

AT2030

Case Study: Full Report

Prepared by
GDI Hub

**Cluster 4 Capacity
& Participation**
Inclusive Infrastructure

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Inclusive Design and Accessibility of the Built Environment in Solo, Indonesia



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Summary: Becoming a more inclusive city

“An inclusive Solo is somewhere that can be experienced by everybody in a fair and equal way. By creating safe and accessible environments for all members of the community the city can allow everyone to access and participate in the opportunities they would like.”

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 history stems from the foundation of the Dr. Soeharso Rehabilitation Centre in Solo in the 1950s through to the implementation of a local regulation on disability rights in 2008 (Local Law No. 2/2008 on Disability Rights) that precedes Indonesia’s ratification of the UN’s Convention on the Rights of Persons with Disabilities (UNCRPD) in 2011. Overall, there is a strong policy framework to deliver on disability inclusion both in Indonesia and locally in Solo through city level regulations. Indonesia has also demonstrated a commitment towards inclusive cities through the work of the Inclusive Mayor’s Network in Indonesia¹. Some challenges to delivering on these frameworks include implementation, cooperation between government departments and sectors, translation of knowledge and vision into action, resources, and the long-term sustainability of initiatives.



An accessible bus stop in Solo

¹ https://www.ilo.org/jakarta/info/public/pr/WCMS_593078/lang--en/index.htm

The city demonstrates the power of a culture of inclusion, a city where persons with disabilities mostly feel accepted, acknowledged, and included through an inclusive social environment. The wider community is a key part of forming this culture and community-led initiatives and community assets and networks are both important and valued. Community participation and community leadership is encouraged and supported through urban governance structures, facilitating the amplification of citizen's voices and their aspirations. However, improvements could be made to specifically support persons with disabilities' participation in community dialogues, particularly in the recovery from the COVID-19 pandemic which has affected participation and impacted people's livelihoods. A strong culture of inclusion is supported by some accessible infrastructure and while there are still numerous challenges to implementing inclusive infrastructure in Solo, **there is political will and a vision to become a more inclusive city.**

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. There is a strong view that international standards are not necessarily fit-for-purpose 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.



The accessibility gap – there is a need for door-to-door inclusive design

Fundamentally, **inclusive infrastructure must support and improve people's daily lives**. When resources are limited, accessible design interventions can often be limited to essential services such as accessing government services, healthcare, education, and transport. However, according to participants, a much wider variety of infrastructures are key to a fulfilling urban life including inclusive green



Gede market has accessibility features, but implementation and maintenance in use could be improved.

spaces, recreational spaces, religious spaces, markets, and tourism. The assistive technologies people can access are also essential in facilitating access to the urban environment. An inclusive design approach to city planning can support all citizens to experience their city in a fair and equal way, providing a framework to integrate people's needs and aspirations in urban development. A city-wide inclusive design strategy should therefore try to integrate this broader scope of inclusive infrastructure

while also being realistic on resource constraints. An inclusive design strategy at the city scale would benefit from considering the role of neighbourhoods in urban life and **make space for grassroots inclusive design and planning that is led by communities in the places that they live.**

“Inclusive cities are cities that have placed disabled persons as actors of development. The key is there, starting from planning, organizing, monitoring to evaluation or feedback.”

Inclusive infrastructure, cities and communities, are more than the physical built environment: the processes of inclusion and participation are key enablers of inclusive environments. Attention to how persons with disabilities are included in city development, ensuring these processes are accessible for all citizens and persons with disabilities are employed in these sectors will help create processes that deliver good inclusive city design. Inclusive



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

urban development processes are more necessary than ever as cities worldwide begin to build back from the COVID-19 pandemic whilst simultaneously facing ongoing challenges such as the increasing impacts of climate change. Cities must build in resilience to these crises, and this can be done through integrating (environmental, economic and social) sustainability and inclusion in urban development to ensure those who are most disadvantaged are not left behind. As the quote above illustrates, ultimately when persons with disabilities are fully recognised and included as participants in urban development – as policy-makers, planners, designers and as citizens – then we will have an enabling environment to create a more inclusive city.



Key barriers to an inclusive city

While Solo has made good progress towards inclusion, the following common challenges were identified:

- Multi-sectoral collaboration is needed, a lack of coordination between departments can create gaps in accessible infrastructure provision.
- Consider diversity and intersectionality in inclusive city projects, both in data collection and in project or programme design.
- COVID-19 has challenged participation, livelihoods and community participation. People need to rebuild trust, feel safe in urban environments, and recover from the challenges experienced during the COVID-19 pandemic.
- Inclusive design interventions are challenged by sustainability, due to resources being cut or funding programmes ending. All inclusive design projects should consider sustainability (economic, social, environmental) from the outset.
- Health and sanitation services are a high priority for accessibility. Water and sanitation infrastructure such as open drains can be a hazard and mental health must be included within core healthcare services.
- Infrastructure to support resilience to crises such as pandemics, disasters, climate change needs to be accessible and inclusive. Persons with disabilities are most affected.
- Knowledge and understanding, and a vision for an inclusive city is there. It needs to translate into robust implementation which involves engaging wider stakeholders to ensure good quality delivery.
- Inclusive design interventions exist but a holistic inclusive design approach is missing, door-to-door inclusive design is needed to ensure people can have inclusive access to the city.
- Good quality implementation with suitable materials and good maintenance is needed to create inclusive environments. In some cases, installations were not fit for purpose.
- Better data on disability in the city would be useful to support programming and monitoring and evaluation efforts of existing infrastructures and programmes would support better future delivery.
- Focus and alignment on the city's vision would be beneficial. Intersecting but sometimes conflicting visions for inclusive, smart, child-friendly cities can dilute resources. One comprehensive inclusive city strategy that encompasses all disadvantaged groups and provides specific design principles and

standards to guide disability-inclusive urban development would be more effective.

Recommended actions

- Cooperation, collaboration and coordination: across government sectors, with practitioners, with communities – an inclusive city is built together.
- Engage the private sector in inclusive city initiatives, privately-owned spaces and infrastructure that serves the public must also be inclusive.
- Develop further tools to support community participation in urban planning and governance, particularly for persons with disabilities.
- Dedicate budgets to inclusive city design and work towards long-term financial sustainability for inclusive design implementation.
- Embrace local knowledge, develop an inclusive design strategy for Solo that integrates local expertise and culture.
- Support assistive technology users through developing inclusive infrastructure that considers the needs of diverse AT users.
- Encourage and facilitate community leaders to amplify the voices of their communities to integrate bottom-up urban planning.
- Scale and replicate what works, where innovations have been successful, learn from them and test how they can be applied elsewhere.
- Let Solo lead by example, Solo has success stories to share across Indonesia and globally.

Creating an enabling environment

An enabling environment for persons with disabilities should integrate: a supportive legislative environment, an inclusive culture and mindset, participation in planning, design and decision-making, positive cultural change, an accessible and inclusive built environment and access to good quality and affordable assistive technology. Some of these aspects are already taking place in Solo but for an inclusive city to maintain an enabling environment it is necessary to ensure robust, sustainable, disability-inclusive urban development processes are implemented.

So what does an inclusive Solo look like?

- **Participation:** A city where persons with disabilities are recognised and directly involved in urban development
- **Mobility:** A city with an integrated inclusive transport network that facilitates people's mobility from door to door.
- **Urban life:** A city where all types of spaces are inclusive and accessible, enabling persons with disabilities to fully participate in urban life
- **Leisure and wellbeing:** Inclusive tourism, recreational spaces and green spaces for all
- **Resilience:** Inclusive and sustainable infrastructure that supports resilience to crises and climate change
- **Assistive technologies and enabling infrastructure:** easy and affordable access to the assistive technologies people need and a built environment and infrastructure that supports their use.
- **Opportunities:** equity of access to opportunities and information for all, including those employed in the informal sector.



An accessible bathroom in a train station in Solo.

What's next?

This report outlines the key findings from a six-month research case study on the city of Solo. As the third of six case studies on inclusive design and the built environment in lower-and-middle-income countries, this report will go on to inform global actions on inclusive design.

The findings of this report will be shared with both international and local audiences through a range of dissemination activities and GDI Hub will continue to support Kota Kita's activities in Solo and across Indonesia through the AT2030 programme.

The data collection that informed this case study took place prior to the second wave of COVID-19 in Indonesia. We recognise the impact the COVID-19 pandemic has had on partners and communities and hope this research on inclusive environments can support strategies for an inclusive recovery.

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This research has ethical approval from University College London (UCL) and permission from the Municipal Government of Solo.

Global Disability Innovation Hub

www.disabilityinnovation.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 solutions-focused 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 guided by an Advisory Board of disabled people. We are operational in over 35 countries and have reached 21 million people since our launch in 2016.

Kota Kita

www.kotakita.org

Kota Kita works with citizens in making their cities a better place. We are a non-profit organization based in Solo, Indonesia working to bridge dialogues between governments and citizens by facilitating the involvement of all citizens — especially the marginalized and excluded. Because without these voices, we will never realize a city shaped and informed by empowered citizens — A City for All. Kota Kita has been collaborating with GDI Hub on the AT2030 programme since 2019, supporting persons with disabilities living in Banjarmasin and Solo.



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Foreword



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 for all members of the community. Inclusive design is a mindset, 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 systems². 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. Inclusive and accessible infrastructures and environments take into account the principles of inclusive design, embracing diversity and acknowledging that designing for 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’.

² Anjlee Agarwal and Andre Steele, ‘Disability Considerations for Infrastructure Programmes’ (Evidence on Demand, 8 March 2016), https://doi.org/10.12774/eod_hd.march2016.agarwaletal.



Acronyms and Abbreviations

ADB: Asian Development Bank

AT: Assistive Technology

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

OPD: Organisation of Persons with Disabilities

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

LMICs: Lower-and-Middle-Income Countries

NUA: New Urban Agenda

PwD: Persons with Disabilities

SDGs: the UN's Sustainable Development Goals

WASH: Water, Sanitation and Hygiene

WHO: World Health Organisation

UN: United Nations

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



AT2030 and Inclusive Infrastructure Programme Background

About AT2030

This case study is part of the FCDO UK Aid-funded ‘AT2030: Life-changing assistive technology for all’ programme. The 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 billion people around the world who need assistive technologies, but 90% of them do not have access, and this figure is project to rise to 2 billion by 2050. The programme has reached 21 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 35 countries and works with more than 70 delivery partners³.

About Inclusive Infrastructure

The Inclusive Infrastructure sub-programme of AT2030 responds to the idea that successfully reaching people that need assistive technology is also dependent on supporting accessible and inclusive environments and infrastructure.

GDI Hub believe that ‘Inclusive Design’ has an important role in facilitating enabling environments for persons with disabilities⁴. Research on the current state of accessibility in different cities around the world and the capacity and appetite for inclusive design in policy and industry in those places is needed both to enable better access to assistive technology and contribute to the inclusion and participation of all assistive technology users in society.

Current knowledge around disability inclusion and inclusive design is largely limited to high income settings⁵. This research aims to counter that by building local and specific knowledge of what constitutes an inclusive environment in diverse, lower-and-middle-income countries (LMICs) by engaging directly with communities,

³ For further information on the AT2030 programme please visit <http://www.at2030.org>

⁴ For more information on GDI Hub’s approach to inclusive design please visit: <http://www.disabilityinnovation.com/inclusive-design>

⁵ Infrastructure and Cities for Economic Development (ICED), ‘Delivering Disability Inclusive Infrastructure in Low Income Countries’, Inception Report: Summary, 2019, <http://icedfacility.org/resource/delivering-disability-inclusive-infrastructure-low-income-countries/>.



industry and policy makers. This will build knowledge and generate actions around inclusive design that is adaptive to these diverse contexts. Research will take place in three main areas:

1. **People** - the community experience of disability and the built environment;
2. **Practice** - industry focused research on the awareness and application of inclusive design in practice; and
3. **Policy** - focused research on the governance, guidelines and protocols of accessibility and inclusive design at local, regional and national levels of government.

Through qualitative and participatory research, the project will engage diverse stakeholders interested in and influencing the built environment such as; decision-makers, urban planners, architects and persons with disabilities. It will generate new insights on the challenges and opportunities for an inclusive built environment and build a picture of what good inclusive designs looks like in different settings and cultures.

Inclusive Infrastructure summary:

- Three-year research programme
- 5 cities in 5 different countries, in low-and-middle-income settings
- Engaging local partners and diverse stakeholders
- Conducting research and engagement across the domains of policy, practice and people

Why does ‘inclusive infrastructure’ matter?

‘Access’, in its various forms, is a primary factor in the connection between disability and poverty. 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’⁶, reinforcing the relationship between disability and poverty⁷. For example, in Mongolia, (where

⁶ Department for International Development, UK Government, ‘Disability, Poverty and Development’ (Department for International Development, 2000).

⁷ Christoffel J. Venter, Thomas E. Rickert, and David A. C. Maunder, ‘From Basic Rights to Full Access: Elements of Current Accessibility Practice in Developing Countries’, *Transportation Research Record*:



we undertook our first case study) households with at least one person with a disability have double the poverty incidence of other households⁸. Research on the multi-dimensional nature of poverty has also shown higher incidences of poverty in households with disabilities in middle-income settings compared to low-income settings, indicating a 'disability development gap'⁹ and making clear the importance of disability inclusive development programmes.

People have a right to access the spaces, services and activities they would like. It is a basic human right as set out in the UNCRPD¹⁰. Access can be either enabled or disabled by the built environment and infrastructure and this is understood best by those who experience inaccessibility in the built environment most profoundly, persons with disabilities¹¹. To break cycles of disability and inequality, it is necessary to design accessible and inclusive environments. To do that there must be consensus on what barriers to accessibility exist in the built environment and what the barriers to designing, building, implementing and regulating accessible environments are. Justice-based approaches to disability and the built environment propose that, 'the distribution of space is an important aspect of realising justice for disabled persons'¹² highlighting the importance of designing and building inclusive infrastructure to create more equitable societies.

Infrastructure, transport and the built environment represent one of the largest areas of investment for any country and 'good' infrastructure can be a driving force for positive change and achieving development goals. Infrastructure should be designed to support society. However, if it is inaccessible, it can exclude individuals or groups, diminish quality of life and infringe on human rights.

In lower-resourced settings, where basic infrastructure needs are great, accessibility is often considered as an extra and is rarely integrated as part of mainstream

Journal of the Transportation Research Board 1848, no. 1 (January 2003): 79–85, <https://doi.org/10.3141/1848-11>.

⁸ Asian Development Bank, 'Living with Disability In Mongolia: Progress Toward Inclusion' (Manila, Philippines: Asian Development Bank, December 2019), <https://doi.org/10.22617/TCS190596-2>.

⁹ Monica Pinilla-Roncancio and Sabina Alkire, 'How Poor Are People With Disabilities? Evidence Based on the Global Multidimensional Poverty Index', *Journal of Disability Policy Studies*, 17 May 2020, 104420732091994, <https://doi.org/10.1177/1044207320919942>.

¹⁰ Disability Inclusive and Accessible Urban Development Network (DIAUD), World Enabled, and CBM, 'The Inclusion Imperative: Towards Disability-Inclusive and Accessible Urban Development. Key Recommendations for an Inclusive Urban Agenda', 2016, 40.

¹¹ Aimi Hamraie, 'Designing Collective Access: A Feminist Disability Theory of Universal Design', *Disability Studies Quarterly* 33, no. 4 (5 September 2013), <https://doi.org/10.18061/dsq.v33i4.3871>.

¹² Victor Santiago Pineda, 'Enabling Justice: Spatializing Disability in the Built Environment', n.d., 14.



infrastructure development¹³. Yet inaccessible infrastructure profoundly impacts the freedom, independence and rights of persons with disabilities and their ability to access opportunities. Some of the factors contributing to inaccessible infrastructure include lack of knowledge or understanding among decision-makers around the implications of design choices, lack of user consultation and consideration of diverse needs and ‘missed opportunities’ to integrate added value through promoting equal access¹⁴.

Previous research led by the iBuild centre at Newcastle University on inclusive infrastructure has emphasised the importance of a more integrated and holistic understanding of infrastructure, including the wider and longer-term benefits to infrastructure spending and multi-scalar systems-based approaches¹⁵.

The World Report on Disability¹⁶ highlights the importance of ‘enabling environments’ for persons with disabilities and defines these environments as physical, social and attitudinal environments. The implementation of policy, compliance and the suitability of existing standards on accessible environments in relation to low-resource settings, informal settlements and rural areas are all discussed as barriers to enabling environments. The report also suggests that the pace at which technologies to support persons with disabilities are developing is ‘out-pacing’ the rate at which standards and regulations in the built environment can be developed calling for a more integrated and adaptive approach to regulating the build environment¹⁷.

A comprehensive understanding and application of inclusive design practices to infrastructure programmes would address some of these barriers. As one of the largest areas of investment in any country, infrastructure development has the opportunity to lead the way in terms of creating an enabling environment for persons with disabilities¹⁸.

¹³ The World Health Organisation, ‘World Report on Disability’ (The World Health Organisation, 2011).

¹⁴ Agarwal and Steele, ‘Disability Considerations for Infrastructure Programmes’.

¹⁵ Richard Dawson, ‘Delivering Effective and Inclusive Infrastructure’, ESRC Evidence Briefings (Economic and Social Research Council, March 2018), <https://esrc.ukri.org/news-events-and-publications/evidence-briefings/delivering-effective-and-inclusive-infrastructure/>.

¹⁶ The World Health Organisation, ‘World Report on Disability’.

¹⁷ The World Health Organisation.

¹⁸ Hamraie, ‘Designing Collective Access’.



Why focus on cities in low-resource settings?

The world is rapidly becoming more urban and more than half the world's population live in urban settlements¹⁹. This growth is not always accompanied by equivalent infrastructure development, leading to wide gaps in urban equality or an 'urban divide'²⁰. Urbanisation is most widespread in low-and-middle-income settings, leading to the suggestion that 'poverty is urbanising'²¹. By 2050, 66% of the world's population will live in cities; 90% of which will be in low-middle-income settings²². UN-Habitat estimates that in 75% of cities people have less access to basic services, quality public spaces, affordable housing and livelihood opportunities than two decades ago and spatial inequality like this exacerbates social exclusion²³. The capability to connect to urban infrastructure, services and opportunities such as work and education are vital to building social inclusion.

According to the World Bank, urban inclusion is multi-dimensional and expressed through three domains: spatial inclusion, social inclusion and economic inclusion²⁴. These three domains are driven by principles of access (such as access to housing, land and essential services), opportunity (such as access to education and employment or access to increasing prosperity in the place they live) and the right to participation (the ability to participate in society). These principles offer a foundation for planning inclusive infrastructure.

Research on, 'what works' for disability inclusive infrastructure has shown the importance of taking city-wide or holistic approaches, to avoid siloed solutions within one type of infrastructure. Additionally, in low-resource settings, large components of infrastructure still need to be built and so there is an opportunity to 'get it right the

¹⁹ Bharat Dahiya and Ashok Das, 'New Urban Agenda in Asia-Pacific: Governance for Sustainable and Inclusive Cities', in *New Urban Agenda in Asia-Pacific*, ed. Bharat Dahiya and Ashok Das, *Advances in 21st Century Human Settlements* (Singapore: Springer Singapore, 2020), 3–36, https://doi.org/10.1007/978-981-13-6709-0_1.

²⁰ Dahiya and Das.

²¹ The World Bank, 'World Inclusive Cities Approach Paper' (The World Bank, May 2015), <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/402451468169453117/world-inclusive-cities-approach-paper>.

²² 'New Urban Agenda' (United Nations, 2017).

²³ UN-Habitat, 'Flagship Programme 1: Inclusive, Vibrant Neighbourhoods and Communities' (UN-Habitat), accessed 19 September 2020, <https://unhabitat.org/programme/inclusive-vibrant-neighbourhoods-and-communities>.

²⁴ The World Bank, 'World Inclusive Cities Approach Paper'.



first time’ highlighting the relevance of focusing on inclusive infrastructure in lower-and-middle-income cities.²⁵

Meeting global goals?

Cities, and particularly cities in low-resource settings, are central to the UN 2030 Agenda and the Sustainable Development Goals, most clearly marked through SDG 11: ‘Make cities and human settlements inclusive, safe, resilient and sustainable’. Habitat III and the New Urban Agenda represent a shift in thinking around cities and urbanisation as a cause of poverty and exclusion to thinking about cities as sites of opportunity and marked an important moment of centring inclusion in development processes through participatory approaches to sustainable development. These global agendas have generated a vast amount of discussion on the topic of ‘inclusive cities’^{26 27 28}. However, inclusive cities are often discussed in its broadest meaning and explicit attention to *disability-inclusive cities* and the design and construction of accessible and inclusive environments and infrastructure in high level policy agendas remains limited.

The UN2030 Agenda recognises that disability inclusion must be at the heart of poverty eradication²⁹ and the UNCPRD Article 9 and Target 3 of the Incheon Strategy to ‘Make the Right Real for People with Disabilities in Asia’ in 2012 explicitly connects access to the physical environment and an inclusive society: “*Access to the physical environment, public transportation, knowledge, information and communication is a precondition for persons with disabilities to fulfil their rights in an inclusive society.*” The Global Disability Summit in 2018 was a pivotal event in which inclusive infrastructure was highlighted as one of six spotlight issues where commitments to embedding disability inclusion in the infrastructure sector were made³⁰. To realise these policies, knowledge and guidance on disability inclusive design for cities in low-resource settings is necessary and so our research and these five case studies will help support making these policy goals a reality.

²⁵ Infrastructure and Cities for Economic Development (ICED), ‘Delivering Disability Inclusive Infrastructure in Low Income Countries’.

²⁶ Asian Development Bank, ‘Enabling Inclusive Cities: Tool Kit for Inclusive Urban Development’ (Manila, Philippines: Asian Development Bank, 1 December 2016), <https://doi.org/10.22617/TIM157428>.

²⁷ The World Bank, ‘World Inclusive Cities Approach Paper’.

²⁸ Diana Mitlin and David Satterthwaite, ‘On the Engagement of Excluded Groups in Inclusive Cities: Highlighting Good Practices and Key Challenges in the Global South’, Urban Development Series Knowledge Papers (The World Bank, 2016).

²⁹ The World Health Organisation, ‘World Report on Disability’.

³⁰ Infrastructure and Cities for Economic Development (ICED), ‘Delivering Disability Inclusive Infrastructure in Low Income Countries’.



Why inclusive design?

“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.”³¹

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’³².

An accessible environment is often considered to be one that offers step-free level access whereas an inclusive environment goes further, looking at equality of experience in the built environment and infrastructure. Inclusive environments embrace diversity and flexibility, understanding that everyone has different needs and those needs are constantly changing³³.

Inclusive design is about genuine engagement and innovation, listening and making space for people. It is a practice that embeds participation and embraces diversity in solving design problems. It differs from universal design in how it embraces difference and recognises that ‘one size fits one person’ and ‘universal solutions’ are not always feasible or optimal to promote inclusion for everyone³⁴. Inclusive design can help to minimise social exclusion³⁵ 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.

In a world where 1 billion people need access to assistive technology, a world that is ageing and experiencing worsening inequality, designing and building a world that limits access or is unnecessarily challenging for persons with disabilities is not an option. Inclusion benefits everyone.

³¹ Global Disability Innovation Hub, Queen Elizabeth Olympic Park, and London Legacy Development Corporation, ‘Inclusive Design Standards’, May 2019.

³² Infrastructure and Cities for Economic Development (ICED), ‘Delivering Disability Inclusive Infrastructure in Low Income Countries’.

³³ Global Disability Innovation Hub, Queen Elizabeth Olympic Park, and London Legacy Development Corporation, ‘Inclusive Design Standards’.

³⁴ World Economic Forum: Strategic Intelligence, ‘Global Issue: Inclusive Design. Curated by the Smithsonian Institution’, World Economic Forum: Strategic Intelligence, accessed 12 September 2020, <https://intelligence.weforum.org/topics/a1G0X0000057IniUAE?tab=publications>.

³⁵ Dr Ellie Cosgrave, ‘The Role of the Engineer in Creating Inclusive Cities’, n.d., 16.



The application of inclusive design principles, methods and practices to the holistic design of urban development and inclusion - be that policies, a city masterplan, road infrastructure, a building or a service – is an area that is under-investigated and requires research and engagement to understand what inclusive design looks like in resource-constrained contexts.

The holistic approach and practice of inclusive design can be applied to more than physically accessible designs. It can be used to build cohesion across sectors by placing disabled voices at the heart of problem solving. Inclusive design can also contribute to achieving the World Health Organisation's Disability Action Plan by offering methods to develop 'culturally appropriate person-centred approaches'³⁶.

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 time³⁷. This calls for a deep understanding of context-based planning and design, where inclusive design can help, by bringing together the people with the most intimate knowledge of the challenges to be solved. The opportunity for inclusive design in disability inclusive infrastructure does not just lie in technical design solutions but in how its practice could mediate multi-sectoral and cross-thematic approaches to pressing urban development challenges for persons with disabilities.

What do we want to find out?

The over-arching research question for this sub-programme is, '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 disabled people?'.

1. What legislation, policy, regulation and guidance currently exists to protect the rights of disabled people in the built environment in each case study city?

³⁶ F Khan et al., 'World Health Organization Global Disability Action Plan: The Mongolian Perspective', *Journal of Rehabilitation Medicine* 50, no. 4 (2018): 388–366, <https://doi.org/10.2340/16501977-2207>.

³⁷ Dahiya and Das, 'New Urban Agenda in Asia-Pacific'. Pg.23



2. What is the current awareness, understanding, acceptance and application of inclusive design in built environment policy, planning, design and construction among key stakeholders in each case study city?
3. What are the current barriers to and opportunities for inclusion in the built environment for people living with disabilities in each case study city?
4. How can inclusive design contribute to creating enabling environments for AT and AT users?



Introduction to the Case Study in Indonesia

This purpose of this case study is to explore the state of inclusive and accessible environments for persons with disabilities in Surakarta (also known and from herein referred to as Solo), Indonesia, through engagement with policy, industry and community stakeholders (policy, practice and people). Through this engagement, the case study is developing evidence on the challenges and opportunities for implementing inclusive and accessible design in Solo and makes recommendations on local actions towards becoming a more inclusive city.

This is the third of five case studies analysing the state of accessibility and inclusive design in low-resource contexts around the world. The five independent case studies will then be analysed to develop a comparison report and finally a global action report that will offer evidence and recommendations that support making infrastructure, the built environment and urban development in low-resource settings more accessible and inclusive.

Across the Asia-Pacific region, urban economic growth has not been equal and the urban poor carry this burden. This region already houses over half the world's urban population and its urbanisation is only increasing³⁸. Major inequalities in access to housing, infrastructure and services, and affordable transportation³⁹ are found across cities in Asia and the Pacific. These inequalities in urban development, disproportionately affect persons with disabilities and these case studies will contextualise the lives of persons with disabilities across Asia and Africa through research on inclusion and accessibility in the built environment.

According to the UN's Economic and Social Commission for Asia and the Pacific (UNESCAP) there are 650 million persons with disabilities in the Asia Pacific region⁴⁰. At a regional level, the Incheon Strategy 'to make it real for Persons with Disabilities' (2012) is an agreed set of disability-inclusive development goals for the Asia-Pacific region, the first of its kind, offering opportunities for the region to be exemplar in disability inclusive development.

³⁸ Dahiya and Das.

³⁹ Judy L. Baker and Gauri U. Gadgil, eds., *East Asia and Pacific Cities: Expanding Opportunities for the Urban Poor* (The World Bank, 2017), <https://doi.org/10.1596/978-1-4648-1093-0>. Pp. XVIII

⁴⁰ 'Incheon Strategy to "Make the Right Real" for Persons with Disabilities in Asia and the Pacific' (UNESCAP, 2012).



Over half of Indonesia's population live on the island of Java. Solo is a city in Central Java in Indonesia. The city is recognised for its long history of being a home for persons with disabilities. The city is home to the Dr. Soeharso Rehabilitation Centre, founded in the aftermath of the civil war of 1945 – 1950. The numerous rehabilitation centres in the city have enabled a more inclusive culture and many persons with disabilities went on to settle in Solo following rehabilitation. The city is also recognised for having local disability regulations that precede national ratification of the UNCRPD and the national disability law which came into force in 2016.

This case study will build a picture of the current state of inclusion and accessibility in the built environment and infrastructure in Solo through engaging local stakeholders and communities and exploring the understanding of and potential for inclusive design to address some of the current barriers to inclusion.

The case study will first describe the background research and contextual factors that influence questions of access and inclusion in the built environment in Solo. It will then describe the activities that took place before discussing insights, lessons learned, and actions towards inclusion for the city of Solo.



Background and Contextual Factors

This section provides some background information that supports and contextualises the primary data collection undertaken in this case study on Solo.

Indonesia is the world's largest archipelago, consisting of around 17,000 islands. Around half the country's population resides on the island of Java, which is also home to four of the five biggest cities in the country. Indonesia is a diverse country with 700-800 languages spoken in the country, Bahasa Indonesia is the country's national language, but it is the mother tongue of a very small part of the population, although it is spoken by 94% of the population⁴¹.

Statistics on Disability in Indonesia			
Population of Indonesia	273,523,621 ⁴²		
Population of Solo	557,606 ⁴³		
Population of Persons with Disabilities in Indonesia	23.3 million	10.4 million male	12.9 million female
Population of Persons with Disabilities in Solo	1,167 ⁴⁴	673 male	494 female

The statistics above give an indication of the population demographics and prevalence of disability. There are a range of datasets related to disability in Indonesia but the classification of disability used varies leading to inconsistent and incomparable data. For a survey in 2015 and the 2020 Census, Indonesia is now using the Washington Group questions to collect data on disability, a step forward in more comprehensive data collection.

⁴¹ 'Language Data for Indonesia', *Translators without Borders* (blog), accessed 14 April 2022, <https://translatorswithoutborders.org/language-data-for-indonesia/>.

⁴² 'Statistics Indonesia', accessed 13 April 2022, <https://bps.go.id/subject/12/kependudukan.html#subjekViewTab3>.

⁴³ UNESCO and Kota Kita, 'Solo City: A Disability-Inclusive City Profile | UNESCO Inclusive Policy Lab' (UNESCO & Kota Kita, 2018), <https://en.unesco.org/inclusivepolicylab/e-teams/inclusive-policy-persons-disabilities-indonesia/documents/solo-city-disability-inclusive>.

⁴⁴ UNESCO and Kota Kita.



Disability and Accessibility in Indonesia

Indonesia ratified the UNCRPD in 2011 and inaugurated its own disability rights law: Disability Law (Law No. 8/2016) in 2016. However evidence shows little has been done in terms of implementation. Challenges to accessing public services cited include a lack of data and evidence on disability and inaccessible environments⁴⁵.

The National Team for the Acceleration of Poverty Reduction (Tim Nasional Percepatan Penanggulangan Kemiskinan: TNP2K) has been advocating for the expansion of social protection schemes since its formation in 2018.

Of persons with disabilities living across Indonesia, 5.7 million have severe disabilities while 17.6 million have moderate disabilities. In addition, 41.2% of persons with disabilities have multiple disabilities⁴⁶. One study found that 76% of disabilities are caused by illness or accidents, highlighting the need for safe and healthy inclusive environments for all⁴⁷.

According to data from the National Socioeconomic Survey (SUSENAS) in 2019, 51.4% of persons with disabilities live in urban areas and 9.9 million live in the lower 40% of socio-economic profiles. There is a correlation between disability and poverty which is more pronounced among those over 60 years of age. Disability prevalence among those over 60 years of age is 42%. 1.3 million children between the age of 2 and 17 have a disability⁴⁸.

Expenses are on average 30 percent higher for a household with a disability⁴⁹ and many persons with disabilities (61.9%) are not part of the national health insurance schemes (JKN-PBI). In Indonesia, the majority of persons with disabilities work in the

⁴⁵ Martin Siyaranamual, 'Disability Situation Analysis Challenges and Barriers for People with Disability in Indonesia' (TNP2K and Australian Government, n.d.), <http://tnp2k.go.id/download/39050Disability%20Situation%20Analysis.pdf>.

⁴⁶ Siyaranamual.

⁴⁷ Lisa Cameron and Diana Contreras Suarez, 'Disability in Indonesia: What Can We Learn from the Data?' (The Australia Indonesia Partnership for Economic Governance and Monash University, 2017), https://www.monash.edu/__data/assets/pdf_file/0003/1107138/Disability-in-Indonesia.pdf.

⁴⁸ Lisa Cameron and Diana Contreras Suarez, 'Disability in Indonesia: What Can We Learn from the Data?' (The Australia Indonesia Partnership for Economic Governance and Monash University, 2017), https://www.monash.edu/__data/assets/pdf_file/0003/1107138/Disability-in-Indonesia.pdf.

⁴⁹ TNP2K, 'THE FUTURE OF THE SOCIAL PROTECTION SYSTEM IN INDONESIA: SOCIAL PROTECTION FOR ALL', 2018, http://tnp2k.go.id/download/6083200829%20TNP2K%20Social%20Protection%20for%20All%20Exec%20Summary_ENG.pdf.



informal sector and unemployment rates are higher in rural areas. Only 46% of working age persons with disabilities are employed, the rates are lower for women with disabilities (37%).

Indonesia has developed a robust policy framework to support the inclusion of persons with disabilities and inclusive development, key policy documents include:

- The Constitution of Indonesia
- Law 19/2011 on the Ratification of the Convention on the Right of Persons with Disabilities
- The National Development Plan 2015-2019
- Presidential Declaration 75/2015 on the Human Rights Action Plan 2015-2019
- Law 8/2016 on Persons with Disabilities⁵⁰

The history of the developing policy framework for disability inclusion in Indonesia begins in 1997 when Indonesia established the Law on Handicapped Persons, however, it was not holistic as it did not address guidelines for implementation for disability rights fulfilment and protection. Furthermore, the law used the terminology “handicapped” instead of “disabilities” which is not inclusive. It was later followed up by the establishment of Government Regulation 43/1998 concerning Efforts to Improve the Social Welfare of Persons with Disabilities and Decree of The Minister Of Public Works No. 468/KPTS/1998 on Building Accessibility. Later, the Law No. 39/1999 on Human Rights was established and stipulated that each person with a disability has the right to facilitation and special accommodations. The Ministry of Manpower and Transmigration’s (MOMT) Decree No. KEP-205/MEN/1999 also mentioned that persons with disabilities are eligible for vocational training certificates. It was followed up by the Circular Letter of the MOMT NO. 01.KP.01.15.2002 on job placement of workers with disabilities in the private sector.

The establishment of Law 28/2002 on Construction of Buildings, followed by the Ministry of Public Works Regulation No 30/PRT/M/2006 on Technical Guidance of Facilities and Accessibility for Buildings and Environment later provided a foundation

⁵⁰ UNESCO, ‘Assessment Tool for Inclusive Cities in Indonesia: 2nd Version’ (UNESCO, 2017), <https://unesdoc.unesco.org/ark:/48223/pf0000262949>.



for the implementation of accessible infrastructure. The regulation stipulates that the provision of facilities must comply with ease-of-access requirements, including ease of connection to, from and within buildings and adequate facilities and infrastructure for building utilisation.

On 30 March 2007, Indonesia signed the Convention on the Rights of Persons with Disabilities (CRPD) without reservations. Meanwhile, at the local level, the City of Solo established the Local Law No. 2/2008 on Disability Rights, which was hailed as a progressive move at the time. The local law covers rights of accessibility, education, health, participation, employment, and social aid. It also sets the foundation for the disability advocacy movement in the city, as it was the first city in Indonesia to formalise UNCRPD by adopting a “rights-based approach to disability”.

Regarding the rights to educational attainment, the Regulation of the Minister of Education No. 33/2008 concerning Facilities and Infrastructures Standard for Special Needs Schools has been established. In the following year, the Ministry of Education also established the Regulation No.70/2009 on Inclusive Education to improve access to education for children with special needs. It stipulates the enforcement that the local government must appoint at least one primary and junior high school at district level to provide inclusive education. Furthermore, Law No. 25/2009 on Public Services and Law 22/2009 concerning Road Traffic and Transportation also requires public service and transport providers to provide special treatment to persons with disabilities in accordance with regulations.

The continuous support to disability issues has been demonstrated in Solo, particularly with the involvement of civil society organisations and organisations of persons with disabilities in the movement. In 2010, Solo and other six regions including Wonogiri, Sragen, Klaten, Karanganyar, Boyolali, and Grobogan established the Disability Advocacy Team to advocate the rights of persons with disabilities at the local level.

Indonesia ratified the UNCRPD on 10 November 2011 by establishing Law No 19 of 2011 concerning Ratification of the Convention on the Rights of Persons with



Disabilities. This law indicates the commitment of the Indonesian government against discrimination of persons with disabilities and continue progressive effort to support more inclusive and accessible services. The ratification of the convention was followed with some legislative progress. For example, the Government Regulation 79/2013 concerning Road Traffic and Transportation Network mentioned accessible facilities must consider persons with disabilities needs in terms of safety, such as sidewalk, traffic signs, road marking, street lighting, and other signage. At the local level, the Regulation of Mayor of Solo No. 9/2013 on Guidance on the implementation of Solo Local Law No. 2/2008 on Disability Rights. This regulation has declared Solo an 'Inclusive City,'

The Government of Indonesia then passed a new law on Persons with Disabilities, namely Law No. 8 of 2016 to replace the Disability Law No. 4 of 1997. The Law strengthened the nation's effort to fulfil and protect the rights of persons with disabilities. The establishment of Disability Law was followed by progressive efforts in policy both at the national and local level. The rights explicitly mentioned in the Law include:

- i. The right to life;
- ii. The right to freedom from stigma;
- iii. The right to privacy;
- iv. The right to justice and legal protection;
- v. The right to education;
- vi. The right to employment, entrepreneurship, and cooperative;
- vii. The right to health;
- viii. The right to political participation;
- ix. The right to religious freedom;
- x. The right to sport;
- xi. The right to culture and tourism;
- xii. The right to social welfare;
- xiii. The right to accessibility;
- xiv. The right to public service;
- xv. The right to protection from disaster;
- xvi. The right to habilitation and rehabilitation;
- xvii. The right to concession;
- xviii. The right to being in the data;
- xix. The right to living independently and being involved in the community;
- xx. The right to expressing, communicating, and access to information;
- xxi. The right to moving residence and (changing) citizenship; and
- xxii. The right to freedom from discrimination, neglect, abuse, and exploitation.



In Solo, the Regional Regulation on Building Construction No.8/2016 includes access for persons with disabilities. Then, at the national level, The Minister of Public Works and Housing Regulation No. 14/PRT/M/2017 on Ease-of-Access Requirements for Building Facilities enforces that all buildings and their surrounding environments must comply with two principles: 1) Universal design principles considering the needs and abilities of persons with disabilities, children, elderlies, and pregnant women; and 2) Adequate standard space measurements (i.e. the need for space for movement, equipment of certain dimensions and circulation). The universal design principle includes: equitable use of space, safety and security for all, easy access without obstacles, perceptible information, independence of use of space, efficiency of user efforts, and ergonomic suitability of size and space.

Other policies concerning rights of persons with disabilities include the Minister of Transportation Regulation No. PM 98/2017 concerning Provision of Accessibility to Public Transportation Services for Users with Special Needs; and the Minister of Women Empowerment and Child Protection Regulation No. 4/2017 concerning Special Protection for Children with Disabilities.

In 2017, Kota Kita, together with UNESCO, developed the Solo Disability-Inclusive City Profile to better understand the conditions and experiences of persons with disabilities in Solo. The profile aims to help the city government and other city stakeholders better develop and implement disability-inclusive regulations and policy.

The Government Regulation No 52/2019 Social Welfare of Persons with Disabilities stipulates that the social welfare program covers social rehabilitation, social security, social empowerment, and social protection programs. Recently, Solo updated its City Regulation No.9/2020 on Protection and Fulfilment the rights of Persons with Disabilities and Mayoral Decree No. 461.05/79/2021 on Disability Advocacy Team for 2021-2024 to advocate more inclusive city planning and development.

1. The Regional Regulation on Disability still needs derivative policies to move forward with implementation. Some regulations have already been issued, such as the Mayor's decree for Disability Advocacy Team and Mayor's



regulation to accommodate everyone regardless of gender, age, ability, etc in the Musrenbang process in 2018. However, several regulations are still in development, for example: The Spatial Design Plan (*Rencana Desain Tata Ruang/RDTR*) is still in the mapping process developed by the Public Work Department as well as the Transportation Master Plan by the Transportation Department.

2. The Regional Action Plan on Inclusive City in Solo was established in 2018. However, it has not yet been translated into regional regulations on disability in Solo. Regional Development and Planning Agency (*BAPPEDA*) said that it plans to update the Regional Action Plan in 2023 to align with the latest regional regulations on disability in Solo City. The delay occurred because the COVID-19 pandemic has placed some budget for regional action plan development.

While waiting for the establishment of regulations, the government continues to communicate with local officials and departments to improve public service and public facilities in terms of accessibility to every citizen regardless of age, gender, ability, and other characteristics.

Solo city is known as being a home for persons with disabilities as it is home to numerous rehabilitations centres including the first rehabilitation centre in Indonesia, 'the Prof. Dr. Soeharso Rehabilitation Centre which was founded by Dr. Soeharso in the aftermath of the Indonesian National Revolution (1945-1950) as a part of efforts to rehabilitate veterans⁵¹. It is one of the largest rehabilitation centres in Southeast Asia and provides shelter, medical care and vocational training and remains the national centre for persons with disabilities in Indonesia. This first centre drove the establishment of related institutions in Solo, including an orthopaedic hospital, a school of physiotherapy, a special needs school for students with disabilities, and a sports club for persons with disabilities. Persons with disabilities from across Indonesia travel to Solo for these facilities, and many choose to settle permanently in the city. According to data collected by Kota Kita, in Solo there are 336 persons with physical disabilities, 206 persons with mental disabilities, 223 persons with intellectual disabilities, 170 persons with aural disabilities, 125 persons with visual

⁵¹ UNESCO and Kota Kita, 'Solo City: A Disability-Inclusive City Profile | UNESCO Inclusive Policy Lab'.



disabilities, and 107 persons with multiple disabilities. Physical disabilities are the most common type in Solo⁵².

In 2017, Indonesia formed the network of Inclusive Mayors through the Association of Indonesian Municipal Governments (APEKSI). In cooperation with United Nations Educational, Scientific and Cultural Organisation (UNESCO), the Association of the Indonesia Municipalities APEKSI has developed the 'Network of Indonesian Mayors for Inclusive Cities.' The network's remit is driven by the goals of the UNCRPD and Indonesia's Law 8, 2016 on Persons with Disabilities. One of the outputs of this collaboration has been the 'Assessment Tool for Inclusive Cities'⁵³. The assessment tool divides questions into the following categories:

- Data,
- Community Development / Political Participation,
- Housing, Health,
- Social Protection & Services,
- Education,
- Sport,
- Art & Recreation,
- Labour,
- Access to Justice and Protection,
- Disaster Risk Reduction,
- Public Transportation.

The development of this tool demonstrates how the Indonesian government is relatively progressive in terms of ideas about inclusive cities. It is important to note how the different categories represent a holistic way of thinking about inclusive cities and a connection to other global challenges such as disasters. Participatory data collection and mapping tools were also developed by Kota Kita as part of the collaboration with UNESCO⁵⁴.

Under another sub-programme of AT2030, the Bartlett Development Planning Unit (DPU) at UCL has led research with Kota Kita on community-led solutions for assistive technology in Banjarmasin, Indonesia⁵⁵. This collaboration led to students

⁵² UNESCO and Kota Kita.

⁵³ UNESCO, 'Assessment Tool for Inclusive Cities in Indonesia: 2nd Version'.

⁵⁴ UNESCO and Kota Kita, 'Toolbox of Practices and Program Ideas: Disability-Inclusive City Banjarmasin' (UNESCO, 2019).

⁵⁵ Ignacia Ossul-Vermehren, Mark T Carew, and Julian Walker, 'Assistive Technology in Urban Low-Income Communities in Sierra Leone and Indonesia: Rapid Assistive Technology Assessment



on the MSc Social Development Practice at DPU collaborating with Kota Kita on their Overseas Practice Engagement. Students worked in Banjarmasin and Solo to develop ideas for disability inclusive cities and public spaces, working with local OPDs to develop ideas on the relationship between infrastructure, citizenship and solidarity⁵⁶.

Culture, Heritage and the development of Solo

Solo city has historically benefitted from a favourable geographical location in the centre of Java. The city sits within a 'golden triangle' with the cities of Yogyakarta and Semarang, creating favourable conditions for economic development. Surakarta is a city with Islamic origin, the city is considered the centre of politics, economy and culture in the eastern part of Central Java Province⁵⁷.

Heritage in Solo includes buildings, monuments and significant urban areas. Local authorities acknowledge culture and tourism as important city assets, the city's urban development framework refers to the importance of cultural legacies from previous generations. Strategies employed by the city to support conservation 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 participation⁵⁸.

A mayoral decree (Decree No. 646/116/I/1997) designates 70 sites of historical significance in the city. However, it is important to note there is no local regulation regarding conservation, so these sites are not legally protected. Heritage sites are categorised into:

- 1) areas or districts,
- 2) traditional buildings,

(RATA) Survey Results.' (London: Bartlett Development Planning Unit - Global Disability Innovation Hub, 2022), <https://at2030.org/assistive-technology-in-urban-low-income-communities-in-sierra-leone-and-indonesia/>.

⁵⁶ UCL, 'SDP Overseas Practice Engagement', The Bartlett Development Planning Unit, 5 January 2017, <https://www.ucl.ac.uk/bartlett/development/programmes/msc-social-development-practice/sdp-overseas-practice-engagement>.

⁵⁷ Christian Obermayr, 'Introduction to Surakarta (Solo)', in *Sustainable City Management: Informal Settlements in Surakarta, Indonesia*, ed. Christian Obermayr (Cham: Springer International Publishing, 2017), 111–33, https://doi.org/10.1007/978-3-319-49418-0_6.

⁵⁸ Putu Ayu P Agustiananda, 'Urban Heritage Conservation in Surakarta, Indonesia: Scenarios and Strategies for the Future' 12, no. 02 (2012): 8.



- 3) colonial buildings,
- 4) religious buildings,
- 5) gates, memorials, bridges and street furniture,
- 6) parks and open public spaces.

As well as having a reasonably established culture of disability inclusion in the city, Solo is home to numerous non-profit organisations.

Urban Development, Infrastructure and Living Conditions

Since becoming independent in 1945, Indonesia has undergone political changes. Today, Indonesia has a devolved governance structure, which came into force in 1999 with the passing of a series of 'autonomy' laws. The structure includes two community level (unofficial) administrative units: Rukun Warga and Rukun Tetangga which are a key part of facilitating more participatory governance and urban development. Local Rukun Tetangga (RT) leaders are elected by the community. The empowerment of cities and local communities in decision-making through this system has been quite successful. However, one of the challenges is that these roles are voluntary, meaning community members receive no remuneration for taking on a leadership role.

In 2007, the processes of decentralisation were further developed through a new spatial planning law, encouraging horizontal coordination between cities and communities. Central to this was that community participation, ground up knowledge and local wisdom is considered and maintained. One of the ways this is done is through the Musrenbang, a formal discussion forum for prioritising development planning activities and budgeting. The Musrenbang operates at community, city and regional scales to ensure knowledge is transferred from the ground up. There is the intention to include diverse communities in these consultations and women's groups have been very active. However, the engagement of persons with disabilities has so far been limited.

There are three main types of cities in Indonesia: coastal cities, interior towns and palace cities with many combining European, Islamic and Hindu influences. In most cities the following elements are present:

- a traditional centre with a linear structure, oriented at the compass rose, most common in Java and Bali
- European historic quarter



- Chinese quarter near the city centre
- Residential areas called kampungs, usually in an irregular pattern⁵⁹

Solo, as with the rest of Indonesia, has experienced rapid urbanisation⁶⁰.

Much of the city is residential, with residential spaces covering over 60% of land. Most houses are 1 or 2 stories high, with multi-generational families living in one dwelling, resulting in average household sizes of 5 or more⁶¹. Most of the city is low-rise, with buildings generally no higher than 3 stories. There is a high amount of informal construction with a lot of housing built by residents themselves.

Solo's economy is based on industrial production of chemical and textile products. The city is well connected, sitting on the main transport route across the island, connecting it to other cities which, along with its position as an economic centre, generates a lot of commuters. Public transport options are comprehensive including trains and buses, and most have accessibility provisions. A bus rapid transport system (BST) has been implemented to form a more affordable and sustainable transport solution, reducing the use of private vehicles in the city⁶².

Jalan Slamet Riyadi is the main road, dividing the north and south parts of the city. The southern part of the city is more developed than the North, is higher density and is home to the business district. The northern part of the city is more residential⁶³.

Solo city sits within the larger Surakarta metropolitan region called Subosukowonosraten, that also includes the cities of: Sukoharjo, Boyolali, Karanganyar, Wonogiri, Sragen and Klaten.

Health, Environment and Climate

An inclusive city must also be a healthy and resilient city and for Solo, inclusive environments, public health, and climate resilience are intricately linked.

⁵⁹ Obermayr, 'Introduction to Surakarta (Solo)'.

⁶⁰ Imam Buchori et al., 'Urban Expansion and Welfare Change in a Medium-Sized Suburban City: Surakarta, Indonesia', *Environment and Urbanization ASIA* 11, no. 1 (1 March 2020): 78–101, <https://doi.org/10.1177/0975425320909922>.

⁶¹ Obermayr, 'Introduction to Surakarta (Solo)'.

⁶² Ratna Budiarti and Surakarta City, 'SURAKARTA CITY REPORT', *Asian Mayors of the Eighth Regional EST Forum*, 2014, 7.

⁶³ Budiarti and Surakarta City.



Solo has a tropical monsoon climate. The rainfall in Solo is significant, with precipitation falling even in the driest month of September. December is the city's wettest month with precipitation reaching a peak of an average of 312mm | 12.3 inch. Temperatures in the city range from average 25.4 °C to 27 °C. January is the coldest month, and September is the hottest. Surakarta has two main seasons, dry season from April to October, and Rainy (monsoon season) from November to March.⁶⁴

During the rainy season, the Bengawan Solo River has been a cause of large-scale flooding in the city, although there are several tributaries that also flood during heavy rain. The city's infrastructure contributes to the flooding problem, as some of the flood water in low lying areas originates from the city's poor drainage. This pattern of flooding is historic, with the largest flood in Solo's history taking place in 1966. This historic flood left 13,000 people homeless. There have been eleven large floods since this disaster, with the largest taking place on December 25th, 2007. Heavy rain led to severe flooding along the river and lowlands, and landslides in the steeper areas surrounding Solo that killed over 100 people. No fatalities were reported in Solo itself, however, at least 6,600 homes were damaged with the poorer areas worst hit as their homes were built of lower grade materials.⁶⁵

The city's high occurrence of flooding coupled with its poor waste management are indisputable sources of harm to human health. Due to inadequate waste management, the cities rivers and waterways become clogged with domestic waste. Waste flows into the rivers during these wet seasons contaminating water sources. The waste attracts animals such as stray dogs, cats, rats, mice, and pests like mosquitoes, flies, and cockroaches. The insects, of which some are also attracted to stagnant water, are responsible for the development of germs which cause several diseases such as malaria, hepatitis, yellow fever, typhoid fever, diarrhoea, and cholera.⁶⁶

⁶⁴ 'Surakarta Climate: Average Temperature, Weather by Month, Surakarta Weather Averages - Climate-Data.Org', accessed 12 April 2022, <https://en.climate-data.org/asia/indonesia/lampung/surakarta-576734/>.

⁶⁵ Heather Lynne Taylor, 'Children's Experiences of Flooding in Surakarta, Indonesia : A Thesis Presented in Partial Fulfilment of the Requirements for the Degree of Doctor of Philosophy in Emergency Management at Massey University, Wellington, New Zealand' (Thesis, Massey University, 2011), <https://mro.massey.ac.nz/handle/10179/3266>.

⁶⁶ Jean Baptiste Aboyitungiye, Suryanto, and Evi Gravitiani, 'River Pollution and Human Health Risks: Assessment in the Locality Areas Proximity of Bengawan Solo River, Surakarta, Indonesia', *Indonesian Journal*



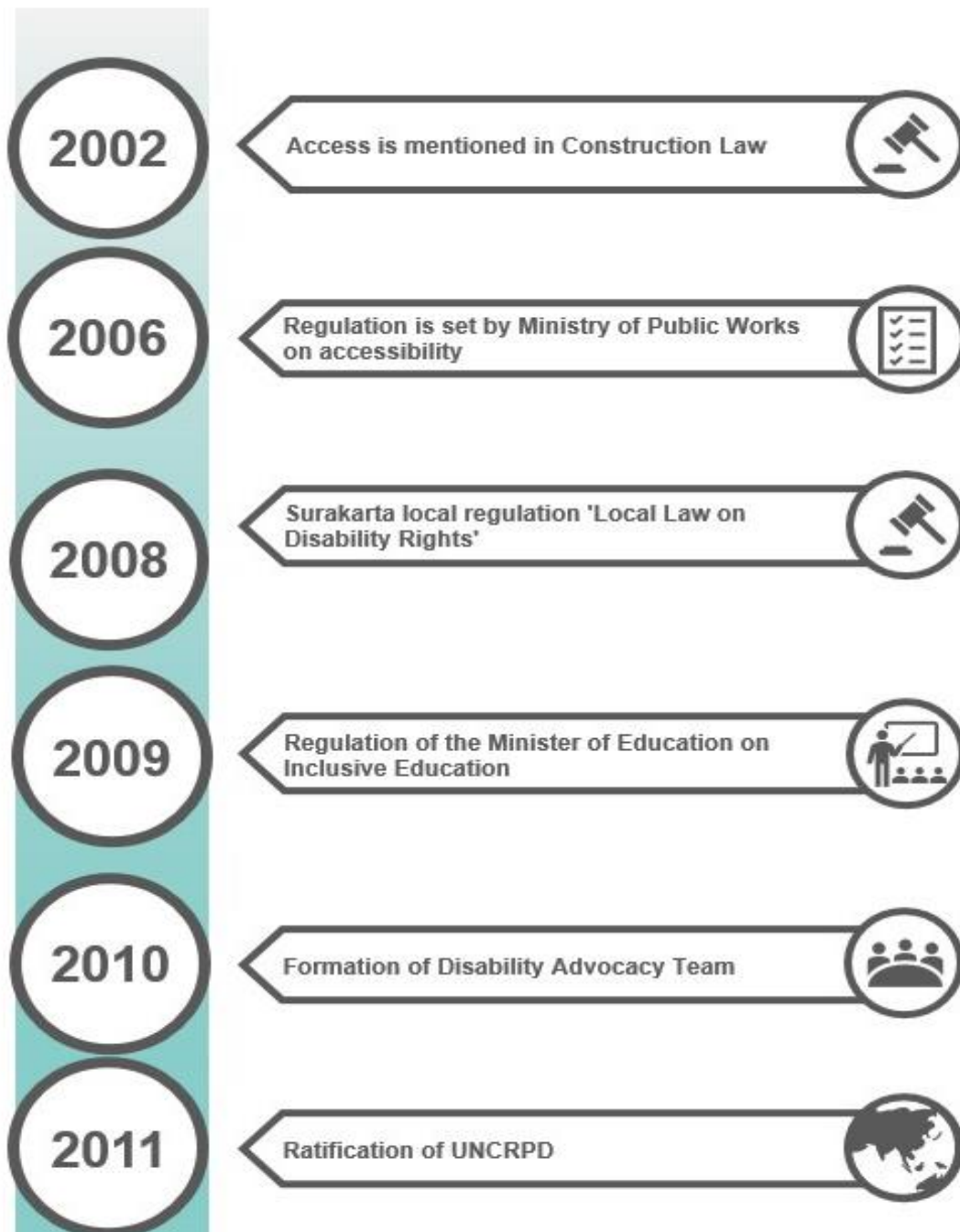
As for green spaces, while the constitution of the Republic of Indonesia confirms the right for citizens to “obtain a good and healthy environment,” with environmental protection laws dictating that the portion of green open space should be at least 30% of the total area, this is not the case in Solo. The city’s green space is a third of this target, at 10%, due to high population growth in the city. Scholars believe this percentage could be increased by restructuring the city and rehabilitating forests and urban land currently not functioning to the benefit of the city’s occupants.⁶⁷

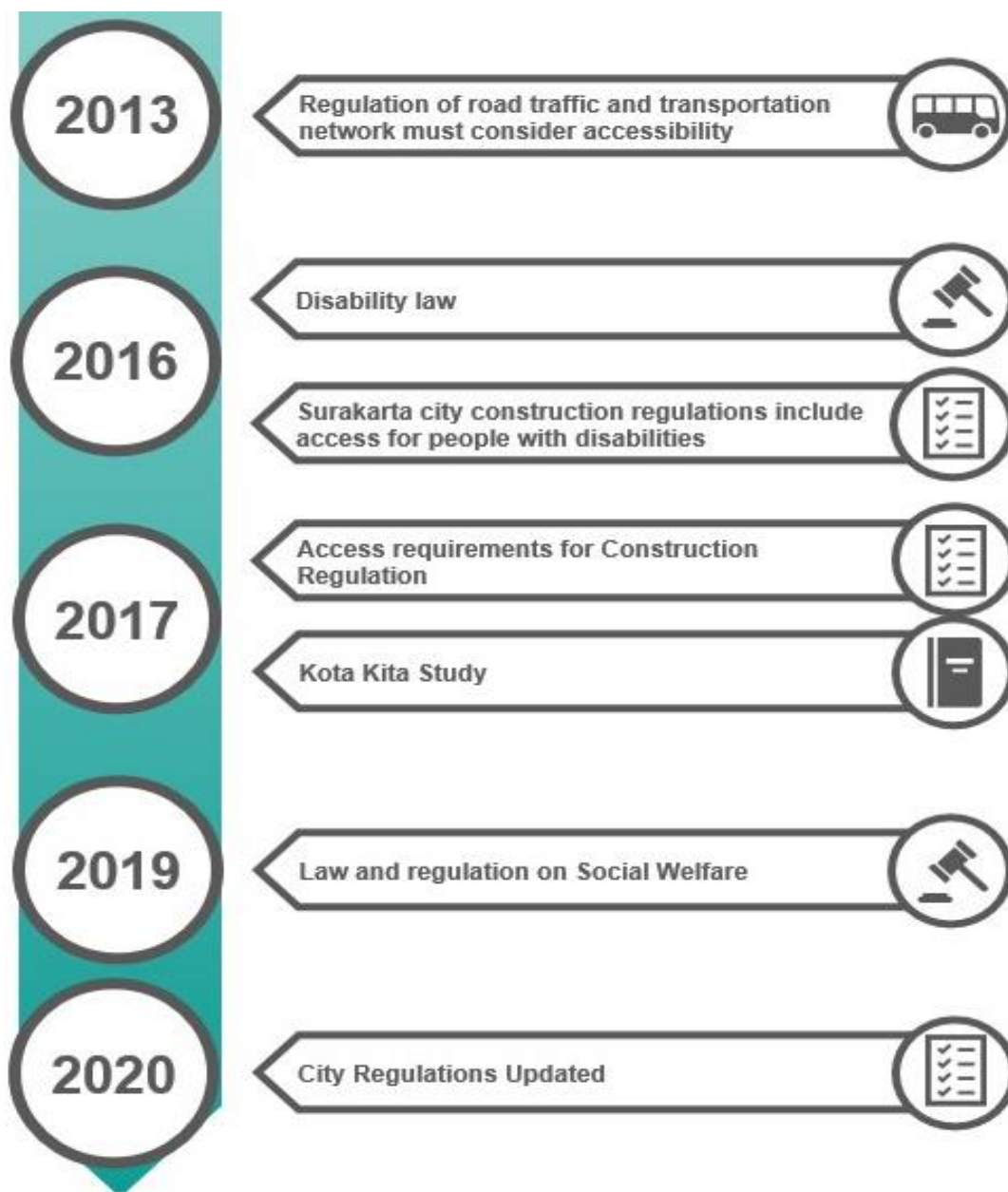
of Environmental Management and Sustainability 5, no. 1 (12 March 2021): 13–20,
<https://doi.org/10.26554/ijems.2021.5.1.13-20>.

⁶⁷ ‘(PDF) Journal of Global Pharma Technology Green and Health Constitution of Green Open Space and Its Implementation in Surakarta’, accessed 12 April 2022,
https://www.researchgate.net/publication/347120892_Journal_of_Global_Pharma_Technology_Green_and_Health_Constitution_of_Green_Open_Space_and_Its_Implementation_in_Surakarta.



Pathway to inclusion – where are they?







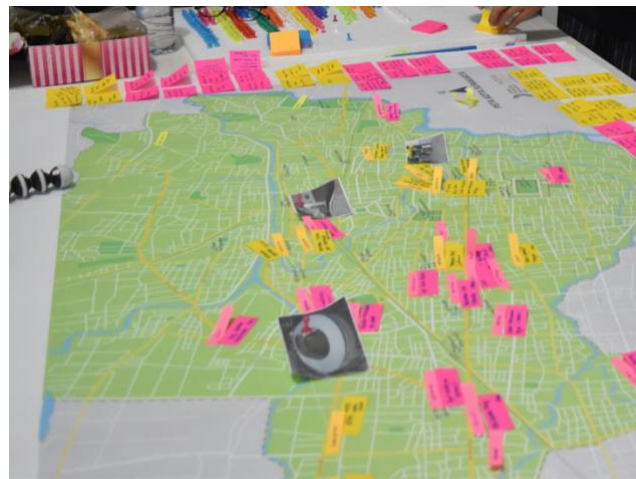


Summary of activities

Research activities took place from April 2021 – August 2021 in three phases. The research combined virtual and face to face research activities and followed local protocols around the COVID-19 pandemic.

Phase 1 focused on understanding the current state of accessibility in the built environment in Solo through desk research, document reviews, working sessions and stakeholder mapping. Interviews took place with key stakeholders including; government officials, architects, urban planners, project managers, academics and entrepreneurs.

Phase 2 focused on capturing the lived experience of persons with disabilities in Solo and their experience of the built environment and infrastructure. Interviews, photo diaries and co-design activities were employed to understand; the challenges and barriers persons with disabilities face in the city, areas where good practice can be found and aspirations for a more inclusive city.



Co-design workshop. Participatory mapping.

Phase 3 focused on synthesising the findings of the previous two phases by holding workshops to discuss and validate the initial findings. The aim of these sessions was to identify, 'actions towards inclusive environments' by identifying shared challenges and opportunities across the diverse stakeholders involved. The workshops employed participatory inclusive design techniques to elicit insights and prioritise areas for action while allowing participants to gain experience of inclusive design methods that could be applied to their own work.

The research engaged three key stakeholder groups;

- **Policy:** government and policy;
- **Practice:** industry professionals such as architects, urban planners;
- **People:** persons with disabilities, community groups, other citizens.



15 stakeholder interviews were undertaken with government and industry professionals operating in the domains of inclusion, accessibility and/or the built environment. One additional stakeholder attended the workshops. The gender balance was 6 male to 10 female participants.

10 interviews and 5 photo diaries with interviews were conducted with persons with disabilities. An additional two participants attended the workshops. The gender balance among our disabled participants was 10 male to 7 female participants.

Across all the activities undertaken the gender balance was 17 male and 17 female participants. Age groups ranged from 18-29 to 60+ with the majority of participants with disabilities between the ages of 18-29 (4) and 30-39 (9). Among policy and practice stakeholders participants the most represented age group was 40-49 (9).

Our disabled participants had a mixture of mobility (6), visual (6) and hearing (5) impairments. One of our government and industry stakeholder interviewees also identified themselves as disabled.

Limitations of the research include the lower representation of female participants among disabled participants, a lower number of older participants and a limited representation of different disabilities. Both related to recruitment challenges during the research.



Workshop tools included tactile maps to support inclusive participation.

Multiple workshops with disabled participants and stakeholders took place where exploratory co-design activities were used to discuss the findings from the primary data collected. Activities included journey mapping, participatory mapping and priority setting. An additional workshop took place with the immediate research team to validate the research findings.

Who has a stake in inclusive design and an accessible built environment in Solo, Indonesia?

The team conducted a virtual mapping session with Kota Kita to identify who has a stake in a more inclusive and accessible built environment. 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 the diagram below.





Insights

Thematic analysis was used to explore the research data which identifies key themes across the three different stakeholder groups; policy, practice and people. In-depth insights from the research are described through these themes and relay the different stakeholder perspectives throughout. The themes are:

Daily life for persons with disabilities in Solo

“Well, the important thing that I’m able to access and I can afford to go there and I can bring my wife and kid.”

Solo is generally considered a good place to live for persons with disabilities. Participants remarked on various challenges they face and aspirations they have but in general participants felt able to go about their daily life activities. Most participants had been educated or trained, were in employment and could undertake household chores. Religious activities such as prayer and visiting the local mosque are an important part of daily life for many people, so it is essential these spaces are accessible. Family life is important, and participants felt it was very important to take part in activities with their family members, such as go to the park, and this required recreational spaces to be both accessible and affordable.

“Shopping, cooking, sweeping, mopping, washing dishes, thank God there are no servants. Everything is done independently.”

However, some of the physical environments that are essential to daily life activities such as markets for food shopping and eating are not very accessible: “The Gede Market already has accessibility, but there is no socialisation to us”. This is in part due to these being quite informal spaces where vendors may not use the space in the correct way, creating barriers to access.



Local markets have accessibility provisions, but spaces are frequently misused.



Gardening is a new hobby for this participant.

The global COVID-19 pandemic had an impact on people's daily life activities during the course of this research, with people having reduced mobility option and in some cases also losing work. One participant developed a new hobby in this time:

"Gardening is actually a new hobby, this is what I said yesterday was right for corona-time and until now I take care of the flowers. It's just that I've been swimming for quite a long time, so I'm more happy with swimming."

Solo, the inclusive city

"I'm already comfortable in Solo because it is easy to go anywhere here. This means that most private non-government places are accessible, they already provide access for persons with disabilities. I have never found a place that is difficult to reach."



Solo has a reputation for being an inclusive city, due to its history as a centre for rehabilitation and this was reinforced by interview participants. People are drawn to the city and many choose to settle there after visiting for rehabilitation services due to feeling more comfortable. Solo even has nicknames such as a ‘paradise for persons with disabilities’. However, when it comes to details and certain specific aspects of access and inclusive environments, there are still challenges. A culture of inclusion exists in Solo and as such, experiences of stigma are less – a key factor for any inclusive city. In Solo, there is a sense that culture, policy, innovation and technology must work together to create a successful city.

“The culture of the people, now this is Javanese culture, like caring for one another and also kinship. So indeed, this Solo City is unique, there are still traces of the sultanate, but there are also modernization developments. So what's interesting is that these two things can collaborate, and technology can adapt to the times like that. This is very extraordinary.”

An inclusive city needs to be physically, socially, culturally and economically accessible: “The first is that life in Solo is relatively cheaper, so here, for example, if we are stuck with Rp 10,000 we still can eat and feel full enough. Then any access is easy, for example, the design layout of the hospital, the school, the market and so on. Besides, these facilities are available for almost 24 hours.”. Participants also 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, it will help result in less stigma and a more inclusive city overall.

“Inclusive cities are cities that have placed disabled persons as actors of development. The key is there, starting from planning, organizing, monitoring to evaluation or feedback. Sometimes, the government argues that we are not ready with facilities, infrastructure, accessibility and so on, proper accommodation, like that. It is true that it is a prerequisite, yes, but that does not mean that it is like a counting sequence, that it is there first, then it is involved.”

Accessibility varies across the city and participants had different views about how physically accessible the city really is. Some participants commented on access being fragmented, that there can be a lack of continuity around accessibility or that at the smaller scales, in neighbourhoods and more informal parts of the city, the infrastructure is less established: “I think most of the places are easy to access. But the sidewalks are not easily accessible in the neighbourhood”. Conversely to this, other participants found the neighbourhood to be accessible because they are familiar with it, where they used landmarks or infrastructure such as railway tracks to help navigate.



At the neighbourhood scale, accessibility varies.

“This also functions as a sign for people with visual impairment. For example, at an intersection where there were speed bumps, we will count how many speed bumps from the alley to our house. Then, when there is a change in the physical environment or infrastructure, the head of the local community, the community leader should speak and consult with the residents regarding the changes that will be made.”

Some participants placed a strong emphasis on diversity and that what might be accessible for one person might not be for another, highlighting the importance of inclusive and intersectional approaches to participatory design:

“In terms of the building, to be honest, it is still not accessible. Because sometimes, their perspectives are different, with us, even those with disabilities themselves are different.”



The 'Inclusive city' is a broad term and can be used quite generally to focus on social inclusion for all, or more specifically to focus on certain disadvantaged groups such as women and girls, children, older people, persons with disabilities. These diverse groups can have different aspirations and city governments can have competing strategies for looking at inclusive cities from these different angles, which may dilute concrete action on the ground. It is evident that Solo has a vision for being an inclusive city, but there are challenges to overcome in balancing the priorities and needs in such a diverse city.



It is important that inclusive design interventions consider the needs of different types of disabilities.

“From what I’ve seen they’re all fragmented. Solo is a home for persons with disabilities, but then it’s still not accessible in some parts. It sometimes shifted to Solo as a city fit for children. Actually, everything can become one, so an inclusive city considering everyone’s needs... Solo is definitely more inclusive and accessible than other cities, that's what I see. But I’d say that not everything is in accordance with the rules.”

The social environment, stigma and empowerment

“Because people are friendly, like smiling, then people like to help, like that. Actually, it is friendly, yes, but the access is still limited, there are only running texts, but the others are still limited, such as written information. But still, the people of Solo are friendly, if I ask, they want to answer.”

An inclusive culture or community can go a long way to overcome some of the inherent challenges in the physical built environment. In Solo, there is a strong sense of solidarity with persons with disabilities and many participants said they were happy to live there.



“The feeling of living in Solo is that I’m happy, because there are a lot of disabled friends, so we don’t feel insecure, there are lots of friends, you know”

Social interaction and social environments are important aspects of building inclusive urban life. One participant reflected on the importance of the social side of the participation process and how building relationships and having social gatherings is just as important to success as the more formal, structured participation processes.

“We are social beings, right? Despite having disabilities, we still want to interact with others. That is the first. Then, related to participation, if we involve and interact with the society like social gathering, visiting our sick neighbour, this is also a part of participation. The third is related to their environment, the physical and social environment, regarding attitude, services, social interaction, and so on. So as I see that social interaction is important, I encourage myself to involve and interact with the community.”

A strong sense of community helps foster inclusion in diverse ways. Examples include participants being taught sign language through community groups and these groups also facilitating advocacy efforts by visiting spaces that may be inaccessible together. One participant remarked that inclusion of caregivers is less supportive, and that consideration for them should also be accounted for.

However, disability awareness and a positive attitude from citizens is not always guaranteed with one participant explaining how in shopping malls they were often not granted priority use for the elevators that they rely on.

Process of inclusion and participation

“We can say that meaningful participation needs the complete involvement of marginalised people. It’s not only talking about their presence or absence but also about how they can participate in such a space to share ideas, convey and discuss different views as openly as possible, enabling them to intervene in such policy changes.”

Processes of inclusion and participation was a major theme of discussion. This is in part due to the participatory approaches that exist in governance in Indonesia, such as the ‘Musrenbang’. There is a strong sense of citizenship among residents in the city. The processes of inclusion matter as much as the final outcome, because



access is always evolving – so having voices heard and evidence that participation is valued is an important part of creating an inclusive environment and culture.

“We invite them, we involve them, so we know better what the lowest level of the community wants, for example the RT RW level until later in the Sub district, they want sewing training for persons with disabilities in this village. We will accommodate the proposals, and in the following year, we will have sewing training.”

Processes of inclusion and participation are complex. There are different voices to hear and acknowledge and structuring and implementing feedback can be challenging with accountability extremely important. It is necessary to follow up participation and inclusive design interventions to acknowledge what has been achieved and also to educate how certain inclusive design features work. Sometimes different community actors need to build awareness about how certain interventions can benefit the whole community and continual, effective participation processes can support this.

“In regard to participation, we really hope that our participation is not limited to the planning level, but also extends to its implementation level. How can we know the quality control level? How’s the monitoring and evaluation? That is very, very important. So far, our participation is still at the planning stage”

Indonesia has a national ‘Disability Advocacy Team’ that works to ensure inclusion across Government initiatives at the city scale playing a key role in facilitating for the participation of persons with disabilities. However, participants were clear that different government sectors must be collectively engaged in inclusion processes as without cross sectoral support, including budget and resources, advocacy can only go so far.

There was strong consensus among participants that participation and inclusion must take place throughout project delivery, from planning to design, construction, monitoring and evaluation. For this participation to be constructive, it should be responsive to the project needs in order to deliver the most inclusive solutions.

“Being tested... yes, it has. The ramp slope has also been evaluated and we have changed it several times, the old one, it's okay, we are actually open. The



hope is that when we involve them, and then they check it again, something's missing, we evaluate it again. It's okay."

Guidelines can support participation too, and the Government has been developing guidelines to support better participation in consultation processes such as the Musrenbang: "before 2016, I wrote here that the involvement was probably less than 1%, yes, so we built internal communication first. How could the technical guidelines accommodate participation at each stage, now there is already one. And how the community can be able to interact in those forums, because this takes courage too." Guidelines are useful as they help support accountability, which is essential to ensure processes of inclusion are maintained in the long term. In Solo there is a good appreciation of the need for ongoing monitoring and evaluation and a long-term approach. However, this approach needs resources and ongoing support to be maintained which can be challenging when a city government has multiple priorities.

Inclusive Communities and Community-led solutions

"I am used to living in Solo. This means that since my wife and I joined the community after our education in Solo, I have enjoyed living here, it is like being in my own village, you know. So if here, in this village and its surroundings, it's us, who are blind people, from the community, we think we are like ordinary people, you know. However, people still perceive certain things, considering that we are different from others. But in essence, the community has accepted us living in this community."

Overall, in Solo there is a strong sense of community solidarity and an appetite for community-led solutions, this goes from a strong informal sector for the production of Assistive Technology (AT) to community support systems and collective advocacy work. To some extent this is supported by the Indonesian government where the devolved governance structure supports community participation at different levels.

"First, in the RT RW or in the village area, we also socialize with our neighbours, especially in disability issues, so that we can be accepted in our community. Second, we can also get closer to them, our neighbours. Because we are a minority, we must be closer to the majority. Third, if there is something that is a problem for us among the blind or disabled, the community knows whether it is related to government or village activities. So,

let us be considered as ordinary people, not differentiated. Indeed, in certain matters there are still differences, but in general we are considered the same.”

Some participants had formed a community to support advocacy for inclusion in the city called the ‘Hore Hore community’: “Actually, it's more about accessibility too, but our concept is cheerful, happy, you know. We like to go to Balekambang (a city park in Solo) and Radya Pustaka Museum and we observe the places,



The Hore Hore community on tour.

whether those places are accessible or not.”. The group can make the experience of advocacy work joyful and build solidarity to overcome what could be negative experiences of inaccessibility.

People also have a desire to be independent and be able to solve problems for themselves, knowledge of their home, their community is an important part of facilitating this: “if I rent a new house then of course I need to orient myself to know the house. If I enter the house, first it is the bathroom, kitchen, clothesline, bedroom, dining room, living room. Then later the more specific orientation, I have to know the position of the lamp socket, switch, screw, fuse. I have to know where and how many, because if at any time the electricity in the house has a problem, at least I can handle it myself if it is in the scope of the house.” At the neighbourhood scale, it is very important that persons with disabilities are kept informed of developments in the community to avoid new access challenges.

Some practitioners are also strongly focused on community-led design, which supports more participatory approaches to city design: **“And maybe the difference with other architects, is actually more of an approach, and the term is soul, or we are more focused on empowering citizens with architectural tools. So**



architecture is a tool for the term empowering citizens, to make citizens more empowered, like that.”

In the policy environment, engagement with Organisations of Persons with Disabilities (OPDs) is vital to ensure representation from the disability community: “Every three months, I would hold coordination meetings with all OPDs. So, we will discuss what has been run by the OPDs. For passive OPDs, they will convey what they need.”

However, some participants still expressed issues around a lack of knowledge or stigma as barriers to engaging in community activities.

“Some people are having doubts when they want to invite me to an occasion, like if she really wants to go? What if it is difficult for her? But, I think it is very okay and equitable to invite us, disabled people. I think this is very valuable and can also be a proof that we have been accepted in the community. This should be built from two sides of the community, the community in general and disabled community. So with my understanding, I encourage myself to interact and involve in the community. If I don’t do this, there will be misunderstanding. One side is afraid that if the other side is offended and then the other side will feel like themselves are embarrassing. These all are only prejudices. If we don’t start to cut these prejudices, the interaction will go wrong. Actually, we can see that the community in general also wants to interact with us, disabled people.”

An enabling environment is needed for access to education and opportunities

For many participants, inclusive education had not been available to them, but the Government has made significant progress in this area in recent years. Participants talked about the importance of education to enable opportunities in later life, and also the challenges of ensuring access to inclusive education. Many participants had experience in inaccessible environments during their education and had to rely on friends' help to access their education. Participants needed to be extremely motivated to access education due to the numerous challenges they faced.



“Oftentimes, it happened like that if I depended on others. If I want to go alone, I need to take public transportation. After that I still had to walk. So if my friend didn’t go to school, I wouldn’t go to school as well, so the next day I would also be punished by our teacher.”

There was criticism about schools for children with additional support needs, referred to by participants as, ‘special needs schools’ not being fit for purpose, and a view that providing inclusive mainstream schools was the way forward. It was evident that a lack of awareness around disability and inclusion in the education system negatively impacted the educational experiences of persons with disabilities.

“They said they don’t have sufficient facilities yet. This is what I don’t like. Why don’t they ask first about my ability, what I’m capable of? They should ask those things first, don’t just judge by saying “Oh there’s no ramps in here or we don’t have sufficient facilities for you”

Where schools are more inclusive, challenges remain with one participant describing how time was needed for the class to adjust and be supportive: “When I was in high school, because it was an inclusive school, the teacher helped me a lot. It wasn’t awkward, the teacher taught other students how to behave with people with visual impairment. They cared for us. At first it was a bit awkward, it took a long time to adjust.”

Various inclusive school projects were discussed but one participant remarked about the challenge of limited resources and distribution, remarking that in some cases it is easier to bring a teacher to a school than bring pupils to the inclusive school due to large distances and transport challenges: “Schools in Solo cannot deny children with disabilities. But not every school is ready because they don’t have a specific teacher for that. Even though right now, inclusive schools are available, the existence of specific teachers for assisting disabled children is still a problem for us.”

In terms of employment and livelihood opportunities, many persons with disabilities rely on vocational training and employment in the informal sector, for example, working as a masseuse or seamstress. There are training programmes available for these roles, but in many cases, there are no resources to provide equipment to start working. The global COVID-19 pandemic also severely impacted people’s livelihoods, as much of the informal sector work was no longer possible.



Access to public services

“For civil registration matters such as birth certificates or death certificates, I usually ask for help with the neighbourhood apparatus, from the RT leader and so on. Thank God I live in a good neighbourhood so if there’s any new information the RT leader will tell and direct us.”

Some participants felt that in general public services are quite accessible and they were able to access services without long waits, in many cases due to the supportiveness of staff or community help, but the physical environments are often still lacking:

“I asked at that time, “Why are these stairs? There's no ramp?” and they answered “Oh, the ramp is in the back for the disabled person”. This means that persons with disabilities are made their own route, you know, it means that it is not yet a universal design.”

An over-arching strategy for the distribution of public services is important as one participant talked about how in some cases services are not evenly distributed or well-integrated, leading to a loss of accessibility. For example, one village may have 15 primary schools but only one high school – limiting opportunities for continued education for all and particularly those who may be less able to travel to high schools further away. They remarked that building permits can be given out quite freely without an overall consideration for the distribution of services. A city masterplan and development strategy that is based on data and evidence could support better distribution of resources and coordinate priorities. Social security provisions can also be challenging to access, as in some cases (such as the Cash Social Assistance programme provided during the global COVID-19 pandemic), if the disabled person is not the head of the family, then they cannot access it.

In terms of financial inclusion and banking, ATMs are generally not accessible, though in some cases assistance is provided by the bank’s security guards.

Communication accessibility is an important aspect of inclusive public services. There is a need for more sign language training and raising awareness of inclusive programmes and initiatives. Sometimes, inclusive programmes can be developed but not publicised, so persons with disabilities are not aware of their existence.



Health, Sanitation, and Infrastructure

Healthcare was frequently mentioned as a priority area by participants, and in general healthcare accessibility had been prioritised with 17 accessible public health centres and two accessible regional hospitals across Solo.

“In my opinion, Puskesmas (Pusat Kesehatan Masyarakat, in English: Community Health Service Centre) is also a best practice. In one year and a half, 17 Puskesmas in Solo are already accessible. They improve their accessibility by providing handrail and toilet for disabled people, they also provide dedicated waiting rooms and service until pharmacy services.”

However, services related to mental healthcare were less positive. Services such as counselling are not covered by social security which creates a financial burden to families who need those services, with most not receiving the mental healthcare services they need. Social protection services such as support for people, and particularly women, who experience sexual harassment is needed. One participant also talked about the experience of bullying and violence in school, support services for this should be available: “Of course. I got beaten, I got bullied and it was very heartless and made me so insecure. I lacked self-confidence.”

“There are obstacles, though. Like a lot of discrimination, But I try to be patient and relax”



Accessing Assistive Technology (AT) can be challenging, and AT provided is not always fit for purpose. Repair is also an issue with AT frequently breaking before a replacement can be provided.



An example of accessible toilets in a train station in Solo.

Water and sanitation infrastructure must also be inclusive and can be an area of conflict due to the complexity of managing this infrastructure:

“I don’t completely agree if they want to close the sewers and drains. I mean it can disrupt the passage of water and it can cause a disease. In my opinion, the sewers and drains like the one in front of my house shouldn’t be closed with concrete. It would be better if they used iron (iron grill for sewers cover).”

Some participants even used the poor state of infrastructure as a guide, using existing drain paths to assist with navigation. However, there was also a view that this could be dangerous.

“This is the edge, we have to walk on the edge, we follow this. That left foot has to be here. Sometimes, the government or the community build a small canal on the side of the road. We don’t know the position and we can fall.



That's why we need a cane. So in theory, the orientation is “You have to know about the road, its edge”

Inclusion and wellbeing

Inclusion and people's wellbeing are closely connected. Factors influencing wellbeing and an overall sense of inclusion in the city include:

- Access to religion and culture

Religion is an important part of daily life for many participants and many mosques in the city are not accessible, there is a need to work with religious leaders to facilitate inclusive participation in religion and prayer for persons with disabilities.



Accessibility of religious spaces can vary.

- Access to green spaces and recreation

Several parks in the city are considered accessible, and this is largely due to advocacy efforts.

“The fight to build the park wasn't easy. This is the third year we've been proposing, but it was very complicated. Last year, it already appeared but it's gone.”

Access to parks is also dependent on affordability and transport options, which can be expensive. In this case, a participant is visiting a recreational space after pay day.

“Well mostly after payday I want to go to a recreational place, but I never determine specific places. Yes, I just want to unwind from this busy life. The point is I can go out with my wife and kid.”

- Access to tourism

Recreation beyond the city of Solo through tourism was also a priority for many participants, with participants sharing aspirations to travel across Indonesia and internationally. Accessible tourism should include accessible transportation, sanitation and accommodation to allow people to travel with dignity.



Accessibility transport and assistive mobility devices are important to facilitate access to tourism.

“I wanted to go to recreation. I want to go to Bromo Mountain. I want to see that, you know, but we need to use stairs if we want to climb up the mountain, and it’s very high. That seems to be an obstacle too, but actually, the place around Bromo can be used for recreation. But it looks like it’s no fun if you don’t go up there, right? So yes, Bromo is a place I really want to go to. And I also have been to Bali, yes, the access is already accessible if in Bali, on the beaches too, then in places such as bird parks, like that also has access.”

“I like going on vacation with my nephew during the holidays. But the problem is that not all tourism spots provide accessible toilets. Well, if, let’s say, a transport facility, we can rent a car or any kind of transportation service provider that we can use according to our needs. But when it comes to toilet related needs, this would become a problem, so I usually look for a place where I can stop by to use the toilet.”

- Access to sports for recreation – not just for para-athletes

“I didn’t know about sports for disabled people until high school. Because the media rarely writes news about sports for persons with disabilities. At first, I was invited by the YPAC teacher to represent YPAC at the inter-school competition, then won up to the national level. Then it was finished, finally, after a few years of graduation, it turned out that there were those at the senior level, professional sports, I found out about this when I was in college, so it was late.”

- Participation in the community and community advocacy

“I am comfortable living in Solo. Why? Lots of places to hang out like coffee places, the seats are comfortable”

Disasters, climate change and the pandemic

The COVID-19 global pandemic has impacted persons with disabilities worldwide, and this too was felt in Solo. In particular, participants talked about the impact on livelihoods due to the reduction of informal sector work opportunities and the impact on finances. Participants also had fears of contracting the virus and levels of community participation reduced during the pandemic. Some participants were able to embrace digital technologies.



COVID-19 impacted people’s livelihoods, in some cases participants were able to adapt better than others.

“Mostly, I spend my time during this pandemic at home, I’m still afraid to go anywhere. During this pandemic, I don’t have the courage to go anywhere. I rarely went to the mall if not necessary.”



Stakeholders also discussed how budgets have been reduced or reallocated during the COVID-19 pandemic, causing additional funding challenges: “First, we have limited human resources, then second, our resources are also limited. Even during a pandemic, for example, staffing in some regional government was reduced due to redeployments by 40% or 50%, but before that, we, in BAPPEDA (Provincial Development Planning Agency), were also reduced by 77%.”

Participants also raised concerns around disasters such as earthquakes and the need for accessible design that consider safe evacuation routes for persons with disabilities. Another participant called for accessible and easily available information to access emergency services, suggesting that contacts for emergency services should be displayed clearly in public spaces and semi-public spaces such as apartment buildings. A disability service unit has been created in the Regional Disaster Management Agency but coordination lessened during the COVID-19 pandemic.

“Because the rain impeded the sound. We, visually impaired people, depend on the sound. It’s difficult for me if I want to cross the road, it’s a bit difficult, if there are no people. Then when I walked in the room it was also difficult, even though I used a cane. Because when it rains really hard, I listen to the sound of the stick when it’s near the wall, it bounces its voice, but it’s not because it’s blocked by the sound of rain. So, it’s a bit difficult if there is heavy rain.”

Weather affects accessibility in many ways. Rain affects mobility, visibility and hearing. In the rainy season, one participant relies on taxis, creating additional costs. One participant also commented that accessibility challenges are exacerbated in hot weather as the need to drink more water means needing to access a bathroom more frequently, which can be hard to find. This shows it is necessary to consider the impact on infrastructure of heat waves and urban heat islands, particularly for water and sanitation. Infrastructure is also poorer in villages, making them more vulnerable to heavy rainfall and mudslides.

“I’m afraid to go anywhere when it rains, I rather wait for the rain to stop. Riding the three-wheeled motorbike when it rains hard is also difficult, I cannot see if there’s a hole or not, it is very slippery also.”



Safety

Safety hazards and security issues, such as thefts, are a particular concern for persons with disabilities. Good quality infrastructure has a role to play in creating safe and secure environments where people feel safe and secure.

“But until now, the sidewalk still has cables running through the middle of the road. Some people must have hit the cable.”

“When I saw at the station, they provide the wheelchair but it’s locked. We didn’t know whom to ask for the wheelchair. Apparently, it happened frequently that the wheelchair was gone. Some people just took it.”

“This is really related to disability etiquette, how to deal or interact with people with diverse disabilities. When they take off from the taxi or bus also, their safety must be ensured. They need to take off in a safe condition.”

Safe and good quality infrastructure must be combined with good awareness to ensure people’s safety. Safety concerns also extended to feeling safe and free from fear of harassment or violence. Some participants did not feel confident in public spaces due to these fears.

“I don’t dare to go to the malls by myself even though there are several malls that can be accessed by persons with disabilities. But sometimes there are still motorbikes or vehicles that like to park there, or even some people who like to hang out, so I’m not confident enough to walk by myself.”

“They might think, does someone kidnap them?”

“The more disability a person has, the more discrimination and more losing of their privacy. And this becomes a potential of harassment if we depend on others too much.”

What do people know about inclusion and inclusive design?

In general, there was a reasonable understanding of concepts such as universal design and knowledge of relevant standards among policy and practice



stakeholders, although this was stronger in government and academia than in built environment practitioners.

“So, accessibility should be used by all types of disabilities, even for seniors, children, and women. Accessibility should cover everyone, everything. Universal design will accommodate these needs”

“I think we need more understanding, all the stakeholders need more understanding about what disability is, what is accessibility, and what is inclusiveness. We need another understanding of that. Because this concept tends to be divided, my lecturers and I were still wrong in implementing it. That’s in terms of physical accessibility. But for the non-physical accessibility, I think it’s more to the sensitivity of the officer or the sensitivity of the person.”

Within university architecture programmes, there is education on accessibility and inclusive design but most courses are elective. Academics also commented that they teach the general principles of universal design and inclusive cities, but not the ‘practice’. As implementation is frequently cited as a challenge, arguable more practice-based education is needed.

“Maybe architectural education can also include dialogue involving persons with disabilities should already be built. It should be like that, because all this time, the process in class or the term study process is still limited to theory, then we like applying it but there is no such thing as having to get feedback or discussing with people who really need it, like that.”

For good inclusive design practice, there is a question whether guidelines or standards are enough. For example, some industry stakeholders referenced international guidelines such as the Neufert book (German architects’ data book), while not being knowledgeable about local regulations, and questioned whether international design standards such as Neufert are fit-for-purpose in Indonesia as they are designed for different bodies and cultures (Western). Some participants held the view that if standards or rules were there and they were followed, that is sufficient. However, evidence shows that a wider appreciation of inclusive design principles and approach can be helpful, particularly to avoid gaps in door-to-door accessibility.



“For example from the Law, then from the regulations, from a kind of design guidebook such as data architect. We just follow those guidelines, those are actually enough. And that's when we've implemented everything, and we've considered who the user is, I think it's fulfilled, right?”

“The point is we follow the rules there, the technical rules are all there, we just follow them, that's all.”

Knowledge of universal design is reasonable, including an appreciation of its wider benefits. There is an awareness of the limitations of standards and the focus on mobility impairments: “Most of the standards are still for people with visual or mobility impairment. I haven't known many for hearing impairment.” However, there is a discrepancy between local and global knowledge: one industry stakeholder described following international standards as they were unaware of local regulations or standards.

“Every time we talk about accessibility, for example during hearing or other advocacy, this issue, regarding universal design, is always voiced out.”

“Talking about universal design, it's actually not just a problem with the ramp that matches the slope, it's not just a problem with an elevator, but it's also a problem whether the design is easy to use, can the design minimize the error factor that will occur. Well, now a simple ramp problem, let's say for people who use a wheelchair, still not many people understand.”

Evidence shows that all built environment practitioners should have some inclusive design knowledge to effectively deliver on inclusive design. For example, it is important that the contractor implementing a design is sufficiently knowledgeable to support good implementation.

“Back then, I discussed first with the contractor when I wanted to adjust my house to be accessible for me. I made the design and measurements, sometimes they also disagree saying this would be difficult. This needs a longer discussion. This is what we should have done, needed a discussion, why we need such a bigger door and so on. In my bathroom, I put a little ramp so I can access it with my wheelchair. This also needs a longer discussion with the contractor so that they would understand.”



While inclusive design knowledge and practice is found in Solo, there is still work to be done. Some participants talked about limitations of inclusive design knowledge leading to perceptions that places were accessible when they were not, perhaps due to a design approach focused on specific impairment groups. In addition, some disabled participants felt that a charity model of disability is still evident in Solo, and that education is needed to further a rights-based approach and the social model of disability.

“For example, let's say that the vision and mission of realizing an Inclusion City / District, the main challenge is there. The next challenge is that the government, yes, the government is not easy to accept the perspective of rights, the perspective is still a perspective of compassion, the perspective is still a charity based. Then, for friends with disabilities to open the door to provide perspective, it is not always easy. So, the main and first challenge is from friends with disabilities themselves, the second is from the government. I mean local government.”

“Knowledge, understanding and execution” Barriers to implementation

Various implementation barriers were found including; barriers in knowledge, a lack of funding and the sustainability of budgets, a lack of community backing and poor translation of the regulations into action.

“So, what is indeed a challenge is, sometimes we face owners who have zero knowledge or end users, where 'I want to build a hospital like this, please build it' but the standards, they don't understand, then about accessibility, then safety and so on, this is sometimes - sometimes forgotten.”

“I think their understanding and knowledge is already sufficient, but when talking about awareness to implement, it still collides with many interests. As we know, it's not easy for example, making a ramp, and so on. And that between knowledge, understanding, and execution in the field is not always synchronous.”



These quotes demonstrate the importance of a collaborative approach to inclusive design. For inclusive design implementation to be effective, the whole team – including clients – must be invested in the vision or approach.

“In terms of knowledge, I think I already have, but from a practical point of view, that is what is usually lacking. Like sometimes the standards are still different between what is in the field and the minimum standard as in the book.

And many in public places still don't really pay attention to the above, universal design, like the size of the ramp, the tilt and so on, sometimes it does not accommodate persons with disabilities, like that. I think the knowledge already exists, it's just the practice that may still need to be resolved to make it better.”



Accessibility features must be properly designed and implemented to be helpful.

“We are at BAPPEDA (Provincial Development Planning Agency), we still have limited resources, and then not all our needs can be accommodated right away, for example during the monitoring and evaluation process can be done once in three years, this is if there's a budget allocated for this. So, our approach is to assist community friends.”



Resources are limited, and budgets are often constrained to short time periods creating problems for the sustainability of programmes due to their funding.

The practical application of inclusive design knowledge and standards can be challenging, and many stakeholders raised the issue that the reality of implementation is more complex than the principles. Examples of challenges include negotiating land and space in the city, gaining community support and understanding and translating regulations into practice through measurable and actionable targets.

“The challenge is that in the context of preparation, not all agency ministries are truly capable of translating regulated narratives into target narratives as well as indicator narratives that can be contributed to the National Action Plan”

Role of policy frameworks

Policy frameworks are substantial in Solo, coming both from national policies and regulations and local ones.

“By making these kinds of regulations, it means that we already read the situation in the future, thus we must prepare the legal framework, so that it will continue.

Changes are real, how to ensure this change works accordingly? By continuously discussing this issue and always communicating.”

However, one participant mentioned the complexity of drafting and delivering disability inclusion policies, explaining that the latest disability regulation in Solo took a year to deliberate and agree:

“This regional regulation on disability issues, it took a year to discuss this, unlike any other regulation, usually we only discuss for 3 months. But on disability issues, we need a year to finally have the regulation. This is interesting.”

“Regional regulation already exists, disabled communities have relatively strong networks, both inclusive and exclusive. Even these friends have awareness, already have the ability to influence the policy-making process,



can push for accessibility, including, for example, pushing for the fulfilment of this assistive tool to the City Government and non-government parties. So Solo is indeed relative, let's say that the indicator as a City of Inclusion is already relatively established.”

“There is still one more Government Regulation that is still in process, so in total there will be 8 Government Regulations and 2 Presidential Regulations.”

“National Development Planning Agency, during the socialization of the Master Plan for Persons with Disabilities in the framework of elaborating the National Action Plan, was able to gather 24 institutional ministries”

Implementation of inclusive design and adherence to policy

One of the issues around implementation is the quality and suitability of materials selected for inclusive design interventions such as ramps and tactile paving. The quality of the implementation (requiring contractors' knowledge) is also important and many participants spoke about the incident where tactile paving was installed in a zig zag pattern. The issue was quite quickly resolved but is recognised as an inclusive design failure.

“Yes, then the second one, now people are building guiding blocks using marble or ceramics, right? Sometimes it is too slippery and difficult to feel it with my feet”

“Hopefully there is a guiding block, then a warning block, like that.

But, once it's implemented, maybe the implementer doesn't understand, or doesn't follow a design or something like that, but it turns out to be very different.”



Mis-construction of guiding block paving in the City Walk (Slamet Riyadi St.)



The entrance to the market. Tactile paving is present but it is often obstructed.

“So, from the entrance to the market, when we enter, we will find branched ones, some straight, some to the left or the right. So, I mean, the guiding block is different. For example, if you want to go to the toilet, we make a guiding block of this size. If you want to go to a vegetable trader, the shape or size of the guiding block is made differently, if you want to go to a fish trader, make a different one. Included also for the entrance and exit. These differentiators that should be able to be adjusted, what size.”

Built environment practitioners such as contractors need appropriate knowledge to be able to implement inclusive design interventions well.

“There has to be capacity building for the contractor regarding this. And there should be quality control in the process. This is what seems to be missing in the process. So, it is sad if for example there’s a ramp in a public facility, but the ramp is too steep, it will harm its user, right? The government had spent their money for this but if there’s no quality control or monitoring and evaluation during the process, this will be such a waste of money.”



“It could be that the planning was good, the design was detailed, then there were many details that did not make it comfortable or safe, or after use, because there was no education. In the end the use was inappropriate.”

Developing appropriate accountability supports inclusive design implementation. Participants suggested that building permits should be conditional on approval by the public following completion, to ensure design intentions were realised.

“When issuing the building permits, it is best if it is given the condition that the building will be accessed by the general public, so that it must be given standards for disability access. That should be made compulsory.”

“When accommodated in a strategic document, there is a program, an output, a budget, we just need to monitor whether the implementation is correct or not.”

“First of all, of course we primarily refer to the applicable regulations, and from us, we involve directly with users. For example, like what we took in the photo, which in Juanda, we directly involved people with disability, whether this slope was appropriate or not. There were a lot of corrections, if the ramp was not suitable, then we improved it. We tried this with a wheelchair as well, they responded “this rotation is not good Ma'am, please adjust it later”. And also the ramps are still a bit too steep, even though we already made it 8°.”

““There is no complaint mechanism. This will be a problem because a lot of so-called 'claimed accessible building and infrastructure' are actually dangerous.”

“And the city of Solo is also famous for “Child-Friendly City”, but during our research, we found out that the implementation of Child-Friendly City was still partial. Maybe we can see the child friendly city implementation at the city level but not at the neighbourhood level. We felt this is very important to remind our young planner that planning is not only at the city instead it starts from the neighbourhood level.”



Inclusive design: door to door

While certain inclusive design interventions have been quite successful in Solo, what is missing is an approach that considers door to door accessibility:

“If you’ve ever observed, the City Government of Solo has put a lot of attention on making the bus stop accessible. There are ramps, handrail, and guiding blocks. But then the shelter, the problem is there is a gap between the accessibility of the building or infrastructure of the platform and the accessibility of the bus itself.”



Gaps between infrastructure create barriers.

“We want to establish an inclusive campus since our infrastructures are not friendly for persons with disabilities. For example, starting from our front building, the infrastructures are quite the same with infrastructure in the city level, like our pedestrian, it is not accessible for persons with disabilities. We have weakness here regarding our infrastructure, but this is the fact. If we want to go to the bus stop, we have to jump over the grass, this is quite difficult even for persons without disabilities. So, we still have to fix and improve our infrastructure since we never paid attention to this issue before”



“Yes, it must be continuous, and it must continue when I come to a new place. I have to ask someone to describe the building, first. After that, I try to walk in the building guided by the person who helps me. And he will start introducing what’s inside the building, such as the bathroom, kitchen, etc. In one week, I can get used to it for the indoor. If it’s the outdoors, it can take longer to adapt. For example, if I take public transportation, from campus to the city hall, there must be an adjustment, such as the location of the bus stops.”

Sustainable and inclusive?

Considerations of sustainability consistently emerged during discussions with participants. Sustainability was discussed in various ways including:

- The rapidly changing urban landscape and its impact on accessibility
- Green infrastructure clashing with accessibility considerations
- Longevity and maintenance of infrastructure
- Political and societal commitment to projects in the long term
- Sustainability of funding / resources for publicly funded programmes
- Recovery from the impacts of weather events such as flooding



“But until now, the sidewalk still has cables running through the middle of the road. Some people must have hit the cable. And large trees in the middle of the sidewalk with the excuse of a green campus and so on but it’s difficult.”



“It won’t last long, then it will be changed again and again. So, I think the approaches that must be taken are integrative, sustainable approaches. If indeed Solo will have to be surrounded by sidewalks, how do you do it, it can be integrative, like that. For example, we can go around Solo, take a walk using the sidewalk.”

“We have seen these friends that their voluntary enthusiasm is also extraordinary, but to maintain the sustainability of their work programs so that they run well, they must also be supported by adequate resources.”

Cooperation, collaboration and negotiation

Working together is critical, many policy stakeholders shared the importance of working across different departments and sectors and expressed how certain areas of work can be siloed which can be a barrier to creating inclusive environments.

“Ministry of Public Work, the time for the socialization of Government Regulation Number 52 if I'm not mistaken, regarding accessibility to the environment, public facilities, and disaster management, the socialization is online and offline, but mostly offline, it invites all Local Development Planning Agencies and Public Work offices of all provinces, all regencies and cities in Indonesia, and at that time I monitored, indeed there are 500 participants, both in zoom and YouTube”

“Coordination is something important, vital, but because our country is a big country, the problems we face, if I may say, are double, right? Problems as a country towards modernity, but also the legacy problems that the developing countries still have. So, let's say that a country that is still in transition is indeed having a lot of problems competing for attention, competing for positions in planning and budgeting, so the challenge of coordination for accelerating the preparation of the Community Action Plan is indeed a challenge too.”

In Solo, there is also a strong sense of the importance of collaboration from the ground up, from communities and persons with disabilities through to community and neighbourhood leaders up to the city scale. TAD (the disability task force) often acts as a bridge to the disability community and supports community participation. While there is strong will for community participation and inclusive design with end-users,



people expressed that there was a need to consider the accessibility of such consultations to encourage participation.

“Involvement of multi-stakeholders also means different opinions and needs. It’s not only in the top level but starting from the bottom level. So, when all stakeholders in the ground are agreed on the bottom level, it is easier to pull upwards. Rather than focus only on top level intervention.”

“It will be a different story if for example it was planned and invited a community or organization with disabilities, then asking them about the design, how good is it, is it already comfortable, how about the safety issue, it would be different because the users are them, not the one doing or implementing the project or the project owner, like that.”

“I think it’s all about coordination and synergy amongst the multi-stakeholders. For example, the Local Development Planning Agency, they have to coordinate back and forth to other agencies. That’s why persons with disabilities need to be involved too. For me, coordination and cooperation are crucial. They can make one type of coordination, but they can’t stand alone.”

“I also think that in planning the terms Urban Planning and Urban Design in a city scale, I think, yes not now, it would be better if it was done not only by the government, but there are groups or communities from various circles, for example entrepreneurs or certain communities that really need such as persons with disabilities, it seems that they really need to cooperate with each other if for example we are talking about city scale.”

Responsibility

Participants were aware of the issue around responsibility and reflected on how it is sometimes unclear who holds the responsibility for certain urban interventions, or that complaints go to the wrong departments. Some practitioners felt they held less responsibility due to their role, for example, as a technical specialist not being responsible for design. This can be a problem as it does not promote a holistic approach to inclusive design. One policy stakeholder acknowledged that in their work they promote accessibility, but their own working environment was not accessible and that this was unacceptable.



“The point is that this inclusivity issue has to be held by the City Government”

“I mean it’s not on us. But the complaints often go to us too, you know, the connection is only because of the many complaints given to us, we redirect them to the Public Works Dept”

We are only technical on the road in my field. At most, it is only zebra crossings, traffic lights, but not for the designs.”

Social media is used as a tool for accountability, documenting accessibility failures and calling out the organisations involved. This has been shown to be quite effective and, in some cases, led to issues being resolved very quickly.

“But if you follow this topic on social media, there was this zig-zag guiding block at Jurug Zoo, it just suddenly appeared. At the exact same day, PHTAD contact the Public Work Dept. and at that day, the zig zag guiding block was fixed immediately, but it was already spread on social media. The Public Work Dept. said that it wasn’t their doing. So, “Not a project from the regional level”, something like that.”

As resources are always necessary to create infrastructure, some participants felt that ultimately those who control the budgets are responsible, as they have the ability to make inclusive design happen.

“The Task force is the government’s partner in propelling Solo as an Inclusive City. The main element in this Task force is the one responsible for education, from us, it’s the head of department. And why is that? That’s because the head of department is the budget manager. We can’t move anywhere if there’s no budget. And the Department’s Secretary because they’re the one arranging the budget. And then we also involve the Head of Divisions because they’re the ones who are on field.”

Participants also shared that the general public has responsibilities too, and in some cases day to day accessibility challenges are due to the misuse of spaces by the public, for example, by parking or storing goods in the wrong location.

“Related to the awareness of the community itself, sometimes using these spaces for parking, for example. We often give a warning, we often lock it too.

There are also other disability facilities that we need to protect, another problem for us, to be honest with zebra crossings. You know our zebra cross, try to see the one at Slamet Riyadi Street. Our zebra cross has a crossing, actually the inclusion is not only for the disabled people, pedestrians too, maybe even cyclists. But try to imagine the ends of the zebra cross, it crashes into the green park, now that’s it.”



Participants talked about problematic pedestrian crossings where a zebra crossing leads directly into a green space like this one.

Image: Google StreetView

Long term responsibility is needed beyond the implementation of standards through effective monitoring and evaluation of programmes post completion.



“Then, related to the standard, who will be responsible to evaluate the accessibility standard in the public spaces or facilities. Who will conduct the monitoring and evaluation process for the building/space? Then who will be responsible in giving punishment, for example, the building has been reviewed during the monitoring and evaluation process and needs some space to be renovated, but the owner or the authorized person of the building won’t do it? Then who is able to sue this issue? Is it the people in general?”

Leadership and inclusion champions

Leadership on inclusion was valued and the city is aspirational in that way. There is an overall ambition for Solo to be an inclusive city, and more widely across Indonesia, there are initiatives to support more inclusive cities. Solo has demonstrated leadership by adopting disability regulations very early in Indonesia.

“The perspective, the desire, the ideals are there. The City Government of Solo realises that Solo is inclusive, comfortable, cultured, clean...”

“Solo had the local regulation at the earliest, right, in 2008. At that time there was no Law Number 8 of 2016, right? but Solo already had the regional regulation for disabled persons. And the most prominent thing from Solo is that there are always figures of activists with organic disabilities, meaning that diffable figures are born from the movement, born from the processes of cadre, empowerment and advocacy by the diffable community itself.”

One of the examples of national scale leadership is the presidential staff office which champions inclusion: **“The Presidential Staff Office (PSO) ensures that the participation of all kinds of persons with disabilities in the preparation of the substance or material of the national regulation is optimal. So, then the material aspect, that the regulatory narratives, must depart from the aspirations of the needs, problems and hopes of friends with disabilities themselves. So, the position of the PSO is like that.”**

The presidential staff office helps facilitate participation and champions a human rights approach to disability inclusion. This demonstrates leadership and commitment at the highest level in Indonesia.



One of the challenges Solo faces is having a strategic approach to delivery. There is great political commitment to a variety of inclusive city initiatives. However, these need to be brought together and coordinated with a strategic action plan to ensure effective implementation of political commitments.

“The jargon of the City of Solo is a lot, for example, a child-friendly city, a healthy and inclusive city, disability-friendly, radiant and free from corruption, and a city of culture.”

“Maybe sometimes they want to focus on disability, but then keep looking at other city concepts. They'll shift back and forth, trying to finish one concept, and forget another. At the end, it doesn't work either. Actually, the synergy and universal design can solve many problems for all.”

Leading by example matters, and it is crucial that government facilities, and public consultation processes are inclusive. Policy stakeholders were aware of this issue.

“What makes me sad is sometimes we conduct a big forum in Pendopo Gedhe (gazebo building in the city hall), we invite community members but you know, the accessibility is only provided in the north side. So, if participants parked on the other side of the building, they have to walk far. I wish that our City Hall Building, which is the face of Solo City, can provide more accessibility to everyone.”

“So when it doesn't fulfil or doesn't include the element of accessibility or convenience, there should be some kind of warning. In my opinion, government buildings must be an example, then others, private institutions, maybe they will make a consideration of who will use it, they will definitely think about it, because it is private. they really - really care about their customers or users, like that.”

One participant also talked about the importance of community leaders and role models, and how in various fields like sports and arts this can be really helpful. They also discussed how in some cases these role models can be limited to public figures such as elite para-athletes, when in fact we need diverse role models.



“In my opinion, it is a form of motivation, because when I was a child there was no such thing, so my thoughts about disabilities were negative “Why am I like this, why am I born like this?”. If there are a lot of people now, we just have to choose which way to go, not just in sports, many persons with disabilities are successful in any field. In education, in the arts, it is up to which one is chosen. not only in sports, but many persons with disabilities are also successful in any field.”

Innovation and best practice

Participants expressed how synergy in inclusive design initiatives and the integration of inclusive design would solve many of the city’s challenges. However, it was also recognised that there is a huge amount of innovation and best practice to be found in Solo and across Indonesia that would be beneficial for other cities to learn from.

Examples include:

- The role of the Disability Advocacy Team is considered crucial in facilitating disability inclusion
- Local regulations are considered best practice in Indonesia
- The Presidential Staff Office (PSO) and their work to ensure ‘Indonesia Inclusion with Disabilities’

“I was recruited to become a professional staff in the PSO to ensure Indonesia Inclusion with disabilities. So, what is the reference? We are working for the state, in this context as a presidential institution. That's the legal basis, everything from the constitution, laws, presidential regulations, government regulations, which in this context is related to how to create an inclusive Indonesia.”

In the tourism sector, there was a lot of appetite for innovation and some good examples shared. The importance of access to recreation and leisure facilities, including those popular for tourism was conveyed.

“Sometimes I wonder, if there’s a lift/elevator or what is the name like a feature in Japan, cable car, am I right? Thus, friends with disabilities can use the cable car to witness the view from up. This is something amazing, right? I imagine if



something like that existed in Tawangmangu or Kaliurang, it would be more accessible for us.”

“Several times, friends with disabilities have borrowed the bus for travel routes, meaning going there and there, to tourist attractions, and so on, it's free and possible. It's free, please if you want to borrow it as long as there is a letter, we can facilitate it. It's just that with all the limitations and the dimensions, it's a long and low deck, so the route that will be passed needs to be surveyed beforehand.”



To be able to travel and particularly explore nature was important for many participants.

Various government programmes and interventions were also considered best practices, those named were:

- Tanggul Markets (Economic and Trading)
- Skills training for women with disabilities (Women's Empowerment and Child Protection department)
- Paralympics in Solo (Department of Transportation)

Participants also talked about the need for innovations in AT as being essential to enabling mobility and participation.

Localised approaches

There is strong support for localised approaches to inclusive design. Many felt that standards followed, which are often based on international ones, are not fit for purpose and too general. More work could be done to adapt local regulations to Solo's specific context and culture. This would be a particularly important aspect to address in an inclusive design strategy for the city.

“The standard is still too universal, so the term is a very general ergonomic level and tends to the west culture, so for the size of citizens in Indonesia, usually Asia is smaller than western people. So maybe ergonomically sometimes it's still lacking. There is one more book from Pak Ikaputra, if I'm



not mistaken, there is an accessibility design, but I'm lacking knowledge about it.”

Developing local knowledge, skills and coordination is valued and there is a strong perception that international accessibility standards were developed for Western populations which may not be entirely appropriate in Indonesia.

“For example, the needs of western people, are they the same as the needs of our people? That can't be generalized, that's where I see it from experience”

“Actually, it's still relevant. But for the details earlier, I have said, there should be local wisdom. Their behaviour is different, Ma'am, between foreigners and Neufert (German architects' data book) and friends with disabilities in Indonesia, so it's like for example the way of walking is different. The way to sit is different, but we don't have a really local standard, so we can't help but use Neufert.”

Regional variation, and the need for approaches to address more rural areas was also discussed, including the need for coordination between regions and centres:

“If outside Java, that is indeed the geographic condition that is still relatively undeveloped, then fluctuates, especially for upstream areas, yes, that is a challenge. Then comes the next challenge, the budget, so for regions that do not have a large budget, it is also a challenge to realize disabled-friendly infrastructure.”

“From the Mayor's Regulation, there needs to be a source centre. In the field level, the one who manages, which was the Central Government in 2013, didn't have a systemic rolling, that's why each region has to have its own creativity. After the task force, we need to have a source centre. The source centre is to support the already appointed Inclusive School”

Role of the private sector

“A restaurant or café is used less often for universal design, because the scope is still small, then not too broad, then most of the owners already have their own target market.”

It is important to engage the private sector in inclusive city design. Many environments that people use in their daily lives are managed by private entities, and these too need to be inclusive. When engaging the private sector, commercial interests are a key factor. Participants explained that private sector clients, such as a restaurant owner, were open to making changes to support their customer base. However, there was a need to educate on how to implement accessibility, as there were inherent views that to do so would negatively impact on space and require significant budget.



Participants want to be able to access restaurants and other recreational spaces that are often run by private sector companies.

“Because actually the client sometimes becomes one of the inhibiting factors too, especially for example for commercial buildings. Right now, if we look at it, there are many hospitals now, in my opinion, from their development, they are no longer built by, for example, if it was a doctor. Like Triharsi, at first, he was a doctor, then he intended to build a clinic, which could then become a hospital. But now, the hospital that stands is just a kind of commercial project, it's no different like building a mall, so usually the biggest obstacle or factor is sometimes from clients, because they definitely count all the things that are spent, especially for access for persons with disabilities.”



Conflict can emerge from citizens such as shopkeepers who can view accessibility interventions as damaging to their livelihoods. One stakeholder gave the example of complaints received about the new bus stops due to the perception it would damage business: “but the point is that there were so many complaints”. Overcoming these conflicts is important and having a good understanding of the rights-based, economic and social arguments for inclusive design can support these discussions.

“If it is from the private sector or from the user, for example, we are working on a Mall for example, we have to give ramps which require a lot of space, that can sometimes become a consideration as a planner too. As a planner, if you want to use a standard, that's what is difficult sometimes. Usually from the beginning, because if for example we are in a commercial project, we have to calculate for all of that. Because the term accessibility is not counted in the space that can be sold, because that is a facility, it is outside the saleable area and the percentage of the saleable area has entered, it must be removed, because it is a facility that must exist, whatever it is, it has to be.”

““The Mall. Well, if you asked about good accessibility, it’s at the mall. From Solo Grand Mall, Paragon, until Solo Square. They even have elevators with braille. And in the elevator, when a wheelchair enters, they can make a U-turn.”

“Still, because hospitals are actually a business. Because, in terms of the tool itself, the price is the same as the building price, they must be thinking, “Oh, I can’t sell this area, how can we remove this?”. That's what we call our own difficulties. We think about compatibility, so we demand it not for us, but “You need this to make your customer comfortable”

Maintenance, use and repair

Ongoing maintenance of the built environment is often a key issue for accessibility. The examples illustrated here show how poor maintenance, such as allowing moss to grow, can create significant access barriers. Another issue is misuse by the public which is not dealt with by operators or management.

“The condition of wet ramps or ramps which are rarely passed, so it still has moss, right? Because moss sometimes makes the ramps slippery, or paving blocks, paving on the sidewalks that are usually used. For example, people



rarely access or use them since they are mossy. So, friends who use crutches can fall over, it's slippery. What is normal, if you use sandals or flip-flops, you will definitely slip in the mossy place, especially the one with a stick. It supports the body at one point, if the one is slippery, it's dangerous, it will definitely fall.”

“The actual accessibility is pretty good, it's just that, sometimes it's misused by other people, sometimes I'm not confident enough to walk alone there”



Misuse of tactile paving is a common problem.

“There are these street vendors who block the guiding block. Gedhe Market is a public space where everyone comes in, I see, and it is in the middle of the city, and that is one of the icons of Solo City in my opinion.”

“in terms of design, it's already taken into account. It's just that sometimes lousy for the maintenance, because sometimes it's only a few years, for example in one year, after the guiding block has been released, then what's funny is there's a guiding block that leads it into a hole”



Some stakeholders felt that maintenance or retrofitting to improve accessibility was challenging, that it is too difficult to modify existing structures. This demonstrates the need for better inclusive design education, and inclusive design standards that also consider retrofitting as much as new builds.

“The obstacle is that, according to the stakeholders, the existing building cannot be changed. The existing buildings that are not accessible cannot be changed. Imagine if most of them are like that.”



Maintenance and repair are a crucial component of an inclusive design strategy.

“I think the infrastructure has already been repaired now. But in the past, it hadn’t. I also protested when I went to the place. I said “Ma’am, how come this place is a public service building? This should be given access for friends with disabilities. There’s no access for wheelchairs”. So, it would be accessible for people like elderly people too”

Need for data and evidence

Participants expressed the importance of data and evidence for inclusive environments, explaining how different types of data and evidence are needed



including both qualitative and quantitative data, considering the different nuances they provide. Inclusive design approaches are needed to engage end-users in the development of project processes, as much as the design outcomes, to and incorporate their vital knowledge.

Evidence of action taken and successful outcomes arrived at is also really valuable and plays a significant part in generating support from multiple stakeholders, including the general public.

“This is what we’re still facing. So, it can be seen as an iceberg phenomenon, perhaps. What’s seen on the surface, there’s many more on the bottom. Because when we’re collecting the data, it turns out that there are plenty.”

“The ones who can assess public facilities, let’s say, whether they are accessible or not, are the community itself, more precisely, the users. They are the ones who can feel, for example, roads; sidewalks; public places; public facilities. Even though, you know, yesterday, I had a discussion about the BST (Batik Solo Trans) which hasn’t been accessible enough. We also provided input for the future regarding the bus settings, so it will be more accessible.”

“So it is not only qualitative, but also quantitative. For example, let's say there is a Regional Action Plan, when there was a Regional Regulation, of course there was a Regional Action Plan, right? So actually, when talking about inclusion, what is it like..., there should be a participation, an implementation, something like that, there are accessible facilities and infrastructure and it meets decent accommodation.”

Data and evidence must also be actioned and used for advocacy: **“the point is we have to continue to voice it. Don’t stop at just researching, but we also need to voice out these advocacies.”**

Having a systematic approach to data and evidence will also support ongoing monitoring and evaluation:

“Now that means, when the National Action Plan and the Regional Action Plan are being prepared in the context of the elaboration of the Master Plan for persons with disabilities, of course we do not have an empirical basis or database that we can mark or can we tag, which ministries already have



programs and budgeting which is structured according to the Master Plan for Persons with Disabilities which is outlined in the National Action Plan as well as the Regional Action Plan. However, all this time, the ministries are in accordance with their respective main duties.”

Inclusion and education

The Indonesian government has identified inclusive education as a priority area. There are currently three types of schools in Indonesia: schools, inclusive schools, and ‘special needs’ schools. The government is keen to promote inclusive schools:

“Inclusive school is mandatory, right to serve children with special needs. But we also realize that not every school is capable of this, so we must appoint some of them. That’s why there’s an inclusive school in each sub-district, to get closer with the kids.”

Transport and mobility

Being able to get around the city is essential. Participants discussed their personal experiences across public transport and private vehicle use.

“If I want to go to some places, I think it is easy now because there is Grab - Online Taxi/Motorbike”

“Access for three-wheeled transportation is difficult. And you know that it’s quite difficult to go from the parking lot to the building, or from one building to another. It takes five years for them to give me a space to park with a ‘disability’ sign on it.”

Many persons with disabilities use three-wheeled scooters to navigate the city. Hazards to using these include bumps in the road, potholes and speed bumps.

“The market is quite near to my house and I usually use my three-wheeled motorbike to go to the market because sometimes it is difficult to look for Angkot (public minibus) to get to the market and it is quite far for me to go to the bus stop so it is comfortable for me to use my three-wheeled motorbike.”

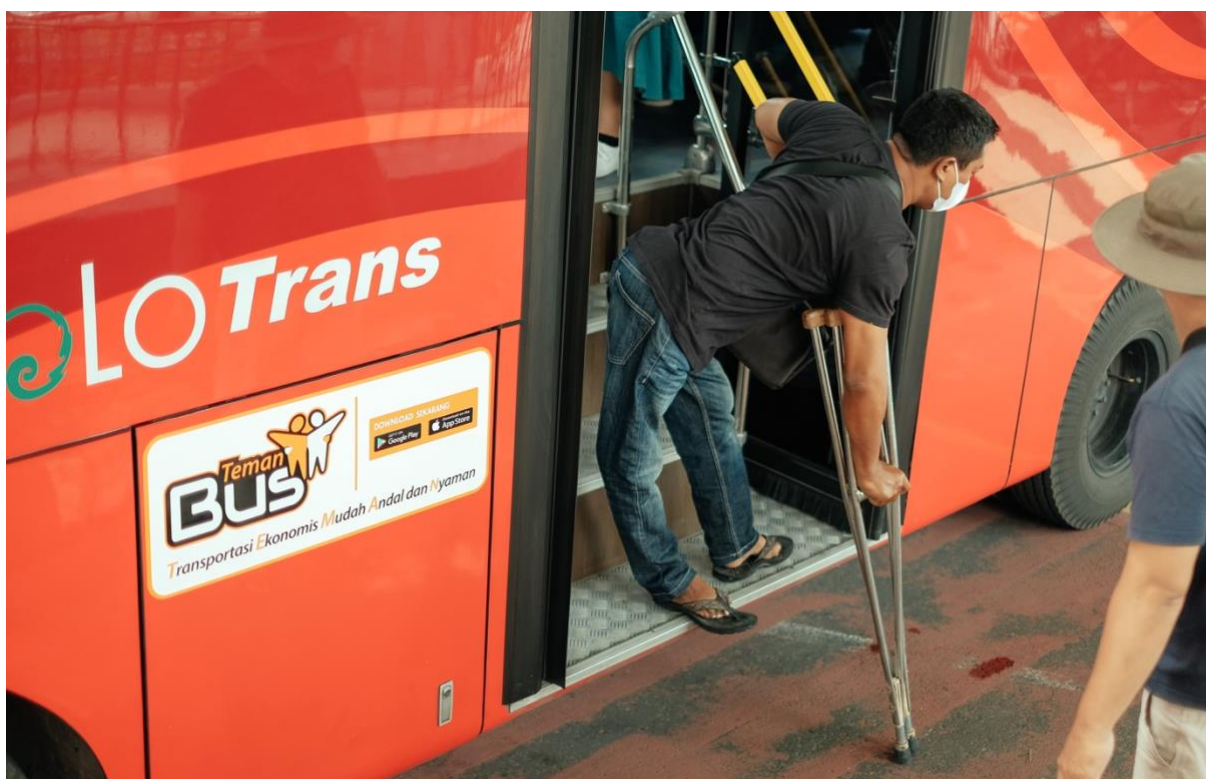


“Yes, it's quite helpful. In fact, it really helps, because the buses are parallel with the platform so that we can easily access them right away. We don't have to make many moves, for example, we should get off the wheelchair first, move first, or something like that, it takes time, right?”

“In the past, I used a wheelchair, but the scope was small, at least around Laweyan. Then when I grew up, since I had my own motorcycle in college, I rode a three-wheeled motorbike. But now, I usually use a car”

“But when the bus has to be transferred, the driver doesn't say any word and there's no other officers who help. Well, it's hard for us, people with visual impairment. Then how do we know, we have to shout, every time a bus comes 'which way, sir?' we have to scream.”

“For the blind, it's difficult for us to find the Angkot Stop. People said the Angkot Stop is the red one. Well, then I have to ask people where the red mark is. But when there are no people there, I'm confused. That's the problem.”



The new line of red buses on the Batik Solo Trans (BST) is not accessible.

Public transport is an area many people still feel needs improving. Some participants did not feel comfortable travelling alone and so would only access public transport if accompanied by a family member or friend. Information accessibility and wayfinding around public transport systems could also be improved, in particular for persons with a visual impairment. One participant felt that public transports is quite accessible in Solo, but commented, “The important thing is that we have to ask if we need something.” This shows that people who are more confident may be able to access the information they need but others who may find communication challenging or intimidating will not have access.



“The officers at the train station are fully aware of our needs. They are very responsive, when we arrived, they immediately looked for the wheelchair for us to use, then they continued to assist us. It was great.”

“The gap between the platform and the train door itself is very high so it is difficult to get in the train. So, what kind of standard operating procedure (SOP) is needed in a procurement for accessibility standards in the physical infrastructure.”



Alternative transport means such as taxis are more expensive, and therefore often not viable options for many persons with disabilities: “Only if I want to go to my parents, I usually take public transportation first, even though I can actually use Grab, but I don't want to spend much money on that, as long as I can still use public transportation, I will use public transportation.”

However, alternative options such as taxi motorcycles, as an individual transport service, are more suited to some persons with disabilities needs as they feel buses are often rushing and don't allow them sufficient time to board: “If you take the bus, you sometimes have to be in a bit of a hurry, I'm afraid that if I fall, you know.”

AT and the built environment

“Yes, taking a taxi much simpler, they can go directly to our destination. It's also safe. But then what about our belongings, including the assistive tools we bring? There's been a case, when our friend forgot the assistive tool and left it in the taxi. He needs to contact the taxi provider and get back to take it. This must be also in the SOP on how to treat passengers with disabilities. How to make the person safe, also their assistive device.”

“Yes, even in this village, I also don't use a cane. There are so many orientations, each individual has its own way and has its own characteristics that cannot be shared with other people.”

“I think there are many specialized workshops. But in the past, there wasn't. Mostly we ask the services of friends who are used to making the three-wheeled motorbike. We ask for their help and they say yes. [...] To access the price of the three-wheeled modification that Mr. Rubianto, the price is quite expensive for me.”

“Actually, in my opinion, hearing aid was uncomfortable, the sound was noisy, so chaotic, so I couldn't focus, so I let go.”

Where people live, what infrastructure and services they have available to them, impacts their ability to access AT. For example, living in an informal settlement will determine people's access to opportunities, which may then impact their livelihood and ability to access the tools and devices they need to support them move out of poverty.



“Some people might be able to afford it, some might not. In my opinion, disability and poverty are in a vicious circle. So, persons with disabilities who live in poverty are unable to afford the assistive product, vice versa.”

AT provision is quite comprehensive in Indonesian cities. However, coverage in villages or rural areas, particularly beyond the island of Java is more challenging. Infrastructure, including transport and distribution networks, should support AT provision in these more remote areas.

“In Java, the ecosystem has been said to be quite complete, but it is still concentrated in cities, villages or districts that are not yet developed, that's also a difficulty. Especially outside Java, especially in Eastern Indonesia, especially in Papua”

The repair, maintenance or redesign of AT is also a crucial issue. Participants often spoke about AT breaking and not being able to repair it or needing to rely on informal markets to do so. The quotes below demonstrate how AT that is not fit for purpose does not fulfil its purpose of being an enabling technology. Some participants also modified AT themselves, or used the informal market to customise AT, highlighting a desire for customisable or contextually-adapted AT.

“I used to use hearing aid when I was in elementary school, it kept breaking, then I stopped using it. The last time I used it when I was in the 6th grade because it was broken. Then after that the government gave hearing aid for free, but it broke quickly and in the end I didn't use it.”

“Yes, for example if it's broken or I want to change something, I will do it myself. For example, the cane that I bought earlier cannot be folded. I took the initiative, I cut it myself, I folded it in four.”

Role of technology and innovation

Technology is one of the tools that supports community efforts towards inclusive cities. Community groups such as the ‘Hore-Hore’ community use social media to report inaccessibility and hold business owners accountable. These efforts are often

successful, but there can also be challenges with ongoing urban development as explained below:

“Well, we objected to that since we want to access the place [using three-wheeler motorbikes]. She said the area was being repaired, and she said that later it would destroy the new lots. We already told everyone that Balekambang is accessible, that three-wheeled motorbike can access the area. We have posted it and we got positive responses, but then there is this new regulation.”



The Hore Hore community on an excursion.

“Yes. For example, with DPUPR (Public Works and Spatial Planning Office), there was a problem with the guiding blocks that were made like zigzag, it was already viral in groups and social media. We immediately take direct actions. We went straight to the DPUPR and asked them regarding the guiding blocks.

In one day, the guiding block is demolished. So, if it's possible, there's no need for the issue to be viral. What will bridge what is needed, we are in the middle.”



“So far, the most we've heard is related to Smart City, right. Smart City also has access, living, transportation, this is actually a good thing if it can be integrated with the mission of inclusion. But I haven't heard the concept of universal design you mentioned.”

Innovation in cities through initiatives such as Smart City initiatives are often popular, but participants raised the issue of inclusion in these projects, calling for inclusion and universal design to be integrated in smart city projects.

Mobile phones are an enabling tool for persons with disabilities but while mobile phone usage is widespread, there are barriers to access such as cost. A study conducted under AT2030 found that persons with disabilities are less likely to have access to mobile phones, mobile phones are often collectively shared in Banjarmasin, Indonesia and women and older people are more likely to experience barriers⁶⁸. These factors should be considered when employing mobile technology for inclusive design interventions.

“The cell phone is interesting, yes, because we can access anything with that cell phone.”

Inclusion, diversity and intersectionality

Intersectional approaches and diversity are important facets of inclusive environments, participants communicated how there is a need to design considering diverse types of disability and factor in other excluding factors such as age and gender. To support more diverse and intersectional city planning, good data can help. However, it is important to remember that we must design to consider all excluding groups even if their numbers are smaller – one participant described how city prioritisation of needs is often done by majority groups which can be a problem for inclusion.

⁶⁸ | Gaskell et al., 'Characterising Mobile Phone Inclusion among Assistive Technology Users: An Intersectional Disability Analysis of Mobile Phone Access and Use in Banjarmasin, Indonesia and Freetown, Sierra Leone' (London: SHM Foundation, Bartlett Development Planning Unit and Global Disability Innovation Hub, 2022), https://at2030.org/static/at2030_core/outputs/Characterising_mobile_phone_inclusion_for_AT_users_FINAL.pdf.



“There were so many aspirations and different perspectives between persons with disabilities”

“Well, actually, the malls have provided accessibility for people with physical disabilities. But for others like people with visual or hearing impairments, it is still a lack of accessibility for them. There is still a lack of text information, lack of guiding blocks, but in some malls, they already have braille in the elevator.”

“it’s all about how Solo decides their priority. So far, the percentage of adults who have the ability to do activities is larger, compared to elderlies or children. At the end, what is deemed necessary is how to improve the city by meeting the needs of their priority or the larger percentages of the city. Sometimes, the small numbers keep getting forgotten.”

There are also conflicting or sometimes intersecting priorities regarding different excluded groups, focusing on an intersectional approach to inclusive design and can support inclusive design for all.

“When there is a happening program in either regional or national government, the city government will follow it without considering the urgency of the actual needs. They can jump from city fit for children to inclusive city for disabled persons quickly. But you see, there is no one master plan which designs what Solo really wants to do? The masterplan which contains all aspects for the citizen.”

Solo also has good examples on inclusive programmes and participation with regard to gender, and there is a strong network of women’s community groups that contribute to city planning processes. There could be learnings here for the inclusion of disability groups in these processes.

“The Department of Women Empowerment and Children Protection also has skill training for women with disabilities, this is also a best practice.”

“Perhaps it’s not easy to unite people from various backgrounds. For example, the Musrenbang (local planning and budgeting forum) must invite all stakeholders from different levels. For example, the children have their own



forum and representatives. I know it's not an easy task for everyone. I can say Solo has been doing better compared to other cities in terms of involvement of diverse stakeholders in the development forums. Actually, it's a real challenge how we can engage everyone and discuss together to accomplish the same mission and vision, for our benefit. Satisfying each group of people is really challenging. Though it hasn't worked out that well, at least the city made a progressive effort to do so."

What does inclusive infrastructure look like?

Inclusive infrastructure is infrastructure that supports all members of society to live their daily lives, rather than a set of specific infrastructures that support inclusion (i.e. ramps), all infrastructure must be inclusive to enable everyone's full participation in society.

"All infrastructure work activities have to do with inclusion. Including if for us, what we are currently working on is the arrangement of the corridors, we still have to pay attention to the facilities and infrastructure for the convenience of the whole, right?"

Inclusive infrastructure is also an ecosystem, the physical design parameters are important but so too are the services, products and stuff that operate within and around those infrastructures. So too is the consideration of different sectors such as housing, transportation, water and sanitation, healthcare, education. These all hold responsibility for shaping people's daily lives and their capability to go to school, work, be healthy and live and be active members of their communities.

"First, the infrastructure, we should make the environment accessible, also the physical infrastructure to be accessible. It doesn't stop until you build the bus shelter or bus stop to be accessible, but you also have to consider the link or connection from the platform to the bus. Second, the system. When we take the bus, we have to enter the main door that is close to the driver. Then exit at the back door. But then the shelter just doesn't accommodate these two doors. So, it's still inaccessible for us"

"For basic service SPM (Standar Pelayanan Minimal, in English: Minimum Service Standard) , there are health, education, then related to the settlement, both flat and uninhabitable houses, access to clean water for persons with



disabilities to get a house water connection or access to clean water, sanitation, that's also a lot of homework. And also, access to the economy, to better public transport, and access for employment. If you see in our City Hall building, the accessibility, if we measure from its percentage, it is still very small, right? Still lacking.”

Inclusive infrastructure is a collaboration, while having inclusive design experts is an essential part of delivering good inclusive design, the cooperation and collaboration between different teams, different government sections is crucial – inclusive infrastructure is built together.

“There are three basic points. Collaboration, Co-investment, and Cooperation. So, how can a city actually be able to invite related stakeholders? First already mentioned before, it’s the synergy, yes, that is to sit together to think about what is needed by all citizens. Then, second, how to invite all parties in this matter, including the community, the elderly with disabilities and so on? To be able to sit together and share what they actually need. Then the third one, the funding, because it’s often limited allocation it comes the priority. What ultimately goes to priority? How do we collect this funding together?”

Overall, participation and leadership of persons with disabilities is key. A city where persons with disabilities are consulted in design and planning and have leadership roles within the city and communities will be more inclusive.

“The main indicator of Inclusion City or District is that which places disabled persons as assets, as subjects, as a development actor starting from planning to monitoring evaluation. The rest is a prerequisite, for example accessibility, then there is also proper accommodation, then there is also a regional regulation, there is programming and budgeting, then there is also data on disabilities.”

Spaces and infrastructure that are developed with inclusion in mind can have a catalysing effect as they become public spaces for all, creating spaces of play, joy, belonging.

“What we see is friends from NPC [Parasports], for sports, but in a wider context, this place could be used for other social interaction from youth with



disabilities. I think youth community have a potential, including those with disabilities, can also use the public space to express, interact, socialize, we don't have such things for youth community yet."

Looking forward, we know that cities will continue to grow, we also know that there are growing global challenges that cities and our global population will continue to face. Learning from the COVID-19 pandemic and what we know about inclusive cities now shows that building in inclusion and inclusive processes from the start will help support a more inclusive future for all.

"The urbanization process cannot be prevented. This will definitely require more concentration and attention related to this matter."



What works now?

“So, it started from the declaration of Inclusive City in 2013. Solo doesn't want that declaration to be something that's just ceremonial. So, when the mayor declared it, we discussed the regulations. The regulations are what urge the declaration to be factual.”

Often insights generated through interviews can focus on barriers, not opportunities. It is as important to identify examples of good practice that can be replicated across the city and used to spread awareness on why inclusive cities are a good thing.

Understanding what works and who is driving inclusion can help unlock opportunities for good inclusive design. The who is important because champions can advocate for inclusive design and tell the stories of what works. Identifying what matters through participation and co-creation with persons with disabilities and stakeholders can support an incremental approach that addresses people's priorities first.



An example of accessible design in Solo. The gradient and material selection for the ramp is not ideal.



So what works for inclusive environments in Solo?

Participation, inclusive processes, policy frameworks and standards, culture, dedicated infrastructure provisions where needed and innovation are all key components that must come together to create an inclusive environment in Solo.

What's considered best practice?

Arguably the most important best practice is participation, where active efforts have been made to involve persons with disabilities in leadership, planning and design processes.

“Solo has an extraordinary commitment to that matter, for example, if we want to see, in any area where the scope of the city is, or the scope of the district, which is like Solo, is not yet visible. In my opinion, the most extraordinary progress is related to mentoring and escorting friends with disabilities”

Social infrastructure and social environment is a huge enabler of inclusion.

This is one of the success stories in Solo, people feel happy to live there.

Innovation is happening but there is a need for ways to scale and/or replicate what is working. There are many examples of community-led innovation happening in Solo, these stories should be told to support learning and scaling solutions.

Upholding human rights, ensuring policy frameworks champion the implementation of the UN Convention on the Rights of Persons with Disabilities.

“Now we are talking about the fulfilment of rights. This is the real keyword.”

Innovation happens with people:

“My hope is when friends in the regional government officials can optimize the FGDs momentum by involving community members and friends, from this we may be able to hear aspiration from them from the beginning, then these aspirations can be collected and placed in which programs that relate and decide when to execute.”

“Participation of the community. It is very dynamic and active, such as collaborating with stakeholders. Then the openness of the city government to



respond to existing problems is very dynamic, I see it that way about the city planning. Many people feel comfortable living in Solo”

Learning by doing, implementation remains a challenge, but those barriers will only be overcome by testing what works and learning from what doesn't. Having an inclusive design vision will support smoother implementation as a tool to build cohesion and support.

“It becomes clear, now, we have the regulation, let's implement this regulation. Then, we will find out what are the shortcomings, what are the weaknesses. Who knows, in the future there will be revisions and all kinds of things that will also be added to the new strengths that are based on the regulation.”

If persons with disabilities are included as development actors, through all stages of urban development, the rest can follow. It starts here.

Learn from other sectors and other excluded groups. Organisations such as ARKOM are supporting marginalised residents in Solo. Women's groups are extremely active in communities and in participatory urban governance. There are transferable processes here.

Knowing how and when to include people, from the beginning, with accessible and inclusive participation processes.

“From Solo to Indonesia”. Indonesia already has a strong network of cities that are motivated to be more inclusive, Solo can lead by example by sharing what works.

There is an appreciation for the complexity of inclusive design and the need for both standards and participation. This is important.

Voices are powerful, creating spaces to listen to the community work.

“Those who were present then voiced out their opinion. I told them to quickly raise their hand, sit at the front so they will be heard. Don't be satisfied with just writing suggestions. When you speak, everyone will listen.”



When inclusion is valued, there are ways to work within existing budgets.
“That's why new budgets don't always have to appear, but they can be inserted into existing programs”



Lessons learned

The biggest learning opportunities in the case study were in developing a deeper understanding of the lived experience of disability in Solo, building a picture of the whole ‘system’ of accessibility and inclusion needs in the city and starting conversations between diverse stakeholders.

Inclusion is a continual process, there are examples of innovation, success stories and community motivation in Solo but there is still lots to do.

First and foremost, design must be led by persons with disabilities

“What really needs to be improved is the involvement of people, communities.

Who actually needs to be designed for? For who we construct the infrastructures and services? With their involvement, they will know better about their problems, their needs, to be accommodated in certain designs. For example, the bus shelter. I may know better theoretically, but they are the one who feels it. I’ve never been in their shoes. So, the design should better accommodate what they actually need. They should be the one to be involved in the discussion. The city can see this as their priority, and needs to be addressed, I think the city can make a way. Coordination amongst the government officials (departments) is their responsibility.”

To support this, participation processes must be inclusive. While participatory urban governance is quite well developed in Solo, these processes must be fully accessible to engage and empower persons with disabilities.

A local vision and locally adapted standards that reflect local culture and context are desired. An inclusive design strategy for Solo would support this.

Implementation of inclusive design remains a challenge, political will is a necessity:

“So maybe it is more about awareness, like the level of desire of the policy holders themselves to be able to make it happen. Maybe there should be more dialogue or collaborations between agencies especially on this accessibility issue.”



So too is education on inclusive design, not just for subject matter experts but for all those who play a role in shaping the built environment.

Inclusive design is a collaboration:

“It should be possible, so what is called collaboration should be from various parties to realize that an inclusive city or an inclusive space or an inclusive design. So, it really needs collaboration from various parties, because in terms of architects, the term is that we don't experience those who are experiencing disabilities. So, from there, we learn the term and there is a dialogue process to enrich the knowledge of an architect so that the design is in accordance with the needs of our friends with disabilities”

Public awareness is key, making sure that inclusive design interventions remain effective in use. Such as not having tactile paving blocked by street vendors.

Integrate service delivery, procurement and infrastructure design: the bus and the bus stop have to be coordinated in their design so they are accessible.

Address inclusive infrastructure at all scales, from the city as a whole to the neighbourhood scale.

Disaster risk reduction and climate action must be inclusive, persons with disabilities must be included in crisis planning and climate action. Participants are aware of these issues and feel they are important, but there is more work to do.

Sustainability and inclusion must go hand in hand. The long-term success of efforts towards inclusion will be lost if sustainability is not considered. Equally so, urban development cannot be sustainable if it is not inclusive. Sustainability must be considered in all ways – environmentally, economically and socially. Things such as long-term funding and resources for initiatives can be a challenge.

People want AT that is **fit for purpose and adapted** to their local environment. AT is a vital part of creating an inclusive city.

AT, infrastructure and the built environment are linked:

“When we talk about the inclusive infrastructure, we should also take into consideration the access to assistive technology.”



People want clear guidance for implementation, a checklist may be useful to **set a consistent vision or set of goals**. While inclusive design delivery is more complex than a checklist, it may be a good starting point.

“The important thing is to have the same points or goals, if there are rules and checklists of requirements, I think it is not something strange.

Limitations and areas for further exploration

The following limitations were identified during this study:

- The research team had to adapt to the ongoing COVID-19 pandemic, which meant adapting and limiting some fieldwork activities. Overall, the team was able to establish an effective working relationship while working remotely. While online collaboration was effective, it is important to remain mindful of the limitations it can have regarding engaging participants and building consensus among a team.
- Reliable internet and electricity connections could be a challenge when connecting remotely, and particularly during workshops
- Most of our participants identified as having either a mobility, visual or hearing impairment, so further research that captures a more diverse group of persons with disabilities would be valuable, such as neurodiversity and people with multiple disabilities
- Older people were under-represented in the research
- The research team was unable to conduct site visits and some collaborative live projects were delayed due to the COVID-19 pandemic, limiting the amount of live project work featured in this report
- The research deliberately focused on accessibility and inclusion from a disability perspective. It is important to note that inclusive design also considers groups that may be excluded from participation for other reasons such as race, class, age, religion, gender, or socio-economic status

Areas for further research, which would assist some of the actions suggested throughout this report include:

- Quantitative research mapping accessibility in the city.
- Monitor and evaluation of inclusion projects that are being implemented would be useful, including measuring impact.



- Research on socio-cultural factors associated with disability inclusion or research on socio-cultural factors in inclusive design approaches.
- To drive policy agendas, it would be useful to develop more robust data on how different aspects of exclusion intersect, such as gender and disability, class and disability and race and disability.
- Research on accessibility and inclusion of the built environment in peri-urban/rural areas, as statistics show more persons with disabilities are living in rural areas and may be harder to reach. (*Note: this research is deliberately focused on cities*)
- Further research on inclusive design with persons with disabilities of all genders.
- Research on the role of inclusive design in sustainable development priorities such as the relationship between climate adaptation measures and inclusive design and accessibility would be useful.
- Research on humanitarian contexts or inclusive design and disaster risk reduction is also needed as city design must be resilient to disasters and crises, as seen through the COVID-19 pandemic and previous flooding.
- Pandemic resilient urban plans which are inclusive, sustainable and resilient for all.
- Research on key urban sectors such as inclusive and green public spaces, pedestrian mobility, and accessible public transport system.
- There is an urgent need for national data on disability, as the last census was conducted in 2011.



Conclusion: Actions toward inclusion

“An inclusive Solo is somewhere that can be experienced by everybody in a fair and equal way. By creating safe and accessible environments for all members of the community the city can allow everyone to access and participate in the opportunities they would like.”

Solo has a long history of being recognised as a great place for persons with disabilities in Indonesia to live. This history stems from the foundation of the Dr. Soeharso Rehabilitation Centre in Solo in the 1950s through to the implementation of a local regulation on disability rights in 2008 (Local Law No. 2/2008 on Disability Rights) that precedes Indonesia’s ratification of the UNCPRPD in 2011. Overall, there is a strong policy framework to deliver on disability inclusion both in Indonesia and locally in Solo through city level regulations. There are challenges to delivering on these frameworks include implementation, cooperation between government departments and sectors, translation of knowledge and vision into action, resources, and the long-term sustainability of initiatives.



An accessible bus stop in Solo

The city demonstrates the power of a culture of inclusion, a city where persons with disabilities mostly feel accepted, acknowledged, and included through an inclusive social environment. The wider community is a key part of forming this culture and community-led initiatives and community assets and networks are both important and valued. Community participation and community leadership is encouraged and supported through urban governance structures, facilitating the amplification of citizen’s voices and their aspirations. However, improvements could be made to specifically support persons with disabilities’ participation in community dialogues, particularly in the recovery from the COVID-19 pandemic which has affected participation and impacted people’s livelihoods. A strong culture of inclusion is supported by some accessible infrastructure and while there are still numerous



challenges to implementing inclusive infrastructure in Solo, **there is political will and a vision to become a more inclusive city.**

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. There is a strong view that international standards are not necessarily fit-for-purpose 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.



The accessibility gap – there is a need for door-to-door inclusive design

Fundamentally, **inclusive infrastructure must support and improve people's daily lives.** When resources are limited, accessible design interventions can often



be limited to essential services such as accessing government services, healthcare, education, and transport. However, according to participants, a much wider variety of infrastructures are key to a fulfilling urban life including inclusive green spaces, recreational spaces, religious spaces, markets, and tourism. The assistive technologies people can access are also essential in facilitating access to the urban



Gede market has accessibility features, but implementation and maintenance in use could be improved.

environment. An inclusive design approach to city planning can support all citizens to experience their city in a fair and equal way, providing a framework to integrate people's needs and aspirations in urban development. A city-wide inclusive design strategy should therefore try to integrate this broader scope of inclusive infrastructure while also being realistic on resource constraints. An inclusive design strategy at the city scale would benefit from considering the role of neighbourhoods in urban life and **make space for grassroots inclusive design and planning that is led by communities in the places that they live.**

“Inclusive cities are cities that have placed disabled persons as actors of development. The key is there, starting from planning, organizing, monitoring to evaluation or feedback.”

Inclusive infrastructure, cities and communities, are more than the physical built environment: the processes of inclusion and participation are key enablers of inclusive environments. Attention to how persons with disabilities are included in city development, ensuring these processes are accessible for all citizens and persons with disabilities are employed in these sectors will help create processes that deliver good inclusive city design. Inclusive urban development processes are more necessary than ever as cities worldwide begin to build back from the COVID-19 pandemic whilst simultaneously facing ongoing challenges such as the increasing impacts of climate change. Cities must build in resilience to these crises, and this

can be done through integrating (environmental, economic and social) sustainability and inclusion in urban development to ensure those who are most disadvantaged are not left behind. As the quote above illustrates, ultimately when persons with disabilities are fully recognised and included as participants in urban development – as policy-makers, planners, designers and as citizens – then we will have an enabling environment to create a more inclusive city.



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

Priority Recommendations:

- Cooperation, collaboration and coordination: across government sectors, with practitioners, with communities – an inclusive city is built together.
- Engage the private sector in inclusive city initiatives, privately-owned spaces and infrastructure that serves the public must also be inclusive
- Develop further tools to support community participation in urban planning and governance, particularly for persons with disabilities
- Dedicate budgets to inclusive city design and work towards long-term financial sustainability for inclusive design implementation.
- Embrace local knowledge, develop an inclusive design strategy for Solo that integrated local expertise and culture
- Support assistive technology users through developing inclusive infrastructure that considers the needs of diverse AT users
- Encourage and facilitate community leaders to amplify the voices of their communities to integrate bottom-up urban planning.
- Scale and replicate what works, where innovations have been successful, learn from them and test how they can be applied elsewhere
- Let Solo lead by example, Solo has success stories to share across Indonesia and globally.

**Recommendations for policy and decision-makers (Policy):**

Policy-makers should have a plan for inclusive design, act on it and be accountable for its implementation.

Recommendations for industry (Practice):

Practitioners should understand that inclusive design will deliver better results, should be motivated to design and deliver good inclusive design, and work collaboratively.

Recommendations for the community (People):

People should feel empowered, be advocates, be involved and affect demonstrable change.

Creating enabling environments

An enabling environment for persons with disabilities should integrate: a supportive legislative environment, an inclusive culture and mindset, participation in planning, design and decision-making, positive cultural change, an accessible and inclusive built environment and access to good quality and affordable assistive technology. Some of these aspects are already taking place in Solo but for an inclusive city to maintain an enabling environment it is necessary to ensure robust, sustainable, disability-inclusive urban development processes are implemented.

So, what does an inclusive Solo look like?

- **Participation:** A city where persons with disabilities are recognised and directly involved in urban development
- **Mobility:** A city with an integrated inclusive transport network that facilitates people's mobility from door to door.
- **Urban life:** A city where all types of spaces are inclusive and accessible, enabling persons with disabilities to fully participate in urban life
- **Leisure and wellbeing:** Inclusive tourism, recreational spaces and green spaces for all
- **Resilience:** Inclusive and sustainable infrastructure that supports resilience to crises and climate change

- **Assistive technologies and enabling infrastructure:** easy and affordable access to the assistive technologies people need and a built environment and infrastructure that supports their use.
- **Opportunities:** equity of access to opportunities and information for all, including those employed in the informal sector.



An accessible bathroom in a train station in Solo.

What's next?

This report outlines the key findings from a six-month research case study on the city of Solo. As the third of five case studies on inclusive design and the built environment in lower-and-middle-income countries, this report will go on to inform global actions on inclusive design.

The findings of this report will be shared with both international and local audiences through a range of dissemination activities and GDI Hub will continue to support Kota Kita's activities in Solo and across Indonesia through the AT2030 programme.

Ongoing engagement with the topic of inclusive cities in Indonesia is also supported through a collaboration with the Development Planning Unit at UCL through the MSc in Social Development Practice as part of the Overseas Practice Engagement which is delivered in partnership with Kota Kita and supported by GDI Hub.

Kota Kita also has ongoing projects that will integrate the findings of this case study such as "Rivers as Inclusive Common Space" which seeks to develop a scalable city-wide riverbank revitalization strategy and vision that integrates inclusive urban development, water management, livelihood, and public space activation and management. In another project, Kota Kita is working with the Department of Transportation Solo City to participate in the "Street for Kids" program, which seeks to reimagine and redesign streets to support comfortable, healthy, and inspiring environments for children. Another upcoming initiative is the "Repaint the City" project, 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. Kota Kita will also work on “Future Cities: Low Carbon Transport” initiative, which seeks to raise the status of public transport in the minds of everyday users and remove barriers to adoption to achieve positive gender equity and social inclusion through transformative change in three cities in Indonesia.

The data collection that informed this case study took place prior to the second wave of COVID-19 in Indonesia. We recognise the impact the COVID-19 pandemic has had on partners and communities and hope this research on inclusive environments can support strategies for an inclusive recovery.



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