# REWIRING THE ENGINES OF GROWTH:

# SMART INFRASTRUCTURE FOR RESILIENT CITIES IN THE GLOBAL SOUTH

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## Abstract

Urbanisation is no longer a choice but a condition of the 21st century. With over half the world's population now living in cities—and much of that growth concentrated in the Global South—the question is not whether cities will expand, but whether they will do so equitably, sustainably, and humanely. This research reimagines cities as not just engines of economic growth but as ecosystems of care, coexistence, and collective well-being. Against the backdrop of infrastructural decay, informal settlements, and deepening inequalities, this paper proposes a reframing of "smart cities"—not as technologically saturated spaces but as inclusive, adaptive, and just habitats that respond to the needs of all, not just the privileged few.

Drawing on the metaphor of legacy cities as outdated cars, the paper calls for a deep structural overhaul rather than superficial digital upgrades. Smartness, it argues, must be infused with empathy, equity, and sustainability. Case studies from India, Colombia, Kenya, Austria, and South Africa illustrate how data-driven technologies and nature-based solutions can transform access to basic services such as water, transport, safety, and sanitation—particularly in marginalised urban zones.

At the core is the proposed 3A Framework: infrastructure must be Adaptive to climate and systemic shocks, Accessible to historically excluded communities, and Agile enough to evolve with dynamic urban needs. The study critiques how dominant urban models marginalise the lived experiences of women, LGBTQIA+ persons, migrants, and non-human species by prioritising top-down, technocratic planning.

Gender-inclusive planning, the integration of mental health and psychosocial support (MHPSS), and recognition of animal life as part of urban ecosystems emerge as critical pillars of inclusive smart cities. From Pune's trans-inclusive toilets to Nairobi's digital literacy for LGBTQIA+ youth and Jaipur's humane animal control programs, the study documents how cities can be reimagined as sites of belonging and dignity.

The research also calls for transforming urban governance into a co-governed, multi-actor process that breaks down institutional silos and embeds ethics in planning. Ultimately, it presents a blueprint for building cities in the Global South that are not only digitally enabled, but emotionally, socially, and ecologically intelligent. It asks: *What if smart cities were not just about better tools—but better values?*

# Smart Cities, Smarter Futures: Building Inclusive Infrastructure

Cities have long been considered the engines of economic growth. “Over 80% of global economic activity is concentrated in cities. And there is no country that has ever reached middle income status without urbanizing, and none has reached high income status without vibrant cities” (Mohieldin, 2017).

Yet today, cities are increasingly struggling to keep pace with the pressures of rapid urbanisation. An apt analogy can help explain this. Think of cities as cars built in the 1960s—originally designed for fewer passengers, basic roads & slower speeds. Over time, they’ve been retrofitted, patched, and pushed to perform in high-pressure conditions, but without major upgrades, they sputter under modern demands. Just as a vintage car needs a new engine, sensors, GPS, and fuel efficiency to run today, our cities too need smart infrastructure, data integration, and inclusive design to serve 21st-century populations. This, in essence, is what defines a smart city, an urban ecosystem that leverages technology and inclusive planning to deliver sustainable and resilient living for all.

## Defining Smart Cities in the Global South Context

“A smart city is the effective integration of physical, digital, and human systems in the built environment to deliver a sustainable, prosperous and inclusive future for its citizens” (British Standards Institution, 2014). In the Global South, this concept means more than technology; it promises real transformation in how cities serve their most vulnerable residents. It uses modern technologies like Internet of Things (IoT), ICT (Information & Communication Technology), sensors & analysed data to optimize city operations, be it energy, water, transport or governance.

### Challenges Faced by Legacy Urban Systems

Firstly, high rates of unregulated urban sprawl—unplanned, low-density & uncontrolled expansion of urban areas into previously undeveloped rural or suburban areas—have burdened these areas and their already stressed components (United Nations, 2024). Secondly, severe infrastructure deficits: about 60% of cities in the Global South are facing infrastructure limitations (Altala, 2025). Thirdly, growing slum populations: it is estimated that 1 in every 3 residents of urban areas in the Global South live in informal settlements or slums (Altala, 2025). In 2022, 1.12 billion urban residents lived in slums—25% of city dwellers, with numbers rising most in Asia and Sub-Saharan Africa (United Nations, 2025). Fourth, exclusion of citizens from accessing public services: globally, just 44% of urban residents live within a 400 m radius

of open public spaces and only 40% of the urban population in least developed countries has easy access to public transport (United Nations, 2025). Fifth, waste & drainage system failures: multi-storeyed waste dumps & waterlogging events are now common problems in metropolitan cities like Delhi.

## Smart City Solutions: Addressing Legacy Urban Deficits

The traditional idea of smart cities has often focused narrowly on digitisation, automated traffic lights, surveillance cameras, and data dashboards. However, this approach is far too limited. Smart infrastructure must go beyond mere technology, to offer a transformative upgrade—but only when designed with inclusion and resilience at its core. As UN-Habitat (2022) aptly observed, "Data alone doesn't make a city smart—what matters is whether it listens, adapts, and includes."

Digital platforms and community-generated data will help map underserved areas, identify stress points, and prioritise resource allocation. This will ensure that informal settlements, which are often excluded from master plans, receive targeted and timely infrastructure upgrades. For instance, Delhi's urban heat-mapping project used AI and satellite imagery to identify vulnerable zones in slums and inform heat-resilience planning (SEEDS India, 2022). Real-time monitoring through IoT & sensors will enable proactive detection of water leaks, drainage blockages, or power failures. It will allow instant response before they escalate into crises. This will minimise service downtime & disaster risk, especially in vulnerable neighbourhoods. Indore, for example, has installed IoT sensors in over 300 public toilets to monitor hygiene, odour, and water levels, ensuring timely maintenance and public health safety (Smart Cities Mission, 2023). Smart transit systems and inclusive public spaces will use mobility data and citizens' feedback to design accessible, gender-sensitive, and climate-resilient mobility options. This will further promote social equity. Cape Town's MyCiTi transit system exemplifies this by using universal design, gender-separated facilities, and step-free infrastructure to improve access for all (Institute for Transportation and Development Policy, 2021).

## The 3A Framework: A Model for Inclusive Urban Resilience

Building on the principles of established models like the Smart–Green–Resilient framework used in Hong Kong for sustainable urban planning (ResearchGate, 2022), and the Smart–Resilience–Sustainability triangle from Cañavera-Herrera et al. (2022), the 3A framework—Adaptive, Accessible & Agile—offers a practical approach for Global South cities seeking truly

inclusive smart infrastructure. Infrastructure should be adaptive, using real-time data and sensor technology to anticipate and respond to urban challenges like flooding, power outages, or traffic congestion. It must be accessible, reaching marginalized communities, informal settlements, and persons with disabilities through equitable service delivery, universal design, and language-inclusive digital platforms. Finally, it must be agile—integrating climate-resilient and nature-based solutions such as sponge pavements, decentralized energy systems, and modular housing that can evolve with urban needs. Together, these three pillars ensure that smart infrastructure is not only efficient, but also equitable and resilient in the face of dynamic urban pressures.

So just upgrading legacy cities is not a luxury—it's imperative. Smart infrastructure must go beyond digital shine to serve slums, informal labor hubs, and marginalized zones. Policymakers must invest in data-driven upgrades, embed equity at design stage, and foster community co-creation. Only then will our Global South cities run like modern, inclusive engines—fit for both economic growth and social resilience.

## Sustainable Infrastructure: A Pressing Priority

In an era of accelerating climate change and rapid urbanization, investing in sustainable infrastructure is more important now than ever before. As the world faces a climate crisis and global economic slowdown, the need to address inequalities that disproportionately affect the most vulnerable people rises rapidly. When we talk about the Infrastructure-79% of global greenhouse gas emissions are related to infrastructure. 4% growth in global GDP by 2030 is possible with clean energy investments. 92% of SDG targets are achievable through infrastructure investment.

India and South Asian countries are significantly advancing infrastructure development to support inclusive growth and climate resilience. India's ₹108 trillion, National Infrastructure Pipeline, focuses on roads, metros, energy, and digital systems, with highways and urban transit expanding rapidly. South Asia faces a $2.5 trillion infrastructure gap, but targeted investments—such as smart ports, energy storage, and rural connectivity—are helping bridge it. These efforts are vital to achieving the Sustainable Development Goals and ensuring long-term regional development. Sustainable urbanization is the key to development in low- and middle-income countries, addressing rural-urban needs, reducing poverty, and protecting ecosystems. Proper urban planning can boost jobs, growth, and inclusion while reducing pollution and resource use.

## IDB Principles of Sustainable Infrastructure

The Inter-American Development Bank (IDB) considered the global principles on sustainable infrastructure and highlighted its four dimensions:Economic and Fiscal Sustainability; Social Sustainability; Environmental Sustainability; and Institutional Sustainability.

## Infrastructure 4.0

Buildings are responsible for 40% of global energy consumption and 33% of GHG emissions, making it a critical aspect of infrastructure systems. By integrating advanced technologies, practices, and materials, infrastructure planning can significantly reduce consumption and associated GHG emissions. Efficient lighting, smart grids technology, and efficient HVAC systems are just a few examples of how infrastructure can maximize efficiency while minimizing operational costs.

In 2010, the Singapore-ETH Centre began researching efficient indoor climate solutions suited for Singapore's hot and humid conditions. At the Future Cities Lab, they developed a three-part cooling system:

**Separation of cooling and dehumidifying** – Sensible (heat) and latent (moisture) cooling are treated separately to reduce energy use, allowing heat removal at higher temperatures (up to 18°C) through radiative cooling using cold surfaces, instead of traditional air-based (convective) systems.

**Water-based heat transport** – Replacing air with water for heat transport improves efficiency and enables smaller, easily integrated pipes, reducing the need for bulky ceilings or floors.

**Decentralized ventilation** – Small, room-based ventilation units draw in and dehumidify outdoor air, removing the need for centralized air distribution systems and saving space.

Together, these innovations enhance energy efficiency, save space, and improve comfort in tropical climates.

**A Cost-Effective Path to Sustainable and Resilient Cities**: Nature-Based Solutions (NBS) offer climate-resilient, cost-effective urban infrastructure. Examples include floodable parks in Bangkok and green roofs in Singapore. NBS reduces costs by 42% and delivers co-benefits like cleaner air, biodiversity, and well-being while supporting other sustainable systems like energy and mobility.

**Living infrastructure**: Living infrastructure—green, blue, and grey systems—enhances urban resilience by delivering ecological, social, and economic benefits. Examples like urban forests and wetlands offer cooling, carbon capture, and habitat support. Canberra's case highlights global strategies for integrating nature-based solutions into sustainable urban renewal and planning.

**IoT in Urban Development:** The MDPI review highlights how IoT enhances Green Storm water Infrastructure by integrating sensors, data communication, and automated controls—like smart rain barrels, green roofs, and bioretention systems—for real-time water quantity and quality management. Examples include soil-moisture sensors and RTC-controlled detention ponds, boosting efficiency and flood resilience.

# Urban Governance 2.0: Harnessing Actors and Innovations for Resilient and Sustainable Cities

Urban governance refers to the mechanisms, institutions, and processes through which diverse stakeholders manage urban affairs. It extends beyond formal government to include networks of civil society, private sector actors, and international agencies (UN-Habitat, 2002). With over 55% of the world's population residing in cities, effective urban governance has become essential for addressing issues such as unplanned urbanization, infrastructure stress, environmental degradation, and inequality (Pierre, 2011; Satterthwaite, 2005). Governance quality directly influences service delivery, social inclusion, and urban resilience.

However, challenges like corruption, institutional fragmentation, and the exclusion of marginalized populations persist, particularly in the Global South (Roy, 2005; Mitlin & Satterthwaite, 2013). This research proposal explores the structural dynamics, actor interactions, and challenges of urban governance. It aims to examine how participatory mechanisms and inclusive frameworks can be applied to create more sustainable and equitable urban environments, with comparative case studies drawn from diverse global contexts.

The literature on urban governance identifies it as a multi-level, multi-actor process that extends beyond the traditional state apparatus. Pierre (2011) emphasizes the importance of networked governance, where decision-making involves public-private partnerships and citizen engagement. UN-Habitat (2002) outlines governance principles such as equity, accountability, efficiency, and civic participation. Roy (2005) critiques urban planning for often ignoring informal settlements and calls for recognizing urban informality as a governance issue. Mitlin & Satterthwaite (2013) argue that urban poverty is closely tied to governance failures in service delivery and inclusion. Hollands (2008) highlights the role of smart city innovations, but warns of deepening digital divides.

Scholars like Wampler (2007) advocate participatory budgeting as a means of democratizing local governance. Despite this, challenges like institutional fragmentation, elite capture, and lack of transparency persist. The literature reveals both the potential and pitfalls of current urban governance practices, providing a foundation for this study.

## Key Elements of Urban Governance

Effective urban governance is built upon several key principles:

**Participation**: Inclusive governance ensures that citizens, especially marginalized groups, hav.e a voice in decision-making. Tools like participatory budgeting increase accountability (Wampler, 2007).

**Decentralization**: Local governments gain flexibility and responsiveness when authority is devolved from central administrations (Smoke, 2015).

**Transparency and Accountability**: Open governance practices, such as public access to budgets and planning documents, reduce corruption and enhance trust (UNDP, 1997; Pierre, 2011).

**Rule of La**w: Effective governance relies on strong institutions and legal frameworks to enforce regulations, especially in land use and urban planning (UN-Habitat, 2002).

**Strategic Planning**: Integrated urban planning aligns land use, infrastructure, and environmental sustainability goals (Healey, 2006).

## Major Actors in Urban Governance

**Local governments:** Local government are key implementers of urban policies and services (Pierre, 2011).

**Private sector**: The private sector contributes through investments and infrastructure partnerships (Payne, 2005).

**Civil society and NGOs**: Civil society and NGOs advocate for marginalized groups (Miraftab, 2004).

**International organizations**: International organizations like UN-Habitat and the World Bank offer frameworks and funding. The interaction among these actors defines the effectiveness of urban governance.

**Challenges of Urban Governance**

**Rapid Urbanization**: Unplanned population growth overwhelms infrastructure, housing, and basic services (Satterthwaite, 2005).

**Informality**: Many urban residents live in informal settlements, which lie outside regulatory frameworks and are often excluded from official planning (Roy, 2005).

**Exclusion and Inequality:** Poor and marginalized groups frequently lack representation in urban policy processes (Mitlin & Satterthwaite, 2013).

**Environmental Degradation**: Poor planning and weak enforcement contribute to pollution, deforestation, and vulnerability to climate change (Bulkeley & Betsill, 2003).

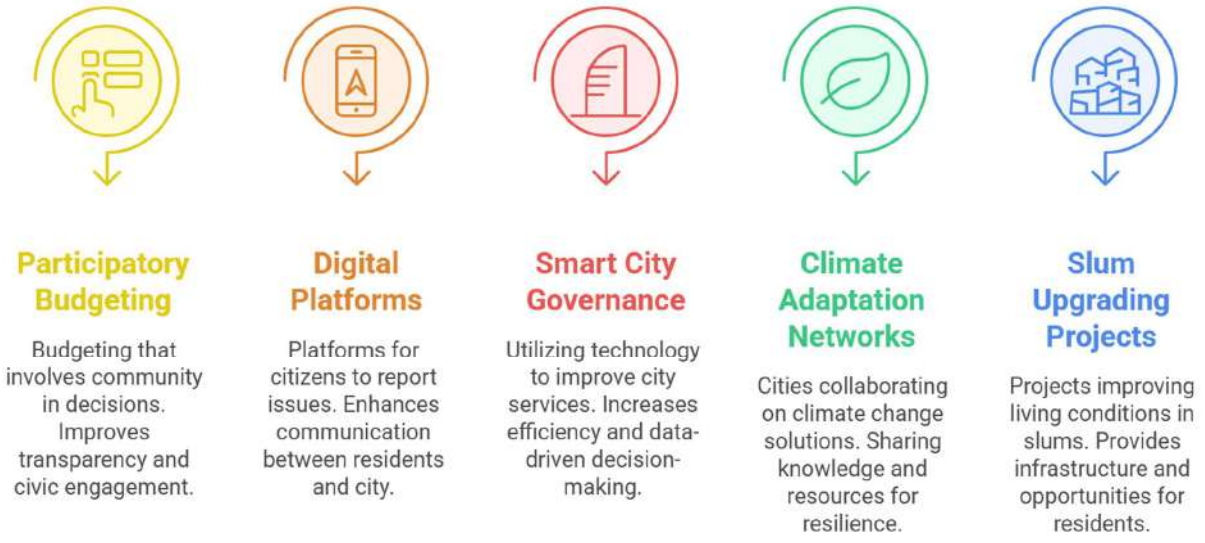
**Corruption and Weak Institutions**: Lack of transparency and institutional inefficiency undermine trust and hinder effective service delivery (UNDP, 1997).

## Innovations and Solutions in Urban Governance

Smart city initiatives leverage ICTs for better urban service delivery (Hollands, 2008). Participatory budgeting allows citizens to allocate public funds (Wampler, 2007). Public-private partnerships (PPPs) enhance infrastructure development (World Bank, 2015). Inclusive planning integrates slums and informal sectors (UN-Habitat, 2003).

### Innovative Practices and Global Models

- Participatory budgeting (Brazil, Portugal)
- Digital platforms for city feedback (e.g., FixMyStreet, Decidim)
- Smart city governance (Seoul, Tallinn)
- Urban climate adaptation networks (e.g., C40 Cities, 100 Resilient Cities)
- Inclusive slum upgrading projects (e.g., Pune, Cape Town)



Urban governance must be adaptive, inclusive, and transparent to meet the challenges of 21st-century urbanization. Effective coordination between actors and strategic planning is key to sustainable development. Future governance models should prioritize participation and social justice.

## Political Inclusion: A Catalyst for Equitable Urban Planning and Effective Public Service Delivery

Exclusion of migrants from decision-making in their host community often limits their access to certain public goods, highlighting a common issue migrants face in participating in local governance. The migration of people seeking better livelihoods has led to rapid urbanization within and between countries, leading to intense competition for limited resources and affecting public service delivery (World Migration Report, 2015). Elections, which are the foundation of a democratic system, provide an avenue for citizens to choose their representatives. While a significant portion of urban populations consists of migrants (migration data, 2022), they are often ineligible to vote for their representatives or compete for principal positions. How citizens are represented directly impacts their satisfaction (Metwally & Samir, 2024), giving governments insights on how to improve the experiences of different demographic groups with public services. According to Alba and Foner (2015), the level of representation of individuals with a migrant background is a key indicator of a society's inclusion capacity. It is also vital for communities to create channels or policies for immigrants to voice their concerns.

Research has been conducted on the political representation and participation of migrants, exploring how migration politics are played out (Gherghina and Basarabă, 2024; Zogu & Schönthaler, 2023). As the share of the world's population living in urban areas is expected to increase by 60% in 2030 (United Nations, 2018), urban planning should therefore be a priority for governments in addressing societal issues. Town planners have often ignored the issue of migrant populations, which has often jeopardized the effective delivery of public services (Patel, Patel & Tailor, 2024). The political inclusion of migrants in decision-making is essential for urban planning to ensure equitable access to public services.

The lack of participation of migrants in decision-making has created inequality between migrants and the indigenous people of such communities (International Organization for Migration, n.d.). The idea that a better life is available elsewhere and that moving can help reduce the differences between their situation and that of people in more prosperous areas is common. However, migrants often face the harsh reality that they may have unequal access to rights and public resources. While local governments play a significant role in making sure urban areas are inclusive, many people in large urban populations still lack access to adequate public resources (World Migration Report, 2015), most of whom are migrants because they are new to the environment.

In low-income settings such as communities in the global south, rapid urbanization can lead to high levels of inaccessible infrastructure, housing shortages, and service gaps, placing pressure on local governments and national agencies due to congestion. This can bring a positive outcome if properly managed through collective governance, it can boost economic growth in the urban area (World Migration Report, 2015).

## Gender Inclusion: Rethinking Participation, Presence, and Power

In the rapidly urbanising landscapes of the Global South, where digitization and smart infrastructures are reshaping the contours of our day-to-day lives; a conventional question remains unnoticed: *Who exactly are our cities being designed for*? While the adjectives from inclusivity such as "equity, access, diversity" have found way into urban policy discourses and academia, the ground realities often speak a different story.

Smart cities in the postcolonial contexts like India, are still largely imagined and executed through a masculine lens. In this top-down architecture of decision-making, the everyday needs, routines, vulnerabilities, and aspirations of women, LGBTQIA+ individuals, children, and those living at the intersections of marginalisation are too often left out of the blueprint.

It is pertinent to note that urban environments are never colourless of the prejudice or value judgments they hold. Each crosswalk, streetlamp, public washroom, and metro line is a reflection of planning choices… choices that reveal whose safety, dignity, and freedom are prioritised over others. For instance, consider the case of a woman returning home from work late in the evening. Here, the absence of adequate lighting, lack of surveillance, or unsafe commuting options, inaccessible helpline institutions, etc, amongst others, fundamentally reshape her relationship with the city. Similarly, a trans individual attempting to access a digital health portal may find themselves excluded by design through systems that assume binary gender, or by platforms that require formal documentation many do not possess. How many google survey forms, or University admission portals have the 'Other' option if not for the ones who do not identify in the social construct of gender identities.

The UN Women, 2021 Report observes that nearly 90% of women on public transport face some sort of harassment while more than 50% trans individuals refused healthcare reporting due to constrains and prejudiced value judgement about their gender identities.

Thus, the issue is not unilinear or just about visibility; it is about *infrastructure being complicit in exclusion*. What is often termed as 'smartness' in cities- automated transport corridors, surveillance policing, or digital governance may actually deepen existing inequalities when designed without gender sensitivity. Digital public services that assume universal smartphone access or financial autonomy fail to account for the gendered digital divide, especially among lower-income communities.

To challenge this, urban inclusion must move beyond symbolic gestures or isolated interventions. A few interconnected domains demand urgent attention:

## Mobility and safety

More than just surveillance, cities must ensure emotionally safe and physically navigable public spaces. Lighting, transport frequency, and inclusive signage can transform how marginalised genders move through space.

For example; Vienna in its 'Gender Mainstreaming in Urban Planning' initiative redesigned sidewalks, pedestrian crossings, lighting, and park layouts to better reflect how women and children use public space. Sidewalks were widened after data showed women tended to walk more with children or groceries. Lighting was adjusted to enhance nighttime visibility in underused areas. (UN-Habitat, 2012).

Bogota, Columbia under its 'Safe Cities for Women' program, the city reconfigured bus stops, increased security presence on the Trans Milenio Bus Rapid Transit (BRT) system, and introduced women-only buses during peak hours to reduce harassment. Notably, complaint hotlines and response units led to a 21% increase in harassment reports, improving institutional responsiveness (UN Women, 2020).

Seoul implemented gender-sensitive transport design by adding surveillance, emergency bells, and pink parking zones near exits for late-night commuters. The city also introduced "safe return home" apps integrated with real-time CCTV monitoring and community policing.

## Health and sanitation

Inclusive design must incorporate the bodily realities of menstruation, pregnancy, and transition. The absence of clean and secure restrooms, for instance, disproportionately impacts those already made vulnerable by their social identities.

Pune, India: Pune's "Toilet for Her" project built and maintained gender-segregated, safe, well-lit public toilets that were also trans-inclusive, with sanitary napkin dispensers, ramps, and CCTV. A maintenance partnership with women's self-help groups ensured sustainability (Jain, 2021). Cape Town, South Africa: In informal settlements, the Sanitation in Informal Settlements Program (SISP) emphasized communal toilets designed to protect women and LGBTQIA+ individuals from assault, with solar lighting, surveillance, and water access (World Bank, 2018).

San Francisco, USA: Introduced all-gender public restrooms across city facilities, including public libraries, government buildings, and parks, following the "Gender Inclusion Policy". The program also mandates signage that is non-binary and uses inclusive language like "All Genders Welcome."

## Digital Inclusion

A digitally enabled city cannot be built on the backs of those digitally excluded. Access to affordable data, platform literacy, and the ability to participate in digital governance must be seen as gender justice issues.

Nairobi, Kenya: Initiated digital literacy drives through community internet kiosks in low-income areas. Special modules for LGBTQIA+ youth covered digital safety, reporting online abuse, and accessing health or legal services anonymously (Digital Rights Foundation, 2019). Kerala, India: Through Kudumbashree, a women-led poverty eradication program, digital literacy was embedded into urban planning at the ward level. Over 4.3 million women were digitally trained, enabling gender-responsive budgeting and access to services (Government of Kerala, 2020).

Barcelona, Spain: The "Decidim" participatory platform allows residents to engage in digital consultations, budgeting, and infrastructure feedback. The platform is explicitly coded for equity, with anonymised inputs and digital accessibility standards to avoid biases against marginalised genders or illiterate users (Barandiaran et al., 2020).

## Housing and spatial ownership

Urban living must support autonomy and agency. Safe rental options, gender-inclusive shelters, and housing cooperatives can provide more than a roof, they can offer freedom and belonging.

Vienna, Austria: The "Gemeindebauten" social housing model integrates participatory planning, mixed-income residents, and gender-neutral allocation policies. Women-led housing co-ops are prioritised, and building design ensures shared courtyards and safe entryways (UN-Habitat, 2012).

However, the real shift lies in *reclaiming who holds the pen in planning processes*. **Participation means power**. Women and LGBTQIA+ persons must not only be consulted but placed within the core decision-making architecture, defining priorities, shaping budgets, and evaluating success. And crucially, their voices must be heard *not as a monolith* but in their rich diversity marked by intersections of class, caste, religion, disability, and age.

There are models to learn from, though not to copy blindly. Still, it's worth remembering that no imported model will work without deep contextual understanding. Inclusive smart cities cannot be engineered from above. They must emerge from **listening, co-creating, and rethinking what success means** in urban life.

Ultimately, at stake is not just access to services or digital tools, it is the fundamental right to belong in, shape, and transform the city. A truly smart city is not one filled with sensors and apps, but one where every resident, regardless of identity, can live with dignity, security, and voice.

## Building Minds, Not Just Cities: Integrating Mental Health and Psychosocial Support

In South Asia, urbanization is occurring at an alarming rate, with megacities such as Dhaka, Mumbai, and Karachi experiencing significant changes due to the implementation of metro rail services, expressway development, and the redevelopment of mass housing (WHO, 2022). Such infrastructural improvements, which are integrated with the plans of a smart city, will benefit the efficiency of transportation, access to housing, and economic viability (UN-Habitat, 2020). Nevertheless, because of these advancements, the marginalized communities and existing informal settlements are usually displaced, thus causing extreme imbalances in their social and psychological health (Cernea, 2000; Srinivasan and Nuthalapati, 2020).

Displacement not only implies a change of residence; it destroys social bonds, familial connections, and emotional attachments, particularly in helpless populations like women, older people, and youth (Bhugra & Becker, 2005; Fernandez, 2014). Although most of the projects have provisions of financial compensation or housing options, most are inadequate to record the long-term impacts of the psychological health effects caused by the trauma of resettlement (Lakshman & Rajan, 2023).

The AECom landscape in infrastructure planning is just one of the symptoms of a larger policy silo: the mental health is ignored by the agencies of the urban development and transport ministries that center their work on engineering and logistics, and the domain of psychosocial care is almost always assigned to underfunded and overstretched health ministries (Saxena et al., 2007; WHO, 2014). It is the argument made in this paper to incorporate Mental Health and Psychosocial Support (MHPSS) services into planning, implementing, and following up infrastructure projects to re-conceptualize the view of development as not merely a physical, but an anthropocentric adaptation of resilience (Patel, 2007).

Urban development causes forced displacement, which is a significant factor in the psychological distress of victims, though it has received less theorization in the policy of infrastructure (Cernea, 2000). The studies conducted in South Asian settings indicated that forced evictions and relocations in slums create social alienation, depression, and collapse of community trust (Bardhan et al., 2015, 2009; Amzad, 2019). It is even worse when relocation entails removing the residents to new places that are miles away from their initial

neighborhoods, thus breaking the connection to work, education, and social interactions (Das, 2015).

The nature of development-induced displacement (DID) provides a rationale behind the idea that development projects that can be conceived as either economically or otherwise beneficial may ultimately cause involuntary traumas where the so-called protections never tackle the occurrence of non-economic losses to identity, place and a sense of psychological stability (Vanclay & Kemp, 2017; Kothari, 2003). It has also been reported in the studies that post-traumatic stress-like symptoms, anxiety, and somatic concerns are higher in communities that have faced forced displacement due to infrastructure development, especially when the support mechanisms of the community fail (Ager & Strang, 2008; Jain & Jadhav, 2008).

International guidelines on mental health and psychosocial support, such as IASC Guidelines on Mental Health and Psychosocial Support in Emergency Settings (2007) and UNHCR Operational Guidance on Refugees (2013), present a clear roadmap on how to include mental health in the response to complex emergencies and forced migration. This has been difficult to apply to the situation of what might be called development contexts, such as the construction of roads or mass resettlement schemes, in which the psychological impact is equally drastic (Miller & Rasmussen, 2010; IFRC, 2018).

The World Health Organization has underlined that the state of mental health is defined by factors of housing stability, income security, access to education, and community cohesion, all of which are disrupted by forced relocation (WHO, 2014). Besides, Patel (2007) and Desjarlais et al. (1995) have demonstrated that psychosocial effects of urban displacement cannot be addressed by psychosocial systems in the low and middle-income countries (LMICs) to which South Asia belongs. This exposes communities who are displaced to protracted emotional distress, particularly due to a lack of formal support systems.

## Policy Design and Key Elements

This paper suggests that to prevent the psychosocial vulnerability to the infrastructure-led displacement, Mental Health and Psychosocial Support (MHPSS) should be incorporated throughout the different stages of the public infrastructure project implementation (IASC, 2007; Oswald et al., 2024). They are the stages before the displacement, assistance during the moving process, and follow-up after the displacement.

During the pre-displacement stage, institutionalization of proactive communication and psychosocial preparedness is necessary (Bhan, 2009). The community members must be

involved in consultations not only about the planned logistic schedules but also about emotional and social disturbance (Das, 2015). Screening at the baseline would be able to determine prior vulnerabilities at the level of communities, particularly those at high risk, including women, the elderly, and individuals with disabilities (WHO, 2022).

When relocating, infrastructure projects must incorporate physical counseling services and mobile mental health units on-site to get direct assistance (UNHCR, 2013; IFRC, 2018). These services may assist people to overcome the trauma caused by relocation, incuring the prospective threat of psychological damages which could otherwise be long-term. Breakdown in social cohesion can be counteracted effectively through community-based interventions like the creation of safe places of collective expression, support groups, etc. (Ager & Strang, 2008; Jain & Jadhav, 2008).

The long-term monitoring and follow-up evaluation are important in the post-displacement stage as a way of evaluating and meeting the psychosocial needs (Miller & Rasmussen, 2010). Women-led organizations of peer support were found to foster community resilience and maintain mental health through promotion (Amzad, 2020). MHPSS can be integrated in primary care in resettlement locations, and this enables access to care and support continuity (Saxena et al., 2007). To ensure institutionalized interventions, it is necessary to revise Environmental and Social Impact Assessments (ESIA) and Resettlement Action Plans (RAP) to contain psychosocial risk indicators (Chen et al., 2022). MHPSS provisions should be obligated by international funding agencies like the World Bank and Asian Development Bank during the eligibility conditions of projects in the frameworks of ESG (ADB, 2022). The local governments can coordinate NGOs and academic institutes to implement this model and customize services to cultural and contextual requirements (Jain & Jadhav, 2008).

## Institutional Roles and Stakeholders

Synergetic incorporation of the stakeholders is imperative in the successful integration of MHPSS in infrastructure projects. Infrastructure projects are mostly undertaken by the urban development and transport ministries, which have little to no mandate and expertise in dealing with psychosociological outcomes (UN-Habitat, 2020). Therefore, ministries of health, which are in a better position to plan and manage MHPSS programs, should make mental health an issue to be shared collectively (Patel et al., 2007).

The local governments play an important middle-level role, particularly in the mobilisation of communities and in the last-mile service delivery (Kumar & Singh, 2022). Culturally

competent counseling, awareness-building sessions, and social support networks could be offered through NGOs and community-based organizations (CBOs) that have set up work in informal settlements in urban areas (Siddikī, 2024).

Financial support and guidance as MHPSS interventions can come in the form of international development agencies like the World Bank, ADB, and UN-Habitat (ADB, 2022; UN-Habitat, 2020). Donor agencies also contribute to determining social safeguard standards as well as providing incentives for the adoption of policies. Institutions of higher learning and mental health practitioners will be instrumental in the formulation of context-responsive assessment playbooks and carrying out rigorous impact assessments (Cosgrove et al., 2020).

## Obstacles and Constraints

Although this policy shows the promise of transformation, it is subject to a number of structural and operational issues. One is that institutional barriers to coordination have been perpetuated by the ongoing siloing of the sectors (health, housing, and transport) (Saxena et al., 2007). The inclusion of MHPSS in infrastructure projects would also involve political efforts at the top level and the redesigning of institutions (Patel et al., 2018). Second, South Asian culture places a lot of stigma on mental health and thus, usually underreports and is not willing to seek support (Jain & Jadhav, 2008). Community work and policy priorities may then be impeded by such a social stigma. Third, the region lacks adequately trained mental health professionals, and few can be used to deliver the programs on a large scale (WHO, 2014). Fourth, mental health risk indicators are not required in some of the available tools used to design projects, like ESIs, leaving gaps in risk analysis (World Bank, 2021). Lastly, the donor conditionalities are subject to inconsistency or half-baked implementation, and this also pertains to the sustainability of MHPSS integration (ADB, 2022).

## Suggestions and Strategic Solutions

A number of action steps can be useful in solving these challenges. First, inter-ministerial task forces should be put in place to ensure planning of infrastructure and health at the onset (UN-Habitat, 2020). The existing regulatory frameworks can be reviewed in such a way that MHPSS should be included in both ESIA and RAP guidance (World Bank, 2021).

To deal with stigma, awareness has to be part of the project outreach, within the outreach as well as culturally appropriate communication strategies (Jain & Jadhav, 2008). They are supposed to be co-developed by the local stakeholders to be relevant and acceptable.

Limited human resources may be alleviated by providing training on the basics of psychosocial support and trauma-informed care to paraprofessionals (e.g., community health workers and peer educators) (IFRC, 2018). Such cadres have the potential to provide services in underserved places and gain trust among the communities.

Governments and donors would be well-advised to invest in the pilot projects testing the viability and effectiveness of MHPSS integration in cities such as Dhaka, Mumbai, or Colombo to establish empirical evidence (Kanai, & Schindler, 2022). These pilots ought to have systems of monitoring and evaluation to create data on scaling up.

In the effort of South Asian cities turning towards smart and sustainable development, it is also important that they need to embark on socially responsible and psychologically astute urban planning. Incorporation of mental health into construction activities makes the process of displacement a smooth one, rather than an ordeal that violates human dignity and well-being (Oswald et al., 2024).

Such a policy is novel and consistent with other international structures, including SDG 3 (Health and Well-being), SDG 10 (Reduced Inequality), and SDG 11 (Sustainable Cities and Communities) (UNDP, 2020). South Asia has the opportunity to show the way in creating not only smart, but also emotionally resilient cities of the future through incorporating MHPSS into the governance of infrastructure.

## Coexistence, Not Control: Welfare of the voiceless

In the ever-growing sprawl of modern cities, there is one presence that continues to be rendered invisible: animals. From stray dogs navigating traffic in Indian metros to urban monkeys adapting to shrinking forests, animals have long been part of human settlements. And yet, urban planning continues to treat them as afterthoughts, or as problems to be eliminated.

This omission is not coincidental. It reflects a larger view of cities as purely human domains, built for productivity, commerce, and control. In such a view, the presence of animals, be it dogs, cattle, birds, or urban wildlife, is framed as disruptive. The aspiration for a "clean" and "smart" city becomes synonymous with exclusion—of disorder, unpredictability, and species deemed inconvenient.

However, this understanding is fast becoming outdated. Urban ecosystems are deeply entangled, and our relationship with non-human species is not merely ecological, it is cultural, moral, and, increasingly, political. Across the Global South, animals are not peripheral; they are part of lived urban life, linked to livelihoods, religious practices, waste systems, and even emotional wellbeing.

Take the example of Jaipur, which has introduced community feeding zones, sterilisation initiatives, and GPS-enabled monitoring for stray dog populations. While not without flaws, these efforts suggest a different vision: one where coexistence is managed with care, not cruelty. Similar models in cities like Thiruvananthapuram or Kathmandu have also shown that conflict mitigation, veterinary access, and civic awareness can replace punitive approaches.

The question, then, is not whether animals should exist in cities, but how we choose to live with them. A truly inclusive smart city cannot be defined only by broadband speed or efficient traffic. It must also be measured by how it treats its most vulnerable beings—human and non-human alike. In this context, urban planners and policy-makers must integrate animal welfare into environmental sustainability, public health, and ethical urbanism frameworks. Humane birth control, access to clean water, and designated shelters are not luxuries; they are signs of a city that recognises compassion as a civic virtue.

After all, the future of cities does not belong to humans alone. And if our goal is to build cities that are truly intelligent, they must be ones that make room for empathy, interdependence, and coexistence.

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