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PASS

Pani Aur Swacchta mein Sajhedari

(Partnerships for WASH)

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BASELINE SURVEY REPORT

CENTRE FOR
URBAN AND REGIONAL
EXCELLENCE

Centre for Urban and Regional Excellence (CURE)

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List of Definitions

Unauthorised Colony: 'Unauthorised' because it is built on land not included in the development area of the city development plan or built on land within the development area but not yet zoned for residential use.

Resettlement Colony: Settlements that have been made as part of a relocation, or removal of certain settlements primarily slums or squatters, mainly from the city centre to a fringe area.

GOV-Informal pipeline extensions to home: These are extensions or plug-ins into a formal water source like government bore well or government provided potable water pipelines. The extensions are taken by the community themselves by pooling in money among themselves or organized individually.

Community Toilet: These are toilet complexes which are constructed by the government having a number of toilet seats for the residents of the community to use.

GOV-Stand post: These are common water taps provided by the government at specific intervals in the settlements with intermittent water supply from the government agency responsible for the city water supply and distribution system.

Executive Summary

Pani aur Swacchta mein Sajhedari (PASS) or the Partnerships for WASH project is a five-year USAID funded cooperative agreement with the Centre for Regional and Urban Excellence (CURE). The project aim is to address the problems of water and sanitation in selected informal settlements of Delhi by engaging meaningfully with the poor and service providers for preparing and implementing micro plans for sustainable change. The overarching goal of PASS is to improve water, sanitation and health outcomes for urban slum communities, especially for women, children and the marginal communities.

As per the project M&E strategy, the operational procedure for program implementation requires the provision of data upon which progress of outputs, contribution to outcomes and impacts can be assessed. These include development of baselines; development of performance monitoring plans; performance reporting; portfolio reviews and ex post evaluations. Accordingly, this Baseline Report has been prepared to provide the information base against which the project's progress may be monitored and assessed, and its effectiveness evaluated during implementation and after the activity is completed.

Corresponding to the main objective of the project, the major focus of the Baseline Report was to present information on water and sanitation facilities and conditions in all the settlements where the project is being implemented. Besides these, certain selected demographic and social features of the population were also collected in order to introduce the communities and provide an understanding of the economic and social composition of the communities. The PASS project is being implemented in thirteen settlements selected from three major types of informal settlements found in Delhi: Unauthorized Colonies, *Jhuggi-Jhompri* (JJ) Clusters or squatter settlements and Resettlement Colonies. These include the settlements where the activity is engaged as part of the USAID grant as well as those where implementation is being pursued through the support of leveraging partners. Stratified random sampling techniques were used for collecting information for a sample size of 1850 households. Information gathered related to WASH aspects particularly on different sources of water, toilet usage characteristics, solid waste, selected health features and some socio – economic characters ranging from family composition, religion, income, caste to occupation. CURE in collaboration with the Water and Sanitation Program (WSP) used the Service Level Benchmark- Connect (SLB-C), an android based application, in conducting its baseline survey particularly for the water and sanitation components of the survey.

The survey data has been analyzed and interpreted and the findings and observations have been presented separately for each settlement type, i.e., JJ Clusters, Resettlement Colony and Unauthorized Colony and in an aggregated form at several places. This was done to capture the unique characteristics and conditions prevalent in each settlement type and to get a better understanding of the differential character of the low income population in Delhi.

Some key findings:

Indicators	Unauthorized Colony	Slum Settlement (JJ Cluster)	Resettlement Colony
Average Household Size	5.5	5.16	4.8
Sex Ratio (females per 1000 males)	840	858	845
Monthly household Income, mode	Rs. 8000/-	Rs. 6000/-	Rs. 6000/-
Monthly Per Capita Consumption Expenditure	Rs. 1700/-	Rs. 1539/-	Rs. 1325/-
Type of Shelter Structure: Kuchha (percentage)	12.87	65.93	12.37
Per Capita Potable Water Available (gpcd)	11.04	12.28	-
Access to Household Toilet (percentage)	99.40	8.5	66
Access to Community toilets	-	83.5	25

1. Informal Settlements

1.1. Introduction

The definition of informal settlements is context-specific. Various definitions have been proposed from time to time. The UN Habitat Program defines informal settlements as residential areas where a group of housing units has been constructed on land to which the occupants have no legal claim, or which they occupy illegally and which is an unplanned settlements or area where housing is not in compliance with current planning and building regulations, i.e., unauthorized housing.

Informal settlements are prevalent in almost all urban areas of the world. Its forms and types vary from country to country. They constitute 43 percent of the total population in the developing countries of the world while in developed nations they make up only about 6 percent. Rapid urbanization and inadequate capability to cope with the shelter needs of people in urban areas have contributed to the development of informal settlements. Living in these settlements often poses significant health risks. Access to sanitation and drinking water are limited and their quality is often poor, with the result that inhabitants are exposed to a wide range of pathogens and diseases. Access to health and other services are limited; overcrowding can contribute to stress, violence and increased problems of drugs and other social problems. Together, these pose special risks to children both during the prenatal period and after birth.

Informal settlements play an important role in building the city economy particularly through their engagement in the informal sector, which is a vibrant support to the city economic system. They also contribute to the vibrancy of the social character of the city. Today, there is a general recognition that they are not to be considered merely as victims of dire poverty, rather should be recognized as dynamic agents capable of accepting challenges posed by urban environments. The urban development policy needs to find ways of mainstreaming them and integrate them into the city's development systems.

1.2. Informal Settlements in India

The Census of India 2011 registered roughly 13.7 million households living in slums. This constitutes 17.4 percent of the total urban households. The 2001 data had set India's slum population at 15 percent. The rise in slum population is more likely a definitional issue. The 2011 census counted slums notified under various acts, including those recognized by governments but not notified, and those that were not accepted by state governments, but fit the definition of a slum. In the Census 2001, information on slums were released only on demographic characteristics based on the Population Enumeration. For this purpose, slum blocks were identified in Statutory Towns having a population of 20,000 or more by the local authorities at the time of the Population Enumeration phase. This has resulted, to a major extent, to the difference between the figures posted by the two Census reports.

The 46 million plus cities accounted for 38 percent of the total slum population while the balance 62 percent were spread across the rest of the urban areas. Among the million-plus cities, Vishakhapatnam had the highest proportion of slums (44.1 percent of households) while Greater

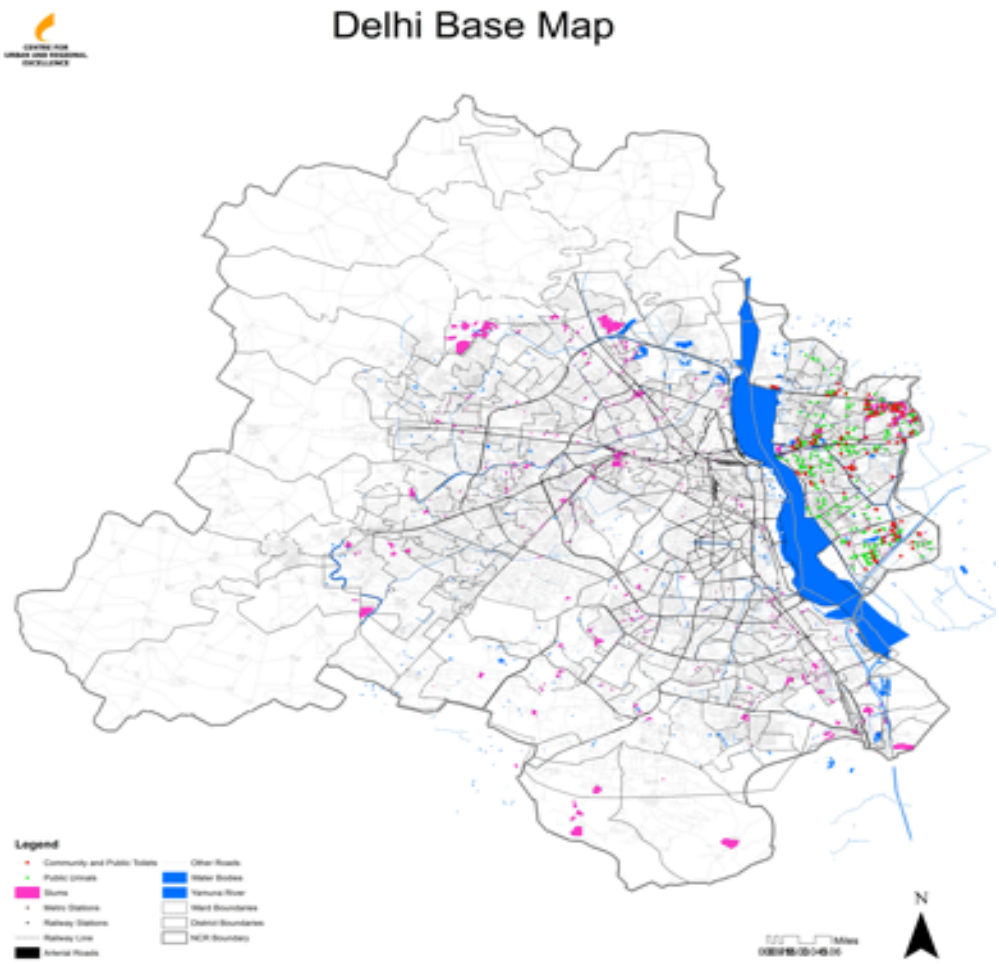
Mumbai had 41.3, Kolkata 29.6, Chennai 28.5 and Delhi 15.72 percent of their urban population residing in slum settlements respectively.

1.2.1. Informal Settlements in Delhi

The Census data reported that almost 15.72 percent population of the National Capital Territory (NCT) of Delhi resides in slum clusters while the Delhi Government had indicated that as much as 52 percent of its population resides in *Jhuggi-Jhompri* or JJ Clusters, Slum Designated Area, Unauthorized Colonies, Resettled Colonies, etc.; which are all considered as slum-like.

Several distinct informal settlement typologies are found in the National Capital Territory of Delhi. These include the *Jhuggi-Jhompri* Clusters, Slum Designated Areas, Unauthorized Colonies, Resettlement Colonies, Rural Villages, Regularized-Unauthorized Colonies, Urban Villages and Planned Low-income Colonies. Out of these, six of them have been designated as informal settlements by the Govt. of Delhi in which more than half of the total population of the NCT of Delhi finds accommodation. A recent survey reveals that out of the total population in the NCT of Delhi, about three fourth people are living in sub-standard housing with a break-up of 1.2 million in Regularized Colonies, 0.5 million in Unauthorized Colonies, 1.3 million in J.J. Clusters, 1.2 million in Resettlement Colonies, 0.5 million in Urban Villages, 0.5 million in Rural Areas and 10.8 million in Slum Designated Areas which includes *Shahjahanabad* or the walled city (Ishtiyaq and Kumar, 2010).

Figure 1 Delhi Base Map with slum settlements geo-located on the maps



The three major types of informal settlement found in Delhi are:

Unauthorized Colonies

Unauthorized colonies are those residential pockets, which have come up generally on private land developed by private colonizers. They have come up through an unplanned manner in violation of the Master Plan and Zonal Plan regulations. Although buildings in these colonies are predominantly constructed of *pucca* or permanent materials, they have been constructed without the authority's approved plans and therefore without any consideration of the planning norms or land use restrictions and building norms of height and front and rear set-backs. These colonies do not have proper road networks, drainage and sewage systems, parks, playgrounds, community centers and other common facilities. Approaches of the government towards these colonies have been purely ad hoc. Over the years many such colonies have been regularized usually on political grounds. As such, the authority levied certain fees for redevelopment of these colonies but it could succeed only partially because the rate of such charges or recovery of the fines was found far too inadequate to

implement the redevelopment plans. As a result, the redevelopment and the provision of the municipal or basic services were seldom completed. Thus these colonies have been lagging behind the pace of development found in higher income residential areas, making most of such colonies only marginally better than many slum resettlements colonies.

***Jhuggi-Jhompri*(JJ) Clusters**

These are squatter settlements, which have come up illegally on public or private lands to accommodate poor migrants from rural areas. The squatter settlements are made up of temporary shelter units using straw, mud, loose bricks, tin, wood, corrugated sheets etc. Without any regular plan, jhuggies have evolved organically, and are not arranged in any particular order. The number of such squatter settlements has consistently been on the rise despite the efforts made to demolish or resettle/relocate them. There are several reports and estimates on the number of slum settlements in the city. According to the survey by the Slum and JJ Department of Municipal Corporation of Delhi, during 1994 there were 480,000 households in 1,080 slum clusters in the Capital Territory. During 2010, the Department of Urban Development, Govt. of Delhi recorded 860 JJ clusters. The Delhi Urban Shelter Improvement Board (DUSIB) in 2013 listed 675 JJ Clusters in the city while the Centre for Urban and Regional Excellence identified 833slums existing in the city (CURE, 2012).

Resettlement Colonies

As the name suggests, resettlement colonies comprise of JJ cluster households that have been resettled from their original place of residence. The first resettlement program was carried out in 1961 and subsequently many JJ clusters have been shifted to resettlement colonies.

Till 2010, a total of 46 clusters have been resettled mainly on the outskirts of the city accommodating about 216,000 squatter families. These colonies suffer from various infrastructure inadequacies like water supply, sewerage, drainage, garbage disposal, electricity, schools, hospitals, roads etc. A survey conducted by the Council for Social Development indicates that half of the families do not have individual water connections or toilet facilities and have to depend on community latrines and bath rooms which are either so inadequate or maintained so poorly that many of the residents defecate in the open (Kumar, 2008). System of solid waste disposal is extremely unsatisfactory and hardly 30 percent of the waste is collected for disposal. Experiences of rehabilitation of squatter families from the city heartland to these outskirt settlements have not been uniform. Proximity of few of the colonies to the new work centers made them success stories, but most of these colonies were so far away from the places of work that about thirty to forty percent of the squatters returned to the previous place or other slums settlements for employment. Livelihood rather than habitation was the priority for the poor squatters who found it more convenient to dispose their plots.

1.2.2 Extent of Informal Settlements

Informal settlements are spread throughout the city with their size varying from one area to another. However, concentration of slums is found relatively less in the Central Zone and more in the peripheral zones especially in South, North and the West zones of the city. Conditions of resettled colonies are not much different from the *Jhuggi Jhopri* clusters while the Unauthorized Colonies may have somewhat improved facilities largely due to the personal efforts of the residents.

However, as far as basic amenities and other infrastructural facilities are concerned, all the settlements lack proper electricity, sewer system, supply of potable water, improved sanitation, drainage and all-weather access-roads. Some of the slum clusters occupy prime piece of land which are meant for construction of government offices, hospitals, educational institutions, development of parks, etc. The authorities habitually relocate these slum clusters for recovery of the land. More recently slums have made way for the expansion of the metro, the Commonwealth Games and the airport.

1.2.3 Government Policies and Programs

Responsibility for upgrading slums in Delhi lies with Delhi Urban Shelter Improvement Board (DUSIB). However, several other agencies play key roles –Delhi Jal Board (DJB) for water and sewerage, city corporations (SWM and environmental improvements), Delhi Development Authority (DDA) for land and low-cost housing, health department and ICDS for women and child development related programs. Further, boundaries of WASH are broad and include the National Water Development Authority (NWDA), Central Water Commission (CWC), Department of Irrigation for assessing, monitoring and regulating surface and ground water, the Central Pollution Control Board (CPCB) and Departments of Environment for environmental concerns, renewable energy and aspects of sanitation. However, the engagement and activities of these agencies typically excludes slum communities. As per the current shelter policy, DUSIB typically constructs tenement flats in multi-storied buildings which are allotted to the relocated slum household on a 10-yearlicense plan. Most of the slum residents who are relocated are relocated at far distant places from their original site while many othersare waiting in the priority list for rehabilitation.

Delhi is on the list of cities for the Affordable Housing Mission (previously known as Rajiv Avas Yojyana) and part of the SMART City mission. However, DUSIB does not have a Slum Free City Plan as required under RAY, and its slum-upgrading actions are spotty: non-comprehensive, non-participative and non-inclusive. Meanwhile, slums across Delhi have poor access to WATSAN – served with shared, community or mobile services and with complicated issues of access, availability, acceptability, affordability and accountability. Of the multiple reasons for poor quality of services provided (if provided at all), the most critical is the illegal and informal nature of slums and people, followed by space matters – slum layout, housing structure quality, lack of trunk infrastructure to connect and convey which complicates service delivery, exacerbating the ability of poor to follow good health practices which cumulatively impact household poverty.

The *Pani aur Swacchta mein Sajhedari (*PASS) or Partnerships for WASH project includes selected settlements from the three major types of informal settlements. The PASS project aims to address the problems of water and sanitation. The major objective of PASS is to mobilize, organize and empower poor communities in slums of Delhi for participatory planning and implementation of water and sanitation services, build partnerships with city service providers and private sector agencies for leveraging and scaling up provisions of such services and build partnerships, share knowledge and replicate the experience in order to influence policies and programs.

2. Pani Aur Swacchta mein Sajhedari(PASS) Project

2.1 Introduction

*Pani aur Swacchta mein Sajhedari (*PASS)or Partnerships for WASH aims to address the problems of water and sanitation in slums by engaging meaningfully with the poor to generate the information required for preparing and implementing micro plans for sustainable change.

Program Goals and Objectives

The overarching goal of PASS is to improve water, sanitation and health outcomes for urban slum communities, especially among women, children and marginal communities.

It has two key objectives,

- Create access to taps, toilets and basic sanitation services in urban slums and poor households in Delhi; and
- Provide technical support to the Ministry of Urban Development to implement various urban development Missions.

Specifically, the project will:

- Mobilize, organize and empower poor communities in slums of Delhi, particularly women and marginal groups, for participatory planning and implementation of water and sanitation solutions;
- Promote and sustain improved hygiene and health practices in particular among children under five and women;
- Strengthen capacity of national, state and city stakeholders to plan, design and implement de-scaled solutions for water and sanitation;
- Build partnerships with city service providers and private sector agencies for leveraging and scaling up;
- Contribute to existing WASH platforms and policy by sharing knowledge and experience and by policy advocacy;
- Promote sustainable livelihoods for the poorest and excluded households for poverty reduction; and
- Build linkages with other cities to transfer knowledge to localize solutions in their areas.

2.2 Geographical Focus

PASS will be implemented in selected slums of Delhi. Together with other partners, it envisages to engage with nearly 70 slums having a total estimated population of about 70,000 households for taps, toilets and other basic services.

During the life of the project, PASS will reach 70,000 households across 70 slums in 23 wards, one resettlement colony in East Delhi and one unauthorized colony in South Delhi.

PASS will also support the Ministry of Urban Development in the implementation of its Missions on *Swatch Bharat*, AMRUT and Smart Cities to scale up innovations, ideas, technologies, processes and policy elements through institutional strengthening and partnerships, data management and analytics, leading practices sharing and participation in urban WASH networks and portals. PASS will forge partnerships with private sector initiatives and implementing agencies to leverage resources. Knowledge sharing partnerships will be extended to other urban areas in partnership with the associated program partners

2.3 Anticipated Results

PASS expects to achieve the following outputs, outcomes and impacts.

- **Outreach:** The project, together with the support of private sector agencies and Trusts will engage in up to 70 settlements having an estimated population of 70,000 households for taps, toilets and other basic services in Delhi. In addition, it shall work with up to four partner cites to share knowledge and ideas. The partner cities shall be mentored to implement innovative solutions in their project areas.

- **Scaling Up:** Innovations, ideas, technology, processes and policy elements shall be scaled up to other cities through; one, technical support to the MOUD for implementing various Missions - Swacch Bharat Abhiyaan (SBM), Atal Mission for Rejuvenation and Urban Transformation (AMRUT) and Smart Cities program; and two, documentation and sharing of best practices over urban WASH networks, portals and forums.

- **Institutional Strengthening:** Over the project period, CURE shall do three things; one, strengthen data and data management systems of local service providers to strengthen service delivery to slums; two, promote planning convergence; and three, facilitate voice platforms for people-city engagement.

2.4 Baseline Report

In order to facilitate evaluation of the grant about its implementation, outputs and impacts and its broader engagement to improve the environment of the overall WASH objective, there is a need for evidence of results. Among others, this requires a comparison of the situation before the start of the operational plan with the situation afterwards, and a process of documenting the changes that are observed during the implementation period, i.e., a monitoring and evaluation plan. The USAID M&E strategy spells out the minimum required operational procedures for all USAID projects that support provision of data upon which progress on generation of outputs, contribution to outcomes and

impacts will be assessed. These include: development of baselines; development of performance monitoring plans; performance reporting; portfolio reviews and ex post evaluations.

2.5 Performance Monitoring and Evaluation Plan

In all, eleven indicators will be tracked during the project duration of PASS. Since the key objective of PASS is to provide access to water and sanitation, two main standard performance monitoring indicators have been selected. These will be the primary outcome indicators monitored under the project. Additionally, three performance-monitoring, secondary indicators will be tracked under the project. CURE has also customized four indicators for the purpose of the project. The choice of indicators – both standard and customized - has been deliberate to achieve four purposes: one - track outputs, outcomes and impacts; two - include indicators that would provide gender specific information on project outcomes and impacts; three - include indicators to provide information on impacts on children; and four - generate information on health impacts of improved water and sanitation. Since gender disaggregated monitoring is critical for a better understanding of the disproportionate burden of water and sanitation services on women and men, including issues of security and health, selected gender specific indicators have been included and disaggregated data will be collected and reported accordingly.

The baseline report provides the required baseline information gathered during September-October, 2015. It provides an information base against which to monitor and assess the project's progress and effectiveness during implementation and after the activity is completed. The main focus is on water and sanitation issues in these settlements. Besides these, certain selected demographic and social features of the population were collected and are discussed in order to have a better understanding of the culture, tradition and social composition of the communities.

3. Research Methodology

3.1. Introduction

Before intervening in the project it was imperative for CURE to know the current status of the beneficiaries in terms of their social-economic profile and the availability and condition of basic infrastructure in the project settlements. CURE undertook the baseline study to understand current status of the project which would be used to set and revise targets for various indicators mentioned in the M&E log-frame and also as benchmark for evaluating the project at different intervals over the life of the project.

3.2. Research Objectives

The main research objectives were: -

- To document the social-economic profile of the target beneficiary groups in order to have better understanding of the challenges and opportunities particularly for accessing basic municipal services such as water, toilets, drainage and solid waste management;
- To record the current condition and assess current levels of the services, notably water and sanitation services available to the target beneficiaries;
- To map the infrastructure and other resources accessed by target groups for documentation of facilities available and asset allocation; and
- To understand gender participation and their role in accessing and utilizing the facilities and services.

3.3. Respondent segment

Baseline survey has been done using an android-based application particularly for the water and sanitation portion of the survey. The mobile phone based application – Service Level Benchmark-Connect (SLB-C) was developed for efficient data collection in collaboration with Water and Sanitation Program (WSP). The SLB-C format developed by WSP has been used to upload all information gathered under the baseline survey to enable linkages with local government systems. Another set of structured questionnaire was used to collect information particularly on the socio-economic characteristics. The Baseline Survey was undertaken across 11 selected slums of Delhi, Savda Ghevra - a Resettlement Colony and Sangam Vihar (Blocks I1 &I2), an Unauthorized Colony with almost equal shares from each. The estimates are based on 1850 sample households i.e. approximately 10% of the total number of households.

Table 1 Disaggregated figures of the number of households in each settlement

Sl. No.	Name of Settlement	No. of Households
A. JJ Clusters		

1	Bhaiya Ram Camp	489
2	Bhawar Singh Camp	1087
3	Hasanpur Indra Camp I	490
4	Hasanpur Indra Camp II	290
5	Kali Bari	274
6	Nepali Camp	367
7	Ramesh Park	360
8	Sanjay Gandhi Camp	1027
9	Shankar Camp	88
10	Shastri Market	979
11	Vivekanand Camp	510
B. Resettlement Colony		
1.	Savda Ghevra	6960
C. Unauthorized Colony		
1.	Sangam Vihar	5360

All the shelter units, i.e., the households were physically marked. Thereafter the survey was carried out on every 10th household, with the questions varying from socio – economic characters ranging from their income, caste, occupation among others. The SLB-C application, which was carried out using tablets and smartphones, was used to gather information pertaining to water and sanitation. This dealt with information related to different sources of water, toilet usage characteristics, questions related to solid waste and selected health aspects. The sample questionnaire is appended as Annexure1.

3.4. Service Level Benchmark-Connect

The Service Level Benchmark-Connect (SLB-C) developed with the support of the Water and Sanitation Program (WSP)/World Bank, is an innovative mobile based Information Communication Technology (ICT) which uses mobile phones and ICT tools to collect and analyses citizen feedback on various municipal service levels.

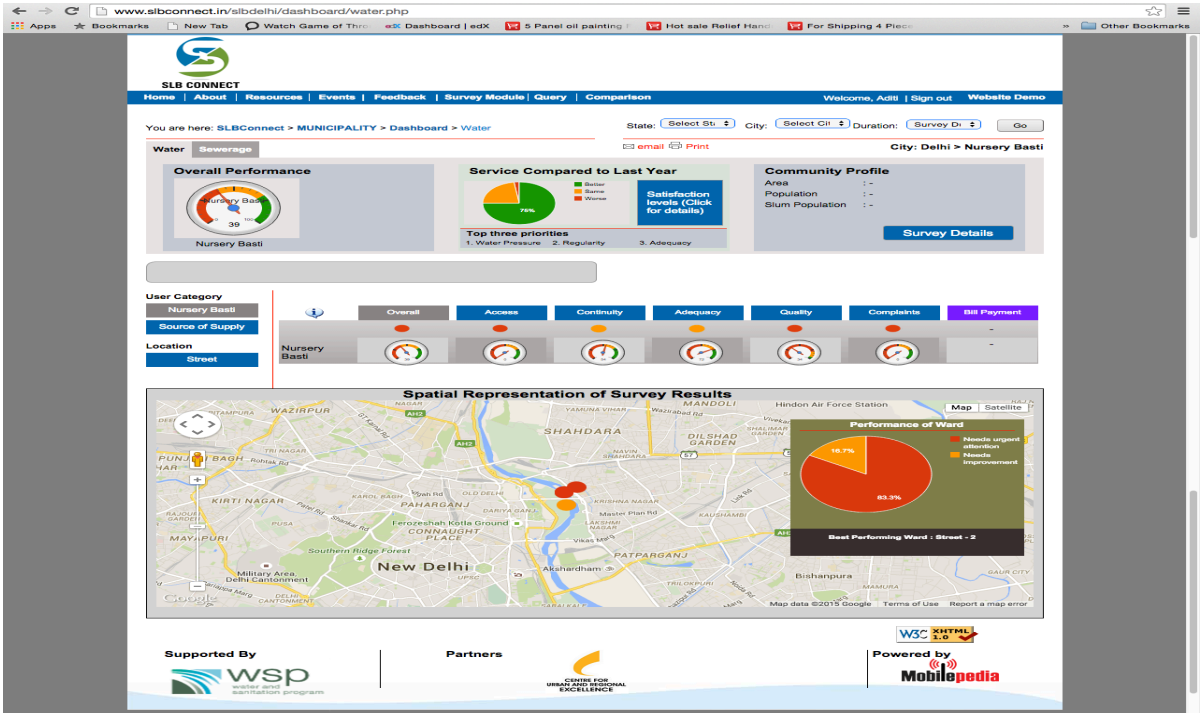
CURE in collaboration with WSP is using the SLB-C application in conducting its baseline survey of slum settlements. The first round of the survey was conducted during September-October in all the settlements that were selected for the first year of the project period. For the next three years of the project period the SLB-C will be used to undertake baseline surveys for about another 30 slum settlements having a population of 30,000 households thereby reaching a total of 70,000 households thus achieve the targeted number of households indicated in the PASS proposal.

The SLB-C provides a useful platform to engage citizens in performance monitoring processes and encourage them to demand better service. It provides a ‘reality check’ on service levels from the citizens’ standpoint. It provides the city managers and the service providers with more ’granular’ data at the sub-city level (ward/zone) which could facilitate improved monitoring and problem solving and act as the basis for inputs into project planning processes. A GIS tracking system in the

phone indicates the location from where the data is collected, thereby enhancing the reliability of data collection while enabling a more 'granular' analysis at the zone or ward level. Given the large urban population living in informal settlements in Indian cities, and the service inequities commonly prevalent in service provision, SLB-C provides for explicit tracking of service delivery in slums including public facilities e.g. public stand posts, community toilets.

By using mobile based ICT, the efficiency of collecting and analyzing a large amount of data increases manifold. A web-based survey management module enables the survey managers to track the progress of the survey on a real-time basis. The module enables remote monitoring and management of survey activities and hence greater quality control. A dashboard developed as a part of the project presents the results of the survey through graphs, charts and maps to facilitate easy inferences on performance levels.

Figure 2 SLB-C Dashboard illustrating features of water supply



3.5. Research methodology

Systematic random sampling was adopted for selecting the sample respondent from the list. Wherever the beneficiary was not available, the respondent was selected by physical hunting the next households at the interval of ten.

The questionnaires were finalized by the following four steps.

- The first draft versions of the questionnaires were prepared, updated and approved by CURE and the coordinator from WSP (for transcribing into the SLB-C format).
- The second draft of questionnaires were pilot tested in two slum settlements to check the flow of information as well as comprehensibility of the respondents.

- Final set of questionnaires were prepared after incorporating the feedback from the pilot testing.
- Final set of questionnaires were translated into Hindi language for easy addressability of questions and survey operation.

3.6. Sampling and sample coverage

As three categories of respondents are there (JJ Cluster, Unauthorized Colony & Resettlement Colony), stratified random sampling techniques were used considering each category as one stratum.

Size of the universe was 22,442 households. At 95 percent confidence level with a confidence interval of around 3, and allowing ±5 percent error in the findings, the sample required was 1600 households by using the following formula:

$$n_{adj} = (NZ^2*(pq)/(Ne^2+Z^2(pq))$$

Where n = sample size

N = 22,442

Z = the Z score associated with the degree of confidence selected (2.36)

p = frequency of occurrence (0.5) q = (1-p) = 0.5 e = the tolerable error (0.05)

Considering 10 percent buffer for non-responses and outliers, the final sample size covered was1850households. This sample size was sufficient enough to detect 10 percent change at the end line stage.

4. Findings and Analysis

4.1. Demographic Details

4.1.1. Household Size

A total of 1850 households with a total population of around 9550 were surveyed across the different settlements distributed across slums, a resettlement colony and an unauthorized colony that formed part of the universe.

Poor households have larger families. The average household size of the combined sample size is 5.18, higher when compared to Delhi's average household size of 5.02 (Census 2011) and the all India average household size of 4.8.The average household size was found to vary by settlement typologies, with the unauthorized colony having the highest household size of 5.5, followed by slum settlements (5.16) and the resettlement colony (4.8); the latter being close to the all India average (Table 2). Higher family size in unauthorized colonies could be because of the greater stability of families in these types of settlements.

Table 2:Demographic profile of settlements by typologies

	Unauthorized Colony	**Slum settlements**	**Resettlement Colony**
Population	2961	3191	3399
No: of households	536	618	696
Household size	5.5	5.16	4.8

**The population and households are based on the 10% sample survey conducted*

4.1.2. Gender Composition and Sex Ratio

Population disaggregated by gender show more males (54 percent) than females (46 percent) in these settlements. As a result, the sex ratio (females per 1000 males) among the settlements is 848,which is lower than the overall sex ratio of 866(Census 2011) for NCT of Delhi and much lower than the all India sex ratio of 940 (Census 2011). Low sex ratio is possibly due to the higher degree of mobility for males in search of livelihood opportunities as compared to females leading to male only migration in initial years, leaving their families behind in villages.

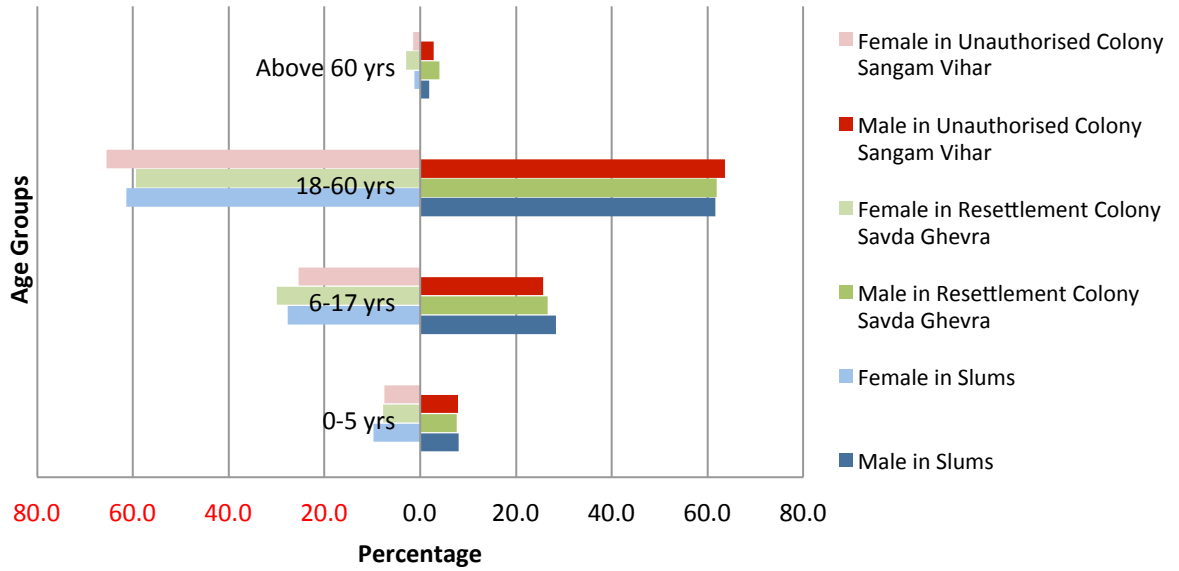
Across the three type of settlements, slums had the better sex ratio of 858, followed by resettlement colony (845) with the lowest being that in the unauthorized colony (840). This could be perhaps attributed to the relatively higher wealth status of these households and awareness of and access to clandestinely operated sex-determination clinics and female foeticide.

4.1.3. Age Composition

Adults (19-60 years)constitute 57 percent of the total population followed by children (6-18 years) at 29 percent. Senior citizens over 60 years constitute just 2.3 percent of the total population. Least

number of elderly persons is in the slums, compared to both the resettlement and unauthorized colonies where elderly females are more compared to elderly males. Low presence of the elderly is indicative of the migratory nature of these communities, particularly the slum settlements where elderly persons may be staying back in the villages.

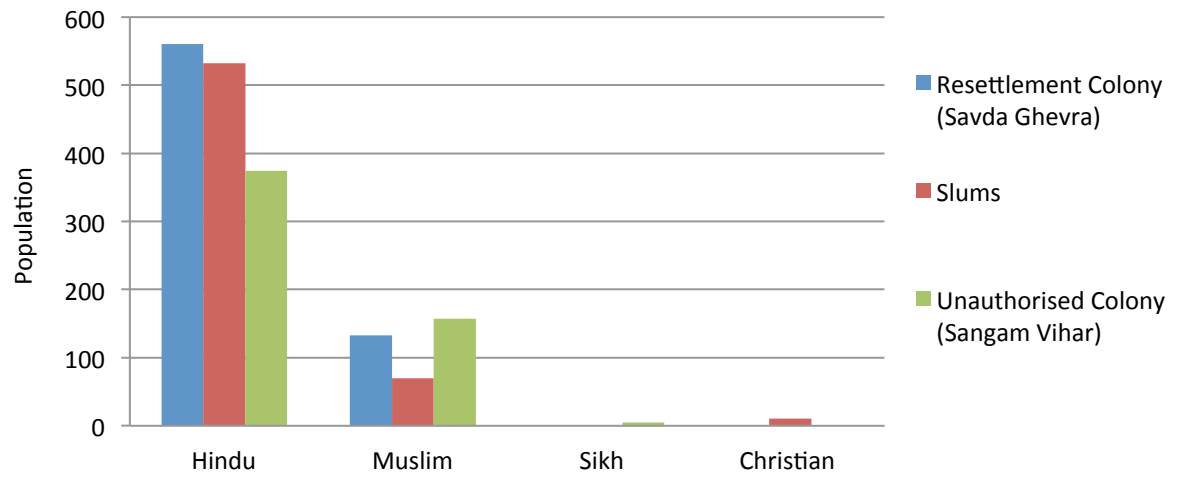
Figure 3Population Age distribution by settlement types (Age-Sex Pyramid)



4.1.4. Religion and Caste

The settlements have a mix of communities – both by religion and caste. Hindus form the majority followed by a small percentage of Muslims, Sikhs and Christians. The unauthorized colony has the highest percentage of Muslims when compared to the other settlements. Most of the communities, especially the slum settlements are characterized by the presence of religious structures (temple, mosque etc.) which form the main social gathering spaces or act as the foci of common or community spaces for the settlements.

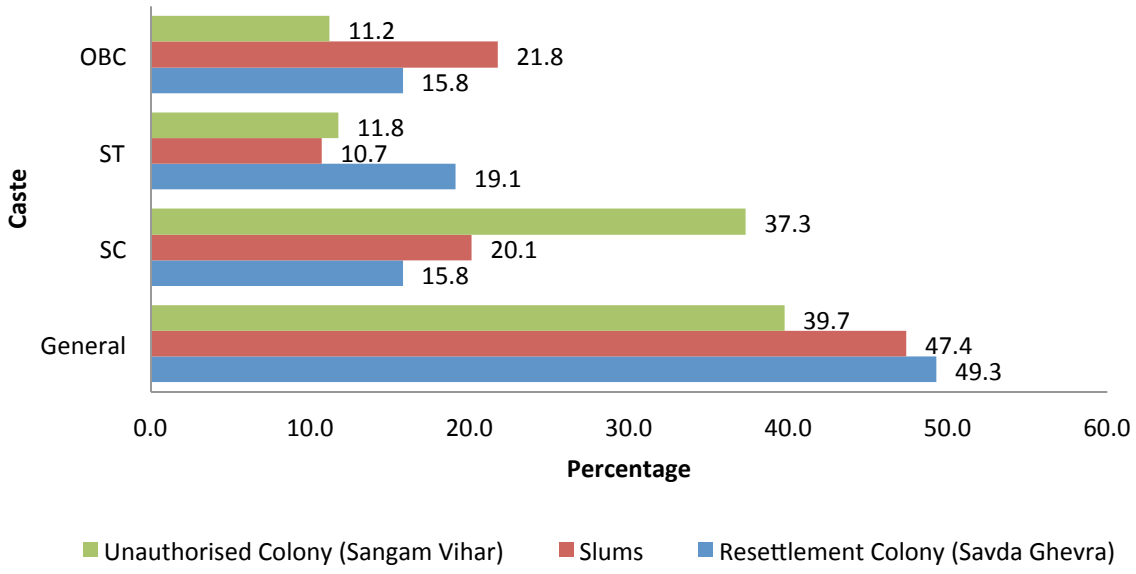
Figure 4 Population Distribution by Religion



The percentage of people belonging to other communities such as Parsis, Jains and Buddhists were negligible.

Although the proportion of general castes is high in all the settlements, the slums have more Other Backward Classes (OBC) population, the resettlement colony has relatively high Schedule Tribes (ST) population and the unauthorized colony (SangamVihar) has a very high Schedule Castes (SC) population - almost equal to that of the general category population.

Figure 5 Caste Composition (in percentage)



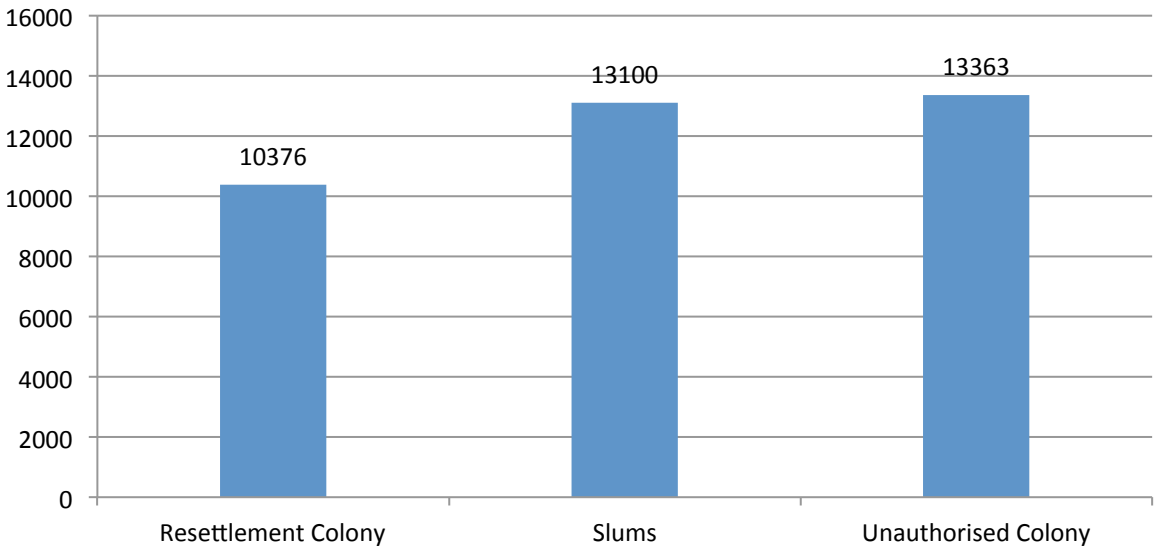
4.2. Income and Expenditure Patterns

4.2.1. Income Patterns

Families in the unauthorized colony report highest average monthly household income of Rs. 13,363/- followed by slum households with Rs. 12,225/- and the least earnings reported in the resettlement colony at Rs. 10,376/-. This is not unsurprising as resettlement has been at the fringe of the city that resulted in a steep decline in incomes in the area.

Mode for income distribution suggests that majority of families in the unauthorized colony of Sangam Vihar earn an average of Rs. 8,000/-compared with Rs. 6,000/-in the resettlement colony and slums respectively. The gap in incomes between the unauthorized colony and the slums or resettlement colony is perhaps due to the lower starting point of households in slums and the resettlement colony (ex-slum households) in the economic ladder – they are poorer to start with and find affordable housing only in slum areas. According to a recent study, the average monthly household income of Delhi's slum dwellers was Rs. 6,676/- (PRIA, 2014). The survey findings are close to this income figure in particular for the slums and the resettlement colony (ex-slum residents).

Figure 6 Average monthly household income (in INR) of different settlements

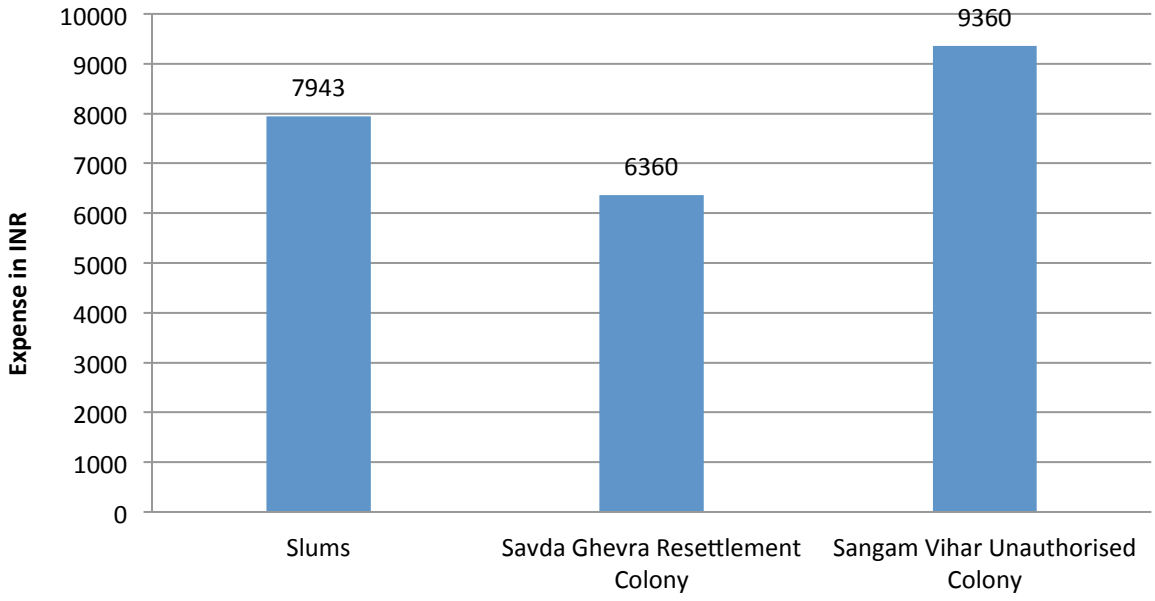


4.2.2. Expenditure Patterns

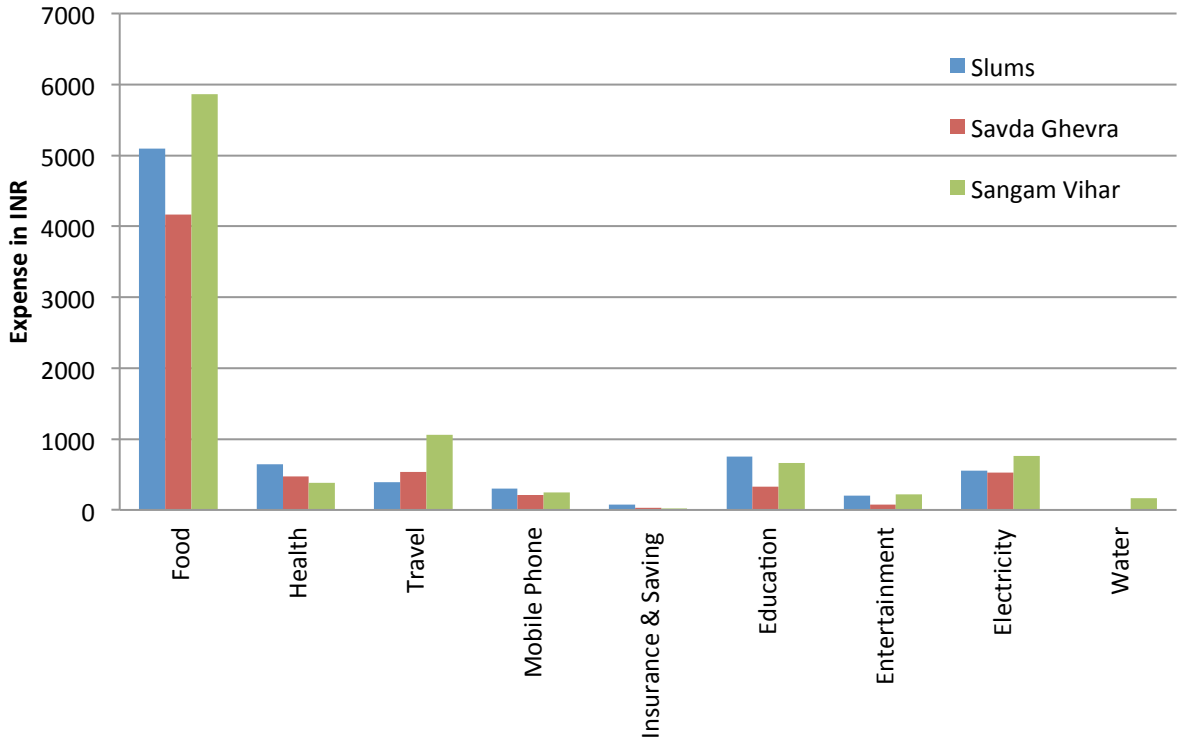
Household spending data was collected as part of the study. Average expenditure per household was highest in the unauthorized settlement at Rs. 9,360/- followed by people in slums at Rs. 7,943/- and Rs. 6,360/-in the resettlement colony.

The survey also looked at what people spend (figure 7). Bulk of the household income (60-70 percent) was spent on food across all the settlements followed by electricity (8 percent) and health (7 percent).

Figure 6:Average monthly household (in INR)expenditure of different settlements



Travel expenses show that slum dwellers spend only 4 percent of the total expenditure as compared to 10 percent in the resettlement and unauthorized colonies. This can be attributed to the fact that slums, being closer to the work centers and commercial hubs, reduce the travel cost and time. The resettlement colony being located far from the main city increases travel time and expense. In the unauthorized colony of Sangam Vihar, the increased ownership of two wheeler vehicles (18 percent as compared to 6 percent in slums and resettlement colonies) has allowed the residents to increase the distance traveled and expenses.The all India average expenditure on food in slums is nearly half of the total household expenditure, i.e., 46 percent (PRIA, 2014). Compared to it, the data indicates that the surveyed households spend a very high proportion of their earnings on food – more than 1.5 times the all India average. This may indicate that the cost of living in Delhi, in general, is higher compared to other cities and towns. The all India average expenditure for health is 7.3 percent for slums, which is comparable to the survey findingat 7 percent. It may be noted that for major health emergencies poor people use free services in government hospitals. Figure 7 Graphs showing monthly expenditure patterns (in INR) in the settlements



For slums and unauthorized colony, the expenditure on education is also significant, ranging between 7 and 8 percent of the household expenditure. This is particularly significant since the general perception of the slum households is that education is not considered as necessary (Tsujita, 2009). Compared to urban Delhi, as a whole, which spends about 3 percent on education, the slum and unauthorized colony households spend a significant sum on education for their children. Many prefer to send their children to small private fee-charging schools rather than free state schools. In absolute terms however, both are more or less of the same amount (PRIA, 2014).

4.2.3. Loans

The data that has been collected show that the percentage of households who have taken loans to be surprisingly very low. Slums and resettlement colonies have slightly higher percentage of households (approximately 7 percent) people who have taken loans as compared to 2.5 percent among the unauthorized colonies.

Table 3: Reasons for loan

Reason for Loan	Slums	Resettlement Colony Savda Ghevra	Unauthorised Colony Sangam Vihar
Marriage	41.5	5.9	16.7
Construction of house	19.5	61.8	41.7
Health	31.7	23.5	41.7
Business	7.3	8.8	0.0

While marriage forms the major reason as to why more than 40 percent of the slum households have taken loans, construction of their houses form the main reason (62 percent) for the households from resettlement colony and unauthorized colony. This can be related to the fact that the resettlement and unauthorized colonies have more pucca houses and houses with more number of floors. There is a clear distinction among the loan type across the settlements. Whereas for slum settlements a significant portion of loan is taken for lumpy expenditure such as marriage and health, which generally is consumptive type of borrowing, for resettlement and unauthorized colonies the main purpose is for property signifying investment in asset creation. Most of the loans are private, provided by relatives, friends, local money-lenders or through locally operated 'chit fund' or ROSCA type schemes (found in the unauthorized colony). Chit funds although a way of building lump sums by the poor are not considered loans. These can be repaid in equated monthly (and more affordable) installments.

4.3. Assets

4.3.1. Consumptive assets

Consumptive assets are those that are non-productive such as television, cooler, fridge, etc. also popularly referred to as white goods. These usually do not add to or supplement income of the households or become the means for an alternate source of livelihood for the households owning them.

Unauthorized colony has the highest consumptive asset ownership with almost 100 percent households having a TV, LPG gas (cooking gas) and mobiles. While this can be attributed to their better economic condition, it could also be because they are better educated and have higher aspirations. Interestingly, at 6 percent, access to computers in slums is almost equal to that in unauthorized colonies

Table 4: Ownership of consumptive assets

Consumptive Assets (percent of households having these assets)								
	TV	Fridge	Cooler	AC	Washing Machine	Cable	Four Wheeler	Two Wheeler
Unauthorised Colony	99.1	71.3	47.4	8.3	13.6	81.7	1.7	18.6
Slums	84.8	54.2	66.8	5.7	15.9	68.0	1.0	6.0
Resettlement Colony	83.1	47.1	40.5	3.2	14.1	70.6	0.9	6.5

Slums being in the city, there is greater awareness, demand and access to these goods and services. Almost all households use cooking gas which indicates that most of the poor households have been able to move away from fossil fuel like fire-wood and coal based cooking systems that had serious impacts on the indoor ambient air quality. It may be interesting to note that across the settlements, almost all households have a television with a high percentage subscribing to cable network (to view multiple channels) and about 50 percent of the households in the slums and resettlement colony own a refrigerator.

4.3.2. Productive Assets

Productive assets are those that people use for earning money such as sewing machines, carts, taxis, etc. These are assets which can be used to increase mobility, learning, access to information and income generation.

Table 5: Ownership of productive assets

Productive Assets (in % of households having them)									
	Sewing Machine	Rickshaw	Cart	Auto	Taxi	Gas	Mobile	Computer	Internet
Unauthorised Colony	18.28	2.05	0.75	2.24	0.2	99.8	100.0	6.5	5.2
Slums	10.19	1.62	1.46	0.65	0.49	99.0	93.9	6.4	2.8
Resettlement Colony	14.66	2.59	4.17	2.01	1.01	91.0	93.3	2.8	2.4

One in five households owns a sewing machine. Women use this to work out of homes and/or tailor clothes for the family. Almost all households own a mobile phone indicating that they are well connected with their friends, relatives, fellow workers and others. It may be noted that slum households match the relatively wealthier households of the unauthorized colony in terms of computer ownership. This may be indicative of their life expectations, penetration of the digital medium and the growing demand to access critical information and services such as birth/death

registration, railway reservations, driving license, Aadhar or ration cards, access to employment portals or websites etc.

4.3.3 Working population

The potential working population has been taken as the population in the age group of 15-60 years at work. The age group has been taken from the early age of 15 years based on findings from previous studies (NSS 2004/05; UNESCO 2009) which indicate that there is a strong likelihood of slum children joining the working population from the age of 15 years - if not earlier[1].

Nearly 70 percent people are in the working age group in the project area.

Table 6: Details of working population

Type of Settlement	Potential working Population in % of the total	Actual working Population in % of the total	Male (% of actual working population)	Female (% of actual working population)
Unauthorized Colony	72%	28.6%	92.5%	7.5%
Resettlement Colony	68.7%	39.8%	63.5%	36.5%
Slums	70%	26.8%	83.5%	16.5%

**working population has been taken as the people in the age bracket of 15-60 (both inclusive) years*

The highest percentage of people in employment among the potential working population, are in the resettlement colony (39.8 percent). These high numbers are possibly because of more women at work (36.5 percent). Resettlement is an economic shock for the uprooted families and there is lot of pressure on the family to find employment and to earn. This may be a reason why more women are into employment – outside the home and home-based. Typically, employment of women in the unauthorized colony is low. As families go up the income ladder into lower-middle/middle income bands, there is a tendency for fewer women to work. According to the Census 2011, the work participation rate for urban India is 36.4, however, it is around 32 for northern India which is comparable to the findings of the survey.

Percentage of women engaged in income generation varies across the different settlements in the study – being highest in the resettlement colony (14 percent) followed by slums (12 percent) and least in the unauthorized colony - at just 4 percent. Almost half the women (44 percent) in the unauthorized colony reported that they were homemakers which contributed to the low level of women's employment in this settlement type. Nearly half of all working age men were engaged in income generation with the percentage ranging between 46 and 50 percent. Unauthorized colony

[1] A study commissioned by UNESCO indicated that the percentage of school dropouts for slum children was highest in the age bracket of 13-14 years (Tsujita, 2009). The NSS 61st. round reported that one of the common reasons for not attending school or dropout was "children have to supplement household income."

had the maximum percentage of working men (50 percent) while the resettlement colony had the least (46.6 percent).

Figure 8 Bar chart showing work patterns in male

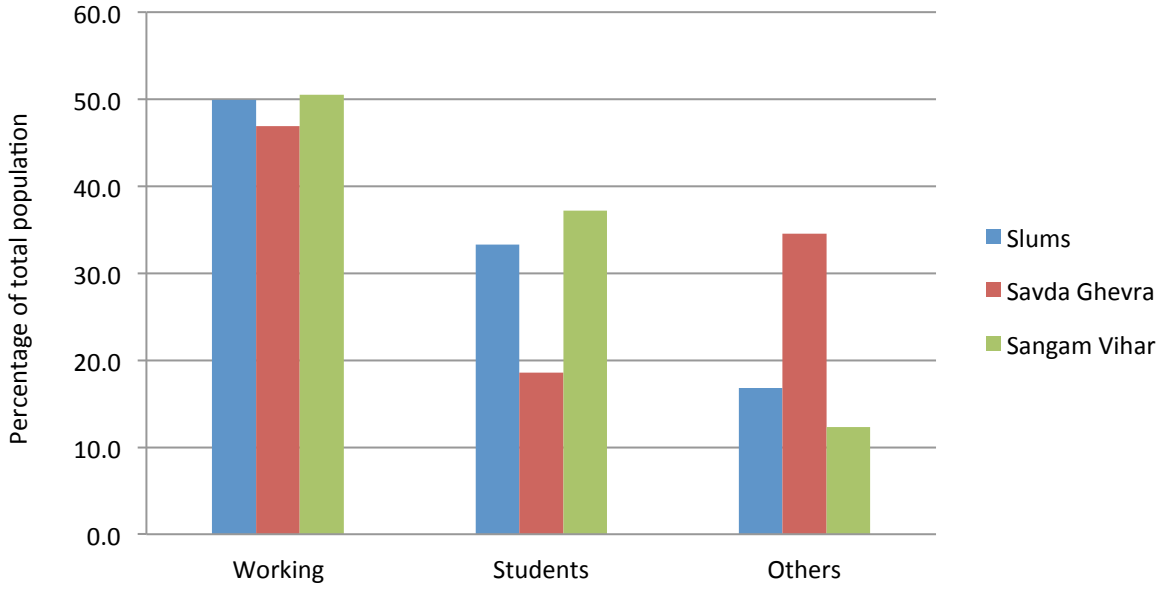
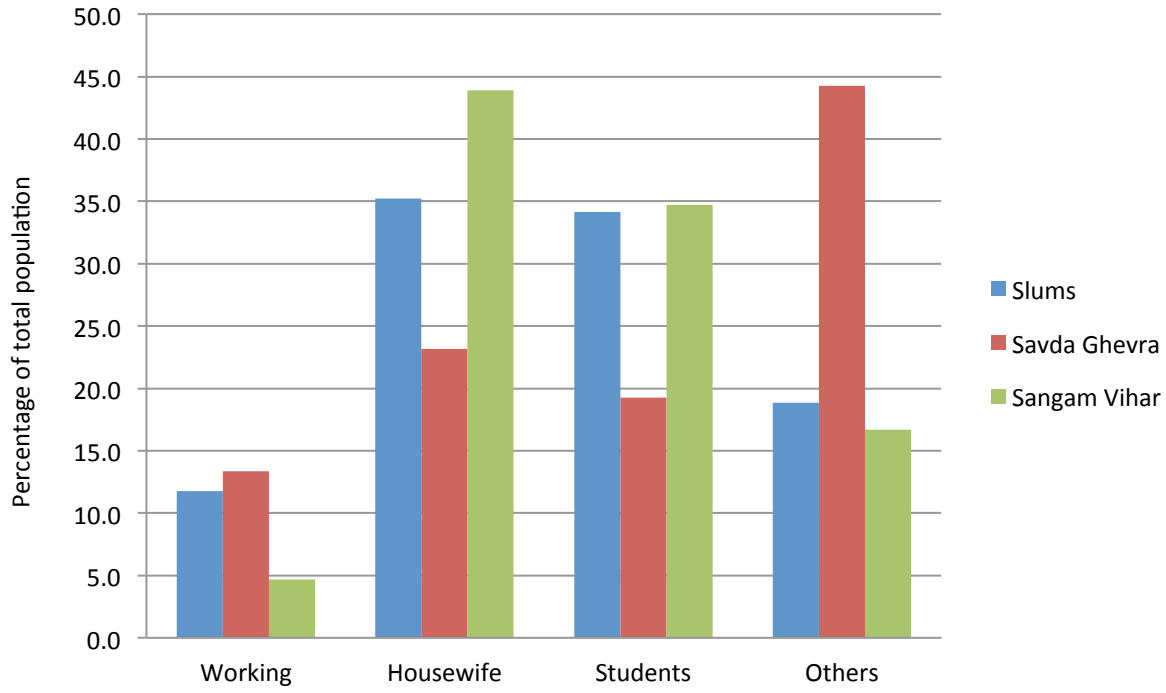


Figure 9 Bar chart showing work patterns in female



Men and boys who are pursuing education also form a major chunk of the sample accounting to as high as 37 percent in the unauthorized colony. It may be noted that the number of persons engaged in pursuit of education in the slums closely match that of the unauthorized colony which is regarded as better off, i.e., the wealthier settlement of the two. This may bring up an interesting question of whether there has been, of late, a change in the slum dweller's general perception that education is

not considered as necessary (Tsujita, 2009).The Baseline report however, did not pursue this. The column on "others" here includes non-workers such as elderly persons, retired men and infants.

Table 7 Occupational Patterns

Employment details					
Settlement	**Gender**	**Employed**		**Self-Employed**	**Daily Wage**
		Private	**Govt.**		
Slums	Male	35.1	1.3	19.5	44.1
	Female	37.4	3.0	31.3	28.3
Sangam Vihar	Male	31.4	1.6	45.0	22.0
	Female	48.9	6.4	27.7	17.0
Savda Ghevra	Male	13.5	0.9	23.8	61.8
	Female	20.8	1.7	11.7	65.8

The table shows that overall, the majority of the household members are employed in the private sector(both male and female)while the majority of men from the slums and resettlement colony are engaged as daily wage labor, particularly for the resettlement colony where over60 percent of the working population is employed as daily wage earners. Compared with household income, daily wage employment correlates with lowest average household income denoting instable jobs and irregular incomes.

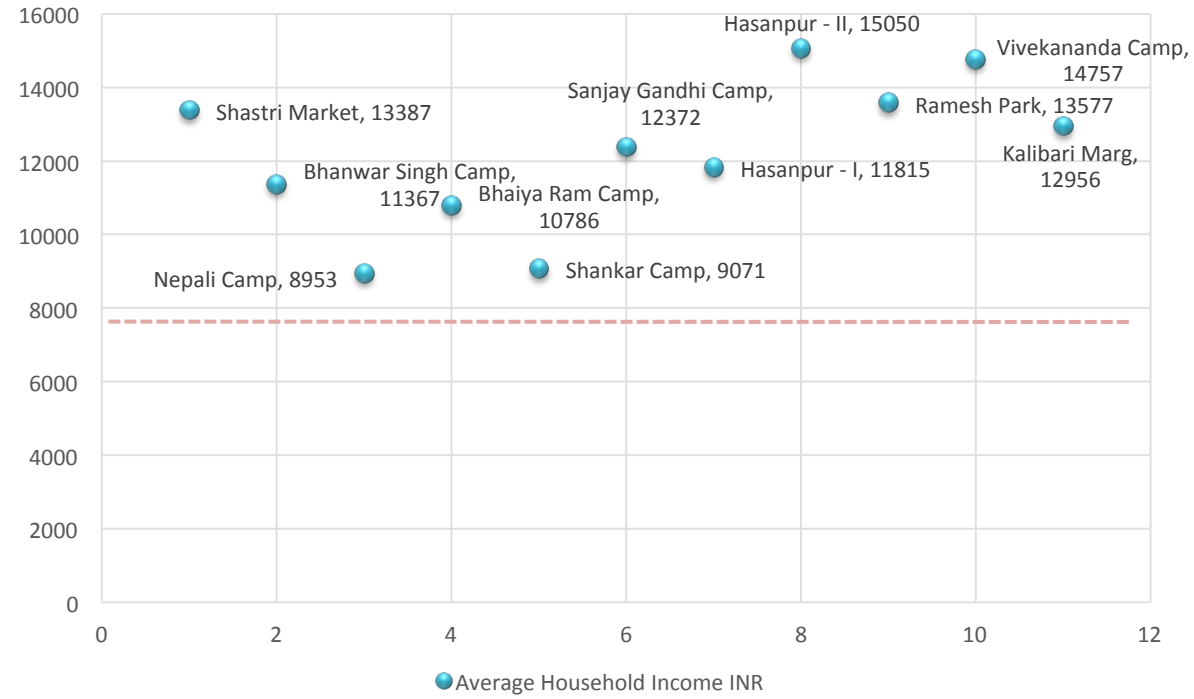
The unauthorized colony of Sangam Vihar has the highest number of persons who are self-employed with their own business and service enterprises. Consistent across all the three settlement types, more women have government jobs than men. Needless to mention, government jobs are secure, with fixed work-hours and offer several perks and facilities that may be especially attractive to the women. Around one-third of the slum women who are income earners are self-employed and primarily home-based which reiterates that a slum settlement is not only a place to reside but also is a workplace.

4.4. Living in Slums and Low-Income Neighbourhoods but not Poor: Poverty Levels

Poverty is usually estimated based on government denoted income levels. For poverty levels, government issued ration cards can be taken as proxy - BPL (Below Poverty Line) cards or APL (Above Poverty Line).Households in slums have the highest number of BPL cards (66 percent). In contrast only 39 percent in the resettlement colony have BPL cards. 30 percent of the population does not have either a BPL or APL card. This can be attributed to the fact that some of the residents are migrants and have no permanent address in the city. Most may be renters in the area.

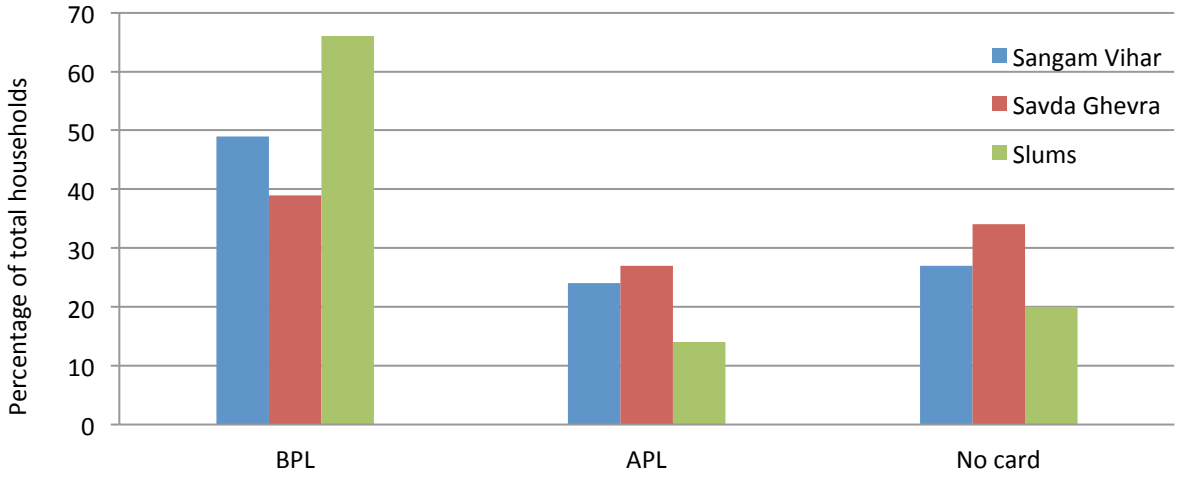
From the scatter diagram below (Fig. 10) it can be seen that in the settlements surveyed, the average household income is higher than that of the BPL income for urban areas which is defined as Rs. 7433/- per household per month. Out of the nine slum settlements surveyed, only two - Nepali Camp and Shankar Camp - have relatively low level of income as compared to the others but are still above the poverty line.

Figure 10 Scatter diagram showing the Av. Household income monthly (INR) in Slum settlements



Alternatively, when compared with the Government of India's estimate for poverty line (all India level) based on the Monthly Per Capita Consumption Expenditure (MPCE), we find that the households do not come under the poverty line. For 2009-10, the adjusted MPCE was Rs. 673/- for rural and Rs.860/- for urban areas. By extrapolating the survey data, we find that MPCE in these settlements range between Rs. 1700/- and Rs. 1325/- which is well above the poverty line. It may be mentioned that Delhi, at Rs. 240,000/- per capita income per annum, across all sections, has the highest per capita income among all the states (Govt. of Delhi, 2015).

Figure 11 Availability of APL and BPL cards



4.5. Housing

The housing conditions in different settlements show a marked difference in the type and construction of houses. Slums are characterized by just 20 percent of households having a pukka structure with concrete roof, which indicates the permanency of the structure.

Table 8 Classification of houses based on the structure

Type of House Structure				
Settlements	House Structure (%)			
	Kuccha	Pukka with any other kind of roof	Pukka with concrete roof	Multi-storey apartment
Slums	65.93	14.65	19.42	0.00
Resettlement Colony (Savda Ghevra)	12.37	27.90	59.73	0.00
Unauthorized Colony (Sangam Vihar)	12.87	24.81	62.13	0.00

The resettlement colony of Savda Ghevra has around 60 percent of the dwellings constructed as pukka structures with concrete roof. This is despite it representing the lowest household income among the three settlement types – in fact it is even lower than the average household income found in the slums. This corroborates the fact that security of tenure and the assurance of non-eviction are critical for housing consolidation which allows the households to invest in their home. Similar is the case of the unauthorized colony of Sangam Vihar (plotted lands with valid documents). With a strong support from the political process favoring regularization of such settlements, the households have heavily invested in their dwellings.

Table 9 No. of floors in the settlement

Number of floors (in %)				
Type of Settlement	1	2	3	4
Slums	77.2	19.7	2.8	0.3
Resettlement Colony Savda Ghevra	63	32.9	4.2	0.3
Unauthorized Colony Sangam Vihar	65.9	29.1	4.5	0.6

All the three settlements are characterized by low rise structures with slums having the highest percentage of single storied structures (77 percent), resettlement and unauthorized have similar percentage (65 percent) of the housing units having single storied structures. The same explanation mentioned earlier holds true when it comes to the number of floors built, as the security of tenure (perceived or otherwise) allows the households to spend on their houses and add more space and floors to their dwellings.

Table 10 Classification of houses based on ownership

Ownership of the houses			
Settlements	Owned (%)	Rented (%)	Av. Rent / Month (INR)
Slums	75.1	24.9	1948
Resettlement Colony Savda Ghevra	81.1	18.9	912
Unauthorized Colony Sangam Vihar	79.9	20.1	1976

As can be seen in the table above, there is a high percentage of rented houses in slums than in the other two settlements. This is mainly due to the fact that most of the slums are located near major work centers or located near major roads and are easily accessible to public transport systems. Even though the rent difference between unauthorized colony and slums is minimal, the accessibility factor tilts the scale towards slums.

Growing urbanization and employment opportunities have attracted people to Delhi. According to a recent study, about 70 percent of the urban poor in Delhi are migrants and have migrated from other parts of the country (PRIA, 2014). Of them, over 72 percent have migrated to Delhi more than five years ago and a majority of them have moved into existing slum settlements that provide existing economic (and social) networks to plug into. Savda Ghevra has less rented houses even though the rents there are the lowest.

Typically, resettlement colonies like Savda Ghevra are located on the city's fringe, far from the commercial areas and work centers, thus have less number of tenants even though the rents are the lowest. These are also more recently developed areas. Over the years, there is a likelihood of their being a catch up.

4.6. Water

Access and availability of clean and safe drinking water is a basic human right and a major parameter to gauge the wellbeing of people. Water in low-income settlements is provided through both formal and informal means. Formal supply is provided through municipal taps, community stand posts, hand pumps, bore wells, and water tanker. People also make their own informal arrangements by extending municipal pipeline or installing private bore wells, private hand pumps and purchasing bottled water.

4.6.1. Sources of Water

Majority of the settlements in Delhi fetch drinking water from community stand posts provided by Delhi Jal Board – the parastatal agency responsible for water supply and conveyance of the city sewage. Burden of collecting water and crowding around the common stand post often leads to conflicts within communities, particularly among the women. As a result, residents extend pipelines from these stand posts to their homes. Table below shows the main source of drinking and non-drinking water in different types of settlements.

Table 11 Sources of drinking and non-drinking water sources

Settlements	Source	
	Drinking Water	Other purposes
Slums	GOVT – Stand post	GOVT – Bore well
Resettlement Colony Savda Ghevra	GOVT – Water Tankers	Private – Covered Source/Bore Well
Unauthorised Colony Sangam Vihar	GOVT – Informal Pipeline extension to homes	GOVT – Informal Pipeline extension to homes

As mentioned earlier, there are two water sources for the slum households – piped water through common stand posts located at some interval within the settlement and few common bore wells spread across the entire site. In the unauthorized colony, people have taken the initiative to connect private pipes to the government provided common water points to extend the water supply into their homes. Apart from government stand posts and bore wells, 42 percent population in slum settlements is dependent on informal arrangements like private water-tankers and *bhisti* or private water carriers to fulfill their water needs.

There are severe inequities in water availability across the different settlements in the city. Water is supplied to different areas based on different supply standards. For example, in planned middle-income colonies it is about 170 lpcd and for VIP areas it is over 300 lpcd. The poor residing in the informal settlements bears the brunt of unequal supply receiving as low as 30 lpcd particularly during the summer months when the overall supply reduces. Table below shows the percent of population affected by water scarcity in summer months across the three settlements.

Figure 12 Bore well stand post and informal pipeline extensions to homes at Sangam Vihar

Table 12Population affected by water scarcity

Main source of drinking water at the time of scarcity in slum settlement is water-tanker and bore well, whereas in unauthorized colony, bottled water serves the same purpose. 75 percent of

population using these alternate sources believes that these alternative systems provide potable water.

Settlements	% of population affected by water scarcity
Slums	47.19
Resettlement Colony Savda Ghevra	10.86
Unauthorised Colony Sangam Vihar	47.95

4.6.2 Piped Water

Government provided piped water through common stand post constitutes the main source of drinking water in the slum settlements while the bore well is the main source for other purposes, i.e., washing, cleaning, bathing etc. throughout the year except during the dry period. Women are primarily tasked to fetch water and the majority of them have to typically travel 200-500 meters and spend around 15-30 minutes to fetch water from the common stand posts.

However, about one-fifth of the slum households surveyed had to travel around 500 meters – 1 Km and spend 30 to 60 mins to fetch water. Bore wells supply water 7 days a week as reported by 93 percent of the slum population. Informal pipeline extensions drawn to homes from the government supply points are the primary source of water in majority of unauthorized colony (70.8 percent). However, 88 percent of the respondents reported that these supply points supply water less than 3 days per week. Residents have made different arrangements to store water at home to sustain throughout the week.

Table 13 Characteristics of water availability

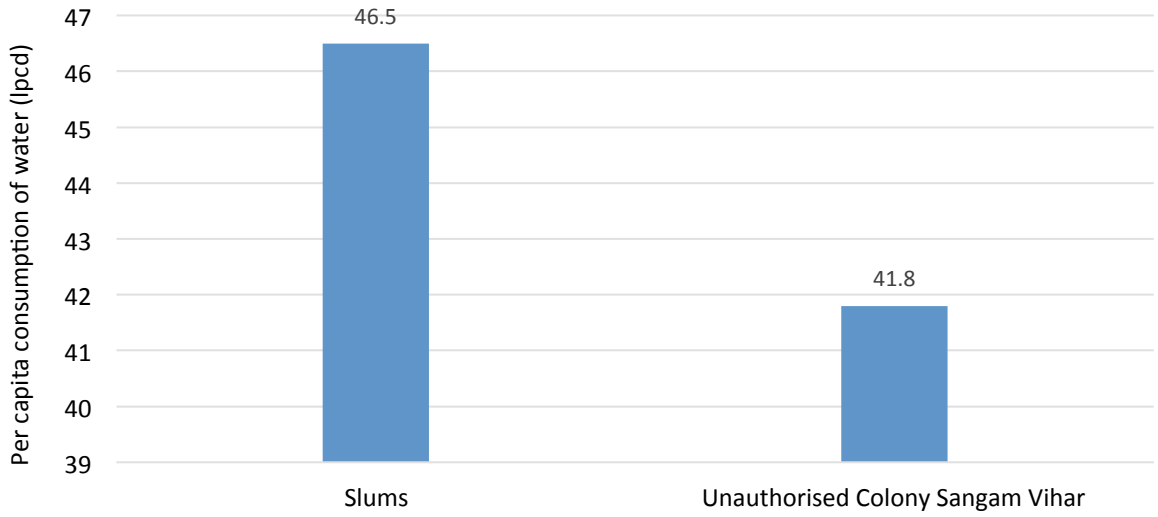
	Indicators	Slums			Unauthorised Colony Sangam Vihar		
		Govt. Stand Post	Domestic Piped Water Connection	Municipal (Non-Piped) Sources	Govt. Stand Post	Domestic Piped Water Connection	Municipal (Non-Piped) Sources
1	**Time taken and distance travelled to fetch water (%)**						
	Less than 15 min (Less than 200 meters)	38.0	….	24.3	No Stand Post	….	4.5
	15-30 min (200-500 meters)	38.0	….	50.3		….	75.0
	30 min- 1hr (500 meters - 1kilometers)	16.6	….	15.9		….	5.4
	more than 1 hr. (more than 1 kilometre)	7.3	….	9.5		….	15.18
2	**Number of days in a week people get water from this source**						
	1-2 days	1.5	0.0	3.7	No Stand	84.1	36.6
	3-4 days	2.0	1.2	9.5		26.1	3.0

	5-6 days	3.4	3.7	5.8	Post	1.9	2.2
	All 7 days	93.2	95.1	80.9		11.2	58.2
3	**Number of hours in a day people get water from this source**						
	1-2 hrs.	45.4	….	….	No Stand Post	62.1	….
	3-4 hrs.	38.5	….	….		27.2	….
	5-6 hrs.	7.3	….	….		9.1	….
	7-8 hrs	1.5	….	….		1.1	….
	9-10 hrs.	0.0	….	….		0.5	….
	More than 10 hrs.	7.3	….	….		0	….
4	**Per Household Consumption of water (litres)**						
		240	260	220	….	200	260
	Average	240			230		
5	**Per Capita Consumption of water (lpcd)**						
	Average	46.5			41.8		
6	**Per month expense to buy water from other sources in INR**						
		950	620	970	….	708	770

Based on the actual quantity of water available with the household, the average consumption per household was calculated to be around 240 lpcd in slums and 230 lpcd in unauthorized colony. In terms of per capita water available per day this amounts to 46.5 liters or 12.28 gallons for slums and 41.8 litres or 11.04 gallons per capita per day (gpcd) for the unauthorized colony.

According to the Delhi Master Plan, 2001 norms, the per capita water requirement is 60 gpcd. When compared to this norm, the actual amount of water available in both the slum settlement and the unauthorized colony is significantly lower indicating severe water scarcity in the settlements. As per the World Health Organization, the guideline for minimum quantity of water needed for domestic use is around 18 gpcd (WHO, 2005).

Figure 13 Percapita consumption of water in liters

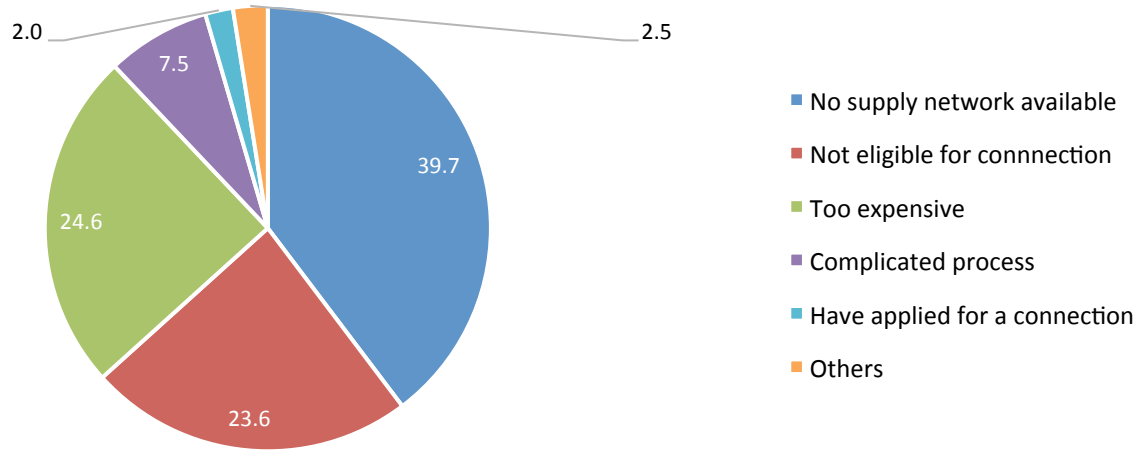


The amount of water available per person is significantly less than this minimum quantity. This indicates that the households do not have enough water to perform their household chores, i.e.,

drinking, cooking, washing and bathing. Moreover, the coping cost associated with arranging for and storing the limited amount of water that the households manage to collect is significant - ranging from Rs. 620 to Rs. 950/- per month for the slum settlements and Rs. 700/- to Rs. 770/- per month for the unauthorized colony. Not only is water not available, the little that is available is available at a high cost. The majority of households have reported water being supplied for 2 hours daily while the remaining respondents indicated daily supply between 3-4 hours. Water is supplied by Delhi Jal Board intermittently usually as per a fixed time schedule which the households find convenient to follow. Among the slum respondents, 50 percent stated that they have never received dirty water in last 3 months, while 72 percent households reported the same in the unauthorized colony.

Chart below shows the reason cited by the respondents from the slum settlement who use stand post as main source of water instead of having a household piped connection.

Figure 14 Reason for not having piped water supply in Slums



Households in unauthorized colony, who have piped connection do not have legal metered connection. Only 18 percent of households in unauthorized colony have metered connection. In case of slum settlements, legal connection is reported to be 20 percent.

4.6.3 Non-piped Water

Main source of non-piped water supply in slums are water-tankers and bore wells which usually supply 7 days in a week whereas in Sangam Vihar, it is bottled water which is mostly used 1-2 days per week. Table below shows the dependency of slums and unauthorized colony on non-piped water source.

Table 14 Water availability in a week

	Duration of Supply	Slums	Unauthorized Colony	Resettlement Colony
1	**Water Supplied**	**Percentage**		
	1 day	1.0	45.0	5
	2 days	2.6	42.8	6
	3 days	6.3	1.7	20
	4 days	3.1	5.3	11
	5 days	3.4	2.6	8

	6 days	2.7	2.6	4
	7 days	80.9	0.0	46
2	**Water Fetched**	**Percentage**		
	1 day	2.4	2.3	
	2 days	2.4	94.2	
	3 days	2.0	3.5	
	4 days	4.5	0.0	
	5 days	3.0	0.0	
	6 days	1.6	0.0	
	7 days	84.1	0.0	

From the table it may be noted that since water is supplied on a daily basis in the slum settlements, the collection of water is also done on a daily basis. For the unauthorized colony, on the other hand, water is primarily supplied for 1-2 days in the week, hence water is fetched accordingly and stored for the entire week. For resettlement colony, water is supplied and available all seven days in a week.

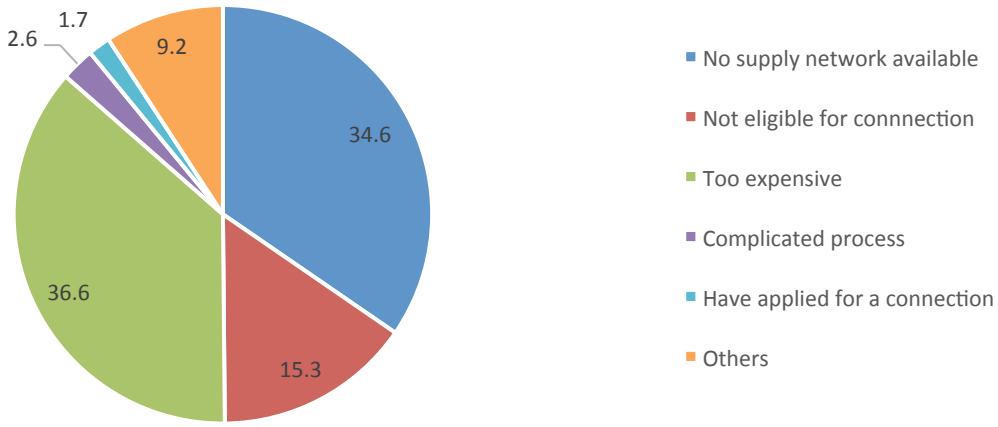
Fetching water from the water-tanker is a challenging task. As soon as the tanker arrives, the slum dwellers rush towards it and jostle to be the first to draw water leading to frequent conflicts as well as wastage. Use of bottled water for only 2 days per week despite the limited supply of piped water is because bottled water is expensive and the tendency of the households to collect in bulks as much water as possible and store it. Fetching water in two-three bottles is not economical and worth the effort. In general, residents find the available water collected from different sources to be sufficient irrespective of the coping mechanisms and cost involved. In the resettlement colony most of the households rely on private water suppliers who provide water at the door-step followed by supply by the Delhi Jal Board tankers and private bore-wells managed by some of the households residing in the settlement who allow their neighbors to draw water or sell it to them.

Savda Ghevra-Improving Water Distribution System from Tankers: Taking Water Closer to Homes: With the help of CURE, the Residents Welfare Association has organized a smoother water distribution system from the tanker that is provided by the Delhi Jal Board. The lane leaders are responsible for promoting the distribution system. With the help of the Jal Board, people now attach their pipes (dedicated to water supply purpose) to the water tanker bringing the water closer to the door-step and distribute water directly in the lanes. The water distribution system has helped to extend water pipelines to the streets and reduce the crowding and chaos at the tanker. This has also reduce wastage and contamination.

Women's burden for carrying water from the main street to the homes is now reduced as the water can be collected closer to home. Through this initiative, the RWA has brought about a drastic change in the behavior of the people.

Similar to piped water supply, residents reported the quality of non-piped water sources to be generally good. Chart below shows the reason of settlement that use non-piped source of water for not having a household piped water connection.

Figure 15 Reasons for not having piped water supply in households using non-piped water supply

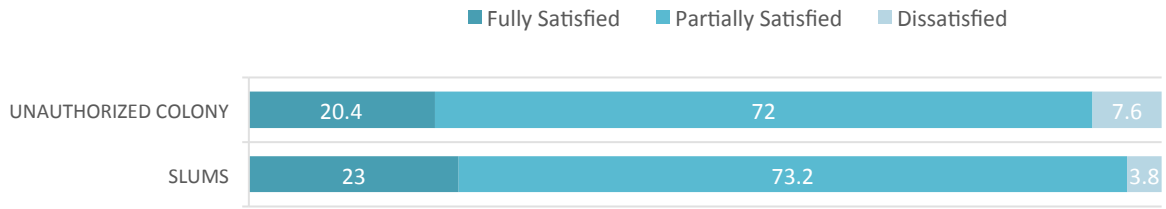


In case of emergency, residents' response was that they had fairly good experience with the Municipal Corporation. For emergency purpose, 30 percent of households have not used the services of the Delhi Jal Board (DJB) or the Municipal Corporation of Delhi (MCD) at all.

During the last one year, only 6 percent of households in slums had lodged any complaint with the MCD or DJB for irregular water supply or poor quality, while in unauthorized colony it was reported to be 8 percent. In slums, residents lodged complaints either through the local councilor or a group of people visit the MCD/ DJB office to register the complaint. In Sangam Vihar, the residents approached the city/departmental engineer of the urban local body to lodge their complaints. Of all the complaints lodged, only 50 percent of them were attended to by the authorities.

Graph below shows that about one-fifth of the respondents are satisfied with the water supply services.

Figure 16 Satisfaction with water supply (in percentage)



More than 50 percent of households in slums believe that water services have improved from last year, however, majority of residents in the unauthorized colony believe it is same as before.

4.7. Sanitation

Access to sanitation like water is uneven in urban India. Major inequalities persist between the various socio- economic communities. Low income settlements have very limited or no access to the city sewage system for making home toilets. People either use poorly maintained community toilets,

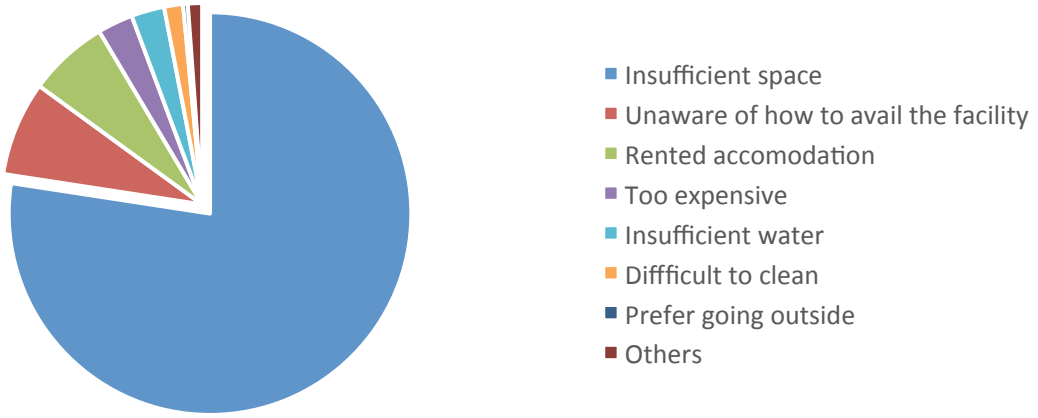
defecate in the open or build private toilets with septic tanks or pit latrine or those that discharge into open drains.

Table 15: Availability of toilet facility

Availability of Toilet facility (%)				
Type of facility		Slums	Unauthorised Colony Sangam Vihar	Resettlement Colony
1	Household Toilet	8.5	99.4	58
2	Shared Toilet	2.0	0.0	8
3	Public/Community Toilet	83.5	0.0	25
4	No toilet facility	6.0	0.6	9

Not having household toilet in slums is attributed to the reasons given below in figure 17.

Figure 17 Reason for not having toilet facility at Home in Slums



The major reason for not having household toilet, as popularly understood, is the lack of sufficient space. However, if given access to private toilet facility, 98 percent of households would like to use it. This reflects the high level of dissatisfaction with the community toilets.

4.7.1. Household Toilets

In the unauthorized colony, over 99 percent households have toilet facilities at home. These are predominantly pour-flush, single pit latrines. The pit is typically built directly below the toilet super-structure and is about 3 meters deep and one meter across with the upper part of the pit usually reinforced with bricks or cement rings to improve stability. The pit is covered with a stone slab which has a hole over which the squat pan is placed. Some household toilets directly discharge into the open drains that run along the street fronting the building.

Only 8.5 percent slum households have individual toilet facility. For the slum households who have constructed individual toilets, the feces are collected in a pit constructed below the toilet or they discharge directly into the open drain. Around 2 percent of the slum households use shared toilets which are used by all the members of the households who maintain and manage the facility. About 6 percent of the slum households have no access to any toilets indicating open defecation. Provision

of water in the toilets is primarily through taps inside the toilet whereas less than 10 percent of the households carry water from an outside source.

Table 16 Discharge of wastewater from toilets

Discharge of Water from Household and Shared Toilets				
Type		Slums	Unauthorised Colony Sangam Vihar	Resettlement Colony
1	Discharging to open drain / street	39.0	2.2	6
2	Connected to sewer line	37.3	0.0	2
3	Pit Toilet	23.7	98.3	92

Some slum households have been able to take advantage of the city sewer line being located close by and have connected their toilets to the sewer line. Of these households, the majority have stated that they do not face any problem with the sewer system however, some respondents mentioned facing problems of overflow during the rains.

60 percent residents of Sangam Vihar de-sludge their pits once in about 2 years mostly through private contractor. The rest of the residents use the services of the local urban body, i.e., the municipality to empty the pits. In the resettlement colony, 84 percent of the households de-sludge the pit once a year, while 10 percent does it once in two years. The private contractors do not properly treat and dispose the sludge, instead they dispose it in forest areas or vacant plots according to their convenience.

4.7.2. Community Toilet

Slum households primarily depend on community toilet complexes (CTCs). According to the survey findings, over 83 percent of the slum households depend on community toilets. On average, most of the CTCs are situated at a distance of not more than 250 meters from the farthest household however, about 18 percent of the respondents indicated that the community toilets were located at distances between 251 and 500 meters or beyond.

While the majority of the household members regularly use the CTCs, around 7 percent households reported that some members do not use it whereas about 4 percent households reported that none of the family members use it indicating practice of open defecation by the household. Over 40 percent of the respondents reported, that on average, they had to wait between 6 – 15 mins for their turn to use the toilet, while more than one-third of the respondents mentioned that the waiting time was between 16 – 30 mins. The general reaction was that waiting (standing in queue)and having to hold is irritating and very uncomfortable and can lead to health issues.

Few community toilet complexes have water points installed inside each latrine or stall. In most cases water from elsewhere has to be carried inside. For more than 50 percent of the households, they have to either fetch water for cleaning and flushing from a community storage tank or from common water taps located in the complex. Again, more than 30 percent of the households indicated that they hand carried water when visiting the toilet. A few households indicated using other means for cleaning.

Figure 17 Community Toilet Complex at Bhanwar Singh Camp and Shastri Market

For using the community toilet, the adults (male and female) have to typically pay a user charge of Rs. 2/- per person (only once in the day) while it is free for the children. In certain complexes, during the weekend only, the user charge is increased to Rs. 5/- per person. Nearly 60 percent of responding households reported paying the user charges, and on average, paid Rs. 85/ - per month for using the facilities.

Table 17 Characteristics of CTC usage

Community/Public Toilet		
1	**Distance of public toilet from house**	**Percentage**
	Less than 100 meters	42.1
	100-250 meters	40.0
	250 meters -500 meters	10.7
	more than 500 meters	7.2
2	**Usage of toilet by household members**	**Percentage**
	All members use	89.3
	Some members use	7.0
	None of the members use	3.7
3	**Waiting time for using the toilet in the morning**	**Percentage**
	Less than 5 min	12.4
	6-15 min	43.2
	16-30 min	37.3
	more than 30 min	6.8
4	**Provision of water in public toilets**	**Percentage**
	Tap inside the toilet	43.4
	Storage inside the toilet	24.9
	Carry by hand	30.9
	Not available	0.8
5	**Percentage of the population paying to use public toilets**	**Percentage**
		59.9
6	**Per month expense to use public toilet**	**in INR**
		85

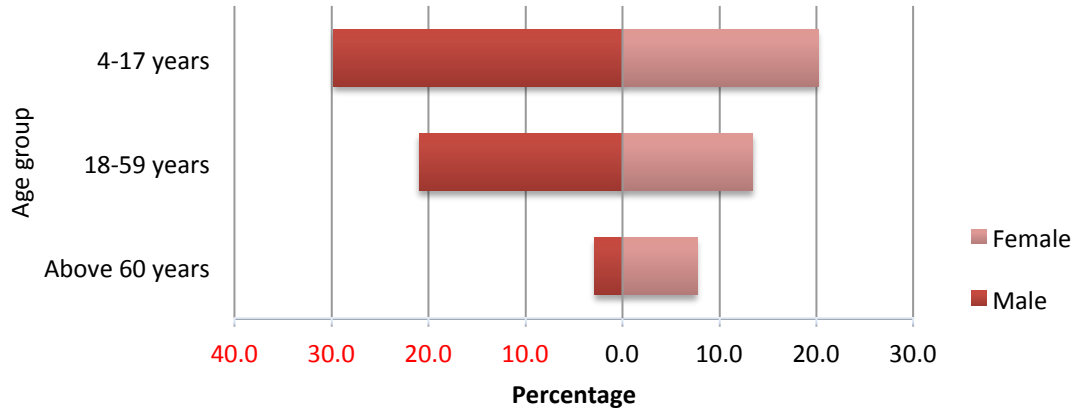
The operation and maintenance of the CTCs is a major challenge with the conditions turning so unsanitary in certain places that people feel disgusted and prefer open defecation. Many community toilets have also become non-functional due to a variety of reasons - from non-availability of water, dysfunctional infrastructure to lack of maintenance.

4.8. Open Defecation (OD)

Only 3.7 percent of slum households reported not having or using any toilet facilities indicating the practice open defecation by all the household members. An additional 7 percent of the households reported that not all members use the toilets that are available in the vicinity. In the resettlement colony, 2 percent of the surveyed households indicated that not all members use the toilet. These were mostly men who preferred open defecation and were predominantly concentrated in three slum settlements - Bhanwar Singh Camp, Nepali Camp and Shastri Market. These settlements were adjacent to forest areas or had vacant plots next to them which were used as areas for OD. Only one percent of households in the unauthorized colonies practiced open defecation - going out to the forest area or to nearby open plots. Although no respondent reported the practice of open defecation by any member of the households who had constructed private toilets, certain respondents indicated that there was fear and anxiety that the toilet pits would soon fill up which made few members of some families to practice OD to avoid the pits filling up quickly.

Boys between the age of 4-17 years and adult males (18-59 years) form the major segment of the people who resort to open defecation (OD). Compared with the data on usage of toilet by family members (ref. table 17) it is found that for those households were not all members use the community toilet, it is primarily the males who tend not to use the toilet facilities, instead go for open defecation. It was also observed that elderly men who practice OD tend to take the young boys along with them. As a result, boys are initiated into the practice of OD at an early age and there is a likelihood that they may continue the practice later in their life. It was also found that the majority of the kids (2- 4 years) - both male and female- defecate in the open. Typically, the slum dwellers believe that kids' feces are harmless.

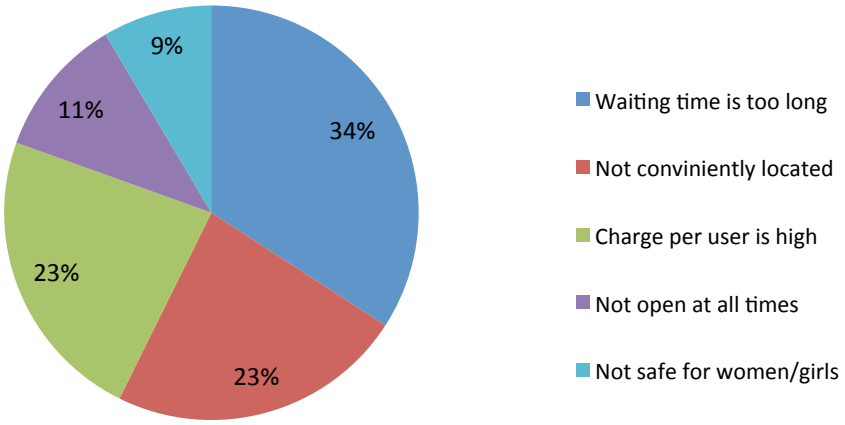
Figure 19 Composition of people not using toilets



Long waiting time was cited as the major reason for non-usage of toilets (34 percent), followed by the CTC not being conveniently located, i.e., the long distance (23 percent) and high user charges (23

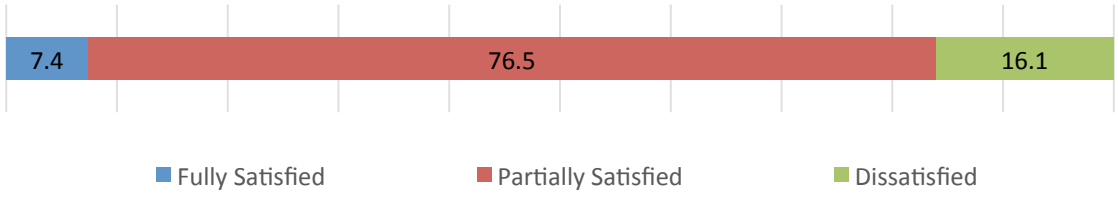
percent). On average, user charges amounted to Rs. 85/- per household per month. The next major reason cited was that the community toilets were not open 24 hours of the day. Typically, the toilet complexes are kept open from 5:00 am to 11:00 pm. The slum households have to manage on their own when the complex is closed, particularly during the night. Of the women respondents, 9 percent mentioned that they did not find it safe to use the community toilet. In particular, women felt insecure during the early morning or late evening using the narrow and unlit lanes leading to the toilet complex or felt uncomfortable from the stare of men loitering around the complex.

Figure 20 Reasons for not using public/community toilets



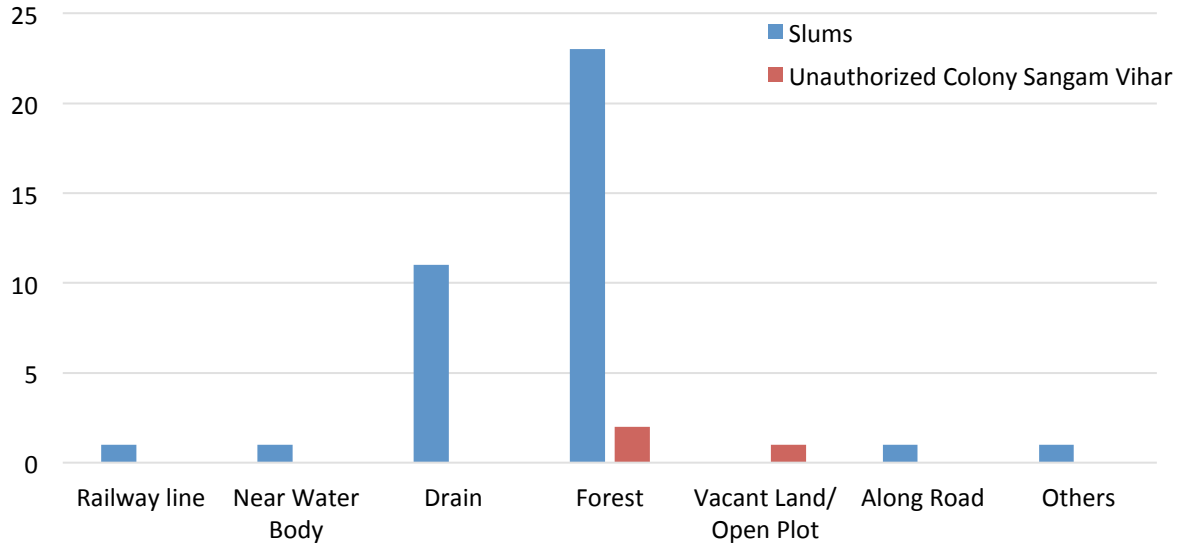
When asked about the maintenance of CTC, only 33 percent households reported it to be always maintained, while 50 percent of households reported it to be maintained sometimes and rest of the households indicated it was maintained rarely or never. Chart below shows the satisfaction level of the respondents with the community toilets. An overwhelming section of the respondents (76 percent) were partially satisfied with the condition of the CTCs while 16 percent was totally dissatisfied with them.

Figure 21 Satisfaction index of the CTC user



Almost 79 percent respondents who indicated defecating in the open mentioned that they go to the forested area because of easy access and privacy. Some people use the railway tracks that pass alongside the settlement while others use the water bodies located nearby. Most of the water bodies are naturally occurring depressions that collect the wastewater from the settlements, and over time have transformed into open cesspools.

Figure 18 Location for Open Defecation



Small children defecate onto the open drains of the settlements as well as along the edges of the roads leading to the settlements. The average time reported spent for open defecation was 15-30 minutes particularly in the early morning. This is more than the average time spent in the community toilet. Needless to mention, in the community toilet complex and during the morning rush hour, the social expectation or pressure to finish up quickly and vacate the toilet for the next user is quite high – which is not so in the case of open defecation.

Based on the feedback from the respondents, several observations can be made on why people prefer or go for open defecation. These include:

1. CTC use is seen as a stressful experience and this stress may be making people avoid the CTC;

2. The discomfort of holding while waiting for a considerable period of time makes people averse to use the community toilet;

3. The social expectation or pressure of finishing up quickly, particularly during the morning or peak time, makes people uncomfortable;

4. The uncertainty of getting a clean toilet leads to disgust which in turn makes people avoid using the CTC;

5. For women - particularly for adolescent girls - the shame of being seen by stranger, especially men, is quite embarrassing (although the latrines or stalls for women and men are in separate wings, they are all located in the same complex and the women have to pass through the common entrance gate or lobby space).

4.9. Bathing Facility

In slum settlements, women of the household take bath inside their houses either inside the room or in separate make-shift enclosures while men take bath in the open. In the unauthorized colony,

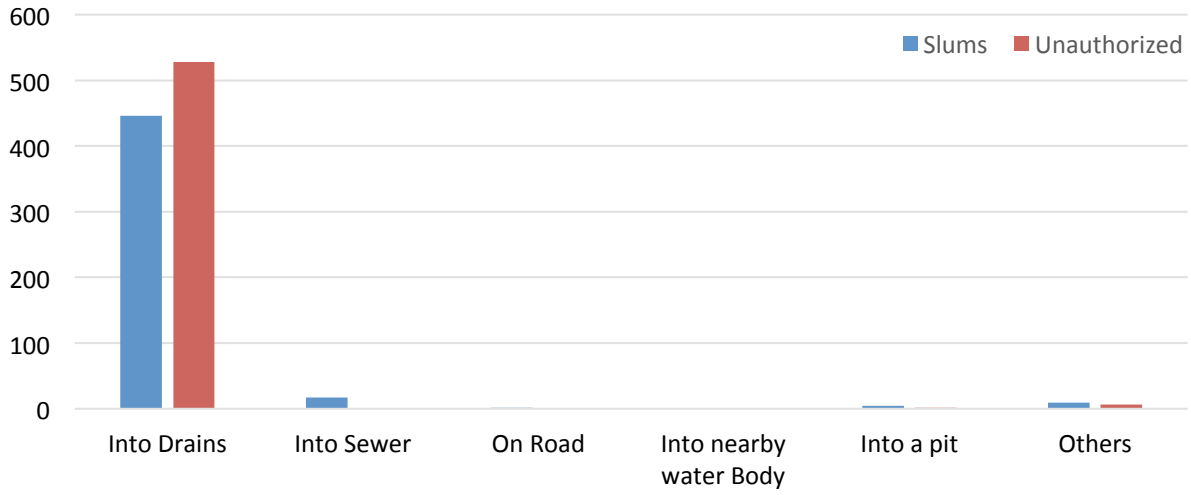
both men and women take bath inside their dwellings using the household toilet which include bathing facility. Surprisingly, few use the bathing facilities available at the community toilet complex.

Table 18 Availability of bathing facility (no. of households)

Location of Bathing	Slums		Unauthorized Colony, Sangam Vihar		Resettlement Colony	
	Male	Female	Male	Female	Male	Female
Inside the house	20	434	453	456	487	592
Shared bathroom	5	12	-	-	21	20
In the open	58	12	4	-	135	24
Community Toilet	376	8	-	1	2	6
Others	12	7	79	79	18	21
Total	**473**	**473**	**536**	**536**	**663**	**663**

For more than 90 percent of households the waste water from their bathrooms flow into the open drains.

Figure 19 Outlet of bathing water



4.10. Solid Waste Management

Solid waste management is the most neglected among the basic municipal services provided by the urban local bodies particularly for the low income settlements. One would often encounter piles of garbage sitting next to such settlements unattended for days giving rise to environmental stress in and around the settlements. While inside of the dwellings are relatively clean, garbage can be found strewn along the streets, vacant plots, and the drains which are clogged and flow of the wastewater is obstructed.

Of the slum respondents, 90 percent have reported to have dustbin in their houses for managing their garbage while 98 percent in unauthorized colony reported the same. Around 80 percent of the households in the slum claim to segregate waste at source while 60 percent reported the same in unauthorized colony.

Figure 20 Open Dumping of Solid waste in Sangam Vihar and Shastri Market

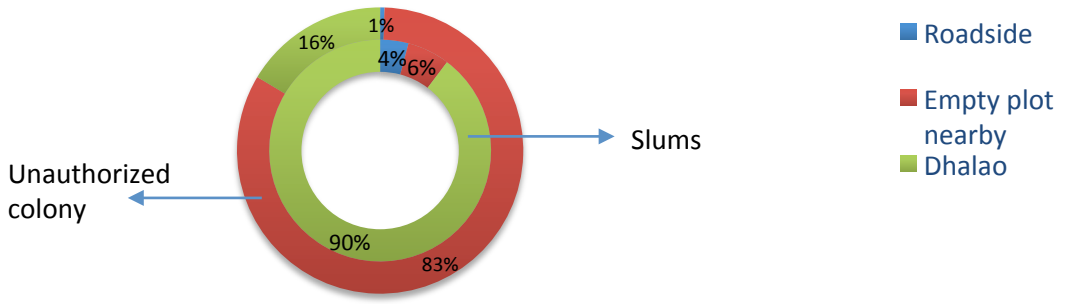
A major reason of segregation of waste is that recyclable wastes such as papers, glass, wood etc. are a source of income since these are purchased by the informal *kabadiwala* or waste collectors.

Table 19 Characteristics of waste collection in the settlements

Collection of solid waste (in percentage)		Slums	Unauthorised Colony Sangam Vihar	Resettlement Colony
1	Self	96.9	74.6	94
2	Municipality worker	1.7	14.4	3
3	Contractor appointed by municipality	0.2	1.9	-
4	Rag picker	0.4	6.5	2
5	Private Agency	0.0	2.4	-
6	No System	0.8	0.2	1

Collection and safe disposal of garbage poses a major challenge. Most of the households dispose the waste on their own at various places as indicated in the figure below. Nearby *Dhalao* or community waste-bins serve as main site for disposal of waste in slum settlement while empty plots act as dumping sites in the unauthorized colony. Municipal workers responsible for collecting and disposing the solid waste safely at the designated land-fill sites seldom visit the settlements and clear the *dhalaos* or bins. Sweeping of streets and public or open spaces such as parks, community space is seldom undertaken in these settlements.

Figure 21 Percentages of disposal of waste by location



From November, 2015 CURE has started a pilot door to door garbage collection in the slum settlement of Bhanwar Singh Camp in collaboration with the Slum Residents Welfare Association. The initiative has already resulted in systematic collection of garbage and its safe disposal. As part of the pilot project, 150 households have joined this initiative and are paying the cost of engaging a private waste collector who visit each house every day at a fixed time for collecting the waste and finally disposing in the municipal vats located next to the settlement. The surrounding of the slum is now very clean with clear streets, clean drains and improved environment.

4.11. Health and Hygiene

Practicing good hygiene leads to good health. For low income communities who are deprived of improved WATSAN services, it becomes difficult to maintain personal hygiene what with water scarcity and limited toilet facility, making them vulnerable to disease and other hazards that leads to loss in productivity and economic growth.

Every household in the communities keeps their potable water covered. However, around 90 percent of the household do not treat water before drinking by boiling, filtering or by other means. Contamination of ground and surface water from the open drains that carry wastewater along with fecal matter and/or the stagnating wastewater in nearby cesspools is very much likely the cause.

On average, a household's monthly medical expenditure is reported to be Rs.1,300/- in slums and Rs. 2,000/- in unauthorized colony which is around 7 percent of the monthly household expenditure. For urban Delhi as a whole, the expenditure on health is merely 1.74 percent, which means that the surveyed households are spending more than 4 times of what a common man in Delhi usually spends on medical bills for his family. This strongly point to the quality and availability of water, sanitation and the hygienic aspects prevalent in these settlements, which need major improvements.

The majority of respondents have stated that within the household, one or more family members have encounter malaria, dengue, diarrhea and nausea during the last 15 days prior to the survey. The next section discusses this in greater detail.

4.11.1. Cases of Diarrhea

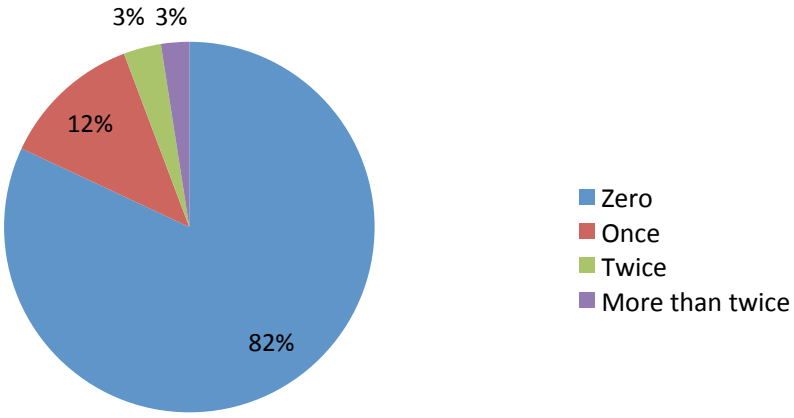
Slum settlements

There are 195 children in the age group of 0-5 years in the slum sample of which 13.84 percent reported diarrhea in the past three months - more among girls (7.18 percent) than boys (6.6 percent). Most children reported just one episode of diarrhea whereas two percent of the afflicted children reported more than one episode.

Of the school going kids (age group: 6 to 17 years) reported having diarrhea in the past 15 days, the number of school days missed was calculated as 4 days for females and 4 days for the males which is quite high indicating that, on average, each school-going child missed classes for 4-5 days in 15 days.

For adults of the household, on an average, 3 working days were lost due to diseases. It may be noted that there usually is chronic diarrhea among the poor and unless severe it is not recognized as diarrhea.

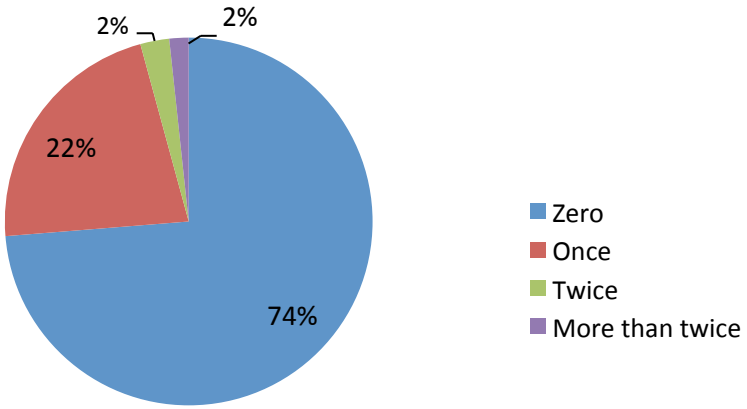
Figure 22. Children in Slums having diarrhea in the last 15 days



Unauthorized Colony

There are a total of 136 children in the age group of 0-5 years in the sample. One fourth (25 percent) reported diarrhea in the past three months. An equal number of boys and girls had diarrhea during the reporting period. Most children had just one episode of diarrhea and only one percent had it more than once.

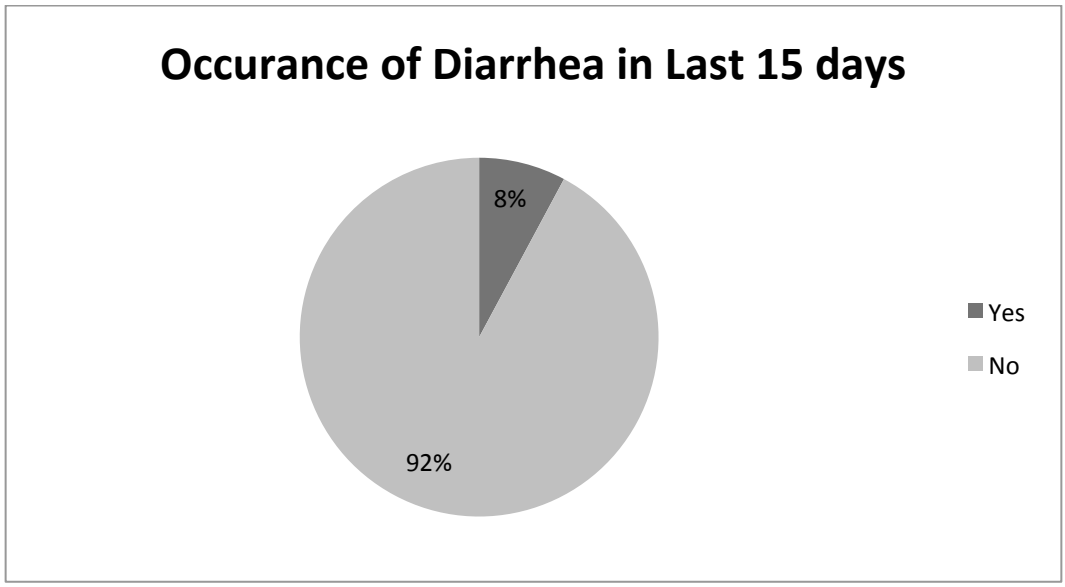
Figure 27 Children in unauthorized colony with diarrhea in the last 15 days

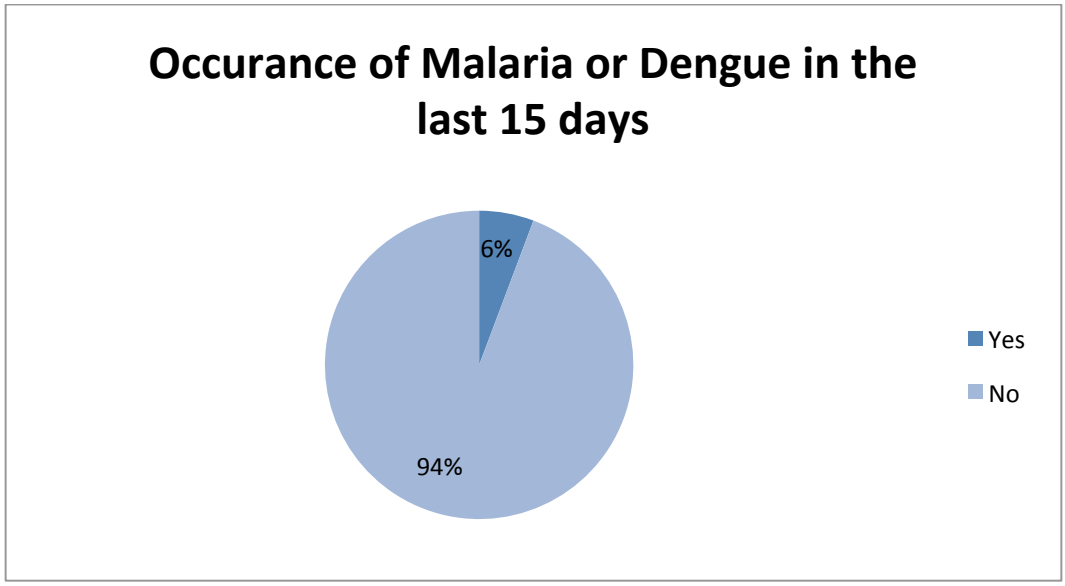


Of the school going kids (age group: 6 to 17 years) reported having diarrhea in the past 15 days, the number of school days missed has been calculated as 4.5 days for females and 4.5 days for the males.

Resettlement Colony

Instances of diarrhea as well as malaria or dengue were reported from the resettlement colony. Of the 663 households surveyed, 52 households reported of diarrheal cases, whereas 38 households reported of malaria or dengue during the last fifteen days prior to the survey period.





When compared with the data from the slum settlements and resettlement colony, the incidence of diarrhea is relatively higher in the unauthorized colony. Only 3 diarrhea cases were reported amongst males and 3 in females from a total of 757 kids in the age group of 6 to 17 years whereas it was 14 and 15 for males and females respectively in unauthorized colony from a total of 761 kids.

Hand washing

Hand washing is an essential part of personal hygiene. The rate of hand washing is reported in table below.

Table 20 Hand washing practices

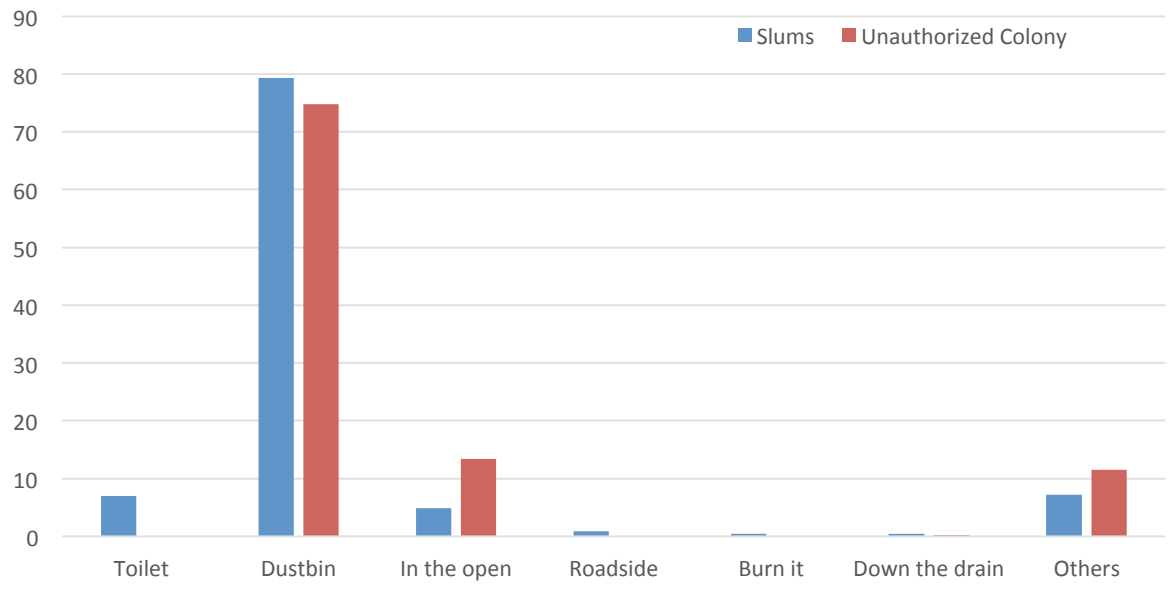
	Hand washing practice	Slums	Unauthorised Colony Sangam Vihar
1	After defecating	99.6	99.8
2	Before eating food	99.6	99.4

Almost every respondent both in the slum and unauthorized colony stated to be washing their hands after defecation using soap. Nearly all households also wash their hands before eating. About 2 percent of the households reported to wash hand using water only.

4.12. Disposal of Child Feces and Menstrual Waste

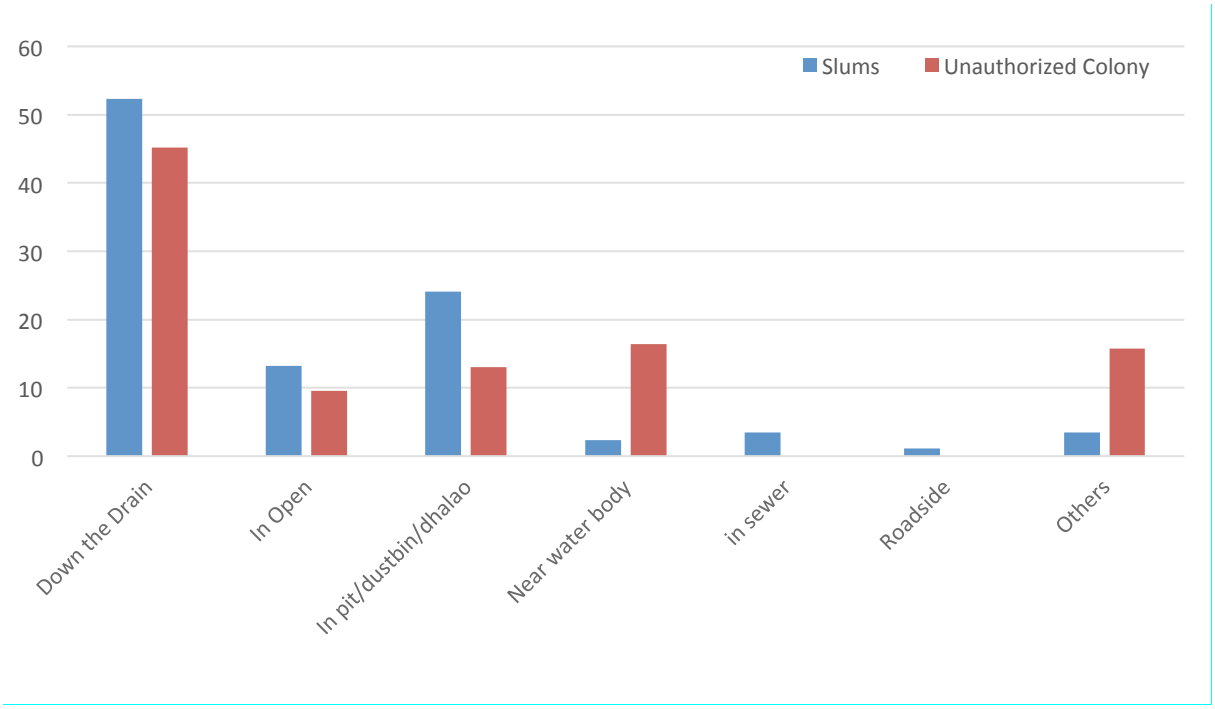
More than 50 percent of women in slum settlements use cloth during their menstruation, however in unauthorized colony, majority of women use sanitary pad. Chart below shows the means of disposal of sanitary pad/ cloth used during menstruation.

Figure 23 Disposal of Menstrual Waste



A major portion of the respondents have responded that they dispose of their menstrual waste in dustbin. Some women throw the waste in open areas, while some from the slums indicated that they dispose the waste in the toilets (see box below). The higher usage of sanitary pads in the unauthorized settlement is maybe due to the fact that the higher economic status enables them to buy sanitary napkins. Sanitary pads are also distributed free in schools.

Figure 24 Disposal of Child feces under the age of 5 years



The majority of the households dispose child feces in the open drains leading to unhygienic conditions. Others dispose the feces in the garbage vats or in holes or pits in the ground located nearby. Such unhygienic practices may be a cause for incidence of diseases and infections.

The women's section in the community toilet complex in Bhaiya Ram slum was dirty and unhygienic. The toilets got clogged periodically due to improper menstrual waste disposal. Also the flushing cisterns in the individual stalls (which were dysfunctional) were being used for dumping the waste leading to unhygienic condition. To tackle the problem, CURE conducted an awareness camp about the ill effects of improper waste disposal, using posters and holding series of group discussions with the women. Based on a consensual approach, the cisterns were closed and small trash bins (provided by the women themselves) were placed inside each stall. The women also provided old newspapers from which paper strips were made and placed at a common location inside the toilet for the women to wrap soiled pads before disposal. During a visit to the settlement a few weeks after this initiative, the CURE team received a positive feedback from other users that the women's toilets are much cleaner as the women/adolescent girls were practicing proper disposal.

5. Conclusions

The findings from the baseline survey has provided detailed insights and observations about some selected conditions of and the dynamics in the life of the poor inhabitants and their settlements in Delhi.

Most slums are well connected and within short distance of work place and commercial hubs. As a result, they are especially attractive to the poor and the immigrants to settle in as they try to establish a toe-hold in the city's economy. The process of resettlement and rehabilitation, on the other hand, is a complex and stressful experience for the dislocated households. The shifting of slum households from their existing location to a new area primarily on the fringe of the city, and where employment opportunities are negligible, is both an economic and emotional shock. The baseline results clearly indicate that the income of the uprooted families becomes uncertain and there is lot of pressure on the family to find employment to rebuild their lives. Consequently, many ex-slum households return to their previous place or other slums settlements.

Household size in these settlements is relatively large compared to the all India average and household income is much above the Government of India defined poverty line although it is significantly lower than the average per capita income for Delhi. The sex ratio in these settlements is skewed reflecting the declining rate witnessed for northern India, in general.

Informal settlements are severely deficient in infrastructure and lack basic municipal services. The situation of potable water is alarming. The slum settlements and the unauthorized colony, on average, receive only 11-12 gallons of water per capita per day which is much lower than the WHO prescribed norm for the minimum water required for domestic uses. In other words, the residents in these settlements do not have enough water to fulfill their basic needs of drinking, cooking, washing and bathing. The condition of sanitation is also poor. Almost all slum dwellers have to depend on community toilets that are over-crowded, dirty and poorly maintained with many toilet complexes lacking proper and regular O&M services. In the case of unauthorized settlements, the households have, on their own, constructed private toilets that are unsanitary. Safe fecal sludge management is practically absent and the wastewater flows into the surface drains and to the ground contaminating the ground water. Many households still practice open defecation particularly in the slum settlements which results in increased contamination and spread of diseases. Solid waste management is one of the most neglected of the urban services in these settlements. Service for regular collection and safe disposal of the waste hardly exits.

In spite of all the challenges, informal settlements provide important contributions to the city's functions. The people residing in them play a significant role in the informal sector and provide important services that are seldom provided by the formal sector. Being heterogeneous they are places where different cultures mix resulting in new forms of urban expression.

The baseline report provides the baseline information for the PASS project to address the problems of water and sanitation in slums by engaging meaningfully with the poor. It has generated the information required to prepare and implement micro plans for sustainable change in the target settlements as part of project implementation. Importantly, this will provide alternative approaches

and technologies that are practical and sustainable to the heavily engineered, top-down solutions typically applied to WATSAN problems in the informal settlements. The baseline report will also support the PASS project to work in collaboration with US based agencies and other specialized organizations to undertake rigorous research to identify useful social and behavioral sciences insights for urban sanitation. These valuable insights will be shared and disseminated to better inform public programs and policies.

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7. Annexure

7.1. Socio Economic Questionnaire

CENTRE FOR URBAN AND REGIONAL EXCELLENCE

USAID FROM THE AMERICAN PEOPLE

Household Details

Surveyor का नाम: दिनांक:

1. बस्ती का नाम _____
2. वार्ड संख्या _____

सामान्य गृहस्थी सम्बन्धी जानकारी

3. पॉकेट संख्या _____
4. 1- परिवार संख्या _____ 2 - मकान संख्या _____
5. परिवार के मुखिया का नाम _____
6. धर्म
   a. हिन्दू c. सिख e. जैन g. पारसी
   b. मुस्लिम d. ईसाई f. बौध h. अन्य_____
7. जाति
   a. सामान्य c. अनु. जनजाति
   b. अनु. जाति d. पिछड़ा वर्ग
8. मकान का ढांचा किस प्रकार का है?
   a. पक्का b. आधा पक्का c. कच्चा
9. मकान में कितने तल्ले है?_____
10. रहने के अलावा, मकान में और कौन कौन सी गतिविधियाँ होती है?
    a. सिर्फ़ आवासीय e. ट्यूशन i. नाई
    b. किराने की दुकान f. डाक्टर/ क्लिनिक j. गाड़ी की मरम्मत
    c. किताबों की दुकान g. कपड़े की दुकान k. कबाड़ी
    d. खाने की दुकान h. मोबाइल की दुकान l. अन्य_____
11. 1 - अपना मकान है या किराये पर रहते है?
    a. अपना मकान b. किराये, 2 - कितना किराया_____ प्रति माह
12. आप कितने सालों से इस बस्ती में रह रहे है? _____
13. परिवार के सदस्यों का विवरण

CENTRE FOR URBAN AND REGIONAL EXCELLENCE

USAID FROM THE AMERICAN PEOPLE

Household Details

a) क्र. सं.	b) नाम (परिवार के मुखिया से शुरू करें)	c) उम्र	d) लिंग	e) कोई विकांगलता	f) शैक्षणिक योग्यता	g) क्या करते है	h) अगर बेरोज़गार है, तो क्यों	i) घर से काम की दूरी	j) किससे जाते है	k) मासिक आय
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

13.2 परिवार की कोई वैकल्पिक आय?

a) मकान से किराया
b) विधवा पेंशन
c) वृद्ध पेंशन
d) विकलांग पेंशन
e) कृषि से आमदनी अथवा अनाज का हिस्सा
f) अन्य _____
g) कितना - _____ प्रति महीना

7.2. Water and Sanitation Questionnaire

A. IDENTIFICATION

A1.	Name of the Election Ward with Code No.	Auto coded in the device ☐☐ .....
A2	Name of the Administrative Zone(if any) with Code No.	Auto coded in the device ☐☐ .....
A3.	Name of the Water Zone (if any) with Code No.	Auto coded in the device ☐☐
A4.	Interviewer's Code No.	Auto coded in the device ☐☐ .....
A5.	Date of interview (DD/MM/YY)	Auto coded in the device ☐☐ ☐☐ ☐☐
A6.	Time of interview (Hour/Min.) Coded in 24 Hrs. *(Display survey record in AM/ PM in the web app)*	Start Time ☐☐ ☐☐ End Time ☐☐ ☐☐ Auto coded in the device
A7.	Is this a slum area? *	No – 1 Yes, notified– 2 Yes, non-notified- 3
A8.	Type of dwelling *	Pucca house with concrete roof – 1 Pucca house with any other kind of roof - 2 Kucha house - 3 Flat in a multi-story apartment– 4
A9.	Would you be willing to participate in the survey for water and sanitation services?	Yes -1 No - 2
A10.	What is your address?	

B. DEMOGRAPHIC PROFILE OF THE RESPONDENT

B1.	What is your name?	.....
B2.	Gender of the respondent*	Male – 1 Female – 2 Other – 3
B3.	What is your age?	18-29 years – 1 30-49 years - 2 50-65 years – 3 65 years & above – 4
B4.	Are you the head of the household?	Yes- 1 No - 2 (IF CODED, 1, GO TO Q. B6)
B5.	What is the name of the Head of household	.....
B6.	What type of ration card does your household have?	APL – 1 BPL – 2 No card – 3
B7.	What is the combined annual income of the household (From all sources)	Less than or equal to Rs.25000 – 1 Rs.25001 to 100000 – 2 Rs.100001 to Rs.5 lakh – 3 Above Rs.5lakh – 4 Do not know – 5
B8.	Is this a rented house?	Yes– 1 No-2

W. DRINKING WATER

W1. **SOURCES & USAGE OF WATER**

W1.1	**Which is the single most used water source for drinking purposes by the household?** **(Single Response)** Refer code list below	
W1.2	**Which is the single most used water source for other purposes by the household?** **(Single Response)** Refer code list below	
W1.3	Is the household dependent on other sources of water for drinking and other purposes?	Yes -1 No -2 (IF CODED 2, GO TO W2.1)
W1.4	Which is/are the other sources of water used for drinking and other purposes?	Multiple Responses, Refer code list below
ASK THE NEXT 3 QUESTIONS ONLY TO THOSE WHO DO NOT USE A FACILITY PROVIDED BY Municipal Corporation(THOSE WHO CODED 9,10,11,12,13 IN Q. W1.1 and W1.2) & THEN GO TO SANITATION SECTION		
W2.1	Why don't you use the source provided by the Municipality? (Multiple Responses)	Poor quality of water – 1 Unreliable supply – 2 Insufficient supply – 3 Municipal water not accessible – 4 Payment of Connection Fee – 5 Other reason –6
		-

Code list for water usage

GOVT SOURCES	Other sources	Private – covered	Open sources -14

		sources -13	
GOV- Household piped connection -1	Private tankers -10	*For example:* *Private covered well, private bore well, private submersible, private tube well, water managed by society (the above examples are for information and should not be displayed in the mobile app)*	*For example:* *Private open well, pond/lake (the above examples are for information and should not be displayed in the mobile app)*
GOV – Informal Pipeline extension to homes -2	Bottled water -11		
GOV – Stand post -3	From neighbors -12		
GOV – Tankers -4			
GOV – Onsite Tank -5			
GOV – Hand pump -6			
GOV – Open Well -7			
GOV – Covered Well -8			
GOV – bore well -9			

W3. INCIDENCE OF WATER SCARCITY

(TO BE ASKED FOR ALL USING GOVT (MUNICIPAL CORPORATION) SOURCES)

W3.1.	During the last 1 year did you face any water scarcity in summer months?	Yes – 1 Continue with Q. W3.2 No – 2 (Auto skip to 4.1)
W3.2.	What was the main source of drinking water used by your household during the period of scarcity? Refer Code list for Water Usage	_____ **SINGLE RESPONSE**
W3.3.	Is the alternate source of drinking water potable?	Yes – 1 No – 2

W4. FEEDBACK ON GOVT STAND POST (PIPED) LOCATED OUTSIDE THE HOUSE (DRINKING & DOMESTIC USES)

Q W4.1TO W4.11 ARE TO BE ASKED ONLY TO THOSE WHO CODED 3in Q. W1.1 or Q.W1.2

W4.1	How far do you travel to collect water?	Less than 200 meters – 1

		200 – 500 meters – 2 500 meters - 1 Kilometers – 3 More than 1Kilometers - 4
W4.2	How long does it take to fetch water for the household? (from house to the source and back, including waiting time, and multiple trips)	Less than 15 min – 1 15- 30 min- 2 30 min – 1 hr. – 3 More than 1 hr. – 4
W3.3	**How many days in a week do you get water from this source?**	**……..**
W4.4	**Normally, on the day of supply how many hours/ minutes of supply do you get from this source?**	**……**
W4.5	**How many buckets of water do you use in one day?**	**_____ buckets**
W4.6 A	**Is the supply of water sufficient to meet the needs of your family?**	**Yes – 1** **No – 2** **IF YES SKIP TO W 4.7**
W4.6 B	**If no, how much do you need more?**	**_____ buckets**
W4.7	Is the water supplied as per a predictable time schedule?	Always – 1 Mostly – 2 Rarely – 3 Never – 4 Do not know – 5
W4.8	How convenient is the timing of water supply?	Very convenient – 1 Somewhat convenient – 2 Not at all convenient – 3 Do not know – 4
W4.9	**During the last 3 months, how many times did you receive water which was dirty?**	**Never – 1** **Less than 3 times – 2** **More than 3 times – 3** **Always – 4**
W4.10	Do you buy water from other sources to meet your family's needs? If yes, how much does your household spend per month?	Yes, Rs._____ don't know - 1 No, Do not buy – 2

W4.11	Do you want a household piped water connection?	Yes – 1 No - 2 Already have – 3 IF 3 SKIP TO W.4.13
W4.12	What is the reason for your household for not having a piped water connection? (TO BE ASKED IF 1 or 2 is coded in Q W4.11)	No supply network available – 1 Not eligible for a connection – 2 Too expensive – 3 Complicated process – 4 Have applied for a connection - 5 Others – 6
W4.13	For emergency use, what has been your experience with Municipal Corporation/ DJB?	Good – 1 Fair – 2 Poor – 3 Not used – 4

W5. FEEDBACK ON DOMESTIC PIPED WATER CONNECTION (Individual and Shared)

Q W5.1TO Q.W5.19 ARE TO BE ASKED WHO CODED 1 and 2 IN Q.W1.1 orQ.W1.2

W5.1	How many household(s) are using this connection?	……
W5.2	**How many days in a week do you get water?**	**……..**
W5.3	**Normally, on the day of the supply how many hours/ minutes do you get water?**	**……..**
W5.4	**How many buckets of water do you use in one day?**	**_____ buckets**
W5.5	**Is the supply of water sufficient to meet the needs of your family?** **If no, how much do you need more?**	**Yes – 1** **No – 2** **_____ buckets** **IF ANSWERED 1 IN A W5.5 SKIP TO Q W5.6**
W5.6	Is the water supplied as per a predictable	Always – 1

	time schedule?	Mostly – 2 Rarely – 3 Never – 4 Do not know – 5
W5.7	How convenient is the timing of water supply?	Very convenient – 1 Somewhat convenient – 2 Not at all convenient – 3 Do not Know – 4
W5.8	**During the last 3 months, how many times did you receive water which was dirty?**	**Never – 1** **Less than 3 times – 2** **More than 3 times – 3** **Always – 4**
W5.9	Do you buy water from other sources to meet your family's needs? If yes, how much does your household spend per month?	Yes, Rs._____ No, don't know - 1 No, do not buy – 2
W5.10	Is there a meter for the water connection?	Yes, functional -1 Yes, non-functional – 2 No meter – 3 Do not know – 4
W5.11	**Do you get a bill for water supply? If yes, how frequently?**	**Yes– 1** **-Once a month** **- Once in two months** **-Once in three months** **-Once in six months** **-Once in a year** **-No regular pattern** **Do not get a bill – 2 (SKIP TO Q.** W6.1**)** **Do not know – 3 (SKIP TO Q.** W6.1**)**

W5.12	Is this billing frequency convenient?	Yes – 1 No - 2 Do not know – 3
W5.13	How is the billed amount calculated?	As per actual meter reading – 1 Fixed amount – 2 Do not know – 3
W5.14	Do you feel there are errors in billing?	Yes, in every bill – 1 Yes, in some bills-2 Never – 3
W5.15	How do you pay your water bills?	DJBCounter – 1 (ASK Q. W5.19) Bank Counter– 2 (ASK Q. W5.19) During campaign/ camp – 3 (ASK Q. W5.196) Online/ internet- 4 (ASK Q. W5.18) Tax Inspector – 5(ASK Q. W5.19) Do not know – 6(ASK Q. W5.19)
W5.16	**Is it convenient to pay bills in terms of timing?**	**Yes -1** **No -2** **Do not know -3**
W5.17	**Is it convenient to pay bills in terms of location?**	**Yes -1** **No -2** **Do not know -3**
W5.18	**Is it convinient to pay bill online?**	**Yes -1** **No -2** **Do not know -3**
W5.19	For emergency use, what has been your experience with Delhi Jal Board Tankers ?	Good – 1 Fair – 2 Poor – 3 Not used – 4

W6. FEEDBACK ON OTHER MUNICIPAL (NON-PIPED) SOURCES LOCATED OUTSIDEHOUSE

Q. W6.1TO Q. W6.12 ARE TO BE ASKED TO ONLY THOSE WHO CODED 4, 5, 6 or 9 IN Q. W1.1 or Q. W1.2

W6.1	How many days in a week do water comes from the non-piped source?	……..
W6.2	**How many days do you fetch water from the non-piped other source in a week?**	**1 day** **2 days** **3 days** **4 days** **5 days** **6 days** **7 days**
W6.3	Why don't you fetch water on all the days? **If number of days water fetched is less than number of days available, what is the reason**	**Not required – 1** **Duration of supply is very less – 2** **Very crowded – 3** **Other reason – 4**
W6.4	**How many buckets of water do you use in one day?**	**_____ buckets**
W6.5	**Is the supply of water sufficient to meet the needs of your household?**	**Yes – 1** **No – 2**
W6.6	How convenient is the timing of water supply?	Very convenient – 1 Somewhat convenient – 2 Not at all convenient – 3 Do not know – 4 Not applicable -5
W6.7	Is the water supplied as per a predictable time schedule?	Always – 1 Mostly – 2 Rarely – 3 Never – 4 Do not know – 5 Not applicable -6
W6.8	How long does it take to fetch water? (from house to the source and back, including waiting time)	Less than 15 mins – 1 15 – 30 mins – 2

		30 mins – 1 hr. – 3 More than 1 hr. – 4
W6.9	**During the last 3 months, how many times did you receive water which was dirty?**	**Never – 1** **Less than 3 times – 2** **More than 3 times – 3** **Always – 4**
W6.10	Do you buy water from other sources to meet your family's needs? If yes, how much does your household spend per month?	Yes, Rs._____ No, Don't know - 1 No, Do not buy – 2
W6.11	Do you want a household piped water connection?	Yes – 1 No - 2 Already have – 3 IF YES SKIP TO W 6.13.
W6.12	What is the reason for your household for not having a piped water connection? (TO BE ASKED IF 1 or 2 is coded in Q W5.11)	No supply network available – 1 Not eligible for a connection – 2 Too expensive – 3 Complicated process – 4 Have applied for connection -5 Others – 6
W6.13	For emergency use, what has been your experience with Delhi Jal Board Tankers?	Good – 1 Fair – 2 Poor – 3 Not used – 4

W7. PROBLEM INCIDENCE AND GRIEVANCE REDRESS

(TO BE ASKED FOR ALL USING GOVT (MUNICIPAL CORPORATION) SOURCES)

W7.1	**During the last 1 year, did you ever lodge a complaint with the** Municipal Corporation/ **Delhi Jal Board on water related problems?**	**Yes – 1 (Go to Q** W7.2**)** **No – 2 (AUTO SKIP TO Q.** W8.1
W7.2	What is the nature of the complaint?	Irregular water supply- 1 Poor quality of water- 2

	(Multiple responses)	False meter reading- 3 Billing errors- 4 Any other- 5 6
W7.3	How did you lodge the complaint?	Through the local Councilor – 1 With the city/dept. Engineer -2 helpline/telephone/ SMS – 3 Through website- 4 Group visit to Municipal Corporation/Delhi Jal Board office –5 NGO/ RWA/CBO - 6 Others –7
W7.4	**Was the complaint attended to?**	**Yes, within 1 day – 1** **Yes, within 2-3 days – 2** **Yes, within 4-7 days – 3** **Yes, after a week – 4** **Not attended – 5 (SKIP TO Q W8.1)**
W7.5	**Within how many days of the complaint was the problem solved?**	**Yes, days……** **No, Not Solved**

W8. SATISFACTION WITH THE WATER SUPPLY SERVICE ((TO BE ASKED FOR ALL USING GOVT (MUNICIPAL CORPORATION) SOURCES)

W8.1	**Are you satisfied with the water supply services?**	**Fully satisfied -1** **Partially satisfied -2** **Not satisfied – 3**

C9. THE MOST IMPORTANT ASPECTS OF SERVICE DELIVERY

((TO BE ASKED FOR ALL USING GOVT (MUNICIPAL CORPORATION) SOURCES)

W9.1	In your opinion, which are the three most important aspects of service delivery? Please refer the card (Maximum three responses)	
	[List of indicators] Regularity of water supply as per stipulated time - 1 Adequacy of water (i.e. water available from this source is enough to meet the needs of the family) -2 Water pressure - 3 Quality of water (i.e. whether water is clear, sweet, no smell) -4 Quality of complaint redress - 5 Convenience of payment – 6 Not Applicable- 7	
W 9.2	How does the water service you are receiving now compare with that of one year back?	Better than before – 1 Same as before – 2 Worse than before – 3 Cannot comment – 4

T. SANITATION

T1.1	**Is there a toilet facility available for your household? If so, what type?**	**Yes, Own toilet at home -1 (ASK Q.T2)** **Yes, shared toilet -2 (ASK Q.T2)** **Yes, Public /community toilet - 3 (ASK T1.2 and Q.T3)** **No toilet facility- 4 (ASK Q.T1.2)**
T1.2	What are your reasons for not having a toilet facility at home?	Too expensive -1 Difficult to clean -2 Insufficient water - 3 Insufficient space -4 Prefer going outside -5 Unaware of how to avail the facility -6 Rented accommodation -7 Others -8
T1.3	If you have an access to a toilet facility, would you like to use it?	Yes -1 No -2

T2	**OWN /SHARED TOILET (Q.T2.1 TO T2.7 ARE TO BE ASKED TO ONLY THOSE WHO CODED 1 or 2 IN Q.T1.1)**

T2.1	How many households use this shared toilet? (TO BE ASKED IF 2 IS CODED IN Q. T1.1)	2 Households 3-4 Households 5-7 Households 7-10 Households 7-10 Households More than 10 households
T2.2.	How is water provided in the toilet?	Tap inside the toilet- 1 Storage inside the toilet- 2 Carry by hand- 3 Not available- 4 Don't know – 5
T2.3	**How many household members use the toilet?**	**All members use - 1 (ASK Q.** T2.6**)** **Some members use – 2 (ASK Q.** T2.4**)** **None of the members use - 3 (ASK Q.** T2.5**)**
T2.4	Which of the family members do not use toilets? (Accept multiple responses)	Elderly male (+60 yrs)- 1 Elderly female (+60 yrs) -2 Adult male (18-59 yrs)-3 Adult female (18-59 yrs)-4 Boy (4-17 yrs)-5 Girl (4-17 yrs)-6
T2.5	What are the reasons for not using the toilet? (Accept multiple responses)	Lack of water -1 No /lack of proper provision for disposal of waste water/- 2 Lack of ventilation/smelly – 3 Toilet will clog if all members use – 4 Not conveniently located/feel unsafe –5 Others- 6
T2.6	**Does the toilet have a flush system?**	**Yes – 1** **No – 2**
T2.7	**Where does the waste water from your toilet go?**	**Municipal Corporation's sewer- 1 [SKIP TO Sewer Line (Section)** T.4**]** **Septic tank- 2 [ASK Q** T2.8**]** **Soak-pit - 3 [ASK Q.** T2.8**]** **Open drain/street - 4 [SKIP TO Q** T5.1**]** **Pit toilet -5 [SKIP TO Q** T2.8**]** **Other- 6 [SKIP TO Q.** T5.1 **Do not know 7 [SKIP TO** T5.1**]**

T2.8	How did you empty/desludge the pit/septic tank when it got filled up?	Municipality service - 1 Private agency licensed by municipality- 2 Private contractor- 3 Local labor- 4 Has not filled up/did not get cleaned- 5 (ASKQ. T5.1) On my own - 6 Do not know- 7
T2.90	What is the frequency of emptying the septic tank/pit? [PROCEED TO Q. T5.1)	Within a year- 1 Once in 2 years- 2 More than 2 years- 3 Don't know - 4

T3	**PUBLIC/ COMMUNITY TOILETS (Q.T3.1 TO Q.T3.9 ARE TO BE ASKED TO ONLY THOSE WHO CODED 3 IN Q.T1.1)**	
T3.1	How far is the public toilet from your house?	Less than 100 meters – 1 100 – 250 meters- 2 250- 500 meters- 3 More than 500 meters- 4
T3.2	How many household members use the toilet?	All members use- 1 (ASK Q.T3.5) Some members use – 2 (ASK Q.T3.3) None of the members use- 3 (ASK Q.T3.4)
T3.3	Which of the family members do not use toilets? (Accept multiple responses)	Elderly male (+60 yrs)- 1 Elderly female (+60 yrs) -2 Adult male (18-59 yrs)-3 Adult female (18-59 yrs)-4 Boy (4-17 yrs)-5 Girl (4-17 yrs)-6 Children below 4 years – 7
T3.4	What are the reasons for household members not using this facility? (Accept multiple responses)	Charge per user is high -1

		Not safe for women/girls- 2 Not open at all times- 3 Waiting time is too long – 4 Not conveniently located – 5 – Lack of ventilation/smelly – 6 Seats are broken – 7 Water supply is insufficient - 8 Other -90
T3.5	How much time do you need to wait for using the toilet in the morning?	Less than 5 min- 1 6-15 min- 2 16-30 min- 3 More than 30 min- 4
T3.6	**Does the toilet have a flush system?**	**Yes – 1** **No – 2**
T3.7	How is water provided in the toilet?	Tap inside the toilet- 1 Storage inside the toilet- 2 Carry by hand- 3 Not available- 4 Do not know – 5
T 3.8.	Is the toilet well maintained?	Always -1 Sometimes- 2 Rarely- 3 Never- 4
T3.9	Does the household spend for the use of the toilet? If so, how much	Yes-1 - Per day (Rs …….) - Fixed amount per month (Rs …….) No, free of charge- 2

T4. SEWER Lines

	FOR ALL RESPONDENTS (Q. T2.7 with Code 1)	
T4.1	**Which agency has provided sewer connection?**	**Delhi Jal Board – 1** **Municipal Council / Municipal Corporation**
T4.2	**Did you pay for Sewer Connection? How much?**	**1. Yes ,…….** **2. No……, _____** **3. Yes, don't know**
T4.3	**Do you have any problem regarding the sewer system?**	**No – 1** **Backflow – 2** **Overflow – 3** **Bad smell – 4** **Other reasons – 5**
T4.4	**During which part of the year do you face problems with the sewer system?**	**Don't face any problem – 1** **Monsoon - 2** **Summer - 3** **Winter – 4**
T4.5	How many months back did you last lodge a complaint?	
T4.6	**Did it get redressed?**	**1. Yes** **2. No**
T4.7	**Rate the complaint redressal**	**____** **Fully Satisfied – 1** **Partially satisifiesSatisfied – 2** **Not satisifies– 3**

T5.	**FOR ALL RESPONDENTS (Q. T2.7 with Code 4)**	
T5.1	**Does your house have a connection to the municipal sewer?**	**Yes - 1[SKIP TO Q.** T6.1**]** **No- 2 [ASK Q.** T5.2**]** **Do not know -3 [ASK Q.** T5.2**]**
T5.2	Is there an underground municipal sewer near your house?	Yes- 1 [ASK T5.3] No- 2 [SKIP TO Q. T6.1] Do not know -3 [SKIP TO Q. T6.1]
T5.3	Why haven't you taken a connection to the sewerage network?	Prefer existing arrangement/no felt need - 1

	(Accept multiple responses)	Do not know how to get the connection- 2 Too expensive- 3 House on rent- 4 Not allowed (illegal settlement) – 5 Not possible to get sewer network extension - 7 Other- 6

T6. SATISFACTION WITH PUBLIC / COMMUNITY TOILETSERVICES (TO BE ASKED IF CODED 1 or 2 IN Q T3.2)

T6.1	**Are you satisfied with the public/community toilet services?**	**Fully satisfied -1** **Partially satisfied -2** **Dissatisfied– 3**

OD. Open Defecation

If any member of the family openly defecates, otherwise skip to next section

OD.1	In case these family members are not using the toilets, then where do they go to defecate?	Railway Line Near Water Body Naala Drain Forest Area Vacant Land/Open Plot Along Road Park Others
OD.1	How much time does it take for defection including travel time?	less than 15 minutes – 1 15-30 minutes – 2 30 – 45 minutes – 3 45 – 60 minutes – 4 more than 60 minutes – 5

TB. Bathing Facility

T1B	Where do the men of the family go for bathing?	Inside the house - 1

		Community toilet - 2 In the open - 3 Shared Bathroom - 4 Other – 5
T2B	Where do the women of the family go for bathing?	Inside the house - 1 Community toilet - 2 In the open - 3 Shared Bathroom - 4 Other – 5
T3B	Is there are covering around the bathing area for women?	Yes – 1 No – 2
T4B	Where does the waste water from bathroom flow out?	Into the drain – 1 Into the sewer - 2 On to the road - 3 Into the nearby water body – 4 Into a Pit - 5 Other - 6

SW. Solid Waste Management

SW.1	Do you have a dustbin in your house?	Yes – 1 No – 2 **[SKIP TO Q. SW.3]**
SW.2	Do you segregate your household waste?	Yes – 1 No - 2
SW.3	Who collects the waste in your area?	Self – 1 Municipality worker – 2 **[SKIP TO Q. H1]**

		Contractor appointed by municipality – 3 **[SKIP TO Q. H1]** Rag picker – 4 **[SKIP TO Q. H1]** Private agency – 5 **[SKIP TO Q. H1]** No system – 6 **[SKIP TO Q. H1]** Other – 7 **[SKIP TO Q. H1]**
SW.4	If the collection is done by self, then where is the waste disposed?	Roadside – 1 Empty plot nearby - 2 Water body nearby - 3 Drain - 4 Dhalao - 5 Other - 6

H1	Is the container in which you store drinking water covered? Do you keep your water covered?	Yes – 1 No - 2
H2	Do you purify your water before drinking it?	No – 1 Boil water - 2 Use chlorine tablets - 3 Use candle filter - 4 Aqua guard - 5 Other - 6
H3	In the last 15 days, has any member of your family encountered malaria, Dengue, Chikungunia, Diarrhea? If yes, who?	Yes, _____ - 1 No – 2

H4	In the last 15 days, has any member of your family encountered diarrhea? If yes, who?	Yes, _____ - 1 No – 2
H5	In the last 15 days, has any member of your family encountered nausea? If yes, who?	Yes, _____ - 1 No – 2
H6	In the last 15 days, has any member of your family encountered respiratory ailments If yes, who?	Yes, _____ - 1 No – 2
H7	In the last 15 days, has any member of your family encountered Tuberculosis? If yes, who?	Yes, _____ - 1 No – 2
H8	How much money have you spend on medical services for these diseases (including doctor's charge, medicines etc.)	……..
H9	According to you what is the prime reason for occurrence of this disease?	Poor quality of water – 1 Open drain - 2 Dirty street - 3 Dirty community toilet - 4 Lack of hygiene awareness - 5 Food - 6 Weather - 7 In contact with other person - 8 Not Applicable – 9
H10	For adults of the house, how many working days were lost due to this disease in last 15 days?	
H11	In the last 15 days, how many days did school going girl child miss due to diarrhea?	
H12	In the last 15 days, how many days did school going boy child miss due to diarrhea?	
H13	Do you wash your hands after defecating?	Yes – 1 No – 2 **[SKIP TO Q. H15]**
H14	If yes, then using which medium?	Only with water - 1 With soil - 2 With ash - 3 With soap - 4 Other – 5
H15	Do you wash hands before eating food?	Yes – 1 No – 2
H16	What do the women in your house use during their menstruations?	Cloth – 2 Sanitary pads -3 Other –4Nothing - 1
H17	Where do you throw their menstrual waste?	Toilet – 1 Dustbin - 2 In the open - 3

		Roadside - 4 Burn it - 5 Down the drain - 5 Other – 6
H18	If there are children under age of 5 years then where do you dispose their feces?	Down the drain - 1 In the open - 2 In a pit/ dustbin/ dhalao - 3 Near water body - 4 In the sewer - 5 Roadside - 6 Other – 7 No child below age of 5 years - 8
H19	How many times did the children under 5 years of age encounter diarrhea in the last 3 months	Zero – 1 Once - 2 Twice - 3 More than twice – 4 No children below 5 years of age - 5

X. FOR ALL RESPONDENTS

F.2	What is your contact number?	Mobile:
		Landline: No number

Y. OBSERVATIONS

G.1	Observations
	…….. ……..

Z. Capture Multi-media information (photo/video/audio)