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# Toilet Access among the Urban Poor – Challenges and Concerns in Bengaluru City Slums

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# TOILET ACCESS AMONG THE URBAN POOR – CHALLENGES AND CONCERNS IN BENGALURU CITY SLUMS[1]

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## *Abstract*

*Urban expansion in India over the last few decades has placed cities in a challenging situation with limited infrastructure facilities affecting the quality of life of people who live in low income settlements. Sanitation is one such important infrastructure that needs to be addressed urgently. Like any other Indian city, Bengaluru is facing serious challenges in providing sanitation infrastructure for the urban poor living in 597 slums with a population of 13.8 lakh. We surveyed 400 respondents across twenty slums through survey instruments and FGDs to understand the problems of toilet access and usage. Alarmingly, we found that access to toilets remains a serious issue as open defecation prevailed in 10 slums (13.5% households). This reiterates the fact that although several interventions have been made to improve sanitation facilities, complete access is yet to be achieved to make Bengaluru free of open defecation. The findings of the study would help understand the ground truths and provide insights to improve sanitation access to the poor.*

**Key words:** Toilet Access, Sanitation, Urban poor, Open Defecation

## Introduction

'Urbanization' has emerged as one of the most prominent dimensions of the development process the world over. World Urbanization Prospects, 2005 says the 20th century has witnessed the rapid urbanization of the world's population as reflected in the dramatic increase in the proportion of global urban population from 13 percent (220 million) in 1900 to 29 percent (732 million) in 1950, from 39.4 percent in 1980 to 41.2 percent in 1990, and from 49 percent (3.2 billion) in 2005 to 52.8 percent in 2010. It is projected to increase further to 60 percent (4.9 billion) by 2030 (Figure 1) (World Urbanisation Prospects, 2005). Further, the process of urbanization is leading to rapid economic, social and physical changes, particularly in the developing countries (Rakodi (Ed), 1997), and has put cities in a challenging situation in providing infrastructure facilities.

India, being no exception, has also witnessed substantial urban expansion over the last few decades. In the last fifty years, the population of urban India has grown almost five times. It is estimated that by 2030, 590 million people will live in Indian cities. Table 1 indicates the increase in Indian urban population over decades, and the 2011 figures show an increase from 28.6 per cent in 2001 to 31.2 per cent (Census of India 2011). The growth of urbanisation is highly discernible in southern Indian states with more than 35 per cent of the population living in urban centres, barring Andhra Pradesh, while Karnataka's urban population has increased from 33.9 per cent in 2001 to 38.57 per cent in 2011.

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**Table 1: Urban Population of India over Decades**

| Years | Total population | Urban Population |
|---|---|---|
| 1901 | 238396327 | 25851873 |
| 1911 | 252093390 | 25941633 |
| 1921 | 251321213 | 28086167 |
| 1931 | 278977238 | 33455989 |
| 1941 | 318660580 | 44153297 |
| 1951 | 361088090 | 62443709 |
| 1961 | 439234771 | 78936603 |
| 1971 | 598159652 | 109113977 |
| 1981 | 683329097 | 159462547 |
| 1991 | 844324222 | 217177625 |
| 2001 | 1027015247 | 285354954 |
| 2011 | 1210193422 | 377,105,760 |

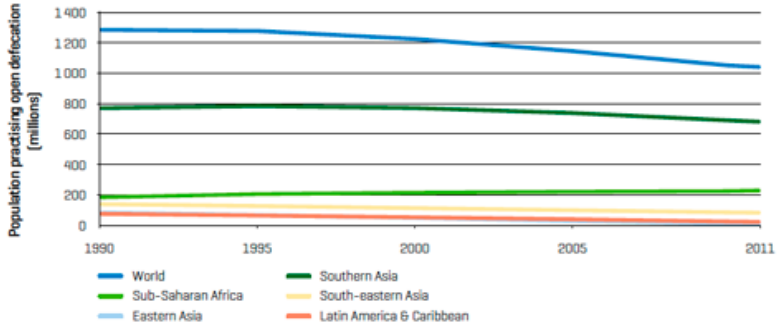
**Source:** Various Census Reports, Census of India, 2011

Rapid urbanisation has posed serious challenges to urban planning and management in terms of providing infrastructure and other civic amenities like housing, electricity, water and sanitation (Ahluwalia, 2011; Bhagat, 2011; Kundu, 2011, Kulkarni and Ramachandra, 2006). The negative consequences of urban pull have resulted in the emergence of slums characterised by housing shortage and critical inadequacies in public utilities, overcrowding, unhygienic conditions etc.

Given the rapid rate of urbanisation, sanitation in India has become one of the major national problems that need to be tackled urgently. Sanitation, in general, refers to the provision of facilities and services for safe disposal of human waste. It also refers to the maintenance of hygienic conditions through provision of services such as garbage collection and waste water disposal (World Health Organization, accessed at http://www.who.int/ topics/sanitation/en/).

A United Nations estimate says a little over 1 billion people still practice open defecation, mostly in the developing countries, despite open defecation rates showing a decline globally from 24 per cent in 1990 to 15 per cent in 2011 i.e., in absolute terms from 244 million people to 1.04 billion in 2011(Fig 1).

**Figure 1: Open Defecation Trends in Developing Regions and the World, 1990-2011**




**Source:** Progress on Drinking Water and Sanitation. 2013 update. UNICEF, WHO, March 2013

According to WHO, a majority of the people with no access to safe water supply and improved sanitation facilities are living in Asia and Africa. In Asia, nearly half of the population lives without proper sanitation facilities and in Africa, 2 out of 5 do not have access to adequate water supply. UNICEF and WHO estimated that in 2010, 25 per cent of sub-Saharan Africa was practicing open defecation. Besides, recent health surveys carried out in the three largest sub-Saharan countries indicate that 31.1 percent dwelling units in Nigeria, 38.3 percent in Ethiopia and 12.1 percent in the Democratic Republic of Congo practice open defecation. This can burden the existing services for decades to come (WHO, UNICEF, 2000).

At the regional level, in 2011, almost two-thirds (64 per cent) of the world relied on improved sanitation facilities while progress was significant in eastern Asia with an increase in sanitation coverage from 27 per cent by 1990 to 67 per cent in 2011. This indicates that more than 626 million people had access to improved sanitation facilities over two decades (United Nation Department of Economic and Social Affair, UNDESA). However, the population practicing open defecation has differed across regions. In southern Asia, open defecation was extensive in the 1990s but declined later whereas in sub-Saharan Africa the number of people defecating in the open shows an increasing trend (UNICEF, WHO 2013). A report by Krishna Prasad (2014) in the context of Nepal indicates that due to the high ground water table, construction of toilets is expensive and hence open defecation is a common practice with about 57 per cent of the country's population lacking access to toilets. Forty-eight per cent of the total Indian population, which is about 600 million people, defecate in the open, followed by Afghanistan (15 per cent), Congo (8 per cent), Burundi (3 per cent) and Bangladesh (3 per cent).

## Sanitation Concerns in India

With respect to India, population density adds to the negative effects of sanitation and hence, it is a matter of serious concern. According to the 12$^{th}$ Plan, with the increase in urban population, the demand for all key infrastructure facilities is bound to increase, more so with respect to water and sanitation. The Planning Commission report on the Evaluation Study of Total Sanitation Campaign, 2013 shows that 72.63 per cent of rural India defecates in the open. According to the 2011 census, sanitation coverage amounts to around 30 per cent in rural areas and about 80 per cent in urban areas while budgetary allocation constitutes 0.04 per cent of the GDP.

A study by WHO and UNICEF on drinking water and sanitation in 2012 indicates that 626 million people in India, i.e., nearly 51 per cent of the total population, still defecate in the open. While a segment of the population in rural areas defecate in the open, what is disturbing is that urban areas are no different. Sewerage systems, if present, suffer from very poor maintenance. Wastewater treatment facilities are highly inadequate, causing water contamination. A study by the United Nations says that the entire Indian population has greater access to mobile phones than toilets. In the slums of Mumbai, around 81 to 243 people share one toilet. This is the world's highest number, and India ranks among the first 12 countries practising open defecation, a major public health concern. Among the countries included in the World Health Organization's epidemiological sub-regions, India falls under D category, indicating high adult and child mortality.

Dean Spears (2012) in his study points out that sanitation and stunted growth are related. Indian children, in particular, face the threat of widespread open defecation and high population density that tend to adversely affect their health as well as growth. The study indicates that a 10 per cent increase in open defecation is associated with a 0.7 per cent increase in stunted growth across 112 districts among Indian children. The findings also provide highly disturbing figures for districts where people practise open defecation. The study also finds that about half of the children are stunted and almost a third severely stunted. In these districts, over 70 per cent of the people defecate in the open, and 71 out of every 1,000 babies born alive die before they reach the age of one.

Similarly**,** slums located along storm water drains are a source of serious health hazards for their dwellers due to the contaminated water flow in the drains. Further**,** slums adjacent to waste disposal sites face several hazards associated with a degraded environment in the form of polluted water and air, raising the possibility of infectious disease spread among children, particularly those belonging to the socially marginalised groups, who generally come in close contact with the outside physical environment (Siddharath and Shivani 2005).

A study by Berna (2006), carried out across eight slums in Tiruchirapalli district of Tamil Nadu, reveals that women blamed poor maintenance of latrines as the causal factor behind the growth and reproduction of fecal worms that are generally found near water taps, and sometimes even inside the walls of their houses. Thus, poor sanitation and contaminated water can affect all families, besides increasing their medical expenses. Niranjan and Vasundhara (1996), in a study carried out on the health status of aged persons in slums across Bengaluru, found that 90.46 percent of the aged had one or more addictions, and 82.89 percent had illnesses, with cataract (73 percent) being the most common followed by anemia (13 percent).

A proper sanitation facility is important as it has a vital role to play in individual and social life as it is one of the basic determinants of quality of life and human development index. There is, therefore, a direct relationship between water, sanitation and health. Inadequate access to safe water and sanitation services, with poor hygiene practices, tends to degrade the general health status of the people, especially children. The implications of poor sanitation facilities on health are severe, with incidence of morbidity and mortality being reported, particularly children. The lack of toilets invariably results in malnourished children and more diseases while improved sanitation facilities show positive signs. For instance, Sikkim and Kerala, which have better access to toilets, have comparatively lower levels of malnourished children (15.9 per cent and 6.8 per cent respectively) while the states of Bihar and Odisha, where 82.4 per cent and 85.9 per cent of the population practice open defecation respectively, show higher levels of malnourished children in view of their poor access to toilets.

## Bengaluru Scenario

Bengaluru is one of the fastest growing cities and the fifth largest city in India. Like other Indian metropolitan cities, increased urbanisation has posed serious challenges in providing infrastructural facilities. Bengaluru's population has been growing rapidly, and the 2011 census indicates that around 84,49,944 people live in the city. The negative consequences of the urban pull have resulted in the emergence of slums characterised by housing shortage and critical inadequacies in public utilities,

overcrowding, unhygienic conditions etc. Thus Bengaluru is a typical example of urban agglomeration subject to the problems of rapid urbanisation and unplanned growth. The rapid urbanisation has thrown up serious challenges in urban planning and management in terms of providing infrastructure and other civic amenities like housing, electricity, water and sanitation (Ahluwalia, 2011; Bhagat, 2011; Kundu, 2011, Kulkarni and Ramachandra, 2006).

## Urban Poor and Sanitation in Bengaluru

There are data discrepancies on the total number of slums. BBMP data indicates that totally there are 587 slums in Bengaluru, out which 230 are notified and 357 are non-notified. But the data collected from the Karnataka Slum Development Board indicates that the number of slums in Bengaluru city is 597, of which 388 are notified and 209 non-notified *(Annual Report 2013-14, Karnataka Slum Development Board)*. The data from KSDB indicates that there are 3,21,296 slum households in Bengaluru with a population of 13,86,583 (*Annual Report, 2013-14, KSDB*). However, the problem of sanitation, irrespective of the number of slums, remains an issue in a majority of the slums.

Several independent studies have highlighted the sanitation concerns faced by the urban poor in Bengaluru city. Benjamin (2000), while dealing with the issues pertaining to women across the slums of Bengaluru, observes that women are forced to use open fields for defecation and face harassment from drunken men making it unsafe. Women prefer to save money for building their own toilets, but the lack of access to underground sewage system makes it very difficult. Lack of open space for defecation is another issue making it difficult for them to gain access to open spaces in terms of time and distance. Kala Sridhar and Venu Reddy (2011) observe that there is a potential for policy to incentivise and influence the entry of private service providers into slums. A study by Mythri Sarva Seva Samithi (2012) highlighted that 40 percent did not have access to toilets indicating that the urban poor suffer the most in terms of accessing toilets. There are instances where one toilet has to be shared by 100 people and nine toilets by 200 people (in Tasker Town, Shivajinagar). Besides, these toilets tend to become unusable due to lack of maintenance, a matter of serious concern.

Several public health experts and many studies have pointed out that large sections of the urban poor are denied access to toilets. The extent of night soil disposed into open drains is a matter of serious concern in the context of health and epidemics. As per Census data, Bengaluru city has shown substantial progress in improving access to toilets, from 90.78 per cent in 2001 to 96.76 per cent in 2011. An official report in 1994 (Ravindra, 1997) says around 113,000 houses were without toilets while 17,500 had dry toilets. Sanbergen and Loes-Schenk (1996), in their study, have highlighted that of the 22 slums, nine (with a total population of 35,400) had no toilet facilities while in the remaining ten slums, there were 19 public toilets for 16,850 households or 102,000 inhabitants.

Divya Rajaraman *et al* (2013) points out that little is known about barriers to sanitation at the workplace, where working adults spend almost half of their waking hours. Her findings highlight that access to sanitation varies by occupation group, with construction workers and domestic workers being the worst affected. The consequences of inadequate access to sanitation include the shame and fear related to urination and defecation in open areas, holding back the urge to urinate or defecate, walking significant distances during working hours to use a toilet, inability to maintain an adequate menstrual

hygiene at work, loss of pay as a result of missing out on work during menstruation and resentment towards employers for not providing access to toilets.

With this backdrop, the present paper brings to the fore the serious issue of open defecation that still prevails in Bengaluru slums, and key issues and concerns as a result of poor toilet access and usage. We collected both qualitative and quantitative data, and reviewed studies on sanitation. Secondary data was collected from the concerned departments of Bruhat Bengaluru Mahanagara Palike (BBMP), Bengaluru Water Supply and Sewerage Board (BWSSB), Karnataka Slum Development Board (KSDB), corporate-initiated schemes, NGO-initiated Sulabh Shauchalaya schemes and other case studies. Interviews and discussions were held with officials at various levels of the government and other senior personnel of corporates and NGOs. Both the structured and semi-structured survey instruments (questionnaires/ checklists) were designed for stakeholders, group-level meetings as well as individual interactions. A comprehensive field survey was carried out covering various aspects of sanitation. The questionnaire was designed to cover socio-economic, physical, financial, user satisfaction and environmental aspects. A pilot survey was carried out in two slums, based on which the questionnaire was revised in terms of its contents. Ten declared and 10 undeclared slums were identified across all zones of the city based on ownership of land (government land and private land), slums with migrant population only, location (slums located beside railway lines, alongside sewage drain etc.), slums with no access to toilets, or having access to public toilets or pay-and-use toilets, and slums that benefited under housing schemes. Discussions conducted with KSDB officials helped us gain a broad understanding of not only the problems facing slums, but also the norms in the selection of slums. The selection of slums from each zone in the BBMP was in proportion to the total number of slums in each zone. Households from each slum were selected randomly. Twenty respondents covering a total sample of 400 respondents across 400 households were surveyed (20 HHs each from 20 slums), broadly representing the age groups, women, and elderly population. Focused group discussions also formed part of the survey for a comprehensive analysis.

The respondents in the selected households were chosen based on the criteria of gender and age. Age was categorised into three groups - adults, middle aged and the old. Accordingly, three questionnaires were administered for each category except for the middle-aged women who happen to be the major victims of problems with no access to toilet facility. Five questionnaires were administered to them to capture their views regarding problems prevailing in slums.

SPSS package was used to analyse the data collected from questionnaires, supported by the perceptions gathered during our focus group discussions. Also, the stakeholders were mapped based on their responses while their perceptions were analysed in the context of drivers, pressures and impacts to identify the gaps in processes.

# Results and Discussions

## Toilet Access

While the latest Census 2011 data indicates that 5.2 percent of households lack toilet facility and 94.8 percent have access to toilet facility in Bengaluru, the absolute number of households that lack toilets is still high. The majority of these are from the large segment of population living in poorer pockets of the city. This has been made clear in our study, which shows that 67 percent (i.e. 268 households) have access to individual toilets (in-house toilets) while a significant percentage of the households (19.5 percent, 78 households) are dependent on shared/ pay-and-use public toilets. Another 13.5 percent of the households (54 households) were without toilet facility of any kind and use open spaces/land for defecation (Table 2). However, if we look at the trends in toilet access over the last few years in Bengaluru, it becomes evident that the city has achieved better coverage lately due to two contributing factors – an increase in the level of awareness and the lack of open spaces for open defecation.

**Table 2: Type of Toilets Used and Practice of Open Defecation in the Study Area**

| Type of toilets | Percent | Notified | Non-notified |
|---|---|---|---|
| Individual/own toilet | 67.0 | 75 | 59 |
| Public toilet | 7.2 | 10 | 4.5 |
| Shared toilet | 12.3 | 2.5 | 22 |
| Open space | 13.5 | 12.5 | 14.5 |
| Total | 100.0 | 100 | 100 |

**Source:** Primary Survey, 2015

## Type of Toilets

The type of toilets and their facilities are an important indicator for understanding the quality of toilets which, in turn, affects their usage. We have observed that a majority of the surveyed households have access to individual toilets as in Gangodanahalli slum, Govindaraja Nagar slum, Yarab Nagar slum, Nayandahalli slum etc. This is a positive sign as households with individual toilets feel less hassled as compared to those that use public or shared toilets. Besides, it also encourages all the members of the households to use toilets. It has been observed that households with no access to individual toilets depend on community /public toilets, shared toilets or neighbour's toilets. Sharing of one toilet by two households is more common in the slums studied. For instance, in Vasanthapura slum, shared toilets are more in number due to space constraints and three to four households share one toilet. At times, in some extreme cases, one toilet is shared by 15 households, as in LBS Nagar slum. Around 7 percent of the households use public toilets as in Jayaram slum, LBS Nagar etc. Toilet infrastructure features are an important indicator of the prevalence of open defecation. For example, in spite of the availability of toilet facility in 20 slums, people in 10 slums still practise open defecation, which brings to the fore the fact that mere provision of the physical infrastructure does not necessarily ensure positive access to toilets. There are issues such as water scarcity, technical aspects etc., which force people to defecate in the open.

***Individual Toilets*** - There are some slums (Gangondanahalli, Govindarajnagar, Swanthatrapalya, Yarabnagar, Sarvagnanagar, Deshiyanagar slums) which are completely free from open defecation and where toilets are maintained well. This was observed in slums where individual toilets were present in all the houses (Plate 1). The households were built under JNNURM scheme along with toilets, prior to which open defecation was prevalent along the sides of the railway lines located close by. People now feel relieved that houses have been constructed with access to toilets. Toilets are used by every member of the family with no open defecation practised.

**Plate 1: Individual Toilets Located Beside the House**

***Shared Toilets*** – In our survey among 400 households across 10 slums, 49 households (12.2 per cent) were using shared toilets. The dependence on shared toilets was more in non-notified slums compared to notified slums. It has been observed that in around 2 percent of the HHs, two families share a single toilet; in around 6 percent of the HHs, three families share a single toilet; and in around 3 percent of the HHs, 4 families share a single toilet (Plate 2). Shared toilets caused a lot of inconvenience as people had to wait for their turn before using toilets. Since shared toilets generally lack maintenance and timely access, men tend to defecate in the open.

**Plate 2: Shared Toilets at Jayaram Slum**

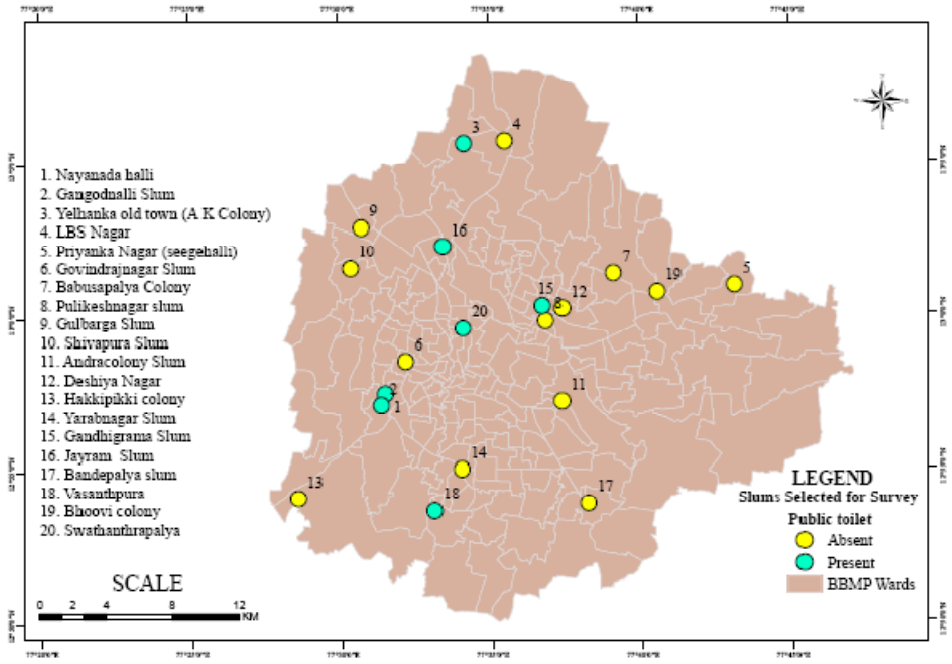
***Public Toilets*** - Public toilets serve as an alternative for toilet access in densely populated low income communities in urban and semi-urban areas. Among the surveyed slums, public toilets are present in seven slums, and around 7 percent of the total surveyed households (29 households) are dependent on public toilets (Map 1). The public toilets constructed in the slums studied (Plate 3) are operated on pay-and-use basis except the one in Swathantrapalya slum. Overall, a few people were comfortable paying user charges as they have no other choice but some of them complained that user fees were too high for them. Public toilets used by slum-dwellers varied in the usage pattern across families/slums. Some of the families completely depended on public toilets as they did not have an individual toilet in their house. However, there were families which had individual toilets, but still had to use public toilets during the times when their toilets had blockages, drain leakages etc. People surveyed complained about lack of hygiene and maintenance in public toilets but had no choice but to use them. Another major inconvenience to the users is that they have to stand in long queues during the rush hour in the mornings.

It has been observed that in Gangodanahalli slum, a few households are dependent on a community toilet located nearby. In Nayandahalli, Swatantrapalya and Gandhinagar slums, though the residents are beneficiaries of housing facility along with individual toilets, due to frequent blockage of sanitary pipes, the dependence on community toilets is relatively high. Public toilets are, at the most, an alternative option, not a preferable choice of the people. Some of the major reasons for dependence on public toilets by a few households are:

a. Lack of space for construction of own toilets in LBS Nagar, Swatantrapalya, and Jayaram slums (3.2 per cent) as they are located in highly congested and densely populated areas with very small houses of 8 x 10 feet.
b. Individual toilets are too small to use.
c. Financial constraints to have their own toilet (2.2 per cent)
d. Water scarcity

**Plate 3: Public Toilets in Study Area**


**Map 1: Access to Public Toilets**

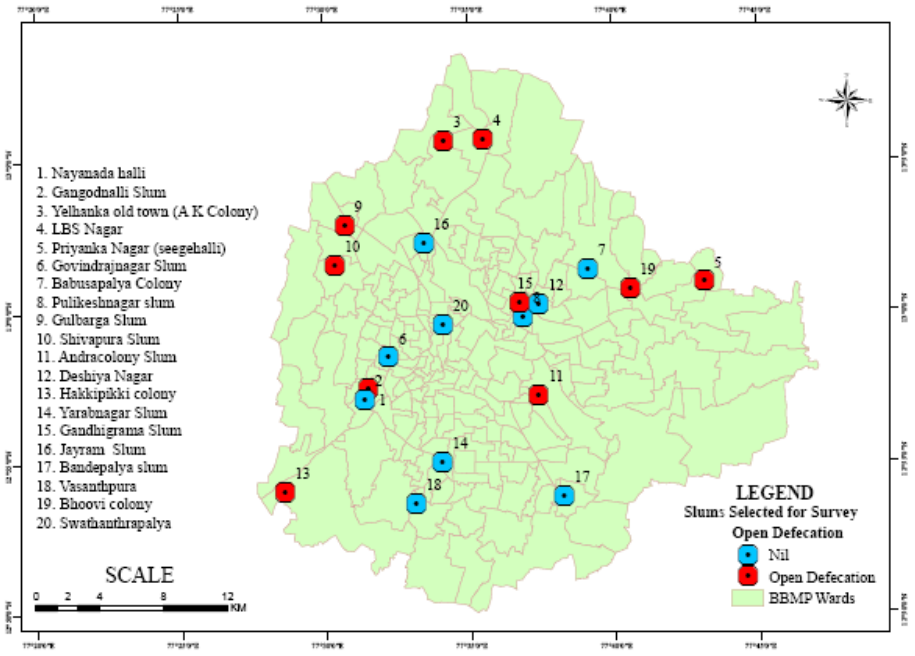



**Source:** Primary Survey 2015

***Open Defecation*** – Open defecation prevailed for varied reasons in the study area. For instance, in Hakki pikki colony with a population of around 2000, all 208 households (except 3 or 4) defecate in the open areas as they do not have access to toilets. Similarly, in Shivapura slum, LBS Nagar slum and Yelahanka A K colony slum, around 50 per cent of the households do not have access to any kind of toilet facility and hence practise open defecation (see Map 2). This is supported by a survey conducted in 2013 by Bengaluru Urban zilla panchayat (ZP), which highlights that 34,656 households in Bengaluru Urban district do not have access to toilets and hence, resort to open defecation. Some of the reasons

are lack of space, inadequate number of public toilets, unused toilets etc. People generally complain about inconvenience caused due to the fact that they have to traverse long distances in search of open spaces, which adds to their stress, and also that it is unsafe for women and inconvenient for children and the aged, particularly in the late evenings.

**Map 2: Map Indicating Slums Practising Open Defecation**

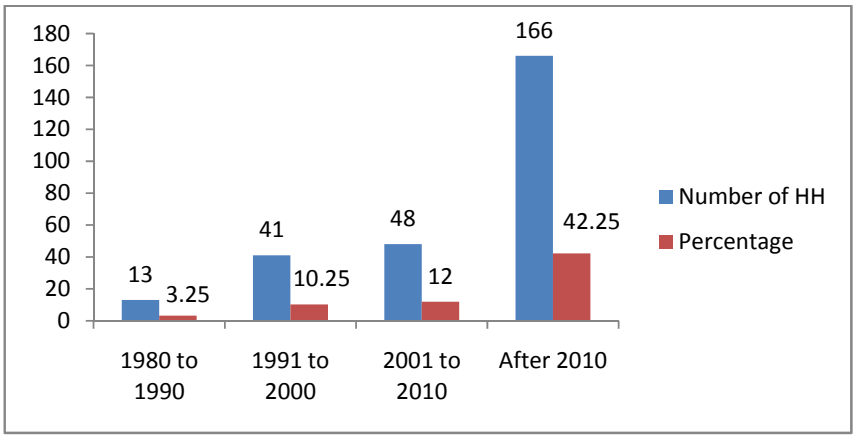



**Source:** Primary Survey, 2015

## Toilet Construction under Various Schemes

Various schemes have been implemented by the State and Central governments to provide toilet access. Under these schemes, financial assistance is given to households for constructing toilets or houses with toilets. The total number of individual toilets constructed in the study area has increased after 2010 (Fig 2). The data collected during our household survey indicates that 42 percent of individual toilets were constructed after 2010, which may be attributed to the implementation of various housing and sanitation schemes by the government like Basic Services for the Urban Poor (BSUP) and Integrated Housing and Slum Development Scheme (IHSD) under Jawaharlal Nehru Urban Renewal Mission (JNNURM) launched in December 2005. In addition, recently under the World Bank sponsored Karnataka Municipal Reforms Project (KMRP) implemented by BWSSB, toilets have been constructed in various slums of Bengaluru. Another reason may be the non-availability of space for open defecation due to the enormous growth of the real estate sector in Bengaluru, which has further resulted in slum-dwellers opting for the construction of own individual toilets. In addition, various initiatives by the government and NGOs on creating awareness among people regarding the importance of access to and usage of toilets, like Nirmal Bharat Abhiyaan, Swachcha Bharat Mission etc., might have motivated people to construct toilets.

**Figure 2: Toilet Construction over Time**




**Source:** Primary Survey, 2015

In 45.5 percent of the households with individual toilets, toilets were constructed by their owners while 21.5 percent received financial support either from the State or Central government under various schemes (only in notified slums). Financial assistance was provided for the construction of individual toilets with World Bank aid under KMRP project implemented by BWSSB (Yelahanka AK colony, Priyanka Nagar slum, LBS Nagar slum, Shivapura slum) (Plate 4) whereas, under Valmiki Ambedkar Awas Yojana (VAMBAY), JNNURM and Rajiv Awas Yojana (RAY) schemes, housing facility including the construction of toilets was provided to the slum-dweller. Regarding non-notified slums, the majority of toilets were owner-constructed, excepting a few which received help under the World Bank's KMRP scheme implemented by BWSSB. Under the KMRP project, the beneficiaries are to contribute depending on the number of walls available. However, under JNNURM and VAMBAY, people had contributed 10 per cent of the total cost of house construction, which varied between Rs.28,000 and Rs.36,000 across slums. Also, when people can afford, they do not want to suffer any kind of inconvenience caused due to lack of access to toilets.

**Plate 4: Toilets Constructed under Various Schemes**

If we consider whether there was any significant difference between notified and non-notified areas in the mean rank of respondents having accessibility to own toilets, as the p-value of 0.107 is greater than the significance alpha level of 0.05, it could be concluded that there is no significant (statistically) difference in the number of respondents belonging to notified and non-notified areas on accessibility to own toilets (Table 3).

**Table 3: Mean rank across Slum Type**

| Slum Type | N | Mean Rank | Sum of Ranks |
|---|---|---|---|
| Notified | 10 | 12.60 | 126.00 |
| Non Notified | 10 | 8.40 | 94.00 |
| Total | 20 | | |

**Table 4: Non Parametric Test -- Mann Whitney U Test Result Regarding Accessibility to Own Toilets**

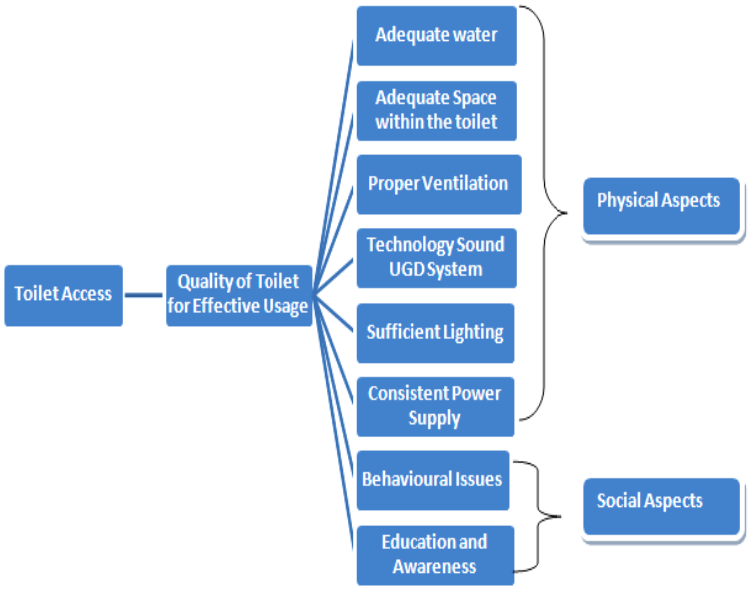
| Test Statistics | |
|---|---|
| | **Availability of Sanitation facility** |
| Mann-Whitney U | 29.000 |
| Wilcoxon W | 84.000 |
| Z | - 1.612 |
| Asymp. Sig. (2-tailed) | 0.107 |
| Exact Sig. [2*(1-tailed Sig.)] | 0.123 |

Usage of toilets by all the members of the households will be the key factor in making Bengaluru an open defecation-free city. We have observed that just providing toilet infrastructure for slum households does not ensure its usage. Instead, there are other several factors that influence toilet usage, which are discussed below.

## Toilet Usage

Toilet usage in slum households is determined by several socio-cultural factors as shown in Fig 3. Unless these aspects are covered, access to and usage of toilets may get affected.

**Figure 3: Factors Influencing Toilet Access and Usage**



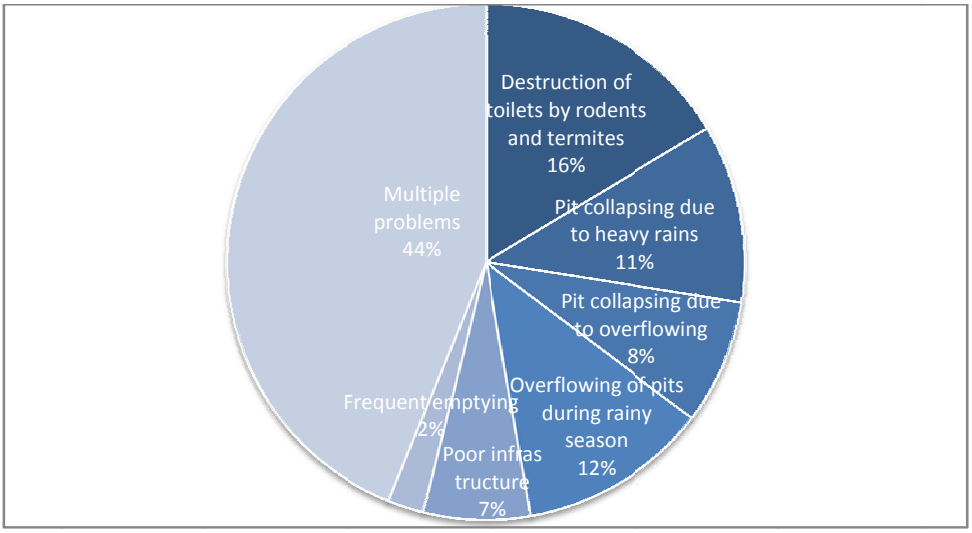

Individual toilets are largely used by households owning them. However, we have observed that though households have toilets at home, some members of the family, particularly men, do not make use of them and also are comfortable with open defecation. Attempts were also made to understand the reasons behind the prevalence of open defecation '*in spite of toilets'.* The major factors that continue to influence open defecation despite the presence of toilet infrastructure may be technological constraints, poor maintenance, water scarcity etc.

## Technical Problems

According to our observations, toilets constructed in several slum households across the city possess the physical structure of toilets but are not being put to proper usage. Among the surveyed slums, 12 had access to individual/shared/public toilets. However, unavoidable circumstances often force household members to defecate in the open, and in several instances, blockage of underground drainage is a prominent problem encountered across slums. This brings us to the issue of access to toilets in the real sense wherein access is not just the physical presence of toilets; what really matters is the set of technical factors that determine their usage. Some of these factors include damage to toilets by rodents and termites, collapse of pits due to heavy rains and overflow, poor infrastructure and irregular emptying of soak pits. A majority of the respondents (44 percent) reported a combination of above mentioned problems, followed by damage to toilets by rodents and termites (16 percent), over-flowing of pits during rainy season (12 percent) and pit collapse due to heavy rains (Fig 4). The menace of rodents has been observed in Babusaplaya and Swanthatra palya slums. In Deshiyanagar slum, the blockage of UGD is a common problem whereas in Nayandahalli, it is the overflowing of sewage due to the blockage of sanitary pipes. Similarly, in Yelahanka AK colony and Shivapura slum, toilets have been built on drainage lines, resulting in overflow during rainy season. Likewise, in Swathantra playa,

Nayandahalli and Vasanthapura, a frequent blockage of sanitary lines is an issue for concern. In Priyanka Nagar slum, due to blockage of pits, residents were forced to defecate in open spaces (Table 5). During such times, it is reported that pigs become more of a problem than privacy.

**Figure 4: Technical Problems Involved in Toilet Usage**




**Source:** Primary Survey, 2015

**Table 5: Sanitation Problems Facing the Slums Studied – An Overview**

| Sl. No. | Zone | Slum Name | Overflowing of UGD | Blockage of drainage system | Rodent problem |
|---|---|---|---|---|---|
| 1 | Bommanhalli | Vasanthpura (N) | | | |
| 2 | | Bandepalya Slum (Non) | ✓ | | |
| 3 | South | Gangodnalli Slum (N) | | | |
| 4 | | Govindrajnagar Slum (N) | | | |
| 5 | | Yarabnagar Slum (Non) | | | |
| 6 | East | Pullakeshinagar Slum (N) | ✓ | ✓ | ✓ |
| 7 | | Deshiya Nagar (N) | | ✓ | ✓ |
| 8 | | Gandhigrama Slum (Non) | ✓ | ✓ | |
| 9 | | Andracolony Slum (Non) | | | |
| 10 | West | Jayram Slum (N) | | | |
| 11 | | Swathanthrapalya (N) | ✓ | ✓ | ✓ |
| 12 | Dasarahalli | Gulbarga Slum (Non) | | | |
| 13 | | Shivapura Slum (Non) | ✓ | ✓ | ✓ |
| 14 | Mahadevpura | Priyankanagar (Seggehalli) | | ✓ | ✓ |
| 15 | | Babusa Palya Colony | | ✓ | ✓ |
| 16 | | Bhoovi colony | ✓ | ✓ | ✓ |
| 17 | Yelhanka | Yelhanka A K Colony | | | |
| 18 | | LBS Nagar | | | |
| 19 | RR Nagar | Nayandahalli Slum | ✓ | ✓ | ✓ |
| 20 | | Hakkipikki colony | | | |
| **Total** | | | 35% | 45% | 40% |

**Source:** Primary Survey, 2015

## Inadequate number of toilets

Inadequate number of toilets is another issue because of which slum-dwellers depend on open land. Nine slums have partial access to toilets i.e., a few households have access to individual toilets or shared toilets and not public toilets. They are forced to opt for open defecation in view of water shortage and drainage problems. For instance, Gulbarga slum is a non-notified slum where 50 HHs out of a total of 325 HHs have constructed own individual toilets[4]. The rest of the slum-dwellers defecate in nearby open spaces.

## Lack of Space - a major hurdle in the construction of toilets

The landscape of a given slum is an important factor that determines the construction of toilets. Slums do not come up in a planned manner and hence are mostly congested with very tiny lanes. Besides, the sub-standard quality of semi-pucca households adds to the problem. Another reason for the absence of toilets in the dwelling units is the lack of sufficient space for constructing individual toilets, with the construction of community toilets being the only option, the absence of which has led to open defection, as observed in LBS Nagar, Priyanka Nagar AK Colony and Shivapura slums. Most of the houses are too small with the area of buildings varying a lot but largely about 12 x 15 feet, 12 x 18 feet and 12 x 20 feet. Almost 18.2 percent of the respondents live in households that cover an area of 10 x 15 feet while 29.8 percent live in HHs that occupy an area of 10 x 10 and even less and hence, construction of toilets is difficult. Besides, the houses are located too close to each other with no space available either to construct toilets within or outside the households (Plate 5).

It is observed that in Shivapura slum, most of the households do not have access to toilets, except for 50 households which have constructed toilets on storm water drainage using their own funds. The remaining households resort to open defecation. Men generally use the open land located nearby for defecation while women use the adjacent lake beds. People consider the daily drudgery of open defecation a challenge every day, putting up with a lot of inconvenience since they have to plan their timings every day i.e., early mornings or late evenings, to protect their privacy and self-dignity.

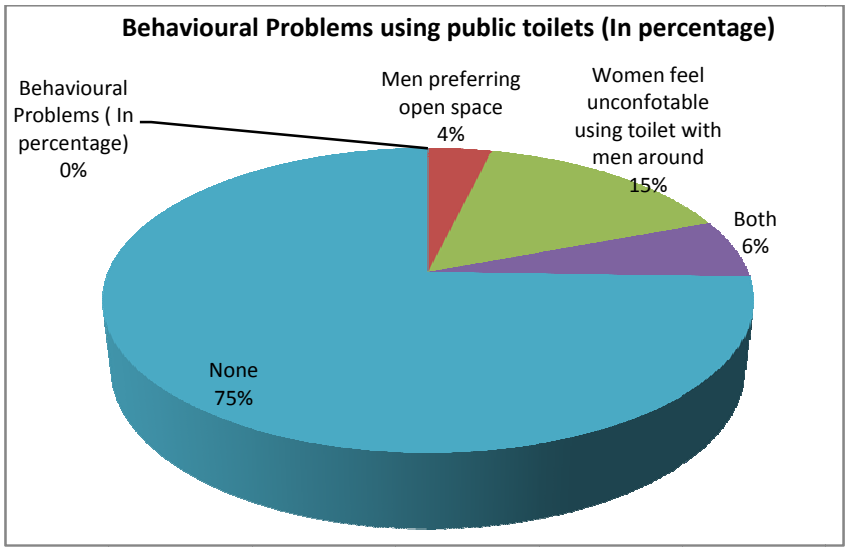
[4] 24 are ring-pit type toilets and the remaining 25 are connected to the drainage system.

**Plate 5: Narrow Lanes and Lack of Space Hinder Construction of Toilets in Swatantrapalya Slum**

## Behavioral Problems

It was observed that a small percentage of men prefer to defecate in the open as they do not feel comfortable to use toilets. This is a cultural factor as migrants from rural areas who have settled in Bengaluru still continue with the habit of using open spaces for defecation as it is a habit they have been used to in the villages. About 15 per cent of women respondents also expressed misgivings with regard to the use of toilets, particularly when men are around (Fig 5).

**Figure 5: Behavioral Problems**




**Source:** Primary Survey, 2015

They prefer seclusion from men while they use toilets. The behavioral aspects of toilet usage are influenced by educational levels as well. The educational level of the respondents are low, as 38.2

percent are uneducated. Although they have been brought up in poor sanitary conditions with almost no access to toilets, with education, they feel the need for investing in own toilets.

## Water Scarcity affects Toilet Usage

Inadequate water availability affects toilet usage to a considerable extent. Water access and availability is a matter of concern across most of the slums. Although the slum-dwellers have access to water, it is not sufficient to meet their requirements fully; 32.75 per cent of the respondents have reported water insufficiency. Another reason for not being able to access water is the frequent motor pump malfunction faced by households that have been built like flats. Households living on the second and third floors have to depend on water pumped by motors that get damaged often and require repairs. Although they share the repair costs, they consider it a burden due to the frequency of repairs.

**Plate 6: Water Scarcity at Nayandahalli Slum, Water Storage at Households and Drawing Water from Tanker**

Purchase of water is a common feature across slums. This explains the reason for the poor sanitation. People feel the pinch of spending on water, even for toilet usage. Inadequate water availability also makes it difficult to keep the immediate surroundings clean (Plate 6).

## Poor Maintenance of Public Toilets and Persistence of Open Defecation

People are not satisfied with public toilets mainly due to their poor maintenance and hygiene (76 per cent) and water scarcity (24 per cent); hence, they resort to open defecation (Table 6). Besides, respondents especially find it inconvenient to use public toilets because their usage is subject to strict timings; they generally close by 9 pm, leaving people with no choice other than defecating in the open. Other inconveniences include poor lighting facilities and lack of sufficient water/no water (Gandhi grama slum).

**Plate 7: A Dysfunctional Public Toilet at A K Colony Slum, Yelahanka**

The condition of public toilets in some of the slums is very poor (Plate 7). However, in some of the slums, they are maintained well - LBS Nagar, for example.

**Table 6: Reasons for Not Being Satisfied with Public Toilets**

| Reasons | Number of HH | Percent |
|---|---|---|
| Poor maintenance and hygiene | 22 | 76 |
| Water scarcity | 7 | 24 |
| Total | 29 | 100 |

**Source:** Primary Survey, 2015

## Conclusion

Several institutions and interventions are involved in providing improved sanitation facilities; however, complete sanitation access is yet to be achieved in Bengaluru city. The findings of the study highlight the complexities involved in providing toilet access, reasons for the persistence of open defecation across the slums studied and the major problems encountered in accessing toilets. Lack of toilets has affected the health of the poor, especially women during pre and post pregnancy, as they have to wait in long queues at public toilets or have to walk long distances to relieve themselves. Besides, they have to plan their timings (either early mornings or late evenings) to ensure privacy. This affects their social life indirectly as relatives hesitate to come home due to lack of toilets, and also causes mental stress due to the need to postpone defecation. The problems and issues brought to light have to be addressed in a holistic way, without which Bengaluru cannot become free of open defecation which affects people's health and quality of life. Practice of open defecation also raises several other issues pertaining to toilet access. While the public toilet initiatives to a certain extent have served the urban poor, these

remain inadequate. Innovative ways of providing public toilets, like e-toilets, aim to provide better sanitation access. Interventions by the KSDB and BWSSB are noteworthy while the conscious efforts by some NGOs, corporate agencies, and civil society are interesting. However, these still are minuscule given the magnitude of the problem.

It is obvious that the reasons for this situation include lack of priority given to this sector, lack of adequate water supply and sanitation services, poor quality infrastructure, inadequate sanitation in public places, lack of financial resources and poor hygienic behavior. The differences across the slums capture a variety of issues that are context specific and which need to be addressed accordingly. There is need for understanding the ground realities intensely prior to implementing any programme. This would help avert the negative health impact on society, reduce the economic burden, and improve the quality of life. Provision of facilities for sanitary disposal of excreta and inculcating the habit of sound hygienic behavior are of prime importance in reducing the burden on health. Since all water-borne, fecal disposal-related and water-based diseases depend on infecting agents from human excreta, it is important to work towards providing adequate sanitation to make the city free of open defecation.

## Reference


Benjamin, S (2000). Governance, Economic Settings and Poverty in Bangalore. *Environment and Urbanisation*, 12 (35): 1 - 23.

Berna I V (2006). India: From Alienation to an Empowered Community - Applying a Gender Mainstreaming Approach to a Sanitation Project. In *Office of the Special Adviser on Gender Issues and Advancement of Women, Gender, Water and Sanitation Case Studies on Best Practices*. New York, United Nations (in press).

Census of India (2011). The Registrar General & Census Commissioner, Government of India, New Delhi

Datta Pranati (2006). *Urbanisation in India*. Paper presented at European Population Conference, 21-24 June, 2006.

Dean Spears (2012). How Much International Variation in Child Height Can Sanitation Explain? *Working Paper*, Princeton University. Wallace Hall. Princeton, NJ 08540, December 10, 2012.

Karnataka Slum Development Board, Government of Karnataka, Annual Report 2013-14

Krishna Prasad Sigdel (2014). Sanitation, Hygiene and Nepal's Scenario. *http://trn.gorkhapatraonline.com/index.php/op-ed/4997-sanitation,-hygiene-and-nepal%3Fs-scenario-krishna-prasad-sigdel.html*.

Niranjan G V and M K Vasundhra (1996). A Study of Health Status of Aged Persons in Slums of Urban Field Practice Area, Bangalore. *Indian Journal of Community Medicine*, 21 (1-4): 37-40.

Rajaraman, D, S Travasso and J Heymann (2013). A Qualitative Study of Access to Sanitation amongst Low-income Working Women in Bangalore, India. *Journal of Water, Sanitation and Hygiene for Development*, 3 (3): 432-40.

Rakodi, C (1997). Global Forces, Urban Change and Urban Management in Africa. In C Rakodi (ed), *The Urban Challenge in Africa: Growth and Management of Its Large Cities*. Tokyo: United Nations University Press. Pp 17-73.

Sanbergen, Loes-Schenk (1996). Women, Water and Sanitation in the Slums of Bangalore: A Case Study of Action Research. In Schenk, H (ed), *Living in India's Slums: A Case Study of Bangalore.* New Delhi: IDPAD: Manohar.

Siddharth Agarwal and Shivani Taneja (2005). All Slums are Not Equal: Child Health Conditions among the Urban Poor. *Indian Paediatrics*, 42.

Sridhar, Kala Seetharam and A Venugopala Reddy (2011). Investment and Economic Opportunities: Urbanization, Infrastructure and Governance in the North and South of India. *Asia Pacific Development Journal (UNESCAP)*, 18 (1): 1-46.

Tanu Kulkarni (2012). More than a Lakh Households in Bangalore Don't Have Toilets. *The Hindu*, August 7.

The Planning Commission, Government of India, Evaluation Study of Total Sanitation Campaign (2013).

UNICEF, WHO (2013). Progress on Drinking Water and Sanitation Update. March 2013

United Nations, Department of Economic and Social Affairs, Population Division (2006). World Urbanisation Prospects, the 2005 Revision. Executive Summary, Fact Sheets, Data Tables. New York. 2006.

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