AT2030
Case Study: Full Report

Inclusive Design and Accessibility of the Built Environment in Medellín, Colombia

Funded by

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Global Disability Innovation Hub

In partnership with

El Comité
CORPORACIÓN SOCIAL

AT2030

Summary: Becoming a More Inclusive City

Medellín is Colombia's second city, a city with a difficult past that has recently become known for its innovative approaches to urban development. Medellín showcases good practices of inclusive design, many of which are looked to from other cities and offer genuine opportunities for cities and local governments to be more collaborative. This forms part of a wider picture of inclusive urban innovation that is found in Medellín, which are delivered through an approach of social urbanism. However, it is important to note that continued improvement, maintenance and new innovation will always be needed to sustain an inclusive city – and energy, motivation and resources must be directed to this.

"It is not a question of saying that we have not achieved anything, but that we need to work continuously, because when processes slow down, it is like starting all over again and sometimes it is very difficult and tiring."

There are nearly 80,000 persons with disabilities registered as living in Medellín, who experience various physical, attitudinal, and environmental barriers to daily life. The city has demonstrated commitments to being a liveable city, through strong commitments to inclusive green spaces, that have been designed in participatory ways. However, in terms of inclusive urban life, there is progress needed in areas such as inclusive recreational spaces and seamless accessibility through the transport system. The social urbanism projects have taken an innovative approach to including more peripheral parts of the city and

Inaccessibility found in the peripheries of the city

informal settlements in city planning, but these areas still lack behind in terms of accessibility.

From a policy perspective, comprehensive legislative frameworks are in place and have been effective in Medellin. However, most policy sits at a national level and therefore is not always locally adapted to the specific contexts of cities, for example, Medellin's unique and challenging topography. The adaptation and implementation of the numerous frameworks is not consistent across infrastructure which can limit overall accessibility.

Ongoing political will towards inclusive cities is essential to continue to deliver inclusive infrastructure and this can be challenging with changing political leadership. More resource and budget would also demonstrate commitment in this area. One positive example of this is resourcing is the city's Accessibility Committee (CAME) which has oversight over inclusive infrastructure in Medellín.

In infrastructure, there is clear progress in accessibility in some sectors. However, it is not yet well synchronised. For example, certain aspects of the public transport system (Metro) are more accessible than others and the connections between these systems are not always accessible or affordable. In social housing, projects are often not as inclusive as they could be for reasons such as a lack of elevators being provided in apartment blocks due to the initial and ongoing financial costs. Parks and green spaces have been given high priority in terms of inclusion in Medellin and there are several accessible parks that have applied inclusive design processes to arrive at an inclusive outcome. These green spaces stand as important examples that make inclusive design more visible in the city. However, it is equally important that the every-day spaces and services people need are made accessible too.
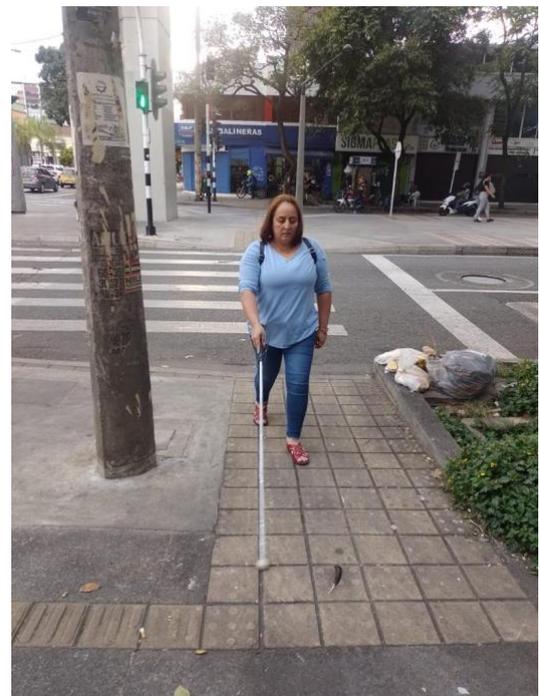
Participant using white cane on tactile paving for guidance.

For example, persons with disabilities expressed challenges that impact quality of life including; limited accessibility of recreational activities, lack of affordable inclusive

spaces (higher-income areas are generally more accessible), poor attitudes and awareness and a lack of continuity and maintenance of existing accessible environments.

Where spaces have been designed and implemented through participatory processes, the outcomes are more inclusive. Success stories of inclusive design practice are found in various public spaces in the city such as Parques del Rio. However, the next step would be to improve the diversity of disabilities represented within these participatory processes. This is an opportunity to really celebrate the diversity of disability and also acknowledge social networks of persons with disabilities including friends, family and support providers.

With regard to Assistive Technology (AT) access and use, persons with disabilities spoke of the challenges in accessing AT, which often resort to legal proceedings. The process of acquiring AT is long, often taking more than 6-9 months. Using AT in Medellín is also not easy as the infrastructure does not always support AT use. Examples include transport modes not being inclusive for AT users and seasonal rainfall creating hazardous surfaces and limiting mobility for many. There are also disparities between people's aspirations for AT and what they are actually provided with which is often quite basic and generic. This also relates to the challenge that in certain circumstances the medical model of disability is still quite prevalent.

MATT Movilidad is a local AT entrepreneur

Medellín lives up to its name as a district of innovation. Its innovation hub, 'Ruta N' is an accessible building which makes a strong commitment to inclusion including a programme on disability innovation. Disabled social entrepreneurs and enterprises are also working in the city such as MATT Movilidad, an organisation producing

electric third wheels for manual wheelchairs with a unique business model that includes rental and tourist tours.

Medellin is on the path to inclusion. Below we summarise, suggested key actions and recommendations that can make a positive step-change in the city. Access the full report of this research case study for a comprehensive overview of the state of accessibility and inclusion in Medellín.

Key Barriers

Barriers exist in the city and include physical barriers, socio-economic barriers and attitudinal barriers. Some of the key barriers highlighted through our research and in this report include:

- Lack of physical space in the city.
- Complex topography, particularly for low-income communities.
- Congestion and inconsistent accessibility throughout the day.
- Inaccessible recreation spaces.
- Lack of consistency in accessible infrastructure, such as between transport systems.
- Difficulty of adapting / retrofitting existing infrastructure and reticence of private owners/developers to do so.
- Access to AT, a flawed system.
- Specific allocation of funding and resources to do this well.
- Recognition of the diversity of disability and support for people with invisible or hidden disabilities.
- Communication barriers for a range of diverse disabilities.
- Attitudinal barriers.
- Implementation of policies and accountability for delivery.
- Materials and quality control, such as non-slip materials to account for steep hills and increased rainfall.
- An ever-shifting political landscape and therefore inconsistent political will.
- Ongoing maintenance and sustainability of existing inclusive infrastructure.
- A lack of vision and direction on inclusion to future-proof a growing and evolving city.

Consistent poverty cycles for many residents, including many persons with disabilities.

Key Recommended Actions

This report sets out recommendations and actions that will support Medellin to build on the good work already done and address the current barriers and challenges to become more inclusive for its citizens. Below are some key, high-level recommendations. A breakdown of recommended actions across policy and decision makers, industry and the local community, are set out in the conclusion. Key recommended actions for Medellín include:

- Produce a new inclusive city strategy that brings together fragmented policies. This should be centred on the participation of persons with disabilities adapted to the local context and local resource-constraints, considering the periphery areas of Medellín and a wide range of visible and invisible disabilities.
- Provide disability equality and awareness training and inclusive design training across all levels, from key urban stakeholders, service providers down to young people in education. This will help raise awareness and break down attitudinal barriers.
- Address climate resilience and disaster response taking into consideration the cities unique topography and changing climate.
- Prioritise action across the key barriers reported including; first and last mile to transport hubs, wayfinding and information, equal access to education and healthcare.
- Ensure support for persons with disabilities who require assistance to acquire independence. Allow persons with disabilities to not feel completely dependent on personal networks including family and friends.
- Finance an inclusive built environment by ringfencing funding and resources to support implementation. Ensure projects are maintained once implemented and not discontinued over time, and if possible, that they do not depend solely on the political will of the leaders.
- Raise awareness around the co-benefits of inclusive infrastructure, for example, better health access and better livelihoods for everyone.
- Further develop building codes and accessibility standards in a way that ensures an inclusive design approach is implemented and inclusive outcomes delivered. These should consider user experiences and journeys in the city ensuring people with a wide spectrum of disabilities are included. Review all existing guidance and consolidate these into one.

- Embed inclusive design in the implementation of all essential infrastructure and services. This must include improvements to the periphery and lower income areas.
- While essential services are a priority, don't underestimate the importance of access to recreation, sport, culture and public space. Consider the attitudinal as well as the physical barriers that exist in these spaces to ensure a welcoming and inclusive environment.
- Support targeted education and training programmes and interventions as required, developing them with persons with disabilities.
- When implementing upskilling projects ensure participants are financially supported, based on need.
- Let communities lead, facilitate and resource community-driven development.
- Champion the good inclusive work already taking place in Medellin so that others can see what best practice looks like and its benefits. Develop a fairer and simpler assistive technology distribution system without the need for legal proceedings and ensure the correct AT is getting to who needs it.

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, empower further positive cultural change, an accessible and inclusive built environment, straight forward access to good quality and affordable assistive technology and inclusive climate resilience. There is good progress across some of these factors in Medellín but for an inclusive city to maintain an enabling environment it is necessary to ensure robust, sustainable, disability-inclusive urban development processes are implemented.

A group of people playing tactile bingo

So what might an inclusive Medellín look like?

- Be known as the city of inclusive innovation.
- Provide inclusive mobility and transport that incorporates good wayfinding and ensures its facilities such as lifts are regularly maintained and operational, with helpful staff on-site who are properly trained in disability inclusion.
- All citizens have a positive awareness of disability and are open with a positive attitude towards disability and persons with disabilities.
- Accessible and affordable housing for all.
- Inclusive and accessible healthcare and education for all.
- Enjoyable urban life: recreation, culture, sport and safe inclusive public spaces where everyone feels welcome and free of judgement.
- Inclusive climate resilience, adaptation, and disaster preparedness.
- Thriving and connected communities.
- Equal access to opportunities and livelihoods.

What's next?

This report outlines the key findings from a four-month case study on the city of Medellín. As the sixth and final case study on inclusive design and the built environment in lower-and-middle-income countries, it will go on to inform global actions on inclusive design.

Acknowledgements

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 41 countries, with more than 70 partners and have reached 29 million people since launching in 2016.

El Comité, Corporación Social

El Comité is a social organisation committed to transforming the lives of people with physical and cognitive disabilities and their families. They are specialists in the creation and implementation of rehabilitation and inclusion models to bring people to optimal levels of independence, autonomy and citizen participation. As leaders in the region, they work hand in hand with people with disabilities, families, strategic partners, actors with a social vocation and other opinion makers, in the construction of an inclusive society, with a culture based on the rights and duties approach. They believe in the abilities and unique talent of people with disabilities, trusting that their rehabilitation model is a tool that develops the potential of people with disabilities and facilitates their full participation in society.

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Foreword

It will always be a dream to think that a city like Medellín, located between mountains and crossed by a river, would be a territory for independent life, not only because of the natural barriers, but because, despite the fact that, going back in history, we find some glimpses of urban planning, such as the corridor on the river bank that made the Metro possible, there are many laws and few efforts are made so that what is written is reflected in the reality that people with some type of disability live in the city.

Despite the fact that we talk about rights and duties, we live in a society that experiences development from the informality that many communes experience, which is nothing more than houses crowded together on a mountain, neighbourhoods that are born more from the need to set up a ranch and put a roof over a family, which does not respond to a development or territorial plan that dictates norms and concepts to take into account a design for all, with the final result being a city for a few.

These types of studies and initiatives such as Inclusive Design and Accessibility of the Built Environment in Medellín, Colombia, carried out by the Global Disability Innovation Hub and partners for the UK Foreign, Commonwealth and Development Office, allow us, beyond diagnosing ourselves, to get to know each other from the needs and people's experiences, listening to them from their daily activities. It allows us to talk about obstacles, but at the same time to recognize the spirit of resilience that is born in people when what they see is what is available, but it is not enough; and when you have to get from one point to another to survive.

Opening spaces for conversation, inviting different public and private actors, guiding discussions and putting forward a spirit of transparency that will allow us to show reality openly, is what results in real information contained in this study and that will serve as a starting point. a real departure, as a zero baseline, to begin to learn from a humble perspective and to build, from a vision of co-creation, what we want to call, a Medellín for all, a territory for independent life.

Sonia Marina Gallardo Gomez
Director of El Comité Corporación Social

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 systems[1]. 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'.

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[1] 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'

DPO: Disabled Persons' Organisation

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

GDI Hub: Global Disability Innovation Hub

ILC: Independent Living Centre

LMICs: Lower-and-Middle-Income Countries

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 29 million people so far through activities that cut across the domains of data and evidence, innovation, country implementation and capacity and participation. The programme is currently operational in over 41 countries and works with more than 70 delivery partners[2].

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 disabilities[3]. 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 settings[4]. 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,

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[2] For further information on the AT2030 programme please visit http://www.at2030.org

[3] For more information on GDI Hub's approach to inclusive design please visit:
http://www.disabilityinnovation.com/inclusive-design

[4] 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:

*   Four-year research programme.
*   6 cities in 6 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'[5], reinforcing the relationship between disability and poverty[6]. For example, in Mongolia, where we

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[5] Department for International Development, UK Government, 'Disability, Poverty and Development' (Department for International Development, 2000).

[6] 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:*

undertook our first case study, households with at least one person with a disability have double the poverty incidence of other households[7]. 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'[8] 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 UNCRPD[9]. 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 disabilities[10]. 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'[11] 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.

[7] 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.

[8] 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.

[9] 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.

[10] 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.

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

infrastructure development[12]. 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 access[13].

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 approaches[14].

The World Report on Disability[15] 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 environment[16].

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 disabilities[17].

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[12] The World Health Organisation, 'World Report on Disability' (The World Health Organisation, 2011).

[13] Agarwal and Steele, 'Disability Considerations for Infrastructure Programmes'.

[14] 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/.

[15] The World Health Organisation, 'World Report on Disability'.

[16] The World Health Organisation.

[17] 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 settlements[18]. This growth is not always accompanied by equivalent infrastructure development, leading to wide gaps in urban equality or an 'urban divide'[19]. Urbanisation is most widespread in low-and-middle-income settings, leading to the suggestion that 'poverty is urbanising'[20]. By 2050, 66% of the world's population will live in cities; 90% of which will be in low-middle-income settings[21]. 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 exclusion[22]. 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 inclusion[23]. 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

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[18] 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.

[19] Dahiya and Das.

[20] 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.

[21] 'New Urban Agenda' (United Nations, 2017).

[22] 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.

[23] The World Bank, 'World Inclusive Cities Approach Paper'.

first time' highlighting the relevance of focusing on inclusive infrastructure in lower-and-middle-income cities.[24]

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' [25] [26] [27]. 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 eradication[28] and the UNCRPD 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 made[29]. 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 six case studies will help support making these policy goals a reality.

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[24] Infrastructure and Cities for Economic Development (ICED), 'Delivering Disability Inclusive Infrastructure in Low Income Countries'.

[25] 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.

[26] The World Bank, 'World Inclusive Cities Approach Paper'.

[27] 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).

[28] The World Health Organisation, 'World Report on Disability'.

[29] 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." [30]

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'[31].

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 changing[32].

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 everyone[33]. Inclusive design can help to minimise social exclusion[34] 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.

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[30] Global Disability Innovation Hub, Queen Elizabeth Olympic Park, and London Legacy Development Corporation, 'Inclusive Design Standards', May 2019.

[31] Infrastructure and Cities for Economic Development (ICED), 'Delivering Disability Inclusive Infrastructure in Low Income Countries'.

[32] Global Disability Innovation Hub, Queen Elizabeth Olympic Park, and London Legacy Development Corporation, 'Inclusive Design Standards'.

[33] 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.

[34] 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'[35].

Evidence shows that isolated interventions for urban development have limited success. To improve quality of life in cities, interventions and urban programmes need to be holistic and sustained over long periods of time[36]. 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?

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[35] 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.
[36] 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 Colombia

This purpose of this case study is to explore the state of inclusive and accessible environments for persons with disabilities in Medellín, Colombia, 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 Medellín and makes recommendations on local actions towards becoming a more inclusive city.

This is the last of six case studies analysing the state of accessibility and inclusive design in low-resource contexts around the world. The six 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.

This case study is the only one undertaken in Latin America. According to the World Bank, there are 85 million persons with disabilities living in Latin America and the Caribbean, 14.7% of the population. This new report by the World Bank also identifies a loss of 3-7% GDP through the exclusion of persons with disabilities, highlighting the economic value of more inclusive environments. The report also documents the significant impact of compounding disadvantages, experienced in the region by numerous groups such as women, the rural population, indigenous peoples and people of African descent with disabilities.[37] Colombia faces numerous challenges in the domains of social inclusion and disability inclusion. The country's history of armed violence has led to relocation, land insecurity, and associated trauma. The country is also home to 1.8 million Venezuelan refugees.[38]

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[37] 'Inclusion of Persons with Disabilities Is Crucial for the Sustainable Development of Latin America and the Caribbean', World Bank, accessed 25 July 2023, https://www.worldbank.org/en/news/press-release/2021/12/02/la-inclusion-de-las-personas-con-discapacidad-clave-para-el-desarrollo-sostenible-de-america-latina-y-el-caribe.

[38] Humanity & Inclusion, 'Humanity & Inclusion | Colombia', Colombia, accessed 16 July 2023, https://www.hi-us.org/en/country/colombia.

Medellin, also known as the city of eternal spring, is surrounded by mountains and crossed by the Aburrá River. It is also the capital of Antioquia, one of the 32 regions into which Colombia is divided (see photo 1). It is located in the heart of the Aburrá Valley, a subregion made up of 10 municipalities (Caldas, La Estrella, Envigado, Sabaneta, Itagüí, Barbosa, Girardota, Copacabana, Bello and Medellín). Medellin is divided into 21 communes, 16 of them located in urban areas and 5 in rural areas. Most of the population is concentrated in urban areas, despite the fact that approximately 70% of the total area of the city is rural land [39] . Historically it has been the second most important city in the country, despite that fact that only 30 years ago it was recognized for being one of the most violent cities in the world[40]. Inequality, poverty, and insecurity were characteristics of the city in the 1990s. However, the reality changed in just a decade[41] and the city was able to recover from drug trafficking and become known for its social and urban projects. In 2021, Medellín was designated as a Special District for Science, Technology and Innovation.[42]

Medellín is renowned for its transport infrastructure, including the cable car system that has sought to support the 'harder to reach' communities in the peripheries of the city. The system is largely designed to be accessible. However, there remain challenges for the 78,562 persons with disabilities living in Medellín. Medellín offers a valuable case study to the Inclusive Infrastructure programme as it offers an opportunity to study what is working and what isn't in accessible infrastructure initiatives, as well as a review of its comprehensive policies on inclusion.

This case study will build a picture of the current state of inclusion and accessibility in the built environment and infrastructure in Medellín through engaging local

[39] Alcaldía de Medellín, 'Actualización Del Informe de Gestión Del POT 2016-2019' (Medellin, Colombia, 2019), https://www.medellin.gov.co/irj/go/km/docs/pccdesign/medellin/Temas/PlaneacionMunicipal/Programas/Shared%20Content/Documentos/2020/Anexo_2.pdf.
[40] World Bank, 2017. "Medellín, laboratorio mundial sobre desarrollo urbano". Online, available at https://www.bancomundial.org/es/news/feature/2017/06/09/medellin-laboratorio-mundial-sobre-desarrollo-urbano-colombia
[41] González Escobar, 'La Experiencia de Desarrollo Urbano de Medellín – Escala Barrial/Comun", Seminario Informalidad Urbano-Rural - Maestría En Estudios Urbano Regionales, Universidad Nacional de Colombia' (Medellin, Colombia, 1 December 2011), https://repositorio.unal.edu.co/bitstream/handle/unal/64254/La_experiencia_de_desarrollo_urbano_de_medellin.pdf?sequence=1&isAllowed=y.
[42] Congreso de la República, 2021, 'Acto Legislativo 1 de 2021, Por El Cual Se Otorga La Calidad de Distrito Especial de Ciencia, Tecnología e Innovación a La Ciudad de Medellín y Se Dictan Otras Disposiciones', 2021, https://dapre.presidencia.gov.co/normativa/normativa/Acto%20Legislativo%2001%20del%2014%20de%20julio%20de%202021.pdf.

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 Medellín. It will then describe the activities that took place before discussing insights, lessons learned, and actions towards inclusion for the city of Medellín.

Background and Contextual Factors

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

Statistics on Disability in Colombia[43]

Population of Colombia	52,386,712 people		
Population of Medellín	2,653,729 people		
Persons with disabilities in Colombia	3,974,522 people	2,174,064 female	1,800,458 male
Persons with disabilities in Medellín	78,562 people	38,188 female	40,374 male

The Urban Development of Medellín
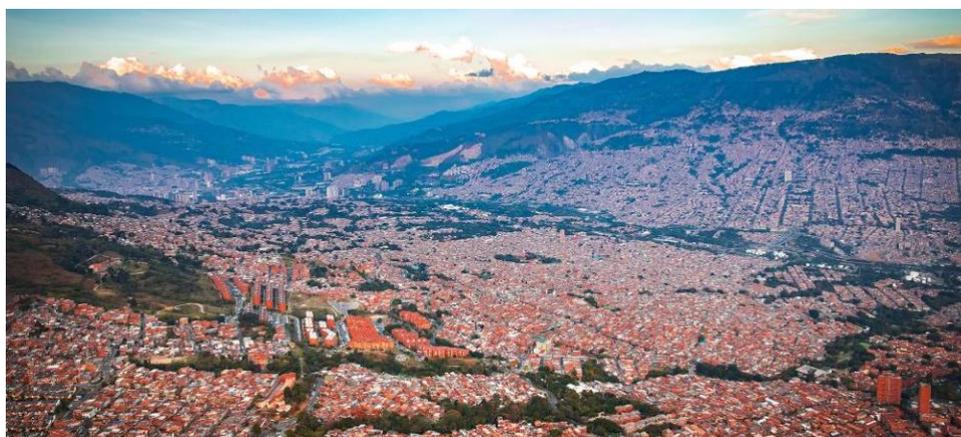
Photo 1: Medellín [44]

The urban development of Medellin has played a leading role in its process of social transformation. Since the 1950s, during the internal armed conflict in Colombia, hundreds of migrants and displaced persons have travelled from rural areas to large cities, fleeing violence and seeking better opportunities. Medellin was the focus of thousands of people, who sought to reach the city of eternal spring to start a new life.

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[43] 'Colombia Population and Housing Census 2018 | GHDx', accessed 28 July 2023, https://ghdx.healthdata.org/record/colombia-population-and-housing-census-2018.

[44] Alcaldía de Medellín, 'Actualización Del Informe de Gestión Del POT 2016-2019'.

However, due to a lack of resources and a host of complex social situations, the only option for many was to settle on the slopes of the city (see photo 2), building their own homes in areas where the lack of regulation and state presence allowed hundreds of human settlements to be built informally.[45] In addition, the prominence of drug cartels through the 1980s and 1990s exacerbated existing social problems, particularly in the north of the city.[46] These areas became centres of narco-violence, generating a serious conflict of governability and delegitimization of the state. [47]
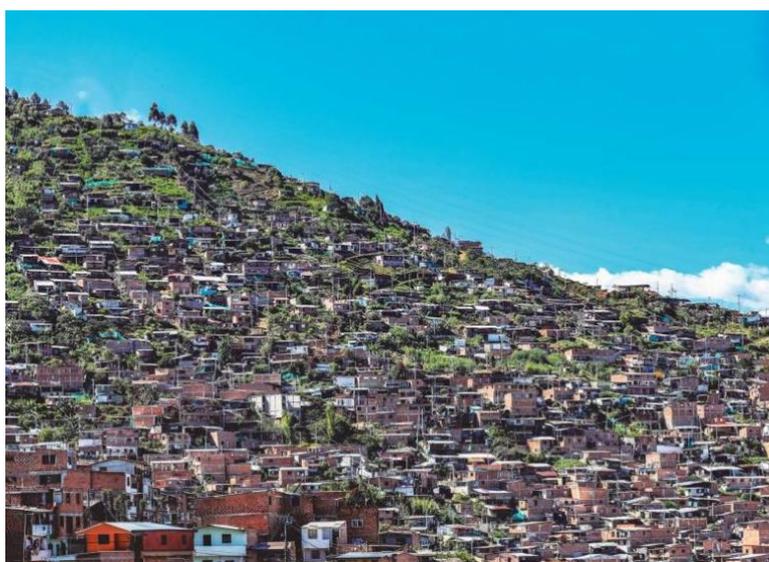
Photo 2: Medellín hillsides [48]

Informal settlements on the periphery were characterized by poor connectivity, precarious housing conditions and public services, little or no public space, and located in geologically unstable areas unsuitable for urbanization. Likewise, land tenure in these areas was illegal and the population lived in conditions of poverty, vulnerability and scarcity. The periphery of the city began to suffer from structural problems of inequality and segregation while being disconnected from the centre, where most services were concentrated.

However, the city began to structure processes for the improvement and rehabilitation of neighbourhoods as a strategic response to the deterioration,

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[45] Empresa de Desarrollo Urbano – EDU et at., 'Medellín Modelo de Transformación Urbana Proyecto Urbano Integral –PUI- En La Zona Nororiental Consolidación Habitacional En La Quebrada Juan Bobo' (Medellin, Colombia, 2015).

[46] Empresa de Desarrollo Urbano – EDU et at.

[47] Empresa de Desarrollo Urbano – EDU et at.

[48] Perez, 'En Las Laderas de Medellín No Solo Hay Amenazas, También Es Posible Hallar Soluciones', 2022, https://www.elcolombiano.com/antioquia/en-laderas-de-medellin-buscan-soluciones-para-reducir-riesgos-por-emergencias-JL18571668.

marginality, and governance conflict that existed on the hillsides. Through these strategies, infrastructure adaptation works, housing improvement and risk mitigation were carried out that would improve the quality of life for citizens living there [49] while also generating a state presence in the territory. [50]

Such was the case of PRIMED (see photos 3 and 4), the Comprehensive Program for the Improvement of Subnormal Neighbourhoods in Medellín, an international cooperation project developed between 1992 and 2001 with the German government, which sought to *"improve the quality of life of inhabitants of 15 hillside neighbourhoods in three areas of the city (...)"* .[51] Approximately 11,000 families directly benefited from the program, who actively participated in the project's different phases .(ibid.)

PRIMED was carried out in an articulated manner between different departments of the municipal administration and the community through the implementation of participatory processes and planning and management instruments that improved living conditions.[52] Schools, meeting points and community parks were built; subsidies were granted to improve homes, properties were legalized alongside many other interventions, based on the fact that informality must be recognized and not ignored.[53] Strategies were developed to complement the territory and provide it with better infrastructure.

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[49] 'PRIMED: Una Experiencia Exitosa En La Intervención Urbana - UNESCO Digital Library', accessed 28 July 2023, https://unesdoc.unesco.org/ark:/48223/pf0000129776_spa.

[50] González Escobar, 'La Experiencia de Desarrollo Urbano de Medellín – Escala Barrial/Comun", Seminario Informalidad Urbano-Rural - Maestría En Estudios Urbano Regionales, Universidad Nacional de Colombia'.

[51] 'PRIMED: Una Experiencia Exitosa En La Intervención Urbana - UNESCO Digital Library', 8–9.

[52] 'PRIMED: Una Experiencia Exitosa En La Intervención Urbana - UNESCO Digital Library'.

[53] González Escobar, 'La Experiencia de Desarrollo Urbano de Medellín – Escala Barrial/Comun", Seminario Informalidad Urbano-Rural - Maestría En Estudios Urbano Regionales, Universidad Nacional de Colombia'.
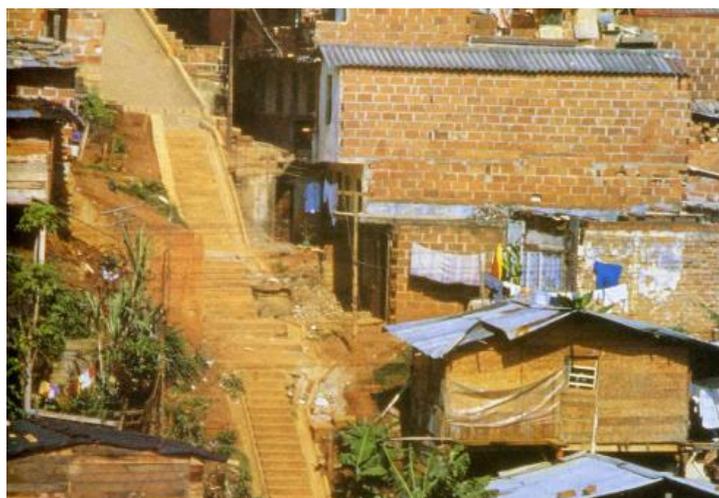
Photo 3: PRIMED - Slum Upgrading interventions [54]

Photo 4: PRIMED Interventions - Commune 13 [55]

This program, together with experiences of neighbourhood improvement in Rio de Janeiro (Favela Bairro), Barcelona and Bogotá, served to guide future approaches and projects of subsequent municipal administrations.[56] The city began to direct its public policies towards the implementation of strategies that make it possible to close the gaps between the periphery of the city and its central zone, solve the problems of inequality and inequity and improve the habitability conditions of the hillsides. From then on, the concept of "Social Urbanism" began to emerge in Medellin, a strategy through which *"interventions are carried out in the marginal areas of the city in an integral manner, with a strong social component and citizen participation".* [57]

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[54] 'PRIMED: Una Experiencia Exitosa En La Intervención Urbana - UNESCO Digital Library'.

[55] Empresa de Desarrollo Urbano – EDU et at., 'Medellín Modelo de Transformación Urbana Proyecto Urbano Integral –PUI- En La Zona Nororiental Consolidación Habitacional En La Quebrada Juan Bobo'.

[56] González Escobar, 'La Experiencia de Desarrollo Urbano de Medellín – Escala Barrial/Comun", Seminario Informalidad Urbano-Rural - Maestría En Estudios Urbano Regionales, Universidad Nacional de Colombia'.

[57] Empresa de Desarrollo Urbano – EDU et at., 'Medellín Modelo de Transformación Urbana Proyecto Urbano Integral –PUI- En La Zona Nororiental Consolidación Habitacional En La Quebrada Juan Bobo'.

In this process of urban change, Law 388 of 1997 was created at the national level, establishing a framework for spatial planning and land use at the municipal level. Derived from this law, the Land Management Plans (POT) arise, which include long-term strategies for the urban development of cities, preventing each new mayors, elected every 4 years, from promoting contradictory initiatives and city models.[58]

It is important to highlight that Medellin, due to its topographic conditions, may not be able to avoid or reverse the occupation of the slopes, which represents a permanent challenge for the city.[59] Consequently, implementing strategies to generate connectivity between the periphery and the centre of the valley becomes a priority. Likewise, the recognition of the informal as a form of development must be the starting point for the execution of interventions in these territories. Rather than considering their destruction, local institutions must seek ways to complement and provide informal settlements with better infrastructure and access to services.

Under this perspective, in Medellín institutional projects and programs continued to be developed in the marginal areas of the city with a view to improving problems of poverty, social exclusion, inequality, violence, and poor governance.[60] This is opposed to other views of urbanism, where the social interest is not at the centre of the interventions, rather attending to the interests of small sectors of society, which can segregate and exclude many others. In this way, urban planning conceived from a social point of view turns this discipline into an, *"instrument for spatial inclusion and construction of equity in access to the possibilities offered by the city for human development"* [61]In the long term, Social Urbanism is *"a contributing agent of peace and prosperity of the human groups that inhabit the city, particularly of the traditionally marginalized social sectors"* .[62]

This has been the perspective adopted in Medellin since the implementation of PRIMED, understanding that interventions in the territory must cover all dimensions of the urban, in an integral manner: mobility, equipment, housing, public space, environmental improvement, and relocation of communities that inhabit high-risk areas [63]. Also important has been citizen participation, placing the community as the key actor in the development of any initiative. This work recognises a historical debt

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[58] Empresa de Desarrollo Urbano – EDU et at.

[59] González Escobar, 'La Experiencia de Desarrollo Urbano de Medellín – Escala Barrial/Comun", Seminario Informalidad Urbano-Rural - Maestría En Estudios Urbano Regionales, Universidad Nacional de Colombia'.

[60] Empresa de Desarrollo Urbano – EDU et at., 'Medellín Modelo de Transformación Urbana Proyecto Urbano Integral –PUI- En La Zona Nororiental Consolidación Habitacional En La Quebrada Juan Bobo'.

[61] Empresa de Desarrollo Urbano – EDU et at., 45.

[62] Empresa de Desarrollo Urbano – EDU et at., 'Medellín Modelo de Transformación Urbana Proyecto Urbano Integral –PUI- En La Zona Nororiental Consolidación Habitacional En La Quebrada Juan Bobo'.

[63] Empresa de Desarrollo Urbano – EDU et at.

owed to the periphery of the city, where it is necessary to develop infrastructure to connect the community on the slopes with the centre of the city, and bring to the periphery a supply of goods and services that improve the quality of life of the population. This understanding of urbanism guided the creation of the so-called Integral Urban Projects – PUI formulated in 2004 (see photo 6); the construction of the Metrocables (see photo 7), Library Parks (see photo 8) and other community facilities that have been developed in marginal areas on the outskirts of the city (see photo 9).

Regarding the PUIs, it is highlighted that they were interventions in different areas on the periphery of the city, with precarious spatial, environmental and social conditions, and with the worst indicators of quality of life of the population.[64] Through this strategy, physical, social and institutional infrastructure projects were developed that supported employment opportunities and improved habitability conditions in the area, with citizen participation taking place from the diagnosis, to the execution of the interventions. This "urban acupuncture" strategy, of small but significant interventions [65] made it possible to implement social urbanism, focusing resources and efforts on those most in need. Part of the interventions of the PUIs was developed through the improvement and adaptation of public spaces and homes; construction of public facilities such as public libraries and schools; and the development of bridges and viaducts that made it possible to connect areas within the neighbourhoods. These kinds of interventions improved accessibility in those areas, as reaching these spaces was difficult before their development, especially for persons with disabilities. PUIs allowed the construction of paths and roads making it possible to connect public spaces with homes and transport systems. Many old narrow paths were replaced by ramps, viaducts and wide roads, which has improved accessibility in these areas (see photo 5).

Photo 5: Before and after PUI comuna 13. [66]

[64] Empresa de Desarrollo Urbano – EDU et at.

[65] J Eveland, 'Medellín Transformed — from Murder Capital to Model City', 204, accessed 28 July 2023, https://www.leekuanyewworldcityprize.gov.sg/resources/features/medellin-transformed/.

[66] Alcaldía de Medellín, 'Actualización Del Informe de Gestión Del POT 2016-2019'.

However, accessibility is still a big challenge in the peripheries of the city. Steep areas often do not allow the construction of ramps, or other solutions. Sometimes it becomes even more dangerous to try and build localised inclusive interventions in these conditions. This is why other kinds of strategies must be created. For example, Metrocables, is one alternative that responds to this issue. It is a cable car system connected to the metropolitan mass transportation system, that provides access to the steep hillside neighbourhoods. The Medellín Metrocables was the first cable car system in the world to be implemented as mass public transport.[67] Added to the benefits of accessibility and reduction of travel times are the financial savings for system users, who greatly reduce the number of bus routes they need to take. Additionally, being a system that uses clean energy, it considerably reduces the transport emissions of the city.

Mass Transport in Medellín

Name	Type	Where it serves
Metro	Rapid transit system with 2 train lines that cross from north to south and centre to west Medellin. There are 27 metro stations.	Line A: Niquía – La Estrella with 21 stops. Line B: Sant Antonio to San Javier with with 7 stops.
Metrocable	Aerial cable car system with 6 lines and 20 stations.	Line K: Acevedo to Santo Domingo Savio with 4 stops. Line J: San Janvier to La Aurora with 4 stops. Line L: Santo Domingo Savio to Arvi with 2 stops. Line H: Oriente to Villa Sierra with 3 stops. Line M: Miraflores to Trece de Novembre with 3 stops. Line P: Acevedo to El Progreso, with 4 stops.
Ayacucho Tram	A Translohr tram system with 1 line and 9 stops	San Antonio to Oriente with 9 stops.
MetroPlus	Bus Rapid Transit System (BRT) with 3 lines and 58 stops.	Line 1: U. de M. to Parque Aranjuez with 21 stops Line 2: U. de M. to Parque Aranjuez with 23 stops Line O: Caribe to Los Pinos with 9 stops

Breakdown of Massive Transport Methods in Medellin. In addition to what is shown in this diagram, feeding buses and other regular bus routes should be considered.

The Metro Company has indicated that *"in 2022, we avoid the emission of 23,742 tonnes of pollutants into the atmosphere, an amount that would require 2,666*

[67] Eveland, 'Medellín Transformed — from Murder Capital to Model City'.

garbage trucks to be transported (...)" [68] Regarding savings in time and money, the Metro points out that by 2022, users of the system *"saved a total of $1.9 trillion (...)* [representing] *annual savings equivalent to 1.9 salaries current legal monthly minimums"* [69] ; and they used less time on their journeys, which, by 2022, represented *"a total of 173,959,800 hours in the year, an estimated benefit of 1.49 trillion and which represents that a user of the Metro network has half an additional vacation period per year"* .[70]

Photo 6: PUI Commune 13. Before and after the electric escalators [71]

Photo 7: Metrocable [72]

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[68] Metro de Medellín, 'Memoria de Sostenibilidad 2022' (Medellin, Colombia, 2022), 151, https://www.metrodemedellin.gov.co/hubfs/memorias-de-sostenibilidad/2022/Memoria-de-sostenibilidad-2022.pdf.

[69] Metro de Medellín, 151.

[70] Metro de Medellín, 151.

[71] Bliss et al, 'Medellín, Colombia: A Case Study for Health', n.d., https://healthymedellin.weebly.com/comuna-13.html.

[72] Metro de Medellín, 'Memoria de Sostenibilidad 2022'.
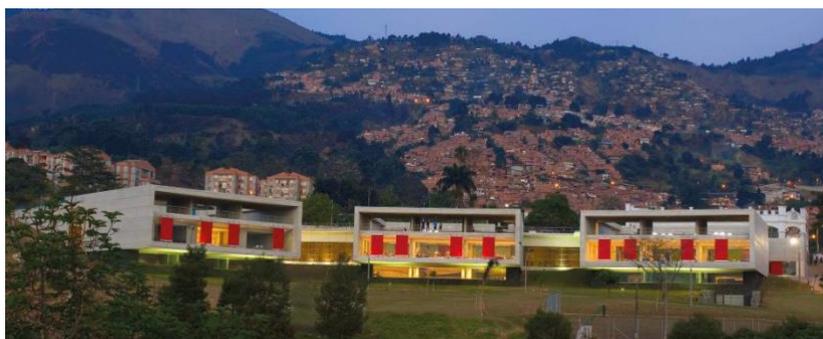
Photo 8: Library Park León de Greiff – La Ladera [73]
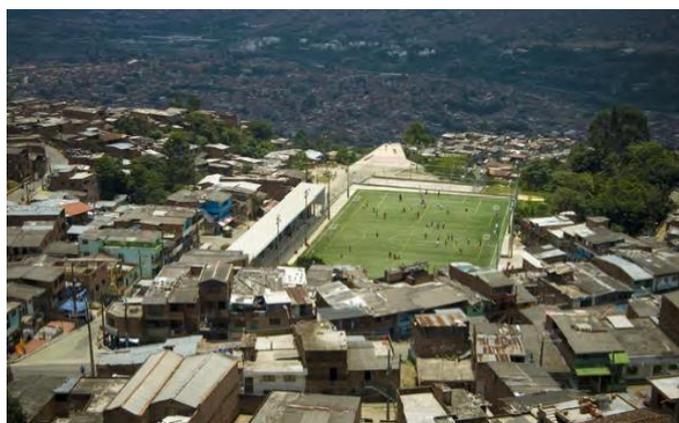
Photo 9: Sports Complex Granizal [74]

Today, Medellín does not look like the city of the 90s. Due to its resilience, it has been recognised internationally, including in 2013 as the most innovative city in the world.[75] According to the Urban Land Institute (ULI) *"the construction of integrated public transport infrastructures, which reduce CO2 emissions, have supported the social development of marginalized areas, the reduction of crime rates, the construction of cultural facilities and spaces, and the management of public services"* (ibid). With these interventions and planning strategies, not only has it been possible to reduce violence in the city, but it has also managed to generate a bond of trust with citizens[76], while improving their quality of life.

Although the social problems and the challenges to generate connectivity, housing, opportunities and services on the slopes of the city continue, Medellín is making good progress towards closing the gaps between the periphery and the centre of the

[73] El Equipo Mazzanti, '1.0 Información Del Proyecto', n.d.,
https://www.elequipomazzanti.com/es/proyecto/leon-de-greiff/.
[74] Empresa de Desarrollo Urbano – EDU et at., 'Medellín Modelo de Transformación Urbana Proyecto Urbano Integral –PUI- En La Zona Nororiental Consolidación Habitacional En La Quebrada Juan Bobo'.
[75] Revista Semana, 'Medellín, La Ciudad Más Innovadora Del Mundo', 2013,
https://www.semana.com/nacion/articulo/medellin-ciudad-mas-innovadora-del-mundo/334982-3/.
[76] Eveland, 'Medellín Transformed — from Murder Capital to Model City'.

valley. A tram, 6 Metrocable lines, a Bus Rapid Transit - Metroplus (BRT) system, a public bicycle system, 36 library parks, more than 25 interventions within the framework of PUIs, among many other strategies, are proof that Medellín is committed to generating more and better opportunities for its people, including those living on the periphery.

In 2021, Medellín was designated as a Special District for Science, Technology and Innovation[77] which projects the city to strengthen its processes in these areas. In the city of eternal spring there is hope, because there is the knowledge and experience problems can be solved and that changing history is possible.

Climate, Health and the Environment

Climate is one of the benefits of living in Medellín known as, "the city of the eternal spring". It has an average temperature of around 22 degrees though the whole year. However, due to climate change, Medellín is now facing hotter temperatures and longer and stronger rainy seasons, which is creating a new challenge the city must respond to. Floods, landslides and temperatures above 30 degrees are now common in Medellín. This effects quality of life and can also impact the biodiversity of the city.

Unregulated urban expansion towards the hillsides has also caused environmental degradation of natural resources.[78] In response to this, Medellín has been developing socially integrated processes to prevent and adapt to climate change and also manage vulnerable land(s) and encourage social inclusion and economic growth in marginalised communities.[79]

One strategy through which Medellín is preventing and adapting to hotter temperatures, whilst improving health conditions, is the creation of "Green Corridors". They were implemented from 2016 to 2019, transforming concrete roads and busy streets into networks of trees and plants [80] (see photo 10). With this intervention, the city has reduced the air temperature of the city by 2 degrees, while also providing shade to pedestrians and cyclists.[81] Almost 880,000 trees and 2.5

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[77] Congreso de la República, 2021, 'Acto Legislativo 1 de 2021, Por El Cual Se Otorga La Calidad de Distrito Especial de Ciencia, Tecnología e Innovación a La Ciudad de Medellín y Se Dictan Otras Disposiciones'.

[78] C40 Cities, 'Cities100: Medellín - Restoring Ecosystems Provides Opportunities for Locals', C40 Cities, 2016, https://www.c40.org/case-studies/cities100-medellin-restoring-ecosystems-provides-opportunities-for-locals/.

[79] C40 Cities.

[80] UCL, 'Medellín: A New Chapter of Resilience', UCL Institute for Sustainable Resources, 22 April 2022, https://www.ucl.ac.uk/bartlett/sustainable/news/2022/apr/medellin-new-chapter-resilience.

[81] UCL.

million plants contribute to cooling down the city temperatures and clean the air.[82] Consequently, there has been an increase in cycling in the city by 34,6% which has also been incentivised by 80km of new bike paths.[83] These interventions have significantly contributed to improving the air quality of the city as certified by Sustainable Energy for All, an NGO advocating for clean and affordable energy. This improvement also reduces respiratory infections, which from 2016 to 2019 fell from 159.8 per 1000 inhabitants, to 95.3.[84]

Photo 10: Green Corridors in Medellín [85]

To contain urban expansion, in 2012 the city established the Peripheral Garden. It seeks to cover over 65 hectares on the hillsides, with bike lanes and pedestrian paths, which not only facilitate mobility, but also allow environmental preservation and ecological restoration.[86] One part of the has already been executed within a marginalised area and implemented participatory and inclusion processes. Consequently, communities were included by providing employment and educational opportunities.[87] However, despite the efforts to generate a project that reduces the impacts of climate change and stops urban expansion, it faces significant challenges in terms of accessibility. Its topographic conditions, being located high on the eastern slope of Medellín, create significant physical barriers to access for persons with disabilities. Mostly there is stepped access and the green areas are also difficult to access.

The rainy seasons in Colombia (April-May and October-November) heavily affect many areas of Medellín, mostly towards the periphery of the city. Flooding and

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[82] 'Creating a Greener, Cooler and Healthier Medellín', Sustainable Energy for All | SEforALL, 4 June 2021, https://www.seforall.org/stories-of-success/creating-a-greener-cooler-and-healthier-medellin.

[83] UCL, 'Medellín'.

[84] 'Creating a Greener, Cooler and Healthier Medellín'.

[85] Alcaldía de Medellín, 'Actualización Del Informe de Gestión Del POT 2016-2019'.

[86] C40 Cities, 'Cities100: Medellín - Restoring Ecosystems Provides Opportunities for Locals'.

[87] C40 Cities.

landslides damage houses and leave many people without water, electricity and sanitation. Flood risk is higher alongside rivers, while landslide risk is higher in steep mountainous zones, particularly in low-income areas that lack proper infrastructure conditions.[88] Towards the periphery of the city small rivers increase flooding risk, while many low-income communities are located in hilly areas with high landslide risk (see photo 11).

Photo 11: Floodings and landslides in Medellín during rainy seasons.[89]

These conditions adversely and disproportionately affect persons with disabilities. During the rainy seasons, persons with disabilities face more challenges to mobilise, and to use their assistive technology devices such as wheelchairs and canes. In many cases, this results in persons with disabilities choosing not to leave their homes due to the weather and lack of solutions. For example, streets on the hillsides

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[88] 'Colombia: Seasonal Rains Cause Flooding in Medellín', Colombia: Seasonal rains cause flooding in Medellín | Crisis24, accessed 28 July 2023, https://crisis24.garda.com/alerts/2018/03/colombia-seasonal-rains-cause-flooding-in-medellin.

[89] El Colombiano,2022. "Invierno sigue implacable con el barrio El Pesebre: cuatro viviendas se desplomaron". Online, available at https://www.elcolombiano.com/antioquia/afectaciones-por-el-invierno-en-el-barrio-el-pesebre-de-san-javier-viviendas-se-desplomaron-JB17521549;
 RCN Radio, 2022. "Dos heridos, una vía cerrada y barrios inundados: El panorama por lluvias en Medellín. Online, available at https://www.rcnradio.com/etiquetas/inundaciones-en-medellin

become even more dangerous when it rains as they become very slippery, preventing many persons with disabilities moving around those areas. In these regards, Medellín is currently facing a great challenge of innovation and community participation in its efforts to create strategies through which climate change can be addressed and citizens' rights, protected.

Disability Context and Issues in Medellín

Colombia signed the International Convention on the Rights of Persons with Disabilities through Law 1346 of 2009, which seeks to *"promote, protect and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities, and promote respect for their inherent dignity"*. On the 10th of May 2011, Colombia ratified this Convention. However, despite the legal advances, community organisations and persons with disabilities find these are being put into practice too slowly highlighting that the perceived shortcomings are not found in the regulations, nor in the institutional architecture, nor in the mechanisms for enforceability of rights, but rather are focused on practices and socio-cultural behaviours in the medium and long term.

Before the adoption of these laws, in 2007, the National Disability System (SND) [90] was created in Colombia, which is the set of guidelines, regulations, activities, resources, programs and institutions that allow the implementation of the general principles of disability, contained in Law 1145 of the same year.[91] It is made up of different public entities and representatives of civil society.

The regulations enshrined in Law 1145 of 2007, are intended to promote the formulation and implementation of public policy on disability in a coordinated manner between public entities of the national, regional and local order and organisations of persons with disabilities and civil society, in order to promote and guarantee their fundamental rights within the framework of Human Rights.[92]

It is important to highlight that Colombia, and particularly Medellín, have a set of other norms, resolutions, decrees and laws that regulate disability and accessibility. One could consider that the more norms and regulations a city has regarding

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[90] Government of Medellin, 'Sistema Nacional de Discapacidad (SND)', (Medellin, Colombia, 2007), https://www.minsalud.gov.co/proteccionsocial/promocion-social/Discapacidad/Paginas/sistema-nacional-discapacidad.aspx#:~:text=El%20Sistema%20Nacional%20de%20Discapacidad,la%20Ley%201145%20de%202007.

[91] Congreso de la República, 2021, 'Acto Legislativo 1 de 2021, Por El Cual Se Otorga La Calidad de Distrito Especial de Ciencia, Tecnología e Innovación a La Ciudad de Medellín y Se Dictan Otras Disposiciones'.

[92] Congreso de Colombia, 2007. Ley 1145 del 10 julio de 2007. Online, available at https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=25670

disability and accessibility, the more it is advancing protection. However, this is not the case for Medellín. There are many norms, at different levels, that regulate disability and accessibility. However, the reality is that a lack of implementation and monitoring that limits persons with disabilities from accessing services and opportunities.

These 'other norms' include the Political Constitution of Colombia, which was approved in 1991 by the National Constituent Assembly. Articles 13, 47, 54 and 68 target equality and special protection for the vulnerable population, educational, labour and social inclusion policies for persons with disabilities. Likewise, Statutory Law 1618 (2013), the National Public Policy of Disability and Social Inclusion of Colombia (2013-2022) and CONPES on Disability 166 (2013) provide guidelines about disability for them to be considered within departmental and municipal policies and development plans.

The region of Antioquia, that includes Medellin, updated its Public Policy on Disability and Social Inclusion (PPDIS) for the period 2015-2025.[93] This targeted the full inclusion of persons with disabilities to guarantee their rights. This is the basis for the planning and execution of all actions at the departmental level aimed at the effective enjoyment of the rights of persons with disabilities, their community, their families and caregivers. This policy specifies its actions through the Departmental Disability Plan (PDD) formulated for a minimum of 8 years. Its construction is the responsibility of the Departmental Disability Committee (CDD) and must be articulated with development plans, sectoral plans and annual operating plans.

Medellín then also has its own development Plan, Medellín Future 2020 –2023, based on three conceptions of development. In the first place, it is concerned with the key development of the capacities that citizens need, and to which they are entitled to ensure better ways of life. Secondly, it understands development from the generation of responsible forms of production and relationship with nature. Lastly, it includes development based on the generation of equitable relationships in access to goods and services. This plan contemplates the differential approach to carry out affirmative actions, with the aim of overcoming inequalities and placing our society on the path of human development and social progress, through attention of the differences that exist between people and the degree of vulnerability and risk they face, as a result of relations of exclusion, invisibility or discrimination.

Medellín also has its own Public Policy for the Inclusion of People with Disabilities, adopted through the Municipal Agreement 86/2009 and regulated by the Decree 221

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[93] Política Pública de Discapacidad e Inclusión Social. Departamento de Antioquia, 2015-225. Online, available at https://www.dssa.gov.co/images/documentos/politicapublicadiscapacidad.pdf

of 2011 (Municipal Disability Plan - PMD).[94] Medellín has, since the end of the 20th century, a large number of public policies that recognize inequality, address the specific problems of the different populations and social sectors; while trying to provide an effective solution to these demands. Thus, today we identify public policies in the social, economic, environmental, cultural and educational spheres. Specifically, the objective of the Public Policy on Disability is to ensure the full enjoyment of the rights and the fulfilment of the duties of persons with disabilities, their families and caregivers.

Between 2005 and 2008, efforts were concentrated on the construction of the PMD 2008 - 2018, to ensure the participation of persons with disabilities, NGOs, secretariats and entities at the municipal level, made up of 8 worktables. This construction took as a reference, the National Development Plan 2003 -2006, the National Plan for Disability Intervention 2004 - 2007 and the Municipal Development Plan 2004 - 2007. Parallel to the process of formulating the PMD, the Inter-Institutional Committee on Disability (CID), today the Distrital Committee on Disability (CDD), and the Week for Disability, today called the Week to Be Able, were consolidated.

The current PMD (Municipal Disability Plan) adopted in 2011, is structured in 5 components:
   1. Promotion and Prevention
   2. Equalization of Opportunities
   3. Habilitation and Rehabilitation
   4. Communication and Information
   5. Training and Research

Based on the PMD, the annual operating plans (POA) are formulated, where the programs, projects with their respective objectives, indicators, goals, managers, co-responsibilities and the resources assigned by each of the dependencies are consigned. However, there is a lack of coordination between the entities and municipal authorities that develop these types of projects and programs. Coordination is needed to align the various interests and adequately support persons with disabilities.

The Distrial Committee on Disability is led by the Secretary for Social Inclusion, Family and Human Rights and is responsible for the implementation and monitoring

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[94] Alcaldía de Medellín, 2014. "PLAN MUNICIPAL DE DISCAPACIDAD 2010 -2018". Online, available at chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.medellin.gov.co/irj/go/km/docs/pccdesign/SubportaldelCiudadano_2/PlandeDesarrollo_0_0/Publicaciones/Shared%20Content/Documentos/2015/Plan%20Municipal%20Version%20Final%202014.pdf

of Public Policy. It is responsible for creating and adjusting the Municipal Disability Plan every 8 years. Likewise, the Secretariat for Social Inclusion leads the Communal and Corregimental Inclusion Committees (CCCI) identify and establish actions that make visible the issue of disability in the territory and contribute to equality and equity of all rights for persons with disabilities.

The normative support of the Public Policy on Disability and Social Inclusion of the Department of Antioquia is made up of international, national and departmental regulations. Some constitute legal background and others represent the support and foundation of it, as set out in the list below:

- Political Constitution of 1991: Articles 13, 47, 54 and paragraph 6 of article 68: protection of Persons with Disabilities.
- Law 361/1997: Establishes tools that allow the social inclusion of people with disabilities: equal access to health services, education, recreation, infrastructure, labor market, etc.
- Law 762/2002: Defines the responsibilities of the State regarding its compliance and calls for the participation of people with disabilities, to achieve equalization of opportunities, in the set of activities of their social life.
- Document CONPES 80: National Public Policy on Disability.
- Law 1098/2006, in article 36: Contemplates the rights of children and adolescents with disabilities.
- Law 1145/2007: Promotes the formulation and implementation of public policy on disability, in coordination between national, regional and local public entities, organizations of people with and in a situation of disabilities and society in order to promote and guarantee their fundamental rights, within the framework of human rights.
- Law 1618/2013: Its main objective is to guarantee and ensure the full enjoyment of the rights of Persons with disabilities, through the implementation of inclusion measures, affirmative actions and reasonable adjustments, eliminating any discrimination based on disability.
- Agreement 027 of 2015, which adopts the Public Policy for comprehensive care for family and voluntary caregivers of people with care dependencies and the formation of Neighborhood Care Networks in the Municipality of Medellín.
- Resolution 0303 of 2011, by means of which the guidelines and prioritization requirements are established for the beneficiaries of the economic support program for people with disabilities.
- Agreement 13 of 2011, through which the Being Capable at Home program is created, which coordinates the implementation of the Public Policy, promotes habilitation, rehabilitation and participation services for people with disabilities. The prioritization of the resource is carried out by the community through the Local Development Planning and Participatory Budget program, enabling the

generation of dialogue scenarios, agreement and decision on actions, strategy and interventions for the problems of the population with disabilities, family members and their caregivers.

Data about Persons with Disabilities in Medellín [95]

According to the National Census of Population and Housing[96] carried out by DANE and revised in 2021, there are 3,974,522 people in Colombia with difficulties carrying out basic daily activities, of which 1,784,372 reported having difficulties at higher levels, corresponding to 8.0% of the country's population. Persons with disabilities are also more vulnerable to poverty, due to the additional costs generated by medical care, assistive devices or personal assistance. According to the census data, 34.62% of persons with disabilities (617,779) receive help from other people to carry out their basic daily activities, 65.40% of persons with disabilities (1,166,984) do not have internet service at home and 20.83% of persons with disabilities work for at least one hour in an activity that generates some income.

Below is a graph showing the number of persons with disabilities per region in Colombia:

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[95] 'Colombia Population and Housing Census 2018 | GHDx'.
[96] 'Colombia Population and Housing Census 2018 | GHDx'.
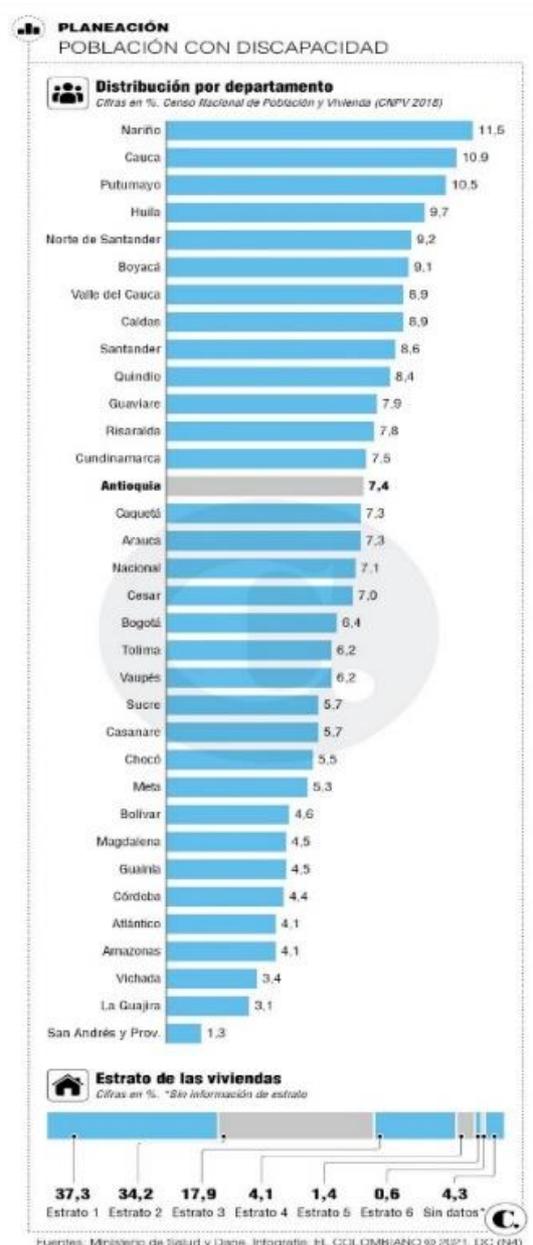
Source: Ministry of Health and DANE.[97]

According to the Registry of Location and Characterisation of Persons with Disabilities of the Ministry of Health and Social Protection, as of June 30, 2020, Medellín has 78,562 persons with disabilities, of whom 40,374 are men, 38,188 women and 9,234 are children and adolescents. According to official data from the Ministry of Health (January 2023), the District registers 64,283 persons with

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[97] Departamento Administrativo Nacional de Estadística -DANE, 2021. Online, available at https://www.dane.gov.co/index.php/estadisticas-por-tema/salud/discapacidad

disabilities, of which only 5,277 are certified. The differences in these figures at the national and local level reveals the under-reporting of this population group.

Persons with disabilities in the city of Medellín do not have sufficient support for their integral development and social inclusion in issues as important as health, education, employment and social support.[98] This directly affects their opportunity to live productive and fulfilling lives. It also increases the severity and prevalence of physical and mental health problems, reducing quality of life for persons with disabilities, their families and caregivers. Consequently, by considering disability as a cross-cutting issue, governments and other actors will be able to more effectively address the obstacles that prevent persons with disabilities from participating on an equal basis. This requires adequate planning, human resources and sufficient financial investment, accompanied by specific, inclusive measures and with reasonable adjustments aimed at guaranteeing the rights of both persons with disabilities and their caregivers.

According to James Larry Vinasco Hernández, University of Antioquia (2015), the participation of persons with disabilities in Medellín has not been strong enough for the planning and design of spaces according to their conditions. Development has been focused on private companies. With the Public Policy, disability was understood as a transversal axis in various topics and not just a medical fact. It is important that designers learn and create new methods directly from the experience of persons with disabilities by applying the principle of, *"Nothing about us without us"* while understanding that complying with the regulations is not a guarantee of the right to accessibility.

In August 2021 the Medellin Accessibility Committee was created to overcome the barriers that people have in physical spaces, transportation, justice, information and communication technologies. It is the first body of this type in the country created by Municipal Agreement, which means that its work is not subject to the will of the administrations on duty. The committee is made up of representatives of the different types of disabilities who are familiar with the subject, as well as officials from the secretariats of Physical Infrastructure, Social Inclusion, Family and Human Rights, Mobility, Education, Communications, Security and Coexistence, Management and Territorial Control, the Administrative Department of Planning and the Undersecretariat of Public Space. Also taking part are representatives of the Urban Development Company (EDU), the Medellín Social Institute for Housing and Habitat (Isvimed), the Metro and Metroplús. The representatives of the different types of

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[98] Departamento Nacional de Planeación. IMPLEMENTACIÓN DE ACCIONES DE INCLUSIÓN SOCIAL ORIENTADAS A LAS PERSONAS CON DISCAPACIDAD, FAMILIARES Y CUIDADORES 21PP99 MEDELLÍN, 2021. Online, available at https://www.medellin.gov.co/ndesarrollo/wp-content/uploads/FICHAS/C6/2020/MGA/20_MGA_PP_C6_INCLUSION.pdf

disabilities became part of the committee after a pre-selection process carried out by the representatives of civil society in the Municipal Committee on Disability (CMD) and a subsequent vote.

Among its functions, the Medellin Accessibility Committee is to provide technical guidance and support across; construction, adaptation of public space, city equipment and housing, information, communication and human mobility, transport and road network, and access to justice. Although it has been intervening in aspects of the city's design and architecture, there is still a need for greater influence and strength from this committee. Committee members often tend to pursue particular interests that are not articulated amongst them. . Some of the programs and projects the Committee has supported includes, comprehensive home care, functional rehabilitation, special care for children with intellectual disabilities, socio-labour guidance, economic support and promotion of entrepreneurship.

The *"Medellín Me Cuida"* (Medellín cares about me) line of the 2020-2023 Development Plan points to the purpose of consolidating an inclusive, sustainable and equitable city, expressing that the accessibility component must be transversal to all areas of development. However, through our research, persons with disabilities highlight that significant obstacles still exist in Medellin, particularly around mobility and communication. The Mobility Secretariat has been working to ensure at least 10% of the city's buses are accessible for persons with disabilities. Bus drivers are instructed to serve persons with disabilities or risk violating article 131 of the Traffic Code and receive a fine. With regard to communication, many persons with hearing disabilities do not know how to read and there is a lack of sign language use. For persons with visual disabilities, there are not enough books or information provided in alternative formats, such as Braille.

Transport Accessibility for Persons with Disabilities in Medellín

According to the Travel Map on Transport Accessibility, carried out in Medellín by the Inter-American Development Bank (IDB, 2020), the following physical, communication, operational and attitudinal barriers were identified:

- Physical barriers: Dangerous crossings without speed bumps are observed in the surroundings of metro stations. There is also a lack of maintenance related to the operation of elevators in the stations. Ticketing booths are also not accessible.
- Communication barriers: There are areas where the signage (text and icons) and orientation of the system is not clear or legible enough for persons with disabilities.

- Operational barriers: Implementation of various forms of recharging the civic card is required, as well as a special profile for caregivers for them to have access to a preferential fare.
- Attitudinal barriers: Unlike the cases of Bogotá and Santiago de Chile, Medellín has been working in the *"Metro Culture"* for more than 20 years, therefore there is generally better behaviour and greater empathy from travellers and station attendants towards persons with disabilities.

In the case of public transport in Medellín, there are proposals for improvement aimed at:

- Maintenance of the subway infrastructure, as well as optimal operation of elevators.
- Design and execution of safe intersections around stations, including auditory traffic lights, and adequate lighting, horizontal and vertical signalling, and speed reduction.
- Improve the signage of metro stations, verify that it is legible and is located in the correct places to improve user understanding and navigation within the stations.
- Include at least one accessible ticket office for each metro station.
- Guarantee accessibility to bus stops.
- Implement speakers in the metro and buses, as well as information screens about stops.
- Integration of the civic card on the routes.
- Promote the development of applications for persons with disabilities associated with transportation and different types of disabilities.
- Despite the fact that there is greater empathy and support for persons with disabilities in the system, it is necessary to include training for support staff at stations in the metro culture on treatment and service for persons with disabilities. Likewise, generate training for bus drivers and campaigns for respect and good treatment of persons with disabilities.

With these actions, it is hoped the entities in charge of public transport systems will support more user-oriented planning and accessibility, both in their design and operation of these systems.

Pathway to inclusion – where are they?

1980s – early 1990s

Period of Narco-Violence

1992-2001

PRIMED is developed - the Comprehensive Program for the Improvement of Subnormal Neighbourhoods

1995

Metro is built

1997

Law 361 of 1997 for the creation of mechanisms of social integration of people with disabilities.

2004

A cable-car system serving lower income barrio communities is established 6 cable car lines that have been developed since 2004 up to today (2004, 2008, 2010, 2016, 2019, 2021)

PUIs: developed since 2004. There are around 26.

2006

Law 1114 of 2006 established a quota of 1% of all housing projects with the characteristics of accessibility

2009

The public policy for the inclusion of people with disabilities was adopted

2011

Metroplus: BRT system is inaugurated . An Electric Escalator 1,260 feet long is opened in Comuna 13

Colombia ratified The United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) on May 10th, 2011

The Being Capable at Home program is created, which coordinates the implementation of the Public Policy, promotes habilitation, rehabilitation and participation services for people with disabilities.

2011

Communal and corregimental committees for inclusion are created between 2011 and 2013

2013

Law 1618 of 2013 By means of which provisions are established to guarantee the full exercise of the rights of persons with disabilities

2016

The Tram system (tranvía) is inaugurated

2019

Public Policy for the Inclusion of people with Disabilities of the Municipality of Medellín is updated

Parques del Rio (River Parks) is designed and constructed with consultation and participation of people with disabilities

2020

2020-2023 Development Plan, "Medellín Me Cuida" (Medellín cares about me) line, points to the purpose of consolidating an inclusive, sustainable and equitable city, expressing that for this it is necessary for the accessibility component to be transversal to all areas of development.

2021

The Accessibility Committee is created

Summary of Activities

Research activities took place from January 2023 – May 2023 in three phases. The research combined virtual and face to face research activities.

Phase 1 focused on understanding the current state of accessibility in the built environment in Medellín 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 Medellín and in particular, 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.

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 officials and policy makers.

Co-design workshop. Journey mapping.

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

20 stakeholder interviews were undertaken with government and industry professionals operating in the domains of inclusion, accessibility and/or the built environment. The gender balance of these stakeholders was 12 male to 8 female participants. 3 stakeholders also identified as a person with disabilities, 2 with visual impairments and 1 with a physical impairment.

15 interviews and 5 photo diaries with interviews were conducted with persons with disabilities. The gender balance among our disabled participants was 12 male to 8 female. Disabilities represented included 9 persons with physical impairments, 2 with visual impairments, 2 with hearing impairments and 2 participants identified as neurodiverse.

Across all the interviews and photo diaries undertaken the gender balance was 24 male to 16 female participants. Age groups ranged from 18 to 60+ with the majority of participants in the 40-49 and 50-59 brackets.

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.

A workshop also took place with caregivers to understand their perspectives as did an additional workshop with the immediate research team to validate the research findings.

There were limitations in participant recruitment, including a small gender imbalance and prevalence of participants with physical impairments.

Multi-Stakeholder Workshop

Who has a stake in inclusive design and an accessible built environment in Medellín, Colombia?

To identify who has a stake in a more inclusive and accessible built environment, the team conducted stakeholder mapping of key actors in the disability and urban development spaces in Medellín. 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 emerging from the Medellin research are:

- Daily life for persons with disabilities in Medellin.
- Poverty, inequality and disability.
- Living environments and housing.
- Access to education.
- Barriers to opportunities.
- Access to healthcare.
- Access to AT.
- Policies and legal context.
- Challenges and areas of opportunity in Policy.
- Urban planning for accessibility.
- Urban planning demands and sustainable infrastructure.
- The benefits of inclusive-decision-making processes and participation.
- Accessibility guidelines and standards.
- Inclusive design processes.
- Implementation of inclusive design.
- Data on disability.
- Knowledge of inclusive design.
- Disability diversity and inclusive design beyond physical accessibility.
- Co-benefits of inclusive design.
- Examples of inclusive innovations.
- Transportation and roads.
- Transport: door-to-door connectivity.
- Wayfinding.
- Accessing transport for AT users.
- Safety and inaccessible environments.
- Public space infrastructure and transport networks.
- Responsibility and key actors.
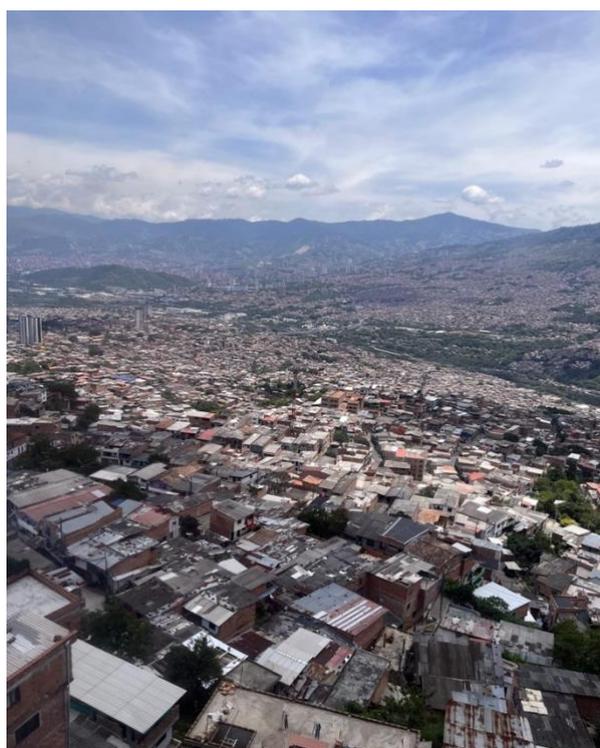
View Across Medellin

- Financing inclusive design – the need for leadership.
- The value of inclusive design.
- Examples of good practice and accessible places.
- Inclusive green spaces.
- Attitudes and awareness of disability.
- Independence, support systems and family.
- Geographic factors, topography and spatial exclusion.
- Informality and peri-urban settings.
- Impacts of violence and conflict.
- Impacts of climate.
- Is Medellín an inclusive city?
- Changing mindsets and inclusive culture.
- Future-proofing an inclusive city.

Daily Life for Persons with Disabilities in Medellin

Barriers to everyday life and recreation for persons with disabilities in Medellin are multifaceted and encompass cultural, attitudinal, physical, and financial challenges.

> **"A very important barrier is cultural; people treat you as if you have a cognitive disability because you are in a wheelchair, or people think you don't have a life."**

This quote also indicates potential stigmas and siloes between different disability groups. Cultural inclusion should also promote inclusion between different groups and recognise the celebrate of disability.

Participant enjoying time with friends in the park.

This cultural misconception is evident in social settings like nightclubs, where persons with disabilities experience judgment and astonishment. As one participant shared:

"In nightclubs they look at you as if to say, 'what are you doing here?'."

Physical accessibility poses a significant barrier. While some areas like the Aventura Shopping Centre are accessible, other places lack proper infrastructure, including transport options.

"I used to have a manual chair that neither the wheel rim nor the footrests could be removed...to take a taxi they would ask: 'Is the chair going?'."

Participants also spoke about the time burdens of inaccessible environments, for example, having to leave home very early to get to appointments. Many participants avoid the first hours of the day due to high congestion, with mobility in the afternoon preferred, limiting the hours of the day for certain activities. Participants use apps to move during peak hours. Participants are also limited in participating in recreational activities due to inaccessible night transport.

"I do not have accessibility and independence or when I am going out at night to a disco, a bar or to a late cinema, because the transport services that take me to Villa Hermosa are generally until 11:00 pm."

Participant enjoying nightlife

The financial implications of disability exacerbate the challenges faced by people in Medellín. Accessible transportation services and accommodations come at higher costs, making leisure activities and travel unaffordable for many – because in most cases these transport options are private.

"Transportation costs 2850 [Colombian] pesos, one way on a bus, but for ramped transportation the minimum cost is [Colombian] 25,000 pesos."

Recreational opportunities also present challenges. While some venues prioritise accessibility, others fall short. Commercial spaces are found to be quite accessible.

"If we think about shopping centres, which is where people are most likely to find themselves, we can identify some very remarkable things, the toilets have universal design, there is a lower or higher urinal, a space specifically for wheelchair users, a reasonable space, with the measurements and equipment to support them."

Bathrooms and transport to different spaces are some of the biggest barriers to recreation:

"I go out to parks, to the cinema with my family. Having a michelada with friends listening to music, in a disco; but if there is the issue of stairs or the bathroom, limitations arise, you cannot drink a lot of beer because you have to go to the bathroom a lot."

Participant at the poolside

"The cost of living goes up if you have a diagnosis or a disability. To go from Villa Hermosa to the city centre is 50,000 pesos a trip. If you can get into a cool place, it's the expensive ones."

One participant reflected that the more expensive places are more accessible. This impacts persons with disabilities capability to travel and participate in touristic activities.

"I love the beach, but they are not accessible, apart from the fact that it is so far from Medellín and so expensive to go on a trip. The places that are accessible in Medellín are expensive, for example, the hotels, I have not visited them."

Participants went on to describe how it is frustrating that hotels are not accessible, as this limits their ability to engage in sexual activities as well. This was also a prominent topic for discussion in the workshops, and participants felt it was a source of discrimination.

"There are no cheap hotels that one can say this can be useful, that is a wake-up call because people with disabilities are no longer at home, we want to go out, to have an independent life, in fact, even in the sexual sphere, to go to a place like this there are many risks because the doors must be big, the beds must be low, there are many situations that do not allow enjoyment."

Participant observing gallery exhibit.

Other recreational venues, such as museums, were also raised as many do not provide any form of interactive experiences for persons with disabilities or provide information in a variety of formats.

"Museums...I can't find anything to do in a museum because they don't let me touch...it's easier to interact with things."

Limited accessibility in entertainment venues further restricts independence and participation.

"There is a great risk that if you feel like going to the bathroom, not all places can accommodate the wheelchair."

Gym facilities may also have accessibility concerns, and there may not be information about the accessibility of the facilities easily available, in advance.

"I don't know if gyms are accessible right now... it would be a good option to go."

Accessible and inclusive recreational options are essential to ensure persons with disabilities can fully engage in daily life and the kinds of activities we all want to.

Poverty, Inequality and Disability

Poverty and inequality due to disability in Medellin is a pressing issue.

> **"There is accessibility, but there is a lack of equity talking about costs"**

Some families with disabled members mentioned how they struggle to make ends meet[99].

> **"They live so badly, if they have lunch they don't have dinner."**

The challenges extend to the education system, specifically pointing to a lack of accessible and inclusive infrastructure as an issue. This lack of accessible infrastructure is a significant barrier to the inclusive education experience for persons with disabilities.

> **"There are barriers in education, it is a big challenge and the teachers, although some are very good, do not have the necessary infrastructure."**

Financial resources are constrained. The financial requirements that can be associated with disability often exacerbate existing poverty and inequality.

> **"It makes it easier to move around, but how much is an Uber or a Taxi compared to public transport or using your own car?"**

The high cost of essential support equipment and assistive technologies (AT) such as wheelchairs places a significant financial pressure on persons with disabilities and their families. Additionally, the need for home modifications can further strain family finances. It is important to note that economic disparity exists between persons with disabilities with resources and those without in Medellín. Access to resources influences people's capability to leave home and experience the city. For example, having a powered wheelchair or a car makes a huge difference.

> **"Having a disability with resources is different from having a disability without resources. Especially in countries like ours."**

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[99] Pinilla Roncancio, M (2015). Revista de la Facultad de Medicina (2015),63(3Sup): 113. Disability and poverty: two related conditions. A review of the literature. Online, available at https://doi.org/10.15446/revfacmed.v63n3sup.50132

Living Environments and Housing

Inaccessible housing impacts costs of living for persons with disabilities. Participants spoke about the need to make modifications to adapt inaccessible housing stock.

"Sometimes you have to transform [the house], because there is no universal design...so you have to transform to make it accessible for a wheelchair."

Persons with disabilities also need to rely on support in their homes when they are not accessible, for example by not having an accessible kitchen. The city is focusing on the construction of social housing (VIS - Vivienda de Interés Social) and 'priority housing' (VIP - Vivienda de Interés Prioritario), as well as providing subsidies for existing housing stock to generally improve conditions. Unfortunately there are currently no subsidies available specifically for persons with disabilities to make accessibility improvements to their homes.

Many of the Social Housing (VIS) and Priority Housing (VIP) projects lack elevators due to associated costs. However, ISVIMED (Instituto Social de Vivienda y Hábitat de Medellín or Social Institute of Housing and Habitat of Medellín) aims to ensure at least the first floor [ground floor] is accessible for persons with disabilities.

Participant in wheelchair at the end of a staircase where there is no elevator

"In Colombia there is no obligation to install lifts if the project is up to 5 floors. The beneficiaries of this type of project do not have sufficient resources to pay administration fees and do not maintain the lifts properly. Although ISVIMED provides support in these matters, it is very difficult, and people do not do it. It should be noted that the costs for VIS and VIP housing are different. It is more difficult in VIP because it is cheaper, and there is not enough money to install lifts. The housing laboratory of ISVIMED is also thinking about strategies through which they can move families between projects to attend to them

according to their realities: if a house they had no longer suits their needs,
they can move to another one.”

Access to Education

Disability-inclusive education in Medellín has its challenges and has also made some progress. The interviews highlighted some of the barriers faced, support received, the impact of inclusive programs and the importance of accessibility and inclusive practices. They shed light on the current barriers encountered by persons with disabilities in their educational journey. From physical obstacles like inaccessible buildings and inadequate facilities to enduring bullying and a lack of support from teachers. Participants often had to rely on their own resources with the assistance of family members and classmates to overcome these barriers.

Participant working on their laptop.

"When I studied I had to go with my sister because at that time I didn't have a wheelchair…I stayed there studying with my classmates and they helped me climb many stairs, there was no lift.”

“She picked me up or my classmates helped me taking a taxi. There were not many accessible toilets. There were many barriers, starting with the toilet because I couldn't go to the toilet on my own, if I sat down I had to watch how I stood up."

The presence of supportive organizations like El Comité is emphasised throughout the interviews. These organizations provided vital assistance in the form of therapies, scholarships, and guidance. They played a crucial role in enabling people to pursue their education, providing them with resources and advice to navigate their academic journey successfully.

"I started treatment with El Comité with therapies, then I started studying and I turned to them because I had no more resources and they helped me with a

scholarship; they have advised me and accompanied me, for example, Doctor Ángela, for my Foundation."

The introduction of accessibility programs for students in schools and colleges is acknowledged as a positive step towards inclusive education. The interviews express gratitude for such programs, as they provide much-needed pedagogical support to students with disabilities. Participants reflect on how their own experiences might have been different if they had access to these inclusive initiatives during their studies.

"Fortunately, there is an accessibility program for boys and girls in schools and colleges. I tell my students and my classmates that if we, when we were studying, had all that pedagogical support, maybe life would have been different."

Participant with a visual impairment teaching child how to create tactile art

The interviews with stakeholders provide information on disability inclusion at higher level education, such as universities. Since the 1990s, the University of Antioquia has embraced inclusivity by opening its doors to persons with disabilities during the admission process. The institution has implemented various initiatives to support persons with disabilities, such as the Borges Room for visually impaired students and a program of university guides. An ongoing project focuses on developing technologies and infrastructure to facilitate the entry, progress, graduation, and employment of students with disabilities.[100] Examples include sign language interpreters using artificial intelligence, devices for students with hand impairments and white canes with sensors. The university has also implemented regulations and

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[100] https://portal.udea.edu.co/wps/portal/udea/web/inicio/udea-noticias/udea-noticia/!ut/p/z0/fYyxDsIwEEN_haUjulBKgLFiQEIMDAi1t6BTEsFBybUkrfh8WjogFhbLtp4NCAWgp44vFFk8VX0uUZ9X6006yzO1VzrTKteHbLFMt_PjScEO8D_QP_CtaTAHNOKje0UoanlGqlrrKFEUftNVHm70g068RDZMIVGftWcrA_Wtgxh2luzIT9mbqg3cEdR3LN_f7_tu/

adapted conditions to ensure access and enjoyment of recreation and social events as well as academic pursuits for persons with disabilities.

Physical infrastructure inaccessibility can also create barriers to education. In many facilities, there are no ramps, platforms or adequate toilets, and outdoor spaces within the schools are not suitable for people with physical impairments due to the inclination of the floor which creates risks – as in many cases it has not been levelled.

> **"There were stairs, I had to call the watchman to put a portable ramp because they had it stored. If the watchman was not there, I was late for class."**

Participants highlighted how support networks that helped with note-taking and accessing course materials fostered a sense of belonging that helped them to succeed in their education.

> **"I did well there, although at first there were teachers who said I couldn't, but it's good that the director was there and could help me. I was able to finish a technical program and keep preparing myself to achieve my dreams."**

For young children, participants spoke about difficulties accessing institutions due to a lack of support systems, for example, assisting young disabled children to go to the toilet.

Participants also spoke of a lack of awareness from teachers about the different attention needs among children with disabilities and feeling that there is a lack of vocation or motivation among some teachers to support disabled pupils. This speaks to attitudinal barriers and a lack of appropriate training.

Barriers to Opportunities

Throughout the interviews transportation emerges as a significant challenge that creates a barrier to education and livelihoods. The lack of accessible public transport leads to long commutes for persons with disabilities. This highlights the need for improved infrastructure and transportation services to ensure equal participation and opportunities for all.

"In this area, transportation is not accessible, it is always very difficult. I had to roll a kilometre and a half in the chair down some steep hills. Besides, I had to take a bus, which generally has a bad ramp, or there is no accessible ramp, so I had to leave my house long in advance and sometimes arrive late because I couldn't find accessible transportation."

"I complain about the bad ramps here, but at least there are because in other communes there is no accessible public transport, and that is very sad, they have no way of going out to study. The city has offers, but if there is no transport for us, there is nothing for us."

Elevator to Metro Station

Attitudinal barriers were cited in an education context. Participants also highlighted the importance of inclusive employment practices and recognition of people' abilities rather than their disabilities to promote equal opportunities for career advancement.

Access to Healthcare

Healthcare for persons with disabilities in Medellín presents a contrast between accessibility advancements and persistent challenges. While some healthcare related buildings are quite accessible in the city, when it comes to hospitals, the situation is considered to be quite different.

"In a hospital everything should be very accessible, the physical access, the ramp, the information we give."

Unfortunately, hospitals often fail to meet these accessibility standards, creating significant barriers for persons with disabilities. One example is the challenges faced by persons with disabilities when trying to navigate healthcare facilities and effectively communicate their needs.

"Where we are weakest is in hospital services, you can see the difficulties from being in a waiting room or being unable to communicate what I need."

The absence of inclusive design in healthcare settings is problematic. Accessibility barriers also extend to the healthcare appointments themselves. One participant shared their experience, stating:

"In fact, when you go for an appointment at the EPS (Entidadas Promotoras de Salud – Public Health care centres), sometimes they cannot check you because who helps you to get onto a stretcher...if you do not go with a caregiver or a person to carry you to the stretcher, they will check you sitting down and they will not check you properly."

The lack of knowledge and awareness among health professionals and AT suppliers is a further challenge with a need for more tailored solutions that can accommodate more diverse needs.

"A wheelchair is not suitable for everyone. Each person has different needs and there is a lot of ignorance on those who sell support products."

The coverage of healthcare services and the supply of AT also poses obstacles for persons with disabilities.

"There are some products that are not included either in the Basic Health Plan (PBS) or in MIPRES[101]...people have to go to the legal system to get the product they need."

This lack of coverage leads to delays and adds unnecessary complexity to the process of obtaining essential assistive products (AT).

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[101] Mipres is a web application created in December 2016 by the Ministry of Health and Social Protection of Colombia to authorize the prescription of biomedical technologies not included in the Health Benefits Plan such as: medicines, devices, procedures, services, and nutritional products

Reference: S Agudelo Londoño, 'Solutions and Other Problems: Analysis of the Mipres Web Application for High-Cost Technologies in Colombia from a Critical Reading of Health Information Systems', 2020, https://repositorio.unal.edu.co/handle/unal/78251.

Access to AT

Persons with disabilities in Medellín face many challenges in accessing adequate and appropriate assistive technology (AT) for their needs. While there is a health benefit plan, there are often delays due to inefficient processes, which can lead to lengthy wait times.

"Sometimes the process takes three, six, nine months for the person to get it."

While simpler devices like orthotics and walkers are provided more promptly, there is a need for improvement in the timely delivery of more complex devices such as prostheses. Legal action is sometimes pursued to ensure access to necessary support products.

"When people decide to move forward by legal means, it is to exhaust all the avenues involved, generally the court rulings are to the benefit of the patients, they are positive."

However, this process can sometimes lead to demands that go beyond what is actually required, causing additional expenses for the health system.

"The patient also has the expectation that, for example, if they are going to give me a wheelchair, they should give me the best one."

To address these challenges, Medellin has implemented the Triangle Plan, which involves collaboration between social workers, medical staff, and economic resources to ensure careful and appropriate allocation of the limited resources. However, there is a lack of knowledge among both users and health professionals regarding assistive technology.

"There is still a very big fight...the health sector...falls short in guaranteeing [assistive technology] we still fail to recognise the needs of the person."

This lack of knowledge is evident in the process of acquiring wheelchairs, where providers often fail to assess individual needs and so go on to offer unsuitable options. Furthermore, there are challenges related to the inclusion of support products in the Basic Health Plan and MIPRES - the system for delivering non-included items.

"Some products are not included...so people have to go to the legal system to get the product they need."

Thus, the process remains difficult, causing people to stop trying.

"In Colombia there is no specific body mandatorily in charge of delivering assistive technology. The process is difficult, cumbersome, costly and long. The system is designed to make people tired."

Currently, in Colombia, the general process required is:
1. Request a medical appointment: This appointment must be with an approved doctor who will check the person and prescribe what they need.
2. Request to the EPS*. From the beginning, persons with disabilities expect that they are going to be denied what they require so in anticipation of this they prepared to file called a 'tutela' (action of protection).
3. It is likely that the request will be denied. Therefore, persons with disabilities then have to appeal this decision. Only after a successful appeal, will you then receive the assistive product.

*Public Healthcare system/insurance

Policies and Legal Context

At the international level, Medellin follows the principles outlined in the International Convention on the Rights of Persons with Disabilities (UNCRPD). This convention serves as a guide for addressing inclusive infrastructure and promoting the rights of persons with disabilities.

At the national level, two significant legal and political processes are in place. Statutory Law 1618 of 2013[102] guarantees the rights of persons with disabilities and contributes to their social inclusion. The National Policy on Disability and Social Inclusion (CONPES) outlines comprehensive strategies to address disability-related issues, encompassing areas such as recognition of diversity, social and political participation, education, health, sports, human mobility and transportation, information technologies, habitat and housing, and access to justice.

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[102] Ministerio de Salud, 2017. Balance proceso reglamentario Ley Estatutaria 1618. Online, available at https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/DE/PS/documento-balance-1618-2013-240517.pdf

On a local level, Medellin has implemented Municipal Agreement 144 of 2019[103], which focuses on six specific axes to promote disability rights and social inclusion. These include; recognising diversity, facilitating social and political participation, providing education and training, strengthening public and human capacities, ensuring access and accessibility in areas including mobility, transportation, information technologies, habitat, housing and justice.

> **"I could not tell you the laws here, but we have studied it quite a lot from the differential approach, much has been achieved, and I am particularly familiar with the declaration of the rights of persons with disabilities, Colombia ratified it, the law we remember most is the Clopatosky law that supported labour inclusion. I know that there is a large or robust normativity. Particularly in the hospital, we have reviewed the benefits and relief for companies if they employ a person with a disability. In terms of accessibility, I am familiar with the technical standard for accessibility on infrastructure, buildings and physical barriers."**

Several laws and technical standards further support accessibility and inclusion in Colombia. These include Law 1287 of 2009, Law 361 of 1997, NTC 6043 (technical quality standards), NTC 4143 (platforms and ramps), NTC 6047 (toilet and circulation areas), and Law 1114 of 2006, which obligates the provision of a percentage of dwellings for people with reduced mobility. Particularly, Medellín has a Public Space Manual specifically to address tactile lines, ramps, visual cues, signage, and furnishings to enhance accessibility.

Medellin also established the Disability Committee and Accessibility Committee in 2009 and 2021 respectively, as per Agreement 86/2009 and Agreement 144/2019 , to facilitate the implementation of disability policies. Agreement 144 of 2019 further strengthened the public policy on disability and provided better tools for addressing disability-related issues. The Director of Social and Economic Affairs actively participates in these policy matters, contributing to physical and spatial accessibility.

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[103] Concejo de Medellín, 2019. Acuerdo 144 "Por el cual se actualiza la Política Pública para la Inclusión de las Personas con Discapacidad y se dictan otras disposiciones". Online, available at https://es.scribd.com/document/489993587/Acuerdo-144-de-2019

Challenges and Areas of Opportunity in Policy

The city of Medellín lacks sufficient and clear parameters from the authorities regarding accessibility in transport. For example, with regard to public buses.

"Today, the only obligation is to have platforms in the vehicles, in terms of legislation we are lacking a lot in the city, because there is no support from the authorities, because more than receiving orders, we need to have clear parameters. Also, the city is lacking accessible transport infrastructure, so we also need the city administration to be supporting the expansion of this infrastructure so that they are articulated and to the extent that inclusive bus stops are established."

In this case, to improve public bus transport accessibility, it is necessary for the city administration to actively support and expand accessible transport infrastructure, including inclusive bus stops. The company responsible for transport operations acknowledges this need and also voluntarily engages with disability committees in municipalities, providing training to enhance service inclusivity.

Platform lift at stairs at Metro Station

While there is pressure from disability committees on public transport, compliance with accessibility obligations, particularly the Metro, remains lacking. According to one stakeholder.

A regulation introduced in 2022 requires health secretaries to maintain a census of persons with disabilities. However, this requirement is not fulfilled in the city. This census if fulfilled could inform other sectors of society such as transport where they can be aware of where certain types of services and inclusive design may be most needed. To combat this some transport providers have been working with communities to improve inclusive service provision:

Participant boarding bus

"In 2022 there was launched a regulation that the health secretaries must have a census of people with disabilities and share it with transport providers…so that we can organise ourselves and make adequate planning. This is not fulfilled in the city, so what we have managed to do is from our own will… we have done different things, such as having an App so that they know where the vehicles come from and how long they take… they are actions that are born from the will of the company that wants to do it, than the obligation of the State"

The government, particularly the mayor, is responsible for inclusion and accessibility in the city, and it is acknowledged that there is some political will for infrastructure projects. However, further efforts are necessary, especially in areas such as education and transport.

"It is more a matter of political will for development...there is always going to depend a lot on the political will and the government."

While private sectors can make efforts as mentioned above to make services more inclusive, they cannot fully address these challenges. Building inclusive services and addressing infrastructure needs requires the government's active involvement and support.

One private sector stakeholder spoke about the costs of retrofitting and calls for the government to enforce implementation and create training for private sectors on how to build inclusive infrastructure from the onset of roll out:

"With the retrofit of vehicles being 25% or 30% more expensive for vehicles that are not equipped… This question must be asked to the mayor of the city,

since it is a governmental responsibility. The reality is that, if it is included, one sees the projects, but cannot judge from the outset, but in the few areas where infrastructure is being built, something is being done, and when one sees, for example, in the construction of pavements that the modifications are being made so that facilities can be created to get on and off pavements or to have a diagram for the visually impaired. One knows that there is political will, by means of a national regulation that obliges, what happens is that one knows that in that will one could do more, but it depends on the administration, in this one one knows that they are interested in education."

Urban Planning for Accessibility

The city is working on designing housing projects with social targets and accessibility considerations through what they call a housing laboratory. The goal is to have control over the designs to adequately meet the population's needs.

"They are in the line of urban planning in the development of housing projects... They are trying to ensure that the needs of the population can be adequately met."

Urban Planning Demands and Sustainable Infrastructure
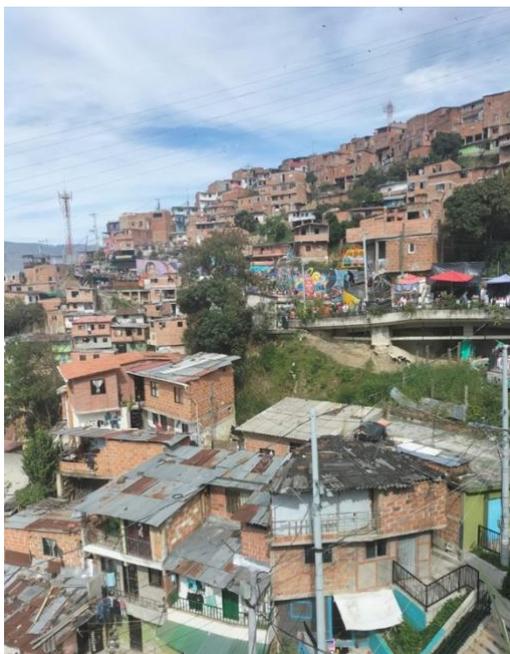
Densely populated area of Medellin

Shortage of space was highlighted as an urban planning issue.

"Cities with a shortage of space is different from a city that is still being planned. Medellín has already developed many spaces and what we have to do is make adaptations and develop actions in the spaces that can be developed, because they are spaces that are not yet available in the city"

There are also cases where existing infrastructure is being demolished to build new, better spaces, with accessibility features integrated from the start. This is progress in

terms of inclusion. However, it raises concerns from a sustainability perspective given the high carbon cost of new construction.

> **"A school was demolished to build a new one, but the new one has to be inclusive and create spaces and adaptations so that all students can attend…it is something more about planning and the city has lacked planning for the future of what is being done today, it is something that will last over time."**

Road in Medellin with good footpath

Participants highlighted congestion being an issue, with the need for more bicycle lanes to promote more sustainable mobility.

> **"More bicycle lanes, more public transport and accessible public transport, because at peak hours we look like sausages in tins, better public transport conditions, better access roads, in other words, the issue of mobility has a lot of challenges and solutions to be proposed."**

The Benefits of Inclusive Decision-Making Processes and Participation

There are several disability-led platforms for inclusive decision making in Medellín. The Disability Unit focuses on accessibility as a means of inclusion. They provide, 'training in accessibility, advice and support, systematisation and research, incidence in regulations and organization and participation.'

Participant meeting other people with disabilities at meet up held by DPO

"Our goal is to see accessibility as a possibility for inclusion rather than an end in itself."

The director of the Disability Unit coordinates inclusion strategies and serves as a bridge between public and private entities. They engage with committees such as the Accessibility Committee of Medellín, the District Committee on Disability, and Chairs of Accessible Communication.

The Accessibility Committee of Medellín (CAME) plays a key role in organisational and participatory strategies. It is composed of representatives from various city administration dependencies, transportation entities, decentralised entities, and persons with disabilities. The committee includes,

"Persons with visual, physical, hearing, intellectual, psychosocial-mental disabilities, short stature, multiple disabilities, and deaf-blindness."

"The selection process for committee representatives involves an open call and pre-selection by the District Disability Committee. Two people with disabilities are chosen to represent each disability category. However, sometimes 'affections influence the choice.'"

The importance of involving persons with disabilities in decision-making processes and project design is emphasised.

> **"It should be mandatory to involve people with disabilities in our processes**."

However, participation is not indiscriminate due to the complexity of the issues involved. Collaboration with the community leads to a change in mindset and better project outcomes.

> **"Political will also affects all these processes a lot."**

Accessibility Guidelines and Standards

Medellín has a Public Space Manual that outlines regulations for creating accessible infrastructure which was issued by the Planning Department in 2017. The manual covers mobility conditions, aiding persons with visual disabilities and ensuring accessibility standards.

> **"This document gives us the rules to generate accessible infrastructure. When applied to public space, these regulations basically consist of creating conditions for people's mobility to be continuous...and contribute to accessible mobility."**

The city recognizes the need to evolve and address specific disabilities beyond reduced mobility and blindness. One stakeholder admitted that the process of implementing accessibility features is ongoing and not everything can be addressed immediately.

> **"The manual is very focused on reduced mobility and blind people... All this is a process, not everything can be addressed immediately."**

Private developers are responsible for building certain public spaces. While they must comply with the Public Space Manual, other accessibility aspects, such as signage, are not mandatory. This lack of consistency in the application of standards and limited accountability for private construction, is problematic.

"In addition, it should be noted that there are many public spaces that are built directly by private developers...our signage manual would not be mandatory, as it has not been not adopted by any legal standard."

In the previously mentioned housing initiatives (VIS and VIP), standards are used to determine space requirements and accommodate accessibility.

"Inside the housing unit, there is adequate space for bathrooms, doors, and mobility; parking spaces…are…enabled for people with disabilities."

However, these projects have limited resources and meeting the accessibility standards can have financial implications.

"With what is being proposed, all doors will be 90 cm wide. The bathrooms should be twice as large, but that means more resources, which are limited."

Inclusive Design Processes

There are various inclusive design processes employed in Medellín. One example is Citizen Committees that provide a platform for sharing project progress with the community. In projects like "Metro de la 80," comprehensive support strategies are being proposed to assist people in transitioning to new areas. Psychosocial support and community participation committees are also established.

"We contribute to the design of strategies to accompany people in the changes they have to make... we develop community participation committees with recreational and cultural interventions, workshops, amongst others."

The Metro actively engages with the community through interest groups, regular meetings and participation in the Medellín Accessibility Committee (CAME). While technical decisions are made by the Metro, the community validates strategies and participates in social management.

"As Metro's processes are so technical, it is not possible to ask all citizens what they want and how they want it, but we can ask them where they want the new systems to go."

> **"We accompany them, we advise them, we listen to them, we hold coordination meetings to find strategies to meet their needs and expectations…the Metro has to make many of the decisions because they are technical issues. Besides, our resources are limited, so we can't do everything the people want."**

Strategies developed to support consultation of persons with disabilities include advise such as; recruiting professionals, understanding the area's context, holding workshops with the community to gather feedback, reviewing proposals, simulating road networks, submitting final designs, executing projects and ensuring community ownership to ensure projects are maintained.

Medellín's Accessibility Committee visits Metroplus projects, provides reports, and makes proposals to improve accessibility.

The Metro also takes on social responsibility projects, actively supporting groups, such as persons with disabilities, through social work and initiatives to provide services they previously didn't have access to.

> **"In commune 80 (San Antonio de Prado) there is a group of people with disabilities we have interacted with, we support them in some activities... generated a policy of providing service to citizens who previously did not have it."**

Community proposals and input is valued, and their suggestions are incorporated into project designs, particularly in EDU (La Empresa de Desarrollo Urbano – Urban Development Company) projects. Design considerations such as ramps with gentle slopes, installation of handrails, tactile signage, and sign language interpretation are recommended for better accessibility.

Example of homemade 10 degree ramp

"Generate ramps with a slope of less than 12 degrees. It should even be less than 4 degrees considering the topographical conditions of Medellín. The less slope the better...We warn about the installation of handrails... Installation of tactile signage, sign language, amongst others."

Stakeholders also discussed how they must learn from these inclusive processes and continue to improve their future projects from the learnings.

"We must implement better pedagogical processes…we, the technical professional, should know more about people's disabilities and realities in order to be able to address them from a technical point of view."

"We should have more flexible standards to adapt to new technologies and people's realities…Moreover, it must be an interdisciplinary work. We, technicians, have to learn from social processes as well."

This demonstrates the understanding of practitioner's responsibilities and the need for an adaptive and flexible approach.

Implementation of Inclusive Design

Ensuring the implementation of inclusive design is crucial for creating an accessible and inclusive environment.

"The important role of EDU (La Empresa de Desarrollo Urbano – Urban Development Company)* in these cases is precisely to call for the incorporation of accessibility elements."

*EDU is the company in charge of transforming the habitat through the formulation, design, execution, advice and consultancy of urban projects that contribute to the development of the territory and the improvement of the quality of life, working in coordination with the people.[104]

The correct construction of inclusive design features is key to ensuring accessibility. For example, inaccurate or inadequate built specifications can hinder the effectiveness of tactile support guides, leading to obstacles and challenges for persons with visual impairments. Correct implementation of the guidance is crucial to enhance functionality and reliability.

"Although there are tactile support guides…they are not clearly constructed, the specifications are incorrect, and they lead to parking areas where there are cars, chains or any other obstacles."

Participant showed using tactile paving

Similarly, relying solely on regulations and norms in accessible parking provision can overlook practical considerations for wheelchair users. Going beyond compliance and considering all functional aspects is essential.

"There are regulations, for example, in the parking areas there are signs, but you see the spaces and the question arises: can someone in a wheelchair fit in here, can they get in, how do they get the wheelchair out of the boot? You have to go a little bit beyond…think about how it could be really functional."

Challenges posed by pre-existing designs and limited budgets should not deter practitioners from advocating for accessibility. The 'Alejandro Echavarria School' and 'Ciudad del Rio Cultural Centre' serve as examples where accessibility elements

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[104] Empresa de Desarrollo Urbano – EDU et at., 'Medellín Modelo de Transformación Urbana Proyecto Urbano Integral –PUI- En La Zona Nororiental Consolidación Habitacional En La Quebrada Juan Bobo'.

were adapted through the design process, including tactile lines, audio description, and sign language.

Plans such as the Metro System Expansion Master Plan (PRES) and the Metro Administrative and Operational Infrastructure Master Plan (PRI) help prioritise and allocate resources for inclusive design projects. These demonstrate examples where urban planning and strategy can support inclusive design implementation.

An example of good implementation includes consideration of service provision. For example, the Disability Unit works closely with the Metro in Medellín's communes, particularly in Guayabal and San Antonio de Prado. This interaction includes training for operators and vehicle drivers to ensure a more inclusive service.

> **"Our operators and vehicle drivers…learn how to provide a more inclusive service."**

Data on Disability

> **"It cannot be ignored that the biggest problem is not really knowing who the population is, where it is, how it is and what are the main barriers it has in order to be able to work towards what the public policy aims to achieve."**

Knowledge of Inclusive Design

> **"Disability is an interaction of a person's physical, mental, psychosocial characteristics with a limiting environment. What limits is not a person's abilities, but the design of the environment. Good design should reduce these barriers that create disability. Bad design is "disabling"."**

Details are also important for good inclusive design, from things like interior fit out to material choices. Good knowledge on inclusive design demonstrates how it forms part of the full design and construction process.

> **"In Plaza Mayor (convention centre) for example, the carpet is very thick, and it is difficult to move around."**

Disability Diversity and Inclusive Design Beyond Physical Accessibility

Medellín must focus on accessibility beyond physical disabilities. Stakeholders acknowledged the need to address various challenges. Awareness has evolved beyond ramps and bathrooms. Thus it is crucial that all participants with a wide range of disabilities are included in the design of the built environment. It is also important to review projects after construction. This is evident from the quote below which references Parques del Rio. Participants highlight problems people with visual impairments have been having with wayfinding.

Large gaps and holes between footpaths and stairs make navigating the city difficult for people with disabilities

"Calle 10 in El Poblado is a place of much tourism, but it has practically no pavements, there is nowhere to walk, accessibility is not only for people with reduced mobility, the city must be open. Let's do the exercise in Parques del Rio for a visually impaired person, for example, it is not accessible."

Participants referenced successful co-design activities where people with diverse disabilities had been consulted, resulting in more inclusive spaces. Even around physical accessibility and inclusive design for physical impairments, there is still work to do. For example, there are no regulations for people of short stature.

"The houses do not have adequate conditions for them. I have a friend who had to demolish and rebuild the inside of her house. There is a debt from the designers to think more about these things. It is very difficult to do everything for them but there are small interventions that can be done. It is very difficult in the construction of kitchens or bathrooms, but for example, the height of the door locks, and the location of the lift buttons are things that can be done."

It is also important to acknowledge that some disabilities may not be immediately apparent, like cognitive disabilities. Training staff, employees and service providers to consider solutions beyond supporting people with mobility impairments and wheelchair users is important.

"There is also a debt with people with psychosocial disabilities…Accessibility goes beyond having a ramp. Language also must be accessible. The way we present information has to be accessible. And people with psychosocial and cognitive disabilities are being left out of this conversation."

Co-benefits of Inclusive Design

"Making things accessible is not just for people with disabilities. It's for anyone who at some point has a limitation in movement. If I break my foot, I'm going to need a lift just like a person in a wheelchair."

Stakeholders also spoke of the benefits of inclusive design for other marginalised groups, such as older people or someone experiencing a situational disability and had good awareness of issues of equity in urban development.

"A very important thing is to be aware that an older person may also need all this. It is not only for persons with disabilities. Accessible spaces make life easier for all of us and allow us to be independent."

Participants shared that it is problematic that the design industry does not design with diversity in mind.

"How the same solution is usable by a diverse public. That the interaction…is optimal whether or not they have a disability. Breaking with the tendency to think everything for the average person, and those who are not there, adapt as best they can. This is the industrial mentality that is present in the design world. We try to break it, as you can't ignore the diversity in the public. This not only benefits people who are diverse because of different characteristics, but it improves the experience of everyone."

Participants also raised how inclusive design processes enable better building use, including in the need for evacuation. This also speaks to creating spaces that are more intuitive to use and flexible.

"Universal design allows us to rethink what is already established and do things differently. If we think from diversity, and from situations that may be more extreme, this allows us to rethink and find different paths that will ultimately benefit everyone."

"For example, when we think about…a space that is more accessible, understanding accessibility as the ease of entering and going around a place. If it is easier to enter, it will also be easier to leave. So, a space that is more accessible is a space that, in an emergency situation, everyone will evacuate better, there will be fewer accidents. And who benefits from that? Well, everyone who is in that space at that moment and has to evacuate.

Examples of Inclusive Innovations

Multiple examples of inclusive innovations were shared by participants, these include:

MATT innovation in use for city tours

- MATT Movilidad: a third wheel for wheelchairs developed by a local entrepreneur. MATT stands for 'mobility, accessibility, time and work (trabajo in Spanish). The MATT model is unique as incorporate local production as much as possible and is exploring diverse funding streams to scale, including running tours in the city using the 'MATTs'.
  - One of the participants is a MATT user and shared how it has been a tool for employment as they are now able to work as courier using their MATT.
- An inclusive toy – the 'Tactala' which is a mindfulness mandala for persons with visual impairments.
- Ruta N, the city's innovation hub is an accessible space and the organisation has a program on disability innovation which runs a number of activities.

"'Tactalas' which are tactile mandalas for blind people. They are focused on children and people with visual disabilities, but they can be used by any child without disabilities. We have people with disabilities in the production chain of

the products we create. By doing so, we also promote accessibility and inclusion."

Medellín has many examples of social enterprises and multiple social enterprises engaging in inclusive design were found, these include BUA and Whee.

"Whee. We are a social enterprise that works to promote the inclusion of people with disabilities on two areas; provide information on assistive technology and its delivery process; and provide knowledge about inclusive design so that no one is excluded."

These examples, which incorporate aspects of inclusive design in their development, demonstrate how inclusive design is a tool for innovation.

The tactile mandala

"We design short experiences to generate awareness of inclusion…In training, we have our own methodology of universal design for learning…so that anyone can learn more easily."

"We develop workshops and training content…we have a line of participation and co-creation, where we have participatory design methodologies that we apply to our own design processes and offer to our clients."

Transportation and Roads

The issue of transportation and roads in Medellín has significant implications for persons with disabilities and reduced mobility, who make up about 30% of the population. The Metro, constructed 30 years ago, initially did not consider accessibility. However, with the advocacy of persons with disabilities, the Metro gradually incorporated lifting platforms and elevators.

> **"When People with Disabilities began to organise themselves, they began to sue and say "what's up Metro", then the Metro began to install lifting platforms, and elevators and was forced to be accessible due to the demands, which are still being presented."**

While there have been advancements, challenges still persist. Some areas on the periphery lack accessible infrastructure, making it difficult for persons with disabilities to access their homes or move around the city. Although certain areas have buses equipped with platform lifts, issues such as maintenance and driver attitudes hinder their effectiveness. Additionally, the misuse of pavements through informal and inconsiderate parking further limits access for many persons with disabilities.

Participant forced to travel on road due to inaccessible or absent footpaths in hilled city areas

> **"There are already neighbourhoods where buses with lift platforms already arrive, which is an important advance in the city, but with this, there are also problems such as that sometimes these buses and platforms are not maintained, or the driver is not motivated to have to get off to help get on the Person with Disability".**

> **"The use of pavements as parking lots limit the accessibility of People with Disabilities."**

The Metro system, along with its various modes of transport such as trains, cable cars, and buses, aims to provide accessible services. Efforts are being made to provide priority areas for persons with disabilities within stations and establish direct communication channels they can use should they need to request any additional

support. However, ensuring accessibility during peak hours, when the network is at capacity, remains a challenge.

"At the entrance, there will also be an accessible area with a screen with real-time information and direct communication with the station manager…so that the disabled community can be attended to as a priority. However, it is a challenge we face because there is a risk that the Metro, at peak hours, will not be accessible to people with disabilities. And it is a challenge for the city, for all institutions."

Road safety in Medellín is an issue, especially for pedestrians, with a significant number of accidents resulting in serious injury. This emphasises the need for prioritising the safety and well-being of pedestrians over vehicular traffic and in particular ensuring the safety of persons with disabilities and older people.

"When we look at the statistics of deaths on the roads, unfortunately, the main victims are pedestrians…That is not a favourable indicator…That clearly establishes who the road is for, who rules in life, who has the priority on the road and it seems that it is the bus, the truck, the car, I don't know who, but it is not the person."

The idea that, 'time and transportation should be for everyone' was highlighted in the workshops. The metro is shown to be accessible. However, there are maintenance issues, including elevators that take a couple of months to be repaired. Much of this infrastructure has been built in the last 10-20 years and there is a perceived lack of proposals and opportunities to improve the current public transport offer.

Participant with visual impairment forced to walk on road with vehicles as motorbikes are blocking the footpath

Transport: Door-to-Door Connectivity

The first and last mile of any transport system is vital for connecting residential areas to the public transport systems and networks. It involves creating pedestrian-friendly infrastructure and road networks that facilitate convenient, efficient and accessible connections. Neglecting the first and last mile conditions can discourage commuters and seriously restrict accessibility. Collaborations with other institutions, like public services enterprises, can improve connectivity and this is something that has been worked on in Medellín.

Water Hydrant and drain at the end of road crossing

"We seek to address the 5-minute city and create strategies for people to reach transport stations and city facilities through road networks. The most important mode is the pedestrian and today it is neglected."

"Even the community comes to the Metro to ask for accessibility solutions around the stations. It's in the PRI [Metro´s Operational Infrastructure Master Plan] to improve this infrastructure (lighting, stoops, lifts, handrails). We don't just focus on the stations but on how the community can get there. There are people who walk more than an hour to get to a station. This is why we need to take a much broader view of the system, beyond the stations. Also, the topography of the city creates different and complex conditions."

One participant describes the difficulties of using regular buses even when they have ramps installed due to lack of training and awareness of bus drivers.

"The attitudinal barrier is the main barrier, in public transport for example they drive a bus with a ramp, but they don't have the key, they can't find the remote control, they don't do maintenance, if it is raining they get wet and we can't use it, if it is too sunny, another problem appears; that attitude leaves you not knowing what to do. In peak hours it is worse, they don't stop you because it will take longer and they have to cover a timetable on a required route. There is a lack of training and awareness where the person is highlighted and not the time."

Wheelchair accessible platform lift on bus

The participant highlights how the BRT Bus Rapid Transit system Metroplus is more reliable, accessible and preferential as a mode of transport even if they have to go out of their way to access it:

"That's why I prefer the Metroplús, [buses that extend the metro line] even if I have to ride for 15 minutes on my wheelchair to get to the station, going up a bit more because I have to take a different route to avoid the slopes and be able to take care of the chair because it is my means of transport, it takes me where I want to go, it is the extension of my legs and my body."

Wayfinding

When communicating issues in transport or emergencies, it is essential to consider various channels to ensure everyone can access the information. Signage plays a crucial role, and efforts should be made to include clear text, symbols, sign language, audio signals, Braille and tactile guidance. The development of a signage manual that includes details on good inclusive design is currently underway. Continuity is important in the implementation clear wayfinding across the city and the across the city's various transport modes.

"At the end of the workday, I go with one of my colleagues to the metro, they do not always announce the stations, and when they don't do it I have to count
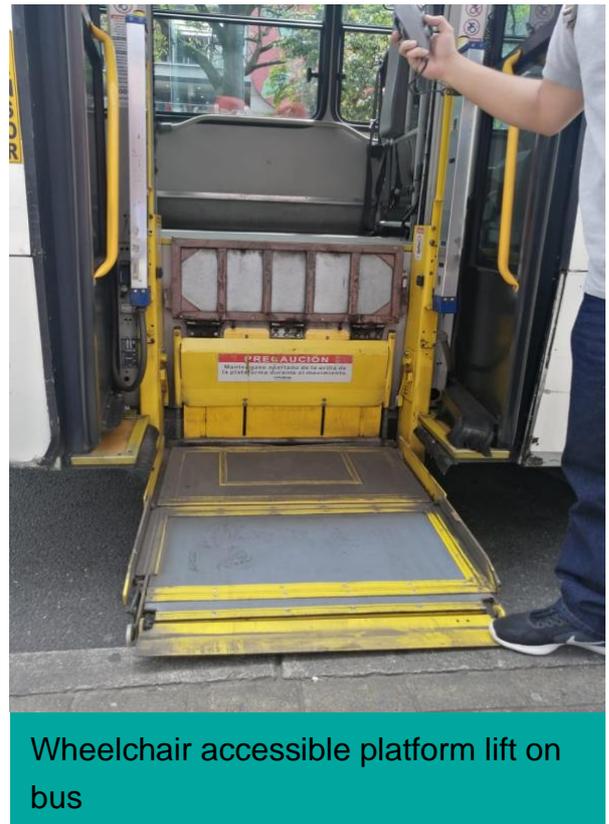
them so I can know where I am getting off. If I don't listen or if I get distracted, I need to ask somebody to tell me where we are at."

"It is just as difficult because if they stop due to an accident, they speak through the speakers and what about us? We look at the clock and say what's up?"

Stakeholders such as the Metro recognise that there are challenges, and that the system is not perfect. Issues have been raised with the accessibility committee, including the attitudes of fellow passengers. Respect is promoted among Metro passengers. However, the population of the city is diverse and not everyone responds or acts in the appropriate way. To try and tackle the issue of passenger attitudes, communication campaigns have been proposed.

The accessibility committee is giving training to the Metro in this regard, for example, how to produce inclusive diagrams, the correct use of fonts and use of simple language. The accessibility committee also have validators with low vision and intellectual disabilities who can review and support the process. The

Participant with a visual impairment using a white cane as she travels down stairs

accessibility committee have identified that it is a challenge for service providers to deliver information to people with sensory disabilities (Braille and Colombian sign language) and so with the help of the Secretariat of Communications they have created some guidance manuals[105].

Although there are efforts to deliver clear and accessible information, many programs or projects are still not communicating in an inclusive and accessible way.

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[105] Alcaldía de Medellín, 2022. Guía de comunicación inclusiva y accesible. Online, avalaible at https://www.medellin.gov.co/irj/go/km/docs/pccdesign/medellin/Temas/NuestroGobierno/Publicaciones/Shared%20Content/Documentos/2022/Manual%20Accesibilidad%202022.pdf

Accessing Transport for AT users

Using assistive technology (AT) on the transport systems in Medellin can be challenging for many persons with disabilities.

"If the public buses don't serve me…and I can't be accompanied by my motorised wheelchair, I hire a private ramp service…because I know that they will pick me up at my house and take me to my destination."

However, the additional costs of using such bespoke, private transport services are a barrier for many. These barriers then prevent and discourage independent travel which can have a significant impact on a person's health and wellbeing. While using private taxis may be physically possible, the lack of awareness and understanding among taxi drivers creates yet another obstacle. This highlights the need for staff training to create a more accommodating and respectful environment for passengers with disabilities.

Participant boarding Metro

"They don't take care of you, they are conflictive, he has had fights with some taxi drivers."
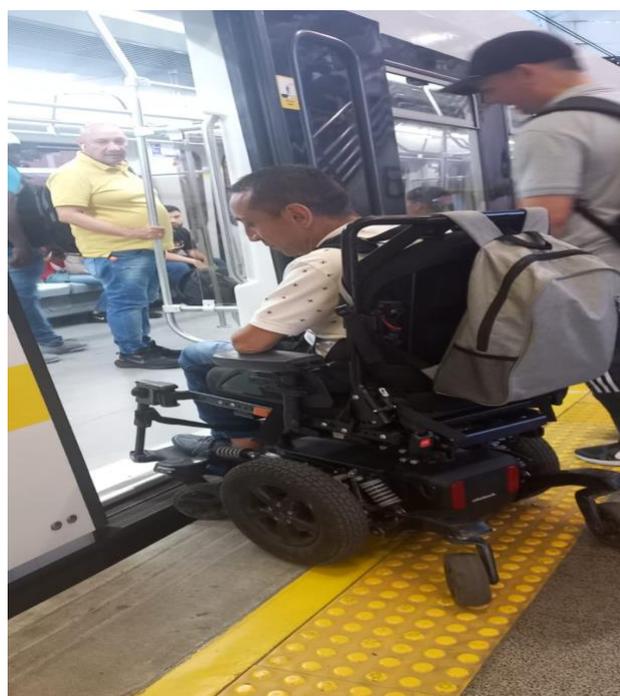
In public transport, persons with disabilities can face challenges when using AT on trains.

"it has happened to me that there is a big gap between the platform and the train, and I need help to get on and off."

Safety and Inaccessible Environments

Participants also highlight the safety risks of inaccessible infrastructure, for example, the lack of appropriate and accessible bus stops.

"It is very dangerous for us to get on a bus if it doesn't have a ramp. Some do, but others don't, so we can't use them. We feel at constant risk."

Public Space Infrastructure and Transport Networks

Cable car is slowed down to allow passenger to board

In Medellín, there have been initiatives for public space and infrastructure, particularly around transport infrastructure. Efforts to improve the pedestrian environment include projects like 'approach urbanism'[106]. However, limitations in funding and the scope have stalled further interventions. The focus seems to have shifted towards making specific interventions in transport stations rather than wider public space improvements. The Mayor's Office, the Metropolitan Area, and other entities are involved in managing accessibility adaptations and interventions around transport stations. Collaborative efforts with the community have led to successful accessibility improvements.

However, ongoing support for public space and infrastructure development remains a challenge.

"We had a project in which the link we had with the community was very good…We developed 12 walking networks…generating better connectivity with two Metroplus stations…The project used the methodology of 'tactical urbanism' with interventions made in the public space…through signage, painting, and some furniture, without having to build pavements, stoops, or traffic lights…We developed workshops…the community's contributions led us to completely change the designs. We did this project in coordination with the Mobility Secretary of the Mayor's Office of Medellín. It was carried out in

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[106] El Colombiano, 2019. " La nueva cara que tendrán las estaciones del metro en 2020". Online, available at https://www.elcolombiano.com/antioquia/metro-de-medellin-renovacion-de-las-estaciones-bajo-la-politica-de-urbanismo-de-aproximacion-BB12203103

the last administration, and this administration did not prioritise projects of this type"

Responsibility and Key Actors

In Medellín, there are actors across multiple departments that take responsibility for aspects of accessibility. For example, there is a person responsible for the inclusion, accessibility, and operationalisation processes of the Inclusion Policy at the Urban Development Enterprise. This person is responsible for the coordination of inclusion strategies, conducts diagnostic visits, and engages in reporting and meetings regarding accessibility and inclusion.

The Medellin Accessibility Committee includes representatives from various committees, academia, public-private entities, and civil society to promote accessibility.

The Mobility Secretariat is responsible for structuring mobility projects and feasibility studies. The mayor, city council, and Secretary of Infrastructure hold responsibility for project approval and coordination. Architects and urban planners work on the development of the Metro Expansion Master Plan, focusing on mobility.

The Secretary of Physical Infrastructure manages the construction and maintenance of public infrastructure, actively participating in disability committees to incorporate feedback.

The District Planning Department guides policies and plans, including the implementation of the Land Use Plan through the Planning Unit.

Financing Inclusive Design – The Need for Leadership

Sometimes there are limited resources in city development and this can impact what is achieved and delivered in terms of inclusive design features.

"When it comes to implementing it, there are not enough resources. It's not that we don't want to do it."

This speaks to the importance of buy-in and support for inclusive design from the highest levels, to ensure funding is ring-fenced for accessibility. Better research on

the cost-effectiveness of inclusive design over time and the various co-benefits would support this financial buy-in.

The Value of Inclusive Design

First and foremost, inclusive design must uphold the rights of persons with disabilities to have equal access to the world around them. But inclusive design also has social and economic value, and more evidence is needed on how inclusive design can be of economic benefit to a city.

> **"So who uses the city during off-peak hours? If people who have to study are studying, and people who have to work are working. The answer is: people who have the time and the money. Older people for example. And we are not making cities for them either. They can't go out either. They don't have proper conditions for them to go out and walk for example. We are losing money. Universal design is about this."**

Participants also spoke about the various incentives for delivering on inclusive design. For example, in commercial and retail spaces accessibility had been thought of in order to reach more customers. In the private sector, incentives are needed as there are fewer mandatory requirements to retrofit inclusion inside private units.

> **"The modernity of construction in shopping centres and educational institutions has allowed them to think of accessible spaces, but places that are over 10 years old have required adaptations and that only happens in more governmental places, the private ones are doing it more for their own will, because it is not mandatory."**

Examples of Good Practice and Accessible Places

In the research workshops conducted in Medellin, various places and spaces were highlighted by stakeholders and disabled participants as being accessible. These are listed below.

Buildings:
- The San Pedro Museum Cemetery.
- Pablo Tobón Uribe Hospital.
- San Diego Shopping Centre.
- SURA in Almacentro.El Comité.

- SOMA Clinic.
- Comfenalco in La Playa.
- Comfama.
- Planetarium.
- The Museum of Modern Art – MAMM.
- General Hospital of Medellín (its signage strategy is great).

Parks:
- Parques del Rio.
- Boston Park.
- Parque de las Luces.
- Botanical Garden.
- Parque Norte.
- Parque Explora (also has accessible tours).
- Parque de la Vida.

Urban areas:
- La Alpujarra and Carabobo are accessible areas, but safety and tactile lines still need to be improved. In La Alpujarra, there is a need to improve the training of officials, for example, to be able to attend to persons with hearing impairments
- Perpetuo Socorro has good security and lighting

Inclusive Green Spaces

It is evident that accessibility of green spaces has been a priority in Medellín. For example, Parques del Río is a good example of an accessible green space cited by many of our participants with disabilities, though some suggested wayfinding could be improved.

Attitudes and Awareness of Disability

Attitudes and awareness on disability inclusion in Medellín are currently a significant barrier to the city becoming more inclusive.

"Disability is assumed to be synonymous with illness or deprivation. There are many attitudinal barriers. This generates a lot of limitations for people."

Stigma and a lack of understanding of disability is a persistent issue, even in a city with a certain amount of progress in terms of accessibility. Perceptions coming from the medical model of disability are still common.

"We have not detached ourselves from either the model of the dispensation or the medical-rehabilitation model, which does not allow us to see the person, but rather to see either the health condition or the incapacity."

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

This training is not just a legal requirement but demonstrates a commitment to inclusivity. Beyond training, the inclusion of persons with disabilities in the workforce is important to break down barriers. The Metro is currently working on strategies to include more persons with disabilities in its workforce[107].

Participant with a visual impairment boarding metro and almost colliding with another passenger

"A study is being carried out to involve more persons with disabilities and not just to comply with the regulations"

The cultural shift to inclusion requires understanding and empathy for the needs of others. It is crucial for the city and its institutions to foster awareness and consider the needs of all people, regardless of personal experience. Raising awareness is seen as a key solution, with a suggestion to invest in campaigns that promote inclusivity and education in schools and colleges.

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[107] Metro de Medellín, 2012. "Metro de Medellín, modelo de inclusión". Online, available at https://docplayer.es/19734520-Metro-de-medellin-modelo-de-inclusion.html

"Above all, I appreciate the attitude and awareness we are lacking...We lack a lot of culture in supporting people"

However, the challenge lies in getting people to understand and act on these issues when they are not directly affected.

"This is difficult when people don't visualise it if it doesn't affect them directly. That's why we have to continue communicating and educating."

Attitudinal barriers are a significant obstacle, impacting both accessibility and the inclusion of persons with disabilities. Despite the progress in existing infrastructure and intentions for change, there remains the issue of a lack of knowledge and awareness of what's needed for genuine inclusive design.

"Visibilisation and awareness raising through campaigns on attitudes towards people with orphan diseases or disabilities; for example, to the managers of the metro, with whom many situations have already been discussed, the owners of neighbourhood buses, of restaurants, the managers of shopping centres, despite how open the discussion of disability is, there are still shortcomings"

The impact of attitudinal barriers is faced by those with both visible and invisible disabilities. One participant with an intellectual disabiltiy highlighted the challenges faced in education where teachers may not recognise alternative forms of learning and underestimate the abilities of children with disabilities.

"Teachers need to have more training on how to deal with different kids. Because sometimes when they see a kid with intellectual disabilities, they will underestimate him or her."

These barriers are also felt at home where parents may limit opportunities for their children due to a lack of awareness

"At home, my mother has the perspective that a person with an intellectual disability is completely different from other people and that I am unable to do everything. Today, she still perceives me in the same way."

Independence, Support Systems and Family

Acceptance and support from family and friends of persons with disabilities is strong in Medellín. Many participants require support in performing everyday tasks and most receive this assistance from family and friends.

"My support network was my mother, who died ten years ago, my extended family, which is quite a lot, my uncles, aunts, my father's family mainly, my friends, my work colleagues and even my students."
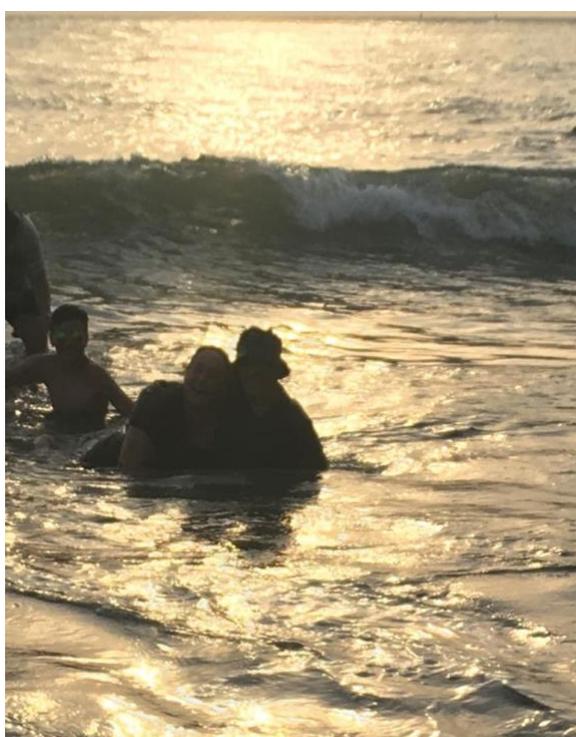
Participant swimming in the sea with family members

However, this support can be a lot for family and friends and our disabled participants demonstrated a desire to have greater external support to alleviate the demands on their personal network and also to allow them greater independence.

"I live with my wife and she helps me with everything, I don't have an adapted kitchen. Let's say it´s 90% accessible, it needs some technical things, for example, to move to the bathroom, my wife has to make lots of effort to help me, so it would be good to have other technical help."

In this example, a more inclusive living environment, incorporating an accessible kitchen and bathroom would support greater independence for him, and less effort for his caregiver.

Geographic Factors, Topography and Spatial Exclusion

"Approximately 78% of persons with disabilities in Medellín live in strata 1, 2 and 3*, and add to that the fact that the areas of greatest socio-economic vulnerability are located on the hillsides, and we find that the largest number

of people with disabilities are located in communes 1, 2, 3, 4, 5, 6, 7 and 13. We cannot flatten the mountain, so Medellín will never be fully accessible."

*Depending on the diversity and quality of housing, there could be six strata in Colombia: one being the lowest and six being the highest. This is a socioeconomic categorisation.

Medellín faces significant challenges due to its hilly topography, making accessibility a complex issue. The city's hillsides, where land is cheaper, are targeted for development, but this leads to problems with reaching those areas. These are also areas where many persons with disabilities live, due to their economic position.

"Our topography makes accessibility very complex...you have to target hillsides, where the value of the land is cheaper. But this leads to accessibility problems"

This contradicts the city overarching goal of densifying the central valley rather than the hillsides. Informal urban development exacerbates the situation, building on steep slopes and creating narrow paths and roads. Implementing necessary infrastructure and public spaces becomes difficult due to the challenging topography and the complexities of already established communities.

"There are places that, because of the topography and the way the territory was occupied, do not allow us to get there [to develop infrastructure], it is very difficult."

In terms of accessibility solutions, stairs are often used in areas with steep slopes, as ramps would be dangerous.

Participant in wheelchair forced to travel on foot due to lack of footpaths in rural areas

"In many areas towards the periphery of the city, where the slopes are so steep, the accessibility solution is to use stairs. Ramps are dangerous because of the slope itself."

Medellín recognizes the importance of addressing accessibility challenges caused by its topography. Efforts have been made to improve mobility and connectivity, particularly for residents in hillside communities. One initiative mentioned is 'social urbanism', which aims to expand mobility and connect the hillsides with the central part of the city.

> **"It creates bigger challenges for us in terms of generating accessibility throughout the territory...Connecting the hillsides with…the centre."**

Part of this initiative is the electric escalators located in the commune 13, which shorten journeys previously only served by stairs. This intervention is particularly useful to persons with chronic fatigue, older persons and persons with visual impairments. Participants with visual impairments called for this to be extended to other periphery areas of Medellín. However, wheelchair users pointed out that the escalators do not support their movement.
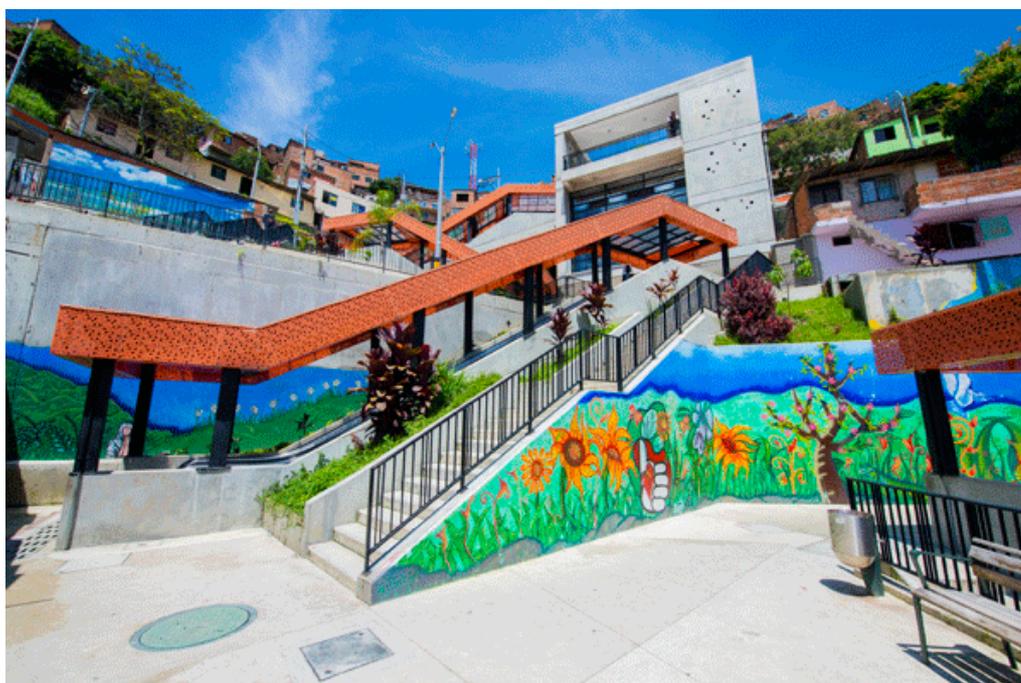
Outdoor Escalator in Communa 13

> **"The electric escalators should be replicated in other neighbourhoods of the city, where accessibility is so unfriendly to people with reduced mobility."**

The cable car system is another infrastructure intervention that targets connectivity into the communities located on the surrounding hillsides.

Informality and Peri-Urban Settings

> **"The biggest challenge is to address the informal city. To complement the formal city. It is a long-term process. We have to think about how to generate connectivity between the interventions we make. This requires time and a lot of resources and social effort. Also, maintenance costs."**

The city experiences informal urban development in certain areas. In most cases, these settlements have steep slopes and narrow road sections, making them inaccessible for many persons with disabilities. Implementing existing public space regulations in these areas is difficult due to the topography and how the land has been occupied. Corrective action, such as displacing people or demolishing neighbourhoods, are not viable options due to the financial and social implications.

> **"The city has many well-developed, planned, and formally built areas. However, there is a big challenge with informal urban development. In these places the slopes are too steep, the road sections too small…We are aware that we have to implement the public space manual in these places, but there are places that, because of the topography and the way the territory was occupied, do not allow us to get there, it is very difficult. The…sites…were created informally, which makes the issue more complex. When it comes to taking corrective action, it is basically impossible, technically and financially, as many people should be displaced, and the communities and their dynamics, affected. Entire neighbourhoods should have to be destroyed. And we are not doing so."**

There is a significant challenge in the relationship between the formal and informal city. Retrofitting and upgrading infrastructure in the periphery areas can be more challenging than in the more formal flatter areas of the city, improving these areas is a process that requires long-term planning, resources, political will and maintenance costs. As an example, rebuilding kilometers of sidewalks to meet standards is both time-consuming and expensive, even in flat parts of the city where the accessibility issues are lesser but this is particularly pronounced in informal settlements, impacting poorer residents more severely.

"There are too many kilometres of sidewalks, for example, to rebuild them up to standard. Even in flat parts of the city where we don't have the above problems, it takes time, and it's very expensive."

Impacts of Violence and Conflict

The difficult and violent past of Medellin resulted in many people living in the city acquiring disabilities. This has increased the number of persons with disabilities living in the city who benefit from inclusive design. It is important to recognise this piece of history as we seek to shape Medellin's future.

"If we are going to talk about the development of Medellín, we must also understand the process of violence it suffered. And all that we lived through left a very high level of disability that we didn't have before."

Impacts of Climate

The impacts of extreme weather on accessibility are significant. Heavy rain and flooding in particular can seriously impact mobility. Inclusive infrastructure must take this into consideration, for example, when it comes to material choices to support safer mobility and longer term resilience as a result of sustained rain and flooding.

"We cannot change the weather, obviously, when it rains the road becomes smoother, there is more traffic, it affects mobility."

Drainage infrastructure must also be upgraded to support heavy rain fall. Where there is better paving and road infrastructure, rainfall is more manageable.

"For me when it rains it is difficult, because since I move around with canes when it rains the floor becomes slippery…there is a risk of falling. As for the roads, the hills help the water to run down, and the roads in the neighbourhood are paved."

Weather also impacts AT users.

"If it's raining I can't go in the motorised chair and if I go in the manual one the taxi driver won't take you because it soils the cushions."

Is Medellín an Inclusive City?

Medellín has made significant progress in promoting equal opportunities and accessibility for persons with disabilities and demonstrates examples of the benefits of inclusive design.

> **"Much has been done in Medellín, not only because there is pressure from civil society, but also because, in recent years, there has been a commitment to equal opportunities…giving visibility to the issue of…accessibility to education, health and work services, achieving greater services for people with disabilities"**

However, there is still much work to do.

> **"Yes, it is inclusive and accessible, although we still have a long way to go"**

Some participants emphasised the need for increased focus on creating inclusive environments and services for *all* people.

> **"Design for all. Not just for people with disabilities, but that we develop a system that can be used by the whole community"**

Furthermore, participants spoke of creating accessible spaces that go beyond the consideration of only physical disabilities.

> **"When we start to develop spaces for everyone, we stop finding answers like 'people with disabilities don't come here' and we start to understand that they don't go to many places... because the places, not being accessible, are not giving a message that they are welcome or want to be served."**

It is also important to recognise the varying circumstances across different parts of the city and its unique and challenging topography.

> **"We cannot ignore the fact that Medellín has a somewhat complicated infrastructure because if we are talking about remote communities, we are always going to be weak in terms of accessibility; in some of them it is inevitable to take 150 stairs to get there. "**

Changing Mindsets and Inclusive Culture

Participants also highlighted how it was crucial to transform mindsets and raise awareness across the city.

"We have not worked to transform people's mindsets, and I think that is where we have lacked the most."

Moreover, it is essential to change the perception of disability held by some parts of the city administration and to provide opportunities rather than care.

"We have to change the concept that the city administration has...that people with disabilities have to be looked after: no, they do not have to be looked after. They have to be given opportunities."

Future-Proofing an Inclusive City

Participants mentioned the need for the city administration to prioritise accessibility in its planning and development.

"The city has lacked planning for the future of what is being done today, it is something that will last over time."

Maintenance and continued improvement are critical issues for Medellín as it continues its journey on a pathway to becoming a more inclusive city. For example, in the Metro system, participants spoke about the need for newer additions and modifications to maintain current levels of accessibility.

"The biggest problem is to maintain it…Depending on who is in charge, many processes continue or stop, and when processes stop, the sense of accessibility is distorted a little."

What works now?

"Accessibility is 'a possibility for inclusion'"

Medellín is an interesting case study as there are some good examples of accessible infrastructure and there is much to celebrate in the city's approach to social urbanism. However, many persons with disabilities still experience exclusion in many dimensions of day-to-day life. This section will highlight examples of good practice that can be replicated across the city and used to spread awareness on the potential benefits of an inclusive city.

Understanding what works and who is driving inclusion can 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.

Medellín has been designated as a district of innovation which is an important framework to support change and there is a real opportunity to leverage this for inclusive innovation and infrastructure. This report can support that by documenting the current state of accessibility in the city and the current experiences of persons with disabilities as well as documenting existing good practice.

Across Colombia, comprehensive legislation frameworks are effective.
However, they should be locally adapted where possible. For example, the social housing policy does not consider the complex geography of a city like Medellín which is a huge challenge for low-income housing.

Representation and leadership of persons with disabilities. In Medellín, persons with disabilities hold positions in various departments in local government and we spoke to other key city stakeholders who also identify as persons with disabilities. This representation and leadership is important to tackle stigma and to drive real change.

Social urbanism is a process through which equitable urban development is mobilised in Medellín. Some of the social urbanism projects are renowned as good practice. However, there could be more application of inclusive design and

participation of persons with disabilities in these projects. More recent projects have been more inclusive.

Social housing, equitable urban development processes. Medellín social urban development policies have broad benefits enhancing equity and social inclusion in the city. In some cases, accessibility is well integrated, in others less so. The city would benefit from resource to ensure accessibility aims can be achieved, for example in the social housing projects.

Designing with informality and the peripheries of the city. Medellín's urban development approach considers the informal parts of the city and peripheries as part of the city. This is a really important approach because it lays the foundation for more equitable urban development. The city would benefit from inclusive design guidance to specifically inform intervention in these areas.

Infrastructure that works with natural topography: cable cars. Medellín is famous for its cable cars which connect the peripheral settlements high in the valley to the city. The connection of this infrastructure to other transport modes such as the metro is quite good, but the cars themselves could be more accessible.

Diverse inclusive design processes. Where inclusive design process engaged diverse groups in an inclusive way, more inclusive outcomes were achieved, such as in Parques del Rio.

Active stakeholders and innovators. In Medellín, it is not only the government that takes action and responsibility for inclusion but the private sector and civil society also participate.

Inclusive green spaces benefit wellbeing. The good examples seen in inclusive and accessible parks in Medellín are a lesson for other cities.

Valuing public space. Some examples of successful public space projects were found, but there was a need for continued support and maintenance of these spaces.

Accountability processes such as accessibility committees. Medellín has formally established accountability for participation through accessibility committees in the city. Likewise, inclusion committees for the comunas (urban communities) and

corregimientos (rural communities within the confines of the city) and the District Disability Committee.

Urban innovation and experimentation: the lab approach. The 'laboratory' approach that is used in various urban development initiatives is a great way to pilot ideas and be more innovative. It will be important to document the successes and failures of these projects to support future progress.

Lessons Learned

The biggest learning opportunities in the case study were in developing a deeper understanding of the lived experience of persons with disabilities in Medellín, building a picture of the whole 'system' of accessibility and inclusion needs in the city and starting conversations between diverse stakeholders.

In Medellín there are also substantial learning opportunities around the significant public infrastructure that has been built in the past 10-20 years. Issues such as ongoing maintenance, sustainability of political will and attitudinal barriers around using inclusive infrastructure have all been highlighted which is important learning.

On inclusive infrastructure and assistive technology (AT), this case study reinforces the importance of inclusive infrastructure for better access to and enjoyment of AT. Participants shared many instances of inaccessible infrastructure being problematic for the AT that they use, which also relates to increased instances of stigma around being an AT user. For example, a bus or taxi driver not wanting to take a wheelchair user as transporting the wheelchair is considered more inconvenient. Both better design and inclusive cultural change are needed.

Areas that were identified where significant improvement was needed include:
- Mindsets, culture and awareness
- Diversity of disability in design
- Future-proofing existing infrastructure and ongoing commitment to inclusive infrastructure

Consideration of cognitive and psychosocial disabilities and neurodiversity in the built environment. Design for these groups was less common in Medellín and expressed as a key area of priority by some participants. There may be lessons learned from other cities and countries. For example, the UK's 'Design for the Mind' report.

Leadership and buy-in is needed for financing inclusive design. Financial resources are necessary and can fluctuate depending on political commitment to inclusion. Some legislation is in place to safeguard progress but it is still an issue.

Ongoing political will is necessary, an inclusive city needs a strategy that can be upheld throughout changing leadership. As above, a strategy and team that deliver consistent inclusive city progress would be beneficial.

Consistent application of standards across public and private construction is needed. While standards theoretically apply across public and private sector construction there is inconsistent application.

Public space infrastructure around transport hubs could be improved. There were positive initiatives undertaken for instance in PUIs, with the construction of health, educational and recreation centres alongside transport infrastructure, which have unfortunately decreased.

Continued awareness-raising, among all citizens and stakeholders. Cultural exclusion, attitudes and stigma were a considerable barrier for many participants.

Development of a more inclusive culture. A lack of awareness was cited as one of the major barriers to inclusion, awareness-raising activities should encourage an inclusive cultural shift for more systemic change.

Ensuring implementation of policies and plans. Strong legal frameworks and norms have their role, but good support for implementation and accountability must back them up. Implementation is inconsistent across the city.

Consideration of the transport system as a whole, it's not connected. Accessibility must be understood through journeys to support seamless mobility.

Understand costs and co-benefits. Where resources are constrained, it is even more important to demonstrate why inclusive design can support other aspects of urban development and quality of life.

Scaling and sustainability of what works. Research and support for scaling and replicating successful initiatives should be developed.

Collaboration between public and private entities, civil society organizations, people with disabilities and their families. Validating, applying and monitoring the

Public Policy of Disability is essential for the recognition of the rights and duties of people with disabilities.

Local infrastructure and production ecosystems can support AT innovation.
Innovators are demonstrating success in pilot local production of AT but there is a need for wider infrastructural and systemic support in the production ecosystem.

Limitations and areas for further exploration

The following limitations were identified during this study:

- A significant amount of the work was undertaken online with in-country partners. 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.
- Capturing a genuine account of participants' perspective was sometimes a challenge, some stakeholders were hesitant to share negative experiences with language and cultural differences also a factor.
- Our participants identified as having diverse impairments, but in many cases there was only one participant to represent a particular impairment group which may limit perspectives. Overall, there was a higher prevalence of physical impairments although within that group there was good diversity.
- The gender balance of participants was not equal, it was much more difficult to reach female participants to interview which may indicate that women with disabilities are excluded to a greater extent. Among city government stakeholders there were also less female participants, indicating that among key stakeholder groups there is a need for better gender diversity.
- 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.
- 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 and landslides.
- 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 systems.
- There is a need for national data on disability to be constantly updated, as the last census was conducted in 2021.

Conclusion: Actions Toward Inclusion

"An inclusive Medellín 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 choose."

In Medellín, it is important to recognise and celebrate the progress that has been made in terms of accessibility and inclusive design at a city level. Medellín showcases good practices that are looked to from other cities, offering genuine opportunities for cities and local governments to be more collaborative. However, it is important to note that continued improvement, maintenance and new innovation will always be needed to sustain an inclusive city – and energy, motivation and resources should be directed to this.

"It is not a question of saying that we have not achieved anything, but that we need to work continuously, because when processes slow down, it is like starting all over again and sometimes it is very difficult and tiring."

From a policy perspective, comprehensive legislative frameworks are in place and have been effective. However, most policy sits at a national level and therefore is not always locally adapted to the specific contexts of cities, for example, Medellin's unique topography.

Ongoing political will towards inclusive cities is essential to continue to deliver inclusive infrastructure which can be challenging with changing leadership. More resource and budget would also demonstrate commitment. One positive example of resourcing is the city's Accessibility Committee (CAME) which has oversight over inclusive infrastructure in Medellín.

In infrastructure, there is clear progress in accessibility in some sectors. However, it is not well synchronised. For example, certain aspects of the transport system are more accessible than others and the connections between systems are not always accessible or affordable. Social housing projects are not as accessible as they could be due to the financial constraints of integrating, for example, elevators. Parks and green spaces have been given high priority in terms of inclusion in the city and there are a number of accessible parks that have integrated inclusive design processes.

These spaces stand as really important examples that can make inclusive design more visible in the city. However, it is equally important that the every-day spaces and services people need are made accessible.

Persons with disabilities expressed challenges that have clear impacts on quality of life including limited accessibility of recreational activities, lack of affordable inclusive spaces (higher-income areas are generally more accessible), attitudes and awareness and continuity and maintenance of accessible environments.

On AT, persons with disabilities spoke of the challenges in accessing AT, which often require resorting to legal proceedings. The process of acquiring AT is long, often taking more than 6-9 months. Using AT in Medellín is also not easy as the infrastructure does not always support AT use. Examples include transport modes not being inclusive for AT users and seasonal rainfall causing slippery surfaces and limiting mobility. There are also disparities between people's aspirations for AT and what they are actually provided with which is often quite generic. This also relates to the challenge that to some extent and in certain circumstances the medical model of disability is still quite prevalent.

Medellín also lives up to its name as a city of innovation. Its innovation hub, 'Ruta N' is an accessible building which makes a strong commitment to inclusion including a programme on disability innovation. Disabled social entrepreneurs and enterprises are also working in the city such as MATT, an organisation producing electric third wheels for manual wheelchairs with a unique business model that includes rental and tourist tours.

Key Barriers:
- Lack of physical space in the city.
- Complex topography, particularly for low-income communities.
- Congestion and inconsistent accessibility throughout the day.
- Inaccessible recreation spaces.
- Lack of consistency in accessible infrastructure, such as between transport systems.
- Difficulty of adapting / retrofitting existing infrastructure and reticence of private owners/developers to do so.
- Access to AT, a flawed system.
- Specific allocation of funding and resources to do this well.

- Recognition of the diversity of disability and support for people with invisible or hidden disabilities.
- Communication barriers for a range of diverse disabilities.
- Attitudinal barriers.
- Implementation of policies and accountability for delivery.
- Materials and quality control, such as non-slip materials to account for steep hills and increased rainfall.
- An ever shifting political landscape and therefore inconsistent political will.
- Ongoing maintenance and sustainability of existing inclusive infrastructure.
- A lack of vision and direction on inclusion to future-proof a growing and evolving city.
- Consistent poverty cycles for many residents, including many persons with disabilities.

Priority Recommendations:

- Produce a new inclusive city strategy that brings together fragmented policies. This should be centred on the participation of persons with disabilities, adapted to the local context and local resource-constraints, considering the periphery areas of Medellin and a wide range of visible and invisible disabilities.
- Provide disability equality and awareness training and inclusive design training across all levels, from key urban stakeholders, service providers down to young people in education. This will help raise awareness and break down attitudinal barriers.
- Address climate resilience and disaster response taking into consideration the cities unique topography and changing climate.
- Prioritise action across the key barriers reported including; first and last mile to transport hubs, wayfinding and information, equal access to education and healthcare.
- Ensure support for persons with disabilities who require assistance to acquire independence. Allow persons with disabilities to not feel completely dependent on personal networks including family and friends.
- Finance an inclusive built environment by ringfencing funding and resources to support implementation. Ensure projects are maintained once implemented and not discontinued over time.
- Raise awareness around the co-benefits of inclusive infrastructure, for example, better health access and better livelihoods for everyone.
- Further develop building codes and accessibility standards in a way that ensures an inclusive design approach is implemented and inclusive outcomes delivered. These should consider user experiences and journeys in the city

ensuring people with a wide spectrum of disabilities are included. Review all existing guidance and consolidate these into one.

- Embed inclusive design in the implementation of all essential infrastructure and services. This must include improvements to the periphery and lower income areas.
- While essential services are a priority, don't underestimate the importance of access to recreation, sport, culture and public space. Consider the attitudinal as well as the physical barriers that exist in these spaces to ensure a welcoming and inclusive environment.
- Support targeted education and training programmes and interventions as required, developing them with persons with disabilities.
- When implementing upskilling projects ensure participants are financially supported, based on need.
- Let communities lead, facilitate and resource community-driven development.
- Champion the good inclusive work already taking place in Medellin so that others can see what best practice looks like and its benefits.
- Develop a fairer and simpler assistive technology distribution system without the need for legal proceedings and ensure the correct AT is getting to who needs it.

Recommendations for Policy and Decision Makers:

"Policymakers should have a plan for inclusive design, act on it and be accountable for its implementation."

- Ensure coordination across ministries, departments and agencies.
- Undertake access audits on existing public infrastructure and act on the recommendations.
- Ensure public infrastructure is properly maintained after the initial construction.
- Increase budgetary support for disability inclusion and inclusive design to ensure end to end accessibility.
- Build strong compliance mechanisms into infrastructure construction.
- Ensure participation of persons with disabilities throughout the planning, design and construction phases.
- Make information about development projects, including what they have done to be inclusive for persons with disabilities, publicly available to encourage accountability.
- Partner with communities, the private sector and persons with disabilities to achieve goals on inclusion, for example, via a monitoring committee. Use previous examples, such as at Parques del Río, to build a framework of future participation.
- Consider how strategies and policies can be implemented across both formal flatlands and periphery hilly areas.

- Ensure technical standards and guidance on accessibility and inclusion consider areas where more innovative thinking may be required, such as the steep hillsides.
- Facilitate disability equality and awareness training and inclusive design training for all city policy and decision makers.

Recommendations for Industry (Practice)

"Practitioners should understand that inclusive design will deliver better results and be motivated to design and deliver good inclusive design by working collaboratively with and being led by persons with disabilities."

- Advocate integration of inclusive design from the start of all projects.
- Ensure the participation of persons with disabilities in decision-making, design processes and evaluations.
- Involve all relevant disability committees and units in the process.
- Spread awareness on the added value of inclusive environments through demonstrating good practice and advocacy.
- Consider the wider site context during project development including local topography and connectivity to services, including transport networks.
- Make sure your staff have had good inclusive design training
- Ensure your workplace is accessible and be pro-active in the recruitment of persons with disabilities.
- Consider climate resilience and disability inclusion together in your projects.

Recommendations for the Community (People)

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

- Identify disability inclusion champions within communities.
- Audit and evaluate the built environment (ideally in a formal and recognised way with local government and agencies through disability committees and units) to highlight what is needed.
- Advocate for community needs and aspirations.
- Spread awareness on the value of inclusive environments through cultural activities and advocacy.
- Participate in decision-making, design processes and evaluations, and ask to participate if it is not offered.
- Encourage and support participation of community members who may be less inclined to, ensuring quieter voices are respected and heard.

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, empower further positive cultural change, an accessible and inclusive built environment, straight forward access to good quality and affordable assistive technology and inclusive climate resilience. There is good progress across some of these factors in Medellin 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 might an inclusive Medellín look like?

- Be known as the city of inclusive innovation.
- Provide inclusive mobility and transport that incorporates good wayfinding and ensures its facilities such as lifts are regularly maintained and operational, with helpful staff on-site who are properly trained in disability inclusion.
- All citizens have a positive awareness of disability and are open with a positive attitude towards disability and persons with disabilities.
- Accessible and affordable housing for all.
- Inclusive and accessible healthcare and education for all.
- Enjoyable urban life: recreation, culture, sport and safe inclusive public spaces where everyone feels welcome and free of judgement.
- Inclusive climate resilience, adaptation, and disaster preparedness.
- Thriving and connected communities.
- Equal access to opportunities and livelihoods.

What's next?

This report outlines the key findings from a four-month case study on the city of Medellín. As the sixth and final case study on inclusive design and the built environment in lower-and-middle-income countries, it will go on to inform global actions on inclusive design.

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