Due to the type of data being searched for (infrastructure projects), only one search engine (Google) was used and comprised a relatively small sample. Furthermore, the level of detail available for projects varied, potentially overlooking some of the less well documented initiatives. It may also reflect a lack of prioritisation of disability inclusion that these aspects of projects are not well documented. It is also true that larger, public or well-funded projects are more likely to published online in comparison to smaller inclusive projects such as small schools or health clinics.

Validating the findings with cities

These findings were compared with each city's priorities and action areas through an online workshop with city partners. Partners ranked each sector based on perceived importance to persons with disabilities, stakeholders, and the current level of inclusivity, as judged by the partner. The graphs below represent these findings, ranging from 1 (least important) to 11 (most important).



This graph represents city priorities as judged by our in-country partner in Ulaanbaatar. The graph represents these findings, ranging from 0 (least important) to 15 (most important).



This graph represents city priorities as judged by our in-country partner in Varanasi. The graph represents these findings, ranging from 0 (least important) to 15 (most important).

This graph represents city priorities as judged by our in-country partner in Surakarta. The graph represents these findings, ranging from 0 (least important) to 15 (most important).

Surakarta, Indonesia



This graph represents city priorities as judged by our in-country partner in Nairobi. The graph represents these findings, ranging from 0 (least important) to 15 (most important).

Nairobi, Kenya

This graph represents city priorities as judged by our in-country partner in Freetown. The graph represents these findings, ranging from 0 (least important) to 15 (most important).

Freetown, Sierra Leone



Medellín, Colombia

Healthcare, education, housing, and

transport emerged as areas requiring disability-inclusive improvements across all cities, albeit with varying levels of perceived stakeholder consensus. Technology and public spaces were identified as areas offering opportunities for showcasing good practice and data collection. Conversely, climate was rated as low priority, despite case study activities revealing the impact of extreme temperatures and flooding on persons with disabilities, with a noted lack of inclusive climate resilience.

Advocacy, awareness, effective policy implementation, funding, and training were identified as key strategies to address gaps in disability inclusion. These findings are valuable as they showcase a need to show case good practice examples across all sectors and scales to help replication and provide examples of what works across different budgets and contexts.

This graph represents city priorities as judged by our in-country partner in Medellín. The graph represents these findings, ranging from 0 (least important) to 15 (most important).

28 Global picture on inclusive infrastructure



Ulaanbaatar Mongolia

Case study

June 2020 – August 2020 10 persons with disabilities 15 practice stakeholders

Ulaanbaatar city presents unique challenges and opportunities for accessible and inclusive design. The city is full of divisions between its more developed core city and the surrounding Ger areas. The Ger areas are unplanned settlements that have grown to become 70 percent of the city's population in the last 30 years. These parts of the city lack access to basic infrastructure, widening inequality, impacting health and wellbeing and presenting immense urban development challenges. The city's architecture and urban planning is blending its nomadic history, 20th century Soviet influences and contemporary plans towards a thriving technological city. These wider forces influence the extent to which disability inclusion can be embedded in the built environment.

In 2016, Mongolia adopted the 'Law Protecting the Rights of Persons with Disabilities', seven years after ratifying the UNCRPD. The law marks an important step



in making progress towards inclusion across all sectors. In the built environment, this is accompanied by accessibility standards that were first developed in 2009 and are currently being updated. However, the standards are not mandatory which creates a barrier to implementing and enforcing them. Current understanding on accessibility and inclusion is being driven by international influences and standards and is not fundamentally embedded in architectural training or urban development programme delivery.

Ulaanbaatar's Ger areas and unique geographical, climatic and cultural context require an approach to inclusive and accessible design and planning in the built environment that embeds local context and knowledge. Currently the design of accessibility is centred on basic physical modifications such as ramps and accessible toilets, inclusive design has the potential to do much more.



Photo diary illustrating mobility challenges.



Climate can act as an additional barrier to access



Ulaanbaatar sits in a valley with mountains either side, which causes air quality issues.

Inclusive design can be applied across the city's urban development and planning initiatives to integrate local perspectives and amplify the voices of persons with disabilities, who have some of the best understanding of how the built environment is inequitable. To ensure inclusion and equity are embedded in the built environment; urban planning, infrastructure and building projects should set a vision for inclusive design that can ensure consistent implementation.

An inclusive built environment creates access and opportunity, allows for participation and builds equity in society. It is the result of collaborate efforts across society to ensure that no one is left behind. There is appetite for making Ulaanbaatar more inclusive across policy, built environment industry and community stakeholders and a reasonable understanding of the wider benefits of inclusive design. Setting a comprehensive



Key policies

- Law on the rights of persons with disabilities.
- Government Action Plan 2018-22.
- Guidance 02: Ensuring the rights of persons with disabilities and granting access to infrastructure.

- vision and action plan for a more inclusive Ulaanbaatar should be complemented by training and education in disability inclusion and inclusive design across stakeholders and the general public. These steps would allow the city's design and development to accommodate and celebrate diversity, improving the lives of everybody: including persons with disabilities.
- Inclusive design should be understood as a mindset and methodology above technical standards, to allow responsive and adaptive design in a rapidly changing city. This adaptive mindset in design has the potential to engage more effectively with the city's rich history in nomadic ways of life, consider the different ways people want to live in a city and respond to sustainable development challenges including stresses associated with the extreme climate.



Key themes:

- Inadequate space for inclusive design.
- Unique geography and climate.
- Gaps in implementation of policies.

Varanasi India

Case study

November 2020 - March 2020 21 persons with disabilities 11 practice stakeholders

Varanasi is a vibrant cultural city, with a rich heritage and complex, organic urban form. The city sits on the banks of the river Ganges and is famous for its Ghats, stepped landmarks that line the river Ganges and form an important part of rituals and daily life. The city has a population of just over 1.3 million but is also populated by huge numbers of pilgrims and tourists throughout the year. In Varanasi, inclusive city design must integrate the considerable and vital heritage sites woven throughout its fabric. As one of the cities in India's Smart City Mission, Varanasi is becoming a hub for innovation and has shown resilience and adaptability in the COVID-19 pandemic, developing digital tools to support its citizens. Now, with the support of the National Institute of Urban Affairs (NIUA)



and the Global Disability Innovation Hub (GDI Hub), the Varanasi Municipality is championing disability inclusion through supporting research, developing interventions, and driving policy changes.

An inclusive design strategy for Varanasi must embrace the living, breathing, nature of the city. Varanasi city stakeholders are encouraged to produce a comprehensive inclusive design vision and strategy for the city that engages with policymaking and awareness; industry and practice; and local communities. An overarching vison can help determine a mindset and approach that stakeholders can champion while a strategy provides a roadmap for how to sustainably make progress towards becoming a more inclusive city.



Varanasi is famous for the Ghats that lead to the river Ganges. A center of social and cultural life in the city, they are inaccessible for, for example, wheelchair users, persons with mobility disabilities and persons who are blind or partially sighted.



Ghats of Varanasi. There are 84 of these stepped riverfront heritages sites in the city.



The river is central to life and culture in Varanasi, accessing it, as a pedestrian to gather ort bathe or by boat should be an experience all urban residents can access.

These steps would allow the city's design and development to accommodate and celebrate diversity improving the lives of everybody, including persons with disabilities. Inclusive design should be understood as a mindset and methodology above technical standards, to allow responsive and adaptive design in a rapidly changing city and world.

This adaptive mindset in design has the potential to engage more effectively with the city's rich heritage and culture, consider the different ways people want to live in the city and respond to sustainable development challenges including climate related stresses and recovery from COVID-19.

Adherence to good practice and action towards inclusion is the responsibility of all stakeholders. At a policy level, national laws must be accompanied by local guidance and standards. National accessibility standards



- Rules of Rights of Persons with **Disabilities Act.**
- Accessible India Campaign.
- Harmonised Guidelines.

must also be localised to Varanasi, and having best practice examples that could be highlighted would help. At the industry scale, good design practice, design reviews and inspections must take place and construction professionals must also be aware of and champion inclusive design and take responsibility to ensure quality implementation.

Communities should convey their needs through participation in design and consultation processes, conducting accessibility audits and advocacy work where they can. However, there should be government and industry support to fund this work, people should be acknowledged and compensated for their work. Persons with disabilities should also be participating in design and decisionmaking processes through being provided opportunities to access employment in policy and industry professions.

Key themes:

- Difficulty in making culture and Heritage sites accessible.
- Inaccessible essential infrastructure.
- Barriers to opportunities due to physical barriers and poor inclusive transport networks.

Surakarta Indonesia

Case study

April 2021 – August 2021 17 persons with disabilities 16 practice stakeholders

Surakarta (known as Solo) is a city in Central Java, Indonesia, with a population of 557,606 people. The city has a strong history of inclusion, recognised as a great place for persons with disabilities in Indonesia to live. This commitment dates back to the establishment of the Dr. Soeharso Rehabilitation Centre in the 1950s and the enactment of Local Law No. 2/2008 on Disability Rights in 2008, predating Indonesia's ratification of the UN Convention on the Rights of Persons with Disabilities in 2011.

The city's dedication to disability inclusion is evident in its strong policy framework, both at the national and local levels, supported by initiatives such as the Inclusive Mayor's Network in Indonesia. Despite these efforts, challenges persist, including implementation hurdles, inter-departmental cooperation, translating vision into action, resource constraints, and ensuring the long-term sustainability of initiatives.



Solo's culture of inclusion extends beyond policies, fostering an environment where persons with disabilities feel accepted and included. Community-led initiatives play a pivotal role, with community assets and networks contributing significantly. Urban governance structures encourage community participation and leadership, amplifying citizens' voices and aspirations. However, there's room for improvement, particularly in facilitating the involvement of persons with disabilities in community dialogues, especially during the COVID-19 recovery, which has impacted participation and livelihoods.

To deliver on inclusive infrastructure, there is a need for better collaboration between policy and practice. Built environment practitioners are often drawing on international standards and references not local, specific, data that is suited to Solo's context.





An accessible bus stop in Solo.

Community-led action, such as the work of the Hore Hore community is a powerful tool for advocacy in inclusive city design.

There is a strong view that international standards are not necessarily fit-forpurpose in Indonesia and a desire for inclusive design standards that are locally adapted and embrace Indonesian culture. More data and evidence on disability in Solo would support more specific local initiatives, particularly disaggregated data that recognises diversity and intersectionality. Currently there are siloes between planning and technical delivery of infrastructure which does not support good inclusive design practice as it leads to a lack of clarity on who is accountable for inclusive design.

While some excellent progress has been made in terms of accessible infrastructure such as the BST bus stops, Solo needs a more comprehensive inclusive design strategy to guide its development to ensure its residents have inclusive experiences. The bus stop is a key example as while accessible design was delivered initially, people's door to door journeys and the future service provision were not considered. For example, when the bus vehicles were replaced with new ones, it resulted in an 'accessibility gap' between the bus stop platform and the bus.

An inclusive design approach to city planning is crucial for ensuring fair and equal experiences for all citizens. A city-wide inclusive design strategy should encompass a broader scope of infrastructures, recognising the role of neighbourhoods in urban life. This approach should make room for grassroots inclusive design and planning led by communities in their living environments.



An example of housing in Surakarta.

Key policies

- 2016 Disability Law.
- Law on Social Welfare 2019.
- 2020 Updated City Regulations.



Key themes:

- Need for multisectoral collaboration.
- Need for water supply and mental health to be included in inclusive health services.
- Sustainability projects must be inclusive.
- Good implementation and maintenance of inclusive infrastructure.

Nairobi Kenya

Case study

July 2021 – January 2022 20 persons with disabilities 15 practice stakeholders

Nairobi, the capital of Kenya with a burgeoning population of 4,397,073, stands at a crossroads of rapid growth and infrastructural development. A city of promise, it grapples with complex urban challenges, with roads and transportation commonly cited as major challenges. More than half of Nairobi's residents live in the informal settlements in the city which are areas of high-density, poorquality accommodation and lack basic infrastructure such as roads, water and sanitation infrastructure and power. Many persons with disabilities live in these communities due to reinforcing cycles of disability and poverty.

However, there is vision and ambition in Nairobi to generally improve urban conditions. There is also a good policy basis to make progress towards disability inclusion. It is important these two agendas are coordinated. Kenya enacted its first disability law, the 'Persons with Disabilities Act' in 2003 and ratified the UNCRPD in 2008. According to official statistics, around



1.1% of Nairobi's population are persons with disabilities, but it is recognised that this is likely an underestimation and the need for inclusive and accessible environments is much higher. Nairobi as the capital city of Kenya has a real opportunity to lead by example in terms of inclusive city design, not just for cities in Kenya but across the continent, as a key African commercial hub.

Kenya's legal framework, robustly supporting inclusive urban development and disability inclusion, reflects the government's commitment. The impending Building Code (2022) promises enhanced accessibility, a crucial step forward from the outdated existing code. Despite these legislative strides, effective implementation remains a challenge. Bridging this gap demands collaboration among policy stakeholders, emphasizing accountability, and cultivating inclusive design knowledge across project teams.

Nairobi's journey towards inclusivity encounters historical legacies, such as



Example of poor drainage planning blocking routes to amenities.



A woman is walking with her guide in the informal settlement.



colonial-era urban planning, which laid the foundation for segregated development and exclusionary conditions, particularly in informal settlements. These areas, characterized by poverty and inadequate infrastructure, emerge as high-risk zones for disasters, such as flooding, fires, and disease outbreak, compounding the challenges faced by persons with disabilities. These risks are due to, among others, poor or lacking infrastructure such as proper sewer and power systems, roads, and water and sanitation facilities.

The most inclusive environments are usually produced not just by regulations and standards for accessibility but robust inclusive design processes that include genuine participation of persons with disabilities. There are learnings from community-led approaches and co-design with other under-served communities. It would be helpful to do this to build more evidence on the co-benefits of inclusive design for social inclusion more broadly. There is shared responsibility to ensure



- 2003 Disabilities Act.
- 2013 The Basic Education Act.
- 2014-2030 Kenya Health Policy.

participation among stakeholders and project finances must account for this. Inclusive infrastructure, urban planning, and assistive technology (AT) must form a cohesive ecosystem. The built environment serves as a gateway to AT access, necessitating designs that align with the environmental context. Local production and innovation in AT, championed by the community it serves, can bridge gaps effectively.

Nairobi as a city of innovation, as marked by a vibrant start-up ecosystem, presents opportunities for inclusive entrepreneurship. Persons with disabilities, often entrepreneurial, aspire for independence and success, but existing perceptions and built environment barriers limit their potential. Innovation must be inclusive and ensuring basic support and access to livelihoods must not be forgotten. An inclusive city, as envisioned, spans accessibility, health, resilience, gender inclusivity, age-friendliness, childfriendliness, and sustainability.

Č) Key themes:

- Transportation and roads.
- Housing and basic infrastructure.
- Inclusive innovation and entrepreneurship.
- Learning from community-led approaches.

Freetown Sierra Leone

Case study

December 2021 to April 2022 18 persons with disabilities 15 practice stakeholders

The city of Freetown has a population of 1.06 million people that includes 7,807 persons with disabilities according to the 2015 census. However, literature suggests this is an underestimate as disability prevalence in country is at least 4.3%. More comprehensive data is needed to support holistic action towards disability inclusion in the city. Freetown has numerous urban development challenges including: complex topography and the occupation of disaster-prone land; poor transport and road networks; a lack of water, sanitation and waste management; inadequate housing and other basic necessities. These challenges exacerbate inequality in the city and the need for improvements in infrastructure across all sectors for the benefit of the whole population.

Climate plays a major role in the city. Living in Freetown for persons with disabilities is not easy. Large parts of the city are inherently inaccessible due to geographic conditions such as the steep terrain and development patterns that have led to many people living in informal settlements



Example of inaccessible surroundings



on high-risk land. Many people, especially those living in informal settlements, lack access to basic and essential services within their communities where infrastructure is limited and connectivity is poor. Persons with disabilities cite transport links and road networks; access to healthcare and education; and access to basic necessities like housing, food, water and sanitation as high priorities.

Inclusive policymaking is leading the way. From the stakeholder perspective there is awareness of the urgent need for progress. The city has a strong track record of developing robust policies, including examples of inclusive policymaking processes such as the new AT strategy (Assistive Technology (AT) Policy and Strategic Plan 2021-25). However, implementation of the policies and their relevance to the reality on the ground, especially for those communities living in informal settlements, remain significant challenges.

Stakeholders would benefit from adopting more community-led approaches and



learning about grassroots inclusive design. Good examples do exist in the city. For example, where persons with disabilities led the development of an accessible home that is future-proofed for family members. These examples could be collated to create a suite of case studies that could be scaled up or replicated.

Access to basic services including sanitation and food is a major theme. The way in which water is managed and accessed in the city affects daily life. Many persons with disabilities have no independent access to clean drinking water. They are also often prohibited from leaving their homes or getting around their communities due to open drains and sewers that are not fit-for-purpose. People also regularly experience stigma due to the lack of privacy in public toilet facilities which are not accessible, leading to longterm mental health impacts. Healthcare and education also urgently need to be more inclusive and will require a systems approach to address infrastructure, products and technology, service design and awareness.



Key policies

- 2021 National Policy on Radical Inclusion in Schools.
- National Plan of Sierra Leone 2019-23.
- 2011 Persons with Disabilities Act.



Climate plays a major role in the city. Incidences of disasters are likely to increase, so the time is now to ensure disaster and emergency responses are inclusive of persons with disabilities. This should be addressed in city wide strategies that deal with the challenges of climate change and should also be reflected in any disability strategy for the city. An inclusive city vision must be resilient and adaptive, just as a climate resilience strategy must be inclusive.

Freetown is busy, congested and overcrowded and there is a need to make space that supports persons with disabilities. Doing so will help provide better public spaces for all residents of the city. Key public spaces that are a priority for improvement include improving streets to provide safe pedestrian environments and improving public spaces in communities that connect housing with other areas and facilities. Housing areas are also very congested and typically inaccessible. Identifying areas where appropriate, accessible and affordable housing can be built will be key.

Key themes:

- Access to basic infrastructure and essential needs.
- Policies not reflecting reality.
- Difficult topography with climate challenges.
- High levels of poverty.

Medellín Colombia

Case study January 2023 – May 2023

20 persons with disabilities 20 practice stakeholders

Medellín, Colombia's second-largest city, has garnered attention for its innovative approaches to urban development. The city, with a challenging history, exemplifies good practices of inclusive design, many of which are looked to from other cities and offer genuine opportunities for cities and local governments to be more collaborative. This inclusivity is a crucial aspect of Medellín's broader framework of social urbanism, a methodology that prioritizes the integration of marginalised areas and informal settlements into city planning. However, it is important to note that continued improvement, maintenance, and new innovation will always be needed to sustain an inclusive city - and energy, motivation and resources must be directed to this.

While the city has made significant strides in creating liveable spaces, particularly through inclusive green spaces developed with community participation, there are still challenges in achieving a fully inclusive urban



life. Approximately 80,000 persons with disabilities face various barriers, including physical, attitudinal, and environmental obstacles, hindering their daily lives.

In terms of inclusive urban planning, there is room for improvement, especially in recreational spaces and seamless accessibility within the transport system. Although social urbanism projects have made innovative attempts to incorporate peripheral and informal settlements, these areas lag in terms of accessibility. The topography of Medellín, unique and challenging, requires local adaptations of national policies to ensure consistency in infrastructure accessibility.

The city has comprehensive legislative frameworks in place, but their consistent implementation across different infrastructures remains a challenge. Local adaptation of national policies is necessary, considering the specific contexts of cities, such as Medellín's topography.



Some of the areas on the periphery of the city are less accessible.



MATT Movilidad is a local AT entrepreneur.



The political will for inclusive cities is crucial for sustaining and advancing inclusive infrastructure, but this can be challenging with changing political leadership. The city's Accessibility Committee (CAME) serves as a positive example, overseeing inclusive infrastructure projects in Medellín. While there has been progress in certain sectors of infrastructure, there is a lack of synchronisation. Public transport, for example, is not uniformly accessible, with disparities in accessibility and affordability between different systems. In social housing projects, inclusivity is sometimes compromised due to financial constraints, leading to the absence of elevators in apartment blocks.

Parks and green spaces have received priority in terms of inclusion, with several accessible parks showcasing inclusive design processes. However, the everyday spaces and services that persons with disabilities require still need improvement. Recreational activities, affordable inclusive spaces, attitudinal challenges, and the lack of continuity and maintenance of accessible environments impact the quality of life for persons with disabilities. Participatory design processes have resulted in more inclusive outcomes, as seen in public spaces like Parques del Rio. However, there is an opportunity to enhance the diversity of disabilities represented in these processes, acknowledging the various social networks that support persons with disabilities.

Regarding Assistive Technology (AT) access and use, challenges persist, with legal proceedings often necessary to acquire AT. The process is lengthy, taking more than 6-9 months, and the infrastructure does not consistently support AT use. Disparities exist between aspirations for AT and the basic and generic devices provided.

Medellín's reputation as an innovation hub is exemplified by 'Ruta N,' an accessible building committed to inclusion and disability innovation. Disabled social entrepreneurs and enterprises, such as MATT Movilidad, contribute to the city's innovation landscape, producing electric third wheels for manual wheelchairs with a unique business model that includes rental and tourist tours.

Key policies

- 2020 Medellin Me Cuida Development Plan.
- 2019 Update to Inclusion Policy.
- Law 1618 of 2013 guaranteeing the rights of persons with disabilities.

Key themes:

- Sustained resourcing for good practice initiatives that is not lost to election cycles.
- Cohesive transport considering first and last mile journeys and inclusive service delivery.
- A need for a consolidation of policies and contextualisation of standards.



People

For cities to thrive, the people living in that city should be able to thrive.

This section provides an overview of the experiences of persons with disabilities living in the six cities, picking up on common and priority themes. Thematic insights are supported by a series of illustrations that provide insights of day-to-day life in each city. These illustrations highlight common barriers and challenges in each of the city, depicting the typical experiences and different types of barriers.


A day in the life of Ulaanbaatar

This drawing illustrates a collage of the city environment to demonstrate various conditions, it is not an accurate cross-section through part of the city on this and all subsequent drawings.

"In Ger area, it is not accessible. I need to collect water and firewood etc and this is difficult for me"

.....

tor me"

With harsh climate conditions, collecting fuel and water is an essential part of life. However transport to and from collection points, transportation of goods and preparation of fuel can be barrier for persons with disabilities. "Going out in winter is very risky, sometimes I can't stop due to slippery road and at the end I crush something or fall down."



The climate can vary from extreme heat to snow and flooding. This can make it difficult for persons with disabilities to move around and use AT. Problems include: inaccessibility of the karaoke equipment for people with visual impairments and lack of sensitivity of staff and other customers



Karaoke places were somewhere people go to for fun and to relieve stress, but they are not accessible.



Public services need to be accessible. Physical barriers and communication barriers reduce service access for persons with disabilities.

A day in the life of Varanasi

This drawing illustrates a collage of the city environment to demonstrate various conditions, it is not an accurate cross-section through part of the city on this and all subsequent drawings.



Animals can create barriers for persons with disabilities, for instance, wild dogs and cows roam the streets freely.

Traditional modes of transport such as tuktuks require updating to be more accessible and easier to board and alight. Heritage sites with large steep stepped areas become barriers of participation and remove independence for persons with disabilities. Inaccessible water fronts and cultural activities can create not only create physical barriers but also social barriers for persons with disabilities.

A day in the life of Surakarta

This drawing illustrates a collage of the city environment to demonstrate various conditions, it is not an accurate cross-section through part of the city on this and all subsequent drawings.

"The Government has put a lot of attention on making the bus stop accessible. But the problem is there is a gap between the platform and the bus itself."



While raising bus stops to help access to buses with raised level can improve access, the gap between the vehicle and platform can be a barrier.

"In an accessible toilet wheelchair users should be able to move around easily. This needs to be understood. Some people think a restroom is accessible as long as it has a sitting toilet seat."



Seated toilets alone do not achieve accessibility and turning space and other inclusive features are crucial.

"The culture of the people, now this is Javanese culture, like caring for one another and also kinship."

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Social inclusion is important. Market stall owners in Solo ensure their customers all get equal and accessible service.

"We tend to see accessibility as only benefiting people with disabilities. This is not the case. Guiding blocks for instance..Market porters prefer to walk on a textured path so they won't slip."



Tactile paving not only helps people with visual impairments but also makes market lanes non slip.

Inclusive employment is important to build a stong economy. In Solo, many textile and craft industries have a diverse workforce.

A day in the life of Nairobi

This drawing illustrates a collage of the city environment to demonstrate various conditions, it is not an accurate cross-section through part of the city on this and all subsequent drawings.

This public space project by KDI in Kibera is a good example of compromise. When a ramp wasn't possible, the team surveyed the area to find out the needs of the community, creating community spaces and gentle steps.



Sometimes in areas of informality, compromises to inclusive design have to be made to come to a feasible solution through surveys and discussions with locals.

"There should be inclusion in public services such as health that considers when you find accessibility a challenge."



Even when provided for free, some persons with disabilities cannot access healthcare if there are barriers between their home and the clinic.

falling and obstruction."



Physical barriers between where someone lives and markets and services can create social isolation, reducing independence both socially and financially. Barrier free routes from door-to-door are key to inclusive environments.

Congested or inconsistent pathways, public transport and traffic can result in persons with disabilities needing assistance.

A day in the life of Freetown



Inclusive sports and recreation are key to healthy and inclusive communities. Small rules changes or alowances can make a big difference.

Informal sanitation systems with open drains can create a barrier on peoples' daily routes. Makeshift bridges and overpasses created by communities to bridge the gaps can be a hazard for all people, and pose especially challenging for people with disabilities.

Lack of accessible transport can lead persons with disabilities to using unusual and unsafe methods of transport.

Even when inclusive education is provided, it is important to teach all students about inclusion to prevent discrimination.

A day in the life of Medellín

This drawing illustrates a collage of the city environment to demonstrate various conditions, it



Topography and informality of paths in periphery areas can lead wheelchair users to have to share space with motorised vechicles and expose them to danger.

Transport staff training on inclusivity is vital to correct use of inclusive design features.

The absense of visual displays can lead people with hearing impairments to confusion during times of emergency and change.

Full inclusivity from door-to-door is vital and support by the government of local disability led innovators is a great step forward here.



The unplanned settlements in Ulaanbaatar often lack infrastructure such as drainage, causing flooding on a regular basis and impeding mobility.

Ulaanbaatar: Balancing tradition with improving liveability

In Ulaanbaatar, the Ger areas are unique. Still representative of traditional nomadic dwellings, but now permanent structures. These areas are challenging for persons with disabilities, lacking in-home toilets, water, heating infrastructure, and suffer from poor road quality. A preference for apartment living was high among participants, raising

Housing, essential infrastructure and services

Ensuring equitable access to essential infrastructure and services for persons with disabilities is a complex challenge faced by all our case study cities. From housing to sanitation and infrastructure, the findings of our reports shed light on the critical need for inclusive urban planning.

questions about the city's overall housing dynamics and how culture can be preserved while raising quality of life and housing. As Ulaanbaatar navigates this challenge, significant investments are required to address the accessibility challenges in the Ger areas and ensure the inclusivity of redevelopment plans.

Varanasi: Adapting while embracing heritage

Varanasi, with its historical significance, grapples with accessibility issues in living environments. Participants highlighted challenges in navigating stairs, external bathrooms and adapting to inaccessible housing stock. Participants had varied opinions on whether the focus should be on improving accessibility in living spaces or public areas. The presence of more accessible living environments in rural settings further emphasizes the need for tailored solutions for urban contexts with historical and cultural significance.



Living environments in Varanasi captured by participants.

Nairobi: Quality housing for all

Nairobi grapples with inadequate housing standards for persons with disabilities, often limiting them to ground floors in high-rise buildings. Sanitation challenges are prevalent in informal settlements, impacting hygiene and health. The interplay of density, land ownership, and the cost of housing further complicates the situation. Nairobi's experience underscores the urgent need for comprehensive solutions that address both housing and sanitation issues, acknowledging the interconnectedness of these challenges.



Living environments in informal settlements in Nairobi can be particularly challenging for AT users.

Surakarta: Navigating water and sanitation complexity

In Surakarta, the intersection of water and sanitation infrastructure with accessibility creates challenges. Participants grapple with the management of these systems, with some even using poor infrastructure as a guide for navigation (for example using train lines as a visual guide). Striking a balance between infrastructure maintenance and ensuring accessibility poses a challenge, highlighting the importance of thoughtful urban planning and awareness raising on the benefit of inclusive design features.



In Surakarta, participants spoke about informal ways to navigate the city, relying on train lines when guidance was missing.



Transport options are limited in Freetown.

Freetown: Navigating topography and service gaps

Freetown's informal settlements, characterised by steep slopes and poor road networks, pose substantial challenges for persons with disabilities - from mobility to heightened disaster risk. Limited accessibility to vital services due to inaccessible secondary routes has serious consequences. As the city focuses on improving main routes, the critical importance of ensuring accessibility in secondary routes within informal settlements becomes evident.

Medellín: Transforming housing for inclusivity

Medellin faces challenges in adapting housing for inclusivity. Participants emphasized the need for modifications to make housing accessible. While the city's focus on social housing projects is commendable, the limitations in subsidies specifically for accessibility improvements and the cessation of housing schemes highlight ongoing challenges in aligning urban development with the needs of persons with disabilities.

Transport and mobility

A lack of accessible and affordable transportation impacts daily life in all cities, impacting access to work and education. Gaps in transport accessibility were found even in cities with more developed infrastructure particularly in first-to-lastmile connectivity and inadequate staff training leading to poor service delivery.

Participants consistently highlighted attitudinal barriers within educational contexts, emphasising the importance of moving towards inclusive practices.



In Surakarta, temporary installations are used to access buses where the entrance is elevated. However, not all are accessible.



In Varanasi, transport options are adapted to the narrow streets, with vehicles such as tuk tuks being popular. However, they are not accessible and drivers may not be amenable to taking passengers with disabilities.

Consistency and maintenance are key themes for inclusive transport, with many transport routes not being fully accessible or suffering from maintenance issues such as a broken lift. In Surakarta (Solo), a once accessible bus stop design became inaccessible when the buses were changed without consultation on the impact on accessibility. Inclusive transport requires coordinated and continued monitoring and improvements.

In access to recreation, transportation also emerges as a leading barrier. In Nairobi, the high costs of transportation pose a significant financial strain on persons with

disabilities, curtailing their ability to partake in social and leisure activities. Similarly, Medellín faces challenges with inaccessible links between transportation methods, creating additional barriers for people seeking to access recreational pursuits despite isolated efforts of inclusive design.

The theme of transportation resonates as a key constraint, emphasizing the critical need for accessible and affordable transportation options with good first and last mile connectivity to enhance the mobility of persons with disabilities.



Mobility within informal settlements is particularly challenging, where minimal infrastructure and high density make environment very inaccessible.

Innovation in the transport sector is key, with The pedestrian environment is equally attention to multi-modal transport networks important. Most cities struggled with safe offering flexibility and choice. Medellín is a and accessible pedestrian infrastructure. good example of this, with buses, metro, Wheelchair users often ended up walking trams and cable cars to address the city's on roads for smoother surfaces. In steep topography. Micro-mobility options are Varanasi, participants reported issues of also important, given issues of first and last using AT in the urban environment due to mile connectivity. wild animals (cows and dogs) that could become aggressive when they see a white At the time of the study, in Ulaanbaatar, there cane or crutch. In Nairobi, participants also is only one accessible bus route which does highlighted safety issues for women and not enter the Ger areas. In Nairobi, Freetown, girls, especially at night. In Medellín, AT and Varanasi, common forms of transport adaptations such as electric third wheels such as matatus and tuk-tuks are not well are enabling individual mobility and access adapted for use by persons with disabilities. to work.

Environmental factors



Medellín's cable car system has been recognised globally as an innovative solution to topographical challenges.

In all cities, specific geographic conditions led to accessibility challenges. Steep topography in informal settlements in Ulaanbaatar, Freetown and Medellín, make access and building infrastructure more challenging. Medellín has endeavoured to address this through cable cars, which have been quite effective, but have also had knock-on effects around land prices. In Freetown, the steep topography has heightened risks of mudslides, which can have devasting impact. Seasonal climate variations also impact accessibility, with participants in multiple cities stating that with heavy rainfall their mobility is severely reduced, which particularly impact social and recreational activities. For example, in Surakarta (Solo), one participant, who is Deaf, spoke about meeting his friends at the night market to eat as a recreational activity. He explained that when it rains, the sound is unbearable as the market only has simple corrugated roofs, so then he is not able to enjoy that experience.



Lacking infrastructure requires persons with disabilities in Ulaanbaatar to rely on burning poor fuel sources to stay warm.

In Ulaanbaatar, the long harsh winter is difficult for persons with disabilities and for the construction industry, as there is a very small window in the year where groundwork construction can take place due to the frozen conditions. People also rely on burning wood or whatever they can find to keep warm, as people living in the Ger areas do not have central heating. This practice is extremely polluting and bad for health. The cold weather also makes leaving the house more difficult, as dressing for the cold takes more effort. Distances that may be feasible in summer, are not in winter.

Awareness and attitudinal barriers

The stigma and negative attitude faced by persons with disabilities were found to be a key barrier to inclusion and participation in all the cities. There was a close link between inaccessible environments and the negative attitudes towards persons with disabilities with both described as deterrents to participation.

The inaccessibility of the built environment limited people's social connections, as infrastructural barriers prevented them from going out, for example to visit their friends or relatives. Participants from Freetown and Nairobi spoke about the discriminatory attitude of transport operators who were rude, disrespectful and unwilling to provide any support or guidance to persons with disabilities. They also pointed to the negative attitudes of fellow passengers who felt that persons with disabilities would delay the journey. This discouraged them to travel on their own.

It was felt that more accessible infrastructure could reduce stigma by allowing persons with disabilities to be more visible and play a more active role in society. This would help improve public attitudes towards persons with disabilities. For instance, participants from Solo reflected on the importance of citizenship and empowerment in inclusive cities and how when persons with disabilities are actively included in city planning and design, stigma is reduced, and cities are more inclusive overall.

The research also suggested a lack of knowledge and awareness around inclusive design, laws, policies and accessibility standards. Therefore, transforming mindsets and raising awareness across urban sectors such as the city administration, and policy decision-makers is crucial. Training or awareness raising among built environment professionals, business professionals and all key urban stakeholders, including service providers is required to build awareness of inclusive design beyond compliance with technical standards.

Mindset shifts in the profession would support better delivery of inclusive design. For instance, participants from Ulaanbaatar mentioned that concept of inclusive environments was not taught in architectural training, excluding the perspectives of persons with disabilities. As a result, it was difficult for them to build inclusive spaces. They also felt that education and training on the value of inclusive design and its benefit on the quality of life of people would help motivate industry professionals to design a better world.



The access barriers present throughout Nairobi mean that it is difficult for persons with disabilities to be independent.

Public awareness around disability inclusion and inclusive design is important to ensure built interventions are used appropriately and well-maintained. Examples include:

- Street vendors need to be aware about not covering the tactile paving.
- Making people aware of the importance of their actions in creating an inclusive environment, for example, by not blocking accessible routes.
- Teaching stakeholders about the co-benefits of inclusive infrastructure, for example, enabling better health access and better livelihoods for everyone.
- Awareness about the connection between physical accessibility with attitudes and mental health.
- Training and awareness of service providers and customerfacing employees.

The role of media was highlighted to spread awareness and celebrate success stories of inclusion to change perceptions of disability. Spreading awareness through demonstrating good practice and advocacy was highlighted. All cities had awareness-raising efforts, but the current awareness and advocacy initiatives were often one-off events whereas, creating a culture of inclusion requires continuous and sustained efforts.

Good examples awareness raising projects

In Medellin training is a legal requirement in transport sectors such as the Metro. This training is part of "Cultura Metro" (Metro Culture) which is an initiative that promotes adequate behaviour within the Metro system. It provides recommendations and training for staff, ensuring they are equipped to assist persons with disabilities.

Surakarta has an initiative called "Repaint the City", which aims to connect the voices of the deaf community in Solo with visual art expressions as a means of awareness raising and reclaiming of spaces, as well as amplifying the aspirations of political participation of the marginalised group to the public. Solo also reported a strong sense of cultural inclusion as it is a city with higher proportions of rehabilitation services for persons with disabilities.

The **Accessible India Campaign** has been successful in improving accessibility and raising awareness ¹⁵. Varanasi city has made efforts to address the issues of an inaccessible urban environment under the Campaign, and the Department of Empowerment of Persons with Disabilities in Varanasi is active in creating awareness about the diverse needs associated with disabilities and implementing projects to make the environment more accessible. Varanasi Smart City Ltd and Varanasi Nagar Nigam are also implementing inclusive interventions to help create a more accessible and inclusive city. The participants felt that such campaigns, initiatives and interventions do go on to deliver appropriate and sustainable results.

Education

Access to education was acknowledged as an issue by participants across all six case studies. Each city highlighted various barriers to education which exist across all six cities.

In Ulaanbaatar, participants stressed the importance of infrastructure for inclusive education, linking it to improved quality of life. However, physical, and attitudinal barriers pose challenges, with discrimination affecting access to essential services, including education.

Varanasi, like all six cities, faces limitations in education opportunities due to inaccessible environments, impacting participants' future livelihoods. Surakarta acknowledged recent government progress in inclusive education but highlights persisting challenges, particularly in attitudes within the education system.

Nairobi underscored the critical connection between education and opportunities for children with disabilities, with geographical challenges compounding accessibility issues. Lastly, Medellín presented a nuanced picture of disability-inclusive education, noting progress alongside challenges such as continued physical obstacles, bullying, and inadequate facilities. These findings show that education is a cross-cutting issue encompassing infrastructure barriers, attitudinal and awareness problems, a gap in training and facilities, system development, geographical difficulties and that there is a knock-on effect to the future livelihood opportunities of persons with disabilities. All six cities face the forementioned barriers at varied levels and there is a need for more inclusive education approaches to improve this.



The Orbit Reader, developed by Kilimanjaro Blind Trust Africa, is a tool to help young learners.

All six cities also highlighted a need for education in inclusive design at all levels. Teaching inclusive design practice to children at early-stage learning, built environment students at higher level education and to stakeholders and policy makers. By integrating this education from an early age, it can create a change in mindset improving attitudinal barriers. Continued professional development on inclusive design can ensure inclusive design is integrated from the beginning of all projects.

Access to opportunities

In all six cities, persons with disabilities experienced a range of challenges that significantly impacted their access to opportunities.

Across the cities, a convergence of factors comprising physical obstacles, societal attitudes, and legislative gaps contribute to environments that exclude persons with disabilities. Notably, technical design solutions often prove insufficient, emphasising the need for a comprehensive, people-centric approach in urban planning and design. This approach is essential for addressing interconnected barriers spanning service access, employment rights, and public attitudes. Persons with disabilities working in service roles often faced mistreatment or discrimination.

The challenges faced by persons with disabilities in accessing higher education, skills training, and gainful employment were frequently mentioned by participants. Factors such as the limited availability of governmentsponsored skill development programs, inaccessible workplaces, and resource constraints serve as formidable impediments to personal and professional growth.

Furthermore, the global COVID-19 pandemic introduced an additional layer of complexity, underscoring the urgency for multifaceted solutions that extend beyond mere training programs to encompass the provision of resources and equipment facilitating livelihood pursuits even during challenging circumstances.

A recurring theme was the desire among persons with disabilities for selfemployment and engagement in online freelance work. The desire to own a business was particularly strong in Nairobi. However, the lack of access to fundamental resources, notably capital, emerges as a significant barrier.



Working as a taxi driver enables independence for this participant in Mongolia, but she experiences discrimination due to her hearing impairment.

The Pallet Café, Nairobi

Pallet Cafe in Lavington, Nairobi, is a garden café, co-working and creative space offering art and yoga classes. The cafe was born out of the vision to provide great food and amazing service while promoting the training and employment of persons with disabilities in the food service community. Described as both an eco-friendly and inclusive space, it offers a good practice example of integrating inclusion and resilient while creating work for persons with disabilities.

"Come learn a few hand signs, relax, enjoy some delicious food and have fun with us."

Participants consistently underscore the paramount importance of awareness and the implementation of inclusive policies to challenge preconceived notions about suitable work, emphasising communitybuilding through collaborative business activities.

The challenge of securing employment for persons with disabilities is widespread across all six cities, attributable to factors such as inaccessible educational institutions, transportation issues, and discriminatory attitudes. Despite concerted efforts towards skill development, persistent barriers include challenges in accessing financial services and infrastructure deficiency.

To promote access to opportunities, a comprehensive and integrated approach is imperative across all six cities – including transport to and from work.

Thorough planning, policy implementation improvement, and a shift in societal attitudes are crucial for creating genuinely inclusive environments that empower persons with disabilities to take up opportunities. The calls for community engagement, resource provision, and awareness campaigns underscore the multifaceted challenges faced by persons with disabilities across these diverse cities.

Recreation

Across all six cities, participants highlighted the need for access to recreation and social activities to live a full life in their city.

The case studies revealed recurring challenges that persons with disabilities encounter when seeking to engage in recreational, such as sports, music, culture and socialising. Inclusive city planning must ensure that recreation is a truly accessible and enriching experience for all.

A persistent theme resonating across these diverse cities is the physical inaccessibility of recreational venues. From karaoke places in Ulaanbaatar to the iconic pilgrimage riverfront in Varanasi, structural barriers such as stepped entrances without ramps impede the seamless participation of persons with disabilities. This not only limits mobility but also obstructs the enjoyment of recreational activities, restricting the ability of persons with disabilities to fully immerse themselves in the social fabric of their cities. As previously mentioned, prevailing transport inaccessibility is also a barrier.

Another aspect is social exclusion which can be deeply rooted in attitudinal and cultural factors. In Ulaanbaatar, the lack of sensitivity among staff and patrons in recreational spaces creates barriers for persons with disabilities, hindering their ability to fully engage in social activities. Nairobi participants also emphasised the impact of social limitations arising from stigma, contributing to feelings of exclusion among persons with disabilities. Medellín too grapples with cultural misconceptions perpetuating stigmas, particularly evident in social settings like nightclubs. Addressing this theme necessitates not only physical accessibility but also attitudinal shifts and cultural sensitivity to foster a more inclusive recreational environment.

Lastly, affordability emerges as a barrier to many aspects of daily life including recreation access. Medellín highlights financial implications, where accessible transportation and accommodations often come at higher costs, rendering leisure activities unaffordable for many. In tandem, Nairobi participants echo this sentiment, with high living costs further limiting the capacity of persons with disabilities to engage in recreational pursuits. The shared theme of affordability emphasises the economic dimensions of inclusivity, the need for financial considerations in crafting accessible recreational spaces and the intersections between recreation access and livelihood opportunities.

By addressing these themes, cities can cultivate an environment where persons with disabilities can fully participate in and contribute to the rich tapestry of urban life.



Two men are playing checkers, one is sitting in a handpeddle tricycle. The building they are in is informal constructed from corrugated metal.



Access to sports and exercise facilities is an important part of recreation.

Culture

Access to cultural, recreational, and religious spaces was seen as important for good quality of life and helped combat the isolation faced by many persons with disabilities, contributing to wellbeing. However, these spaces were often inaccessible and not prioritised by city initiatives. However, positive examples included accessible public libraries in Medellín and a strong recognition of the importance of making the Ghats accessible in Varanasi. The participants considered access to culture as a priority. Types of cultural spaces identified as important include:

- Religious buildings
- Heritage sites
- Traditional ways of living
- Modern ways residents adopt for living and transport
- Museums and Galleries
- Parks
- Beaches
- · Sports and recreation
- Visiting restaurants and clubs
- Tourism



In Varanasi, access to the river is a key part of culture.

Varanasi is one of the oldest cities in the It was suggested that an inclusive culture world, a site of pilgrimage and cultural in a community can go a long way to significance for visitors from across the overcome some of the inherent challenges world. Built in the eighth century BC it in the physical built environment. They are has been evolving and transforming and important to build a city where persons making the ancient religious infrastructure with disabilities mostly feel accepted, accessible has been a challenge. Moreover, acknowledged, and included. The wider being a city of pilgrimage, many come to community forms a part of this inclusive the city to serve and help others which culture and community-led initiatives and leads to a prevalence of the charity model community assets and networks are both of disability among the general public. important to build it. Awareness raising was Varanasi's rich culture and heritage is also suggested as an important tool to build woven into daily life in the city, but much an inclusive culture. of this infrastructure is inaccessible and presents a particularly difficult challenge The culture of the country was also linked balancing inclusive design and heritage to the accessibility standards. It was conservation. Persons with disabilities in felt that international standards are not Varanasi felt excluded from their culture by necessarily fit-for-purpose for the country not being able to access the Ghats and river and the participants desired inclusive Ganges. The city government recognises design standards that are locally adapted the importance of access for all to these and embrace the country's culture. For spaces, and has developed an accessible instance, in India the standards issued by the Central Government efforts have ghat called Namo Ghat.In Ulaanbaatar, the traditional nomadic ways of life were a been made to make them suitable for an factor in urban planning the development Indian context by adding accessibility of the Ger areas, leading to unplanned design requirements for an Indian toilet settlements with lower densities to other and accessible parking for a two wheeler. cities. Going forward, the ways in which Yet State and local governments find traditional ways of life and architecture can it difficult to adapt these to the local influence a more inclusive environment governments. Lack of cultural adaptability should be a consideration. Nomadic ways of the standards was also highlighted by of life in Mongolia also reflect a more participants from Indonesia. sustainable relationship with nature and land which may offer valuable insights for inclusive and sustainable development that adapts to climate and urban change while balancing this with infrastructure demands.

Health

All the cities identified access to healthcare facilities as a priority.

The six cities identified similar barriers to accessing healthcare. These included inaccessible infrastructure of health facilities that often did not comply with the accessibility standards in the country. Participants from Ulaanbaatar shared about how the family care centres which were the first point of care for health services, were always located in the neighbourhood 'Khoroo', local government office, on the second floor without a lift, indicating systematic infrastructural barriers. In addition, the absence of sign language interpreters made communication difficult to even access an appointment. People also faced challenges in reaching the medical centres because of the inaccessible transport.



Accessible healthcare also requires an inclusive environment and infrastructure surrounding it so persons with disabilities can access the services.

The participants in the six cities closely linked their environment to the health of residents. Some cities highlighted the challenge of poor urban infrastructure due to rapid urbanisation with inadequate sanitation, poor waste management and drainage, and high air, water, and soil pollution levels especially in the informal settlements. Persons with disabilities living here are at higher risk of health impacts due to the links between disability, poverty, infrastructure and health. Poorer areas were identified as being more densely populated making access to health centers difficult also due to demand. Access to healthcare facilities by poorer persons with disabilities is further reduced as a major part of health services are privately run on a chargeable basis. Without health insurance, they are not able to access these services. Social security covered health services in some countries but did not cover mental health such as counselling. As a result most people needing it did not receive mental healthcare services.

The COVID-19 pandemic had a

disproportionate impact on persons with disabilities living in cities. The lockdown resulted in many persons with disabilities losing their incomes and accessing basic needs such as food became a priority. Also, most persons with disabilities were unable to access preventative measures such as face masks or hand sanitiser. Persons with disabilities were not able to access their necessary therapy or medication. Not having access to appropriate AT put persons with physical disabilities at increased risk of contracting COVID-19 as they needed to rely on assistance, and interactions with the physical environment for guiding purposes, needing to touch different surfaces. Health resources were redirected towards the COVID-19 pandemic, leading to further vulnerability from existing ongoing health issues such as pre-existing conditions that require ongoing treatment.

All cities found that the failure of the infrastructure to address climate change impacts such as flooding increased health risks. People living in the informal settlements are also worst hit during periods of extreme weather such as flooding, as rent is often cheaper along riverbanks or other less suitable terrain.



Areas that lack drainage infrastructure pose health risks.

Creating resilient and inclusive public spaces, Kounkuey **Design Initiative**

One encouraging project from Nairobi that is looking to combat issues of flooding is the Kibera Public Space Project. The project, a partnership between Kounkuey Design Initiative (KDI) and Kibera residents, aims to co-develop built environment strategies to tackle the issues of flooding among others. It achieves this by developing a series of eleven community-designed and managed public spaces that reduce flood risk, provide access to core services such as water and sanitation and create new income generating opportunities. The project exemplifies communityled solutions where infrastructure is lacking. However, the environment of Kibera is extremely challenging in terms of accessibility and emphasises the need for inclusive design guidance that is adapted to such a context.

Equitable access to health is an intersectional issue for persons with disabilities. In some cities such as Ulaanbaatar, women with disabilities spoke about the difficulty of accessing sexual and reproductive health services as a woman with disability. It is important to recognise that all health services and infrastructure should be accessible to all. In Nairobi, one female participant also spoke about her experience of chronic illness and fatigue and the impact of this on daily life, particularly due to her care-giving responsibilities as a woman. Inclusive access to and management of chronic illnesses must also be considered within the health system.

Poor access to AT was also an important issue that impacted the wellbeing of persons with disabilities. While there were social protection programmes in some countries to get AT often there are delays due to inefficient processes, which can lead to lengthy wait times. Wait was longer for complex prostheses devices. Medellín implemented the Triangle Plan to overcome these challenges, by building collaboration between social workers, medical staff, and economic resources to ensure careful and appropriate allocation of the limited resources. However, there is a lack of knowledge among both users and health professionals regarding assistive technology-created barriers. Furthermore, participants reported that AT provided is not always fit for purpose and repair was difficult.

Innovating in AT for access to more inclusive health in **Freetown, Development Planning Unit and SHM Foundation**

Under the AT2030 programme, community-led research on access to AT revealed aspirations from persons with disabilities for better access to healthcare. The Development Planning Unit (UCL), SLURC and SHM Foundation worked together to test a mobile solution for access to healthcare.

The first part of this research looked at mobile phone use within the community of participants in both Freetown, Sierra Leone and Banjarmasin, Indonesia. The research found that mobile phone use is common, but devices are often shared collectively as factors such as cost are prohibitive.

The second phase of the research looked at how mobile phones could support community health literacy through a pilot intervention. The intervention was designed through a co-design process which adopted the following three priorities:

- To be led by persons with disabilities
- To be appropriate, with simple and accessible information communicated
- To be safe, with ongoing monitoring and safeguarding.

Through the intervention, residents gained access to community heath champions and guest speakers such as doctors. Each participant sent on average 79 messages, with 78 male and 68 female participants. Participants reported finding the project valuable in how it provided: learning, connection, advocacy, support and digital literacy.

The findings of the pilot validated that access the basic health services is essential for low-income urban residents, and particularly for persons with disabilities living in those communities. It also identified that mobile phones represent an opportunity for better access to information that should be explored further.¹⁶



Climate change

Inclusive infrastructure is interconnected with other urban development challenges such as climate adaptation and disaster resilience. Infrastructure that is poorly constructed increases intensity of damage during disasters and new infrastructure that is built without accessibility in mind is widening inequality.

Many of the case study cities experience issues related to flood resilience and access to water, sanitation, and waste infrastructure. Fear of flooding risk led to building structures built raised above ground level, immediately creating access barriers and requiring further accessibility interventions. This makes the case for embedding inclusive design early in infrastructure planning. Drainage infrastructure often creates hazards for persons with disabilities through open

The infrastructure throughout cities will need to adapt to changing weather patterns to ensure the resilience of cities long term.

storm drains on pathways, poorly built bridges to cross drains. Persons with disabilities are more likely to live on the ground floors due its accessibility benefits, or in informal settlements due to low incomes, both increasing flood risks. Flood resilient infrastructure is vital for persons with disabilities' participation in urban life, as they are likely to be more impacted by extreme weather incidents, but can also leave them further behind if it creates new barriers.





Access to essential services, such as banking, can be disrupted when disasters strike.

Even more temporary or seasonal weather incidents such as heavy rainstorms can be particularly disruptive for persons with disabilities, limiting mobility, ability to use AT and access to the city which can limit access to work. For example, one participant in Indonesia spoke about they could not use their hearing aid in rainy weather which meant they could not work as they are a motorbike taxi driver. Another spoke about how when roads flood they cannot go out in their wheelchair. All these risks and barriers need to be considered for emergency planning and safe evacuation.

In Surakarta, disaster preparedness was identified as a key concern and participants spoke about wanting to be included in disaster risk management and planning and well as infrastructure **development.** Embedding participatory inclusive design processes in urban development and disaster planning can ensure persons with disabilities are leading more inclusive and resilient outcomes.

In Medellín, parks and green corridors are used to support the city adapting to heat while also creating public spaces for all residents.

In terms of adaptation measures, most of the data collected demonstrates why adaptation measures need to be accessible, rather than presenting good examples. For example, urban greening in Varanasi impacting pedestrian accessibility where tree roots have damage paving, flood resilience in Nairobi and Freetown and drainage interventions impeding accessibility. Flood risk reduction in most cities meaning buildings rarely have level access as they sit on a foundation/plinth. In Medellín, there are examples of accessible green spaces which both create accessible recreational environments and support climate mitigation through cooling the city. In Ulaanbaatar, the lack of heating and running water is a major barrier to quality of life for persons with disabilities, and impacting air quality due to continued use of coal as a fuel source in homes.



The Hore Hore community travel together to explore new places.

Tourism

Participants felt that inclusive tourism should include accessible transportation, recreation, sanitation and accommodation that allows them to travel in their own country and visit recreational places in their city with dignity.

Places of tourist attraction in a city such as It was highlighted that inclusive cities parks, museums, restaurants, beaches, and attract more tourism and tourism can be religious monuments if made accessible used catalyse inclusive infrastructure and can play an important role in building development in a city. City participants recreational and socialising opportunities felt that tourist infrastructure could for local persons with disabilities. This can introduce international good practices in help to combat the isolation, loneliness inclusive environments that could also and discrimination persons with disabilities benefit local communities. Local designers and architects can leverage this to create face by getting access to recreational or examples of best practices for their city. cultural spaces.

AT innovation and inclusive tourism, MATT in Medellín

In Medellín, social entrepreneurs with disabilities are locally manufacturing electric third wheels for manual wheelchairs that offers a unique inclusive business called MATT where tourist tours rent wheelchairs with an electric third wheel to tour the city. These chairs are used by both tourists with and without disabilities. Parks and green spaces have been given high priority in terms of inclusion in Medellín. There are also accessible tours provided in some places such as in Parque Explora and Parques del Rio.



MATT provides inclusive experiences to explore the city of Medellín.

In Varanasi, tension between pilgrimage, religious tourism and tourism in general was highlighted. At times, there are so many tourists that many local people are unable to access the Ghats as a result. Some felt that the growth of the tourism industry is diminishing the genuine sacred experience of the city. Moreover, implementing good inclusive design in heritage conservation often created conflicts and locals do not trust the planning and development process. It was felt that collaboration with heritage experts with tourism and conservation stakeholders is crucial to shaping a more inclusive city in Varanasi.

Participants in Surakarta had many aspirations related to tourism and travelling, and one spoke about travelling overseas. Surakarta's strategies to support the conservation of heritage tourist sites include public-private partnerships, physical conservation work, and renovation work to buildings and infrastructure. Public engagement tools, such as the 'Musrenbang', and awareness schemes on tourism such as 'Pokdarwis' demonstrate the city's commitment to heritage preservation and their support of community participation.¹⁷

Summary

Common challenges



Housing will always be fundamental to people's quality of life. In cities with high levels of informality, housing will be harder to regulate. Inclusive design guidelines for informal settlements and community-led construction are urgently needed.



In accessing opportunities, effectively addressing the multifaceted challenges of access to work is necessary for dismantling the cycle of constrained opportunities. A collaborative and concerted effort across each city to ensure equal access to opportunities for all.



Recreation, culture and heritage are part of a city's urban fabric. Inclusive design should ensure persons with disabilities can participate on an equal basis with others.



Citizenship and access to rights. An accessible city must ensure all residents have equal access to rights, participation in daily life in the city and the necessary services and opportunities to thrive.



Essential infrastructure for all: Transport, roads, water and electricity. These

fundamentals cannot be taken for granted and informal settlements particularly suffer from lack of basic access to infrastructure and services.



Education is foundational. Persons with disabilities should have access to education at all levels. Equally important is training and education on disability awareness and inclusive design for all, but particularly built environment sector professionals and service providers.



Environment, climate change and health are interconnected. Climate change is going to make environmental conditions more difficult with increasing risks and diminishing access, unless there is concerted effort to build inclusive and resilient infrastructure now. This doesn't just apply to climate-related disasters and emergency situations, but needs to consider the impact of heat, the pollution of air and water, and increase of certain diseases that may come with with a warming planet.



What works?

- Awareness and cultural change are a collective effort. Where people feel socially included, it goes a long way.
- Innovation has a role in finding creative solutions. Supporting • persons with disabilities in developing solutions can result in more adaptable and fit for purpose tools.
- Co-design, collaboration and creativity with persons with disabilities. These initiatives can be joyful, and unlock aspirational thinking for what an inclusive city can be.
- AT as an enabler of urban life. People need access to AT and accessible environments to use that AT. When the infrastructure conditions are poor, AT can be damaged and require more frequent repair. Exacerbating affordability concerns.
- Awareness of how global challenges are impacting persons with disabilities. Climate change, pandemics and conflict are all issues that may impact persons with disabilities more severely, but they are often left behind. Locally adapted co-design could support building inclusive resilience.
- **Inclusive spaces can address stigma.** Physically accessible infrastructure has impact beyond physical access, it is about facilitating dignity and independence.
- Prioritising mobility to support education and livelihoods. Design solutions that consider door-to-door mobility will be most effective in creating inclusive experiences.

Policy

Overview

The policy environment is critical for laying the foundations for creating inclusive cities. Within our research framework, the policy context was explored both through document review and through consultation with policy stakeholders to understand the reality of the application of current frameworks.

The countries of all six case study cities have a robust legislative framework for inclusive environments. All the countries have ratified the UNCRPD and amended their existing disability laws or adopted new laws to harmonise with the UNCRPD. It is this harmonised 'Disability Law' that is the key legislation guiding inclusive environments in all the cities and addresses accessibility from the perspective of physical environments, transportation, public services, information and communication services and technology. Providing inclusive environments is a right in national laws relating to the Rights of Persons with Disabilities in the six countries. All countries have some form of accessibility standards or guidelines. In some countries they are mandatory, but not in all.

There is a wide diversity in the way accessibility is addressed in legislation in different countries. Other than an overarching disability law it is also the construction laws that address accessibility in some countries. The legislative environment is complex, requiring different committees or departments to monitor implementation. There are also variations in the way the national-level legislation is adopted by provinces or cities and then implemented. The responsibility for implementation often is with the local government or the municipality.

Localisation to drive accessibility in cities, World Blind Union and UCLG

One of the initiatives looking to address the diversity of global policy on accessibility and weak spots has been led by the World Blind Union (WBU) and United Cities and Local Governments (UCLG) in collaboration with UN-Habitat, the International Disability Alliance, the GAP PCG Older Persons Constituency Group and the Cities for All Network. The collaboration has produced a policy brief: 'Localisation to Solve the Accessibility Crisis: recommendations to State Parties for immediate action'. One of the strengths of this resource is that it has been developed in partnership with representatives of both Organisations of Persons with Disabilities and representatives of local governments.

Its main purpose is to:

- with disabilities, older persons and their representative organisations in achieving accessible and inclusive infrastructure and services for all in urban and rural settings
- and removing accessibility barriers for all in line with the CRPD and the global agendas through recommendations.¹⁸

To directly support local and regional governments in delivering on localisation, the following actions are recommended:

- Adopt laws, policies and strategies that promote inclusion and accessibility.
- Foster inclusive engagement in policy and decision-making processes
- Allocate adequate resources to implement accessibility measures.
- Collaborate with diverse stakeholders such as civil society organizations, academia and private sector partners, to promote inclusion and accessibility.
- Promote inclusive data collection and monitoring on accessibility
- Advocate for inclusive policies at the national, regional and international levels.
- Undertake VLRs (Voluntary Local Reviews) and VSRs (Voluntary Subnational Reviews). ¹⁹

• To emphasise the critical role of local and regional governments (LRGs), persons

Support national governments and LRGs to collaborate to deliver on localisation

The terminology used to address inclusive environments in the legislation varies in different countries. Indonesia, India, Kenya and Colombia use the term 'accessibility'. In Sierra Leone, the legislation uses the term 'barrier free environment for access' and Mongolia uses mostly 'barrier free environment for universal access' and also 'universal design' in places.

Key legislation on disability inclusion and accessibility in each country

Colombia

Legislation	Туре
Law 1618 of 2013	
Law 361 of 1997 & implementing decree 1538 of 2005	
Law 1287 of 2009 (addition to law 361 of 1997)	
Law 762 of 2002	
Conpes 80: National Public Policy on Disability	National Disability
Law 1618 of 2013	
Agreement 13 of 2011	
Conpes 166 of 2013	
Political Constitution (1991), articles 13, 47, 54 and 68	National
Law 1712 of 2014	National Construction
Municipal Agreement 144 of 2019	Local level Disability
Municipal Agreement 86/2009 - Regulated by Decree 221 of 2011	National & local level Disability



Areas of unplanned developed such as informal settlements are particularly challenging as it is difficult to regulate construction in these areas through policy.

India

Legislation

Rights of Persons with Disabilities Act 2016 wi Persons with Disabilities Rules 2017

National Building Codes

Building By-Laws of the State. Guided by the Building By-Laws 2016

Varanasi City plan 2001

	Туре
ith Rights of	National Disability
	National construction guidance
Model	Provincial Construction
	Local plan

Indonesia

Legislation	Туре
Law No. 19/2011 concerning the ratification of Convention on the Rights of Persons with Disabilities.	
Law 8 of 2016 on persons with disabilities. Implementing Regulations no. 42 of 2020 for the accessibility of settlements, public services, and disaster protection for persons with disabilities.	National Disability
Presidential Decree No. 83/2019	
Law No 11/2020 on Work Creation (Omnibus Law) followed by Government Regulation No. 16/2021 for implemention. Regulation of the Minister of Public Works and Housing No.14/PRT/M/2017 Regulation of the Minister of Public Works and Housing No 03/PRT/14/2014	National Construction
ocal legislation from Solo Local Law No. 2/2008 on isability Rights and Regulation of Mayor of Solo No. /2013 guidance to implement the law	Local Disability

Kenya

Legislation	Туре
Persons with Disabilities Act No. 14 of 2003 revised in 2010	National Disability
Constitution of Kenya 2010	National
National Disability Mainstream Strategy 2018 - 2022	National plan
Kenya Vision 2030	National strategy
National Construction Authority Act (No. 21 of 2011)	National building

Mongolia

Legislation
Law on the Human Rights of Persons with Disab
Construction Law (revised) 2016
Sierra Leone
Legislation

1991 Constitution of Sierra Leone

Persons with Disabilities Act 2011

Education Act of 2004 Child Rights Act of 2007

Radical Inclusion policy 2021

Sierra Leone's Medium Term National Developr (2016 – 2023)

Education Act of 2004 Labour Act, 2004 Child Rights Act of 2007 Sexual Offences Act 2012 Gender Equality and Women's Empowerment (GEWE) Act 2022

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pilities 2016

National Disability

National construction

	Туре
	National
	National Disability
	National
	National
ment Plan	National
	National

The key policy gaps

- Multiple legislations guiding accessibility in the country lack clarity. The relationship between the building and disability laws and regulations is not always clear. Moreover, the national legislation is not always translated and adopted appropriately in the local building regulations or plans - leading to a disconnect. Where the building laws also mandate accessibility, they do not address the topic comprehensively.
- The requirement for the private sector to comply with accessibility requirements is not always automatically adhered to unless it is specifically mandated in law. Even when the private sector is specifically mentioned, the sector lacks awareness about it and the monitoring by the authorities is poor.
- There are penalties in the disability law for non-compliance with the accessibility requirements within the timeframe specified in the law. However, none of the countries has managed to meet their target. For example, according to the Clause 22 of the PDA 2003/2010 building owners are required to adapt their premises within five years, which ended in 2015.
- Penalties are low and anecdotal evidence suggests that some construction firms would rather pay a fine than consider accessibility in their project. Moreover, there isn't a mechanism to monitor and process the penalties.
- Implementation of standards is still poor in most countries. This is because in some countries they aren't mandated, in others, there are multiple documents guiding design requirements that bring ambiguity. None of the countries had the need for accessibility embedded in the public procurement process.
- The participation of persons with disabilities and their organisations throughout the planning and implementation process was reported to be poor, even though it was seen as being critical for creating inclusive infrastructure.
- A lack of disability-disaggregated data for city planning was identified without which city planning processes cannot address the needs of persons with disabilities adequately.



It is more difficult to regulate privately-owned spaces such as commercial venues.

Guiding global frameworks

There are several global frameworks guiding inclusive environments.

20 December 1993

Custodian: UNOHCHR Standard Rules on the Equalization of Opportunities for **Persons with Disabilities**

Rule 5 on Accessibility requires States to recognize the importance of accessibility in equalizing opportunities. It required the States to introduce programmes of action to make the physical environment accessible; and provide access to information and communication.

13 December 2006

Custodian: UNOHCHR

UN Convention on the Rights of Persons with Disabilities

Accessibility is a General Principle that needs to be considered when addressing all rights of persons with disabilities. A stand-alone article on accessibility requires States to ensure access for persons with disabilities, to the physical environment, transportation, information and communications technologies and systems, and public facilities and services, in urban and rural areas.

18 March 2015

Custodian: UNDRR

Sendai Framework for Disaster Risk Reduction

Principles of Universal Design to be used in reconstruction to ensure building back better. Engagement of persons with disabilities and their organisations to be engaged while assessing disaster risk and in designing and implementing plans tailored to their needs using principles of universal design.

1 January 2016

Custodian: UNDESA

Agenda 2030 and the Sustainable Development Goals

To ensure that No One is Left Behind, inclusive environments become critical to meeting several Goals. Goal 11 to "make cities inclusive, safe, resilient, and sustainable" embeds accessibility as an important criterion to address in city development.

October 2016

Custodian: UN Habitat

New Urban Agenda

The NUA aims to ensure that future cities, towns, and basic urban infrastructures and services are more environmentally accessible, user-friendly, and inclusive of all people's needs, including those with disabilities.



The role of the UNCRPD in inclusive cities

The United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) is the first global framework on the rights of persons with disabilities that is binding for the countries that have ratified it.

The Convention considers accessibility as a pre-condition for the fulfilment of all other rights. Recognising that accessibility cannot be achieved immediately, the convention also provides for the States to implement accessibility progressively.

The UNCRPD has had a significant impact on the creation of inclusive cities, especially in three ways:

- The UNCRPD has laid the standards for the rights of persons with disabilities that have not only raised awareness about them but are also recognised and absorbed in global and regional agreements. This has resulted in persons with disabilities now being recognised as important stakeholders. The need for building inclusive environments is well recognised in these agreements as is evident in the Sendai Framework for Disaster Risk Reduction (SFDRR), the Sustainable Development Goals (SDGs), and the New Urban Agenda (NUA).
- Most countries around the world have ratified the convention. Several countries have already harmonised their legislation for persons with disabilities with the UNCRPD addressing accessibility as a pre-condition to inclusion. The six case study countries have ratified the convention and amended their existing legislation or adopted a new law harmonised with the convention, which are now guiding accessibility in these countries.
- The UNCRPD has provided a monitoring mechanism by the Committee on the Rights of Persons with Disabilities. Five out of the six case study countries have been reviewed by the Committee on the Rights of Persons with Disabilities and have received concluding observations that emphasise the need for the countries to develop a cross-sectoral National Accessibility Action Plan for the built environment, housing, transport, ICT and all services open to the public involving all levels of government, with a time frame and budgetary allocations to achieve it. They also recommend strengthening the monitoring and evaluation processes and engaging the OPDs for monitoring.

Though the UNCRPD provides a good framework for policies, what was evident from the six cities and emphasised by the participants was the gap in implementation and monitoring. Global frameworks are not having the local impact they could.

Key differences and similarities

Range of legislative framework

There are wide differences in the existing legislative frameworks that exist in the countries addressing inclusive environments. The Disability Rights legislation is the most important legislation addressing inclusive environments in all countries. In Colombia and Kenya, their Constitution (Constitution of Kenya, 2010; Constitución Política de Colombia, 1991) also addresses inclusive environments. In some countries, the construction laws and policies address accessibility for persons with disabilities such as the Construction Law (revised) 2016 in Mongolia (Construction Law, 2016), National Construction Authority Act (No. 21 of 2011) in Kenya, Law No 11/2020 on Work Creation (Omnibus Law) and Regulation No. 16/2021 for implementation in Indonesia, and Law 1712 of 2014 in Colombia.

Legislation exists at the National level in all six countries with some having policies at the provincial level such as the State Building byelaws in India and also at the local level, such as the Local Law no. 2/2008 on Disability Rights and Regulation of Mayor of Solo No. 9/2013 guidance to implement the law in Surakarta, and the Municipal Agreement 86/2009 - Regulated by Decree 221 of 2011 that addresses Medellín´s Public Policy of Disability in Medellin.

On the benefits of having local laws, participants from Indonesia said:

"The local law which is strengthened with mayoral regulation for its implementation had enabled the bureaucracy process in each department to better implement disability equality in the city. These were also the basis for communities or civil society actors to act or file lawsuits when there was an inappropriate implementation."

Participants reflected on the complexity of the legislation and its implications on implementation. The complexity in implementation seemed more pronounced in a large and diverse country like India where variation in National and local guidance was more pronounced according to the participants. Participants from India highlighted the challenges in the implementation of the National level legislation at the local level where monitoring becomes complex. According to them:

"The three tier system of governance (National, state and city level), makes the current statutory systems slightly complex. As Harmonised Guidelines is a national guideline, it needs to be adopted in the state byelaws and city master plan and development control regulations." Multiplicity of legislation and regulations guiding accessibility also created ambiguity. For instance, participants from Colombia said:

"Colombia is a country with a very comprehensive regulatory framework in all aspects; however, the fact that there are different laws and agreements that mention the same thing, without there being a unified document on accessibility, tends to cause confusion and interpretations that often limit the timely intervention of spaces, systems and information. Likewise, the implementation of this diversity of norms is complex. Proper monitoring is difficult, which means that in many cases the rules remain on paper."

Integrating accessibility from the start and retrofitting

Legislations in four of the six countries require accessibility to be provided from the beginning before construction starts, at the building drawing approval stage. The drawings need to be approved by the authorities before commencing construction.

In India, the RPDA 2016, says that no establishment should get permission to build or a completion certificate, unless accessibility is addressed and provided. In Indonesia, Law No. 11/2020 on Work Creation (Omnibus Law) has replaced Law No. 28/2002 moving the Building Permit (IMB) process from the regional government and introducing the Building Approval (PBG) process at the national level with Regulation No. 16/2021 for its implementation. Now all building approval processes are documented and processed through a national-level Buildings Information Management System (SIMBG) database run by the Ministry of Public Works and Housing.

In Mongolia, the HRPDA 2016, forbids the State Admission Commission to grant permission to build unless accessibility is addressed. In Colombia, Law 1681 of 2016 mandates the Ministry of Housing, City and Territory to grant a licence for construction only if accessibility is provided. The legislation in Kenya and Sierra Leone are both more focused on retrofitting accessibility into buildings and services and do not mandate the building permit process to ensure accessibility.

Retrofitting accessibility into the existing buildings is an important aspect of the legislation. Five countries also have timeframes in the legislation to achieve retrofitting.

Penalties for non-compliance

Country	Legislation	Timeframe for retrofitting		Co	untry
Colombia	Law 1618 of 2013	Achieve an accessibility level of minimally 80% within 10 years for the built environment and transport. Ends in 2023.		C	olombia
dia	RPDA 2016	5 years from the time implementing rules are provided for making public buildings accessible. Extension can be granted depending on Government preparedness. Ends in 2023		In	dia
ndonesia	Regulation 42/2020	5 years for service providers to adjust their services to enable access for persons with disabilities. Ends in 2025.	-	lı	ndonesia
Kenya	PDA No. 14 of 2003 revised in 2010	5 years time limit for retrofitting from the time of enactment of the law. Ends in 2015			
Mongolia	No specific legislation relating to timeframes for retrofitting.	N/A			
Sierra Leone	PDA 2011	Five years time limit for retrofitting from the time of enactment of the law. Ends in 2016.			Kenya
l countries have e deadlines se veral activitie ghlighted the pacity for imp	ve either already missed th et. Reflecting on the misse s that have been undertak need for factoring in the ti plementing accessibility in	neir deadline or are way behind being able to meet of timeframes, participants from India shared about ten by the government to reach the goal. This me and steps required for building institutional a city.			Mongolia
					Sierra Leone

nalty for non-compliance

r private or legal persons, a penalty will range tween 50 to 200 legal daily minimum wages in ce. ¹⁷ Government authorities will be penalized per the Law of Administrative Responsibilities Public Servants and other applicable norms.

nalty of INR 10,000/- for the first contravention. bsequent contraventions would result in a fine NR 50,000 up to INR 500,000.

nalty on building owners/managers. These nalties are a) a written warning; b) a limitation construction activities; c) a temporary or rmanent suspension of construction activities; a temporary or permanent suspension of ilding usage;e) Suspension of the construction rmit; f) Revocation of the construction permit; Suspension of the certificate of building oper function; h) Revocation of the certificate building proper function; or i) Ordered for molition of the building.

n-compliance to an adjustment order to a blic premises, service or facility is liable to a fine t exceeding 20,000 Shillings or to imprisonment a term maximum of 1 year or to both.

crimination involves a 14-day training aimed at specting the rights of persons with disabilities d raising awareness. Harm or damage by ong actions against persons with disabilities individuals, legal entities and public servants all be reimbursed by the guilty party according the relevant laws.

less exempted is liable to a fine not exceeding ,000,000 Leones or to imprisonment aximum of 2 years or to both for not following & Commission's orders. While all countries have a penalty for not providing accessibility, there is no evidence that any of the country's penalties have been enforced. None of the countries have a mechanism for implementing it.

Participants felt that the penalty amount is low and anecdotal evidence suggests that some construction firms would rather pay the fine than consider accessibility in their project. Moreover, there isn't a mechanism to monitor and process the penalty.

Participants from Indonesia felt that sanctions were mainly useful for getting public attention through social media or any other media. For example, the provision of guidance paving in front of Jurug Zoo in Surakarta went viral due to being laid incorrectly. This was immediately resolved by the responsible stakeholders after the news was publicly known.

This has shown the importance of raising awareness on inclusive design and its function to wider audiences, not only the community who can monitor the process but also the private sector who are involved in the implementation process.



Proper implementation of accessibility regulations or standards is crucial to their success, but is often missed.

Standards & procurement

There are a range of standards that exist in most countries. In some countries, the construction law mandates accessibility while in others it is the Disability Law mandating it. In some countries, technical standards are a separate document while in others they are a part of the building codes. Some countries have both. Some country participants felt that the building codes did not address the needs of persons with disabilities adequately and that having separate, much improved and progressive accessibility standards/guidelines was important.

The table on the right lists the type of technical standards, codes or guidelines relating to accessibility that each of the six countries have and the legislation guiding these.

Country	Legislation	Build
Colombia	Decree 1316 of 2009 provides minimum requirements and some design guidelines and mandates compliance. Decree 1538 of 2005 Status: mandatory Implementing agency: Municipal administration of the city.	
India	RPDA 2016 The Harmonised Guidelines & Standards for Universal Accessibility in India 2021 Status: mandatory Implementing agency: Ministry of Housing and Urban Affairs	Secti Build State mane Imple agen India
Indonesia	Regulation of the Minister of Public Works and Housing No.14/ PRT/M/2017. Status: Mandatory	Build in SN (Each own s regul

Status: Mandatory Implementing agency: Department of Public Works in each city/region.

ding Code

Technical Standard

NTC 4143; NTC 4144; NTC 4201, NTC 6043.

Status: Mandatory **Implementing agency:** Curadurias (agency in charge of issuing building permits).

ion in the National ling Codes 2015

t**us:** nondatory **ementing ncy:** Bureau of In Standards

ling guidelines are N 03-17281989 h regency has its set of building lations)

Status: Mandatory Implementing agency: Badan Standardisasi Nasional

Country	Legislation	Building Code	Technical Standard
Kenya		A section in National Building Codes of 2022 addressing accessibility requirements and refer to ISO 21542	KS ISO 17069:2014 KS ISO 17049:2013 KS ISO 19028:2016 KS ISO 17069:2020 KS ISO 19029:2016
		(Building construction -Accessibility and usability of the built environment). Status: Mandatory Implementing agency: County Government - Lands and Physical Planning	Status: Implementing agency: Kenya Bureau of Standard
		Department	
Mongolia			MNS 6055:2009 MNS-6056:2009 MNS-6808: 2009 52 new standards have been introduced for Ulaanbaatar city in 2023. 19 of these have articles relating to disability inclusion.
			Status: Mandatory Implementing agency: The City Standards and Controlling Agency
Sierra Leon	e	A section in the Draft National Building Codes of 2016/17	

Status: Mandatory **Implementing agency:** Ministry of Works and Public Assets. veloping and mandating ere is a multiplicity of idelines, building codes nt that potentially make

lation that mandates standards for the built ries, when procuring sure accessibility or

tion as standards ountries and did not icipants from India national guidelines were al byelaws were often nal standards.

The key policy gaps identified

The following challenges were highlighted around the implementation of the legislative framework for inclusive environments in country.

Complex legal frameworks and their translation to provincial and local policies

All country participants highlighted the complex and sometimes conflicting legal frameworks related to inclusive environments. There is a need for streamlining and bringing clarity and consistency for better implementation. Furthermore, the translation and adoption of the National legislation for disability or construction guiding inclusive design requirements into provincial or local policy and practice were seen as a challenge. There is a need for harmonising national and regional/city-level policies. Countries with laws guiding inclusive environments felt it aided the inter-departmental bureaucratic processes to better implement disability equality in the city. These were also the basis for communities or civil society actors to act or file lawsuits when there was an inappropriate implementation.

Meaningful engagement of persons with disabilities

The need to include the voices and perspectives of persons with disabilities in the development and implementation of policies and standards was identified. It was highlighted that often policies and standards did not address the diversity of disability. For example, there is still often a focus on mobility impairments with little to no consideration for persons with neurodiversity or non-visible disabilities. Genuine involvement of persons with disabilities could help ensure that policies and standards address the full spectrum of disability.

"There is insufficient participation of people with disabilities in urban planning, though there are some consultations on the provision of accessibility. There is no provision for the participation of people with disabilities in re-planning of the Ger districts."

Participants from Mongolia

Timeframes and penalties

Countries have missed the timeframes their legislation set for achieving accessibility. It was highlighted that the time required for building the preparedness for the implementation wasn't accounted for and should have been factored into the timeframes. There was only anecdotal evidence of penalties being issued with a need for the government to implement penalties, ensuring they are right-sized and actioned. Rewarding good practice implementation was recommended as a potential way forward. Rather than have sanctions for poor delivery, a more positive approach could have more impact and start to create 'desire' to do this well, while generating some healthy competition in the construction and development sector.

Implementation and monitoring

Though the countries have a good legislative framework there is a gap between policy and actual implementation. This came through from all the countries in all aspects of implementing legislation, policy, building codes and standards.

Awareness and training

There was a need for raising awareness about the laws and accessibility standards in place. It was felt that most stakeholders would benefit from training including; political representatives, government officials, the private sector service providers and the community at large.

Data collection

The need for disability disaggregated data collection, particularly from the ground level for policy development was emphasised.

Accessibility standards

A need to ensure that all countries have accessibility standards or guidelines that are clear and contextualised to the country was seen as being important to achieve inclusive cities. Accessibility standards must address the unique local needs and contexts of the diversity in the community and amongst persons with disabilities. Often there was a lack of clarity about what standards were to be used. Standards that were a part of the building codes were often considered to be baseline and therefore inadequate. They also emphasised the need for aligning national standards and guidelines with regional and city standards.

Disability-inclusive city profile: Solo (Surakarta), Indonesia by Kota Kita and UNESCO

In 2018, Kota Kita conducted an inclusive city profile of Solo.

Kota Kita and UNESCO has developed an approach to profiling a city for accessibility and inclusion that included engaging citizens. These studies were undertaken in the cities of Surakarta (Solo)²⁰ and Banjarmasin and a guide to reproduce the participatory process was produced. ²¹ The steps are as follows:

Phase 1:

- Collect and consolidate baseline data.
- Develop data collection methodology.

Phase 2:

- Implement surveys.
- Focus group discussions.
- Data analysis.

Phase 3:

- Writing the city profile.
- Dissemination workshop.

The report on the city of Solo captures vital information about the profile of persons with disabilities in Solo including spatial distribution, type of disability, information on education and livelihoods. The study also captures data on accessibility both in terms of physical accessibility and access to basic rights. Its main findings were that access to services and accessibility of infrastructure are uneven, lack of inclusive education is a barrier to further opportunities and persons with disabilities have limited opportunities to participate fully in civic life.

The study is exemplar in the level of detail it provides at a city level on disability data.

The markets in Surakarta aim to be accessible, but the use of the space by the traders and general public can sometimes create barriers.



What Works?

The Nairobi Country Integrated Plan (2023 – 2027)

Is a five-year plan that guides development in the county. The plan is intended to improve the quality of life for people and contribute to devolution. It establishes a comprehensive framework for creating and adopting city and county plans. The latest plan addresses disability comprehensively in all parts. It is believed that that plan will be of significance in ensuring accessibility of the built environment. Its impact may not be felt in the short term but rather in the long term especially with new development projects coming forward.

Indonesia prioritises 'Disability Champions'

Indonesia is unique among the six countries as the Presidential office helps facilitate participation and champions a human rights approach to disability inclusion, demonstrating the highest level of leadership and commitment. The presidential office has a direct link to the president and ministerial level where advice on strategic issues can be delivered through this office - enabling disability mainstreaming in each sector at the national level (such as infrastructure, social assistance, health, education, employment, etc.). This would considerably reduce the time taken for Ministerial orders to come and amplify the agenda towards inclusive cities in the country.

Medellín public policy on disability

Is a good example of enhancing participation of persons with disabilities and their caregivers, ensuring they are pro-actively contributing, which also helps raise awareness and change attitudes of other city stakeholders. This activism has resulted in demands for the Metro system to improve accessibility and contributed to the construction of Parques de Río. Moreover, Under Agreement 144 of 2019, which implements the Rights of Persons with Disabilities and Statutory Law 1618 of 2013, an Accessibility Committee of Medellin (CAME) has been constituted. This committee comprises of representatives from various city administration departments, public transport bodies, and a range of persons with disabilities. It recognises the importance of involving persons with disabilities in decision-making processes and project design. The committee has oversight to help ensure that inclusive infrastructure is delivered in Medellin.

India's ABLE (Accessibility Assessment for Built Environment)

India's - Certification Framework for assessing accessibility in Public Buildings (NIUA & Committee Members) is the first of its kind attempted anywhere in the world in the field of accessibility evaluation of a building. It is an initiative of the Ministry of Housing and Urban Affairs. The Ministry developed the Standards but felt the need to create objective methods to encourage its wider adoption and greater implementation. The framework is to assess the building design, evaluate the level of accessibility, identify the gaps, and encourage best practices. Thus, the framework acts as an assessment tool to measure and rate a building's accessibility compliance or performance by the building architects and engineers. It also aims to evaluate accessibility compliance in the entire building planning cycle as well as its operation and maintenance phase results over its full life.

The framework has yet to be used in an implementation project. Various public buildings were audited in the development stages of the framework (Nirman Bhawan and Vigyan Bhawan in New Delhi). Furthermore, a few buildings (Rudrakash Convention Centre and Municipal Corporation Office) in Varanasi were audited as part of the training and dissemination work by the NIUA team.



This building demonstrates the importance of audits to create more accessible environments, in this case, to access a doctor's office in Varanasi.

Practice

Overview

'Practice' covers all aspects of actual delivery of inclusive design of the built environment. It is concerned with implementation and is also where good (and bad) examples of inclusive design in the built environment can be highlighted for reference. 'Practice' includes both the inclusive design process for delivery (inclusive design in practice) and examples of delivered solutions (the inclusive outcomes that are delivered).

Throughout the research, there has been a constant appetite for examples of good 'practice'. In many places, if inclusive design is relatively new as a concept and isn't particularly well understood, then people seek examples in order to 'see' what good looks like.

Projects: what is being built?

In preparation for the practice virtual workshop with our local research partners, as forementioned (on page 23), we undertook a review of global infrastructure projects searching for project categories that cited being disability inclusive. This helped us understand what building sectors were currently demonstrating and advocating good inclusive design practice. The top three building sectors to come from that global review were: Transport (88/354 projects), Public Open and Green Space (72/354 projects), and Public Buildings (45/354 projects).

As previously discussed with use of the graphs (on page 25 to 28), we compared

the priorities from the point of view of city stakeholders and also local persons with disabilities. What these exercises clearly demonstrated was a disparity between infrastructure sectors that were 'publicly' demonstrating good inclusive design practice versus sectors that were actually important to people.

Consistently, across the cities, the data indicates good inclusive housing and access to healthcare and education are a priority for people. Yet, these building sectors currently have a relatively low rate of projects demonstrating good practice at a global scale (23-27/354 projects each).

Small pilot projects

A good way to demonstrate what good looks like and to help generate wider interest is to deliver relatively small and cost efficient pilot projects. A pilot project can test inclusive design processes and be used to showcase the benefits that inclusive design brings. This can help galvanise support for wider implementation of inclusive design practice across the city and help cities 'make a start' in a relatively low risk way.

Manahan Stadium Improvement was a project piloted in Surakarta for the preparations towards the ASEAN Para Games 2022 and the U20 World Cup that were planned to be held in May 2023 – although they were ultimately cancelled. Accessibility improvements included the area inside the stadium and surrounding public space such as:

Pavement improvement surrounding the stadium

- Accommodating space for street vendors
- Wide pavement equipped with bollards and tactile paving

Pavement improvement inside the stadium area

Wide pavement equipped with tactile paving and ramps

Improvement on the stadium building

- Dedicated stand for persons with disabilities
- Toilets for persons with disabilities



A dedicated accessible stand is provided in the stadium.



The surrounding public space has been made accessible too.

Challenges for inclusive design practice

Informal settlements



Medellín's mountainsides are inhabited by 'peripheral' areas where construction is normally more informal.

The low standard housing in informal settlements and 'periphery' areas was a particular issue that came through strongly in the research across all six cities. While transport and public buildings may be demonstrating better inclusive design delivery, if persons with disabilities are isolated in inaccessible and unfit housing in informal settlements, they remain unlikely to access these services and the wider opportunities they bring. While accessibility is a concern in informal settlements, it is true that fundamental issues can take precedence as many homes have no access to power, water, or drainage. Participatory and inclusive design activities in Medellín highlighted the importance of designing to include these peripheral areas in city design.

What is notable is that inclusive design or accessibility standards do not normally apply in informal areas, which tend to not follow building regulations and norms. This creates a challenge for improving access, and suggests the need for community-led approaches to inclusive design and perhaps community programmes promoting inclusive design in informal construction. This is something practitioners should be aware of and there are opportunities to look at fit-forpurpose and localised design guidance for such contexts.

Climate change: Inclusion and resilience need collaborative practice



The lack of infrastructure in informal settlements will exacerbate climate-related disasters. This coupled with the existing inaccessibility will make the worsening climate crisis severe for persons with disabilities.

The impact of climate change and its related industries is influencing practice. Climate change is already having a significant affect in the six cities, with many persons with disabilities being disproportionately adversely affected. However, city planning and design still tended to consider climate sustainability and disability inclusion separately rather than as interconnected issues. Policies and standards do not speak to each other. There is also a tendency for climate efforts to focus on disaster responses and more immediate concerns, neglecting the importance of access in long-term climate adaptation and mitigation work. Cities need to address climate mitigation and adaptation in a pro-active and integrated way, alongside disability inclusion and inclusive design. Often, when siloed, climate responses can actually exacerbate issues of exclusion. Similarly, it is important that inclusive design solutions are mindful of impact on the planet, which can be done more effectively when the two work together from project inception.
Putting inclusive design into practice

Co-design

One of the key points emerging from the research, across all six cities, was the importance of collaboration and co-design with local people, including persons with disabilities. This has proven to be vital in ensuring that solutions delivered meet the needs and aspirations of all members of the community. It also helps create a sense of belonging, as local people feel part of the project, which can help the project be successful immediately and long-term.

Co-implemented project in Kenya

Kilimanjaro Blind Trust Africa has incorporated advocacy activities targeted to promote accessibility to the built environment in Kisumu City County and West Pokot County. The project was co-implemented with UNICEF. It looks at the accessibility to the built environment specifically to facilitate the utilization of AT products to access public health and educational services by children with disabilities in humanitarian settings. It is important to highlight how this initiative specifically looks at the use of AT products in the built environment.

Strategic leadership

To ensure an inclusive built environment is delivered in practice requires strong leadership from national and local government. This includes coordinated and cross-cutting policies on disability inclusion that provides clear responsibility and accountability for delivery. If delivery of inclusive design is promoted, or better yet, mandated, from the top, then it is more likely to be acted upon and therefore be successful. Enabling persons with disabilities to be employed in these sectors, at all levels, can enhance strategic inclusive leadership.

Advocacy -Strong OPD networks

The role of advocacy is important in supporting good practice delivery. Some cities and countries have Disability Commissions or Committees where OPDs are represented with a remit to hold the national/local governments to account. However, often, they lack dedicated resource and have limited powers to affect real change on the ground - such as the Disability Committee in Freetown, Sierra Leone. As with legislation and policy, there is a risk that once in place, local governments feel like the job is done. However, any such Committee or Commission must be supported to have an impact in practice.

Education and industry

Education underpins inclusive practice. Practitioners also have a responsibility to continue to learn and educate. Education efforts should consider:



Educating society about disability, starting with young children at school, to help prevent stigmas and negative attitudes from forming in the first place.



Funding may also be required to support persons with disabilities living in poverty to acquire a good education, for example, access to assistive technology (AT).



Educating the built environment 'implementers' who are responsible for the built environment around us. This includes planners, designers, architects, builders, managers and maintenance crews. Education and training should include mandatory inclusive design courses.



Educating procurement staff about the importance of inclusive goods and services to ensure procurement requirements embed inclusive design principles.

Attainment of a **good education** by persons with disabilities. This involves access to education, both in terms of the physical infrastructure, the curriculum and teaching support.

Educating parents and guardians about how they can support children with disabilities to attain a good education.

Educating **service** delivery staff to ensure that all services offered to the public are inclusive for persons with disabilities.

Educating leaders about the importance of inclusive leadership.









Issues of stigma and attitudinal barriers can be addressed by embedding disability education in schools.

Educating young people about disability and supporting co-learning between disabled and non-disabled peers can be powerful and effective at reducing or eliminating some of the stigma and barriers that can exist in society.

This can help foster more inclusive mindsets from an early age leading to a more inclusive generation that values diversity and understands disability inclusion.

Persons with disabilities want a good education in order to get a good job and enjoy a good quality of life, and they have a right to access those opportunities on an equal basis with others. Therefore, it is important to look at the provision of education services to make sure they are inclusive. Inclusive education will support all children to learn and perform to their full potential. Infrastructure needs to be inclusive, kindergartens, schools and higher education facilities should all be accessible. The curriculum should be inclusive with assistive technology (AT) available to students who need it. Teachers should also be trained to support children with disabilities both in mainstream schools and dedicated schools for children with additional support needs. Equally, training and support should be provided to parents and guardians of children with disabilities to know how best to support them.

The specific education of professionals working in the field of disability inclusion and inclusive design of the built environment is essential. Currently, training on inclusive design is not common practice

for most professionals working in the construction industry. This needs to change if we want to see effective implementation on the ground. People cannot deliver what they do not know. Even in cities where good legislation, policy, regulation and technical standards exist, there is a lack of implementation. There are many reasons for this. However, one is the lack of knowledge and expertise among key stakeholders to put legislation, policy, regulation and standards into practice. Well trained professionals are a pre-requisite for successful delivery. There is a huge opportunity for persons with disabilities, including through OPDs, to deliver education and training to built environment professionals. This also supports co-working and co-design, employment for persons with disabilities and can be highly effective.

To create an inclusive environment requires more than just inclusive infrastructure. A person's experience of a place comes from more than the physical space. It includes all the overlay, including any service provision, staff interactions, the attitudes of other people and many other factors that make up the complete experience.

Therefore, education of service delivery staff is an important aspect to consider in practice. Staff must have received good disability equality and awareness training, preferably delivered by persons with disabilities, to ensure they can support all persons with disabilities as required and to ensure they offer an inclusive service to all. Training must also reflect the diversity of disability, to account for people who are neurodiverse and people with non-visible disabilities.



Education was vital to participants in all cities, the accessibility of learning environments and tools is fundamental to ensuring equal access.

How to leverage education and training

- Embed disability inclusion education from a young age in schools and support co-learning between persons with disabilities and their non-disabled peers wherever possible.
- Ensure that all key personnel involved in the planning, design, build and management of the built environment have appropriate inclusive design training such that they understand the importance of it and how to deliver it successfully on their projects. This is essential for long-term, sustainable success.
- Ensure all service delivery staff have appropriate disability equality and awareness training, to support delivery of inclusive and equitable services to all.

- Specific training can also be important, particularly around service delivery, for example, sign language training. This is often lacking. Providing sign language training at school is a good way to ensure people have a basic understanding when entering the workforce.
- Train procurement personnel on the importance of procuring inclusive goods and services.

Machodari School, Varanasi

It is the first smart school of Varanasi and promotes inclusive education. It includes facilities such as smart classrooms, a computer lab, a skill development centre, library, multipurpose hall, inclusive playground, cafeteria, toilets, and drinking water facilities. These facilities aim to encourage children with disabilities to take admission. If successful, this could support mainstreaming inclusive education facilities.



Delivery and implementation

One of the most striking and consistent learnings from the research across the six cities was the lack of successful implementation of inclusive design, regardless of the legislation, policy, regulation or standards in place. Some of the reasons for this include:



Complex and confusing legislative context that doesn't always reflect the local context and conditions.



Ratifying the UNCRPD does not automatically translate to good practice and implementation. This requires significant energy and support.



No involvement of local OPDs or persons with disabilities to support and champion delivery through to a conclusion. If local persons with disabilities are not aware of or involved in projects, it is impossible for them to positively influence them.



Lack of a clear strategy and timeline that supports the creation of a framework to facilitate successful implementation.



Lack of funding that supports implementation. This can be specific funding or ring-fenced funds within existing project budgets.



Lack of recognised accreditation or awards (international, national or regional) that recognises and celebrates good practice. There are some examples, but they are focused on high-income countries.



Poor monitoring and evaluation of implementation. There is often no-one checking if legislation, policy or standards are being applied.



No clear lines of responsibility or accountability for implementation. Unless someone is held accountable for delivery, it will continue to fall through the gaps of wider processes.





Weak or no sanctions, in practice, for poor or no delivery.



Lack of trained, skilled and experienced implementers. There is a need to build capacity of local individuals and teams responsible for delivery. This comes back to the need for education and training. Monitoring and evaluation of delivery is a key aspect that is often lacking. Translating policy requirements and even legislative requirements into real life practice on the ground is something that needs to be addressed.

Across the six cities, there are examples of policy or legislation existing that it is simply not being delivered. Aligned to this was the concept of responsibility and accountability. Equally, the role of sanctions and incentives was raised as often it was felt that without explicit incentives for delivering good inclusive design, many responsible agents would continue to ignore it.

Often, political will is coupled with a desire to be seen by the public as doing a good job. As a result, it was considered that prominent and visible public spaces were often prioritised for improvements as they are highly visible and in the public eye. The fact that many informal settlements, where the majority of persons with disabilities lived, were not formally recognised by

the city government also made positive change challenging in these critical areas. Another political factor was how different city administrations had different agendas and therefore could have differing opinions on the approach to disability inclusion and inclusive design. It is important to have consistency across key topics like disability inclusion. Therefore, it is preferable to have non-political civil servants working in the city government, especially the city planning departments, who are not affected by party politics and election cycles. This helps provide some stability to the city's approach to disability inclusion. This requires a robust framework for delivery.

The quality of implementation was also raised. While getting any implementation is a goal in some cities, it must be to a good standard. Low quality or ineffective implementation can be just as disabling as no implementation, and in some cases can even make things worse.



Case study 1: Namo Ghat

Namo Ghat in Varanasi is a project that seeks to address the challenge of how inaccessible the city's Ghats are. Namo Ghat is a dedicated renovation project, the 85th Ghat in the city. The Ghat offers various facilities such as a food court and has been designed with accessibility features including ramps, accessible toilets, seating and even aims to have accessible bathing facilities, to provide safe access to river bathing for visitors with disabilities. This project offers an example of how ensuring culture and heritage is accessible to all. While it does not offer a solution for the existing sites across the city, it does begin to look at how Varanasi can create inclusive cultural experiences. Other sites across Varanasi are also looking to exemplify accessibility, such as the Kashi Vishwanath Temple.



Namo Ghat in Varanasi is a pilot project to create a fully accessible Ghat.

Case study 2: Matatu's driver's initiative in Nairobi

Public transport in Nairobi is inaccessible and a major barrier to mobility for persons with disabilities. While infrastructure development is needed, there is also great opportunity for social interventions. For example, Matatu drivers in Nairobi learned to accommodate wheelchair users through an initiative that facilitated understanding and cooperation. This was done by bringing drivers and service users with disabilities together to discuss the issue and become acquainted.



Kashi Vishwanath temple has also made efforts to create accessible spaces.

Barriers to good practice

Process related barriers



Thinking policy and standards will deliver action. This is not the case. A lack of implementation was a real source of frustration from all of our cities with often, 'the rules remaining on paper'. **Translating legislation, policy and standards into real-life practice and delivery on the ground is what is needed.** Ultimately, there needs to be greater clarity on roles, responsibilities and accountability, to ensure that inclusive design is delivered.



Inconsistency is a problem. Inconsistencies between the local, regional and national level. Good inclusive design works best when it is applied consistently, hence the **need for robust, consistent and clear national legislation, policy and standards** that flow coherently to regional, local and city application.



Funding can be a barrier. Funding into development and infrastructure often comes with caveats and requirements. However, the need to deliver inclusive design is not always included or prioritised. Funding must acknowledge the need to deliver inclusive solutions and hold projects to account ensuring delivery. Where disability related funding is provided, it is often siloed and sits within a single Ministry or department, when it is a cross cutting issue. This can lead to fragmented and inconsistent delivery of inclusive solutions.



First/last mile considerations are often lacking. Inclusive interventions can be made, with little or no consideration of how persons with disabilities will access them, from their homes. This can create **islands or pockets of inclusive design that are unconnected** and therefore still not accessible by the majority, a symptom of inclusive design practice that is isolated to singular interventions rather than a whole city intervention.



Clarity on responsibility. Linked to the funding point before, disability is a crosscutting issue. However, responsibility for disability related issues is often assigned to one Ministry or department. This can result in very fragmented delivery and a lack of consistency. There needs to be a cross-cutting city-wide strategy to disability inclusion and inclusive design with clear lines of responsibility and accountability.



Lack of capacity. Resources at city government can be constrained and in house expertise is often not available. Cities would benefit from having a **dedicated responsible** inclusive design officer.

Attitudinal and service delivery barriers



Lack of training of front-line staff. Even if buildings are accessible, the staff working there need to have good disability equality and awareness training and sign language training, in order to support all persons with disabilities. This includes being aware of hidden or non-visible disabilities.



Attitudinal barriers exist. These can cultural and can have a significant effect on persons with disabilities being recognised as valuable members of the community who have a voice to be included. Education and awareness raising is often the first step to help eliminate these attitudinal barriers.



In some cases, **the diversity of disability is not considered.** For example, there can still be a tendency to focus on wheelchair users and people with a physical disability. In these cases, education and awareness raising is necessary to ensure that all disabilities are considered in built environment design solutions, including neurodiversity and hidden/non-visible disabilities.



Where attitudinal barriers prevent persons with disabilities going out in their communities, it can perpetuate false impressions about persons with disabilities, for example, that they don't exist, are a minority or don't want to take part in society. It is important that persons with disabilities are visible and active in their communities and cities. This helps break down attitudinal barriers while also helps the city identify key areas for physical access improvements, to support better access and inclusion.

Physical infrastructure barriers

Physical infrastructure barriers are significant. Physical barriers exist for diverse impairments from mobility, visual, hearing to sensory and poor practice can create additional barriers. The following examples demonstrate some common barriers found and possible solutions.



Often, the **topography** of the city was a 'natural' barrier to access. Cities such as Medellin and Ulaanbaatar sit in a basin with the periphery areas, which is where informal settlement areas are, being steeply sloped. The availability of public transport options can also be reduced in these areas. This demonstrates how inclusive design cannot simply be an overlay, but should be discussed at the point of land use and planning. **Quality of implementation.** Tactile paving can be installed incorrectly rendering it at best useless, at worse dangerous.





Persons with disabilities are often living in **informal settlements**. Informal settlements present a multitude of physical infrastructure barriers and are often not regulated by the built environment industry. There are often no, or limited, road or pedestrian routes, no drainage, no running water, no power, or very unreliable power. These are challenging environments for anyone but can be impossible to navigate for persons with disabilities.

Solution – improving these areas must be a priority. If persons with disabilities are 'trapped' in these areas, they cannot reach

and enjoy any other access improvements in

the city.

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Solution – Medellin has tried to combat this by introducing some innovative public transport interventions including public escalators and cable cars to support access into the high neighbourhoods. **Solution** – inclusive design and accessibility training should be extended to all built environment practitioners, including contractors, to ensure quality implementation. Having an inclusive design lead who can supervise a project through delivery, can also support these teams to ensure mistakes are identified and corrected.

80 Practice



Lifts are often cited as being too expensive and unreliable in places where electricity supply is not consistent. This can result in high rise buildings being built, including homes, without any level access to upper levels. This creates large parts of cities that are 'exclusive' and does not future proof the city for when power supplies do become reliable.



Possible Solution – for sustainability, we must future proof our buildings as much as possible. Therefore, lift shafts could be provided in buildings to allow the future installation of passenger lifts when finances and electricity reliability allows.

What works?

What does good look like?

So what works to deliver inclusive environments? This can be separated in terms of both the process applied and then the solution or outcome delivered. An inclusive process yields an inclusive outcome, so we must consider both components to know what success is.



Culture must support inclusion. An inclusive culture is needed to ensure an inclusive built environment is delivered. The built environment alone cannot deliver inclusion. The attitudes and actions of other people, along with the service delivery, information provision and physical infrastructure are what create inclusive environments.



Advocacy is needed and must be supported by the local government.

This can be done through a Commission or by a supported network of local OPDs. Advocacy should lead to collaboration and where this is done it tends to lead to more inclusive solutions.



Collaboration and sharing knowledge are important. Cities should not need to 'reinvent the wheel' when it comes to disability inclusion and inclusive design. There is a lot of knowledge, experience and good practice examples in the world that must be shared, while taking into consideration local demographics, culture, faith and geography.



There is a great deal of potential in technology and the role of technology to create more inclusive cities. There can be a focus on personal devices when considering Assistive Technology (AT). However, **technology embedded in the city's infrastructure can also be incredibly enabling.** For example, supporting public transport use, wayfinding and accessing public services.



Bringing practitioners (delivery agents) (i.e. designers, architects, planners, builders) together with persons with disabilities to help them to understand first-hand what the current issues and challenges are and to then co-design solutions is essential. Only by including persons with disabilities in the process, can inclusive outcomes be delivered. Persons with disabilities must be involved in all aspects of city planning.



An inclusive service alongside inclusive infrastructure. Trained staff and inclusive services are just as important as an inclusive built environment. Learning from what works. Research and case studies are needed to understand what good look likes in terms of actual project outcomes. It would then be valuable to understand if this is the outcome of an inclusive delivery process.



Dedicated funding is needed to resource inclusion and accessibility. Clients can mandate accessibility in their projects. Or local government can subsidise private sector clients for demonstrating best practice. 81 Practice



There is an **appetite for an international 'accreditation' and/or repository of information** around inclusive design, that supports cities to take a pro-active role in delivering inclusive infrastructure.

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Ultimately, creating more inclusive environments is about making cities more liveable and enjoyable for all residents.

Where to begin?

There are some very clear and consistent recommendations that can be made following the challenges and opportunities identified through the research through the research from the six cities that can inform a 'Global Agenda' for inclusive design delivery, an aim of this research. The next step is to prioritise and order the recommendations summarised below, ready for inclusion in the Global Action Report, that will serve as a 'Global Agenda' for inclusive practices.



There needs to be a **cross - cutting city wide strategy** to disability inclusion and inclusive design with clear lines of responsibility and accountability.

The need for **good inclusive**, **social housing and access to education and healthcare** is a top priority.



Low quality housing in informal settlements is a particular issue and should be addressed as a priority. There is an opportunity here to develop inclusive design technical standards especially for housing in informal settlements, as this is such a unique and challenging environment.



Collaboration and co-design with local people, including persons with disabilities is vital. Only an inclusive process can deliver an inclusive outcome.



Education of all key personnel involved in the planning, design, build and management of the built environment needs to be addressed. Well trained professionals are a pre-requisite for successful delivery. You cannot deliver what you do not know.



Without **explicit incentives for delivering good inclusive design,** many responsible actors will continue to ignore it. Perhaps a positive, pro-active approach is needed and will have better impact that the retrospective approach of sanctions and penalties.



Trained staff, public attitudes and inclusive services are just as important as an **inclusive built environment** in creating a positive experience for people. Public procurement must ensure that inclusive goods and services are being provided at all times.



Technology embedded in the **city's infrastructure** can be incredibly enabling. So called, 'smart cities' must first be inclusive cities and support all its citizens.



Funding must acknowledge the need to deliver inclusive solutions and hold projects to account, ensuring delivery.



There is a need to address **climate mitigation and adaptation** in a pro-active and integrated way.



Have non-political civil servants working in the city government planning departments, who are less affected by party politics and election cycles, to achieve a consistent approach to city planning and inclusive design regardless of administrative changes, which can be frequent.

Lessons learned

O1 Lack of data on disability in cities makes it more difficult to advocate for the need for accessible cities and ensure interventions address a diversity of access needs. This includes demographic data on persons with disabilities living in cities, including in informal settlements. It also includes data on accessibility in cities. Most cities lack quantitative data on how many buildings are accessible or what proportion of the urban realm is accessible, or how they are meeting targets set out in policies. It is challenging to quantify this, so looking at models or scenario-based planning could support actionable insights.

05 Education and training is needed for everyone. For leaders, practitioners, the general public and communities. All while ensuring educational institutions are as inclusive and accessible as possible from primary to higher education. By creating a new generation of inclusive design practitioners, we can enable better inclusive education opportunities for all in the future.

OP Culture is part of an inclusive city. A genuinely inclusive city is one where people can enjoy and live well in their cities. Museums, parks, heritage sites and karaoke bars should also be accessible and inclusive, from physical design to service design to cultural awareness.

02 Implementation and capacity to deliver

are key. Local capacity is needed for local solutions. Without sustainable approaches and localisation, inclusive development of cities will not be sustainable, resilient or fit-for-purpose. Good initiatives often run out of funding or leadership changes, creating a gap in sustained progress. The enabling environment to ensure good implementation needs attention, ensuring funding, collaboration and capacity are in place to deliver on disability inclusion. Additionally, quality and consistency of implementation must be prioritised in inclusive design strategies. The role of the private sector also remains under explored.

03 Letting communities lead is crucial, including disadvantaged and grassroots groups, as they possess invaluable expertise and first-hand knowledge of their challenges. By empowering community groups with training in inclusive design and supporting them in implementing inclusive solutions, they can draw from local innovations to effectively address challenges and be equipped to work with and in the urban sector. Where committees are formed, they must be empowered to be influential.

06 Policy frameworks can lay the foundation for inclusive cities, but must be deployed with a strategy for implementation and are not always all encompassing. For example, the UNCRPD (Article 9) does not address the role of land use and urban planning in underpinning access. Guidance on localisation could help here. Policies should also lay the groundwork for a supportive financing landscape.

10 From global to local. Contextualising global policies and good practice is fundamental. There is a disconnect between global knowledge of best practice and areas of priority action for urban residents. Cities should be enabled and empowered to drive inclusion, with opportunities to be more responsive to local needs. Working with urban residents is the best starting point.

07 There are diverse approaches – from accessibility to inclusive design. Language varies in how disability inclusive urban interventions are discussed, accessibility is often seen as the mandatory minimum with inclusive design and universal design considered better practice. Realistically, good training and participatory approaches and a diversity of tools and mandates, policies or standards are needed to ensure application.

11 Health and the impact of the pandemic.

Health was consistency a high priority for participants, and likely continues to be so. However, it is important to recognise the acute impact of the COVID-19 pandemic during the time the research was conducted. As pandemics are expected to be an ongoing global challenge, it is vital lessons are learned from COVID-19 for future resilience. **04** For meaningful participation, codesign and resident participation must be accessible. Consultation processes were often reported as inaccessible, meaning persons with disabilities voices are not heard. There are opportunities to consider how tools can be adapted to diverse needs and abilities, as tested through the case study workshops.

08 Institutional capacity must accompany policy. This includes training, a diverse workforce, reasonable accommodations, employment policies and inclusive culture. Leadership should reflect the diversity of a city's population and the sector has a responsibility to drive inclusive practice and ensure good delivery of policies and strategies through their work in the built environment.

12 Ultimately, Inclusive infrastructure and an inclusive city is needed for AT users to thrive. This will need to be a cohesive and collaborative effort by all stakeholders from people to policy to practice. Leaders should work to set strategies to guide this.

Areas for further research

This study intended to be a broad overview of the current state of inclusion and accessibility in cities. Through this research, further and more targeted areas were identified. These include:

Intersectional inclusion and gender

The complex interplay of exclusion factors and intersectional identities, such as gender, class, race, and disability. Robust data should be developed to capture these intersections, emphasizing the socio-cultural aspects of disability inclusion. Additionally, integrating gender perspectives into research is crucial, ensuring active participation and addressing the unique experiences of women with disabilities. In the research, recruiting female participants was more challenging and indicated greater barriers to access for women with disabilities.

Research on key urban sectors, such as green public spaces, pedestrian mobility, and accessible public transport systems, should integrate gender-inclusive strategies. This involves considering the experiences of women with disabilities to ensure that urban spaces are designed to accommodate diverse needs and promote inclusivity. Further research might look into participation numbers and gender balance in existing studies, cultural factors and gender roles which impact participation in a contextual sense and how gender might intersect with other barriers to inclusion.

Accessibility in peri-urban/ rural areas/informal settlement and housing

There is also an appetite for research efforts that are directed towards investigating accessibility and inclusion challenges in peri-urban areas, informal settlements and rural areas. This includes a thorough examination of the impact of housing and settlement types on the lives of persons with disabilities.

Inclusive climate resilience design, sustainable development, and resilient urban planning

Integrating inclusive design into sustainable development priorities is paramount. Research should explore the relationship between climate adaptation measures, resilient urban plans, and inclusive design. Understanding how these elements intersect, particularly in climatevulnerable, humanitarian and crisis/disaster contexts, will contribute to creating urban environments that are resilient, sustainable, and inclusive for persons with disabilities.

Inclusive healthcare infrastructure

Investigating and improving healthcare infrastructure and ecosystems to ensure they are accessible to persons with disabilities is a critical aspect of inclusive urban development, inclusive of a diversity of disabilities. The research we conducted highlighted difficulties in access healthcare due to physical accessibility to and within health care settings and due to attitudinal factors. There is a need for research into the role of design and the built environment in this context and how this could also support addressing stigma and awareness.

Implementation and piloting

One of the overwhelming barriers to realising Similarly to healthcare, the accessibility more inclusive cities is the 'implementation of educational pathways from early gap'. Further research into implementation years through to higher education and and delivery processes, research on practice, professional development is needed. The could help identify sticking points. There role of design and the built environment are hesitancies about where to begin with in support more inclusive experiences and inclusive design so good examples of practice furthering education opportunities for would help change narratives. Research on children and persons with disabilities merits the delivery and impact of pilots, including further research. the enabling environment and how research and learning can be integrated into pilot work would be beneficial.

Mapping and evaluation

Further exploration of the potential of rigorous quantitative research to map accessibility and evaluate the impact of inclusion projects in cities is warranted. This may involve continuous monitoring to ensure the effectiveness of interventions in promoting accessibility for persons with disabilities. The ability of technology to support data collection should be explored.

National data on disability

Addressing the urgent need for updated and reliable national and regional data on disability is a cross-cutting theme. Across all cities, efforts should be made to continuously update and improve data collection methods to better understand the prevalence and experiences of persons with disabilities. Because of the challenges with data, there are still gaps between national and local data on disability in terms of categorisation (as seen in Indonesia). Data collection at the city level could allow for more localised approaches.

The role of design in inclusive education

The cost and value of inclusion

There is very limited data on the true cost of inclusive design interventions and the longterm value and return on investment that can be created. This limits the desire to invest.

Conclusion: Common threads and action towards inclusion

While every city is unique and diverse, this research has identified common themes and common challenges that contribute to accessibility or inaccessibility in many cities. Four years of research in six cities has shown that better cities can exist if they listen to and design with their residents, including persons with disabilities. Cities where everybody can enjoy urban life throughout their life course. The previous sections have examined inclusive cities and infrastructure from the perspectives of people, policy, and practice, as well as looking at the global picture beyond these six cities. There is inevitable overlap between these stakeholder groups and as themes they represent different enabling factors for action towards inclusive cities - from people-centred approaches, to mandates and guidance, and good and inclusive practice.

To enable genuinely inclusive cities for persons with disabilities and AT users; housing, transport, roads, education, employment, healthcare, green spaces and recreational infrastructure need to be accessible. People need to be able to move between the spaces they would inhabit in daily life easily and free from stigma. This requires a whole city approach, otherwise accessibility will fall between the gaps. It also requires private sector collaboration, as the built environment is designed and built by a myriad of actors.

Global challenges will continue to impact cities, exemplifying why local solutions are more important than ever. With trends such as technology and smart cities; urbanisation; climate change; health and geopolitical instability, cities must be resilient and future-proofing must be inclusive. However, many of these issues remain siloed and disability inclusion is not sufficiently integrated. This research aimed to show why that is problematic, and why inclusive design is a tool for proactive solutions that include persons with disabilities. Furthermore, disconnects from the global to local in terms of data, knowledge exchange and collaboration are limiting opportunities for innovation.

The tools to deliver on inclusive cities and infrastructure align with the framework of people, policy and practice, with a common thread of inclusive design and participation as approaches throughout. To learn more about what this looks like, the **Global Action Report on Delivering Inclusive Design in Cities** offers starting points.

People are enablers of inclusive cities,

and are best placed to design local, fit-forpurpose solutions. Advocacy and awareness were identified as key strategies to address gaps in disability inclusion. Inclusive cities cannot be delivered without persons with disabilities, and their participation should extend beyond to consultation to being 'active agents of urban development'.

When it comes to **policy as an enabler for inclusive cities,** implementation remains a major concern. While there is often goodwill towards inclusive city initiatives, this is not always accompanied by dedicated funding or an action and accountability plan. Cohesive or holistic approaches are needed, engaging diverse stakeholder such 86 Conclusion

as the private sector, and considering both new construction and current building stock. Policies and inclusive city strategies can ensure that inclusive experiences are considered from door-to-door, through daily life activities and across the life course.

The case for locally adapted strategies and standards is clear. Local actions should be supported by collaboration, knowledge sharing, best practices and case studies, from city to city.

Financing inclusive cities is important. Budgets are limited and perceptions remain that accessibility is expensive. Local governments and policy makers should take responsibility for resourcing inclusive cities. New financing models should cultivate innovation in inclusive cities to address these design challenges, as well as effort to understand of the value and return on investment that inclusive cities could offer.



One of the positive outcomes of the research was of the city-city exchanges that were formed. Here, all the partners gathered in London to discuss common challenges and opportunities.

Lastly, practice is an enabler of inclusive cities. Education and professional training are key areas of intervention. Support persons with disabilities to access employment in built environment sectors, and build inclusive leadership from the ground up.

Inclusive design challenges should spark creativity in designers: designing an accessible latrine for a Ger Hut in Ulaanbaatar; accessible river experiences in Varanasi, inclusive emergency preparedness in Solo; accessible and good quality housing in Nairobi; access to education and opportunities in Freetown; and accessible bars and nightlife in Medellín. These are all opportunities to innovate for inclusive futures.

Demonstrating what works can inspire others. Collaboration should seek to look at

how good practice can be applied or scaled in different cities, to build a network of inclusive city leaders and practitioners.

Building on how this research was delivered, when inclusive design practice is combined with inclusive methodologies for collecting data, solutions can be cocreated. Collaboration between cities and global and local partners could build capacity for those involved at the same time. This has the potential to be replicated in further cities – a model for actionoriented research and delivery.

Ultimately, the world continues to urbanise, let's make sure that an urban future is inclusive for all and cities allow everyone to thrive. From global to local, we all have actions we can take.



Implications for assistive technology

AT and infrastructure must support each other, but until now, the evidence demonstrating why infrastructure is a vital part of AT access and why AT users must be included in city planning and design was limited. This research changes that.

The ways in which AT is considered in the planning and design of built environment remain limited to quite a small sample of AT: wheelchairs, crutches, prosthetics and white canes. More evidence is needed on areas such as environmental AT and smart home or smart city technologies, or how mobile phones (as AT) enable access to cities.

Designing with AT users has huge potential to create more inclusive environments as this user group may also include people who do not identify as disabled, such as those with temporary disabilities or older people.

Infrastructure and cities should enable AT use, so people can participate in the activities they enjoy.

Given that evidence shows our population is ageing, the benefits of environments and infrastructure that are inclusive of AT use will extend beyond the estimated 1.2 billion persons with disabilities globally.

Going forward, inclusive city ecosystems should create the conditions for AT users to thrive through inclusive and accessible infrastructure. This should be complementary to continued momentum on increasing AT access, as found in other areas of the AT2030 programme's work including looking at country capacity, AT innovation, local production and more.

Research can support, through developing new evidence on how AT can be designed and manufactured within city ecosystems, providing more suitable and sustainable solutions.



Next steps

This report clearly sets out the complex challenge of creating more accessible cities through inclusive design. What is needed now is action, to drive change. Piloting inclusive design initiatives is also crucial to identify solutions to the implementation challenges that were common across the six cities.

The findings show that cities around the world experience common challenges, however, the solutions need to be localised to be genuinely inclusive and relevant to a specific city's currenty maturity with regards to inclusion.



A global action report accompanies this report, which sets out guidance for how to take steps towards a more inclusive city.

Moving forward, it will be important to test and pilot those actions, to continue to identify and develop good practice and build evidence on how global strategies and common principles can be locally adapted. This can only be done in partnership, in partnership with persons with disabilities, with local governments, with the built environment sector. The AT2030 programme intends to continue to lead on this work, with an inclusive city pilot in the pipeline.

Further research on key thematic areas, aligned to global goals is also needed. Some of the identified areas for further research will be explored in the next phase of the Inclusive Infrastructure programme.

Cities like Medellín are making progress, but all cities still have work to do to continue to drive inclusion for their inhabitants.



What is needed now is action, to drive change.







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