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CURATED VOICES

Quality of Life in Informal Settlements: Basic Sanitation Services ‘A Luxury’

Mohd Salman Kavish

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September 2021

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Quality of Life in Informal Settlements: Basic Sanitation Services ‘A Luxury’

Mohd Salman Kavish

ABSTRACT

The rising urbanisation in India is leading marginalised sections living in informal settlements towards a more impoverished lifestyle. The quality of life in informal settlements is dependent on multiple factors such as access to toilets, access to drinking water, sanitation, and waste management. The state of affairs regarding such factors has always been bad in informal settlements with no practical solution in sight yet. Thus, this paper attempts to analyse the accessibility to drinking water, toilets, sanitation, and waste management infrastructure in informal settlements.

INTRODUCTION

Various organisations and civil societies have thoroughly studies India's rural sanitation issue Still, there remains a gap in understanding sanitation among the urban poor, especially among the households of informal settlements. Informal settlements are areas where residents often have no tenancy rights over the land or the place they live in. The residents often lack basic civic services and city infrastructure, like, drinking water, toilets, drainage system, sewer pipelines, proper roads and many other services (Brown 2015). In other words, informal settlements are those that emerge unlawfully and haphazardly, either on government property or private land, and are usually unplanned, thereby breaching government planning requirements. Jhuggi-jhopri clusters, unauthorised colonies, resettlement colonies, and notified slums are some examples of Informal Settlements. For the 2011 Census of India, the Registrar General of India classified slums into three categories, namely 'notified', 'recognised', and 'identified' (Bhandari 2013). It is important to note that while several civil society organisations and institutions define informal settlement in terms of its literal meaning, no competent authority in India has defined it (Bhandari 2013).

The poor physical and social conditions dictate the quality of life in such neighbourhoods. Households in densely populated settlements lack stable electricity, clean water, and sanitation amenities. Moreover, pavements and roads are practically absent (Ali 2006), along with garbage collection and disposal facilities. This leads to solid waste and household wastewater stagnating around the household premises, contributing to an unhygienic environment. All factors, as mentioned earlier, contribute to the intractable urban misery visible in such settlements.

Rapid and unplanned urbanisation has led to much of urban India lacking regular access to safe drinking water. Lower-income households spend a significant part of their already limited income on water purchased from private or publicly contracted suppliers (Roy 2013). Unclean drinking water causes diarrhoeal illness in children living in informal settlements. As a result, recurrent diarrhoea causes higher child mortality and poor nutritional status (Howard and Bartram 2003).

Sanitation is already a significant concern in India, worsened by the lack of access to toilets in informal settlements. Though more than half the Indian population owns a mobile phone, less than half have access to a toilet (Kelkar 2012). The increasing population in informal settlements combined with no hygienic amenities pushes approximately 5 crore men, women, and children in India to defecate in the open every day (Nallari 2015). As per the 69th round of the National Sample Survey, there are 33,510 urban slums in the country, comprising 88 lakh households, with less than a third of them having toilets (NSSO 2012).

There are a variety of factors that deny access to toilets. One of them is the inefficient role played by Urban Local Bodies [ULBs] in maintaining toilets. The service includes frequent emptying of excreta from septic tanks, regular water supply, cleanliness for public toilets, and the overall maintenance of the toilets. An urban poor person faces a range of sanitation-related obstacles daily, but their

concerns go overlooked and unheard. Thus, this study attempts to identify the status of essential sanitation services and civic amenities affecting the quality of life among the households of informal settlements. This study utilises the unit-level data from the 76th round of the National Sample Survey [NSS] Schedule 1.2 on 'Drinking Water, Sanitation, Hygiene, and Housing Condition' using Stata software to meet its objectives. For this study, the variable 'Informal Settlement' uses NSS data's classifications of 'notified slums, recognised slums, and identified slums'.

1. ACCESS TO DRINKING WATER IN INFORMAL SETTLEMENTS

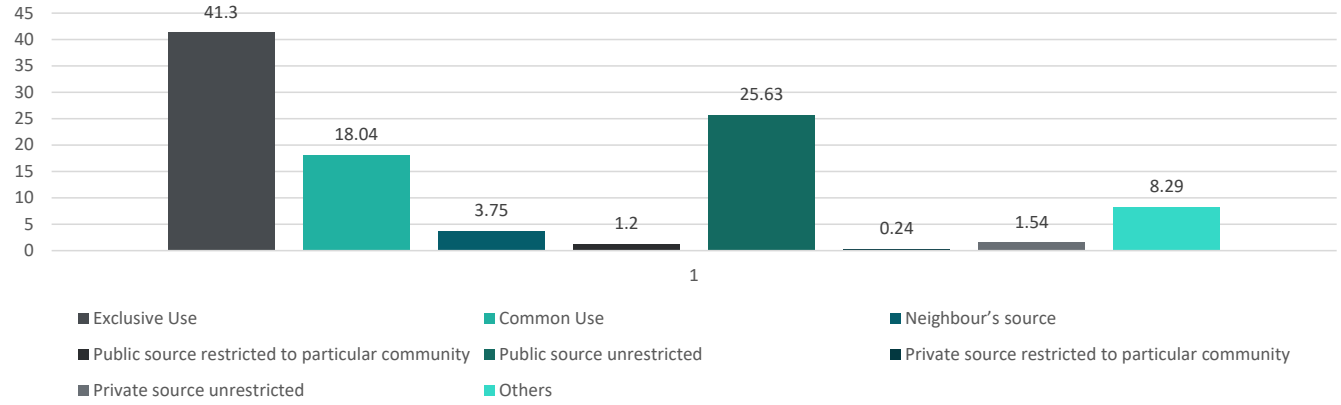
Water is a highly crucial and necessary element of life. Around one billion people worldwide do not have access to safe drinking water. Contaminated water is responsible for 15.9 lakh deaths each year, mostly among children under the age of five (Verma et al., 2017). The goal of adequate and equitable access to clean and affordable drinking water for all by 2030 (Sustainable Development Goal 6) [1] might be a huge issue, particularly in urban, informal settlements of India. Rather than being a public good, urban water is a rival economic good since its access depends on the willingness to pay money and walk for a certain distance physically to obtain water.

1.1 Access to the principal source of drinking water among the households of informal settlements

The NSS has defined specific categories for access to the principal source of drinking water (Graph 1). There are three primary water sources for the households of informal settlements, namely Exclusive Use, Common Use and Unrestricted Public Sources. In these settlements, a considerable number of households still lack access to principal sources of drinking water for Exclusive Use. A substantial number of families also rely on public and private sources. Apart from Exclusive Use, reliance on different sources implies that a significant section of the population depends on sources outside their dwellings to access drinking water, which is a basic necessity for human beings. It is impossible to connect to water pipelines in these unplanned settlements since these settlements are established illegally on public and private lands. For instance, in Mumbai, the government provides a chlorinated central water supply (Subbaraman 2015). People residing in non-notified slums have barely legally connected to this system, compelling most of these dwellers to illegally tap into city water pipelines out of desperation, a strategy of survival that risks contaminating the water supply.

[1] Sustainable Development Goal 6: Clean Water and Sanitation. It goes beyond drinking water, sanitation and hygiene to also address the quality and sustainability of water resources, which are critical to the survival of people and the planet.

Figure 1: Access to principal source of drinking water among the households of Informal Settlements



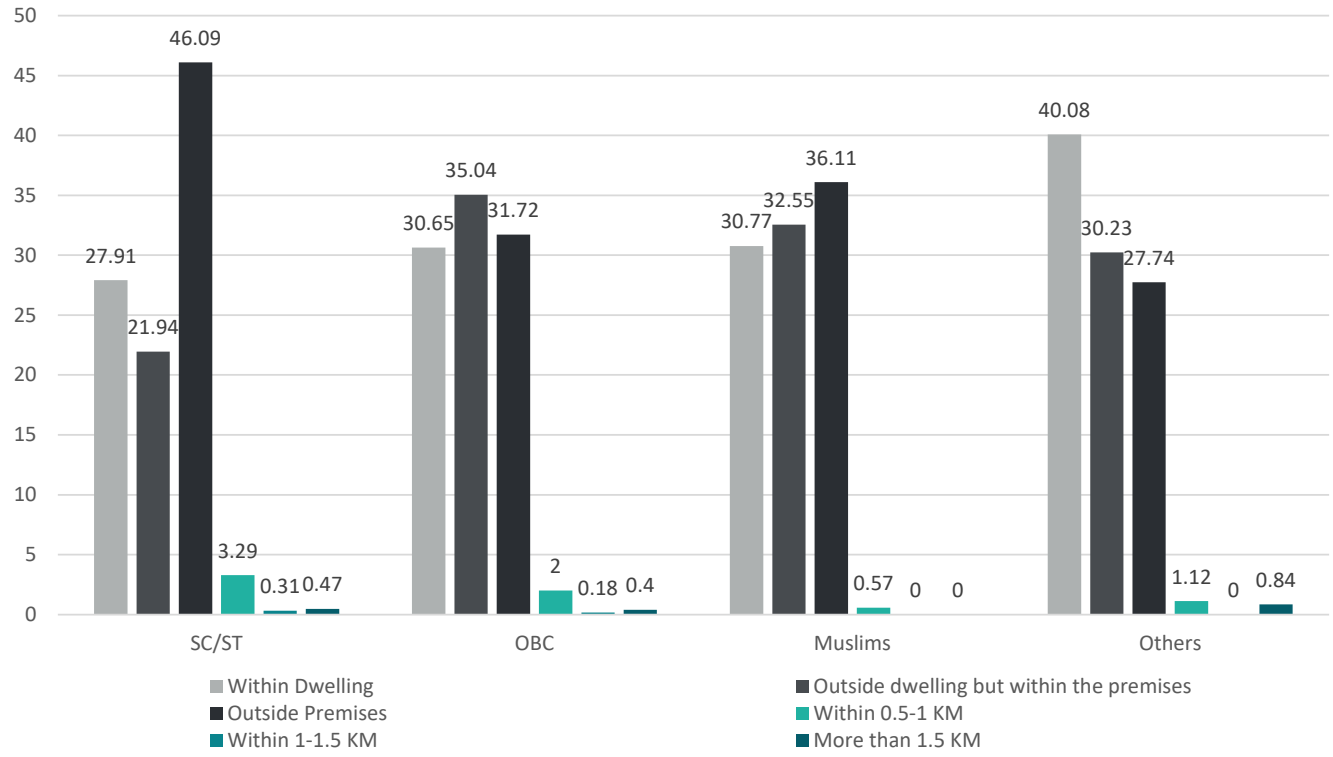
Source: Computed from NSS Round 76th Schedule 1.2, (2018)

1.2 Distance of the principal source of drinking water from the households in informal settlements

Distance travelled to access drinking water is another major issue faced by the individuals living in informal settlements. As seen in Graph 2, most households rely on the water sources outside their dwelling premises across all socio-religious groups. Though multiple households have access to drinking water within their dwelling, a significant percentage still lacks this basic necessity. Likewise, in terms of the overall population in informal settlements, the percentage of the population walking a certain distance to access drinking water is very low. Though this percentage seems to be very low, in actual numbers, a considerable portion of people have to walk a certain distance to have access to drinking water. These dwellers, particularly women, sometimes walk significant distances to an illegal or public water tap, queueing for their turn to fill water and bring it back to their homes (Roy 2013). Those who can afford it adopt self-supply methods such as drilling underground to get subsurface water [2]. The lack of legal recognition of these communities and the resulting absence of tenure rights for residents can substantially impede obtaining clean drinking water.

[2] Subsurface water, also known as groundwater, occurs below the surface of Earth, where it occupies all or part of the void spaces in soils or geologic strata.

Figure 2: Distance of the principal source of drinking (Percentage)



Source: Computed from NSS Round 76th Schedule 1.2, (2018)

2. ACCESS TO TOILET AMONG THE HOUSEHOLDS OF INFORMAL SETTLEMENTS

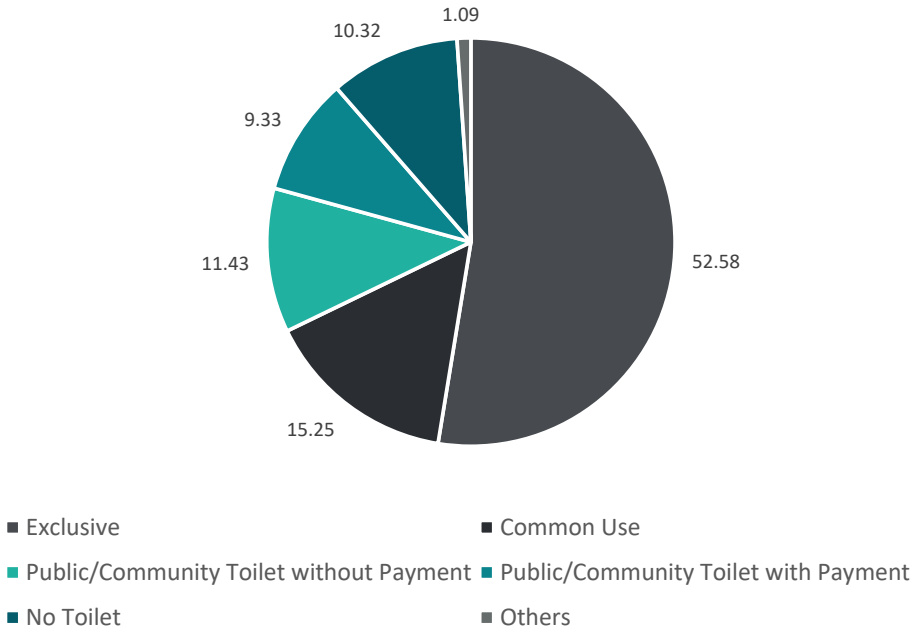
2.1 Access to toilet among the households of informal settlements

Access to toilets is yet another critical concern for the dwellers in informal settlements. Unfortunately, an increasing number of people living in informal settlements and a lack of sufficient sanitary facilities leads to around 5 crore individuals defecating in the open daily (Surya et al., 2017).

In 2018, as per the 76th round of the NSS, approximately 67 lakh households were present in India's urban, informal settlements. In these settlements, toilet inadequacy and poor management continue to be a source of deficient sanitation services. According to the NSS data, toilet access has been divided into different categories, as shown in Graph 3. In urban, informal settlements, almost half of the households have Exclusive Use of the toilet, whereas Common Use was relatively lesser. To reduce open defecation, few states and local governments have come up with the provision of Community Toilets (CTs). The access to public and community toilets was relatively low. Because the use of public toilets with and without payment is almost equal, perhaps the cost element may not be the chief factor for households not having access to public toilets. In informal settlements, with almost negligible urban planning and very few civic amenities,

many households have no access to toilets. This is evident through data (Graph 3), as roughly 10% of households in informal settlements have no toilets.

Figure 3: Access of the Household to Toilet (Percentage)



Source: Computed from NSS Round 76th Schedule 1.2, (2018)

Except for 52 ULBs in West Bengal, the Ministry of Housing and Urban Affairs claims that Swachh Bharat Mission-Urban [SBM-U] has succeeded in making urban India open defecation-free (Special Correspondent 2019). Though the government might claim that urban India is devoid of open defecation, the reality is not equally promising, as per the NSS data. There is no particular reason for the lack of toilets in areas of the urban poor. There are various significant reasons, ranging from socio-economic factors—caste, gender and religion, to the political scenarios of these informal settlements.

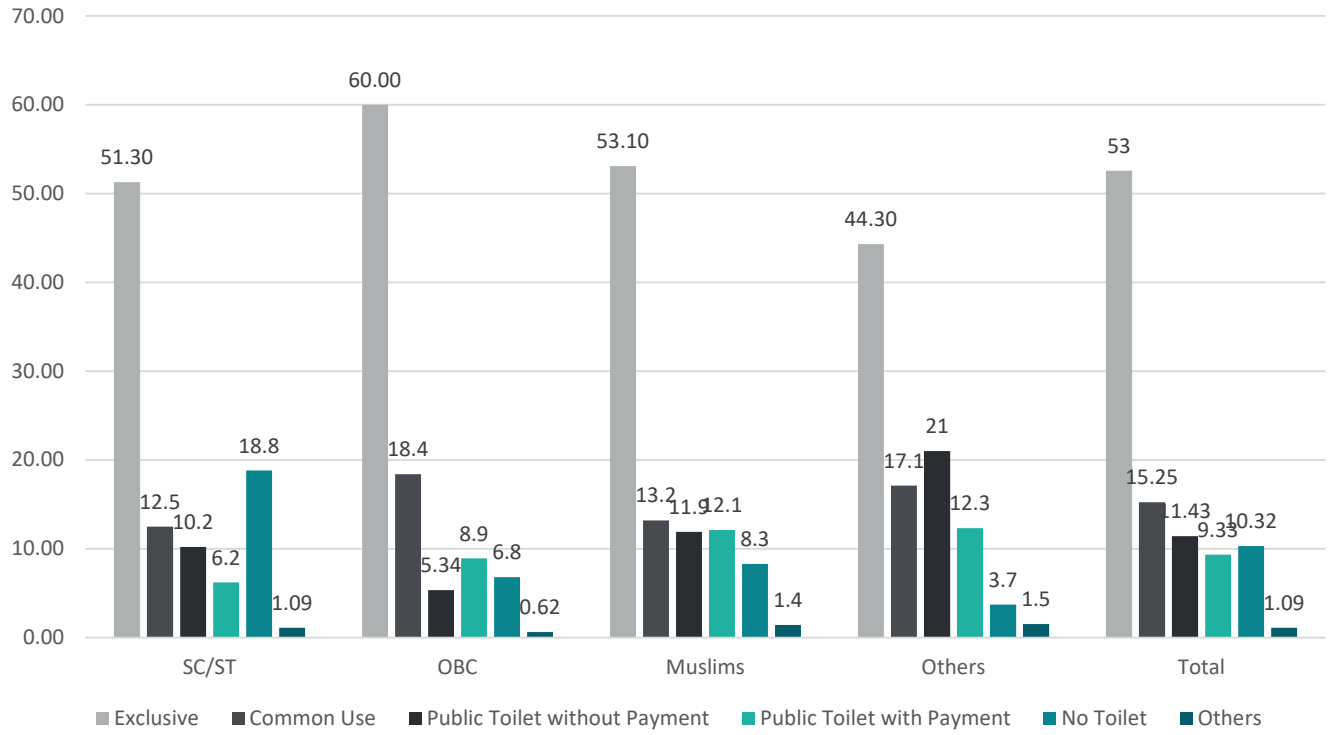
2.2 Access to toilet among the socio-religious groups in informal settlements

In India, caste and religion play a significant role in determining access to toilets. According to Banik (2016), individuals from Scheduled Castes [SC], Scheduled Tribes [ST] and Other Backward Classes [OBC] have less access to a toilet in both rural and urban areas when compared to upper-caste Hindus, Muslims, and Christians. If we analyse the statistics in Graph 4, the SCs/STs have relatively lesser access to Exclusive and Common Use among these three socio-religious groups. OBCs have the highest percentage for accessing toilets for Exclusive Use, followed by Muslims and then SCs/STs.

Among OBCs, more than half the population can access toilets for exclusive use. However, many within the community still lack access. At the same time, a significant portion also depends on Common Use. For the Common Use of

toilets, OBCs have the highest percentage, followed by Others, Muslims, and SCs/STs. However, access to Public/Community Toilets was highest among the Others category, followed by Muslims, then OBCs and lastly SCs/STs. If we consider access to CTs among SCs/STs, then reliance on 'without payment' is more than 'with payment'. Thus, the cost factor might be one crucial factor limiting the access to public toilets among SCs/STs. Furthermore, in urban, informal settlements, the SC/ST community had the highest proportion of those who did not have access to a toilet, followed by Muslims and OBCs.

Figure 4: Access to Toilet among different Socio-Religious Groups in Informal Settlements (Percentage)



Source: Computed from NSS Round 76th Schedule 1.2, (2018)

2.3 Access to toilet across gender in an informal settlement

India is in a position where it needs to take sanitation more seriously since it impacts most individuals' overall quality of life, particularly women from lower socio-economic groups. As shown in Graph 5 and Graph 6, the difference in accessing toilets between males and females is not significant. However, there are various other issues that women deal with while accessing toilets, such as harassment from males while going to or coming from a public toilet. Though there is not much difference between males and females, there exists a significant difference among transgender people (Graph 7) compared to males and females regarding access. This difference is also because of the lack of data concerning transgender peoples' access to toilets in the NSS study.

Figure 5: Male

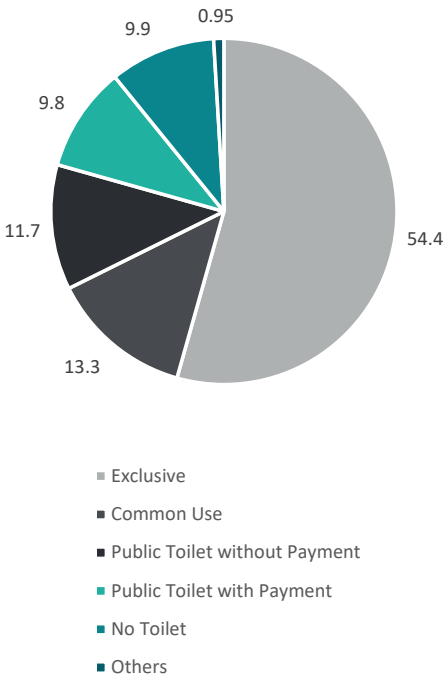


Figure 6: Female

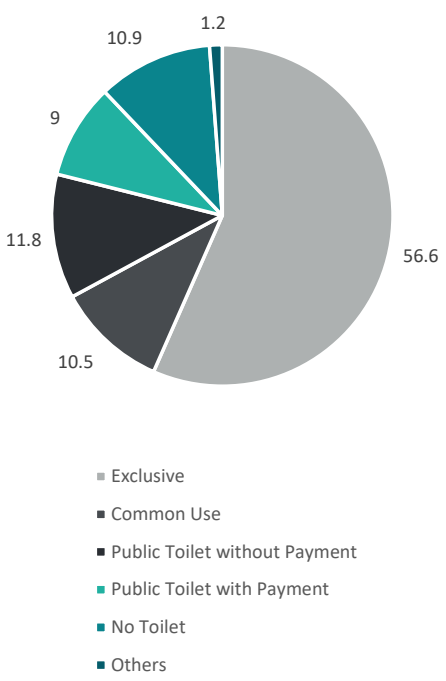
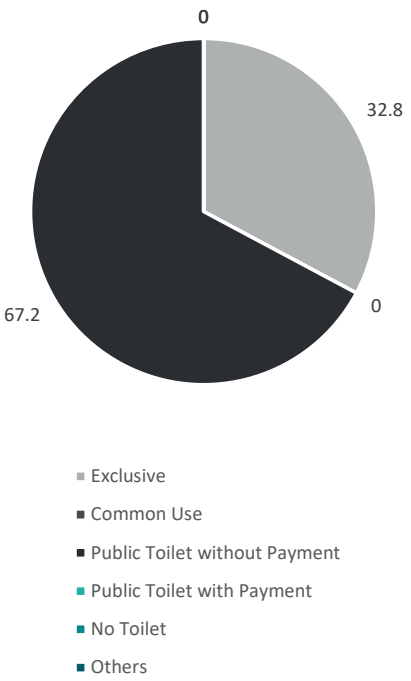


Figure 7: Transgender



Apart from economic factors, various social factors limit the access to toilets for women and transgender people. In many developing nations, several girls and women who require sufficient access to toilet facilities live in informal settlements or slums (Chaplin 2017). As per Toilet Speak, a Mumbai based magazine, lakhs of women defecate in the open— near railway tracks, between houses, on empty plots, on footpaths, on gunny sacks, or over drainage nullahs— where they are shouted at and molested (Krishnakumar 2003). When it comes to women, the lack of access to toilets is highly distressing. It directly impacts their integrity, health, safety, and privacy and indirectly affects their literacy and general productivity.

The Government of India has succeeded in constructing public toilets as part of the Swachh Bharat Mission. However, public participation in utilising these toilets remains low. Even after being denied access to a toilet for Exclusive or Common use, the significantly low usage levels suggest that there may be other factors at play, such as poor management or a lack of attention towards hygiene and sustenance. For instance, according to the Centre for Policy Research study, there was only one working community toilet in B block of Kusumpur Pahari, New Delhi, which served a total population of 20,000 jhuggis (Chaplin and Kalita 2017). Another critical issue in urban centres is this lack of public/community toilets to serve the enormous population living in informal settlements.

3. STATUS OF SERVICES ASSOCIATED WITH

TOILETS IN INFORMAL SETTLEMENTS

Individuals often lack access to toilets because the toilets are not maintained enough to be used. A functioning toilet must have a regular water supply and connection to a sewerage system. If not connected to a sewerage system, a connection to septic tanks is a must, most preferably the Twin Leach Pit Tanks [3]. Excreta must be appropriately disposed of to prevent pollution and contamination, ensuring a safe environment and preserving personal health. An adequate sanitation system must collect and segregate faecal waste, transport it securely, and then treat it before re-using or releasing it into the environment. A functioning toilet can only execute a few of these activities, such as waste collection and isolation, temporary storage (in the case of on-site systems), and partial waste treatment.

3.1 Type of toilet systems used by the households of informal settlements

India has a severe paucity of services for safe waste collection, transport, and treatment for both on-site and sewage network systems. Roughly 300 cities are estimated to have a sewerage network (Wankhade 2015). As indicated in Graph 8, there are different toilet systems used by the people in India, like sewer systems, septic tanks, twin leach pits, and pit toilets. As shown in the graph below, 42.37% of urban, informal households have sewage connections. In informal settlements, nearly half the households have septic tank toilets. A septic tank system includes a tank near the toilet, which collects the wastewater and excreta. The Bureau of Indian Standards formalised the most recent set of standards for constructing septic tanks in 1986 (Dasgupta and Arya 2017). However, according to a survey conducted by the Centre for Science and Environment in urban areas, many town planners do not follow the rules laid down by the Bureau of Indian Standards while constructing septic tanks (Das and Sengupta 2019).

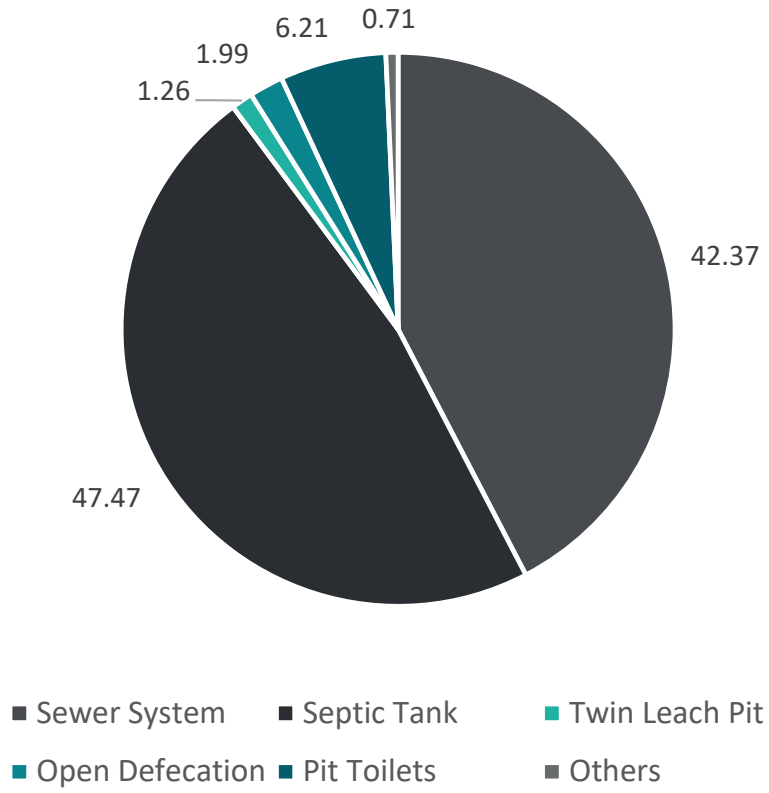
As a result, most septic tanks only have a single chamber tank that functions as a container to store excreta. Whereas the usage of the Twin Leach Pit system is economical to maintain and construct, and it doesn't require a regular supply of water. Thus, the Indian government, through SBM-U, encourages the adoption of Twin Leach Pit Toilets, which manage faecal waste locally, unlike conventional toilets. Under the SBM scheme, the Government of India is also offering a subsidy of Rs. 12000 for building Twin Leach Pit Toilets (Ahuja 2020).

Another toilet system used in India is Pit Toilets. However, they are not appropriate for usage, as manual labour must empty the pit regularly. The SBM scheme discourages the use of Pit Toilets as well. Furthermore, with on-site systems such as septic tanks and pit toilets, the situation worsens. If there are no soakaways, liquid waste from septic tanks gets dumped into open drains without being treated (AIILSG 2011). The results show a relatively low prevalence

[3] The Twin Leach Pit System consists of two alternating pits connected to a pour flush toilet. The contaminated water is collected in pits and allowed to soak into the soil slowly. Over time, the solids are sufficiently dewatered and can be manually removed with a shovel and reused on-site, much like compost, to improve soil fertility and fertilise crops.

of open defecation in urban settlements. However, it contradicts the literature available on open defecation in India.

Figure 8: Type of Toilet System used by the households (Percentage)

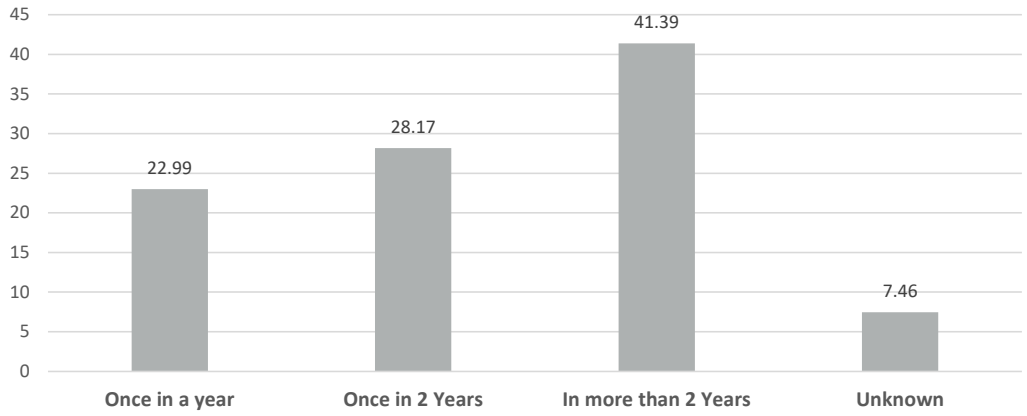


Source: Computed from NSS Round 76th Schedule 1.2, (2018)

3.2 Frequency of excreta getting emptied in informal settlements

Graph 9 demonstrates the frequency of excreta getting emptied from the households in informal settlements. A large section of these households had the excreta emptied in more than two years. Pit toilets and septic tanks eventually fill up and must be emptied. Excreta is supposed to be emptied regularly by ULBs or private contractors, who dump the excreta in nullah or at some isolated place. Municipal Solid Waste Management is a legislated obligation of ULBs. However, most ULBs in India have insufficient infrastructure and funds to maintain the multiple systems necessary to operate an efficacious municipal waste management system (Dube, Nandan, and Gudipudi 2010).

Figure 9: How frequently are excreta emptied (Percentage)



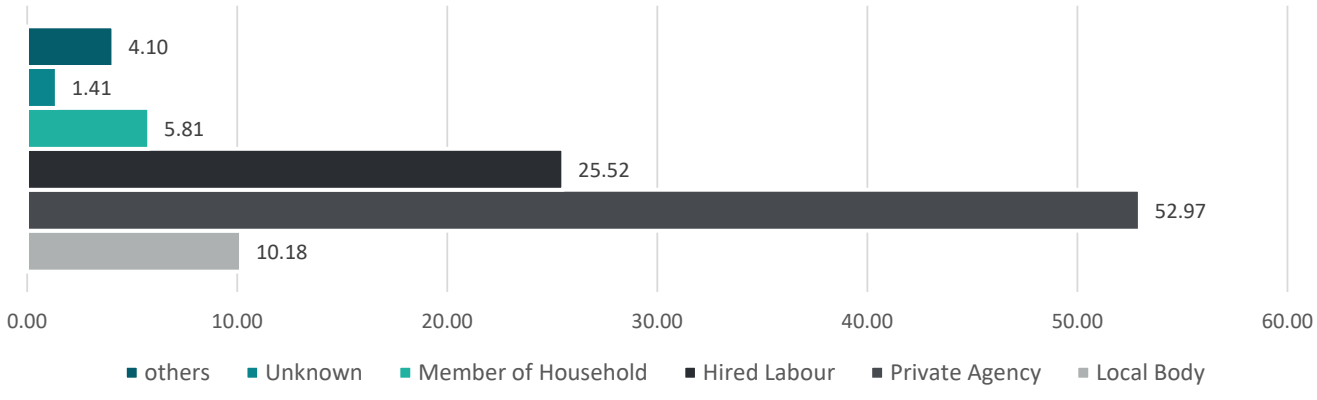
Source: Computed from NSS Round 76th Schedule 1.2, (2018)

3.3 By whom was excreta emptied?

Excreta removal from pit toilets and septic tanks is challenging since it can result in significant health problems, as deposited excreta may contain harmful faecal organisms. They are either emptied mechanically or manually. Although the ULB is obliged to empty the tanks and pits of excreta, given the frequency with which it happens in informal settlements, it is reasonable to conclude that the ULB does not complete the task on time. Graph 10 shows the negligence of ULB in carrying out its obligations.

Private stakeholders are looking after the situation and trying to bridge the gap. Still, in most cases, they are not monitored by any government institution, making way for inconsistent and unlawful waste disposal (Sivaramakrishnan 2019). The majority of households had the excreta removed by a private agency, and one-fourth of families relied on hired labour. The crucial takeaway is that over half the households (52.97 %) relied on a private agency to empty their toilet's excreta. This number is significantly higher than the percentage of households who received service from ULBs. It shows the inconsistency and ineffectiveness of ULBs' waste management efforts.

Figure 10: Who emptied the excreta last time (Percentage)

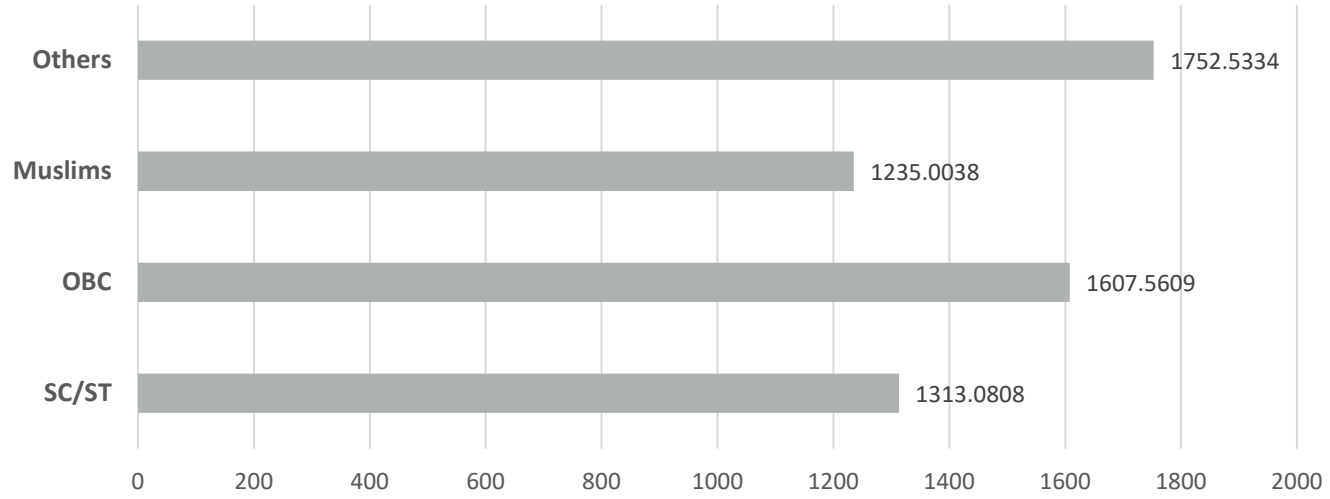


Source: Computed from NSS Round 76th Schedule 1.2, (2018)

3.4 Average amount paid to get the excreta emptied

As indicated in Graph 11, in 2018, the average cost of removal of excreta in an informal settlement was around Rs. 1500. The average price paid for having the excreta emptied among socio-religious groups shows that households in the Others category paid the highest price, Rs. 1750 in 2018. OBCs paid Rs. 1607, and SCs/STs paid Rs. 1313. The Muslim community paid the least amount at Rs. 1235.

Figure 11: Amount Paid for emptying the excreta last time among Socio-Religious Groups in Informal Settlement (Percentage)



Source: Computed from NSS Round 76th Schedule 1.2, (2018)

4. WASTE MANAGEMENT IN INFORMAL SETTLEMENTS

The growth of cities is essential for the nation's advancement, but rampant and haphazard urbanisation has also increased informal settlements. Considering the poor quality of life and poor civic amenities in these settlements, waste mismanagement, including both solid waste and waste, is no exception. The status of poor services for waste management has been made evident through the NSS data presented in the subsequent sections.

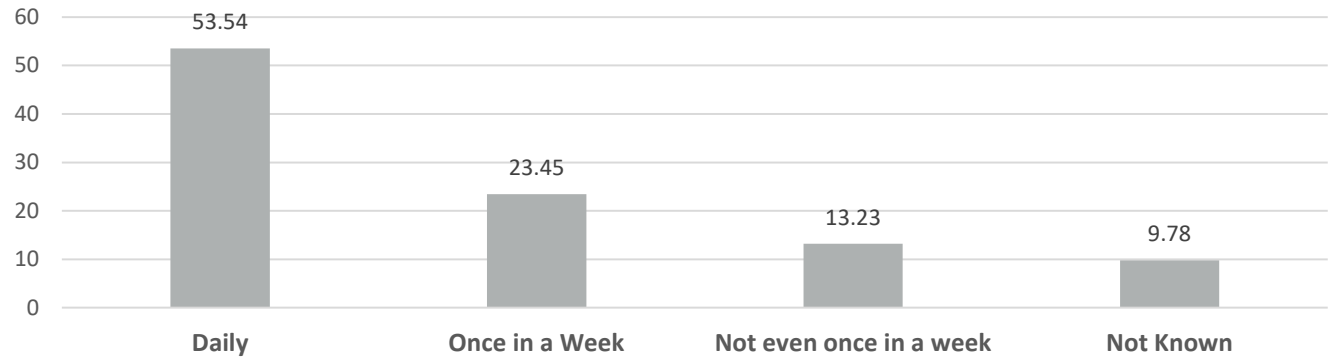
4.1 Frequency of clearing the garbage by ULBs

As per Wankhade (2015), the efficiency observed in waste collection across 1,400 cities is only 10%. The 76th round of NSS divided the frequency of waste collection into four categories: , Daily, Once a week, Not even once a week, and Not known. A considerable percentage of households in informal settlements are denied daily garbage collection, though, the garbage is generated on a daily

basis.

Graph 12 shows that approximately 47% of households in informal settlements do not have access to daily garbage collection in their area. Out of that, just 23.45% of informal settlements have garbage collection once a week. The negligence of ULBs towards proper garbage disposal has led to the proliferation of diseases and contaminants in the environment. Furthermore, because these informal settlers are frequently in direct contact with the garbage lying in surrounding areas, they are the most vulnerable to communicable diseases.

Figure 12: Frequency of Garbage Cleared (Percentage)



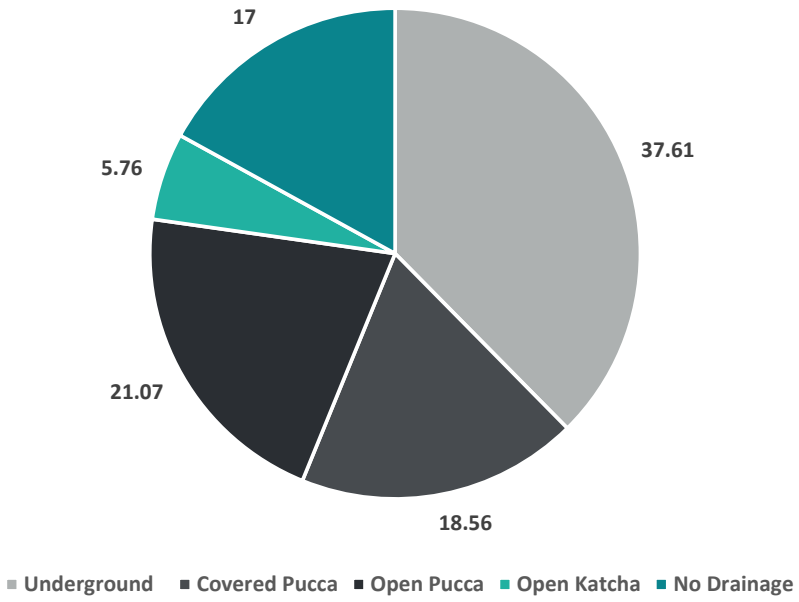
Source: Computed from NSS Round 76th Schedule 1.2, (2018)

4.2 Drainage system of the households

As per NSS, the drainage system has been classified into five categories, as indicated in Graph 13. Though households with Underground drainage systems have the largest share, the portion not having underground drainage systems is also significant. The second-most prevalent drainage system is Open Pucca, followed by the Covered Pucca drainage system. The remaining two categories, Open Katcha and No Drainage detail the facts around faulty or non-existent drainage.

The lack of a drainage system for a significant percentage of households in informal settlements demonstrates a lack of sanitary awareness among informal settlement dwellers, making these areas unfit for people and contributing to increased health and environmental problems. Without a drainage system, garbage accumulates. There is no area for wastewater to flow, causing traffic congestion during rainy seasons and, in the worst-case scenario, natural disasters such as floods.

Figure 13: Drainage System of the Household (Percentage)

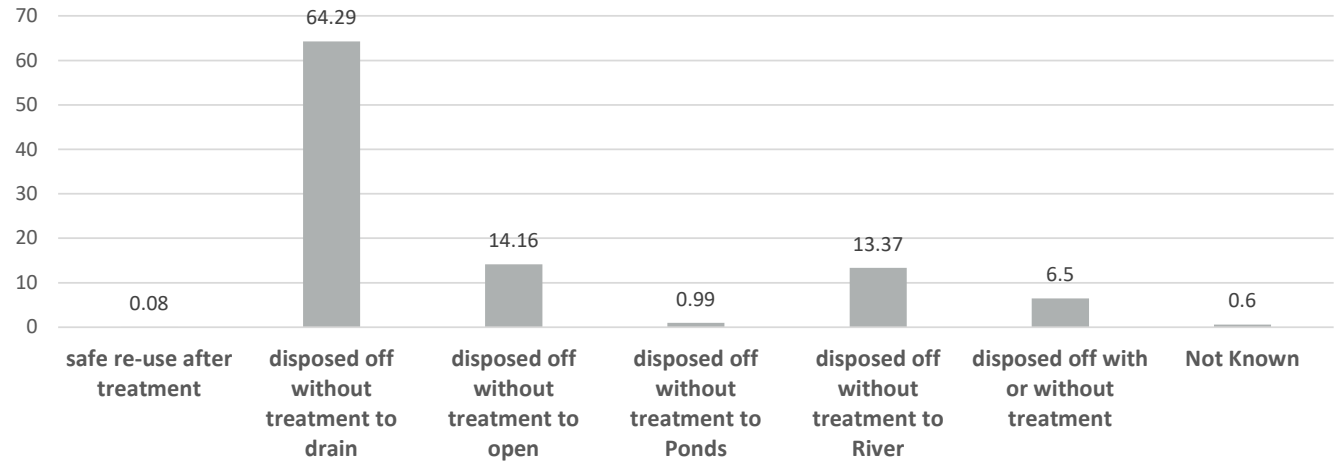


Source: Computed from NSS Round 76th Schedule 1.2, (2018)

4.3 System of disposal of household wastewater in informal settlements

According to a 2005 research by the National Institute of Urban Affairs, only around a third of total wastewater generated in Class I and II towns [4] was collected (Wankhade 2015). The problem with wastewater treatment is substantially worse. In 2009, Class I and II cities' treatment capacity was just 30%, or 1178.8 crore litres per day [MLD], compared to 38,255 MLD of wastewater generation (Wankhade 2015).

Figure 14: System of Disposal of Household Water (Percentage)



Source: Computed from NSS Round 76th Schedule 1.2, (2018)

[4] Class I towns: More than 1, 00,000 population
Class II towns: 50,000 - 99,999 population

As shown in Graph 14, in informal settlements, wastewater is rarely treated for re-use purposes since the percentage of households with 'safe re-use after treatment' is almost negligible. However, the households with wastewater 'disposed off without treatment to drains' have the highest percentage, followed by those with wastewater 'disposed off without treatment to open'. Most water-borne diseases occur because of dirty water due to poor wastewater treatment. It includes diseases in which water or wastewater acts as a breeding ground for vectors or hosts.

RECOMMENDATIONS

Upon analysing the insights from the NSSO data of contemporary Indian cities, it seems policymakers use their institutional power to develop exclusionary water regulations, creating classes of haves and have nots. It becomes evident through data that the idea of exclusion/inclusion in water policies reflects the government's views on water infrastructure being 'urban' and 'anti-urban', creating borders within the city's territory. The primary reason behind this exclusion can be that these settlements have been established illegally on private and public lands. Drinking water is a basic human necessity, and the government needs to provide water for all, irrespective of individuals possessing property rights.

The first measure that the government should undertake is to provide water pipelines for exclusive access to water in informal settlements. These settlements are usually unplanned and overcrowded, and their location and topography act as obstacles in providing water pipelines, even if the government intends to construct one. Thus, if the government cannot build pipelines, it needs to establish enough public sources of clean drinking water at a walkable distance so that these individuals do not have to walk and wait in line for water. Constructing multiple public sources of drinking water at a certain distance can act as a solution until the government can develop an appropriate program to enhance slums, unlike contemporary slum rehabilitation schemes.

Although the government has constructed toilets, the number of toilets built in informal settlements is less than those in other formal settlements, creating a lack for the former population. Consequently, the government should focus its efforts on building toilets in informal settlements. Since building a large number of toilets is a considerable undertaking, another option is to provide mobile toilets. A suitable choice would be providing portable toilets with enough water supply and an attendant responsible for the cleaning and overall maintenance of toilets, situated at a specific walking distance.

In the current situation, the government needs to consider toilet issues through the lens of gender and socio-religious aspects. As discussed in earlier sections, nearly half of the households belonging to OBC, SC/ST, and Muslim population in informal settlements do not have access to a toilet for Exclusive Use. The government should provide toilets to these populations, as a considerable portion of them still do not have access.

Gender also plays a role in limiting access to toilets in addition to socio-religious factors. Women confront a variety of challenges when it comes to using toilets. Appointing female attendants to public toilets might be an appropriate approach to ensure safe toilet access for women. The presence of a female attendant would make the females feel more secure, leading to better results.

Additionally, the policy measures should address proper management of toilet-related services and the provision of suitable WASH facilities. Apart from constructing public toilets, the government must also focus on the household toilet systems, ensuring the connection of most newly created toilets to the sewer system. Since the government already encourages the construction of Twin Leach Pit Toilets under SBM, it must also ensure that people building toilets for personal use should construct the same if a sewer network is absent. They are less expensive and do not require a regular water supply. The government could run awareness campaigns in informal settlements or provide a subsidy for installing these toilets to promote this toilet technology.

Solid waste management and wastewater management are some of the most basic services offered by ULBs in the country to keep the environment clean. However, it is also among one of the worst-performing services. Municipal laws regulating ULBs do not include sufficient provisions that hold the latter accountable for the ever-increasing issue of solid waste management. ULBs do not collect garbage on time, and when they do, there is no proper waste treatment system. They collect the waste and dump it in open spaces, making that place a massive pile of garbage.

Another vital concern among ULBs is the acute capacity shortage at multiple levels. Various organisations, particularly ULBs, are frequently understaffed. In addition, workers possessing technical and managerial positions usually lack sufficient skills to perform their responsibilities efficiently. Furthermore, due to a lack of capacity, the various organisations may lack a mandate or have an ambiguous one to pursue, particularly when it comes to sanitation-related environmental concerns. Capacity building at the local government level is critical for achieving an open-defecation-free India and universal access to toilets.

CONCLUSION

People living in informal settlements face daily challenges accessing essential services like drinking water, toilets, and a liveable environment. Despite global advancements, informal settlements have lower coverage of improved WASH facilities than their urban counterparts. These informal settlements do not receive the government's attention because they have been established unlawfully on public and private lands. The settlements lie outside of the government's jurisdiction. At the government's end, the fundamental issue in providing services to the so-called informal/illegal settlements is their lack of tenurial security/status. In contrast, authorities cannot unjustly evict people living in Notified slums since they are entitled to land tenure security.

Therefore, the informal private service providers fill the gap in providing services, such as drinking water, emptying excreta and cleaning garbage. They charge exorbitant prices for the services, thus exploiting the broad base of consumers. Such practices raise a serious concern regarding the rights and entitlements of the residents in informal settlements. It also questions the state's role in providing access to basic amenities to every citizen since the state exists to offer its citizens basic human rights.

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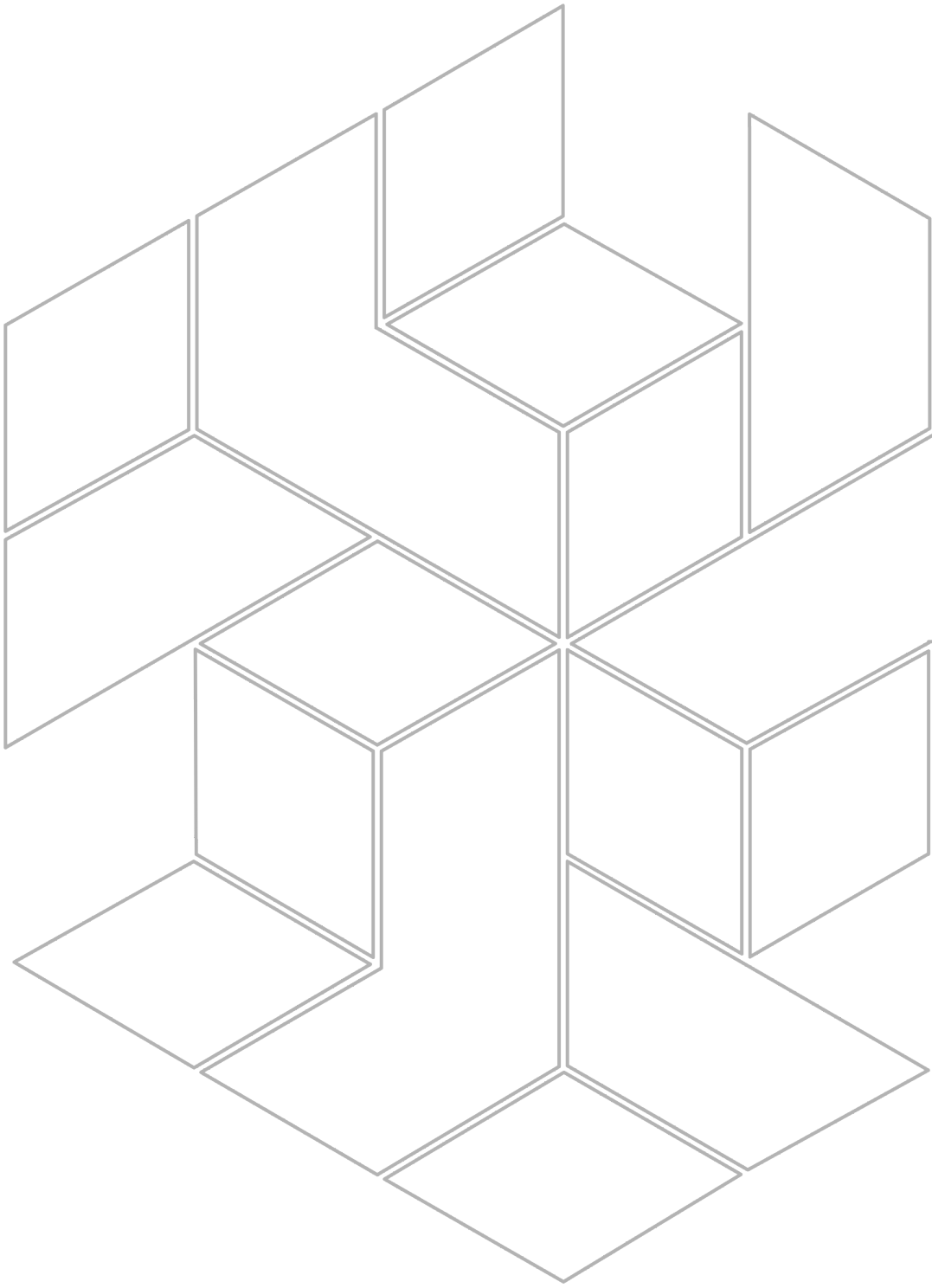

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