Community based Usage of Water and Sanitation (WASH) in Informal Settlements and Slums in Bengaluru

Acknowledgements

Acronyms

AMRUT	Atal Mission for Rejuvenation and Urban Transformation
APSA	Association for Promoting Social Action
BBMP	Bruhath Bengaluru Mahanagara Palike
BDA	Bangalore Development Authority
BSUP	Basic Services for Urban Poor
BUPP	Bangalore Urban Poverty Alleviation Programme
BWSSB	Bangalore Water Supply and Sewerage Board
CDP	City Development Plan
Chawl	Low-income Tenement
CIVIC	Citizens' Voluntary Initiative for the City
CURE	Center for Urban and Regional Excellence Urban
EECD	Early Childhood Care and Development
ESG	Environment Support Group
FGD	Focus Group Discussions
GIS	Geographical Information Systems
Hakku Patra	Title Deed (in Kannada)
HRA	High Risk Areas
IBM	Integrated Behaviour Model
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
Khata	Title Deed
Kere	Lake (in Kannada)
Kote	Historical Fort Area (in Kannada)
K- Ride	Rail Infrastructure Development Company (Karnataka) Limited
KSDB	Karnataka Slum Development Board
KUIDFC	Karnataka Urban Infrastructure Development and Finance Corporation
LIS	Low Income Settlement
LULC	Land use and Land cover
NID	National Immunization Day
NIMHANS	National Institute of Mental Health & Neurosciences
Pete	Historical Market Area (in Kannada)
PHC	Public Health Centers
PMAY	Pradhan Mantri Awas Yojana
Rajakaluwe	Storm Water Drain (in Kannada)
RAY	Rajiv Awas Yojana
RTI	Right to Information
RWA	Residents Welfare Association
TMC	Thousand Million Cubic
SCM	Smart City Mission
UDD	Urban Development Department
UIG	Urban Infrastructure and Governance
ULB	Urban Local Body
UPHC	Urban Primary Health Center
WASH	Water, Sanitation and Hygiene

Contents

Executive Summary

Introduction to Centre for Urban and Regional Excellence (CURE) and the Study

The Centre for Urban and Regional Excellence (CURE) is a key partner in the Support for Urban Water and Sanitation in India (SUWASI), a USAID initiative that aims to improve water and sanitation access across India. CURE is also providing technical support to the National Urban Livelihood Mission (NULM), while facilitating convergence with the Swachh Bharat Mission (SBM) and the Atal Mission for Rejuvenation and Urban Transformation (AMRUT). As part of these efforts, CURE is advising the Government of India (GOI) on infrastructure development, providing holistic solutions for resilient communities, citywide slum upgrading, and environmental resilience planning.

The following study is aimed at improving the quality-of-service provision in slums and informal settlements in Bengaluru especially for vulnerable individuals. The study aims to develop an appreciative enquiry to citywide slum upgrading, focusing on behavioral change, community engagement and participatory methods.

Mapping and Identification of Study Areas

The research involves conducting a mapping of slums and informal settlements in Bengaluru, identifying different categories of slums in the city and conducting consultations with stakeholders, particularly women.

Mapping of slum development indicated that, between 1990 and 2011, major clusters of informal settlements emerged around Mahadevapura/ Whitefield (northeast Bengaluru) and Jayanagar (south Bengaluru). Since 2014, informal settlements have increasingly developed on the periphery of the city. Some have developed around existing settlements in the central area, hidden in plain sight, occupying the interstitial spaces of the city. O*fficially*, informal settlements in Bengaluru are classified into two categories -*Notified and Non-notified slums*. The literature review identified a new classification of settlements-*new migrant settlements, very low-income settlements and low-income*

settlements, which could provide a more detailed understanding of the different types of informal settlements in Bengaluru.

Based on the mapping, literature review, classification (notified, non-notified, and other), and in conjunction with Association for Promoting Social Action (APSA), the nonprofit partner organization with accessibility to communities in informal settlements in Bengaluru, four slums were selected for the study based on and. The four slums included:

- The Notified slum of Byrasandra, Jayanagar
- The Non-notified slum on ISRO land in Indiranagar
- The low-income settlement of Islampura,
- Migrant settlements in Pai Layout, near Whitefield/ Mahadevapura

Broad Findings of the Study include critical Issues such as:

1. ***Inequity in the Quality of Infrastructure, Maintenance, and Service Provision in Slums/Informal Settlements*:**

   o While the municipality provides basic services to most settlements, the provision of services is often ad hoc, dependent on political and interpersonal relationships, regardless of whether the settlement is notified or non-notified.
   o The quality-of-service delivery is inconsistent, with issues in material quality and financing, with much of the infrastructure aging and inadequate for current conditions.
   o Coordination between urban local bodies (ULBs) and parastatals is inconsistent, particularly in slums. This is particularly the case in non-notified slums.
   o Funding for Urban Infrastructure and Governance (UIG) services to both Notified and Non Notified slums in Bengaluru is barely 10% of all allocated funding, thus making communities fend for themselves.

2. ***Techno-Bureaucratic and Over-Engineered Policy Frameworks*:**

   o BBMP and BWSSB rely on performance benchmarks that are overly quantitative and bureaucratic, with minimal focus on socio-environmental or economic factors.
   o The government hasn't shifted from providing one tap for 40 households to one tap per household under AMRUT's *water-at-home* scheme.
   o Community level benchmarks are absent in both notified and non-notified slums.

3. ***Lack of Local-Level Participation:***

   o Residents in slums (*notified and non-notified*), especially women, are rarely included in urban planning decisions (City Development Plans etc) regarding their settlements
   o Women are rarely involved in discussions about improving WASH (Water, Sanitation, and Hygiene) services, including placement of public and community toilets, maintenance, and management of water and sanitation in their settlements.

4. ***Non-Transparency and Gender Imbalances in Grievance Redressal*:**

   o Women often lead infrastructure grievances and demands, driven by caste imbalances between the slum's male residents and the official engineers.
   o Women spend disproportionate time demanding services, assuming their time holds less value than men's.

- o Municipality staff engagement with women is inconsistent, mainly due to lack of capacity and gender training. Most staff are men, which exacerbates the issue.

5. ***Lack of Capacity and Training on Gender, Climate Change, and Communication***:

   - o Most community engagement is limited to lower-level staff such as water meter readers, line engineers, and sanitation inspectors, who are often in "firefighting" mode and lack the authority or resources to push for policy-level changes.
   - o Many staff (both senior and junior) have little training in gender-sensitive approaches or in handling women's issues.
   - o Local municipality offices often lack essential facilities such as bathrooms and waiting areas for women.

Aspirations of the Consultation Respondents

- All the women respondents, regardless of settlement classification, want to live in safe and 'better' neighbourhoods, with regular and clean water supply, adequate sewage systems and with social services like schools, hospitals, street lights, markets, accessible transportation, police stations and parks and recreational spaces.
- Most of the women want safer roads and better access to transport, especially to be able to walk back safely at night from the bus stand after work.
- All the women want concrete houses with inbuilt toilets, to use at night, when pregnant and when unwell.
- Most women want to stay in the area they are in, due to long connections to their settlement, community bonds and access to work and education. No one wants to be relocated even if the government offers them other housing options.
- None of the women want to return to their native villages where they feel they have no rights or freedom.
- All the young women want 'room' to live in and aren't too concerned about the legality of the settlements they live in

Some Suggestions to address the challenges include:

	For Notified Slums	*For Non-Notified Slums*
Access to Power and Bureaucracy	***Integrate Slum Community Plans*** *into city-wide urban planning* ***such as master plans****, infrastructure development projects****, and*** *policy decisions****.*** ***Include dedicated government officials*** *at the ward level to* ***focus on*** *slum development,* gender and rehabilitation***.*** ***Streamline Service Delivery*** *to government services for direct access to housing development programs****,*** *healthcare****,*** *and public welfare schemes.*	***Establish clear Processes to Regularization*** *to allow residents to access legal protections, land rights, and formal services, instead of ad hoc access to services.* ***Gender and caste inequity*** *needs to be addressed at the ward level bureaucracy;* ***Engage more women*** *and SC to liaise with community.*
Ownership, tenure and investment in the future	***Streamline Service Delivery*** *to government services such as clean*	***Provide immediate and flexible solutions****, such as temporary housing,*

	water, sanitation facilities, and waste management services	ad-hoc service delivery, and long-term advocacy for regularization
Quality of infrastructure, maintenance and service provision in slums and informal settlements	**Formal Infrastructure Investments** such as in-situ upgrading of housing, drainage systems, water supply networks, and electricity grids through state-sponsored programs, to improve the overall quality of infrastructure without displacing residents	Invest in **improvised, short-term solutions** like mobile sanitation units, temporary water tanks, mobile health clinics or solar-powered street lights and basic sanitation facilities to meet the immediate needs of residents**.**
Infrastructure Technology	**Smart Water Management**: Introduce smart water meters and leak detection systems to monitor water usage, reduce wastage, and equitably water supply distribution. **Mobile Apps for Monitoring:** Deploy mobile applications for residents to report sanitation issues such as clogged drains, faulty toilets, or water supply disruptions. These apps can also offer reminders for water usage, conservation, and sanitation maintenance. **Tech-Enabled Waste Management**: Use technology like GPS-enabled waste collection routes, smart bins, and sensors to improve waste management efficiency, track the waste collection process, and prevent overflow in slums. Women should be consulted on the design and placement of infrastructure, particularly toilets, and water points to ensure accessibility and safety.	**Low-Cost Sanitation Technologies**: Implement cost-effective and locally adaptable technologies like composting toilets, bio-digesters, and community-based wastewater treatment systems. These systems are more sustainable for areas without access to formal sewage networks. **Mobile Solutions for WASH Issues**: Use mobile technology to raise awareness about sanitation best practices (e.g., safe toilet use, menstrual hygiene management). Provide basic sanitation information via SMS or mobile apps to help communities manage their water and sanitation needs effectively. **Community-driven solutions** (such as the installation of communal toilets or water kiosks) should be supported by NGOs or community organizations.
Grievance Redressal and Public Participation	**Improve existing grievance systems** - more transparent, user-friendly and gender-sensitive **Comprehensive training** for municipal staff, focusing on gender-sensitive grievance handling, communication with women Create **regular feedback mechanisms** with **elected representatives** to hold them accountable.	**Encourage informal, community-led** structures to ensure that women's voices are included in decision-making about local services. **Strengthen advocacy groups** to ensure these complaints are escalated and addressed.
Policy Framework for Service Providers	Implement systems for regular **Data Collection** of WASH-related data (e.g., water quality tests, toilet usage rates); make the data accessible to residents and local authorities. Conduct **independent audits** of WASH services to assess performance against benchmarks and ensure accountability.	Establish **Community-led monitoring** and reporting systems, where residents can report WASH-related issues via SMS, apps, or community committees. Leverage **low-tech or mobile solutions** for monitoring service delivery and

		tracking improvements in WASH infrastructure and behaviour
Financing	*Increase allocation of Urban Infrastructure and Governance funds (UIG) to BSUP/ RAY components*	*Access infrastructure funding through urban planning methods such as town planning mechanism, TDR etc; prioritize gender, social climate and environmental safeguards*

Introduction

Bengaluru is increasingly being affected by the combined effects of climate change and rapid urbanization. Erratic rainfall, rising heat, longer hot months and increased flooding are only a few of the impacts. The brunt is largely borne by people living in low income and informal settlements.

According to the Karnataka Slum Development Board (KSDB)[1], there were 2,804 slums[2] in the state in 2011, housing 40.50 lakh people, which represents approximately 22.56% of the State's urban population[3]. Of those, 597 slums were located in Bengaluru.

Since 2011, the city has expanded witnessed rapid growth, and is one of the fastest developing cities in India[4]. As a result, Bengaluru now hosts over 2000 informal settlements spread across it, with only 25% having access to basic services[5].

With limited low-income housing options, vacant lands, low-lying areas, and spaces between construction sites have been increasingly occupied by informal settlements. These range from notified slums to private low-income colonies, construction sites, and peri-urban villages. The majority of these settlements are informal, without legal tenure, and have little to no access to essential infrastructure, water, and sanitation (WASH) facilities. The housing structures in these settlements are often built with materials such as tin, asbestos, and tarpaulin. While these materials are easily dismantled, they absorb heat during the hot summer months and are vulnerable during Bengaluru's heavy monsoon rains. Homes are typically constructed in close proximity to each other, with little natural light or ventilation, further exacerbating the challenges faced by residents. At present, climate-responsive strategies in Bengaluru remain largely broad developmental policies, with limited focus on addressing the specific needs of informal settlements and their inhabitants.

For a more nuanced approach to the climate change and developmental issues more effectively, it is crucial to adopt a bottom-up, ethnographic lens to assess these communities. The communities that live here need to be studied in terms of their relationship with the settlement (*how long they have lived there, how long they plan to stay, why they live there*), their relationship with the infrastructure of the settlement, both provided to them and developed by them (*especially water and sanitation related*), their investments in housing related infrastructure, their relationships with government and

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[1] https://ksdb.karnataka.gov.in/page/Slums/Abstract+Details+Of+Slums/en
[2] 'Slums' have been defined under Section 3 of the Slums Areas (Improvement and Clearance) Act, 1956
[3] based on 2011 census data
[4] https://bpac.in/Bengaluru-population-growth-consequences-and-possible-solutions/
[5] https://timesofindia.indiatimes.com/city/bengaluru/study-reveals-2000-slums-in-bengaluru-govt-lists-only-597/articleshow/65096665.cms

other powerbrokers, behavioral issues related their engagement with water and sanitation infrastructure (especially post covid). Special focus should be on gender, diversity and disability related factors.

Center for Urban and Regional Excellence (CURE) is providing technical support to the Govt of India's NULM Mission (National Urban Livelihood Mission) and bringing convergence with the Swachh Bharat Mission and the Atal Mission for Rejuvenation and Urban Transformation (AMRUT). As part of this endeavour, CURE is advising the Urban Development Department (UDD), Government of India on basic infrastructure development as wholistic solutions and resilient communities, citywide slum upgrading and environmental resilience plans. Specifically, it focusses on water supply; sewerage and septage management; storm water drainage; green spaces and parks; and non-motorized urban transport in slums and low-income settlements. This includes water supply and metering facilitation in slums in the city. CURE emphasizes the focus on behavioral change, community engagement and participatory methods.

While the facilitation of water and sanitation are considered critical to the upgradation of slums, especially from a health and hygiene perspective, there is a growing cognizance at the policy and settlement level of the correlation between income opportunities, social capital, employability and social status with upgrading infrastructure. The following study is aimed at improving the quality-of-service provision in slums/ informal settlements in Bengaluru, under the AMRUT program, especially for vulnerable individuals.

Methodology

This study[6] provides a broad-brush examination of the community and behavioral aspects of the provisioning of and access to water and sanitation facilities in Bengaluru slums/ informal settlements. It focuses on settlements in terms of settlement development, community engagement, behavioral change, participatory processes, information and communication dissemination, and gender, diversity and disability related issues in terms of the resilience discourse (at the individual, household and community) and climate change narrative.

Key steps in the study include:

Understanding the Context
The study begins with an assessment of WASH (Water, Sanitation, and Hygiene) interventions in the last five to ten years in Bengaluru from an informal settlement perspective. This context helps to identify gaps, opportunities, and the challenges faced by residents of these settlements in accessing adequate water and sanitation services. The following methods were used to gather data and provide insights into the situation:

- *Literature Review*- Analysis of existing research, policy documents, and other relevant papers on low-income settlements in Bengaluru. This review helps to understand the historical context of WASH interventions, identifying previous approaches, their successes, and limitations
- *Broad-brush Mapping of slums/ informal settlements* to understand the geographic spread of informal settlements across Bengaluru. Using data collected from studies conducted between 2011 and 2024, this mapping effort captures the scale of informal settlements and identifies key

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[6] *Note on the Study: this is not intended to be a comprehensive study but an observational study in selected low-income settlements where the team has networks with civil society organizations. Data collected has been quantified to the extent possible. Extrapolations are best estimates.*

characteristics such as population size, access to basic services, and infrastructure gaps. (see *Annexure 1* for Maps)

- *Semi-structured Interviews* were conducted with key members of the nonprofit, activist, academic, and government sectors in Bengaluru to gather insights into WASH challenges and interventions. Mr. Sandip Aniruthan, SwarajforCities, a key expert on urban governance and slum upgrading, provided insights into the policy landscape and community-based solutions in urban water and sanitation. Ms. Bhargavi Rao, Environment Support Group (ESG), offered an environmental perspective on the sustainability of existing WASH solutions and the importance of climate-sensitive interventions. Ms. Kathyayini Chamaraj, Citizens' Voluntary Initiative for the City (CIVIC), shared experiences regarding community mobilization and advocacy efforts for improved water and sanitation access in Bengaluru's informal settlements. (see *Annexure 5* for Key Informant Interviews)

Identifying Study Settlements

The selection of settlements for this study was driven by several key criteria to ensure the inclusivity and representativeness of the research. These criteria focused on the **age**, **location**, **size**, **community composition**, **available infrastructure**, and **accessibility** of the settlements.

- The *mapping exercise* revealed a pattern of clusters of informal settlements in the *Jayanagar, South Bengaluru* area (an established area, but with significant informal settlements, particularly in peri-urban zones), the *KR Puram/ Whitefield area* (areas with rapid urbanization, where informal settlements have sprung up due to the expansion of industrial and commercial developments), and parts of the *northern peripheries* of the city (areas that are on the outer edges, where informal settlements have developed in response to the increasing demand for housing).

- In the key informant interviews, minority (specifically muslim) and scheduled caste (SC) community settlements were identified as a point of focus with unique socio-economic and infrastructural challenges.

- *Officially*, informal settlements in Bengaluru are classified into two categories -*Notified and Non-notified slums*. In addition to this official classification, a study[7] within the literature review proposed a **new categorization** of settlements in Bengaluru, which provides a more detailed understanding of the different types of informal settlements. This includes *new migrant settlements, very low-income settlements and low-income settlements*. In addition to the official classification, this re- categorization has been incorporated in the selection of settlements, to understand the differences in the states' approach to WASH across informal settlements.

- The role of the **Nonprofit Partner** is critical in the selection of the study settlements. The **Association for Promoting Social Action (APSA),** a respected nonprofit in Bengaluru, played an important role in identifying study settlements**.** After sharing data on *cluster areas* from the mapping exercise, the *classification* of informal settlements and the need to work in a minority settlement, APSA identified settlements where they have a presence and could assist in facilitating community consultations. These included:

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[7] Krishna, A., Sriram, M. S., & Prakash, P. (2014*). Slum types and adaptation strategies: identifying policy-relevant differences in Bangalore*. Environment and Urbanization, *26*(2), 568-585

Area selected based on Mapping and validated by Interviews	Classification of Settlement based on Literature Review	Settlements identified by APSA
In the Jayanagar/ South Bengaluru cluster	Notified Slum	Byrasandra (3rd Block, Jayanagar)
In the KR Puram/ Whitefield cluster	Migrant communities/very low-income shelters in middle-income settlement	Pai Layout, Mahadevapura
Minority (muslim) Settlement	(Very) Low-Income Settlement	Islampura, Vimanapura

In addition, the non-notified ISRO Colony slum on ISRO land in Indiranagar in west-central Bengaluru was included to compare services between officially notified and non-notified slums.

Location of Study Settlements in Bengaluru

Community Consultations

- **Qualitative methods** were employed to gain a deeper understanding of the lived experiences and challenges faced by residents in the study settlements. These methods included **transect walks** which involves walking through different parts of the settlements, observing the physical environment, infrastructure, and services firsthand, **participant observation**, which includes observing daily life, interactions, and practices related to water use, sanitation, and general community behaviour and Focus Group Discussions (FGDs).

- **Community consultations** were conducted in the study settlements leveraging APSA's deep community ties and local expertise. The consultations were facilitated through **Focus Group Discussions (FGD's)** in APSA run Early Childhood Care and Development (EECD) schools and training centres in the community. These venues provided a safe and familiar space for community members to gather and discuss issues related to **water, sanitation**, *and* **community infrastructure**. The consultations primarily engaged women, specifically mothers of children at the schools.

- The FGD's were conducted with women across the study settlements, with **23 women** participating in total. These discussions were guided by **semi-structured, open-ended questions**, allowing participants to share their experiences and concerns about water and sanitation access, safety, and infrastructure issues.

Understanding the Context- Informal Settlements in Bengaluru

Historical Growth and Imagery of Urbanism in Bengaluru

Bengaluru is the capital of the southern state of Karnataka in India. The total population of Karnataka is projected to increase from about 61 million in 2011 to 80 million by 2030[8].

The dominant imagery of Urban India and of Bengaluru City over the last two decades has been **rapid growth**. The rapid urbanization of Bengaluru over the last two decades has transformed the city from a modest retirement and educational hub into one of India's largest and most dynamic metropolitan areas. This growth has been driven by the influx of people seeking employment, education, and business opportunities.

Bengaluru, once a city of around 2 lakh residents in the 1980s, is now home to over **13 million people**[9]. Around **5,000** people arrive in Bengaluru daily, contributing to its rapidly expanding population[10]. This migration also includes **expats, non-resident Indians (NRIs), and people from abroad** who are drawn to the city's opportunities. The city's development has been fuelled by both **internal migration** from various parts of Karnataka (30%) and **inter-state migration** from other states and 5% expats[11] A significant portion of the population, approximately **65%**, comes from outside the state, reflecting the city's appeal as a major employment centre in India's **IT, education, and services sectors**.[12]

This dramatic population growth is a key driver of **urban expansion**, placing additional pressures on infrastructure, housing, and public services, particularly in **low-income settlements** and informal settlements that struggle to keep pace with the city's rapid development.

Bengaluru's urban history is marked by distinct phases of growth, with the city's development reflecting broader socio-economic, cultural, and infrastructural changes.
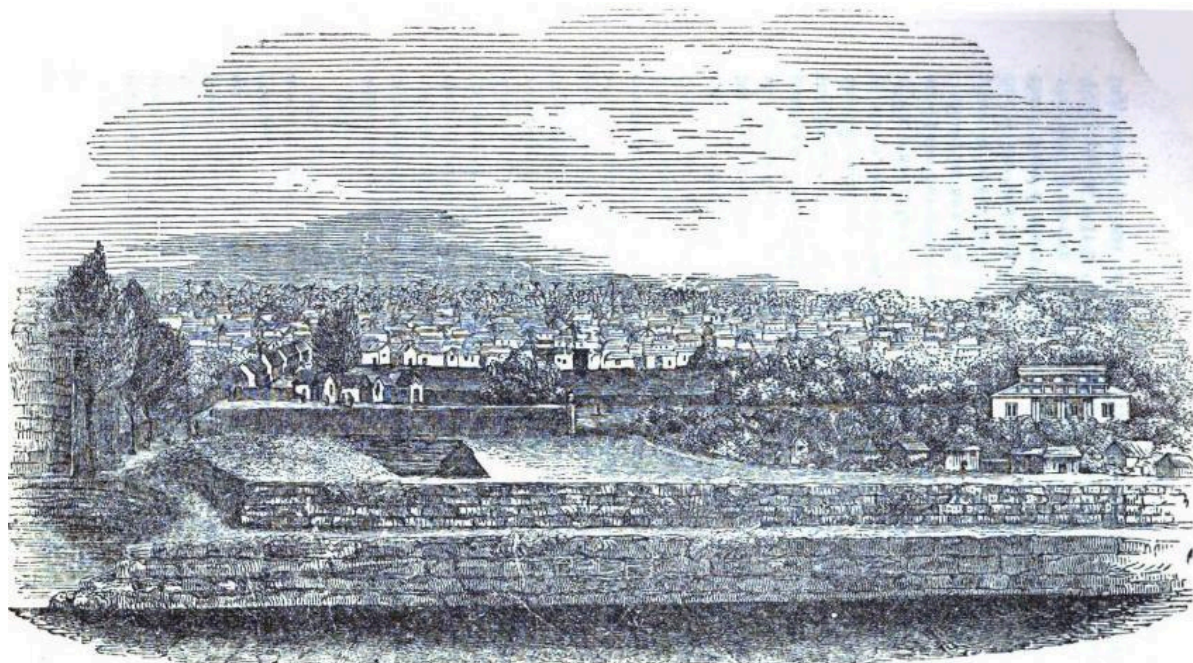
FORT AND PETTAH OF BANGALORE.

https://2030wrg.org/wp-content/uploads/2016/09/2030-WRG_Karnataka-HEA_Nov14_final.pdf
[9] https://worldpopulationreview.com/world-cities/Bengaluru-population
[10] https://timesofindia.indiatimes.com/city/bengaluru/5000-new-faces-every-day/articleshow/849903.cms
[11] ibid
[12] ibid

Historically, the city was divided into **Pete** (market areas) and **Kote** (fort areas), which were the heart of the city. These areas date back to the **1700s** and were home to the city's older and more traditional societies, predominantly Kannada, Tamil, Telugu, and Urdu speakers. The architecture in these areas is dense, with narrow streets and overcrowded conditions.

In contrast, the **cantonment** area, developed in the **1800s**, was designed with modern urban planning in mind. It featured **wider streets, greener spaces**, and a **grid pattern** for infrastructure, offering a more organized urban environment with better service provision. This marked the beginning of a more modern phase of Bengaluru's urban development.

The next major urban shift occurred in the **1900s**, particularly after the **plague** of the early 20th century. New neighbourhoods like **Malleswaram** (North Bengaluru) and **Jayanagar** (South Bengaluru) were built in grid patterns, incorporating more structured urban planning. These developments catered to a growing urban population, providing modern amenities and infrastructure.

In the **1950s and 60s**, Bengaluru became a hub for public sector companies like **Bharat Heavy Electricals Limited (BHEL)** and **Hindustan Aeronautics Limited (HAL)**, along with prestigious academic institutions such as the **Indian Institute of Science (IISc)**. These institutions created **gated communities** with housing and essential services (schools, hospitals) for their employees. Adjoining villages provided services to them and slowly moved away from practicing traditional agriculture

Aerial view of Indian Institute of Science (IISc) Campus and its neighbourhood. Office of Communications (OOC), IISc, Bengaluru

The **1990s** marked the advent of Bengaluru's rise as a **technology hub**. The city became home to numerous IT companies, leading to an increasing demand for housing. Much of the technology sector-built offices in the south of the city in areas like **Electronic City, Koramangala**, and **Indiranagar**. Housing for employees had to be sourced independently. Private sector developers

such as **Prestige, Sobha,** *and* **Purvankara,** began constructing high-rise apartment complexes, primarily to cater to the middle and upper-middle-class tech workforce. This development was largely concentrated in the southern parts of the city and along new infrastructure corridors such as the **Outer Ring Road (ORR);** in redeveloped mill properties like **Minerva Mills** near KSR Railway Station and **Binny Mills**, Yashwantpur.

In recent years, the growth has expanded beyond the tech-centric south of Bengaluru, with new developments emerging in the **north** (Yelahanka), **west** (Whitefield), and **east** (Peenya). The construction of the **Kempegowda International Airport** *in* **Devanahalli** has further contributed to the city's growth in the northern parts of Bengaluru, as new residential and commercial developments have emerged in these areas.

Despite its reputation as an economic powerhouse and technology hub, Bengaluru is a city of huge inequities and micro economies[13]. The city has shopping malls, mega entertainment complexes, swimming pools, golf courses, technology parks, multi-level parking centers and luxury high rise buildings. Meanwhile, **ghettoes of subsistence** of economically weaker sections of the city are proliferating quietly in the interstices of the city and are largely being ignored. Nearly one million poor live in slums, and about one third of slum dwellers fall below the poverty line[14]

Lower and lower middle-class communities have had to **fend for themselves**, organizing their own solutions for basic needs. Initially most moved into **peripheral villages** but gradually, as entire communities migrated to Bengaluru, have increasingly found themselves **occupying vacant plots**, often near **lakebeds** or other environmentally precarious areas. These settlements, while offering refuge, come with significant challenges, as they are often located in areas that are subject to **flooding** during the monsoon. Many of these settlements fall under the category of slums, though not officially designated as such.

Just a few miles down the road, we will find the other 'face' of Bengaluru (broken roads, cramped shops and houses, streets that flood during the monsoon). Slums are seen as failed parts of cities or as Ashish Nandy puts it, "unintended cities." These slums are blotches on the otherwise 'perfect' or ideal city. Rich and middle-class are not willing to pay their drivers, domestic helps and vendors "First World rates." Yet the sight of these unintended cities irks them (Shehari Safarnama, Travel. Culture. Stories Church Street- the Intended and Unintended Cities of Bengaluru)

[13] Benjamin, S. (2000). *Governance, economic settings and poverty in Bangalore*. Environment and Urbanization, 12(1), 35-56. https://doi.org/10.1177/095624780001200104

[14] Roychowdhury, S. (2011). Livelihood and Income: Informality and Poverty in Bangalore s Slums. https://www.southasia.ox.ac.uk/sites/default/files/southasia/documents/media/oxford_university_csasp_-_work_in_progress_paper_10_supriya_roychowdhury.pdf

Ambiguity in the Narrative on Slums

In Bengaluru and indeed all of India, the narrative on 'slums' is complicated and fraught with ambiguity, particularly due to the *lack of clear and standardized definitions*. The official discourse around slums often hinges on *legal and spatial definitions* that can be subject to interpretation and, in many cases, exclusion.

'Slums' have been defined under section 3 of the *Slums Areas (Improvement and Clearance) Act, 1956* [15] as *'areas where buildings are in any respect unfit for human habitation, are by reason of dilapidation, overcrowding, faulty arrangement and design of such buildings, narrowness or faulty arrangement of streets, lack of ventilation, light, sanitation facilities or any combination of these factors which are detrimental to safety, health and morals.'*

The *Karnataka Slum Areas (Improvement and Clearance) Act 1973*[16] definition is almost identical. The Census *of India* defines slums as "*a compact area of at least 300 population or about 60–70 households of poorly built congested tenements, in unhygienic environment usually with inadequate infrastructure and lacking in proper sanitary and drinking water facilities'*[17].

The state officially recognizes only *two types* of slums: officially declared *("notified*" or "recognized") slums, and a second category *(non notified)* that encompasses all other low-income settlements [18]

- **Notified Slums**- areas officially recognized as slums by the **municipality** or **urban local body**. These settlements are legally acknowledged, and residents may have access to certain services and benefits, but still often face challenges in terms of infrastructure quality and service delivery.
- **Non-Notified Slums**- settlements that are **not officially recognized** as slums by the urban authorities, even though they function as slums. Residents of these areas have little to no formal access to urban services or support, and their living conditions may be far worse than those in notified slums.

Only those living in notified slums can access state welfare packages and the government is responsible for the provision of basic services. However, even within *notified slums*, there are often issues with *spatial boundaries*. These slums are not always represented on official city maps, rendering them *invisible* to urban planners and local authorities. As a result, even those who live in officially recognized slums continue to face challenges related to *basic service provision* and *tenure security*.

As of 2011, Karnataka Slum Development Board (KSDB)[19], recorded 2,804 slums in the state, housing approximately 40.50 lakh people (22.56% of the State's urban population)[20]. Of these, 597 slums are recorded in Bengaluru. *No slums have been notified since 2011*.

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[15] https://delhishelterboard.in/main/wp-content/uploads/2011/12/SLUMACT_14FEB17.pdf
[16] https://ksdb.karnataka.gov.in/storage/pdf-files/Karnataka%20Slum%20Development%20Act.pdf
[17] Krishna, A., Sriram, M. S., & Prakash, P. (2014*). Slum types and adaptation strategies: identifying policy-relevant differences in Bangalore*. Environment and Urbanization, *26*(2), 568-585
[18] *ibid*
[19] https://ksdb.karnataka.gov.in/page/Slums/Abstract+Details+Of+Slums/en
[20] based on the 2011 census data

Constituency	No. of Slums	No. of Slums Declared	Undeclared	Huts	Popn.
Gandhinagar	24	13	11	1311	9679
Chikapete	10	7	3	1311	11194
Binnypete	15	13	11	1552	11988
Chamarajpete	30	22	8	5446	35155
Shanthinagar	10	8	11	551	4065
Basavanagudi	13	7	6	1464	8606
Yelahanka	25	14	11	3147	24893
Jayamahal	26	16	10	2259	17903
Malleshwaram	28	25	11	4447	34064
Bharathinagar	26	21	5	1533	12483
Shivajinagar	6	2	4	60	455
Jayanagar	50	25	11	7382	55557
Rajajinagar	19	10	11	1906	16412
Varthur	37	25	12	6743	35501
Uttarhalli	62	38	24	12226	91756
7CMC	155	0	155		
Total	**542**	**246**	**296**	**51338**	**369711**

Source: www.kscb.org.

List of Slums in Bengaluru City 2011[21]

Increasing Number of Slums and Migrant Population

A recent study divides the city's poor into old poor and new poor[22]. The **new poor** are **migrants** to the city in the last 1-10 years and typically live in temporary settlements, near construction sites, or in tenements in peripheral areas of the city. Many in this group are not recognized as slum dwellers by the government.[23]

During Covid, migrants in Bengaluru finally became visible as they headed back to their hometowns, many on foot. Lack of employment opportunity in hometowns and prospects for better incomes are the main drivers for migration[24].

Migrants in the City

National Statistical Office (NSO) uses the concept of 'Usual Place of Residence' criteria to define migrants. If a person continuously stayed at least six months or more in a place (village/town) other than the place of enumeration then at the place of enumeration he/she will be considered a migrant.

[21] Sudhakara H, *Urban Slum Dwellers – A Study in Bangalore City,* Shanlax International Journal of Economics 61, Vol. 2 No. 4 September 2014 ISSN: 2319-961X
https://www.shanlaxjournals.in/pdf/ECO/V2N4/ECO_V2_N4_008.pdf
[22] Roychowdhury, S. (2011). *Livelihood and Income: Informality and Poverty in Bangalore' s Slums*.
https://www.southasia.ox.ac.uk/sites/default/files/southasia/documents/media/oxford_university_csasp_-_work_in_progress_paper_10_supriya_roychowdhury.pdf
[23] *ibid*
[24] Centre for Budget and Policy Studies, *Life and Livelihoods of Migrant Labourers in Bangalore* 2021
https://cbps.in/wp-content/uploads/Life-and-Livelihoods-of-Migrant-Labourers-in-Bangalore-Short-Report-Webinar-Series-2021.pdf

The **old poor** live in inner-city slums in the central districts (Shivaji Nagar, Lalbagh etc.) which have existed for 40-70 years and are inhabited by two, sometimes three generations of original residents[25]. Three out of every 10 slums in Bengaluru have existed for over 40 years.[26]

As the population of the city has increased, the number of poor has increased. Most live in **non-notified slums** that lack the basic infrastructure services[27].necessary for a decent standard of living. These settlements include a variety of habitations and spaces including temporary squatter colonies, pavements, railway stations and migrant construction labour camps and villages.

In many cases, the poor living conditions in these settlements are **hidden in plain sight** within the broader urban fabric, often overshadowed by the wealthier, more visibly developed areas surrounding them. The residents of these settlements—often **migrants** or people from lower-income backgrounds—are typically involved in **informal labour** and provide services that sustain the city's functioning but remain **marginalized** in urban planning and development policies.

The original 597 slums of Bengaluru of 2011 have skyrocketed to over 2000[28].

Migrant Workers and Informal Economies

Interestingly, while **new migrants** often live in informal slums, they play a crucial role in the **functioning of the city**. Migrants often work in **low-wage sectors**, such as domestic work, construction, security, and retail. Despite contributing significantly to the city's economy, **slum dwellers**, especially **migrant workers**, are often viewed as a **burden** by wealthier city residents, and their living conditions remain largely **ignored** by policymakers.

Evictions and Displacement

One of the most pressing issues faced by slum dwellers is the constant **threat of eviction**. Even within **notified slums**, residents can face displacement, often without adequate compensation or relocation options. In 2013, over 5000 people were evicted from Ejipura with 48-hour notice[29] and 5000 people were evicted in Thubarahalli, Bellandur in 2018 with two days' notice[30] In the absence of specific legal protection, slum dwellers are liable to be evicted or displaced without compensation, destroying lives and livelihoods overnight. Under the **Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act (RTFLARRA) of 2013**, families who occupy land acquired by the state for **public purposes** are entitled to **rehabilitation**, even if they lack formal land titles. However, the reality is that many of these families face **evictions without compensation**, exacerbating their vulnerability.

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[25] *ibid*

[26] Schenk. R (2001), *Living in India's Slums*, New Delhi, Manohar

[27] basic services include site level infrastructure services such as water supply and sanitation, drainage, roads, street lighting, footpaths and community facilities.

[28] *Studying the Real Slums of Bengaluru'* and '*Characterising Irregular Settlements Using Machine Learning and Satellite Imagery*', Sanford School of Public Policy at Duke University, Omidyar Network, North Carolina State University, and the University of North Carolina 2017
https://timesofindia.indiatimes.com/city/bengaluru/study-reveals-2000-slums-in-bengaluru-govt-lists-only-597/articleshow/65096665.cms

[29] "*Governance by Denial: Forced Eviction and Demolition of Homes in Ejipura/Koramangala, Bangalore.*"2013. Housing and Land Rights Network (HLRN) and the People's Union for Civil Liberties (PUCL). https://www.hlrn.org.in/documents/Bangalore_Fact_Finding_Mission_Final_Report_June_2013.pdf

[30] https://citizenmatters.in/bangalore-migrant-eviction-bbmp-bescom/

Types of Slum Settlements in Bengaluru

A recent study[31]. conducted by Duke University identifies three distinct types of slum settlements in Bengaluru focusing on the economic status and settlement conditions of the residents. These types of settlements are typically not formally recognized or notified by the state or municipality, and thus, lack access to the basic services, welfare schemes, and legal protections typically available to **notified slums.** All these settlements fall under the category of ***Non-Notified Slums*** but are very ***different from each other***. They include:

- ***New Migrant Settlements***- typically temporary settlements, often characterized by **blue plastic sheeting (tarpaulins)** as roofing material. These shelters are primarily constructed by **migrants** who have recently arrived in the city and are seeking employment opportunities.
- ***Very Low-Income Settlements***- typically small shelter units, with little space between houses, small brown roofs, limited resources for maintenance or expansion, and narrow inner and paved roads that are often insufficient to accommodate the growing population
- ***Low Income Settlements***- typically medium sized shelter units with slightly more space between houses, paved but narrow inner roads and some small brown roofs.

To better understand the differences in the states' approach to WASH across various types of settlements, the study incorporates not only the **Official Notified Slum** classification but also that of **Non-Notified** Settlements like ***New Migrant Settlements, Very Low-Income Settlements, and Low-Income Settlements***

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[31] Krishna, A., Sriram, M. S., & Prakash, P. (2014). *Slum types and adaptation strategies: identifying policy-relevant differences in Bangalore.* Environment and Urbanization, *26*(2), 568-585

Images of types of Informal Settlements in the City

*Example of a **Notified Slum**-**Byrasandra, South Bengaluru**- In notified slums people live in 2-5 storey concrete buildings, with basic access to piped water, sanitation and electricity. Most houses have individual toilets*

*Example of a **Notified slum**- Devarajeevanahalli (DJ Halli), Central/ North Bengaluru- 10 years ago and today*

*Example of a **Non- Notified Slum- ISRO Colony Slum, Indiranagar-** In non-notified slums people live in single story structures. Houses range from blue tarpaulin covered mud shelters to tin and wooden sheds to concrete structures. Access to water, electricity and sanitation is facilitated through provisional means*

*Example of a **Non-Notified-New Migrant Settlement**- Blue Tarpaulin Settlement, Inside the Infectious Diseases Hospital, Byppanahalli, South Bengaluru*

*Example of a **Non-Notified-Very low-income Settlement**-Khata Nagar, North Bengaluru*

*Example of a **Non Notified- (very) Low Income Settlement**- Islampura, South Central Bengaluru- small shelter unit size, lack of space between houses, paved but narrow inner roads and some small brown roofs*

*Example of an Unrecognized **Inner-City Slum**- Shivajinagar, Central Bengaluru- medium shelter unit size, space between houses, paved but narrow inner roads and some small brown roofs*
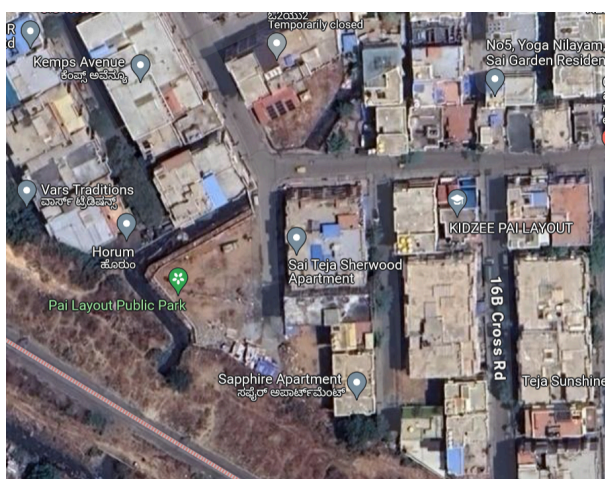
Example of a Middle-Income Settlement with pockets of low income / migrant (blue tarpaulin) shelters- Pai Layout, Mahadevapura

Mapping of Informal Settlements in Bengaluru

To understand the spread of informal settlements across the city, data from various studies conducted over the last decade has been systematically mapped.

Layer 1 of this mapping process includes the **Karnataka Slum Development Board KSDB Slum Survey -2011**[32] which provides the most recent official data available to the public on slums in the city.

Layer 1- Mapping of KSDB Slums- 2011 survey
Source: Opencity; mapped by Indes;

[32] https://data.opencity.in/dataset/bengaluru-slums-map; https://www.integrateddesign.org/
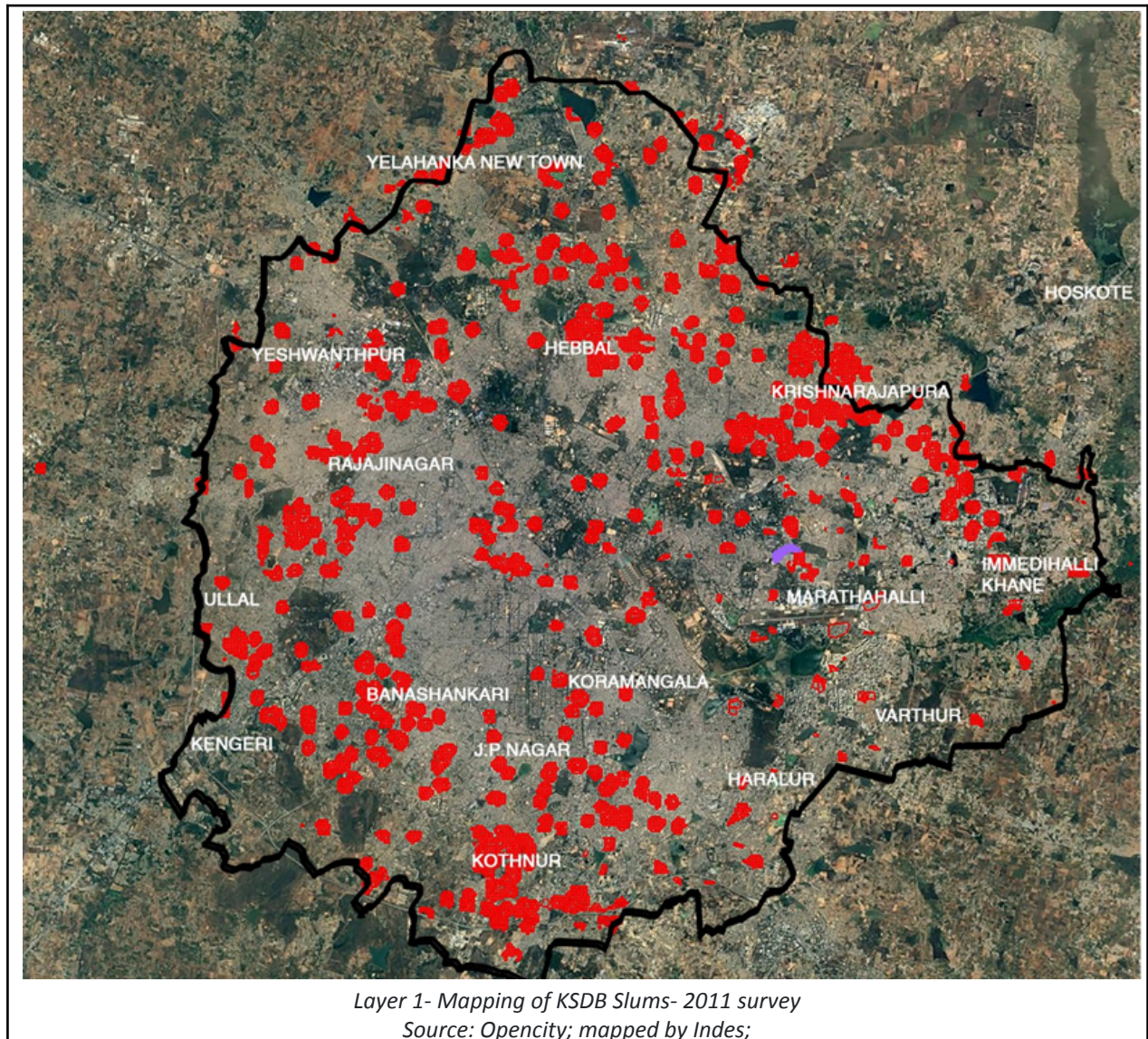
Since 2011, several studies have provided valuable insights into the characteristics and growth patterns of informal settlements in Bengaluru. These studies focus on a wide range of aspects including social capital, health, sanitation, and housing conditions. The key studies undertaken since 2011 are:

1. **Duke University- Blue Tarpaulin Study, 2014**[33] This study primarily examined the **"blue tarpaulin" settlements**, often considered temporary and informal, where migrant populations settle in makeshift homes made from blue plastic sheeting. These settlements were largely identified along the peripheries of Bengaluru and adjacent to existing slums. The study provided a critical look at the living conditions and the vulnerabilities faced by these communities.

2. **2014 Study on the Impact of Vegetation in Slums in the city**[34] , a study on the impact of vegetation on social capital, livelihoods, health and nutrition in 44 slums across the city. The study highlighted how green spaces, even within dense informal settlements, can improve the quality of life by reducing heat, providing areas for community interaction, and offering potential sources of income.

3. **2015 study on Public Toilet Access among the Urban Poor in Bengaluru**[35]- This study focused on the availability and access to **public toilets** in slums, with a specific focus on **20 slums** in Bengaluru. It examined the condition of these facilities and how the lack of adequate sanitation infrastructure impacts the health and dignity of low-income communities.

4. **University of Twente Study in 2016-17**[36] In this study, a detailed **household survey** was conducted, compiling data from **1,114 households** living in **37 notified slums**. The data, gathered from a 2010 survey, provided critical information on the demographic characteristics, housing conditions, and access to services like water, sanitation, and healthcare in these communities

5. **High Risk Areas (HRA's) Study 2024**- As part of the **Health Management Information System** through **Urban Primary Health Centres (UPHC**) [37], Karnataka's government tracks health indicators such as **mortality, infant mortality,** and **immunization** in low-income settlements identified as **High-Risk Areas (HRA)**. The **BBMP National Immunization Day Survey** conducted in March 2024 provides updated data on the health risks and service access for communities living in these areas.

6. **Google Earth Scanning for Blue Tarpaulin Settlements-** Physically scanning google earth and visually identifying blue tarpaulin settlements in areas adjoining existing slums, low lying areas, drainage networks, lakebeds, railway lines, large tracts of land, garbage dumps, large construction sites, brown or grey roofs. The parameters are based on the Duke University Study, 2014.

[33] Krishna, A., Sriram, M. S., & Prakash, P. (2014). *Slum types and adaptation strategies: identifying policy-relevant differences in Bangalore*. Environment and Urbanization, *26*(2), 568-585. https://doi.org/10.1177/0956247814537958

[34] Gopal, Divya, Nagendra, Harini - 2014/04/28 - *Vegetation in Bengaluru's Slums: Boosting Livelihoods, Well-Being and Social Capital*, VL 6, Journal of- Sustainability https://www.researchgate.net/figure/Location-of-surveyed-slums-in-Bengaluru-with-reference-to-the-administrative-_boundary_fig2_267075808

[35] Manasi S & N. Latha, 2017."*Toilet Access among the Urban Poor -Challenges and Concerns in Bengaluru City Slums*, "Working Papers id:12090, eSocialSciences.https://ideas.repec.org/p/ess/wpaper/id12090.html

[36] Ajami, Kuffer, Persello and Pfeffer, "*Identifying a Slums' Degree of Deprivation from VHR Images Using Convolutional Neural Networks*",2019, Remote Sensing Based Urban Planning Indicators

[37] NID Microplan Zone Wise 2023-24, Office of the Reproductive and Child Health Officer (RCHO), BBMP

Refer to **Annexure 1** for mappings of individual studies. The combined mapping of all these studies is presented below

Combined Layer- Mapping of Low Income Settlements - 2024
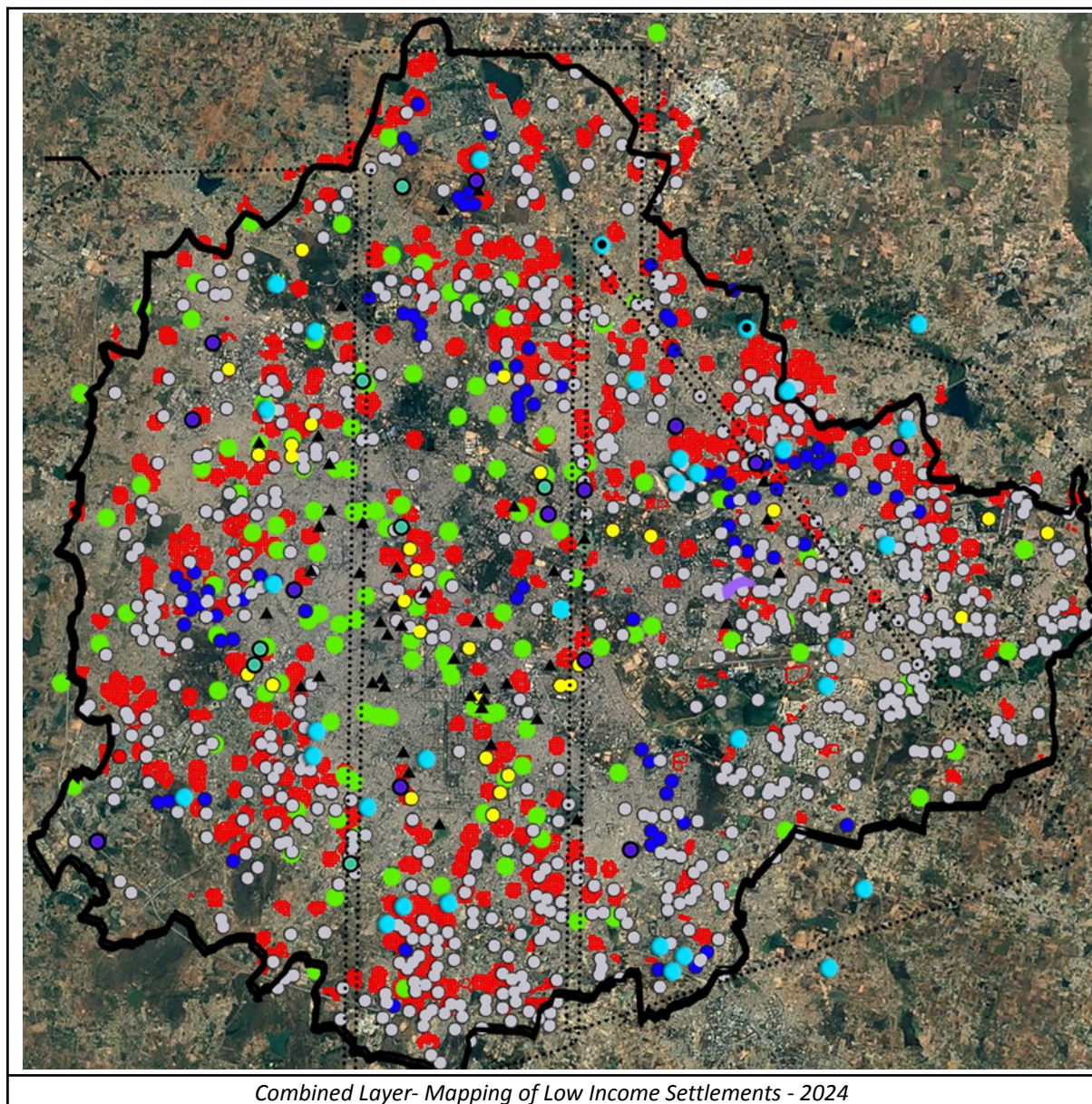
The **combined mapping** of the studies suggests that **informal settlements** are widespread throughout Bengaluru. The relatively 'slum free' of central Bengaluru is probably because the inner-city low-income settlements are no longer identified as slums; and therefore, do not feature in official surveys[38]. However, low-income settlements in Shivajinagar and Lalbagh have existed for over 70 years and are home to multiple generations of families.

The mapping of the KSDB slum data (2011) highlights the formation of **major clusters** of informal settlements in the **Mahadevapura/ Whitefield (north east Bengaluru)** and the **Jayanagar (south Bengaluru)** areas of Bengaluru that between 1990 and 2011.

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[38] Central Bengaluru has benefitted the most, in terms of infrastructure, from government schemes such as Smart City etc.

The clustering of informal settlements in Jayanagar area can be attributed to forced migration due the loss of livelihoods of landless and tenant farmers due to the construction of the Outer Ring Road (ORR) in the south of the city between 2007- 2015. The Mahadevapura cluster of informal settlements can be attributed to the influx of migrants into the city through the KR Puram railway station from 2012-2014 and the rapid development of the adjacent **Whitefield technology hub**. Since 2014, the mapping indicates that newer informal settlements developed in the periphery of the city such as in the industrial area of **Peenya in north west Bengaluru**. Other lower income settlements developed by attaching themselves to existing low-income settlements and villages in the central districts of the city. Most are hidden in plain sight in the interstices of the city, between apartment buildings, in low lying areas, along *rajkaluves* (storm water drains/ nallahs) and waterbodies, and still others on vacant parcels of land. Barely visible behind the glass and steel of tech parks and residential neighbourhoods, these settlements are omnipresent. These areas are constantly in flux, with migrants shifting locations frequently within the city based on work opportunities. These temporary shelters are primarily constructed by landless families or as part of construction worker camps.

Government Intervention in Water and Sanitation and Hygiene (WASH) in Slums in the city

The government has made several attempts to address the challenges faced by low-income settlements in Bengaluru, particularly in the area of Water, Sanitation, and Hygiene (WASH). However, the effectiveness of these interventions has been hindered by multiple challenges, including *institutional fragmentation, lack of inclusivity*, and *limited focus on the poor*.

Key Government Agencies Involved in WASH in slums in Bengaluru include:

1. **Karnataka Slum Development Board (KSDB)**: Responsible for both notified and non-notified slums across the state, KSDB plays a crucial role in the development of infrastructure in slums.
2. **Bangalore Development Authority (BDA)**: The BDA is primarily responsible for urban planning and infrastructure development in Bengaluru, including some informal settlements.
3. **Bruhat Bengaluru Mahanagara Palike (BBMP)**: As the urban local body responsible for city governance, BBMP is also responsible for managing water supply and sanitation in non-notified slums.
4. **Bangalore Water Supply and Sewerage Board (BWSSB)**: Specifically responsible for managing the water supply and sewerage systems in the city, including slums

With the promulgation of the 74th amendment of the constitution in 1992 and after decades of neglect, from 2005-07, the Indian state finally began to pay attention to the urban sector. Policy from the Jawaharlal Nehru National Urban Renewal Mission (**JNNURM**)[39] 2005-2015 to Atal Mission for Rejuvenation and Urban Transformation (**AMRUT**) to Basic Services for Urban Poor (**BSUP**) to Smart City Mission (**SCM**-2015) has encouraged cities to improve existing service levels in slums in a financially sustainable manner. The focus of all these policies is the improvement of Urban Infrastructure and Governance and Basic Services to the Urban Poor. Emphasis on technology to facilitate accountability, inclusiveness and transparency are the cornerstones of the Smart City Mission (SCM). *All these policies are only applicable to Notified Slums.*

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[39] https://mohua.gov.in/upload/uploadfiles/files/15broucher.pdfs

Over the years, the government has facilitated multiple initiatives to improve water and sanitation conditions for low-income settlements in the city[40]. Some of these include:

1. **Karnataka Slum Clearance Board (1980s):**
   In the ***1980s***, the Karnataka Slum Clearance Board initiated a scheme aimed at ***relocating slum dwellers*** and ***upgrading basic facilities***. However, this initiative faced ***resistance*** from slum residents, who were often unwilling to relocate or give up their homes due to the lack of trust in the government's promises.

2. **Bangalore Urban Poverty Alleviation Programme (BUPP) (1993-1999):**
   The BUPP aimed to address ***poverty*** through small-scale ***projects*** focused on shelter, health, income generation, and other community-level interventions. However, its ***impact*** was limited by the ***small scope*** of the projects and the difficulty in coordinating such efforts across a city with a large population of informal settlers.

3. **Basic Services to Urban Poor (BSUP) (2007):**
   The ***BSUP*** is *a **redevelopment scheme*** under *the **Jawaharlal Nehru National Urban Renewal Mission (JNNURM)***, intended to upgrade slums and improve the living conditions of residents. However, similar to earlier initiatives, this program struggled to meet its objectives, with ***funds*** not reaching slums in a timely manner and a lack of coordination between different stakeholders.

4. **Pradhan Mantri Awas Yojana (PMAY):**
   Under **PMAY**, **affordable housing** projects were initiated for slum redevelopment, including schemes like **Swathanthra Palya Slum Redevelopment**. In 2017, around **43.93 crores** were allocated for affordable housing in the **Gandhinagar constituency**, with an estimated 933 people expected to receive housing[41]. However, the scale of the intervention is limited, and much of the development is concentrated in select areas, leaving many slum residents without access to these benefits.

Much of the implementation of government policy has emphasized improving infrastructure in the ***city center*** and ***upper and middle-class neighbourhoods***. Studies have shown that in the ***JNNURM*** project, the majority of funds (85%), after 8-9 years, were allocated to Urban Infrastructure and Governance (UIG) with only a small fraction (less than 15%) dedicated to the BSUP/ RAY components[42].

Additionally, in the ***Smart City Mission*** (2015), a significant portion of the funds (90%) was allocated to the 22 sq km of the ***central parts of Bengaluru*** (area-based development), leaving little for improving conditions in slums or lower-income areas[43]. In SCM Bengaluru, 43.93 crores were allocated in 2017 to increase affordable housing stock for slum redevelopment in the Swathanthra Palya Slum Redevelopment. Around 933 people in Gandhinagar constituency are expected to receive housing under ***Pradhan Mantri Awas Yojana (PMAY)***[44].

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[40] '*Observations of Water Equity in Low Income Communities in Bengaluru April 2023*', Environmental Synergies in Development (ENSYDE)In collaboration with BIOME Environmental Trust https://urbanwaters.in/wp-content/uploads/2023/12/Water-in-Low-Income-Communities.pdf

[41] https://www.deccanherald.com/india/karnataka/bengaluru/houses-slum-dwellers-2025525

[42] Mapping expenditure: 80% Smart City funds for just 2.7% of city area http://indianexpress.com/article/india/mapping-expenditure-80-per-cent-smart-city-funds-for-just-2-7-per-cent-of-city-area-4702935/

[43] Baindur, Vinay and Chandra, Richa & Ganguly, Debapriya. (2019). *Smart Cities and Urban Deprived Communities*. https://www.actionaidindia.org/wp-content/uploads/2019/05/Smart-Cities.pdf

[44] https://www.deccanherald.com/india/karnataka/bengaluru/houses-slum-dwellers-2025525

This skewed allocation reinforces the inequities that exist within the city, where wealthier areas receive a higher level of infrastructure investment than the poorer, informal settlements in the outskirts of the city.

Similarly, Urban Financing and the **City Development Plans (CDP 2015 to 2030**) reflect a distinct bias towards upper and middle-class projects. **Consultations** on both the policies and the plans are characterized by the lack of 'inclusivity', making it difficult for the urban poor to enter the discussion.[45]

While, the CDP 2015 acknowledges un-recognized, low-income settlements and villages, growth management, service delivery to these settlements is shared between KSDB, BDA and the BBMP. These agencies are siloed, have little local representation,[46] barely interact, and are struggling to keep up with demand.

A consistent theme of the management of water and sanitation in urban India is the multiplicity of agencies involved. Karnataka and Bengaluru City are no different. Urban water supply and sanitation in Karnataka is governed and monitored by the Urban Development Department (UDD) and supported by other agencies such as the Karnataka Urban Water Supply and Drainage Board (KUWSDB), the Bangalore Water Supply and Sewerage Board (BWSSB), Urban Local Bodies (ULBs), and the Karnataka Urban Infrastructure Development and Finance Corporation (KUIDFC).

In notified low-income settlements in Bengaluru specifically, the Bangalore Water Supply and Sewerage Board (BWSSB), Bruhat Bengaluru Mahanagara Palike (BBMP) and private agencies (bore well diggers and water tankers) facilitate water supply and sanitation. The lack of coordination between relevant governing bodies, poor access to institutions and lack of knowledge of the local language often act as barriers to improvement of these settlements.[47]

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[45] Coelho, Karen & Kamath, Lalitha & Ma, Vijayabaskar. (2011). *Infrastructures of Consent: Interrogating Citizen Participation Mandates in Indian Urban Governance.* IDS Working Papers. 2011.

[46] Benjamin, S. (2000). *Governance, economic settings and poverty in Bangalore*. Environment and Urbanization, 12(1), 35-56. https://doi.org/10.1177/095624780001200104

[47] Deshpande, T., Michael, K., & Bhaskara, K. (2018). *Barriers and enablers of local adaptive measures: a case study of Bengaluru's informal settlement dwellers.* Local Environment, 24, 167 - 179.

Profile of Study Settlements[48]

Notified Slum- Byrasandra, 3rd Block, Jayanagar

The **Byrasandra settlement** is a **notified slum** declared by KSDB. Spread over 5 acres, it is bounded by Jayanagar 3rd Block, an upper middle-class neighbourhood in the south of Bengaluru, and by the Byrasandra lake. It has over 800 houses and accommodating approximately 10,000 people. Over 65% of the slum is located on a bund. In the 70's- 80's, the area was a kere (lake). In the 80's-90's, the settlement was small, with residents living in tarpaulin sheet shelters. With Bengaluru's growth in the 90's, migrants from districts across Karnataka, Tamil Nadu and Andhra Pradesh moved to Byrasandra, seeking employment and opportunities. The construction of the Outer Ring Road (ORR) in 2007 displaced many tenant farmers, leading to further growth in the slum. Over time, as the settlement became **notified**, the original tarpaulin roofs were replaced with **cement walls** and **tin sheet roofs**. Recently, there have been some changes, with some houses being rented out to North Indian families, and the original owners moving to other localities. **Gundappa layout**, a low-income settlement adjoining the Byrasandra settlement, is located between the compound walls of the Sanjay Gandhi Hospital and National Institute of Mental Health and Neurosciences (NIMHANS). It is a distance away from the main road. Here, shelters are primarily made of blue tarpaulin sheets, tin sheets and mud walls. Both settlements are located on slopes and are subject to severe flooding in the monsoons.

Non-notified Slum- ISRO Colony, Cambridge Layout, Indiranagar

The **ISRO Colony slum** is a **non-notified slum** located in the Cambridge layout area of Indiranagar. The settlement was established in the 1980s on land originally owned by the Indian Space Research Organisation (ISRO). It spans an area of approximately 2 acres and is situated adjacent to a stormwater drain. The settlement is only accessible via a narrow pedestrian bridge from Cambridge Layout. The settlement has around 400 - 500 houses built with cement bricks and tin sheets. It has six public toilets. The residents are of Tamil and Telegu origin and most residents are scheduled caste. Since its establishment, the settlement has become home to 3-4 generations of families. While the majority of the population is Hindu, there are also a few Christian and Muslim families living in the settlement.

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[48] See Annexure 2 for details

Migrant Settlement- Pai Layout, KR Puram

Pai layout is a middle-class housing settlement with a unique combination middle class housing and *very low-income* and *temporary migrant shelters* wedged between apartment blocks. The settlement is spread over 28 acres and adjoins a railway line to the south west. Originally, the area was **agricultural land**, predominantly used for growing **ragi** (millet) and **wheat**. Over time, the area was squatted on by migrant families, mostly from **northern Karnataka**, who built temporary shelters using **blue tarpaulin sheets.** Over the last 25 years, the villagers/ original landowners have sold their land or became developers and built apartment complexes to cater to the growing demand for middle class housing in Bengaluru. Located near **Whitefield**, a hub of tech activity and adjoining the **Outer Ring Road (ORR),** demand in this area in the last decade has skyrocketed and ad hoc construction has grown rapidly. The very low-income and temporary migrant families have slowly moved away into more pucca construction or to other areas. The few blue tarp families that are left survive at the mercy of landowners. Water is sourced from adjoining apartment complexes. The empty railway line is used for open defecation. New migrants from north India and Nepal live in developer-built tenements/ chawl like housing. Typically, 5-6 members of family share two rooms. They use a common toilet at the end of the corridor. Water is collected from a tap at the end of the corridor and transported to the rooms.

Low Income Settlement- Islampura, Vimanapura, Mahadevapura

Islampura is a **low-income settlement** in Bengaluru, characterized by modest living conditions and a long history of migration due to its proximity to the **Hindustan Aeronautics Limited (HAL)** campus. It

can be classified as a ***low-income settlement*** with medium sized shelter units with small brown roofs, little space between houses and paved but narrow inner roads. In some areas, there are pockets of **deep poverty** with residents living in **blue tarp shelters** wedged in between houses —a sign of informal and transient housing. Spread over 65 acres, the settlement has over 300 houses and is home to approximately 1,500 people. Islampura is a predominantly a minority (Muslim) settlement in central Bengaluru. An older settlement, it developed in the 70's and 80's due to its proximity to the prominent public sector institution Hindustan Aeronautics Limited (HAL). Most of the people from the settlement migrated from other parts of Karnataka to either work in HAL or provide services to HAL. The settlement is bounded by the Vibhutipura Lake to the north west, the HAL campus to the south and south west and by middle class neighbourhoods of GM Palya and Malleshpalya to the north east. It is barely 5 kms from the upper middle-class neighbourhood of Indiranagar.
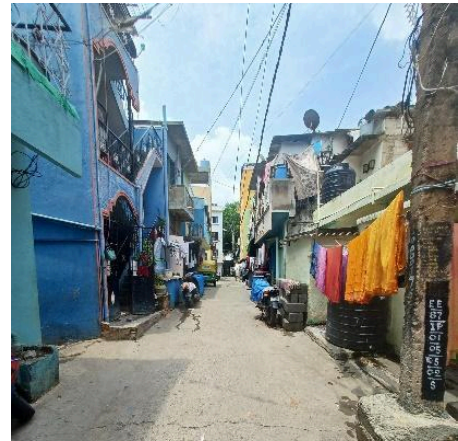
Comparison of Study Settlements

	Byrasandra	*ISRO Colony Slum*	*Pai Layout*	*Islampura*
Type of Settlement	Notified Slum	Non notified Slum	Mixed Income Settlement with Pockets of Migrant Families	(very) Low-Income Settlement/ municipal area
Age of the Settlement	40+ years	40+ years	20+ years	40-50 years
Number of Residents (approx.)	800 families	4-500 families	Pockets of 6-10 sheds	300 families
Area	5 acres	2 acres	on the edge of a 28-acre settlement	65 acres
Location in Bengaluru	Jayanagar, South Bengaluru	Indiranagar, West Central Bengaluru	Mahadevapura/ Whitefield, West Bengaluru/ Periphery of the City	West Bengaluru
Type of Land	Government Land	Government Land	Private/ Agricultural	Private plot ownership
Diversity of (lower Income) inhabitants	Older Kannadiga, Andhra and Tamil families (2-3 generations); mostly scheduled caste	Older Tamil and Telegu families (2-4 generations); mostly scheduled caste	Older Kannadiga families from North Karnataka live in blue tarp tents- for over 20 years; recent migrants from north India and Nepal live in chawls/ tenements	Muslim Kannadiga families; at least 3-4 generations
Possible Reasons for Settlement	Displacement of tenant farmers due to Outer Ring Road (ORR) Development in the 90's- 2000's	Migration from neighbouring regions in Tamil Nadu and Andhra Pradesh in the 80's for better economic opportunities	Migration from economically deprived regions like Hassan etc in the 2000's for better economic opportunities	Migration from neighbouring districts in the 70-80's for better economic opportunities connected to HAL and public sector industry
Type/ Typology of Housing	Blue tarp and tin sheds converted to newer pucca cement housing with one- two rooms, 4-5 stories high	Blue tarp and tin sheds; some newer pucca cement housing with one- two rooms, mostly one storey high	Chawl like tenements; blue tarpaulin shelters for migrant Kannadiga families in between Middle-income apartment complexes	10x12 ft plots with 4-5 stories; one unit per floor; pukka concrete structures with attached bathrooms
Tenure Security	Some owners have hakku patras but confusion over cutoff date for issuance of hakku patras	No tenure security; on government land	Blue tarp shelters on developer's land- no tenure security	All owners have khatas/ hakku patras
Quality of Construction	Pucca (concrete, 4-5 storeys) but very small plinths	Combination of temporary (tin sheds) and pucca (concrete structures)	Very Temporary	Pucca (concrete, 4-5 storeys)
Possibility of Eviction	Not applicable since Notification	High	Very High	Not Applicable

Access to WASH Services in Study Settlements

Service	Byrasandra (Notified slum)	ISRO Colony (Non notified slum)	Pai Layout (migrant shelters)	Islampura (low-income settlement/ neighbourhood)
Piped Water	Cauvery water (piped water) supplied by BWSSB is available to all households – but on alternate days and specific periods of the day. A main borewell is on the main road next to a sewage pipeline that overflows regularly. The overflow and smell from the sewage discourages people from accessing water from this connection. 	Cauvery water supplied by BWSSB is available to all households - on alternate days and one hour a day. Blue drums are used for storage of water Water Tankers provide water when piped water is inadequate. However, the tankers come to one edge of the settlement and women and children queue to collect water 	Piped water supplied by BWSSB available to apartment blocks and chawl/ tenement facilities; Women from the older migrant Kannadiga families in blue tarpaulin shelters collect water from neighbouring apartment complexes 	The settlement has piped water (Cauvery water) supplied by BWSSB. However, water supply is limited and irregular (alternate days and for a few hours only). Water tankers are used regularly. Due to the narrowness of the roads, regular size tankers don not fit. Tempos and autos with water tanker attachments provide water to houses

Service	Byrasandra (Notified slum)	ISRO Colony (Non notified slum)	Pai Layout (migrant shelters)	Islampura (low-income settlement/ neighbourhood)
Water Metering	Installed by BWSSB and the Municipality, but a lot of confusion as many meters have been removed and common bills are being generated	Installed for all houses recently by BWSSB and Municipality 	Individual bills in the middle-class apartment blocks; shared bills generated for chawls- by BWSSB	Installed in individual houses by BWSSB
Borewells	A few BBMP borewells are available but have run dry recently	There is only one functioning borewell for the whole settlement 	Some apartment complexes have their own borewells	A few BWSSB borewells are available but have run dry
Sumps	Not available	Not available	Most apartment complexes have sumps	Many houses have started installing sumps

Service	Byrasandra (Notified slum)	ISRO Colony (Non notified slum)	Pai Layout (migrant shelters)	Islampura (low-income settlement/ neighbourhood)
Water ATMS's	Close to the main road and difficult to access for most residents	Not Available	Close to the main road and difficult to access	Available close to the main road and difficult to access
Sanitation	Most houses have individual toilets. Four to five houses in a row have pit latrines connected to a larger underground pit. These pits regularly overflow and back up. The main sewage lines face regular blockages Complaints to BBMP avails no response. The community regularly pays over Rs 2-3,000 for private sanitation workers. Some	Only 5 to 10 houses have attached toilets (built by owners). Private toilets are locked at night to avoid menace and safety issues. There are only 4 working Public Toilets (2 for men, 2 for women) Public Toilets built by BBMP along the edge of the settlement. Women find it difficult to access the public	Middle income houses have sewage connections. In the chawls/ tenements, tenants share a common toilet at the end of the corridor; for security and safety reasons, women use the toilet at specific times; bathing area within the unit. Blue Tarp shelters have no toilets; residents use the adjoining railway line to defecate in. With the upcoming K- Ride project (railway	All houses have sewage connections; Some houses have common toilets for every four or five floors- on the ground floor. Due to regular sewage line blockages, people often have to use neighbours' toilets. In some areas of the settlement, especially near the *rajakaluwe* (storm water drains), open defecation is witnessed.

Service	Byrasandra (Notified slum)	ISRO Colony (Non notified slum)	Pai Layout (migrant shelters)	Islampura (low-income settlement/ neighbourhood)
	households have started to defecate on quieter paths.	toilets due to the distance from their houses.	line extension); they are anxious that they will have to move.	
	In Gundappa Layout, public toilet is available but men get preference. Women wake at 4:00 am, use the toilet, return home to cook, send their kids to school, and then go to work as domestic workers. At night, they wait till 9 :00 pm to use the public toilets. This is a daily challenge for women, children and elderly.			
Drainage	Rainwater flows down a steep gradient and drains along narrow pathways causing flooding in the monsoons. Many houses are flooded during rains. 	During rainy season, water flows into houses and pathways are always flooded. 	Fringe areas (along the railway line and the ORR) suffer water logging due to inadequate storm water drainage	Rainwater follows the natural gradient and drains into the adjoining Vibhutipura lake. Due to poor storm water drainage, even low amounts of rainfall cause waterlogging on the streets.
Flooding	Flooding affects the Gundappa Layout regularly; affecting sewage lines. Dengue is a regular concern	Flooding is common due to the adjacent storm water drain.	Flooding regularly affects low lying areas and the rajkaluve. Dengue is a regular concern	Flooding occurs along the rajkaluve and the waterbody

Service	Byrasandra (Notified slum)	ISRO Colony (Non notified slum)	Pai Layout (migrant shelters)	Islampura (low-income settlement/ neighbourhood)
Healthcare	Government hospital is adjacent	Government hospital and private hospitals provide services to the area	The government hospital is overcrowded; private hospitals available	The government hospital and private hospitals provide services to the area
Transport	The area has two bus stops; one of them is within a radius of 1 to 1.5 km (1st block to 3rd block Jayanagar).	No bus transport available within the settlement	No bus transport available within the settlement	The closest bus stop is on GM Palya Main Road, 1.5 kilometre away. Women and children use shared autos (expensive) or walk due to lack of bus transport.
Safety	The area is safe, well-lit and women are able to do their daily chores without much hindrance.	The area is unsafe in the evenings due to young men loitering. At night, women find it difficult to walk from their houses to toilets	The area is safe and well-lit	The area is unsafe in the evenings due to young men from neighbouring settlements wandering in

Community Consultations

Focus Group Discussions (FGDs) were an integral part of the community consultations facilitated through *APSA's Early Childhood Care and Development (EECD)* schools and training centres. The FGDs aimed to gather diverse perspectives on the conditions and needs of women in the community, especially in informal settlements.

The FGDs brought together *23 women* from various *age groups* and with different *livelihoods*. This diversity ensured that the discussions reflected a wide range of experiences and concerns.

Some of the women were mothers of children at the EECD schools but others were students and older women. The group was diverse through the inclusion of women headed households, women from minority communities, physically challenged women and migrants. The inclusion of *women-headed households*, who often play a central role in decision-making within families, as well as *migrant women* who may face additional challenges, provided a holistic view of the challenges faced by women in these communities. The participation of *women with disabilities* also ensured that the conversations addressed accessibility and inclusivity.

The consultations were conducted using *semi-structured and open-ended questions*, allowing participants the flexibility to express their opinions in their own words. This approach also encouraged the sharing of personal experiences, which helped to gather qualitative data on the issues affecting women in these areas. The open-ended nature of the questions allowed for *detailed responses* that could capture the nuances of different women's lives, particularly in the context of their economic roles, social positions, and challenges.

Name of Settlement	Type of Settlement	No of people in consultation	Diversity of Respondent
Byrasandra, 3rd Block, Jayanagar (in the Jayanagar cluster area)	Notified Slum	8	Women, home based workers, 1 woman with disabilities
ISRO Colony Slum, Indiranagar	Non-Notified Slum	2	Young women
Pai Layout, Mahadevapura (in the KR Puram/ Whitefield cluster area)	Temporary Migrant shelters in middle-income settlement	7	4 women from migrant (North Indian and Nepali) families; and 3 women from North Karnataka that have lived in the area for over 20 years
Islampura, Vimanapura (Minority- Muslim settlement)	(Very) Low-Income settlement	5	4 Muslim women and 1 Hindu woman

Of the **23 participants** in the **Focus Group Discussions (FGDs)**, the following demographic details were observed:

- **Age Range**: Participants' ages ranged from **17 to 65 years**, representing a wide spectrum of generational experiences.

Participants by Age Group
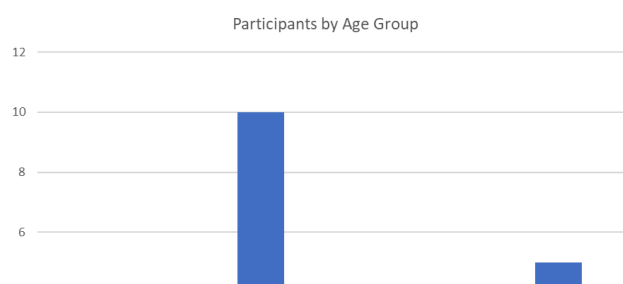
- *Marital Status*:

  o **17 participants** were **married**, highlighting the prevalence of women with familial responsibilities.

  o **5 participants** were **single**, providing a perspective on unmarried women's challenges and experiences.

- *Housing Situation*:

  o **7 participants** lived in their **own houses**, indicating that the majority of participants did not have stable housing ownership.

  o The rest likely lived in rented or informal housing, which is typical in informal settlements, where homeownership is often out of reach for lower-income families.

- *Access to water and sanitation* differed across the settlements.

  o 10 of the women (in the notified slum of Byrasandra and the low in come settlement of Islampura) had access to individual toilets at their premises

  o 6 women relied on Public Toilets; 2 in the non-notified slum of ISRO colony slum and 4 in the notified slum of Byrasandra,

  o 4 women, in Islampura, used ground floor toilets in 4-5 storey family blocks

  o 3 women, in Pai Layout, engaged in open defecation along the railway line.

Experiences of Women[49] in the Different Settlements

Case 1: Aruna, Notified Slum-Byrasandra/ Gundappa Layout, Jayanagar 3rd Block

In the **notified slum** of Byrasandra, Aruna (39) lives along with her husband, mother-in-law and son. She is educated up to class nine, speaks Kannada, Tamil, Telugu and a little English. She works as a maid for a middle-income home in the adjoining neighbourhood of Jayanagar. She has lived here all her life and proudly tells us that her family claims ownership of this land. She come from a community of manual scavengers (scheduled caste) and is proud of her community. Her community have resided on this land for over three generations. The land was gifted to them over 60 years ago. Aruna's house is a two-room pukka unit with a kitchen in the corner. The bathroom is attached but accessed from outside the unit. She has rented out the top floor.

Aruna has a long day with work and household chores. She wakes at 4 am, goes to the toilet (in the house), cooks for the family, sends her son to school, goes to multiple houses to work, returns at 6pm to more chores for the house. Despite Byrasandra being declared a notified slum; Aruna says *'there are lots of problems. Hakku patras have not been issued because of problems with the cut-off date. While the older families have received theirs, many newer families (10-20 years in the area) have been asked to leave. The community is fighting this. Water and sanitation are a big issue. During the rains, due to the gradient of the slum, water gushes down the paths causing people to slip and fall. Houses flood regularly. The storm water drains are not adequate for the settlement. It is not safe for women and children. The sewage lines also back up regularly. Backing up of the pit latrines also causes significant problems in the settlement. When the lines are backed up, there is only one public toilet and it is far away from our house. It is very difficult for us. The BBMP is supposed to look after these issues but there is a consistent lack of response from them. We have to constantly fight to get them to hear us. They are too busy looking after the richer people around us. The local MLA only visits around election time. However, we have no option. We have to fight to live.'* Aruna, along with some other women of SC/ ST backgrounds have formed a cooperative to demand their rights in the slum. Despite long hours of work, they visit the BBMP offices regularly demanding better infrastructure. She, along with her colleagues, regularly access the APSA offices for support.

Aruna and her family have to use the public toilet whenever the sewage lines get blocked. Using the toilet at night is especially difficult as the path is slippery and narrow. Sometimes, she stops drinking liquids by the afternoon to avoid having to go to the bathroom. Bathing also has to happen outside at this time. While her husband and son can bathe at any time, she and her mother-in-law must wait for the cover of darkness. Due to embarrassment, they bathe half clothed with makeshift arrangements of partial shields made of sarees etc. Despite all the issues in Byrasandra and Gundappa Layout, Aruna is proud of her home, community and settlement. She says the neighbourhood of Jayanagar is a good place to live. She has no interest in ever leaving.

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[49] names changed for privacy

Case 2 Vanitha and Rekha, Non-notified Slum- ISRO Colony, Indiranagar

Vanitha and Rekha, aged 21 and 22 respectively, are B. Com students at a local college in Indiranagar. Both were born and raised in the **non-notified** ISRO Colony Slum. Their parents' occupations reflect the financial constraints faced by their families: One's father works as a labourer in a shop, while the others father works in a startup in a menial position. Both have had to deal with difficult financial conditions.

Vanitha aspires to become a teacher, reflecting a desire to contribute positively to her community and achieve personal growth. Rekha is still contemplating her future career path, but her current focus is on overcoming the immediate challenges in her daily life.

Both girls begin their day at 6 am to avoid long queues for the public toilet (near the stormwater drain). Their families fetch water from a connected pipe and store it in large blue drums and smaller buckets. For their mothers, this task starts as early as 4:30 am and continues throughout the day. Since neither girl has attached toilets at home, they have to be very careful, especially at night and during menstruation. Often, when the slum floods, they have to miss college and work. Despite the challenging living conditions, both Vanitha and Rekha prefer to stay in this area due to its proximity to essential services like metro stations, buses, auto stands, and educational institutions. Additionally, they have an emotional connection to the land.

Both Vanitha and Rekha expressed contentment with their lives but expressed a strong desire for improved living conditions, including better access to water and attached toilets. They are aware of the potential risk of displacement since the land belongs to ISRO and are concerned about the long-term sustainability of their current living conditions.

Case 3: Savitriamma, Migrant Settlement- Pai Layout, Mahadevapura

This is the residence of Savitriamma (55) and her three children on the fringes of Pai Layout in Mahadevapura. This cluster of settlements fall in the category of very low income/migrant settlements. Her oldest daughter (19) is pregnant, her 17-year-old son works intermittently at shops in the layout and her 11-year-old daughter attends the local government school. She originally moved here with her husband from north Karnataka almost 28 years ago, due to lack of work in their village. Her husband died almost a decade ago. Since then, she has raised her children by working as a maid for a middle-class family. They have lived in temporary structures and have moved around in the area, depending on the availability of land and the charity of landlords. Hers is one of the few blue tarp structures left of the over 100 shelters that existed a decade ago. The railway line in the background is used for open defecation. They have built a small shelter for bathing adjoining their residence. Savitriamma and her daughters collect water from the next-door buildings. The water ATM is too far away for her. She is scared that she will have to move again if the railway line extension (K-Ride) is built. The older daughter had to leave school early to help out with childcare and household chores. She was not too upset about this as she found school difficult and money needed to be spent on her brothers' education. The older daughter helps Savitriamma cleaning, cooking, washing clothes and fetching water. She is worried that carrying heavy pots of water will affect her pregnancy. Her younger daughter is bright, speaks English and wants to become a doctor. She hopes to move her family out to one of the adjoining buildings when she starts earning. Both mother and daughters are fierce but pragmatic. '*We will not leave. This is our home'*. They would like access to a public bathroom. '*People are good here but no one cares about the poor. There are no public toilets in the layout. We have to manage somehow. Our house gets flooded every time it rains. But we are not complaining'.* The lack of sanitation facilities bothers the women. Savitriamma and her family use the adjoining railway line or go along the rajkaluve for daily toileting. The daily challenge of not being too exposed, protecting themselves from harassment from the many men loitering around, protecting themselves from slipping in the monsoons- all take a toll. The younger daughter uses the school toilet as much as possible. She spoke about being teased at school about the lack of toilets at home. '*A public toilet would make such a difference. But no one cares about us here'*

Case 4: Sufaira, Low Income Settlement-Islampura, Vimanapura

Sufaira is a young woman mother of two in her twenties. She was married at the age of 15 years and became a mother of her children by the age of eighteen. Her husband is works in a garage. His work is temporary and he makes very little money. She has a limited education. Like many other women in her community, she only went to school for few years and dropped out around class nine to get married. While she doesn't regret dropping out 'I *didn't learn much. But I wasn't good enough. I couldn't understand what the teacher was saying'*, she wishes she was better educated.

Her main role is to take care of the family like many other women in her community. Sufaira wakes early every morning at 5:00 am to use the washroom and then starts her daily chores. Cauvery water (piped water) is available for a few days in week at certain time slots either in the morning or in the evening. Often, when the Cauvery water supply is inadequate for her family of four, she carries home water from her workplace. The water is used for cooking, cleaning, washing etc. She sends her children to school for few hours in the day and in that time works in two houses in nearby apartment blocks for a very low wage. With the increasing cost of living, she and her husband are struggling to make ends meet. Today, Sufaira regrets that she is not able to improve the economical standing of her family because she doesn't have an education. She doesn't want her children to be in the same situation that she and her husband are in. She is not quite sure about how to improve their standard of living.

Sufaira and family live in a temporary structure with a metal sheet roof. During the rains, the roof leaks and water seeps in from below. The house has an attached individual bathroom. She takes care of it. However, when it rains and the bathroom clogs up, her husband talks to some other men in the mosque and they deal with the situation. Both she and her husband are looking for better opportunities across the city as well as a better place to live but haven't succeeded so far. She wants to live in a better and a permanent house with flowing water and an attached and working toilet.

Water Usage and Sanitation- Observations and Community Consultations

Where to live and what to live in

Location plays a crucial role in the decision-making process regarding where to live. Most respondents, with the exception of the migrants from North India and Nepal in Pai Layout, expressed a strong sense of attachment to the settlements they reside in.

In the *notified slum of Byrasandra*, the women respondents expressed a *deep connection to the settlement*. Though they lacked formal documentation, they claimed that the land was *'granted'* to them by a previous owner. *Demand for services*, ranging from social amenities to physical infrastructure such as water and electricity, was based on their sense of 'ownership' of the land, a theme that repeatedly emerged in consultations. The women of Byrasandra shared that they belong to an extended community of *Scheduled Caste (SC) families* that have lived in the settlement for *several generations*. They take pride in their SC status, particularly their association with manual scavenger, and use it to assert their rights and demand services from the municipality. They residents also take pride in the *location* of Byrasandra, *situated next to the affluent* neighbourhoods of Jayanagar, JP Nagar and Koramangala. While they were pleased that their settlement was finally designated a '*notified slum*' which they believed would lead to improved services, they felt offended by the *term* "slum" itself. They viewed it as derogatory and wished to be regarded as a more *"respectable" neighbourhood*, which they felt could be achieved if the municipality provided *services on par* with those available in the adjacent middle-class areas. Despite their pride in the location, they noted the *poor quality of their water pipes and sewage lines*, with the BBMP and BWSSB often neglecting their service requests.

In Byrasandra, most women live in *multi-story concrete houses* (ranging from 3 to 5 stories), which have been gradually constructed over the years, dependent on available finances and the settlement's 2011 slum notification. Initially, homes were makeshift structures, such as blue tarpaulin tents and tin sheds. Over time, these have been upgraded to more permanent homes, with concrete foundations, brick walls, and concrete roofs. While the slum notification does not confer official tenure, it has empowered residents to invest in durable, *"pucca" construction*, providing them with a greater sense of security and stability.

In the *non-notified slum* of *ISRO Colony slum*, the Tamil and Telugu migrants have a *strong connection* to their settlement. Many have lived in the area for *over forty years*, work locally and benefitting from the rapid development of the adjoining Indiranagar area over the past two decades. Most of the young residents attend local schools and *contribute to the workforce* within the neighbourhood. Although the slum remains non-notified, the settlement receives essential services from the BBMP and BWSSB. Over the last decade, the BBMP has *made significant improvements to the infrastructure* of the slum including the concretization of the bridge across the rajakaluwe, paving of inner pathways, and installation of water connections (complete with meters) to every household. The slum has access to piped water (intermittent and supplemented by tankers), basic sanitation through public toilets and electricity. Most homes are single-story concrete structures, offering permanence and stability. With generations having lived in the settlement, residents are *deeply rooted* and have no intention of relocating, even in the event of eviction. Despite the lack of formal tenure, the infrastructure upgrades have instilled a sense of reassurance among the residents, suggesting that eviction is unlikely.

In Pai Layout, the older Kannadiga migrant families, who have lived in **blue tarpaulin tents** and tin sheds for over 20 years, expressed minimal connection to the settlement. However, extreme poverty and a lack of social networks make it difficult for them to relocate. Their decision to stay is primarily driven by familiarity with the area, having **moved within the neighbourhood multiple** times. In contrast, the Nepali and North Indian migrant families, residing in **multi-story chawl-like tenements**, have little to no attachment to Pai Layout or Bengaluru. Most of these women moved to the area following their husbands after marriage, have lived there for 2-3 years, and are actively seeking better opportunities elsewhere in the city.

The women in the low-income settlement of **Islampura** belong to families that have lived there for **multiple generations**. Typically, they reside in joint family households, with each new generation occupying individual floors in 2-5 story concrete buildings, built on 10x12 sq ft plots. Most of their homes have **secure tenure**. The women of Islampura share **strong ties to their community** and are committed to raising their families within the same settlement. While a few are seeking opportunities outside the settlement, they express that they would only feel comfortable in other Muslim-majority areas. Most of the women are satisfied with their homes, the construction quality (primarily concrete), and the overall living conditions in the settlement. However, housing decisions are generally not made by the women themselves. Men in the family typically handle major decisions such as housing and relocation. Most of the women interviewed are undereducated, work in low-paying jobs, and are financially dependent on their husbands. Their roles are largely confined to household duties such as childcare, cooking, and cleaning, leaving them with **little agency** outside of these responsibilities.

Community, Water and Sanitation, and Power[50]

Byrasandra, with its official status as a **notified slum**, is now **entitled to basic civic services** and tenure from the city government, a fact the women of Byrasandra are acutely aware of. At the community level, these women are **outspoken and determined** in their demands for improved WASH (Water, Sanitation, and Hygiene) infrastructure, believing that such improvements will enhance health, education, and the overall quality of life for their families. Since receiving notified slum status, the settlement has seen a **rapid transformation**, with homes shifting from blue tarpaulin tents and tin sheds to concrete 3-4 story buildings. Most households now have **individual toilets.** However, the rapid population growth, the settlement's location on a slope, limited space for expansion, and overcrowding have led to significant infrastructure challenges. The WASH infrastructure **is grossly inadequate, poorly constructed, and prone to frequent breakdowns**. Water supply is intermittent, pit latrines often back up, and stormwater drains regularly overflow. Sewer lines frequently mix with water supply lines, leading to contamination. The community is forced to continually demand services from BBMP and BWSSB. In Byrasandra, **women spend hours every day** at the local BBMP offices advocating for basic services like clearing clogged latrine pits, repairing sewage pipelines, removing solid waste, and improving roads. These women have developed a **strong community identity**, particularly as Scheduled Caste members, a role they embrace despite their long working hours in the neighbouring middle-class areas, as well as their responsibilities at home, such as caring for children and the elderly. **Women are still expected to maintain household toilets daily**, while in wealthier households, marginalized minorities and other castes are often tasked with cleaning toilets. **After puberty, women face additional social restrictions due to stigmas surrounding menstruation, pregnancy, and sexuality**. Their use of sanitation facilities is often restricted during these times. The public toilet in Byrasandra is located on the main road, and women typically use it early in the morning around 4 a.m. or late at night for privacy. However, they travel in

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[50] See annexure 3 for detailed analysis

groups at night to avoid harassment and sexual abuse. New migrants from North India face additional challenges, particularly with the **language barrier,** and women and girls are **rarely consulted in the design of household toilets** or the placement of public toilets, overlooking their specific needs.

In contrast, in the **non-notified** slum of ISRO Colony, the settlement has **access to basic services** provided by BBMP and BWSSB, but residents are strategic in how they demand attention. They have **strong political connections**, primarily facilitated by men, and leverage their votes to secure services, particularly during election seasons. The permanent bridge across the rajakaluwe was constructed by the BBMP around an election period. The settlement has a strong sense of community, with Hindu, Muslim, and Christian festivals all being celebrated. Three places of worship are located at the entrance to the slum. **Women's use of sanitation facilities** in ISRO Colony slum is complicated because the only available facilities are **public toilets located at the edges of the slum**. As in Byrasandra, women in ISRO Colony face restrictions due to **social norms** and stigma related to menstruation, pregnancy, and sexuality. Despite working long hours in the neighbouring middle-class neighbourhoods, looking after children and the elderly, and managing household chores, women in ISRO Colony **must line up to collect water from tankers** on the main road due to the intermittent supply of Cauvery water, then haul the water back to their homes.

Women waiting at the water post in the non notified ISRO Colony slum in 2015[51]

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[51] Images taken from Facebook Page- *Indiranagar ISRO colony Association*

Women and children carrying water home from the adjoining neighbourhood to ISRO Colony

Women and children waiting at the entry to ISRO Colony in the early morning for water from water tankers

In Pai Layout, only a **few very low-income migrant shelters** (8-10 blue tarpaulin tents) **remain scattered** along the **fringes of the settlement**. There is **little sense of community** left, and due to the small number and dispersed nature of the shelters, they cannot be officially categorized as an unrecognized slum or even a migrant settlement, despite having existed in the area for over 20 years. Most of these shelters are **headed by women,** who are keenly aware of their **lack of power or rights** at the **community, societal, and policy levels**. These women and their households are entirely dependent on landlords and neighbouring buildings for access to water and sanitation. For sanitation, they resort to open defecation along the railway line. There are **no public toilets nearby**, and the water ATM is nearly a mile away, making it difficult to access. Neither the women nor the men in these shelters are ever consulted during public interventions. **They lack decision-making power and are profoundly disempowered.** At the household level, **stigma and misconceptions persist**, particularly when it comes to restricting access to sanitation facilities for pregnant and menstruating women. For safety reasons, women travel in groups at night, and they often **control their fluid intake** to avoid venturing out after dark due to concerns about snakes, thorns, and slipping in the rainy season. To maintain privacy, they have built makeshift structures for bathing. **Gender dynamics and power imbalances** continue to influence sanitation-related decisions within the household, and much of this behaviour is driven by **safety and security concerns**.

The women interviewed in Islampura expressed a **strong sense of stability and community** within the settlement. They highlighted the importance of **strong relationships between the local mosque, the councillor, HAL, and BBMP/BWSSB,** which facilitate access to WASH services. The settlement receives basic city services, including stormwater drainage, sewerage connected to the Mahadevapura STP, and piped water from the Cauvery supply. However, **technologically,** the WASH infrastructure is **aging, outdated, and insufficient** to meet the needs of the growing population. Piped water is available only once or twice a week, often at irregular hours, forcing families to rely on water tankers. Due to the narrow lanes, the BBMP tankers cannot access all homes, and smaller, and sometimes more expensive auto-rickshaw-based tankers are used instead. Most buildings in Islampura have a kitchen and bathroom on each floor for each family unit, but the **inadequate sewerage system, the high cost of installing sumps, and the intermittent water supply** mean that ground-floor bathrooms often serve as shared facilities for the entire building. During the summer months, some families are forced to share bathrooms with neighbours. **Blue water drums** are commonly used to store water outside most houses. Water taps, installed by the BBMP to tap into groundwater, are located at the ends of many streets, but most have run dry, according to the

women. They use plastic hoses to extend down the streets, connecting the drums to the tankers for water access. Most ***decisions regarding water management***—such as purchasing water from tankers or the ATM, constructing sumps, and interacting with the BBMP/BWSSB or the local councillor—are made by the men in the community.

Climate Change, Gender and Access to WASH

One of the most ubiquitous objects in the streets of all the settlements studied is the ***blue water drum***. Typically **placed outside homes**, near **public taps**, **water pipes**, or **tankers**, they are a central feature of the daily life and water collection routines in these communities. The drums are usually filled by women and young men or children and are always either halfway or completely full, indicating irregular access to water. The blue drums reflect the **prevalence of water challenges** in these low-income communities; constant visual reminder of the **scarcity** and **uncertainty** surrounding access to clean water.

Blue water drums outside Islampura residence

Store selling Blue Drums in Pai Layout

The presence of ***blue tarpaulin sheet roofed shelters*** spread ***intermittently*** across the middle class Pai Layout and low-income settlement of Islampura is a visual reminder that many people in Bengaluru ***still have precarious living conditions with little access to water and sanitation and are extremely vulnerable***. Their living conditions stand in stark contrast to the adjoining more affluent and well-planned neighbourhoods, underlining the **divide** between the **city's rich and poor** when it comes to access to **basic services**. None of the blue tarp shelters had water connections or toilet facilities. This forces residents to rely on **informal and often unhygienic alternatives**, such as **using neighbours' toilets** or **open defecation**. Water is hauled across from neighbouring buildings or public taps in the street making water access **irregular** and **labour-intensive**, particularly for **women** and **children**. Even in the notified slum of Byrasandra, ***access to water and sanitation*** is problematic due to erratic supply, poor quality of infrastructure, gradient of the settlement and poor response from BBMP/ BWSSB.

Blue Tarp shelters in Pai Layout inbetween Apartment Buildings

Steep Gradient in Byrasandra

Bengaluru, traditionally known for its pleasant and moderate climate, has recently seen a marked shift towards **erratic and extreme weather events**. The city, like much of India, is increasingly facing the **impacts of climate change**, with **floods**, **cloudbursts**, **heatwaves**, and other unpredictable weather events causing significant disruptions to daily life, particularly for the **marginalized communities** living in **low-income settlements** and **slums**. The non-notified slum of ISRO Colony floods every year due to its proximity to a storm water drain. Pai Layout, Islampura and Byrasandra all flood in the monsoons, causing significant damage to lives and livelihoods. In the last two years, the ***extreme heat of the summer*** has also had disastrous impacts in all the settlements studied. Water supply has been drastically affected resulting in ***demand for tankers***. Shelters, typically capable of handling the temperate Bengaluru weather, have struggled with the extreme heat. ***Lack of ventilation and tin roofs*** have exacerbated the heat impact within the shelters. **Women and children** in particular bear the brunt of the heat, as they often **spend more time at home**, cooking, caring for children, or completing household chores. The **heat** exacerbates **respiratory issues**, **dehydration**, and **heat exhaustion**, which are especially dangerous for young children, elderly, and individuals with pre-existing health conditions.

Bangaluru has an **Action Plan for Climate Change**[52] The Plan identifies the Urban Poor and Water and Sanitation as key areas of ***vulnerability.*** It identifies the lack of an institutional mandates for resilience planning and management, lack of an integrated approach, ***over engineered solutions*** and poor understanding of ***vulnerable groups***, patterns of development and food security. It notes impacts of climate change such as declines in agricultural yields in Bengaluru's wider catchment (potentially impacting Bengaluru's food security and livelihoods for those working in agriculture), increased morbidity and mortality from flooding, an increase in ***water borne diseases and cholera***, an increase in power demand in buildings, and damage to road infrastructure. Both Pai Layout and ISRO Colony are regularly affected by water borne diseases due to their proximity to storm water drains. The study points out that approximately 43 % of Bengaluru's population lives in ***multi-dimensional poverty***. Most slum areas are largely not connected to city water supply and sanitation networks, leading to dependency on ***ground water or tanker water which may be of poor***

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[52] *Future Proofing Indian Cities-Bangalore Action Plan for Water and Sanitation Infrastructure*, 2014, Atkins, IIHS and UCL https://niua.in/csc/assets/pdf/water/Action-Plan-for-Water-and-Sanitation-Infrastructure-Bangalore.pdf

quality. The lack of latrine facilities and waste collection is highlighted. Solutions include *Improvements to wastewater collection* and treatment and distribution management, *strengthening social capital* and policy and regulatory improvements.

In our study, the low-income settlements are largely dependent on piped water, especially the slums of Byrasandra and ISRO Colony. However, in the last five years, the settlements, especially the low-income settlement of Islampura have become more dependent on tankers and borewell water. Most unregularized low-income settlements are dependent on tankers that source their water from borewells. The government has installed water ATMs in many communities but last mile connectivity is an issue for most households making it difficult for residents to access clean water at their doorsteps. The water ATMs are primarily sourced through ground water. **Groundwater management** is highlighted as an area of concern, with no clear **policy or regulatory framework** in place to address issues such as **pricing**, **location**, or **sustainable extraction** of groundwater. The **lack of regulation** means that water extraction is largely **uncontrolled**, further depleting resources and making water access unpredictable.

Pipes from Taps in the Byrasandra slum

Individual Toilets in Byrasandra slum

Bengaluru's struggle to address the **water and sanitation issues** in low-income settlements is reflected in the daily lives of its marginalized residents. Savitriamma and her pregnant daughter, in Pai Layout, still have to walk to the neighbouring apartment block to collect water. They balance the heavy drum on her shoulder for the journey back to her blue tarp shelter. During the summer, this trip is repeated frequently. She is tired and dehydrated from the trips. Hers is one of the many women's stories in the struggle for *water access and security*. As the hurdles of climate change continue to worsen, women like Savitriamma are being forced to find solutions to care for themselves and their families. The *societal burden* of water collection falls on women like her. This affects them adversely in terms of nutrition and food security, disease risks, reproductive health, personal safety, and access to education.

In 2017, the World Food Programme described three connections between *water and food insecurity*. The *lack of access* to enough clean water for hygiene and household use is applicable to all the settlements studied. Having clean drinking water is crucial for *nutrition and disease prevention* because its absence weakens the body's ability to absorb nutrients. All the women

interviewed complained that **water timings** were a problem, **water quality** was an issue (especially tanker water) and in Pai layout, the women from the blue tarp shelters had trouble **accessing water**. With more time spent on accessing and treating water, there was less time for education, childcare, and income-earning work, leading to worse economic and health outcomes.

A UN water report[53] reported *that in urban areas, the main challenge is often a lack of access to basic services in informal settlements, or high prices and a lack of quality control of water from private vendors.* This is very much the case in Byrasandra, ISRO Colony, Pai layout and Islampura. The women in Byrasandra have formed a cooperative **demanding better-quality water** from the BBMP/ BWSSB. Untreated sewage is discharged through open sewage drains near the water tank in Byrasandra, thus contaminating the water. This results in dangerous water-borne diseases such as cholera and typhoid. The women are demanding that BBMP/BWSSB find a solution. The burden of protecting their families by boiling the water falls on the women, again. ISRO Colony adjoins an open storm water drain. **Piles of garbage** are found in an along the drain. The drain is covered with flies and mosquitos and has a constant stench. Here too **water borne disease** is a constant threat.

Sewage is discharged near the water tank in Byrasandra

Pipelines are old and poorly maintained; often interchanged with sewage lines causing contamination

The **responsibility of household chores** and taking care of children largely rests on women's shoulders. Water is essential for drinking, cooking, bathing, and breastfeeding, as well as for hygiene purposes during menstruation, pregnancy, and birth. Women need water to take care of their families; thus, bearing a **disproportionate burden of climate change**. In the Pai layout, Savitri Amma's pregnant daughter is still forced to collect water despite her condition, because her mother has to work. In Byrasandra, Velliyamma spends inordinate hours visiting the local BBMP office and the councillor to solve the sewage blockage issues. As her husband is the primary bread winner, and despite the fact that she works as a domestic help in multiple houses, her time is considered less valuable. In Islampura, due to personal safety reasons, women try to finish their water and sanitation related chores before daylight ends. This creates a unique set of challenges.

Water insecurity also leads to **reproductive health risks** that are entirely unique to women. Studies have shown a direct connection between infection rates and women's access to water, sanitation,

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[53] https://www.unwater.org/water-facts/water-and-urbanization

and hygiene (WASH) practices[54]. **During Covid,** the women of Byrasandra formed self-help groups to provide water for people that were unwell. Women are also at risk of harm because of dangers associated with their water-gathering responsibilities. Many of the women in Byrasandra wake at 3 a.m. to fill the blue water drums; most lose sleep worrying about water for the next day. The women in Pai layout face **harassment** on their way to the latrine as do the women in Byrasandra. They travel in groups and early in the morning. In ISRO Colony, young women go to the public toilets in groups to avoid harassment. Many women experience domestic violence if they are unable to fulfil their household obligations. In households lacking toilets, women are responsible for the disposal of faeces for young children and sick adults. This and washing utensils in **contaminated water** exposes them to **health risks**.

Most of the women interviewed in Pai Layout and Byrasandra were the **primary water collectors** for their families. Most were caretakers of younger children during their youth, were married off early becoming young mothers shortly after. Most have **barely pursued an education,** remaining confined to traditional domestic roles.

Many of the women interviewed expressed feelings of **shame, fear and embarrassment** when defecating due to inadequate and inaccessible sanitation services. The inability to provide private household sanitation to visitors or guests creates additional embarrassment for hosts. In ISRO Colony slum, **poor-quality toilet facilities such** as inadequate toilet design (lack of doors, locks, roofs, and walls), non–gender-segregated toilets, and poorly maintained facilities with faeces and urine contaminating the environment, are significant issues. In Byrasandra and Islampura, parts of the settlement are inaccessible due to open defecation. To avoid shame and prying eyes, women often bathe **early in the morning, control their diet (avoiding liquids) at night and bathe with clothes on**. This causes **extreme stress** as they are always tense. Some of the women interviewed take low-paying domestic jobs in exchange for access to private bathing and toilet facilities. Despite the Covid crisis, most women have **limited access to soap and face taboos** against washing and drying menstrual cloth in public. During their periods, women in the four settlements bathe less and increasing their risk of health issues.

Unfortunately, **gender nonconforming people** were not easily accessible for interviews. Key informant interviews indicated that most face extreme hostility in the settlements visited. Many are sex workers and reluctant to disclose their identities outside of close circles. Access to sanitation is particularly challenging for them, especially in in **public and community toilets**. **Elderly** and **disabled people** in low-income settlements also face significant difficulty accessing sanitation, particularly during the monsoon season, when conditions worsen.

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[54] Baker, K. K., Padhi, B., Torondel, B., Das, P., Dutta, A., Sahoo, K. C., Das, B., Dreibelbis, R., Caruso, B., Freeman, M. C., Sager, L., & Panigrahi, P. (2017). *From menarche to menopause: A population-based assessment of water, sanitation, and hygiene risk factors for reproductive tract infection symptoms over life stages in rural girls and women in India. PloS one*, *12*(12), Article e0188234. https://doi.org/10.1371/journal.pone.0188234 https://web-archive.lshtm.ac.uk/www.shareresearch.org/research/menarche-menopause-population-based-assessment-water-sanitation-and-hygiene-risk-factors.html

Poorly designed toilets/ bathing spaces with little privacy in Byrasandra

Lack of facilities force people to bathe outside

Community usage of WASH in low-income settlements can be understood through the lens of **politics, power and governance institutions**. All settlements studied, each have distinct local microeconomies and social dynamics, which shape their access to and management of resources. The processes of local governance for these micro economies vary significantly. The low-income settlement of Islampura, the notified slum of Byrasandra and the non-notified slum of ISRO Colony are more cohesive in terms of community which gives them more **power in institutional settings**. The older cohesive minority community of Islampura is able to **leverage local governance mechanisms** to **demand services** from BBMP/ BWSSB, primarily through male representation. Similarly, despite being a non-notified slum, ISRO Colony also maintains cohesive representation with the municipality. In Byrasandra, the women have coalesced around their scheduled class **(identity) designation** to demand services from the BBMP and their local legislator, though less successfully. In contrast, Pai Layout exhibits a fracture in governance. The middle-class apartment complexes in Pai Layout have access to "better" governance, while the **very low-income and migrant shelters lack any governance support**. These migrant settlements are also affected by the **ambiguity regarding legal designation**. These shelters, consisting of small clusters of 8-15 houses (down from 50-60 a decade ago), fall below the 50-60 shelter threshold required for official "slum" status, making them vulnerable to exclusion. As a result, the migrant population in Pai Layout literally **fall between the cracks** and are being pushed out by rising real estate prices and infrastructure projects like K-RIDE. Most of the remaining migrant households are **headed by women** who have lost their husbands and lack the economic resources to relocate. These women face significant challenges, both in terms of their housing situation and access to basic services.

The individual consequences that women confront in these low-income communities are **exacerbated by climate change**. Women and poorer communities struggle to recover from setbacks such as loss of shelter, water and sanitation during floods and heatwaves. Climate change deepens inequities for the marginalized **particularly women, children and gender non-conforming individuals.** Discriminations and limitations, such as barriers to accessing resources and services, negatively affect the socioeconomic status of women and girls, leading to school and work

absenteeism. This cycle of **gender inequality** perpetuates poverty and vulnerability, making it harder for these communities to break free from systemic disadvantages

Structurally, there is a notable lack of gender sensitivity in the policy or bureaucratic level towards WASH, especially at the settlement level. While **Gender Equality and Social Inclusion (GESI)** is a technically incorporated into many infrastructure projects, the necessary budgetary provisions to support GESI at the local government, urban local body, ward and settlement level are often absent. As a result, the implementation of gender-sensitive policies remains tokenistic. Moreover, the workforce involved in WASH projects—such as engineers, linesmen, and other personnel at urban local bodies—is predominantly male. This **gender imbalance** means that there is limited attention given to the gender-specific aspects of WASH, further neglecting the needs of women, children, and marginalized groups in the planning and execution of sanitation and water management projects.

Aspirations of the Women Respondents

- All the women respondents wanted to live in safe and 'better' neighbourhoods, with regular and clean water supply, adequate sewage systems and with social services like schools, hospitals, street lights, markets, accessible transportation, police stations and parks and recreational spaces.
- Most of the women wanted safer roads and better access to transport, especially to be able to walk back safely at night from the bus stand after work.
- All the women, wanted concrete houses with inbuilt toilets, to use at night, pregnant and when unwell.
- Most women wanted to stay in the area they were in, due to long connections to their settlement, community bonds and access to work and education. No one wanted to be relocated even if the government offered them other housing options.
- None of the women wanted to return to their native villages as they felt they would have no rights or freedom there.
- All the young women wanted 'room' to live in and weren't too concerned about the legality of the settlements they lived in.

Conclusions

This study covers a spectrum of informal settlements and slums ranging from pockets of migrant settlements in the rapidly developing privately owned Pai Layout to the non-notified slum of ISRO Colony Slum in Indiranagar to the notified slum of Byrasandra in Jayanagar to the municipal neighbourhood of Islampura, near Whitefield. While different in their relationship to tenure and typology, all four settlements are low income and face similar issues related to water, sanitation and hygiene particularly concerning access and quality.

Common issues that plague all the settlements studied (relating to WASH) include access to power and bureaucracy, quality of technology and the role of the citizen/ electorate in defining WASH in their neighbourhoods and last but most significantly, access to financing. These are primarily structural aspects of infrastructure development; they have neighbourhood level impacts as well as impacts on inclusivity and gender.

Access to Power and Bureaucracy

In all the settlements studied, despite the BBMP/ BWSSB providing basic services, the quality of the facilitation of WASH services by the bureaucracy is less defined by the **Notification Status** and more by the **community's relationship** with the local bureaucracy. **Caste, religion, class and gender** play a role in the provisioning of WASH on an everyday basis. In Byrasandra, Scheduled Caste women demand services; in Islampura, older Muslim men and in ISRO Colony slum, older men engage in negotiations with the local BBMP offices- on a daily basis. The women of Byrasandra likely assume the role of negotiators to mitigate the **power disparity** between the typically upper caste government engineers and their lower caste husbands, fathers or sons.

Likewise, the **gender discrepancy** between bureaucracy and the slum residents is plays a significant role in negotiations. Of the 350 engineers in the BWSSB in 2010, only 4 were women.[55] Off the 100-odd meter readers only a handful are women. In all the settlements studied, site engineers and meter readers were men.

Language and paperwork-based power discriminations also play out in everyday negotiations between the settlements and the bureaucracy. Applying for **tenure documents** such as khatas/ hakku patras in the Notified Slum of Byrasandra are facilitated an **opaque and overwhelming set of paperwork** often in English. Papers[56] are issued by various agencies and range from *Parichay Patra to Gurutina Chitthi*: to *Thiluvalike Patra* to a *Lease deed* to *Swadheena Patra* to *Occupancy Certificate* to *Possession Certificate*[57]. The **Politics of Signatures** and recommendations only adds to the frustration of not having the right documents and the vagaries of how to obtain them. Making residents **run from pillar to post for basic services** is a widespread issue enabled by the local bureaucracy across all

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[55] https://www.deccanherald.com/india/karnataka/bengaluru/women-get-fair-deal-bwssb-2486397

[56] *'Observations of Water Equity in Low Income Communities in Bengaluru April 2023'*, Environmental Synergies in Development (ENSYDE)In collaboration with BIOME Environmental Trust https://urbanwaters.in/wp-content/uploads/2023/12/Water-in-Low-Income-Communities.pdf

[57] *Parichay Patra,* BBMP identification given when transferring land to the individual that belongs to another agency (like BDA), *Gurutina Chitthi*: identification document with the site number/house number and photo copy of the identification document of the person, *Thiluvalike Patra*: letter containing the holder's details, house number and slum details, *Lease deed* — private: a private lease agreement that specifies a duration for which the documented person has ownership, *Swadheena Patra*: issued by the BDA to residents (if the slum is on BDA land) during the transfer of land ownership to BBMP, *Occupancy Certificate*: temporary identity document for the land, *Possession Certificate*: (primarily issued by KSDB) gives one the right to live on the land, conferring ownership of a house or apartment but not the land on which the dwelling exists

the settlements studied, regardless of **Notification Status**. All participants surveyed expressed frustration with governmental processes in accessing WASH services.

Socioeconomic structures of control and domination continue to undermine the accessibility, impartiality, and accountability that bureaucratic processes may well deliver elsewhere[58] The **class, caste and gender inequities** in the governance mechanism, i.e. BBMP and BWSSB need to be addressed to facilitate better access for the poor and marginalized citizen.

Ownership, tenure and investment in the future

Residents of all the settlements studied except Islampura (which is a municipal area) live in extremely **insecure conditions with inadequate access to basic services**. On one hand, Bengaluru is promoted as a 'world class' city- ostensibly slum free, leading to **evictions and displacement**[59]. On the other hand, the lack of affordable housing[60] results in slums and informal settlements. Under the slum act of 1972, municipalities are prohibited from clearing a **notified slum** for 10 years or more and are eligible for central government funding for infrastructure improvements. Living in a notified slum, therefore, implies improved security of tenure. However, with increased migration to Bengaluru, the municipality is overstretched and unofficially stopped notifying slums after 2011. In the non-notified areas of ISRO Colony slum and Pai Layout, residents have **very insecure tenure living conditions**. Even in the notified slum of Byrasandra, for people that moved in after the **cut-off date**, tenure ship is uncertain. Accessing **tenure ship documents** is a long **uneven, opaque** and **complicated** process. Only people in notified slums can apply for them. Residents of new migrant settlements (Pai Layout) and non-notified slums (ISRO Colony slum) are excluded. Notably, residents of notified slums **invest in their properties** (building concrete structures, 3-4 storey homes and **individual toilets**) after notification. In ISRO Colony slum, a long standing non notified slum and despite receiving basic services like water and electricity from the city, residents are still uncertain about their legal status and have invested in **only one storey high** permanent (concrete) shelters.

Quality of infrastructure, maintenance and service provision in informal settlements

While the **municipality provides basic services** to most informal settlements and slums, **regardless of classification**, service provision is often ad hoc and dependent on interpersonal and political relationships. The **quality of WASH service provision and problem solving is inconsistent**, especially in terms of materials and financing. Decision making is often shifted back to the community. Service provision is localized but decisions about quality of material, finances and technology are made at a policy level. All the participants surveyed reported that despite complaints to the BBMP about water shortages and sewage leaks, they frequently had to **bear the cost of repairs** themselves. While there was anger about the situation, there was also a sense of resignation.

Quality of Infrastructure Technology

In all the settlements studied, the **quality and technology** of the WASH infrastructure is **very basic** in **with little attention to sustainable operation and maintenance**. Narrow water pipes and pit latrines are the standard, most **pipelines are over a decade old**, **corroded** and very poorly managed. There is a complete **lack of operation and maintenance** of the systems. There is a complete lack of proper operation and maintenance. **Solutions are piece meal** and cheap; mostly financed by individuals in

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[58] Carswell G and De Neve, G, 2020, *Paperwork, patronage, and citizenship: the materiality of everyday interactions with bureaucracy in Tamil Nadu*, Journal of the Royal Anthropological Institute (N.S.) 26, 495-514 India https://rai.onlinelibrary.wiley.com/doi/pdf/10.1111/1467-9655.13311

[59]'*Governance by Denial, Forced Evictions and Demolitions of Homes in Ejipura/ Koramangala'* 2013, Housing and Land Rights Network – Delhi and People's Union for Civil Liberties – Karnataka https://www.hlrn.org.in/documents/Bangalore_Fact_Finding_Mission_Final_Report_June_2013.pdf

[60] https://www.deccanherald.com/india/housing-for-all-who-is-left-behind-1085506.html

the settlement themselves. Due to inadequate water supply, three of the settlements (Byrasandra, ISRO Colony and Islampura) rely on small-scale private providers like tankers, and on self-provisioning, typically through borewells (mostly dried up now) or hand-pumps (in ISRO Colony slum, till a few years ago). In absence of continuous storage mechanisms, the households invest in **storage devices**—the ubiquitous blue drum. **Water quality** is a significant issue in the settlements studied. Regular **leakages and overflowing** of the sewerage lines into adjoining water pipelines in Byrasandra, ISRO Colony and Islampura adversely affect the quality of water. **Water contamination** due to proximity to polluted storm water drains causes regular **disease outbreaks** in all the settlements. The **quality of tanker water** provided by BWSSB is also dubious. As most groundwater aquifers in Indian cities are polluted, **tubewell and handpump water** is also often contaminated. **Water ATMs** are located too far away from most households in all the settlements. In Islampura, the sewers are badly maintained and have regular blockages, siltation, missing manhole covers etc. Improper disposal of solid waste also tends to block sewer lines. Sometimes, storm water enters the sewerage network, leading to inflow in excess of the capacity of the system, and hence sewer lines cannot function. **Maintenance** is typically only addressed in crises. In Byrasandra, pit latrines and single stretch sewer lines are **dysfunctional and constant clogged**. Many households build and maintain the sanitation facilities at the household level, including cleaning and emptying of on-site systems. In ISRO Colony slum, **residents regularly repair** taps leakages, roofs and floors of the public toilets, particularly in the monsoon season.

Grievance Redressal and Public Participation

In all the settlements studied, the women seek better quality infrastructure and services from the BBMP. In both the notified slum of Byrasandra and in the non-notified slum of ISRO Colony slum, **women want to be included in Policy level discussions on WASH**. They want to be part of the discussions on the number and placement of public and/or community toilets, maintenance, water management for the settlement and the improvement of sanitation conditions. They expressed that they are **largely ignored** and water and sanitation management is typically in **crisis mode**. The women of Byrasandra have formed a cooperative to **demand services** from BBMP.

There are **transparency and gender imbalances** in the **Grievance Redressal** Process at the local level. The system is **opaque and difficult** to navigate. Municipality staff's engagement with women is inconsistent due to the **lack of capacity and training on gender, grievance redressal and communication**. Most staff members are men. Both the community and the petty bureaucracy lack and training in gender, climate and communication issues.

Most **community engagement** occurs through **water meter readers, line engineers and sanitation inspectors**. Given the high volume of complaints, these staff members are always in **firefighting** mode. Local-level staff **do not have the power or the finances** to influence policy changes. Senior and junior staff generally lack training in dealing with women, who are the primary complainants in the settlements studied. Local municipality offices don not have sufficient bathrooms or waiting areas for women. Most offices are understaffed and tend to ignore complaints, unless escalated by a politician. While there is substantial public participation by the communities, the municipality's response is typically tokenistic or ad hoc, influenced by political considerations.

Policy Framework for Service Providers

In all the settlements studied, WASH is supposed to be facilitated by the ULB. However, service provision and grievance redressal is complicated, partly because BBMP (the ULB) and BWSSB (a parastatal) operate in silos. They typically rely on **performance benchmarks** that are **overly quantitative and techno bureaucratic**. with little attention given to socio-economic or environmental

performance benchmarks. These benchmarks need to be applied at the policy level particularly within programs such as AMRUT and SBM. Little effort is made by the urban utilities to benchmark their utilities annually. In the case of JNNURM, performance benchmarking is linked to funding, while with SBM, the main objective is to develop a common minimum framework for monitoring and reporting indicators, along with an operational plan to improve and implement it. Apart from these two national programmes, there has been little effort by the urban utilities to benchmark their utilities annually. At the local level—particularly in the settlements studied—performance benchmarks are rarely applied. ***Solutions tend to be over engineered and seldom cost effective.***

Technology and climate responsive policy are largely neglected at the local level. However, the individual consequences women face in these low-income communities due to climate change—such as property damage and loss of access to sanitation—have severe long-term impacts on the cycle of poverty.

Financing

Despite the devolution required by the 74th Amendment, the ULB has limited power and even fewer financial resources for WASH infrastructure and its maintenance, particularly at the local level.

Currently, most capital investments in infrastructure are made by the Centre or the State. While technically, operation and maintenance fall in the ULB's hands, the lack of funding results in bare minimum service provision. The slums of Bengaluru seem to be the lowest priority. Nonetheless, BBMP making efforts to provide basic services to all the settlements studied, notified and non-notified.

The sector is characterised by low revenues, both due to low collection rates, and low pricing. In Bengaluru, the average charge for water metered connections is around `1.5 per kl. For non-metered connections, the average cost is around Rs`45 per month (for 1000 l). There is no separate charge for wastewater collection. The collection charges are mostly collected as part of water bill or property tax. For water ATM's, the rate is Rs 5 per for 20 litres of water.

In all the settlements studied, the residents expressed a willingness to pay for water and sanitation, provided they felt that the government was engaging with them sincerely and treating them fairly. Some of the women indicated a willingness to contribute to the construction of public and community toilets

Suggestions based on the study settlements include[61]:

	For Notified Slums	For Non-Notified Slums
Access to Power and Bureaucracy	● Integrate into **city-wide urban planning** such as **master plans**, **infrastructure development projects**, and **policy decisions**. ● **Include dedicated government officials at the ward level to** focus on **slum development** and **rehabilitation**. ● **Streamline Service Delivery** to government services for direct access to **housing development programs**, **healthcare**, and **public welfare schemes**.	● **Establish clear Processes to Regularization** to allow residents to access legal protections, land rights, and formal services, instead of ad hoc access to services. ● *Gender and caste inequity* needs to be addressed at the ward level bureaucracy. ● More women and SC to liaise with community.
Ownership, tenure and investment in the future	● **Streamline Service Delivery** to government services such as clean water, sanitation facilities, and waste management services	● Provide *immediate and flexible solutions*, such as temporary housing, ad-hoc service delivery, and long-term advocacy for regularization
Quality of infrastructure, maintenance and service provision in slums and informal settlements	● **Formal Infrastructure Investments** such as **in-situ upgrading** of housing, **drainage systems**, **water supply networks**, and **electricity grids** through **state-sponsored programs**, to improve the overall quality of infrastructure without displacing residents	● Invest in **improvised, short-term solutions** like mobile sanitation units, temporary water tanks, **mobile** health clinics or solar-powered street lights and basic sanitation facilities to meet the immediate needs of residents**.**
Infrastructure Technology	● **Smart Water Management**: Introduce smart water meters and leak detection systems to monitor water usage, reduce wastage, and equitably water supply distribution. ● **Mobile Apps for Monitoring:** Deploy mobile applications for residents to report sanitation issues such as clogged drains, faulty toilets, or water supply disruptions. These apps can also offer reminders for water usage, conservation, and sanitation maintenance.	● **Low-Cost Sanitation Technologies**: Implement cost-effective and locally adaptable technologies like composting toilets, bio-digesters, and community-based wastewater treatment systems. These systems are more sustainable for areas without access to formal sewage networks. ● **Mobile Solutions for WASH Issues**: Use mobile technology to raise awareness about sanitation best practices (e.g., safe toilet use, menstrual hygiene management). Provide basic

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[61] See Annexure 4 for details

	• **Tech-Enabled Waste Management**: Use technology like GPS-enabled waste collection routes, smart bins, and sensors to improve waste management efficiency, track the waste collection process, and prevent overflow in slums. Women should be consulted on the design and placement of infrastructure, particularly toilets, and water points to ensure accessibility and safety.	sanitation information via SMS or mobile apps to help communities manage their water and sanitation needs effectively. • **Community-driven solutions** (such as the installation of communal toilets or water kiosks) should be supported by NGOs or community organizations.
Grievance Redressal and Public Participation	• **Set up local governance bodies** with a clear mandate to involve women in decision-making • **Improve existing grievance systems** by making them more transparent and user-friendly and gender-sensitive • **Provide comprehensive training** for municipal staff, focusing on gender-sensitive grievance handling, communication with women • Create regular feedback mechanisms with **elected representatives** to hold them accountable.	• **build informal, community-led** structures to ensure that women's voices are still included in decision-making about local services. • **Strengthen advocacy groups** to ensure these complaints are escalated and addressed.
Policy Framework for Service Providers	• **Data Collection and Transparency**: Implement systems for regular collection of WASH-related data (e.g., water quality tests, toilet usage rates) and make the data accessible to residents and local authorities. • **Independent Audits**: Conduct independent audits of WASH services to assess performance against benchmarks and ensure accountability.	• **Community Monitoring Systems**: Establish community-led monitoring and reporting systems, where residents can report WASH-related issues via SMS, apps, or community committees. • **Use of Technology**: Leverage low-tech or mobile solutions for monitoring service delivery and tracking improvements in WASH infrastructure and behaviour
Financing	Increase allocation of Urban Infrastructure and Governance funds (UIG) to BSUP/ RAY components	Access infrastructure funding through urban planning methods such as town planning mechanism, TDR etc; prioritize gender, social climate and environmental safeguards

Annexures

Annexure 1- Mapping of Informal Settlements in Bengaluru

In order to get a better understanding of the types and numbers of low-income settlements across the city currently, data from various studies conducted over the last ten years was mapped. These include Karnataka Slum Development Board (KSDB) slum survey data[62] , the Blue Tarpaulin Study, 2014[63], High Risk Areas (HRA's) identified as part of the BBMP National Immunization Day NID Bengaluru survey March 2024-conducted by Public Health Centres (PHC'S) and by physically scanning google earth maps and visually identifying informal settlements.

Layer 1a: KSDB notified slums in Bengaluru, 2011

Source: Opencity; mapped by Indes; based on KSDB 2011 survey
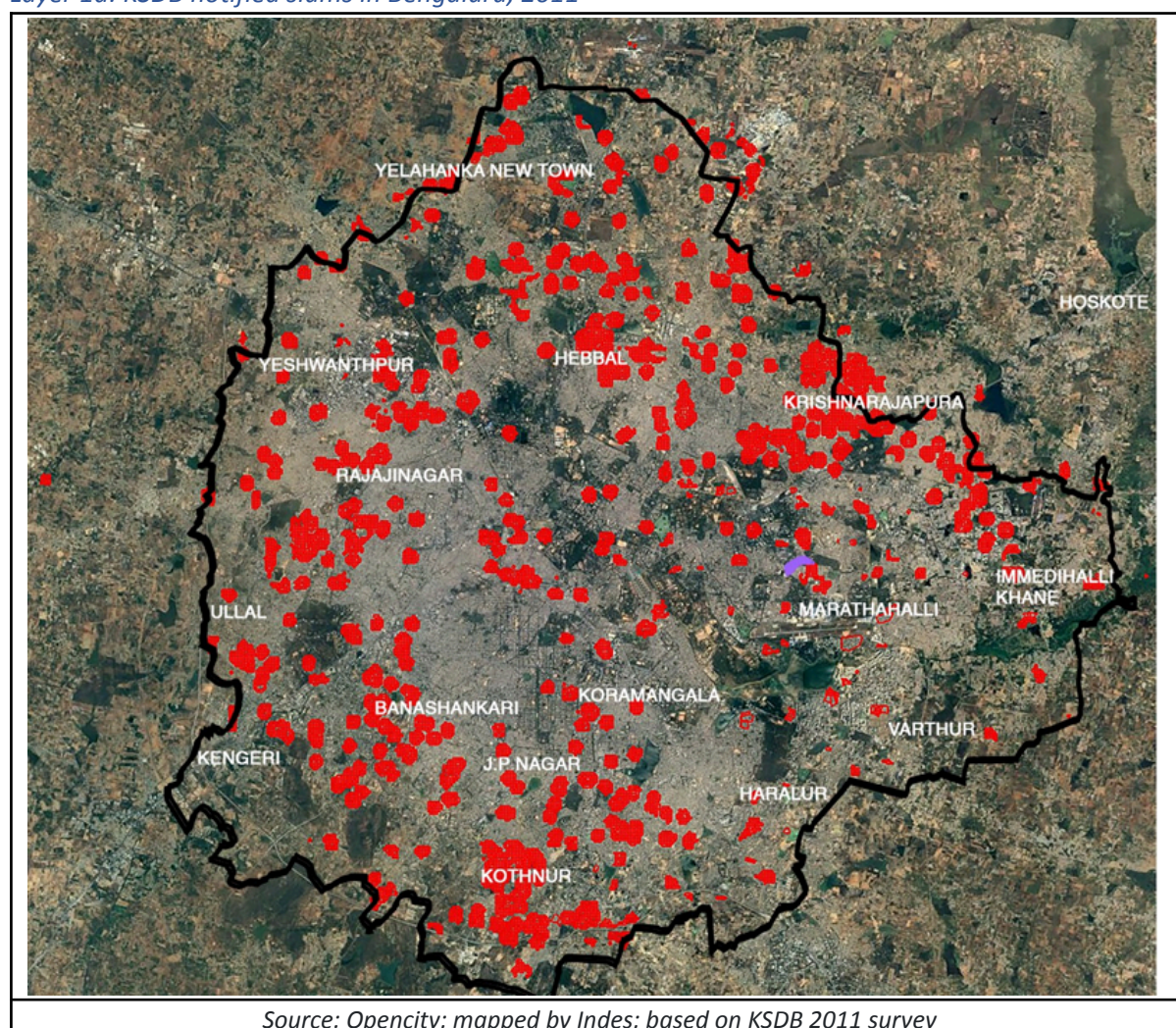
Layer 1a is based on the KSDB slum survey -2011[64]. The mapping offers an approximate location of slums though it does not provide exact boundaries. This map was developed by Indes, Bengaluru.

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[62] OpenCities.com, mapped by Indes- 2012

[63] Krishna, A., Sriram, M. S., & Prakash, P. (2014). Slum types and adaptation strategies: identifying policy-relevant differences in Bangalore. *Environment and Urbanization*, *26*(2), 568-585. https://doi.org/10.1177/0956247814537958

[64] https://data.opencity.in/dataset/bengaluru-slums-map https://www.integrateddesign.org/

Layer 1b- Mapping of KSDB 2011 data onto 2023 Ward Maps
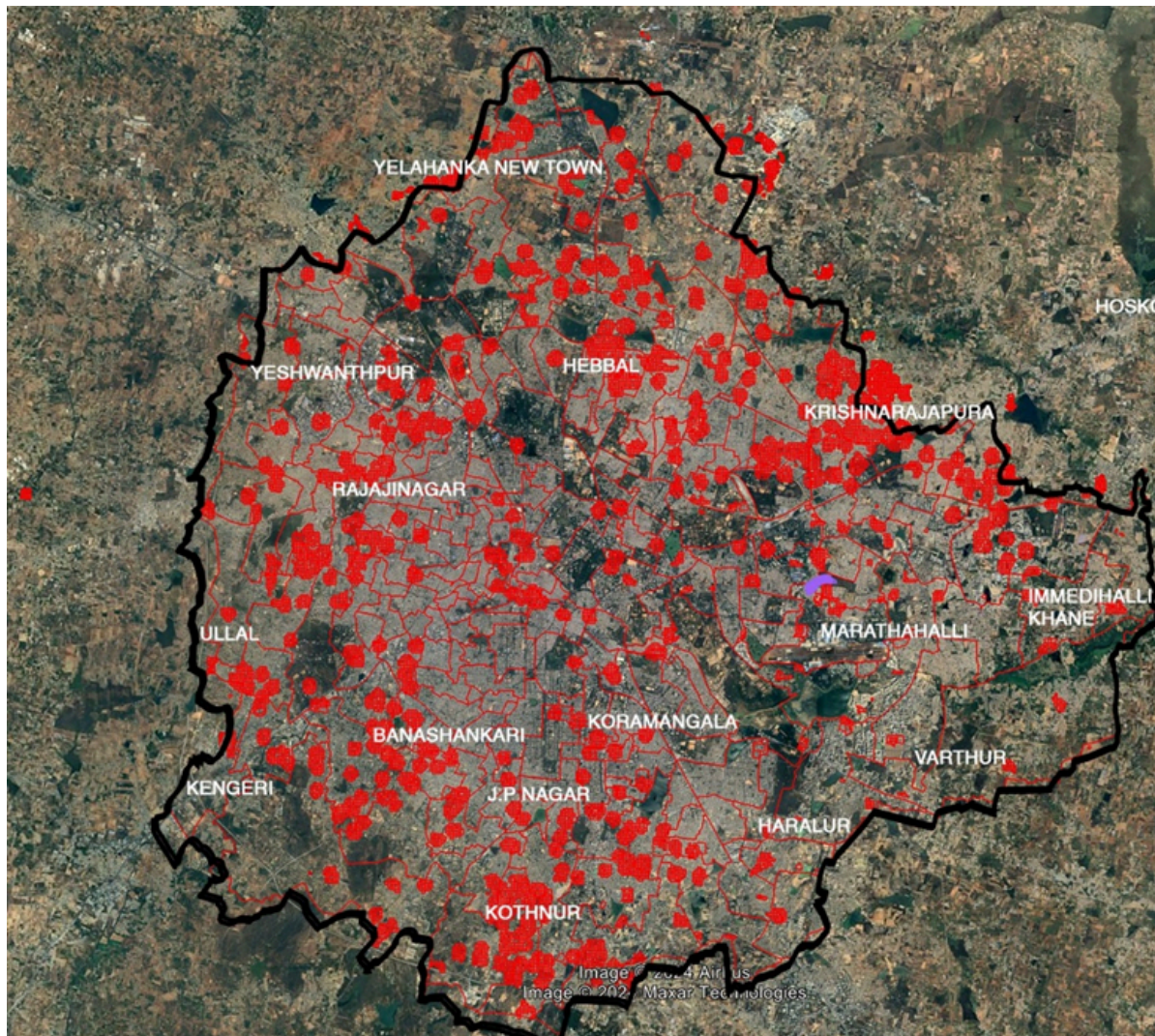
Layer 1b overlays the KSDB Slum Data 2011 onto a Ward map of Bengaluru (BBMP 2023, New Ward List[65]). This data is accessible through Opencities.com. This map is then superimposed on to a Google Earth Pro map for enhanced spatial visualization.

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[65] https://data.opencity.in/dataset/bbmp-ward-information

Layer 2: Vegetation in Bengaluru' Slums, 2014
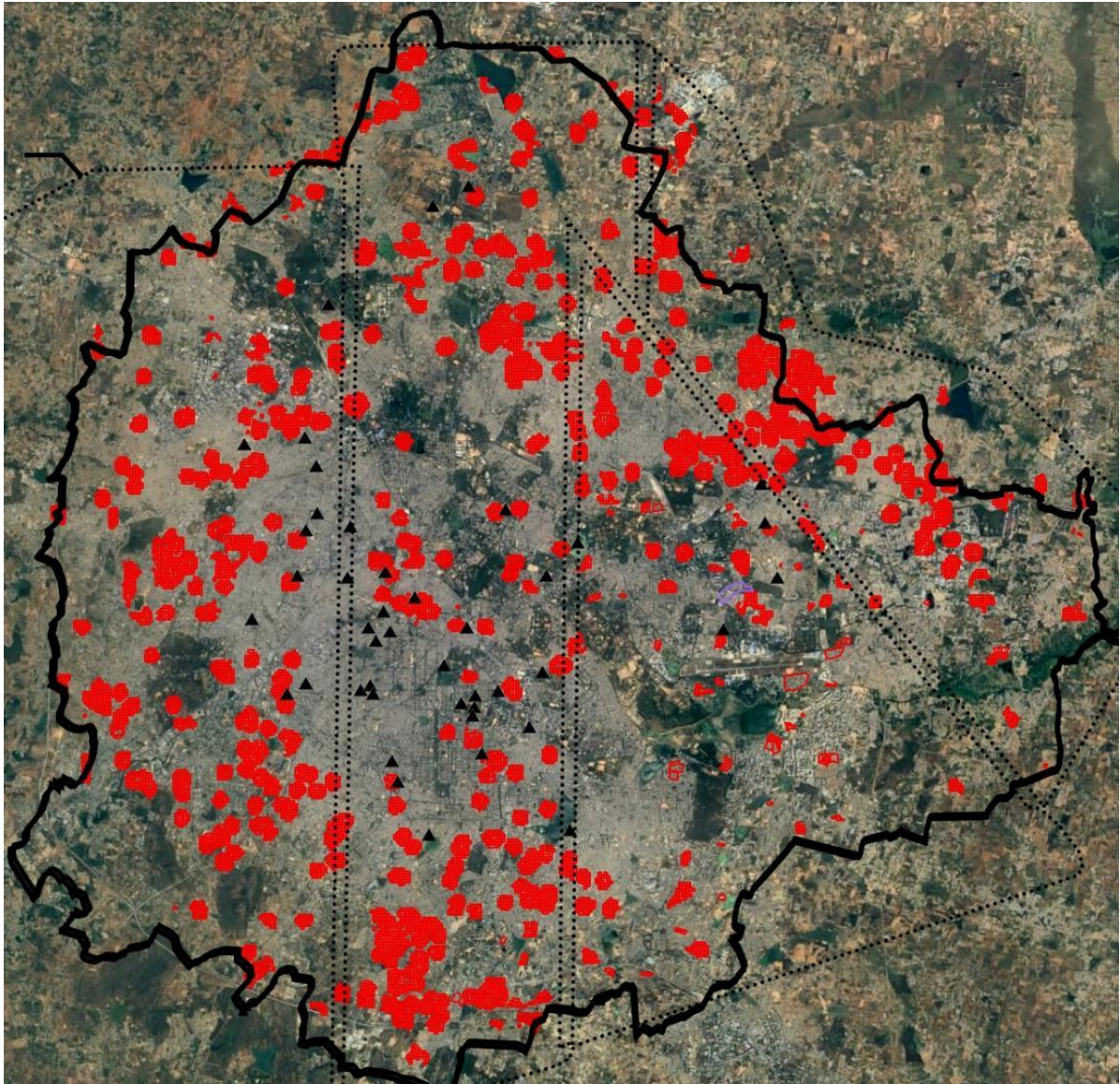
This layer is based on the 2014 study[66] that assessed the impact of vegetation on social capital, livelihoods, health and nutrition in 44 slums across Bengaluru. The black triangles on the map represent *sacred trees* within these slums. These trees are culturally significant and are often associated with local community practices and beliefs.

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[66] Gopal, Divya, Nagendra, Harini - 2014/04/28 - Vegetation in Bengaluru's Slums: Boosting Livelihoods, Well-Being and Social Capital, VL 6, Journal of- Sustainability https://www.researchgate.net/figure/Location-of-surveyed-slums-in-Bengaluru-with-reference-to-the-administrative-__boundary_fig2_267075808

Layer 3: Toilet Access among the Urban Poor, 2015

1. Naynada Halli
2. Gangodnalli Slum
3. YelhNK Old Town (AK Colony)
4. LBS Nagar
5. Priyanka Nagar (Seegehalli)
6.Govindrajnagar Slum
7.Babusaplaya Slum
8. Pulikeshnagar Slum
9. Gulbarga Slum
10. Shivapura Slum
11. Andra Colony Slum
12. Deshiya Nagar
13.Hakkipikki Colony
14.Yarabnagar Slum
15.Gandhigrama Slum
16.Jayram Slum
17. Bandepalya Slum
18. Vasanthpura
19.Bhoovi Colony
20 .Swathanthrapalya

Purple Dots = Absence of Public Toilets.   Green Dots = Presence of Public Toilets.

This layer maps the slums studied in the 2015 research study of toilet access among the urban poor in Bengaluru[67]. Public toilets provide sanitation access in densely populated low-income settlements. The study identified 20 slums (10 notified and 10 non-notified) across various zones of the city, considering factors such as land ownership (government or private land), migrant populations, location (e.g., near railway lines or sewage drains), access to toilets (individual, public, or pay-and-use), and housing schemes. Of the 20 slums, seven had public toilets. Seven percent of the total surveyed households (29 households) reported depending on public toilets. Other households had individual toilets but frequently used public toilets due to issues like blockages or drain leakages in their private facilities. Notably, the study did not differentiate between community and public toilets.

[67] Manasi S & N. Latha, 2017."Toilet Access among the Urban Poor -Challenges and Concerns in Bengaluru City Slums, "Working Papers id:12090, eSocialSciences.https://ideas.repec.org/p/ess/wpaper/id12090.html

Layer 4: University of Twente Study, 2017
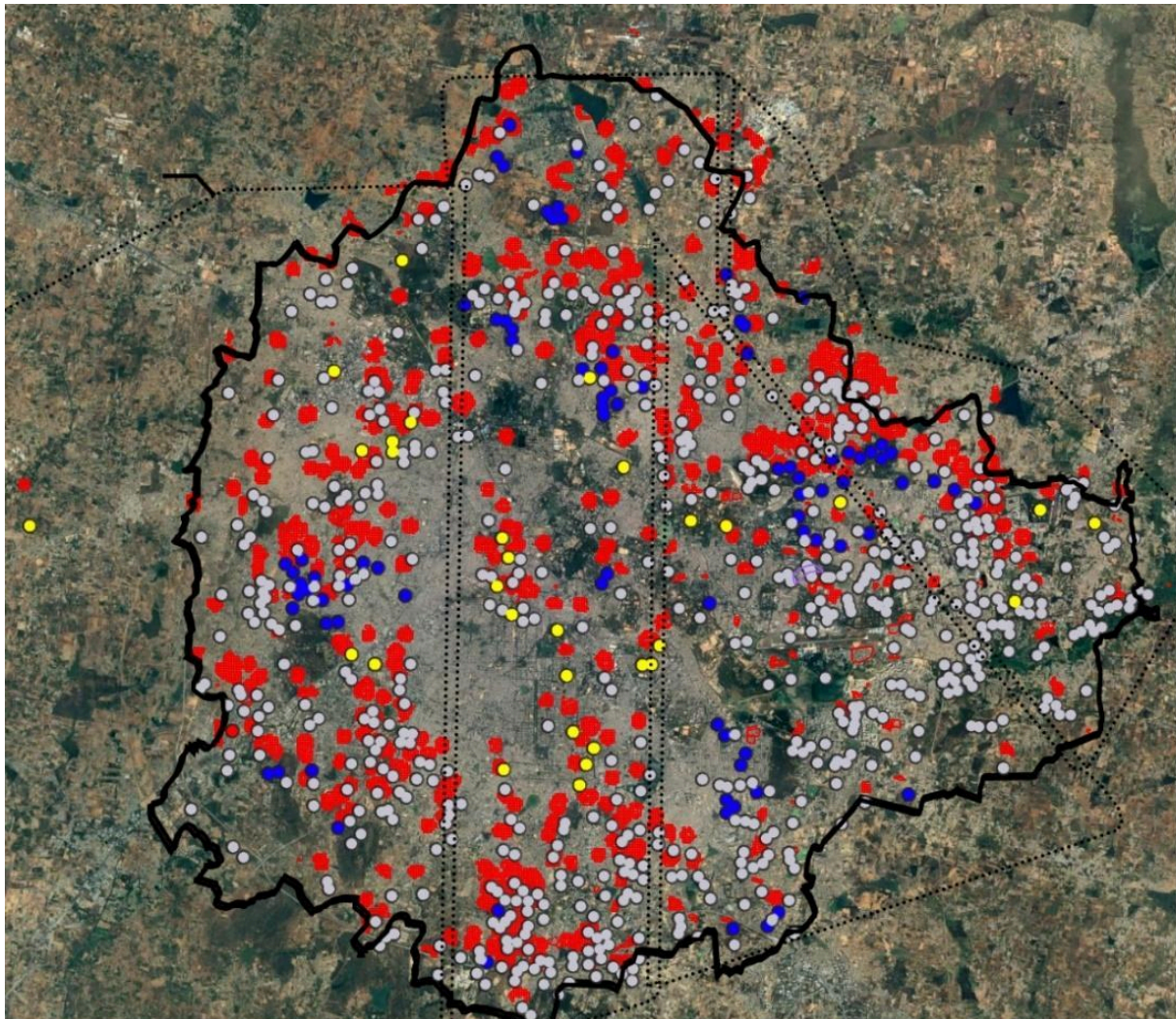
This layer maps data from a study conducted by the University of Twente in 2016-17[68] . The dataset includes two sets of socio-economic data, a set of satellite images, and GIS layers. A detailed household (HH) survey covering 1,114 households across 37 notified slums, conducted in 2010 is part of the DynaSlum project[69] Additionally, the study utilized delineated boundaries of 1,461 slums from 2017, also provided by the DynaSlum project. Given time and resource constraints, and spatial coverage, primary data referred to as "quick scan" (QS) data was collected from 121 slums. The study analysing the household data (HH) and the quick scan (QS) survey to conceptualize deprivation in urban slums.

In this layer, yellow dots indicate slums where the Household Data was collected, blue dots indicate slums where the QS Survey were conducted and grey dots indicate Other Slums.

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[68] Ajami, Kuffer, Persello and Pfeffer, "*Identifying a Slums' Degree of Deprivation from VHR Images Using Convolutional Neural Networks*",2019, Remote Sensing Based Urban Planning Indicators

[69] DynaSlum Available online: http://www.dynaslum.com/)

Layer 5: Mapping of BBMP National Immunization Day (NID) Data, Bengaluru, 2023
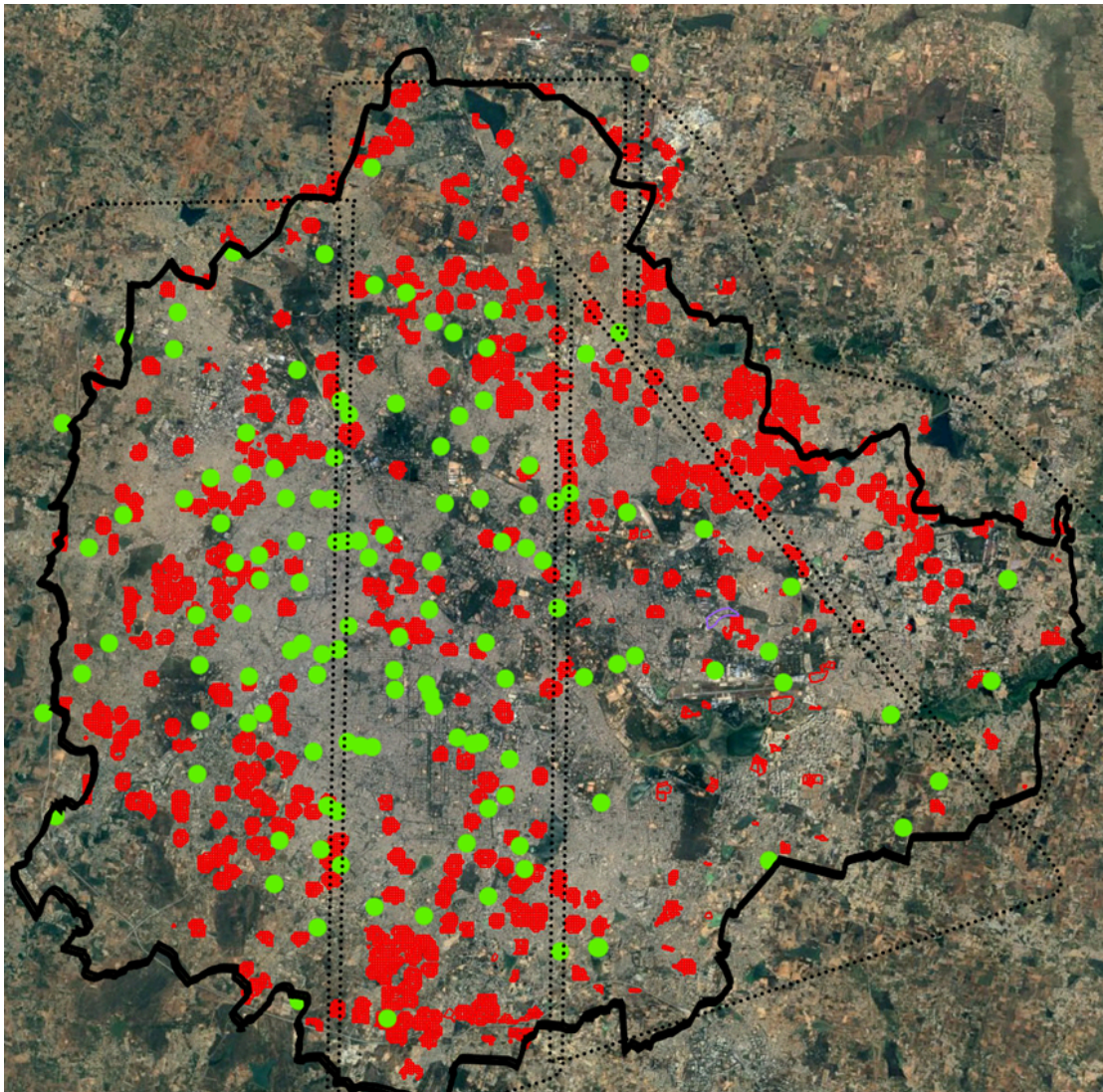
This layer maps data available in the 2023 BBMP NID Bengaluru survey. In its commitment to achieving Sustainable Development Goals 3, the Government of Karnataka captures health indicators such as mortality, infant mortality and immunization in the Health Management Information System[70].This survey was conducted at Public Health Centers (PHC'S) across the city of Bengaluru to better understand the resident population, settled population, migratory population and health risk factors in lower income groups. The survey identifies High-Risk Areas (HRA) in low-income settlements. BBMP administers the polio vaccine to children (1-5 years) at 145 urban primary health centers, 228 Namma Clinics, dispensaries, anganwadi centers, schools, bus stands, metro stations, parks, medical colleges and nursing homes. The green dots in this layer represent Urban Primary Health Center (UPHC)[71] in High-Risk Areas in the wards of Bengaluru. This survey serves as a proxy for the identification of low-income settlements in the city in 2024. This layer is superimposed onto the earlier KSDB slum- Ward Map for enhances spatial context.

[70] https://cris.maastrichtuniversity.nl/ws/portalfiles/portal/53213483/c6740.pdf

[71] NID Microplan Zone Wise 2023-24, Office of the Reproductive and Child Health Officer (RCHO), BBMP

Layer-6: Eyeball Identification on Google Earth Pro 2024
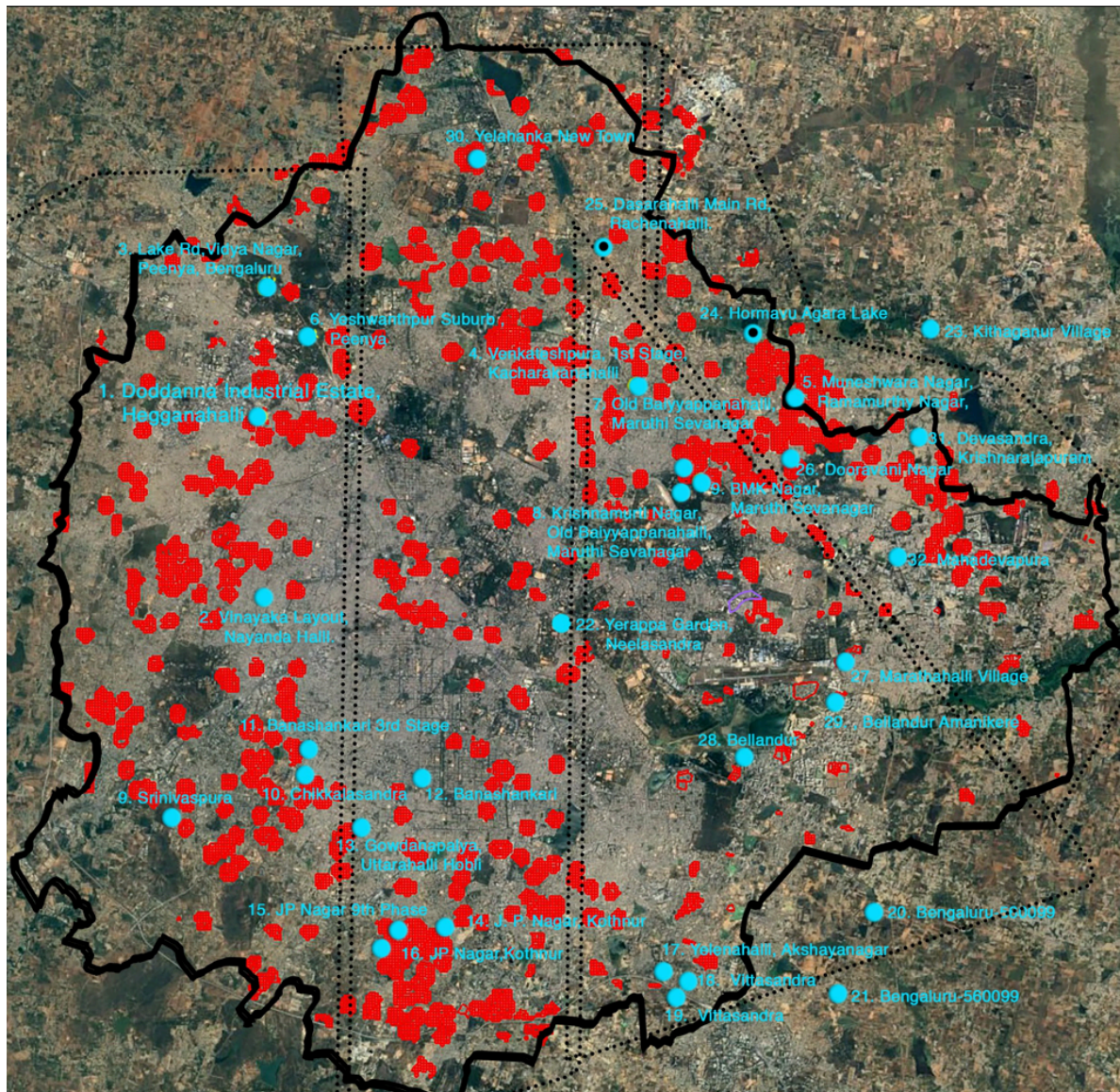
This layer identifies some low-income settlements based on Eyeball Identification. The Blue Dots in this layer represent blue tarpaulin roofs/ tents[72] which are used as a proxy for low-income settlements. The identification process involves physically scanning Google Maps for areas adjoining existing slums, low lying areas, drainage networks, lakebeds, railway lines, large tracts of land, garbage dumps, large construction sites, brown or grey roofs (indicating weathered and low-quality materials, jumbled pattern of units). Many of these parameters are informed by the Blue Tarpaulin Study[73]. The Time Slider feature on Google Earth is used to analyse settlement growth over time. However, this method is time-consuming and captures only a fraction of new settlements, making it a limited, time-bound exercise rather than a comprehensive survey of all low-income settlement.

[72] Deshpande, T. (2016) *Dimensions of vulnerability and responses: a case of Bengaluru's blue tent settlements*. ASSAR photo essay. University of Cape Town: Cape Town, South Africa. Source: http://www.assar.uct.ac.za/news/dimensions-vulnerability-and-responses-case-Bengaluru%E2%80%99s-blue-tent-settlements

[73] Krishna, A., Sriram, M. S., & Prakash, P. (2014). Slum types and adaptation strategies: identifying policy-relevant differences in Bangalore. *Environment and Urbanization*, *26*(2), 568-585. https://doi.org/10.1177/095624784537958
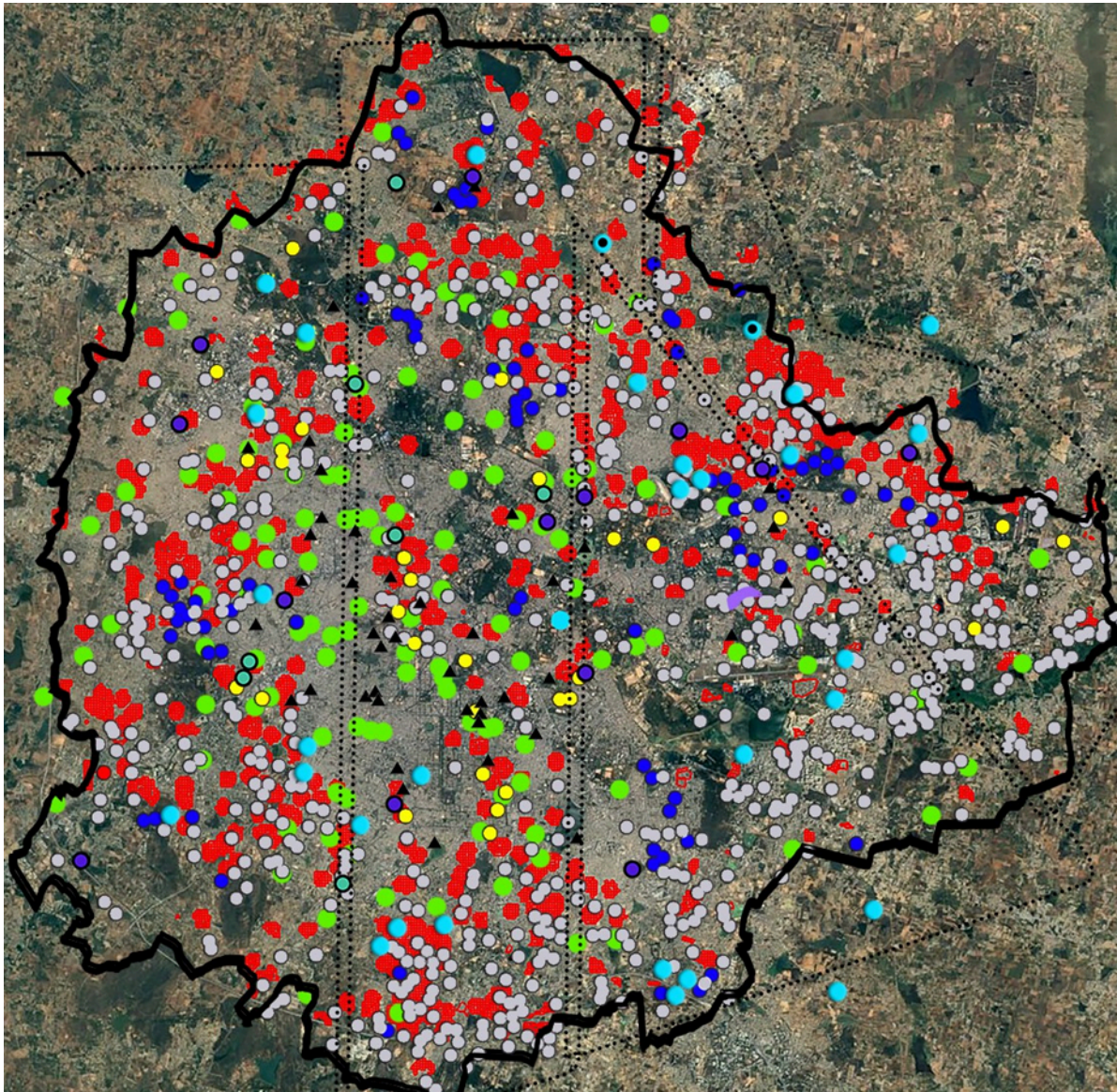
Based on the combined map of all the earlier layers, it is clear that the number of low-income settlements in Bengaluru have increased dramatically since the 2011 KSDB survey. Today, much of the city is populated with low-income settlements and slums. While the official number of notified slums (as per the KSDB survey) remains at 597, the BBMP PHC study highlights a significant rise in non-notified low-income settlements. These non-notified settlements are growing rapidly, indicating a shift in the urban landscape where informal and unrecognized settlements are becoming increasingly prevalent across the city.

Annexure 2- Profile of the Settlements

This is a study of low-income and very low settlements in Bengaluru. However, the discussion of the ambiguity of the definition of slum comes to a fore in the selection of the settlements. While the women interviewed came from low-income parts of the three settlements, only one settlement (Byrasandra) is a notified slum. The other two settlements, Islampura and Pai layout are a combination of middle- and low-income settlement types. While the middle-income areas have access to amenities and services, the lower income residents have very basic amenities and services and are slowly being pushed away.

Diversity of Settlement Type

The Byrasandra settlement, a notified slum, is an old settlement from the 1980's. Built close to NIMHANS on a slope, the settlement is a mix of tin sheds and newer pucca cement housing, some of which is being facilitated by PMAY. As a notified slum, its inhabitants have access to government welfare schemes.

Rooftop View of Byrasandra Notified Slum

ISRO Colony Layout, the non-notified slum is also an old settlement (from the 80's). It is located in central Bengaluru and is a mix of tin sheds and cement housing. None of the houses exceed one floor. Despite being a non-notified slum, basic services such as water, electricity and sanitation (public toilets) are provided. It has seen significant infrastructural improvement since 2015.

One storey buildings in ISRO Colony- non notified slum

Narrow paths in ISRO Colony- non notified slum

ISRO Colony in 2015. It has seen significant infrastructural improvement since

The Pai layout is an organic mix of middle-class apartment complexes with pockets of very low-income and migrant shelters, characterised by blue tarpaulin/ tin sheds and *chawl* like housing built by developers. Pai layout is built on private agricultural land. The older migrant labour, largely from Karnataka, lives in blue tarpaulin/ tin sheds in between the apartments. Due to its proximity to the KR Puram railway station, Pai layout is now home to more migrant labour from northern states of India. These newer migrant labours live in tenement/ chawl like facilities.

Middle Class Apartments in Pai Layout

Migrant Blue Tarpaulin Shelters in Pai Layout

Islampura is an organic and overdeveloped very low-income settlement with small plots, narrow roads and poor infrastructure. Most residents own khatas/ hakku patras for their properties.

Street View in Islamapura

Older very low income shelter on 10x12 ft plot

Blue Tarpaulin shelters between buildings

Diversity of inhabitants

The Byrasandra inhabitants have resided in the notified slum for over two- three generations. They are primarily from Karnataka, Tamil Nadu and Andhra Pradesh. Most are scheduled caste. One of the discussants indicated that her family owned some of the land that the slum is built on. However, she said they were scheduled caste and did not own papers for the land and have never been compensated for their loss. In Gundappa Layout, women generally work as maids; don't have much free time and spend their time doing chores. There is no time for leisure.

The residents of the non-notified ISRO Colony slum are primarily from Tamil Nadu and Andhra Pradesh. Most are scheduled caste. There are a few Christian and Muslim families. They have resided in the slum for over three generations. The men are mostly construction workers- and the women work in neighbouring apartments. Most of the children go to Kannada / English medium government schools / colleges and the smaller children are looked after by neighbours.

The women interviewed in Pai layout were primarily recent migrants from Nepal and North India. They had recently (one- four years) moved to Bengaluru following their husbands; most of whom worked as security guards in offices and building complexes. They mostly worked as domestic workers in the residences in Pai layout and lived in a chawl like facility. The two older Kannadiga women in the consultation had lived in Pai layout since for over 28 years. They were from North Karnataka. They were construction workers.

The women interviewed in Islampura were primarily Muslims. They were Kannadigas and had lived in the settlement for multiple generations. They were mostly housewives.

Workshop with APSA community workers

Consultations in Pai Layout

Consultations in Byrasandra

Consultations in Islampura

Tenure Security

In the notified slum of Byrasandra (and Gundappa layout), the government has issued Hakku Patras[74]. However, there is a lot of confusion and antagonism regarding the cut-off date. Older groups are being allowed to stay and build houses but newer residents are being asked to move out.

Despite the residents have lived in the area for over 40 years, ISRO Colony slum is non-notified. There is no tenure security.

In the Pai Layout, most of the new migrants (Nepali and north Indian) either live in quarters in the apartment complexes that they work in or in developer built chawl like tenements/ chawls. The new migrants are renters and not interested in tenure related issues. The older migrant Kannadiga families live in blue tarpaulin/ tin shelters in open areas and are dependent on landowners. These families have been in the area for over twenty-eight years. However, they have no rights to their shelters or the land they live on.

In Islampura, an older settlement, most of the residents have khatas/ hakku patras for their properties.

Typology of Housing

In the notified slum of Byrasandra, most of the original tin sheds have been converted to newer pucca cement housing (many being facilitated by PMAY or as incomes improve). The settlement is built on a slope. The houses are small in plinth, consisting of one-two rooms with a bathing area and toilet and with at least 4-5 stories. The houses are generally 10x15, 10 x 12 ,10 x 10 ft with 4 to 5 people per unit.

| *Tin Roofs in Byrasandra* | *Converting to Concrete Buildings* | *Narrow Lanes in Byrasandra* |

ISRO Colony, a non-notified slum is also an old settlement (from the 80's). It is located in central Bengaluru and is a mix of tin sheds and cement housing. None of the houses exceed one floor.

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[74] Hakku Patra is a legal document used to prove the inheritance of the property of an individual. The document is issued as a part of the Ambedkar Rural Housing Scheme in Karnataka

Entrance bridge (built by BBMP) to ISRO Colony, over storm water drain; Public Toilet is at the far right end

Entrance of ISRO Colony

Temple, church and mosque adjoining each other at the entrance

Single storey concrete structure with tin roofs; all houses have water connections (with meters) and electricity
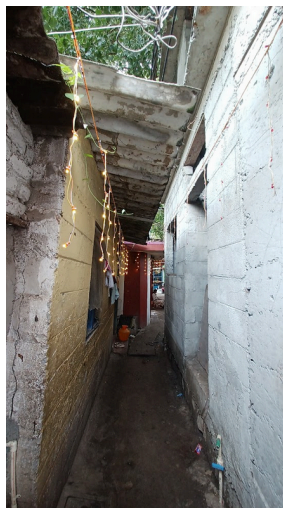
Narrow corridors through the slum

Children playing in the corridors of the slum

In the Pai layout, the older Kannadiga families live in one room tin or tarpaulin shelters in open areas. They have to move regularly. Developers have built tenements/ chawl like housing for the newer migrants who share two rooms with 5-6 members of family and use a common toilet at the end of

the corridor. Water is collected from a tap at the end of the corridor and transported to the rooms. A separate space is created in the rooms to bathe in.

Developer built Chawl Housing

Residential/ Commercial Road- Low Income Area

Blue Tarpaulin Sheet Shelters on Rajkaluve

Tarpaulin Sheet Shelters adjoining Apartment Blocks

Temple Road – Low Income Area
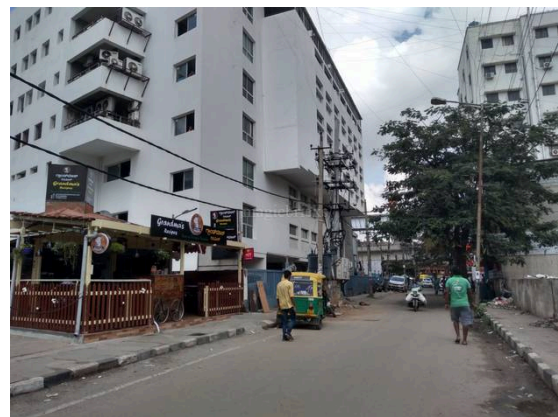
Apartment Complexes- Middle Income Area in Pai Layout

In Islampura, most of the community lives in permanent concrete houses. The houses are built on 10x12ft plots with 4-5 stories. Each floor has a living unit. Each unit has 2-3 rooms with a bathroom. Most of the units belong to newer generations of the same family. Some are now being rented out.

Early Housing from 70's-80's

Adjoining 4-5 storey buildings

Low Income Housing

Tenements and Blue Tarpaulin Shelters

Annexure 3- Community Based Usage of Water and Sanitation- Integrated Behaviour Model

Access to safe drinking water and sanitation is a key environmental determinant of the health of a community. According to the Integrated Behaviour Model (IBM- WASH)[75] , there are micro (individual, household), meso (school, workplace, community, local government), and macro (national, international organizations) behaviours that affect health. The multi-level behaviour change framework can be structured into three dimensions (contextual, psychosocial, technological) and five aggregate levels (behavioural, individual, interpersonal/household, communal, societal).

Levels	*Contextual Factors*	*Psychosocial Factors*	Technology Factors
Societal/ Structural	Policy and Regulations, Climate and Geography	Leadership/ Advocacy, cultural identity	Manufacturing, financing, and distribution of product, current and past national policies and promotion of products
Community	Access to markets, access to resources, built and physical environment	Shared values, collective efficacy, social integration, stigma	location, access, availability, individual vs collective ownership/ access, maintenance
Interpersonal/ Household	Roles and responsibilities, household structure, division of labour, available space	Injunctive norms, descriptive norms, aspirations, shame, nurture	Sharing of access to product, modelling/ demonstration of use
Individual	Wealth, age, education, gender, livelihoods/ employment	Self-efficacy, knowledge, disgust, perceived threat	Perceived cost, value, convenience and other strengths/ weaknesses
Habitual	Favourable environment for habit formation, opportunity for removal of barriers	existing water and sanitation habits, outcome expectations	Ease/ Effectiveness of routine use of product

In this study, we have used some of the above elements to analyse community usage of WASH in the four study settlements. The framework is applied to the focus group discussions and site observations.

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[75] Dreibelbis, R., Winch, P.J., Leontsini, E. et al. The Integrated Behavioural Model for Water, Sanitation, and Hygiene: a systematic review of behavioural models and a framework for designing and evaluating behaviour change interventions in infrastructure-restricted settings. BMC Public Health 13, 1015 (2013). https://doi.org/10.1186/1471-2458-13-1015

Societal/ Structural	Byrasandra	ISRO Colony	Pai Layout	Islampura
Contextual	At the societal level, the notified slum settlement of Byrasandra is 'regularized' in policy.

Despite being an old settlement, it is not settled or stable. As a notified slum, it is now entitled to basic civic services from the city.

The combination of its rising population, geography (on a slope), lack of adjoining open space to expand and overbuilding has led to a rapid densification of the settlement.

The Byrasandra/ Gundappa community has piped water but it is intermittent. Most houses have individual toilets but deal with regularly clogged latrine pits and pipelines. The steep gradient of the settlement leads to rushing water and flooding during monsoons. | The ISRO Slum is a non –notified-settlement located in the ISRO Campus in Indiranagar.

Geographically, it is located in a prime area, making jobs and education very accessible.

Despite the settlements being over 40 years old, and around 4-500 families, it is still a non-notified slum. Regardless, it has access to the basic civic services like storm water drainage, sewerage, piped water and meter readings.

The settlement is dependent on 4 working Public Toilets. Only 5 to 8 houses have individual toilets. | Pai Layout is a very fractured community.
Originally agricultural land, the area became home to over 100 migrant labour families from North Karnataka in the early 2000's. Over, the last 20 years, these migrant families have gradually been pushed out as apartment blocks were built to cater to the middle-class housing demand of Whitefield. Now only a handful (8-10 blue tarpaulin shelters) remain scattered across the settlement. There is no sense of community left. Technically, these shelters cannot be categorized as an unrecognized slum or even a new migrant settlement (they have been in the area for over 20 years). Middle-class apartments have piped and tanker water and good sanitation conditions. They are catered to by BBMP/BWSSB. However, low-income shelters have no water or sanitation and are completely dependent on landlords for access to water. They use surrounding open spaces (railway line) for open defecation. | Geographically, the adjoining Vimanapura lake acts as drain off for excess water during the rains.

In terms of regulations and policy, the settlement falls within the 'regular municipal area' of the City Development Plan (CDP) and is entitled to basic services such as storm water drainage, sewerage (connected to the Mahadevapura STP) and piped water (Cauvery water).

In terms of leadership, strong connections between the mosque, the local councillor, HAL and the BBMP/ BWSSB enable access to WASH. |
| **Psychosocial** | At the individual, household and community level, Byrasandra is aspirational, demanding improved | The 4-500 families are primarily from Tamil Nadu with a strong Bangalorean cultural identity. | The relationship between the Pai Layout community and BBMP is fractured. Much of the water and | The Islampura settlement has strong links with the local mosque and the municipality. It has a very strong |

Societal/ Structural	Byrasandra	ISRO Colony	Pai Layout	Islampura
	WASH infrastructure to create better health, education and quality of life. Individual toilets are quickly being adopted. The relationship between the Byrasandra/ Gundappa community and BBMP is contentious. The community has a strong cultural identity based on its SC status and links to the land. It has strong women leaders demanding better WASH access from the government.	Despite being non notified, the settlement is an old settlement and accesses basic civic services through its strong relationships with political powers. They have social support from the local bodies and the MLA.	sanitation needs of the community are privately managed.	cohesive muslim identity and an identity as Bangalorean and Kannadiga. Leadership on water and sanitation is facilitated by men. Women largely deal with water usage inside the house.
Technology	Due to the combination of poor-quality technology, inadequate infrastructure, aging and regular pilferage of WASH infrastructure, the community is forced to constantly demand services from BBMP/ BWSSB. The WASH infrastructure is grossly inadequate for the settlement and constantly breaking down. Water supply is intermittent, pit latrines are constantly backing up and the storm water drains overflow regularly. Sewerage lines mix with water supply lines causing contamination regularly. Blue storage drums are noticeable everywhere. The Byrasandra/ Gundappa community often has to hire private contractors to clean	The settlement is dependent on BBMP/ BWSSB for basic services. The WASH infrastructure is aging, outdated and inadequate for the settlement. Water supply is intermittent, the older public toilets are backed up due to the proximity of the storm water drain, the storm water drain overflows regularly. Blue storage drums are noticeable everywhere However, due to the non-notified nature of the slum, demands cannot be made directly. Political networks and vote bank networks are leveraged strategically.	The dominant techno-centric service providers are completely focused on the demands of the middle-class community with little engagement with the migrant shelters in representative and inclusive governance, for WASH program implementation. These migrant households are completely dependent on landlords and/or adjoining buildings for access to water and sanitation. They use the railway line for open defecation. There are no public toilets and the water ATM is almost a mile away and difficult to access. Neither the women or the men of these shelters are ever consulted in any public intervention. They have no	The Islampura community is dependent on BBMP/ BWSSB. The WASH infrastructure is aging, outdated and inadequate for the increase in population. Blue storage drums are noticeable everywhere; and used to store water This leads to water stagnation and disease.

Societal/ Structural	Byrasandra	ISRO Colony	Pai Layout	Islampura
	the pits and sewer lines due to poor response from BBMP		decision-making powers, are completely disempowered	
Community	**Byrasandra**	**ISRO Colony**	**Pai Layout**	**Islampura**
Contextual	BWSSB water supply is erratic and undependable; public taps are used to access water. Due to regular blockages of pit latrines, Public Toilets are used but are not adequate for the population	BWSSB water supply is undependable. Public Toilets are inadequate and does not suffice the whole population. Sanitary pipes are constantly blocked with cloth and napkins. Lack of storm water drainage causes regular flooding. During rainy season, water seeps into living units and the common corridor has stagnant water.	Low-income shelters access water from neighbouring buildings. They use surrounding open spaces (railway line) for open defecation.	BWSSB water supply is erratic and undependable; due to the of narrowness of the streets, only small tankers can access the settlement to provide water. Lack of storm water drainage causes flooding. Most houses have individual or shared toilets
Psychosocial	The community has a strong schedule caste (SC) identity. Due to the uneven power dynamic associated in dealing with typically upper caste government engineers, the men of the settlement rarely engage in 'demanding' services. This responsibility has been taken on by women, who have channelled their identity as manual scavengers into active demands for WASH services Stigma has been channelled into demand for better services.	The settlement has a strong migrant community (Tamil Nadu) but distinct Bangalorean identity. It is characterized by strong familial ties with intergenerational families (4th generation) and intermarried families living in the slum. Women face major issues accessing toilets. This is a major concern for the whole settlement.	Dysfunctional and almost non-existent avenues for demanding better quality infrastructure for low-income women; the poor are heavily dependent on private landowners', and the societal burden of water collection is mainly borne by women; there is significant stigma associated with open defecation.	The community has a strong minority identity with a long-term attachment to the settlement. Demands have evolved from basic WASH to include training and job opportunities
Technology	Water and sanitation pipelines need upgradation; number of public toilets need to be increased to meet demand	Water, sewage pipelines and public toilets are inadequate for the settlement. They also need upgradation.	High end WASH technology in apartment complexes but open defecation and shared toilets for very low- and low-income settlements- dysfunctional situation	Both water and sewage pipelines are aging and inadequate to meet demand in the community

Societal/ Structural	Byrasandra	ISRO Colony	Pai Layout	Islampura
Interpersonal/ Household/ Individual	**Byrasandra**	**ISRO Colony**	**Pai Layout**	**Islampura**
Contextual	Byrasandra, as a notified slum, is rapidly transitioning from tarp and tin sheds to 3-4 storey concrete one- two room units. It is a well-established slum with most residents employed in the local neighbourhood of Jayanagar. Houses have individual toilets. The women of Byrasandra are strong advocates for their community, actively demanding services from BBMP/ BWSSB.	Despite being a non -notified slum, the community is well established. They have strong political connections and don not expect to be evicted. However, due to the tenure insecurity, most houses are only ground floor units, though constructed with concrete blocks. Very few houses have attached toilets and the majority of the community relies on public toilets.	Pai Layout is a mix of middle-class apartment blocks, with access to piped and tanker water and good sanitation conditions, and low-income shelters with poor access to water and sanitation. Due to the migrant and temporary nature of the low-income settlements, they are not served by BBMP/BWSSB. They are dependent on landowners for access to water. There are no public toilets in Pai Layout. The railway track and rajkaluve are used for open defecation.	Islampura is a well-established low-income municipal colony. The community has strong connections to the mosque. Typically, families have built multiple units of one- two room houses on 10x 12 ft plots, with multiple generations living on different floors. Houses have individual toilets. Some have shared toilets built on the ground floor. Men typically handle interactions with BBMP/BWSSB. Women handle water management in the house. Children and women collect water from the ATM or street taps when piped water is inadequate.
Psychosocial	Interventions in WASH in Byrasandra are myopic to gender, caste and diversity. Women are still expected to maintain household toilets daily. After puberty, women in Byrasandra face restrictions on their activities and sanitation access because of social norms related to menstruation and sexuality. Stigma and misperceptions around menstruation and pregnancy restrict women's use of sanitation facilities. The placement of public and community toilets does not	Most key decisions regarding the settlement such as organizing meetings, civic services, the construction of the pedestrian bridges etc are made by men. Many gendered and societal influences are in play. Stigma and misperceptions restrict use of sanitation facilities for pregnant and menstruating women. Women travel in groups at night for safety as the public toilets are located at the edge of the	Many gendered and societal influences apply. Stigma and misperceptions restrict use of sanitation facilities pregnant and menstruating women. Women travel in groups at night for safety. They control fluid intake to avoid going out at night because of snakes, thorns and losing their foothold in the rainy season. For privacy, they have created makeshift structures to bathe in. Gender dynamics and power relationships continue to play a	Societally, there are issues relating to gender and diversity. At all levels- house and neighbourhood, power and decision making related to access to water (buying water from tankers or the ATM, building a sump and interacting with the BBMP/ BWSSB/ local councillor is facilitated mostly by men in the community. Women have a limited say in decision making regarding WASH or the community.

Societal/ Structural	Byrasandra	ISRO Colony	Pai Layout	Islampura
	account for the mobility and privacy needs of women and gender non-conforming individuals. In Byrasandra, the public toilet is located by the main road; a techno bureaucratic response to supply of public services. It is placed where BBMP could procure land. For privacy, women typically try to use the facility around 4am in the morning or late at night; but travel in groups at night to avoid harassment and sexual abuse. Access to and availability of water and sanitation is shaped not just by gender and caste, but also by poverty and ethnicity. Newer migrants into the community from north India struggle with language barriers. Older and better off residents can inform and influence the installation of new water infrastructure. In contrast, poorer, newer, minority and women and gender non-conforming residents, at the bottom of social power hierarchy have less influence on program interventions and access improved water supply infrastructure.	settlement. They restrict fluid intake to avoid going out at night.	role in sanitation decision-making within the household; but in the case of the migrant families of Pai layout, much of this behaviour is associated with safety and security related concerns.	

Societal/ Structural	Byrasandra	ISRO Colony	Pai Layout	Islampura
Technology	Demanding better technology to upgrade WASH experience at the household level	Blue drum usage is rampant; pipes connected to roadside tap connections;	High end WASH technology in apartment complexes but open defecation and shared toilets for very low- and low-income settlements- dysfunctional situation	Blue drum usage is rampant; pipes connected to roadside tap connections; common ground floor toilets
Habitual	Byrasandra	ISRO Colony	Pai Layout	Islampura
Contextual	Water supply, while intermittent, is available to all houses. Transition to individual toilets is rapid with notified slum status	Water supply, while intermittent, is available to all houses. Very few houses have attached toilets. Most of the community relies on public toilets	Very fractured/ dysfunctional state – middle class have individual toilets etc; low income has shared toilets and very low income use open areas	Water supply, while intermittent, is available to all houses. Most houses have individual toilets but many share toilets located on the ground floor of the family unit
Psychosocial	With the notified slum status, the community is quickly adopting individual toilets. This is being associated with better outcomes in health, education, jobs and gender equality. However, not everyone can maintain the pit latrines and use public toilets when their toilets back up.	With the non- notified slum status, and the lack of internal sewage systems, the settlement has only a few attached toilets. The community is dependent on 4-6 public toilets located on the edge of the settlement. There is a degree of shame associated with the lack of individual toilets.	Due to the lack of WASH infrastructure for the migrant/ low-income shelters, there is a lot of shame associated with open defecation in the open. There is a dire need for public toilets and water access for the poor/ migrant community.	With the closest bus stop over 1.5 km away, women have to walk and deal with harassment in the evening or take expensive shared autos. In Islampura, the women interviewed accept socially and culturally constructed gender roles with gendered social norms shaping responsibilities. Women mostly stay at home, taking care of children and elderly in laws, while managing household chores such as cooking and cleaning.
Technology	Demand for individual toilets is high but sewerage infrastructure technology has to upgraded from pit latrines. Water supply pipelines need to be upgraded.	The upgradation of toilets, water pipelines etc are all corelated to the demand for notification as a slum. Currently, no technological upgradation is being undertaken, either privately or through the municipality.	Migrant and very low-income settlements are slowly being pushed out of the community. Adoption of WASH technology for the poor seems almost impossible.	Adoption of individual toilets is high but for individual toilets to function on all floors, economical technology has to be made available

Annexure 4- Recommendations based on Study Settlements

	Policy Framework AMRUT 2.0 Policy[76]	Current Status in the Study Settlements	Recommendations (for Notified Slums)	Recommendations (for Non-Notified Slums)
Access to Power and Bureaucracy	*While formulating the projects, it should be ensured that households of informal settlements and low-income groups are duly considered. These admissible projects/ need to be prioritized as per functional outcomes*	Currently none of the respondents in any of the settlements have clear access to the bureaucracy No clarity on Functional Outcomes (especially to include access to power; be operationalized at the ULB and ward level to be inclusive)	**Streamline Service Delivery** to government services for direct access to **housing development programs**, **healthcare**, and **public welfare schemes**; **Include dedicated government officials at the ward level to** focus on **slum development**	Establish clear **Processes to Regularization** to allow residents to access legal protections, land rights, and formal services, instead of ad hoc access to services. Include more trained community and municipality **women and SC** to facilitate improvement of settlements
Coordination between Government Agencies and Implementation	*Synergy among Missions: Swachh Bharat Mission (SBM), Smart City Mission (SCM) and National Urban Livelihood Mission (NULM) have components common with AMRUT 2.0. Sanitation and FSSM are components of SBM and water supply with smart elements is a component of SCM.*	Poor coordination at the local level between the BBMP, BWSSB and other agencies that provide services	Establish **clear processes** at the **local level** between agencies working on SBM and AMRUT; link with **City Development Plans**	**Increase** number of trained **municipality staff**; Increase and train number of **sanitation and informal waste workers**
Performance benchmarks	*Evidence based evaluation of outcomes using online monitoring platform combined with citizen feedback through gig economy will enable community partnership*	Currently no online monitoring platforms at any of the settlements; also, no socio-enviro- economic performance benchmarks used by BBMP/ BWSSB	**Data Collection and Transparency**: Implement systems for regular collection of WASH-related data (e.g., water quality tests, toilet usage rates) and make the data accessible to residents and local authorities. **Independent Audits**: Conduct independent audits of WASH services to assess	**Community Monitoring Systems**: Establish community-led monitoring and reporting systems, where residents can report WASH-related issues via SMS, apps, or community committees. **Use of Technology**: Leverage low-tech or mobile solutions for monitoring service delivery and

[76] https://mohua.gov.in/upload/uploadfiles/files/AMRUT-Operational-Guidelines.pdf

			performance against benchmarks and ensure accountability.	tracking improvements in WASH infrastructure and behaviour
Monitoring and Evaluation	*Pey Jal Survekshan is proposed in cities as a challenge process to assess the compliance of service level benchmarks with respect to quality, quantity, and coverage of water supply, sewerage & septage management, extent of reuse & recycle of used water, and conservation of water bodies in the city.*	Currently no evidence of application of Pey Jal Survekshan or any other service benchmark at any of the settlements	**Empower local community** to collect and collate data to assess the impact of WASH on the community **Gender, social change, climate and environmental** change accountability units need to established as independent auditors to the SBM and AMRUT programmes	**Empower local community** to collect and collate data to assess the impact of WASH on the community **Gender, social change, climate and environmental** change accountability units need to established as independent auditors to the SBM and AMRUT programmes
Inclusive Community Participation	*Mission will co-opt women and youth for concurrent feedbacks about its progress.*	None of the respondents or SHGs in any of the settlements were consulted in any water management issues by the ULB or parastatals	**Operationalize Community and Women's Participation** at the local/ ward level -where to place public and/or community toilets, how to maintain them, how to manage water for the settlement and how to improve the sanitation conditions of the slums- for SBM and AMRUT.	**Operationalize Community and Women's Participation** at the local/ ward level -in design and placement of WASH
Awareness Building	*IEC campaign shall target to build the capacities of local communities through information, education, and persuasion of people effecting Behavioural Change Communication (BCC). NULM Mission management will be involved in training and mobilizing SHGs in water quality testing and infrastructure management.*	None of the respondents or SHGs in any of the settlements were have been part of any ICE campaigns	**Incentivize SHG's** to facilitate awareness campaigns and sanitation practices	**Incentivize SHG's** to facilitate awareness campaigns and sanitation practices
Gender Sensitivity	*Women SHGs will be involved in water demand management, water quality testing and water infrastructure operations.*	None of the respondents or SHGs in any of the settlements were consulted in any water management issues by the ULB or parastatals	Local BBMP offices need *diversity and gender friendly* waiting rooms; increase number of women officers at local municipality offices;	*Gender and caste inequity* needs to be addressed at the ward level bureaucracy.

			Prioritize construction of **gender-segregated** and accessible sanitation facilities,	
GESI and Climate Change policy	Empower the application of GESI in SBM and AMRUT that identify the need to '*prioritize the needs of women, transgender communities, and persons with disabilities (Divyangs)*'	Currently no evidence of application of GESI or any prioritization of women's and transgender needs at any of the settlements	Establish **gender-disaggregated data collection** to assess the impact of sanitation initiatives on women and girls	More women and SC need to be *trained* to liaise with community on climate change
Capacity Development	*Capacity building programs will be conducted for all stakeholders including contractors, plumbers, plant operators, students, women and citizens, elected representatives, ULB functionaries, contractors & their staff and citizens.*	Currently no evidence of any capacity building at any of the settlements	**Engage in training in community engagement, gender equality and climate change** for community and local level service providers - engineers, administrative officers, water meter reader, line engineers and sanitation inspectors	**Engage in training in community engagement, gender equality and climate change** for community and local level service providers - engineers, administrative officers, water meter reader, line engineers and sanitation inspectors
Grievance Redressal Mechanism	*Effective system for grievance redressal will be put in place in ULBs. Similarly, the online extent of ULB's grievance redressal system will be evaluated for water, sanitation, solid waste, street lights and drainage services.*	Currently no grievance redressal mechanism at any of the settlements	Establish Grievance Redressal Mechanism at the neighbourhood level with access in English, Kannada, Tamil and Urdu; *Swachhta App* to be managed better, especially in responding to grievances	**build informal, community**-led structures to ensure that women's voices are still included in decision-making about local services. **Strengthen advocacy** groups to ensure these complaints are escalated and addressed.
Quality of infrastructure, maintenance and service provision in slums and informal settlements	*Technology Sub-Mission will help in identifying the proven and potential global technologies in water sector. Entrepreneurships / start -ups involved in low-cost indigenous equipment and processes will be encouraged.*	Currently no sign of any start up activity at any of the settlements	**Formal Infrastructure Investments** such as **in-situ upgrading** of housing, **drainage systems**, **water supply networks**, and **electricity grids** through **state-sponsored programs**, to improve the overall quality of infrastructure without displacing residents	Invest in **improvised, short-term solutions** like mobile sanitation units, temporary water tanks, **mobile** health clinics or solar-powered street lights and basic sanitation facilities to meet the immediate needs of residents**.**
Infrastructure Technology			**Smart Water Management**: Introduce smart water meters and leak detection systems that can	**Low-Cost Sanitation Technologies**: Implement cost-effective and locally adaptable technologies like

			monitor water usage, reduce wastage, and ensure that water supply is equitably distributed. **Mobile Apps for Monitoring**: Deploy mobile applications that allow residents to report sanitation issues such as clogged drains, faulty toilets, or water supply disruptions. These apps can also offer reminders for water usage, conservation, and sanitation maintenance. **Tech-Enabled Waste Management**: Use technology like GPS-enabled waste collection routes, smart bins, and sensors to improve waste management efficiency, track the waste collection process, and prevent overflow in slums. Women should be consulted on the design and placement of infrastructure, particularly toilets, and water points to ensure accessibility and safety.	composting toilets, bio-digesters, and community-based wastewater treatment systems. These systems are more sustainable for areas without access to formal sewage networks. **Mobile Solutions for WASH Issues:** Use mobile technology to raise awareness about sanitation best practices (e.g., safe toilet use, menstrual hygiene management). Provide basic sanitation information via SMS or mobile apps to help communities manage their water and sanitation needs effectively. community-driven solutions (such as the installation of communal toilets or water kiosks) should be supported by NGOs or community organizations.
Public Private Partnership (PPP)	*Public Private Partnership (PPP) projects are mandatory in million plus cities and at least a minimum of 10% of total fund allocation at the city level shall be committed to PPP*	Currently no sign of any PPP activity at any of the settlements	Incentivize private sector to develop innovative solutions addressing women's sanitation needs, such as mobile sanitation units and apps for locating safe facilities.	**Work with NGOs focusing** on women's rights and health to leverage their expertise in implementing gender-sensitive sanitation programs
Financing	*Mission has a reform agenda on ease of living of citizens through reduction of non-revenue water, recycle of treated used water, rejuvenation of water bodies, augmenting double entry*	Currently no sign of any financing activity at any of the settlements	***Access local level Funding*** by revising water and sanitation charges and third-party funders (e.g. CSR, crowd funding etc); Tap into infrastructure funding through urban planning techniques such as	***Access local level Funding*** by revising water and sanitation charges and third-party funders (e.g. CSR, crowd funding etc); Tap into infrastructure funding through urban planning techniques such as town planning

	accounting system, urban planning, strengthening urban finance etc. Outcome based funding is to be considered for the outcomes achieved with respect to sewer and water connections		town planning mechanism, TDR etc; funding should prioritize gender, social climate and environmental safeguards	mechanism, TDR etc; funding should prioritize gender, social climate and environmental safeguards

Interview with Mr Sandeep Aniruthan, SwarajforCities

SA – Sandeep Aniruthan, SP – Shreya Pillai, MM – Maenma Mani

SP: We wanted to understand more about the Mahadevapura area. Studies/ maps related to the slums (2011/2013) give us a picture that there are a large number of slums in this area and in K.R Puram, J.P Nagar and Jayanagar. We are still figuring out why the slums are higher in this area.

MM: K.R Puram has a large number of Bihari's, Nepalis and other migrants. They are all located in small pockets of areas because of upcoming infrastructure, IT sector etc in Bengaluru. It's easy to commute to Bengaluru from the K.R Puram station which is a major intercity stop from North India.

SA: Okay. It's one of the busiest areas and a lot of people commute through these areas. I personally take these trains which are very convenient for travel.

SP: Our major focus is on the low-income communities in Mahadevapura, K.R Puram. Our main focus would be about access to water / sanitation. We would like to know more about these communities? Are they going anywhere or staying? Are they returning to their hometowns? Are they the first generation or extended generations? Do they have access to water and sanitation or is it limited? How do they deal with water?

SA: There are several layers of this slum situation. One of them is the traditional Older Slum where you had poor people from the same geography as us i.e. the Tamilians etc.

As economic development happened, areas like Whitefield area/ Mahadevapura, in a largely unplanned manner got converted into high density residential areas / high density commercial areas. In-between pockets sprung up to serve these communities. Earlier these were poor people who lived in marginalized areas. These areas slowly converted over a period of time into some sort of layout. So those layouts are the lower income layouts but have a lot of characteristics they share with the modern slum population which is the denser and lower income groups. They are slightly better off, but they still have lesser spread of services etc.

SP: About designation for notified and non-notified slums. Are these older slums notified? some villages have got converted into notified slums because they've got denser.

SA: Some civil society groups keep asking the government to do it and they ignore it. So, I have seen some places where people have been organized but the government gave them sites for the poorer populations. So, these have become like the lower income group housing areas with layouts and amenities. With property values going up, most of the original owners have sold out. But people still continue to live in a lower economic bracket with high density. They have small spaces and entire family / extended family live together in a crowded space. This becomes one area and I would call it slum because they have the characteristics of crowding with lesser service etc.

SP: What about the water situation?

SA: So, one street will have one pipe and all are dependent on this single public line. They use pots due to the water crises and massive water cuts etc. Most of them don't have personal connections. In Ambedkar Nagar, they haven't got Cauvery water for over a year. These areas are functioning based on five public bore wells from the City Municipal Corporation (precursor to BBMP). People have sold their sites to private operators and these operators sink the borewells that have now dried up. So, people have now become aware and are against private operators.

SP: Is Ambedkar Nagar still in existence?

SA: Individual site owners have sold out to developers. Currently, they have put sintex tanks in every street and they fill it occasionally once/ twice a week. But, if you go to the real slums, most primarily encroach on public commons like lakes. These are where the new slums are emerging. Most of the entire population I spoke of in Ambedkar Nagar are largely Tamil / Kannada. But the new slums are basically either Nepali, Bihari's or Bangladeshi. These are the larger demographics.

SP: What about tenure on these lands, they must have ownership to get connections etc?

SA: Behind most of this is a scam i.e. to build new slums. Everything is temporary. They don't have any fixed facilities and the land itself is illegal.

SP: What about the population? Is it increasing? Is it primarily young men?

SA: Yes, there's a predisposition towards a larger population of men. Most have come to seek employment-whether it's increasing or decreasing varies economic opportunity.

SP: What about these blue tent settlements**?**

SA: Blue Tents, Tin Sheets etc are temporary**.**

SP: These have come in the last 5 to 10 years? Primarily

SA: Less than that- they are temporary, it's largely associated with outside CBD areas, these areas have developed without a plan and grown rapidly. Demand for maids, security guards, house help etc are getting filled by these people who are migrating.

SP: So, about blue tents settlements, when they come to a place, they don't have a space and they pitch a tent. But within a year or two, they look for something more permanent and they tend to add. Which is why I had asked how old these places would be? So, anything about more than 5 years, they would have added some kind of permanent by adding some bricks or tin sheets etc.

SA: What I have noticed is that they remain very temporary in their nature and they don't feel anchored. It's an unanchored presence.

SP: Given the situation with water currently in Bangalore, would people leave the city? It kind of correlates to climate change and if you don't have water, how do you live?

SA: The government can't withstand the pressure for the lack of supply of water and they will probably declare who can work from their hometown, can leave the city and that will bring down the population of the city by about 20 % or 30 %.

SP: This is about the Middle Class?

SA: IT guys who can have an option to work from home; and that will have a spillover effect on the reduced opportunity. Even if you go to Ambedkar Slums or any other slums people don't have enough water supply and they survive by one quarter a day or they buy. There are suppliers who go to the slums and sell water at Rs 110/- or through water ATM systems.

SP: Does Ambedkar Nagar have?

SA: No.

SP: So, the ATM water is drinking water, not potable water?

SA: In that they manage.

SP: How about Bathrooms? Do they have community bathrooms or do they have individual bathrooms?

SA: Yeah, like most of the temporary slums, they have community toilets. I've not enquired about it but they look like the places that have community toilets amongst themselves.

SP: The Nepali community, Bengali, Bangladeshi community tend to stick to each other and a narrative of outsiders and insiders is developed.

SA: Most of the Bangladeshi Muslims and Hindu's look alike and one can't differentiate amongst them. For ex: Bangladeshi Muslim Women wear bindis and wear sarees similar to the Bangladeshi Hindu and they all look alike, except for some extreme factors.

SP: But is there a sense of particular communities living in one area- like the Bangladeshi is one area and the Nepalis in another.

SA: Yes, that sort of ghettoization is there and in a lot of other areas like Kathugodi near Whitefield, even the boards in the regular buildings are in Bengali.

SP: that's interesting to hear.

SA: Also, the area is next to the railway station that possibly what Maenma mentioned. The Calcutta train stops here.

SP: On a similar note, while I was travelling from Chennai to Bangalore (Lalbagh Express). Most of the labourers from the unreserved compartments got down near Whitefield and K.R Puram. Around 6 to 7 of them got into an auto with their bags to move to their destination.

SA: There's a lot happening to communities like the Bangladeshi whose farmlands are inundated due to the climate change and that's is driving them to migrate. They are migrating to Thailand, Burma, India wherever they can go. They sell what they have and get agents to help them. The agents get them to the border. From here, it is their job to get to the other border alive. They face life and death situations. But once they cross the border, arrangements are made and they are put on trains from Calcutta etc to major cities in India. There another agent/ contact person will take them to slums (their first place to stay) and get them an Aadhaar and Voter ID card. This is the package deal which entitles them as Indian Citizen with new names, new identities etc.

MM: One of the slums in Mahadevapura Whitefield – -is it an old village?

SA: The older villages have high-density populations. They are a group of small houses, the larger slum/ colony generally crops up by encroachment of some water body etc. Usually, the migrant population is on the outside of the community. But today it's exactly the opposite. If you go into older villages, you'll generally see the Bangladeshis and Nepalis. They older Kannadiga/ Tamil/

Andhra families would have sold their old properties and moved into apartments and the poorer people remain. In the villages they have built some tenements like a multi storey buildings and they rent it out.

SP: Is there any kind of power infrastructure in these villages that they stick together?

SA: They are neglected, because they look out for their own gain and sold out their properties and the remaining buildings are given for rental purposes; that's the only function. The villagers don't stick together because if you look at the politics of it the delineation that BBMP has done is that, they tear villages up into 2 or 3 different wards but this could have been retained as one ward which helped them giving them a sense of identity.

BR – Bhargavi Rao, SP – Shreya Pillai, MM – Maenma Mani

SP: We were discussing Tilak Nagar.

BR: In Tilak Nagar, we can see very distinct homes were people managed to make money and have not moved out because of the proximity to 4th block Jayanagar. So, they've made their homes look so fancy, like even in the front, they've put tiles/granite so it no longer looks like slum board housing, a low-income housing. Whereas just behind that, as you walk inside, you will also see homes, where the walls are breaking. So those who have the money are able to strengthen their homes. Those who cannot afford to strengthen that, reinforce that, then they continue to live in those broken homes.

SP: Migrant labourers, many of them are young men. are not coming with families. They reside at this construction sites and stay on. But there are some people who bring their families.

Given that our focus primarily is on Gender and the Disabled. In these, my assumption would be that these older slums, they've managed to get access to water and sanitation. They've managed to put in bathrooms.

These Blue Tarpaulins sheets - places don't have access to water. So, where are these people? Are they actually leaving or are they moving across the city also? When a person/ migrant comes, he works on a construction site for like two years or more & he typically brings his family & they continue to live.

Do you see that in the JP Nagar site? Are these Blue Tarpaulins sheets sites kind of moving away also, or are they just becoming more and more permanent?

BR: They are becoming more and more permanent, expanding both vertically and horizontally as far as possible. In like Tilak Nagar, whoever can afford are expanding vertically.

But they are expanding in South Bangalore because South Bangalore is largely richer than the other parts of Bangalore for various reasons. It also has this old history of Basavangudi. Another factor is it is also a BJP neighbourhood, majorly Brahmin dominated and they have not allowed lower caste/ poorer communities into the neighbourhood. In South Bangalore we see the quality of parks, the quality of roads.

In the past there were a lot of individual homes that were being built, rebuilt and added. Today that concept has reduced in Bangalore. I see very few people that are buying sites and constructing homes. They are mainly pulling down their old homes, giving it to big companies, big architects and builders.

So, there is some way in which the labourers are taken care of. For example, just across the road from Deve Gowda Petrol Bank, there is a Shobha complex coming up (Shobha Mantri -a huge apartment complex). The developer has provided tiny tin sheds as living quarters for the labourers, mostly men. Every morning you'll see the men walk to the construction site with their helmets and their orange safety jackets and we see them walk back in the evening. As long as they are young, they can live in those thin sheds / shacks. Once they start bringing their families, they will move into a settlement like those in Kothanur/ Jayanagar and Mahadevapura. There are very few slums that are growing here in South Bangalore.

If we look at Puttenhalli, there is a slum within the lake bed. It is the same residents who have lived there for a long time. They are all connected with the work in and around that area. The women work as domestic helpers, cooks, caretakers, babysitters etc. in the neighbourhood

In the JP Nagar slums, people have been settled for a while. The houses that once had tin and tarpaulin covers now have reinforced concrete roofs. The quality of housing has also changed to more permanent over a period of time. But the slum has not expanded. Even the Subramaniapura slum has not expanded. It's just the people who are coming in and moving out that is interesting.

So, the point that you made about who's living in these homes- it's mostly the young men who are getting married and bringing in their wives and children but very rarely their parents. It is difficult for their parents to get used to a totally different way of life here. So, you will hardly see an Odia-speaking grandmother, grandfather, but you will see a Tamil-speaking grandmother, grandfather, or even a North Karnataka grandparent.

SP: In the Duke Study we saw, they had studied about 15-17 slums. They found that in some of the settlements there were actually four generations of families. One of the issues was about mobility outside of the slum. It's like they are still stuck in the slum. From the perspective of gender and disability, this kind of question brings the whole idea of livelihoods. Is it due to their location that they continue to remain as maids, and the next generation also becomes maids, and they don't get access to education, they're not getting access to water and sanitation, they're not getting access to infrastructure. Is that compounding the issue further?

BR: Most of these women can't get out of the scenario that they are in. Some of the field visits that I have done to the Bhuvaneshwari slum, most of these women work as domestic helps and they cannot move out of the area because now they have their own small children. During the day, they somehow leave them at home. The kids will be playing around in the courtyard etc, In the hope that the neighbours' watchful eye will keep them safe. Not everybody has the advantage of having a grandparent at home to oversee the kids. But these women will quickly finish their work and come back by 2 o'clock or 3 o'clock to ensure that they feed their own families and continue with their own household chores.

So, there is no way that she has time to learn a different skill. I don't like the fact that most of the foundations today, the kind of skill building they do is pathetic in the name of vulnerable groups, in the name of gender. If you go see the kind of skill building that is happening, it is tailoring, beauty parlour etc. They are not taught entrepreneurship. They are not taught basic accountancy. They are all still locked in their chit funds where they pay the money and that chit lady or man runs away with all the money. They are doomed. So, it's the same thing that is happening and the government skill training is pathetic.

So, there is no way this woman can get out of what she is doing. Usually, she will be a 7th/ 8th class pass She will be married off early and have children when her body is not ready. She is weak, falls sick regularly and by 25-28, will be taking care of 2 or 3 kids herself. She will also be dealing with family issues of in-laws and the demands of this newer community she is settled in there. Today even typical Tamil / Telugu / Kannada maids have to cook North Indian dishes in a North Indian family and she has to learn these things quickly. She has to keep her job. She will do anything to please her boss who is probably a working woman somewhere driving a fancy luxury car. So, these women are going through their own traumas.

They are basically surviving. It is their own interest and ability to learn quick things like cooking or taking care of the household that keeps them going. I was pretty impressed with the way somebody

served me in one of those neighbourhoods. As soon as we got in, she asked, would you like water? Would you like chai, coffee? Have you had your lunch? So, they are learning, quickly learning all these things. They are forced to learn if they have to keep their jobs. So, these are the pressures on the women. Obviously, they probably bring home the bread compared to the men who manage to learn driving skills. She is probably also dealing with the problems at home with the men slowly drinking and causing all the problems. She is learning to keep her job, look after the children, deal with the husband and the violence at home.

We hear all these big debates about gender and empowerment. But there is hardly anything that is happening at the ground level when it comes to women and disability. Even in the Bhuvaneshwari slum, I've seen women who still have and are victims of polio. While we say polio is eradicated, we do see women who have had polio. At the intersection of caste, class, disability, religion, language, we can imagine the state of that woman. If she has to limp and go across that lake to get a job, compared to a woman who can walk easily, who would we hire, right? So, what are her chances of getting that job? Somebody was telling me that everywhere you go today, they will ask you what languages are known and knowing Hindi has become a prerequisite. A girl I was working with is in this Theobroma outlet here on the ring road in Banashankari. She lives in Itmadu which is another poor settlement. So, initially I thought she may not know Kannada because most of the places you go today, people no longer speak Kannada, right? But I make it a point to speak in Kannada. I said, *Namaskara, Kannada baratha*? She said, *O Kannada innore madam navo*, etc. Usually, they get picked based on the preferences of languages like Hindi / English. So, if you don't know the language, then the chances of getting the job is also gone. So, there are very many dimensions.

SP: Interesting. So, there's already some kind of lack of inclusivity happening again- discrimination through language.

One of our focuses is on Water and Sanitation. Now that there's no water. How these women are functioning, getting water for themselves, how do they have water for their families when they're out to work. How do we deal with that whole aspect? So, would you have something to say on that also?

BR: It's definitely putting a lot more pressure on these women because they have to go stand in that public tap or tanker when it comes. In most of these slum neighbourhoods, they have that cement cylindrical tall tank which gets filled once or twice a week. And then they have to go collect from there.

So, to ensure that all her family 's needs are met, she has to get up at like 3 o'clock or 4 o'clock at odd hours, go put her bucket and pots there, collect it and come back. The man of the house, you know, usually is the one who gets up late and he's not going to be helping her. So, if you go see any of these water queues anywhere, you'll mostly see women or youth with their cycles and pots. So, it's definitely an additional burden on women to not get the minimum number of sleep and rest and it's the extra work for her. Its time management - collecting water, doing her own household chores, if she has to send children to a local government school, all those things will become secondary and then to her own workplace. She's constantly juggling with these things and has a lot of pressure on her. This affects her health.

SP: It does have an effect on the health of all these women. I can't seem to find any studies which show this kind of stress, showing a correlation between them and women living in low-income settlements. I imagine their lifespans are probably lower than the lifespan of women that have access to basic amenities. Our study may impact infrastructure and the location of the infrastructure

provided. So, the correlation between infrastructure and health is one of the angles that we are interested in. Would you know of any studies like that?

How do we impact infrastructure from the perspective of gender? Would you know of any studies that have looked at this actual direct correlation between poor infrastructure and health indicators?

BR: ESG did a consultation of sex workers in the context of climate change. The report is on our website, and can be downloaded and read.

It was very interesting what all these sex workers said in the context of infrastructure. They said, we don't have basic facilities to access, you know, the restrooms. There is no infrastructure to get water. As it is, we stand in the hot sun and we solicit business and then we feel very thirsty. To buy that 20 /- Rupees water bottle is very expensive for us. So, we land up carrying water from our homes and it gets over very quickly. There are no refill spots also in any of these typical public spaces like bus stands and railway stations. It's very difficult. So, all that they asked for was water, good toilets. They also asked if sanitary napkins can be made available at very low prices. They can't afford one which is available in the market. So, they land up using cloth for long periods of time, they can't change, they can't wash. So, they said, if sanitary napkins can be made at subsidized prices like you put a 5-rupee coin, you can get one in one of these kiosks type, if something like that is available. Similarly, the Indira canteens, if they can have more canteens everywhere, so that food is also available at subsidized prices. These are the very basic things that they requested. Also, some kind of access to health. So, they said, they have a lot of challenges going to the public health centres which are also very far away. Also, most public health centres deal with maternity and child health. There is very little provision for everyday issues of fever, cold, cough, and things. But even if it is a simple fever, they said that it will stop us from doing our own business, because the minute I have a fever, nobody would want to come near me. I can't even go out that day. So, if it is an ache or pain, I can still bear it and put on a smiling face and dress up and go. But if it is fever, I can't. So, there was another very interesting point, access to health. Also, they requested a kiosk for condoms. Kindly go through the report.

So, I think when it comes to gender and infrastructure, these are the very basic things. This has to be made available at the ward level across the city. Every ward, at the ward committee office, should have this. Then people will know that this is a place I can go get it. So, then there will be some control over the infrastructure.

SP: In the sex worker study, were they associated with a particular settlement or were they from various settlements? Because the issue of caste and the issue of access for them by the people of the settlement itself would come up. I mean, there would be people who are saying you cannot access this infrastructure. You're a sex worker, access is denied. Was that an issue?

BR: So, they had these issues at two levels. They said that we have problems in the neighbourhood where we live because one, people look down upon us and they are very suspicious of the kind of work we do. So, we can't do anything related to our work anywhere near our house because then I will get further branded. So, I have to travel across the city and go to a place where there is less likelihood of my neighbours or others seeing me and that is where I work. So, the infrastructure they were asking for was at the place of their livelihood and at their own living quarters. They said that, the place where we live, there is no underground sanitation in most of the places. So, they are constantly exposed to contaminated water where they live. As a result, the risk of catching gastrointestinal disease is high. They have these demands at both levels. But since ours was in the context of climate change and what would they want from the government? Definitely caste, class,

language, all of this plays a big role. So, if it is people from your own language, you will take them with you in the business, teach them the tactics of the business. But if the person is of a different language, different region, you will wait to see how well they will be a team player and teach the tactics. But by then they might, fall prey to so many things.

So, there was a woman who was a victim, a survivor of acid thrown on her and she had survived a horrible incident where nobody had even picked her up from where she was lying, bleeding. On the way back, somebody else who does the same business saw and she said, I had seen her in the morning. She reported to the police station. So, the woman who helped her was also sharing the story of, whether I should help her or not was a big question for me, because what would my fellow travellers say about me? These are the intersections. Every person's experience is so different and it is a very traumatic story.

SP: So, one of the things that came up in yesterday's interview is interesting because we were talking about Mahadevapura area, because of the water situation now, people are actually leaving and going back. But are people from low-income settlements going back? Do the women want to leave because they often have little back home. There may be something for the men, but there's nothing for them they don't want to go back to those patriarchal structures. They you got the sense that they didn't want to go back into those structures of family that they would be expected to function within. Do you envisage like given how women's journeys are in these settlements, would that also be an issue like given the climatic climate change issues right now happening, the sanitation part.

How do they access the bathroom? Do they have access to community toilets or public toilets or and then would they want to go back to their home villages at all? What do you think based on your work?

BR: I don't think women will want to go back. They will want to stay here by hook or by crook, you know, just go on because exactly like you said, the patriarchal structures are so bad and there isn't enough to eat there. So, if they have to share that little food that is available at the village level, it's going to be even more difficult. So, I think it's also making women a lot more vulnerable for sexual exploitation. So, on another journey, I found that Bangalore is one of the destinations for all the trafficked women. I guess it does push women and make them more vulnerable to get into all kinds of sexual exploitation, do sexual Favors to get that little extra money to survive here.

SP: The sexual exploitation happens in the village coming to Bangalore or in Bangalore?

BR: In Bangalore. So, if they have to retain a job, if they have to get a better job, if they have to get an increase in their payments, that is where they are really getting. In Bhuvaneswari slum, there are very interesting dynamics, there's also the court intervention, but despite that, very little progress has happened. So that way it will be interesting.

In Tilak Nagar, I've seen some of the homes which have become very fancy with all kinds of appliances and all that. Next to the Tilak Nagar is the Swagat Garuda Mall on one side and on the other side, you have a dominant muslim community, where all the shops have apprenticeship kinds of jobs (automobiles and automobile parts or tires or tubes etc). There is also the predominant Dalit community because you see the Ambedkar statue there. That again will be a very interesting thing in terms of access to water sanitation.

SP: How to go around this idea of the religious aspect. So, one of the things was that when you have a settlement, which is predominantly Muslim, and there are issues given the current political situation, what is the status of the women with the gender issue related to like? So, in a regular

Hindu settlement, even a Dalit slum, the women have issues. Is it more predominant in a Muslim slum, there might be a patriarchy issue, but on the other aspect, they will not hire Muslim women. Therefore, the lack of jobs for them impacts their life, their lives and their lifestyle. Then access to water sanitation, does that impact? Because I've heard that in some of the slums, I worked on some water sanitation, but in towns. I shouldn't generalize, but one or two Muslim communities would not let us take pipelines through there. That was something that became an issue. I've understood that some of what I've read is that some of the communities' issues are that, you'll come in, you'll gentrify and you'll take over our land, which may be a valid point. Do you have a perspective on that?

BR: I don't know in Tilak Nagar because its largely Brahmin dominated neighbourhood. So, third block, fourth block, seventh block, they're all predominantly Hindu Brahmin.   So, I think more than the fear of the lines passing through these neighbourhoods and things like that, I think this community lives in fear all the time. So, if it's for the girls and women, they are more in fear. So today it is not just the men who live in fear, it is also the women, girls who live in fear, absolute fear all the time. Because of this, the need for water and sanitation would have gone way below many other needs. They would have probably put it on the back burner and they would be adjusting and managing with what little they have because when their survival itself is at stake, access to a decent, respectable, dignified, safe living is at stake, access to water, sanitation will definitely go way down the list of needs. So, I think that is a major problem there.

KA – Kathyani Chamaraj, SP – Shreya Pillai, MM – Maenma Mani

SP: We started about two weeks ago and we said, let's try and find out what is happening in Bangalore and if there's any policy actually being applied to informal settlements from gender. How do women access water? How do they have access to water? What are the aspects that they need to deal with it? We realized there wasn't a proper mapping of slums in Bangalore. The last mapping that we found was that Opencity, - they've mapped Karnataka Slum Development Board's data from 2011 onto a map. We overlaid the OpenCity data onto Google Earth. Where are the slums? How are these slums developing? Who's staying in these places? What has happened in the last 10 years? So, we started searching for and mapping the more recent data. One study is by Duke University and IIM called the blue tarpaulin study, in which they study settlements with blue tarpaulin roofing. It's essentially like migrants coming in, settling, putting up a tent.

So far, based on our mapping of the KSDB data, we have found that Madhavpura has a cluster of low-income settlements, and Kothanur/ Jayanagar in South Bangalore has another cluster. We don't what kind of slums, whether it's notified, whether it's not notified. We understand that BBMP has another list in of slums, which we would like to get access to. Would you know if it is freely available? Once we do this mapping, we can go deeper into the slums and work on understanding them from the perspective of a woman, somebody who is disabled, inclusivity issues, community toilets, water and sanitation. How is the slum performing and what are the policy components that can be done? We are also mapping the various government agencies and their interventions, because there's so many agencies doing different things, BWSSB, BBMP, KUIDFC etc Do they deliver or what they are accessed wrt to their specific roles. What do you think we should focus on? Are there any areas in Bangalore that, slums that particularly notified, on-notified, the narrative is so broad, that we should again focus on? Are there structural issues that we should focus on? Is there any particular area of policy that we should look at that is not being looked at? In the last 5 years like there's a lot of work done till about 2016,2017, last five years, there's not that much material, at least online. Is that something you've seen also?

KA: Does Jal Jeevan Mission not reach the urban areas then?

SP: Peri-urban areas, now they're doing urban areas.

KA: This Jal Jeevan Mission, the central government mission of providing, at the doorstep or within the house, one connection, one pipe connection at least. Is that not applied to urban areas?

SP: I think Jal Jeevan Mission 2 is going to be applied to urban areas.

KA: About notifying or mapping the slums, you can ask Ashwin Mahesh, whether he's able to map all the slums on his Map Unity. They had a project that started, map everything, with overlapping of different service levels. So, you can ask him how far that has gone. Many organizations working in slums were supposed to help in mapping it. We had actually funded the Map Unity project many years ago. The list of notified and non-notified slums should be available in the public domain, the notified slum should be available on the slum board website and the non-notified slums should be available on the BBMP website. Otherwise, you can ask through RTI under section four of the RTI Act, it should have been notified. Which are the slums being serviced by them? Should have been there in section four of RTI Act and if they have not publicized, you can demand that information under section four of RTI. We were working with the Centre for E-Governance and trying to make them upload all section four information at a single window. So, we have been telling them all section four

information should be available at the Mahaniti Kanhaja portal, which means a treasury of information and we have been asking them to expand the idea of section four also to include all such information, you know, and they have not been very responsive. We had wanted them to put up all such information and wanted to know what is there at the policy level.

We worked on the JICA project, a Japanese funding project about giving pipe water supply to all selected slums. That was 2012. We actually studied what the NGOs were supposed to do. NGOs were recruited as agencies to facilitate the whole thing. I can share those with you and we made a presentation that day to the BWSSP officials on what we felt was lacking and what we felt should be in the policy document. Because it gives the pointers on how the policy document should be for giving water supply to the urban poor. Our main contention was that by not giving pipe water supply, the women are suffering. They're using their working hours to fetch water and so on. There's a very deep cost involved in that. They're foregoing livelihood opportunity just to go and fetch water and that may be two, three hours a day and if they had gone to work for two or three hours, they could have earned enough to have a piped water supply with a pipe water meter also. They're foregoing that and depending on a public standpost, it robs them of several hours because they have to stand in a queue and wait for the water to come maybe in the middle of the night and so on. So, there are terrible costs involved when they don't have a metered water supply. We have been advocating that they should be given piped water supply, it prevents the children also from going to school very often, standing in the public standpost at night. A lot of children miss school the next day or they oversleep. Very often the children go hunting for water. So, they are missing school and if they don't have piped water supply, then they are storing the water in barrels, making the running water into stagnant water. The likelihood of getting diseases from the stagnant water or even from untreated water, they go and collect from somewhere; it enhances the chances of the children getting diarrhoea and health costs increase because of that. So, a lot of the malnourishment is because of drinking impure water that causes diarrhoea, and their capacity to absorb nutrients, it's harmed and they don't grow to their full potential. Their mental faculties also get stunted, physical stunting.

So, the great costs involved, which is not calculated by not giving clean piped water supply is tremendous actually. Malnourishment, diseases, diarrhoea, infant mortality etc. The saddest part that that many ngo's are vehemently against metered water supply to the urban poor. We have been advocating for piped water supply with the meter because the metering creates a right for the slum dweller. BWSSB citizen data a says that if you have a meter, BWSSB is supposed to deliver a minimum amount of water to you as a right and if the water doesn't come in your pipe through the metered connection, you have a right to demand free water supply through a tanker. Once you get a meter, you get that entitlement and that right. But of course, very often water doesn't come. If it does, it comes once in two days or you miss collecting the water. So, then what happens- these NGOs which were working with the urban poor, tell them, *see, if you take the metered connection also, you have to pay the minimum water supply bill every month, Rs 40/- or Rs 50/- something*. *But if the water doesn't come, then what do you do? Why have the meter if the water doesn't come?* So, they would actually provoke the urban poor to take out the meter and throw it away.

SP: I worked on a project for the last eight years where this was an issue we found everywhere. The metering of putting meters was a, in every town hall we did, that meter issue came up every time. So, initially, I thought it was the cost of the meter, maybe that was prohibitive. So, then we got a grant scheduled for that meter. So, there was a grant to fund that. Even then, and it was interesting, it was not just the urban poor, it was not just the slums. Even middle-class people said, that meter, why would we have the meter? Because the meter gives wrong readings. I'm still trying to figure out why this is such an issue in, if it's only Karnataka, or is it everywhere? It's a huge issue.

KA: Huge issue, because they would say, you're better off with the public standpost. NGOs would actually, tell the urban poor, *don't go for meters, you're better off with the public standpost*. And I've explained to you what are all the problems with the public standpost. You don't get a right if you don't have a meter on your water supply. Why they would say you shouldn't take the meter is, what would happen is, the water may not come for a couple of days, then they should have actually educated them, please call up BWSSB and ask them to send you a free water tanker, because you didn't get your water supply today.

Instead of empowering them with this information, they would tell them, see, water is not coming, so you throw away the water meter and if the water meter fellow comes and asks you to pay the minimum bill, thrash him and send him out. These kinds of things are being told to the urban poor, which is making them, you know, give up the water meter connection, isn't helpful to any right and then because you had a meter, BWSSP will continue to send you the bill every month. You may throw the water meter, but on their record, you are supposed to be having a meter, they will keep sending you the bill. Then they will keep putting interest on the unpaid bill.

NGOs tell the slum dwellers, *don't pay the bill, because you didn't get the water*. That means just 40 rupees 50 rupees a month. But because they tell them don't pay the bill, interest goes on mounting and at one public hearing, one activist gentleman who works with the urban poor, he held up a bill for Rs 40,000/-. From the BWSSP he said, see, if you get a meter, this is what will happen to you. You'll get the bill for Rs 40,000/-. He's not explaining to them that this is because you didn't pay the monthly bill, interest has accumulated in the bill for Rs 40,000/- and if you had paid those Rs 40/-you know, your rights would have been there and you wouldn't have had to go running to a private water supply and pay through your nose. You are paying through your nose as it is.

You are collecting impure water, you are foregoing livelihood, your children are foregoing schooling. all these things are never told to the urban poor by these so-called activists. I am deeply sorry to hear all this from them. So, and we in the slums that we worked, we were educating them about that entitlement they will have if they have a metered connection.

In my presentation, the presentation we made to BWSSP after the JICA project study that we did, we said, the individual slum dweller will not be Like, if I open my tap in my flat, 24x7, I get piped water, not because water is coming from BWSSP for 24 hours. The water is coming in the middle of the night for two hours, but it is filling up my sump, private sump and I have a private pump and I have a private overhead tank. So, anytime I open my tap, I am getting water because of the private sump, pump and overhead tank that I have installed and it is shared by my entire flat, the water bill, you know, for pumping and so on & we are better off because of that common sump that we have. We don't have to get up in the middle of the night. We don't have to run around for water. When the water comes, it gets filled up. And so, what we proposed was the an individual slum dweller cannot afford to have a sump for himself or a pump or an overhead tank.

So, it has to be done on a collective basis for a group of slums, that setting up ground level tanks. At ground level, they create a tank and people have to go again and stand under the tap and fill up the water and take it to their house and convert it into stagnant water again. So, what we proposed was, instead of making ground level tanks for the slum dwellers or like a public standpost, you create a common sump for 100 houses or so, every settlement. Maybe there will be 50 houses,100 houses. You create a common sump, a common pump and a common overhead tank for only the slum dwellers & you meter that one meter and let us all the slum dwellers who are benefiting from this and from the common overhead tank, you give pipe supply to every house so that they have at least one connection inside the house. So, that they, when they operate 24 by 7, they will get water, which is running water and not stagnant water.

SP: This would be in notified slums, right? Because of the issue of tenure and all?

KA: When Justice Srinivas, Justice Gopal Gowda, he held a big meeting once. He called the BWSSB, He called BBMP and he said water being a fundamental right. Even if it's a non-notified slum, you have to supply water, and he held the BBMP fellows also accountable. He said, you cannot deprive anybody of water. So, even a non-notified slum should get basic water supply. So, as a human right. So, I think we have to stress on that and stop this distinction between notified, non-notified for the supply of water.

SP: So, in our study, we've taken a position saying this will be tenure agnostic because we think that It's a human right and to be connecting it to tenure is always problematic with any analysis.

KA: Even if migrant workers have come, it's the duty of the employer or the contractor to see that they get drinking water. Don't deny them water saying you are a migrant. It's bound, it's their bounden duty to supply some water to them.

SP: BBMP has started out with water ATMs. They've put these like kiosks in some of the slums. They're on the main road. But it's five rupees per litre again. It's portable water. What do you Think of that?

KA: What was happening was all these private water suppliers were going and collecting that water, almost free of cost and making money out of it, you know, because it was open. Anybody could go collect that water. So, the private fellows were benefiting from it. They would collect it in cans and go and supply it privately. One more thing I have to tell you that very often why BWSSB water doesn't come, even if you have a pipe supply connection, because the wild man is in control. If you bribe him, he will open the valve & if you don't bribe him, he won't let the water come to you. You know, so if the slum dwellers are unable to pay that bribe, he will shut off the supply to them & they'll be running around for a private supply. Also, what happens is, the private fellows, there is a mafia with the BWSSB. The private water tanker goes and fills up the BWSSB water into the private tanker. The BWSSB water will not come. Then the MLA or the corporator will take this private water tanker and supply it to the slums, pretending that he has paid for it. He will have just collected it from BWSSB.

SP: Sandeep was telling us about this in Mahadevapura. So, he was telling us how the local MLA literally has even created like Aadhaar cards and vote cards for slum dwellers out there who are coming, migrants, new migrants. He says, you can't break it because it's a vote bank at the end of the day.

KA: So, he will pretend that the water tanker is being supplied by him. So, that is his personal practice that he is doing to the slum dwellers. Maybe he has robbed it from BWSSB. All these nexuses there, whether it is water, whether it is garbage collection, these nexuses are very prevalent.

SP: So, I was reading your report, the 2012 report that you did on BSUP and some of the points that you made, which were like they were related to structure, you know, the structural governance issues that are coming up because the structure itself of the government and how its functioning is problematic. So, I know your report was 2012, but I'm sure the problems haven't changed, right?

KA: More migrants coming who are even less entitled, because they are migrants, they don't know where to go or whom to ask and they are so dependent on whoever's, whatever agency is trying to serve them and they are absolutely helpless, you know, they are so dependent on everybody else for everything. They may not even have a ration card, all those things.

SP: Do you think there's a space for any kind of structural change in the form of governance in Bangalore?

KA: Why have they not, why are the corporators as well as the MLAs not at all interested in activating the people's participation platforms, like the ward committee, the area Sabha, and in the ration shop, the vigilance committee, in the school, the school development and monitoring committee, in the primary health care centre, the Arogya Raksha samiti, in the Anganwadi, the balvika samiti. Why are they all dysfunctional? None of them are activated.

SP: If there's no political motivation, maybe also because there's no demand from the public to some extent?

KA: There's no demand because they're not aware of the right. Wherever we work in the slums, The first thing we used to do was get the citizen charter from those departments, whether it's BWSSB, whether it is food department, we get their citizen charter which says These are your rights. First of all, we would create a simple booklet about their rights. These are your rights and also explain it to them orally with a PowerPoint presentation or something like that at a physical meeting and tell them these are your rights, you should know, This is how you get a ration card. This is what the ration card entitles you. We've done that for all these rights- Water, Housing, Social security, Health, Education, Food.
We used to educate slum dwellers wherever we worked on all these rights. When they know those rights, only they know how to demand or where they should Demand & we know all the citizens charter say that each department has to conduct grievance literacy meetings, you know, once a week, twice a week or whatever, once a fortnight, once a month, there are grievance meeting has to be held by the deputy director or somebody higher up or by the food inspector. So, all these things would be educated to slum dwellers on, you know, if the food inspector doesn't conduct the grievance meeting, then you can go to the deputy director first Saturday, third Saturday and air your grievance so that you are empowered to claim your rights yourself. No, you shouldn't be depending on NGO or anybody else. You should know where to go and what to ask for, so that is how we used to empower them & if the grievance meeting was not being held by the food inspector, we would invite him for a grievance meeting and invite the slum dwellers face to face.

If the grievance meeting was not held by the officials themselves, we would conduct the grievance meeting and allow the slum dwellers to express their grievances and get the solutions on the spot and record what were the promises made by the food inspector or by the BWSSB official, then we would record that and submit it in writing to the official and send a copy to the commissioner or the head of the institution. And we would wait for the follow up on all the grievances that we submitted. One month we would wait. If no action taken happens, we would file an RTI. We would ask, what is the action taken on the grievances that we submitted and the commitments that were made. So then the commissioner would send that to the person concerned, to the food inspector to the BWSSB and then they would come running and solve the grievance only when we file the RTI. So they would come and find the tap keeper, they would go and cancel his license or do whatever they said they would do. That way, locally the grievances were getting redressed. But we would also come across systemic issues during that process. Then we would take the systemic issues to the city level, to the highest-level officials, like the commissioner or the chairman of the BWSSB and so on and get the structural issues also solved. Like we found that BWSSB did not have grievance redressal mechanism in the citizen charter. The only grievance redressal that used to happen was with the executive engineer, where he would only look at the problem with the bills.

The rich people also would come and say, I have been overcharged, I didn't get so much water and only bills and things like that would be solved, but not real access issues or, you know, non-supply of water. Those grievances never used to be aired at those grievance meetings. So, we told BWSSB, you have to have a system like the other departments where your officials conduct grievance meetings even about access to water and non-supply of water and all that. So, they did install a system.

SP:, I was working in Mangalore and one of the issues that we saw consistently was a lack of staff at the government level. There was just no capacity. On my project, we had to facilitate a grievance redressal unit. In theory, it was put up, it was not staffed 7 they said also? Like just the lack of people to deal with and then the executive engineer who was not on the redressal committee, he was getting all the questions, thousands of questions he was getting. How can he handle so much all the time? Like I used to deal with him regularly. How can I share? How can I handle so many questions all the time? I'm not supposed to be handling this, that grievance is supposed to be handling it, but there's nobody there and it was also political. Apparently, they would identify someone, and then the appointment would not go through. That was something that we saw in Mangalore. So, I don't know what the situation in Bangalore is like at BWSSB. Is that something also that, just lack of capacity?

KA: I don't think in Bangalore as such a problem because everybody tries to come to Bangalore. All the officials pay a bribe to get posted to Bangalore. So, I doubt that there are many vacancies in Bangalore itself and the other thing we pointed out to BWSSB was that they didn't have, like the Arogya Raksha Samiti, the Vigilance Committee in the region, they did not have a people's participation platform. Where these interactions could happen, in a systematic way.

SP: They're doing the BWSSB, suddenly in the last six months, I've noticed in the papers, they're doing Adalats.

KA: They're mostly only for the wrong billing. So, if you're not getting water at all, I don't Think that gets aired there much. But we pointed out, they don't have institutionalized mechanisms.

SP: Then the older people are the ones who actually know how they would be sidelined. They would be sidelined all the time. I used to find it very strange that you've got people who are really good. They know the system. They can tell you how it works. But you won't get a consultant in some consultant who you re-educate again. So, we have to look at about we want to do a little deeper analysis of about three, informal settlements. We've kind of because of the waste of our data that we've kind of focused on Mahadevapura side, one in Kothanur/ Jayanagar side, because that's where the preponderance of slums. Then we were thinking like some of the gender issues may be community based also. So, say Tamil Christian areas, Muslim areas for women etc. Specifically for access to water. What would the specific issues be related to a community? So, would you have any suggestions of which slums we should maybe look at?

KA: We worked in about 11 slums only in three wards. I wouldn't be able to say anything about all the slums, the rest of the slums. So, one of the things we have realized is that we cannot go into an area unless the people trust somebody there. So, we don't want to go somewhere where we don't, we are not known and we are not known. We worked with APSA, a lot in the south of KR Puram area, So we worked in a slum called Rajiv Gandhi Nagar and a very good community was there. Then we worked in Azad Nagar in the south, southwest of Bangalore. We worked with SPAD, another Organization & in the north, we worked with the Nagawara Residents Welfare Association. It's a very minority dominated area & they were working from their office in the mosque area.

MM: Also, K.R Puram has a major count of Bihari's, Patna's etc. lot other set of migrants who have encroached small pockets of areas because of upcoming infrastructure, IT sector etc in Bengaluru. It's also easy to commute to Bengaluru through trains and the K.R Puram station is their convenient spot to get down and major intercity stops from the North & also easier for them   to go back home on their convenient bases.

KA: Okay. It's one of the busiest areas and a lot of people commute through these areas. I personally take these trains which are very convenient for travel.