



Pune  
Municipal  
Corporation



SAshelter  
associates

# RAPID HOUSEHOLD SURVEY ACROSS SLUMS OF PUNE

To Provide Individual Sanitation Through  
SWACH BHARAT MISSION





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## Abbreviations

- SA: Shelter Associates  
PMC: Pune Municipal Corporation  
RIM: Rapid Infrastructure Mapping  
RHS: Rapid Household Survey  
HH: Household  
GIS: Geographic Information System  
CTB: Community Toilet Block  
NUSP: National Urban Sanitation Policy



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## Introduction

Pune, the educational and cultural capital of the state of Maharashtra has a population of 5.04 million (2011 census; it is the ninth most populous city in India) of which 40%, an estimated 14 lakh individuals reside in slums. Pune ranks third in India in the total number of slums and is also referred as “city of slums”. Of the 244 sq km which comes under PMC limits, about 15 sq km, i.e. 6% of the total land is encroached upon by slums, thus creating a serious population density issue which directly or indirectly relates to health, economic, social, and psychological problems; as well as sanitation. According to Pune Municipal Corporation (PMC), around 88,000 people migrated to the city in 2006 of which 45,000 settled in slums. Further, the UNICEF survey in 2011 had said that 58 per cent of the world’s population practicing open defecation lived in India.

A base-line survey done by the Zilla Parishad of Pune records that Open Defecation Free status (ODF) which was 74% in 2012 has increased to 82% in 2015 - courtesy Swachh Bharat Mission/Abhiyaan (SBM) whose mission is to build 25 lakh individual household toilets in 2015-16 and 1.04 crore units by the end of 2019. It is equally important to note that the status of urban slums is not clear in the report. Hence, there comes the need of a robust data which would be used for an effective and an efficient intervention.

Shelter Associates (SA) carried out Rapid Infrastructure Mapping of 313 slums in the year 2013 which covered around 4.9 lakh people spread across informal settlements of Pune. The analysis showed that over 70% of the households either use community toilets or defecate in the open. Open defecation leads to health issues not just for the slum communities but also to the entire neighborhood, apart from defacing public spaces and reducing dignity and safety. Around 45% of community toilets are dirty and of poor quality (and only 6% are clean and of good quality) and therefore, using them also leads to multiple problems:

- **Health Problems:** Urinary Tract Infection, diarrhoea and other illnesses
- **Safety:** These toilets are often surrounded by garbage, faecal matter of children under age of five who normally defecate outside the community toilets, rats etc.
- **Dignity and Convenience:** Women use toilets either early in the morning or late in the evening for some privacy and to avoid being harassed and teased, and eat/drink less in the evenings leading to digestive tract and other health problems
- **For Municipal Corporation:** Building / maintaining community toilets is a recurring financial and maintenance burden

This report captures the analysed data gathered from 107 slums of Pune and looks at viable solutions to the sanitation problems based on the existing infrastructure and aspirations of the communities.



## 1.1 Purpose of the Project

The Swacch Bharat Mission (SBM), launched on 2nd October 2014 by the Prime Minister, is being implemented by the Ministry of Urban Development (MoUD) for urban India. **Eliminating open defecation** is one of the key objectives of SBM, and **constructing household toilets** is a key component to help achieve this.

Shelter Associates has been providing housing and sanitation to the urban poor for over 23 years. Since 2010, individual sanitation has been delivered in a structured and focused manner in vulnerable slums. The intervention of building household toilets initiated with an extensive data collection and analysis at each stage. This began at slum level to identify vulnerabilities, before narrowing down to the individual household and family members. This collected data, formed the foundation of a pragmatic approach ensuring feasibility of interventions as well as efficient and optimum use of funds. For the effective implementation of Individual Toilet program under SBM, SA is helping PMC (Pune Municipal Corporation) to plan the program using factual data collected through Rapid Household Surveys and mapping existing infrastructure.

The concept of “One Home One Toilet” of SA has proved to be very sustainable, replicable and scalable across cities where the NGO has worked and built over **5000 individual toilets** to date. Shelter has developed this model, which is more scientific and ensures the exact intervention plan. The model involves community members, the municipal corporation, local councillors to have an effective intervention. SA and PMC had provided individual toilets in similar way in a Partnership Model by procuring toilet construction material and mobilised beneficiaries to build the toilet by paying/bearing beneficiary share. PMC has adopted the same model to provide individual sanitation in the City under Swach Bharat Mission.

The PMC decided to target slums which had a higher incidence of open defecation and set target for reaching out to 28000 families by October 2017. In order to achieve this, they shortlisted 107 slums on the basis of SA’s rapid slum data which were then taken up for Rapid Household Survey to target families who lacked access to individual sanitation.

## 1.2 Toilet Situation across Pune City as per Rapid Infrastructure Mapping (RIM) of slum in Pune City (2013) By Shelter Associates:

Shelter had carried out Rapid Infrastructure Mapping of 313 eligible slums which became the basis for planning Rapid Household Survey (RHS). Some of the analysed results are shown in Table 1 below:

**Table1: Toilet Situation across Pune City**

Total No. of Surveyed Slums	313
Approx. No. of Households	1,06,700
Slums with Open Defecation	86 (27%)
Approx. Households with Individual toilet	30,000 (28%)
Approx. Households using CTB / OD	76,000 (72%)
Total No. of CTBs in Pune	682
Total No. of CTB Seats in Pune	8,548
No. of Functioning CTB Seats	7,741 (91%)
Average Person to Toilet Seat Ratio	49
Full Drainage Coverage	91%
No. of Households that can get Individual Toilets	61,000





In cities, community toilets have been the only solution provided across slums which has proved to be very capital intensive and a perpetual maintenance problem for the wards.

**Table 2: Cost comparison between Community Toilet and Household Toilet**

Community Toilet		Household Toilet	
No. of "Seats" (10 families/seat)	10	Number of Toilets	100
Cost per "Seat"	Rs. 2 Lacs	Cost per Toilet	Rs. 18,000-30,000*
Total Building Cost	Rs. 20 Lacs	Total Building Cost	Rs 18-30 Lacs
Maintenance Cost p.a.	Rs. 2-4 Lacs	Maint. (for govt.) **	Zero
Cost Over 7 Years	Rs. 34-48 Lacs	Cost Over 7 Years	Rs. 18-30 Lacs

\*Depending on regular sewer connected or bio-toilets

\*\* Family maintains toilet as it's a private asset

The above table depicts the cost-effectiveness of the model created by Shelter Associates. This report highlights through the rapid infrastructure mapping done by SA that open defecation is prevalent in 27% of the total 313 surveyed slums. Besides, the average person to toilet seat ratio of CTB is 49. However on the positive side, over 91% of Pune slums have sewerage networks. Hence, it is feasible to provide individual toilets to the households by referring to the data gathered by SA.

### 1.3 Importance of Rapid Household Survey (RHS)

Along with RIM data, for providing individual sanitation household level (Rapid Household Survey) data was also essential to assess the situation in Pune slums. The importance of spatial data becomes a pre-requisite for determining the families who need to be targeted for individual sanitation. It was observed that no data was available about the slums for the city of Pune and whatever was made available, was old data as many structural and infrastructure changes were observed on field. This necessitated the need for accurate data of the slums to plan and implement the project.

### 1.4 Selection of Slums:

As SBM aims for an "Open Defecation free India", we have prioritised selection of slums mainly on the prevalent sanitation situation in a particular slum. From SA's Rapid Infrastructure Mapping data, the slums were identified in the following manner:

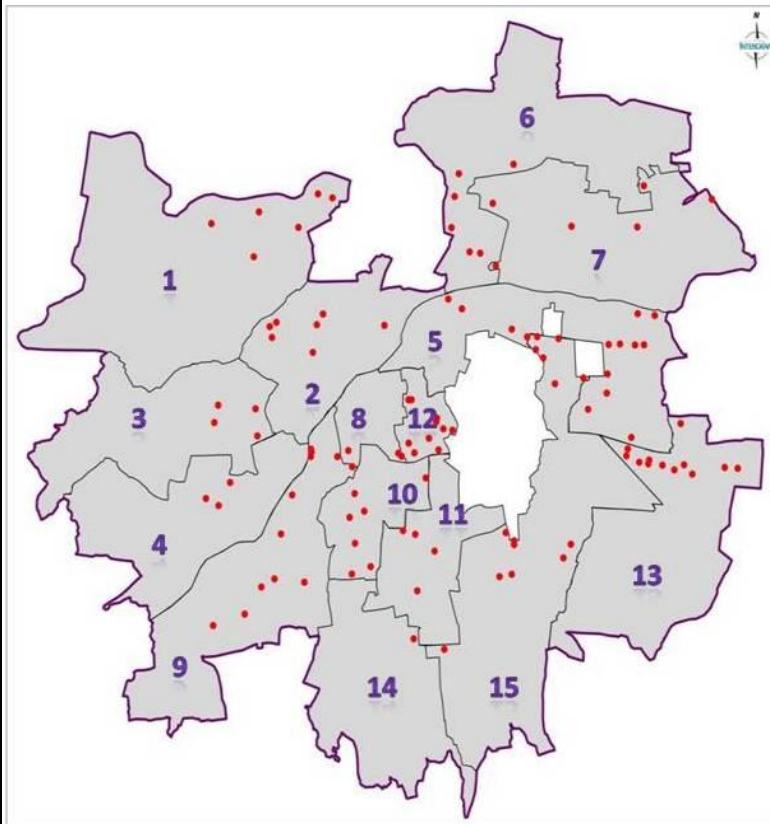
- 1) Selection of slums was mandatory in each ward in Pune City for better sanitation
- 2) Where there was a higher incidence of open defecation
- 3) Where situation of Community Toilet was poor and toilet seat to person ratio exceeded the PMC norm of 1:50.

With this exercise SA in coordination with the PMC came up with the list of 107 slums which would be surveyed covering all 15 wards as given in the annexure 1.



This Survey covered 46,644 households across these 107 slums. Out of 46,644 households 38,596 households were occupied, remaining 17.25% of the total households were either locked, broken, double house, under construction or were permanently locked.

**Table 3: Ward wise Number of selected Slums for RHS**



● Slums selected under SBM across Pune City

Ward No	Ward Name	Slums Selected
1	Aundh	6
2	Ghole Road	7
3	Kothrud	4
4	Warje	3
5	Dhole Patil	14
6	Yerwada	6
7	Nagar Road	6
8	Kasba-Vishrambaug Wada	3
9	Tilak Road	12
10	Sahakar nagar	7
11	Bibwewadi	3
12	Bhawani Peth	9
13	Hadapsar	12
14	Dhankawdi	1
15	Kondhwa	14
15	<b>Total</b>	<b>107</b>

## Methodology

Rapid Household Survey was carried out in two phases viz, Structure mapping and Household Survey. The entire process was carried out from November 2015-February 2016.

### 2.1 On field Structure Mapping & Numbering:



*Numbering households*



*Household Mapping on slum map*

The process included mapping every physical structure along with open space & infrastructure including the drainage line, gutters for waste water, chambers along the drainage line, facility for water supply, solid waste management, etc (Already done by SA for Pune City during RIM) and numbering of every house using Auto-cad/Google maps in the settlement. Immediately after the mapping and numbering exercise, a Rapid Household Survey (RHS) was carried out, the details of which is described in the next section.

### 2.2 Rapid Household Survey using Tablets:

To understand the details of the households in the slums, we conducted a RHS covering each and every household in the particular slum. Shelter has developed a quicker, smarter process of conducting a quick household level survey to assess the sanitation situation in every household in a slum. This survey was undertaken using TABLETS with an Android application developed by Shelter Associates.



*Collecting information on Tablets*

A short questionnaire is run on every household which captures the following information:

1. Name of family head
2. House no.
3. Type of occupancy (occupied, locked, broken etc.)
4. Type of structure (*kutchha*, *semi-pucca*, *pucca*)
5. House area in sq. ft.
6. No. of family members
7. Ownership status (Owner / Tenant)
8. Current place of defecation
9. Individual toilet connection
10. Type of water connection
11. Waste collection facility
12. Is the family interested in getting an individual toilet? (with reasons)
13. Type of toilet preference

### ***2.3 Bringing together Map and Data on GIS platform:***

Once the data for all the households was collected, the map and data were brought on to the GIS platform which helped in generating the required collective information of the slum such as

- number of houses with or without individual toilet,
- number of houses with individual water connections,
- number of households interested in having an individual toilet,
- sewerage network,
- location of community toilet blocks and open defecation area in slum, etc.

This also enabled us in studying existing sewerage networks and understanding its capacity and associated problems. In addition, this data can also be used to plan other interventions like workshops, door to door waste collection and other IEC activities in a systematic manner in the settlement by the urban local body to plan a targeted intervention program for these households.



## Findings

### City wide analysis

**Table 4: Overview of Sanitation of Pune City (107 Slums)**

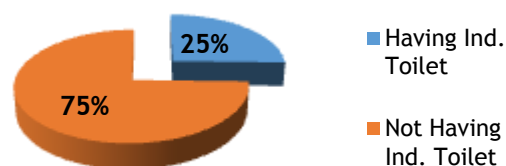
Total No. of Surveyed Slums	107	
No. of Households	46,644	
No. of Occupied Households	38,596	83%
No. of slums practicing Open Defecation	50	47%
No. of Households with Individual toilet	9,804	25%
No. of Households using CTB / OD (excluding unoccupied HH)	28,792	75%
Total No. Of Seats in Used CTBs	3,227	
No. of Functioning CTB Seats	2,845	88%
Toilet Seat to Person Ratio*	1:51	
NUSP Category	Black	
No. of HHs that are interested in having an Individual Toilet	20,222	70%

\* There is no CTB in 23 slums out of 107. Thus the ratio is calculated for remaining 84 slums only.

#### Key Facts:

- About 1,43,960 people, or 28,792 households use community toilets or defecate in the open
- 47% of the slums defecate in the open
- Building **20,222 individual household toilets** will move Pune towards open defecation free city and vastly improve sanitation within PMC.
- This will in turn reduce the 'toilet seat to person ratio' to **1:15** persons.
- The main reasons for **8,570 HHs** showing unwillingness to build individual toilet during survey were small size of house, tenant issue, drainage related issues, etc.

**Chart 1A: Status of Individual Toilet in the Selected Slums from Pune**



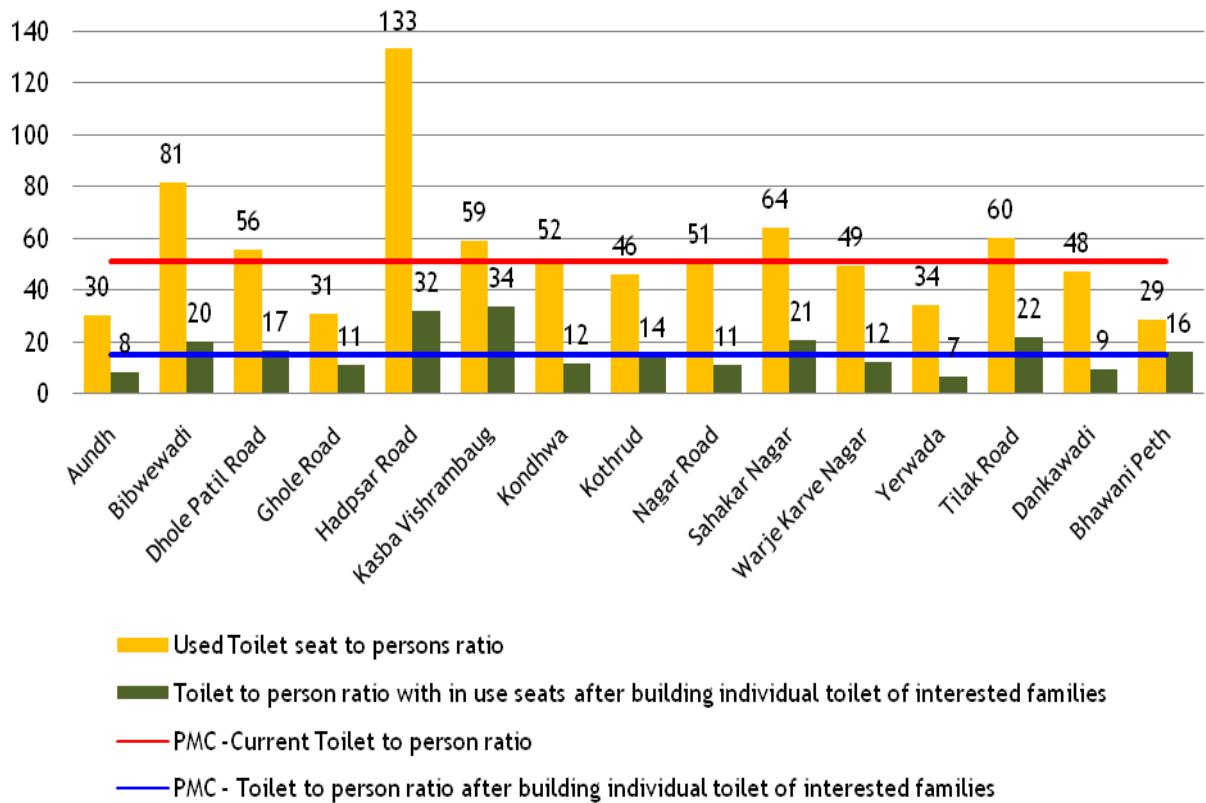
**Table 4: Ward wise summary**

Name of Ward	No. of Slums covered	No. of Slums with OD	Total No. of HHs	No. of occupied HHs	% of Individual Toilet	No. of HHs with No Ind. Toilet	No. of HH Interested in building Ind. Toilet (%)	Toilet seat to person ratio
Aundh	6	2	2362	2000	12	1761	1282 (73%)	1:30
Bibwewadi	3	2	2738	2436	10	2200	1659 (75%)	1:81
Dhole Patil Road	14	11	3740	2949	18	2417	1680 (70%)	1:56
Ghole Road	7	1	3215	2618	25	1975	1262 (64%)	1:31
Hadpsar Road	12	9	4508	3697	18	3034	2305 (76%)	1:133
Kasba Vishrambaug Kondhwa	3	1	768	670	1	660	284 (43%)	1:59
Kothrud	14	8	4476	3386	32	2308	1786 (77%)	1:52
Nagar Road	4	1	4255	3775	45	2061	1421 (69%)	1:46
Sahakar Nagar	6	3	2203	1741	31	1208	940 (78%)	1:51
Warje Karve Nagar	7	2	5215	4405	22	3436	2324 (68%)	1:64
Yerwada	3	3	3205	2678	23	2056	1544 (75%)	1:49
Tilak Road	6	1	3604	3116	52	1502	1209 (80%)	1:34
Dhankawadi	12	5	4007	3163	22	2480	1563 (63%)	1:60
Bhawani Peth	1	1	796	705	14	608	488 (80%)	1:48
	9	0	1552	1257	14	1086	475 (44%)	1:29

The 'toilet seat to person ratio' exceeds the PMC norm of 1:50

From the above table, 7 wards out of 15 showed high ratio. It is exceptionally high i.e. 2.6 times more than the norms in Hadapsar Ward (1:133) while it is the lowest in Bhawani Peth (1:29). 10 wards out of 15 show individual toilet percentage less than 25%. Thus considering 'high ratio' and 'less individual toilet percentage', there is an urgent need of implementing individual sanitation. It is also a challenge to convert the OD status (11 slums out of 14) of Dhole Patil Road Ward to nil, whereas Bhawani Peth Ward presents with a nil status of open defecation. This may be due to the fact that Bhawani peth is a densely populated area in the city having no spaces for open defecation. But it was noted during the survey, that children defecated in the chambers as well as along the Nalas.

**Chart 1B: Status of Toilet Seat to Person Ratio Before and After Providing Individual Toilets in Pune City**

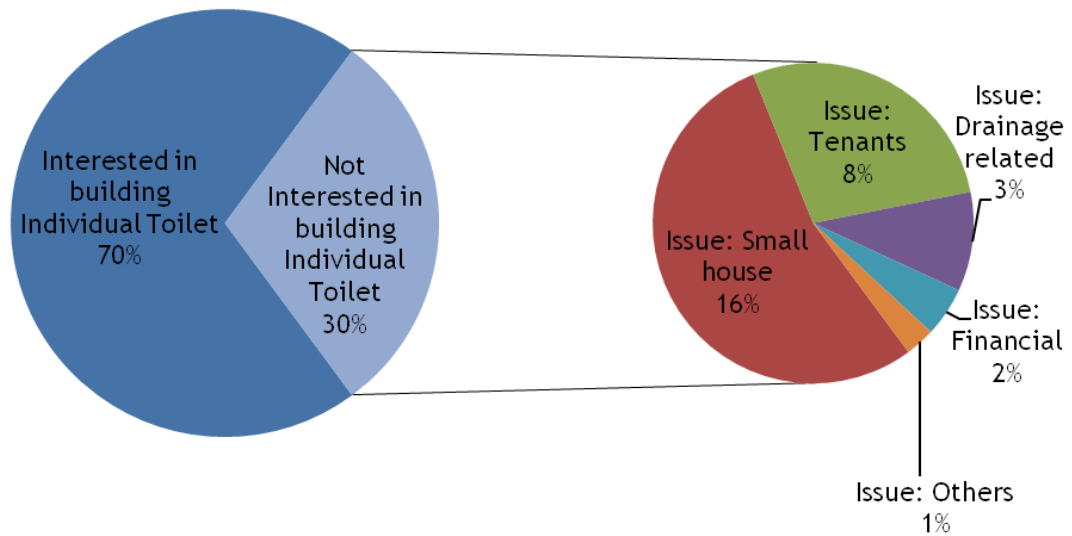


The above information is gathered through a Rapid Infrastructural Mapping of the Community Toilet Blocks (CTBs) in 107 slums. The above bar depicted in yellow indicates the current toilet seat to person ratio as is seen in the Community Toilet Blocks across the wards of the city. The green bar indicates how the ratio will reduce if toilets are built in all the interested households across the city. It clearly highlights that the toilet seat to persons ratio declines after implementing the project 'One Home One Toilet' wherein the figure drops down to 1:15 from the current status of 1:51, thus reducing the burden on the CTB.

Also depending on the situation in each slum, CTB seats can be distributed to the families who could not build individual toilets. Therefore, in such cases the CTB can start functioning more as a shared toilet. Lastly, if most households in a slum that has multiple CTB's gets access to an individual toilet, then the number of CTBs in the slum can be reduced and those spaces can be converted to amenity halls or a recreation space for Community.

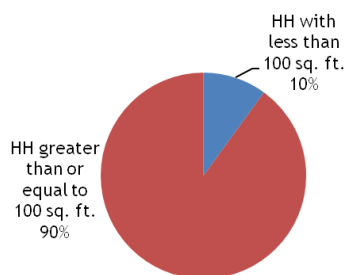


**Chart 2: Households interested in Individual toilets and analysis of the reasons for not building the toilets**

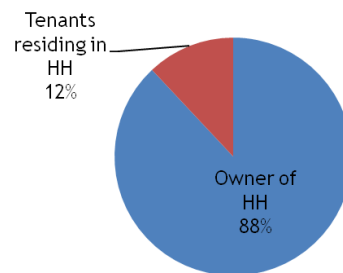


As per chart 2, almost 70% of the households across different surveyed settlements of Pune are interested in building an individual toilet in their homes which can be immediately targeted. Some of the main reasons for the remaining 30% who are not interested in having an individual toilet are small size of house (16%), tenant issue or indecisiveness (8%), others (3%) complaining about drainage related issues and still others stating financial and other constraints (3%).

**Chart 3:- Household size in sq.ft.**



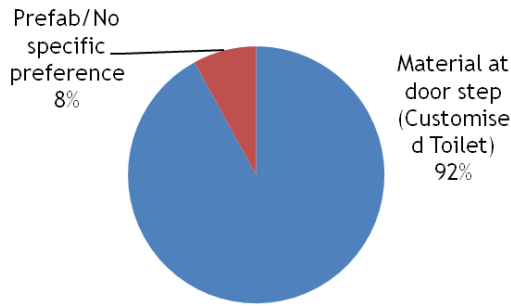
**Chart 4:- Ownership Status of Surveyed Households**



However, if the statistics related to ownership status and house area from survey data are studied the facts are explained in the charts. Chart 3 above shows that only 10% households are really small in size. About the ownership status also it reveals from chart 4 that 88% families are owners while only 12% are tenants.



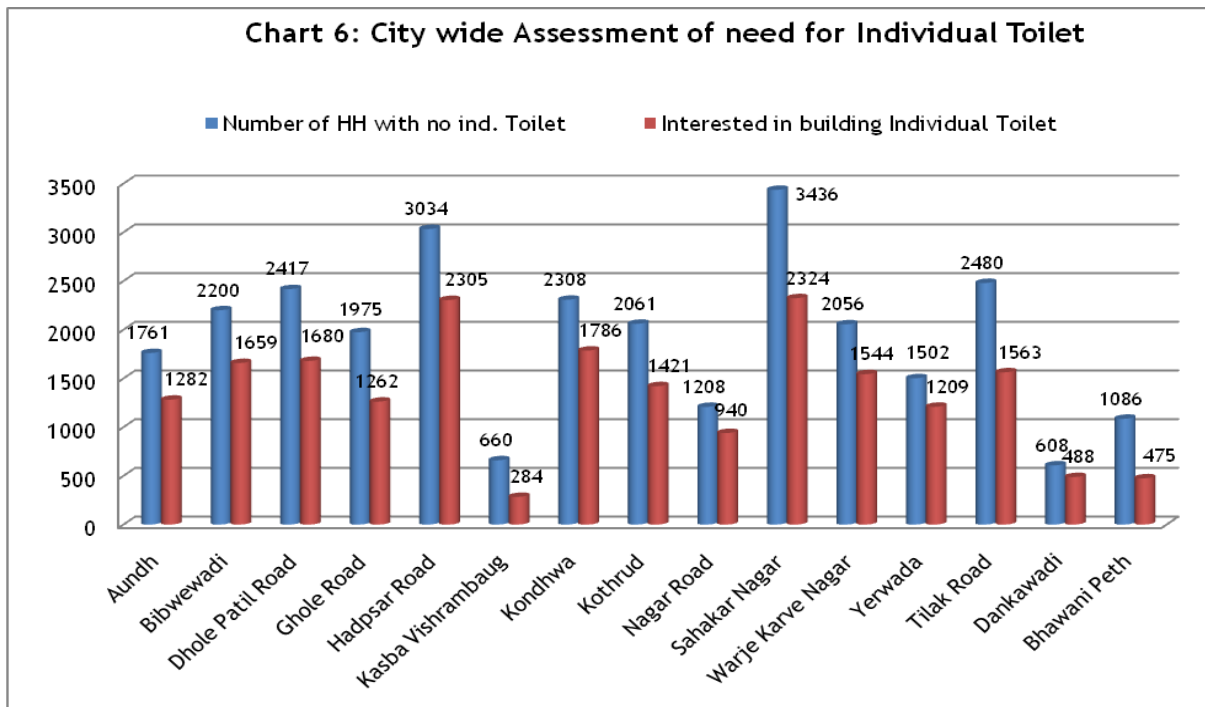
**Chart 5: Type of Toilet Preference**



One of the questions asked was related to the Type of Toilet that would be preferred by the people. About 92% of families reported that they would prefer to build the brick and cement toilet and not the readymade prefab toilets ones. The constructed toilets can be customised to the families’ needs to suit the structure of house. From the ground experience, it was also found that people prefer to get their houses renovated along with the process of toilet construction. Hence, prefab toilets have got very less acceptance as compared to its alternative i.e. the brick and cement toilets.

The bar graph in blue bars show number of households not having individual toilet and bars in orange are those who are interested in building.

**Chart 6: City wide Assessment of need for Individual Toilet**

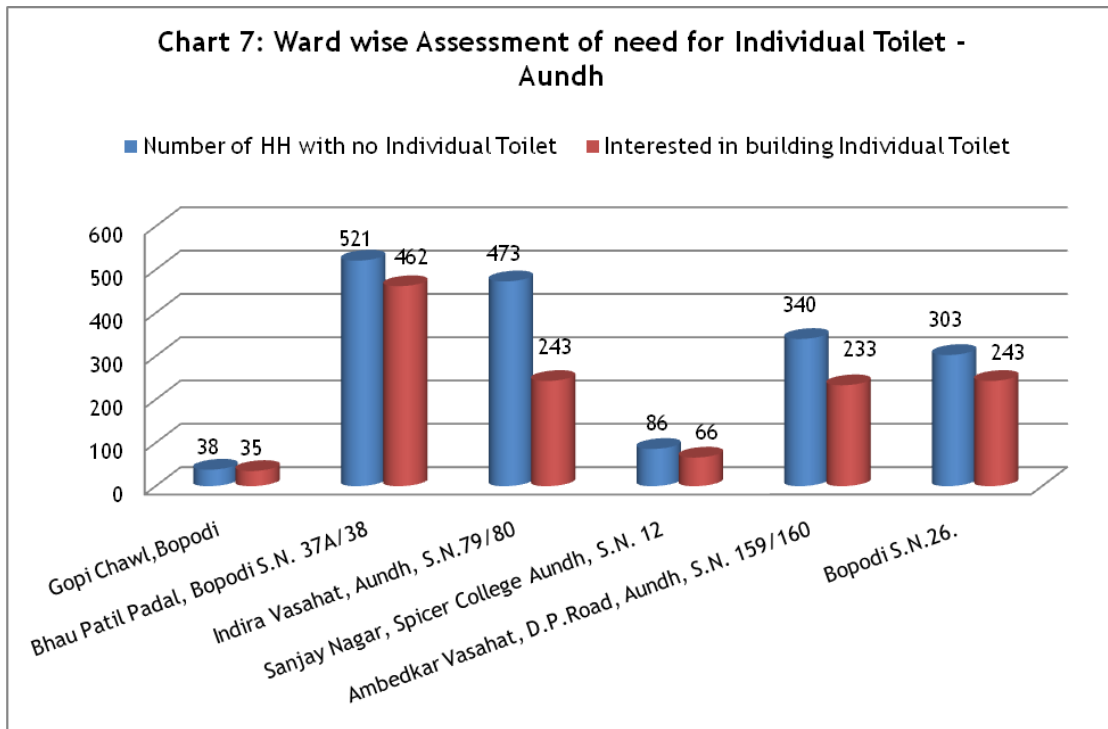


From the above Chart it can be noted that on an average 70% (20,222) families are willing to build individual toilet. It is also observed that the difference between families without individual toilet and families interested in building one is highest in Sahakar Nagar ward (1,112HH) followed by Tilak Road ward (917 HH). Reasons of unwillingness to build individual toilet are explained in chart 2.

## Zone Wise analysis

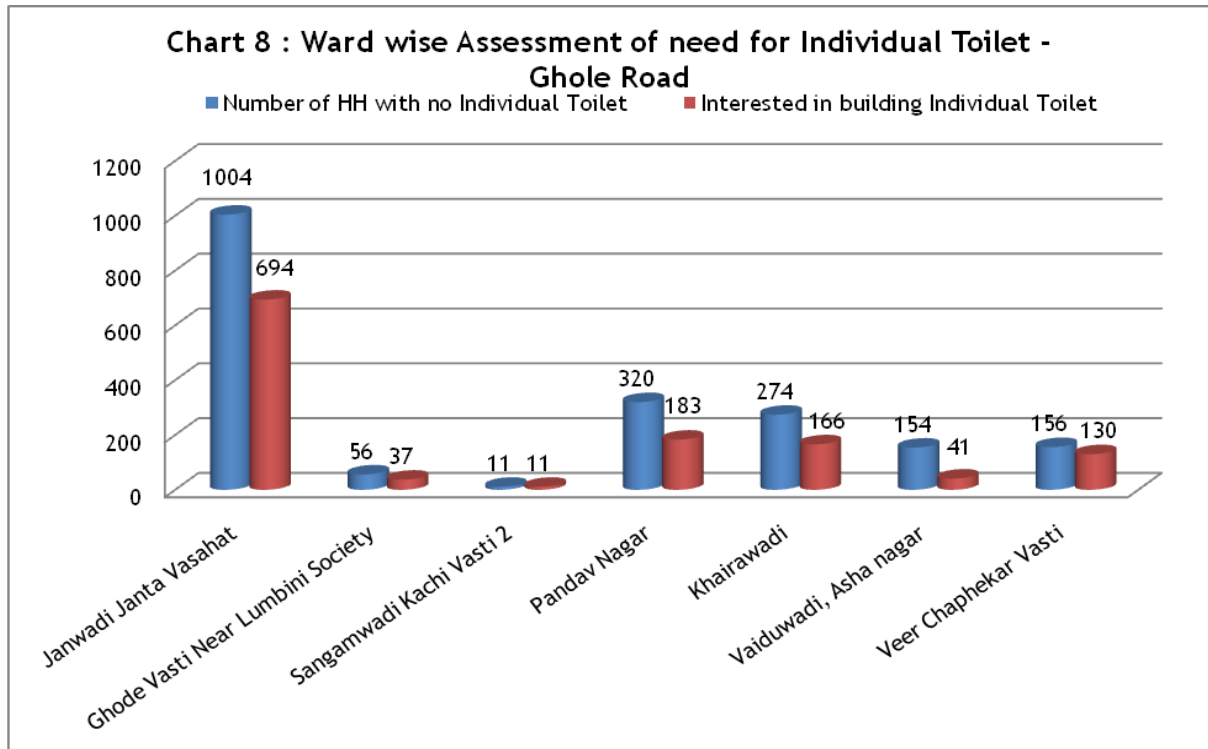
To facilitate better planning given below are the ward wise graphs showing the assessment of need for individual toilet in each slum.

### Zone I: Aundh Ward



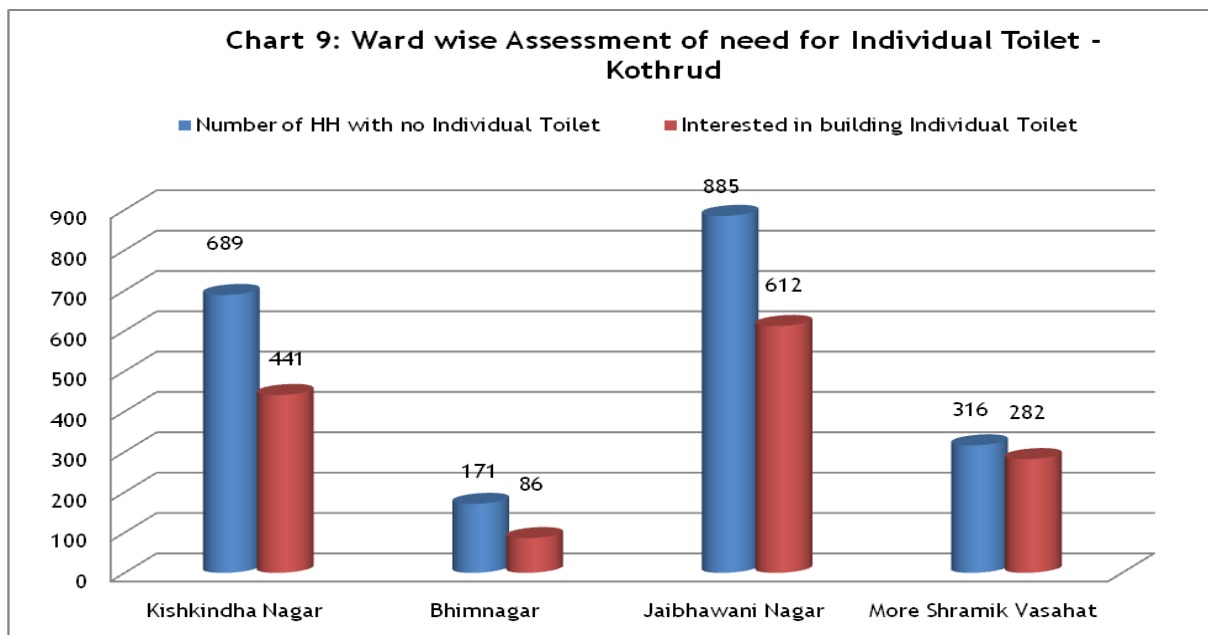
In Gopi Chawl, Bopodi and Bhau Patil Padal, 92% and 89% of households respectively showed interest in building toilets, whereas, only 51% of households made a demand for individual toilet in Indira Vasahat.

## Zone I: Ghole Road Ward



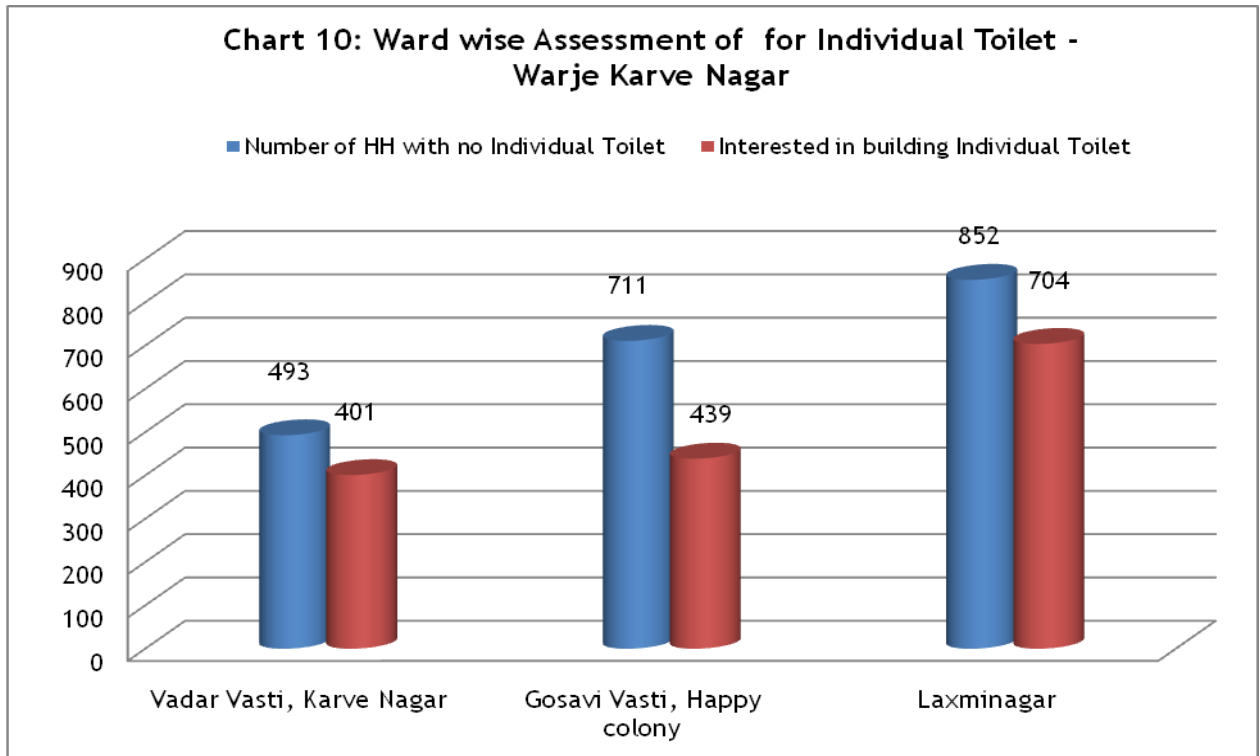
83% households of Veer Chaphekar Vasti have preferred to get individual toilets. Whereas the lowest demand (26%) has been shown by the households of Vaiduwadi Asha nagar.

## Zone I: Kothrud Ward



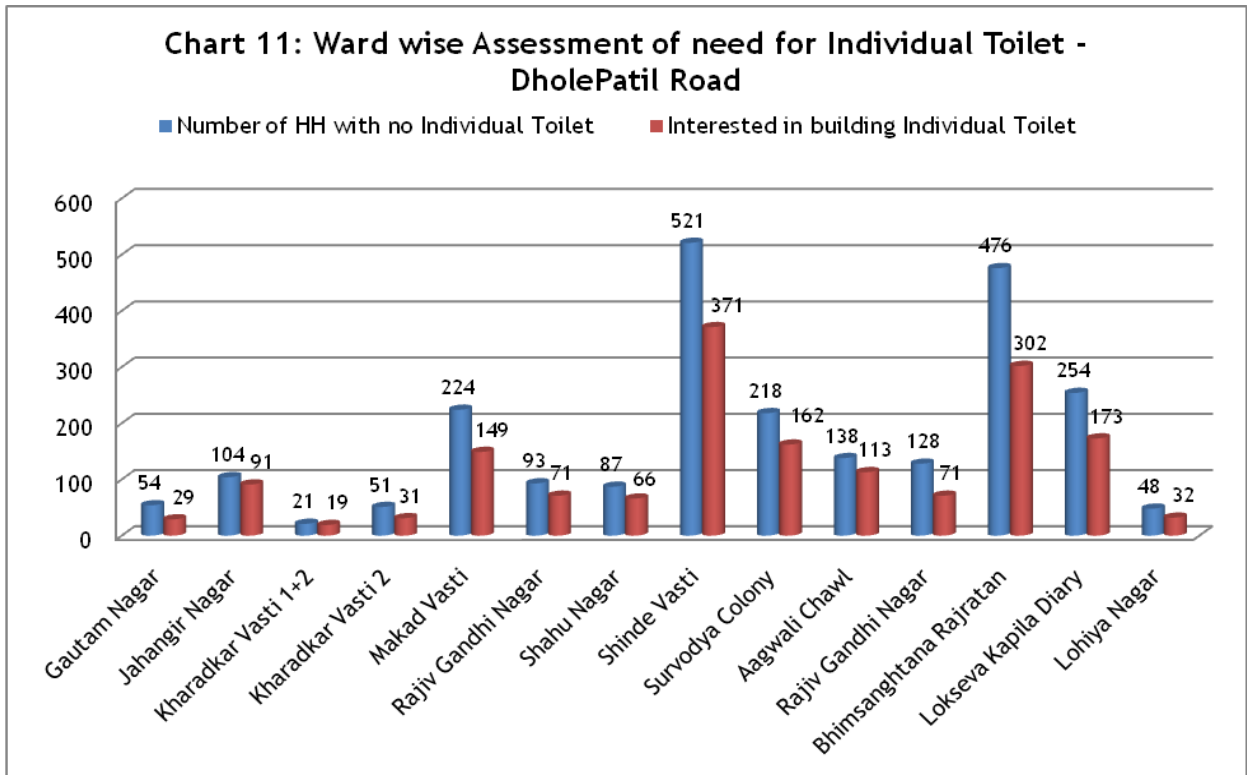
From the kothrud ward, 89% households from More Shramik Vasahat, Paud Phata have expressed their desire to build the toilets. In comparatively bigger slums like Jaibhawani Nagar and Kishkindha Nagar, even though percentage of interested households ranges between 60%-70%, these can be still targeted phase wise.

## Zone I: Warje - Karve Nagar Ward



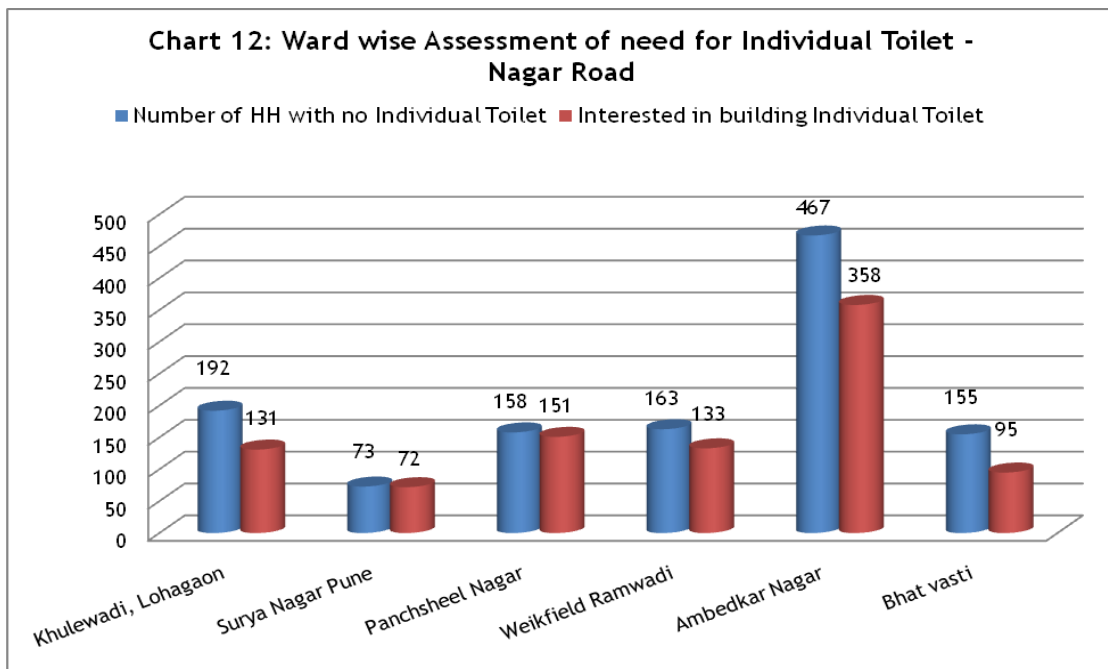
Here, both Vadar Vasti and Laxminagar have got a response of 81% and 83% respectively to build the toilets, whereas the households from Gosavi vasti have given a response of only 62%.

## Zone II: Dhole Patil Road Ward



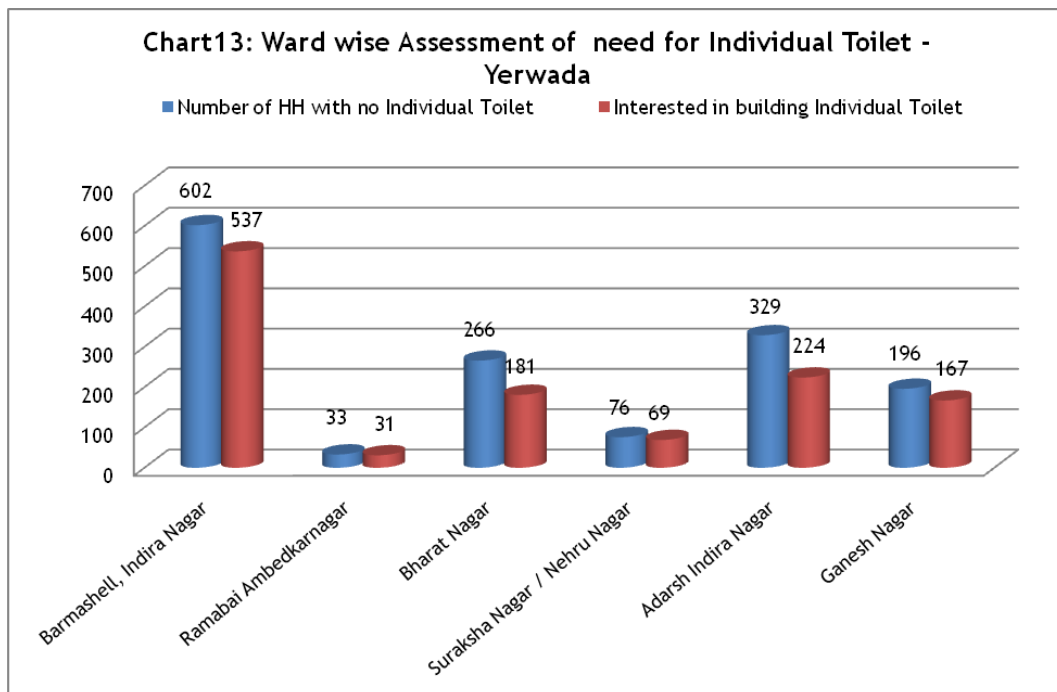
In Dhole Patil Road ward, 12 slums out of 14 practice open defecation. The smaller slums can be first targeted to improve sanitation situation. In comparatively bigger slums like Shinde Vasti and Bhimsanghatna Rajratan, even though percentage of interested households ranges between 65%-75%, these can be still targeted phase wise.

## Zone II: Nagar Road Ward



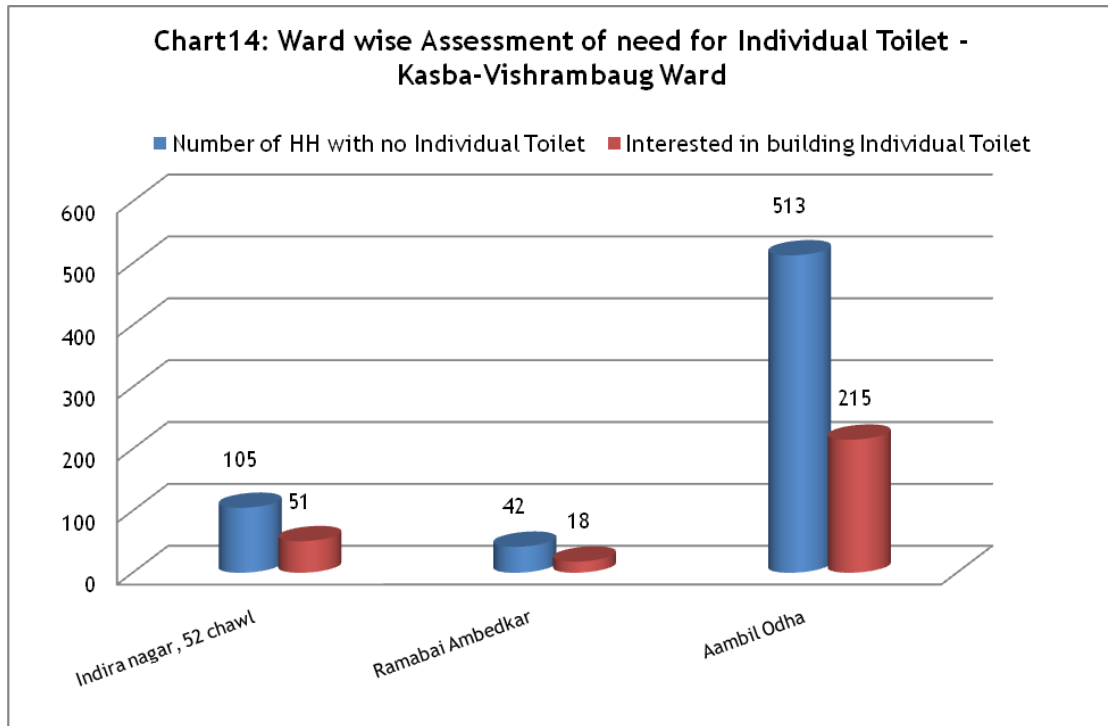
Leaving beside Bhat Vasti, Ambedkar nagar, and Khuhlewadi which show the responses of 61%, 76%, 68% respectively, rest other Communities viz. Suryanagar (99%), Panchsheel nagar (96%), and Weikfield, Ramwadi (82%) have showed high level of interest to build individual toilet.

## Zone II: Yerwada Ward



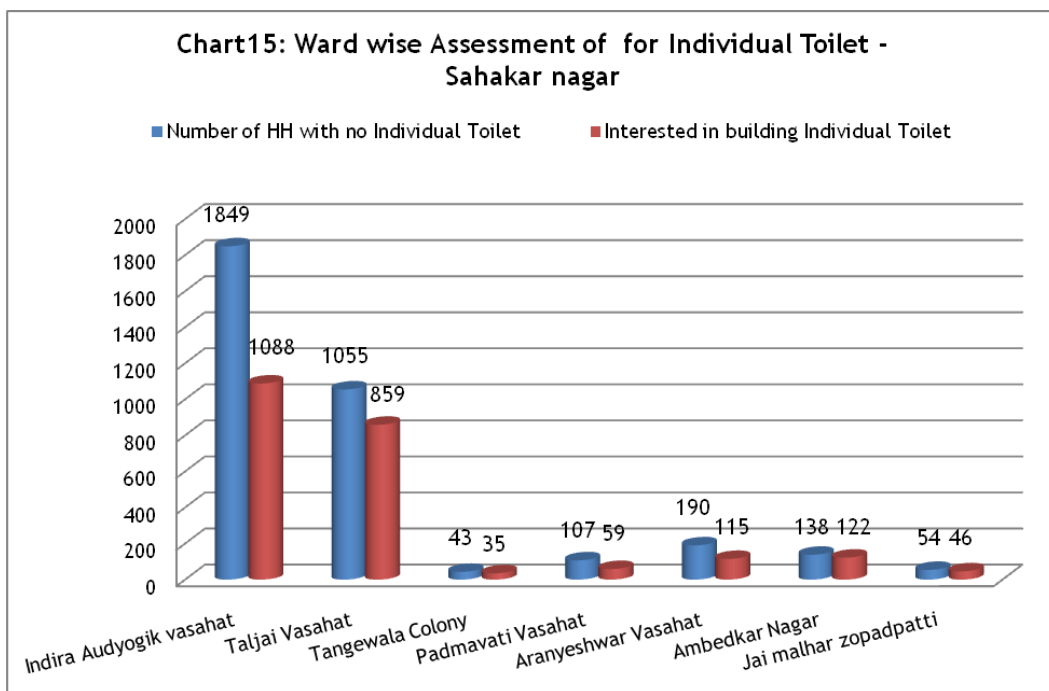
Barmashell (89%) and Ganesh Nagar (85%) depict a strong picture which is eligible for getting toilets built-up.

### Zone III: Kasba-Vishrambaug Wada ward



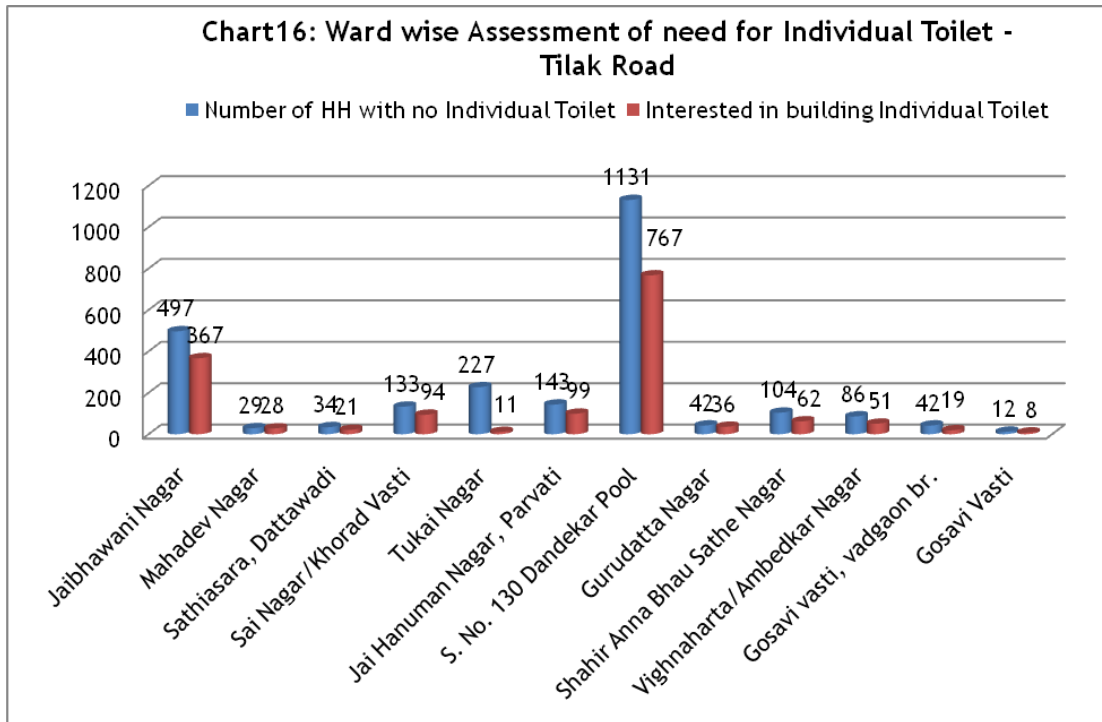
Here, all three slums - Indira Nagar (49%), Ramabai Ambedkar Nagar (43%), and Aambhil Odha (42%) showed low response to build individual toilets as compared to other wards.

### Zone III: Sahakar Nagar Ward



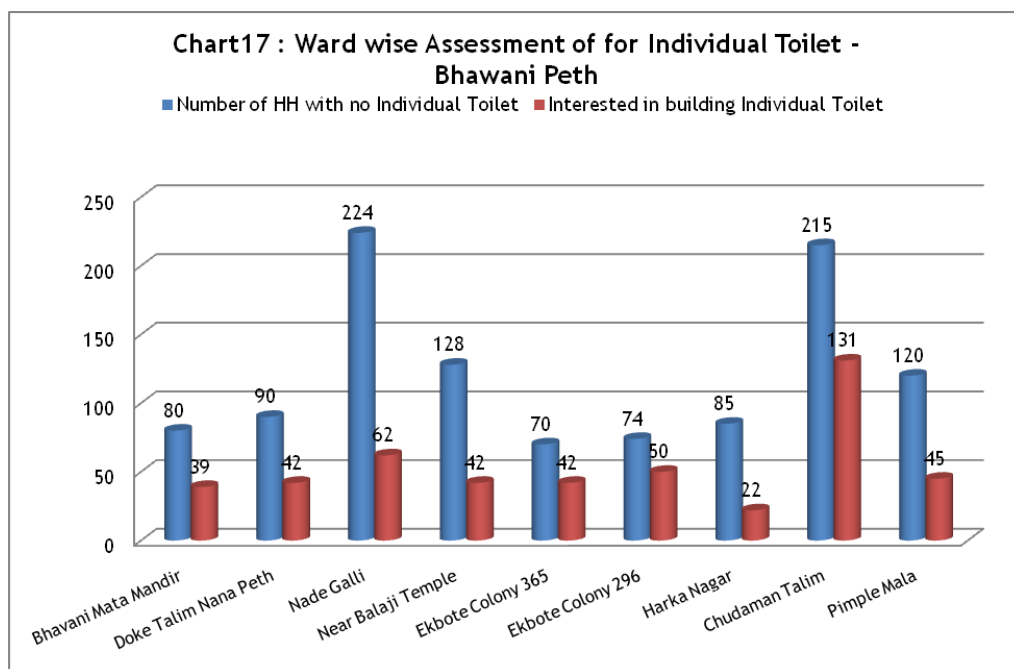
Here, Tangewala colony shows a response of 81% and the lowest response is shown by Indira Audyogik Vasahat (59%) to build the toilets. Indira Audyogik Vasahat and Taljai Vasahat being large slums also need attention to improve overall sanitation of Sahakar Nagar Ward.

### Zone III: Tilak Road Ward



The lowest response of 48% is seen in Tukai Nagar to build the individual toilets whereas Jaibhawani Nagar and 130 Dandekar Pool showed 74% and 68% interest respectively.

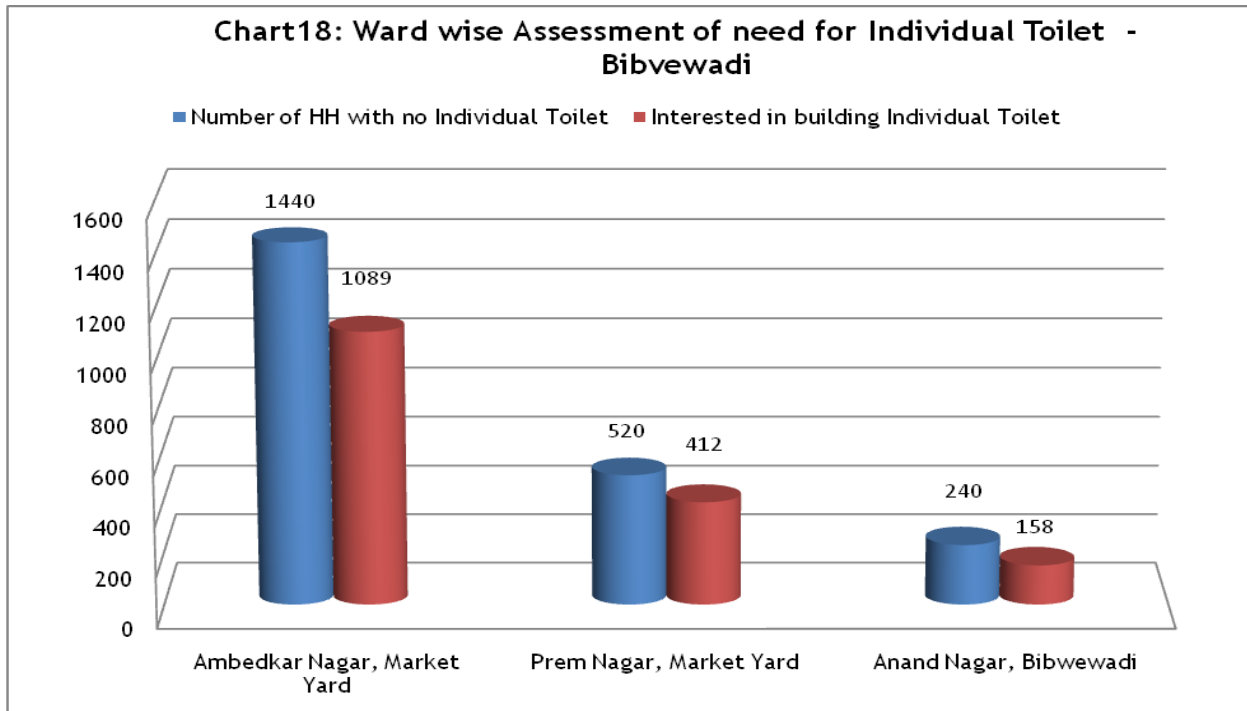
### Zone III: Bhawani Peth Ward



In Bhawani Peth Ward overall response to build individual toilet is low. In Ekbote colony 296 the response to build toilets is 68% while the lowest response to build toilets is in Harka Nagar (26%). One of the major reasons for low response is these settlements are densely located.

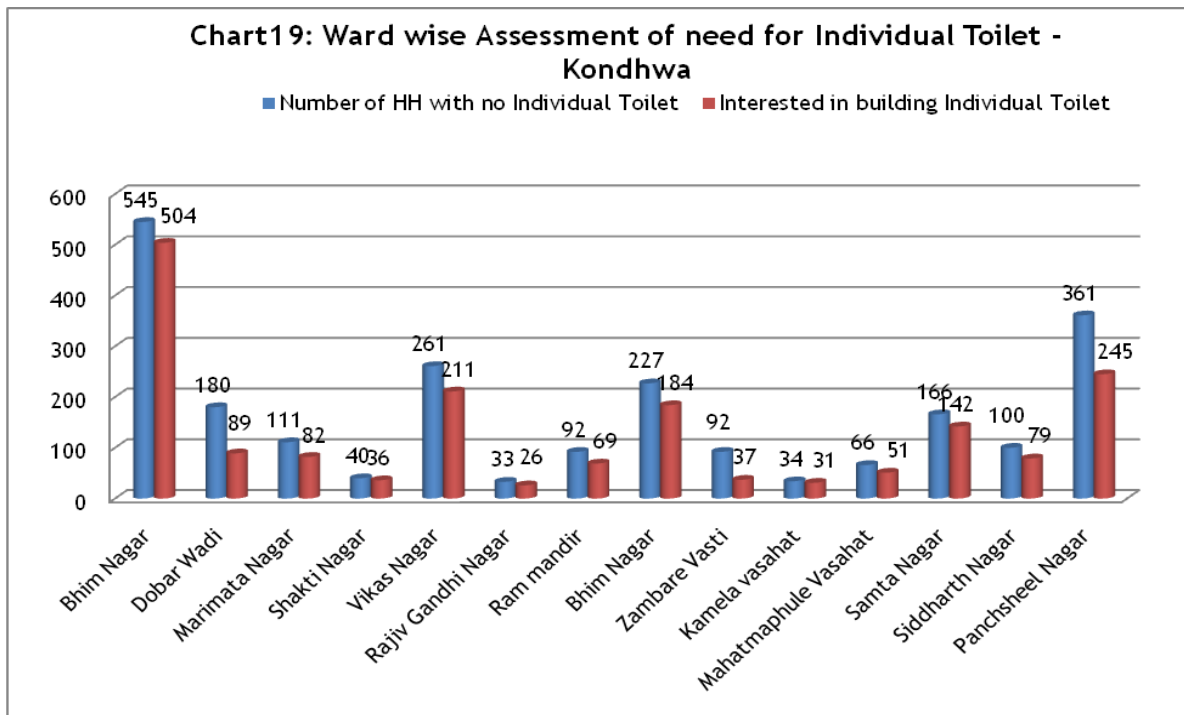


### Zone IV: Bibwewadi Ward



In Ambedkar Nagar, Prem Nagar, and Anand Nagar, 76%, 79%, and 66% have expressed the wish to build toilets respectively.

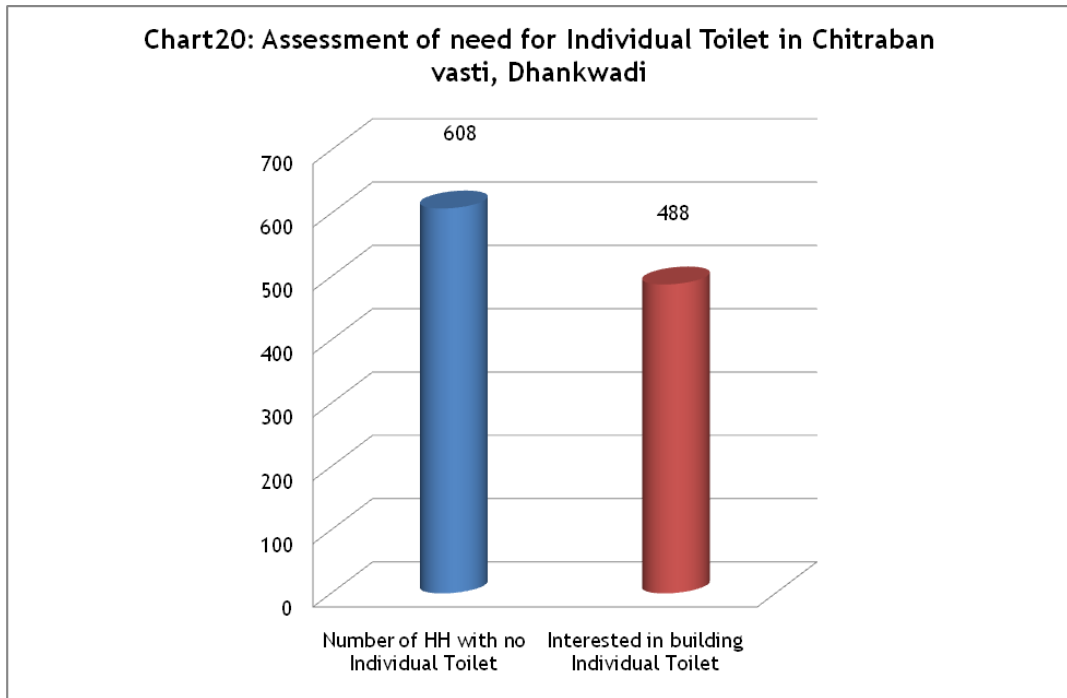
### Zone IV: Kondhwa Ward



Bhim Nagar, Ghorpadi, Vikas Nagar and Samta Nagar showed vast response of 92%, 81%, and 86% to build the toilets.

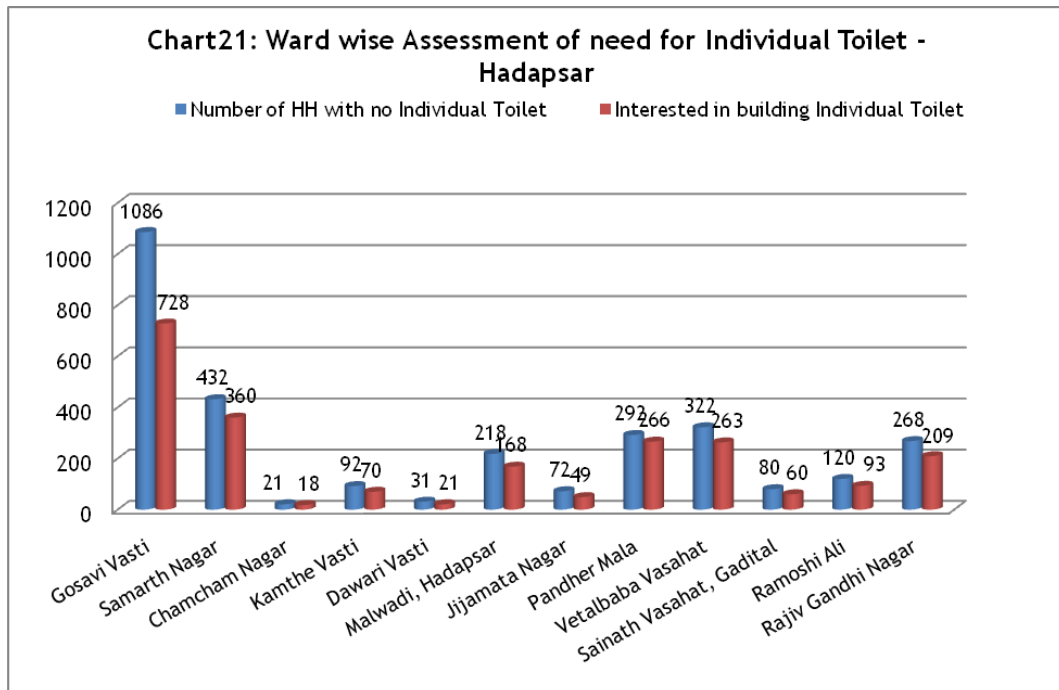


## Zone IV: Dhankawadi Ward



Out of 608 households, 488 HH have given the response to build toilets which come up to 80% in Chitraban Vasti in Dhankawadi ward.

## Zone IV: Hadapsar Ward



Here, Samarth Nagar, Pandher mala, and Vetalbaba vasahat showed a encouraging response of 83%, 91%, and 82% respectively to build the toilets whereas Gosavi vasti showed a reasonable response of 67%.

## Guide to use data and use of GIS in proper implementation of various programs

The gathered information is attached to the GIS map which further aids in efficient and systematically planned implementation of the desired program.

All the collected data is maintained in excel spreadsheet such as the one given below:

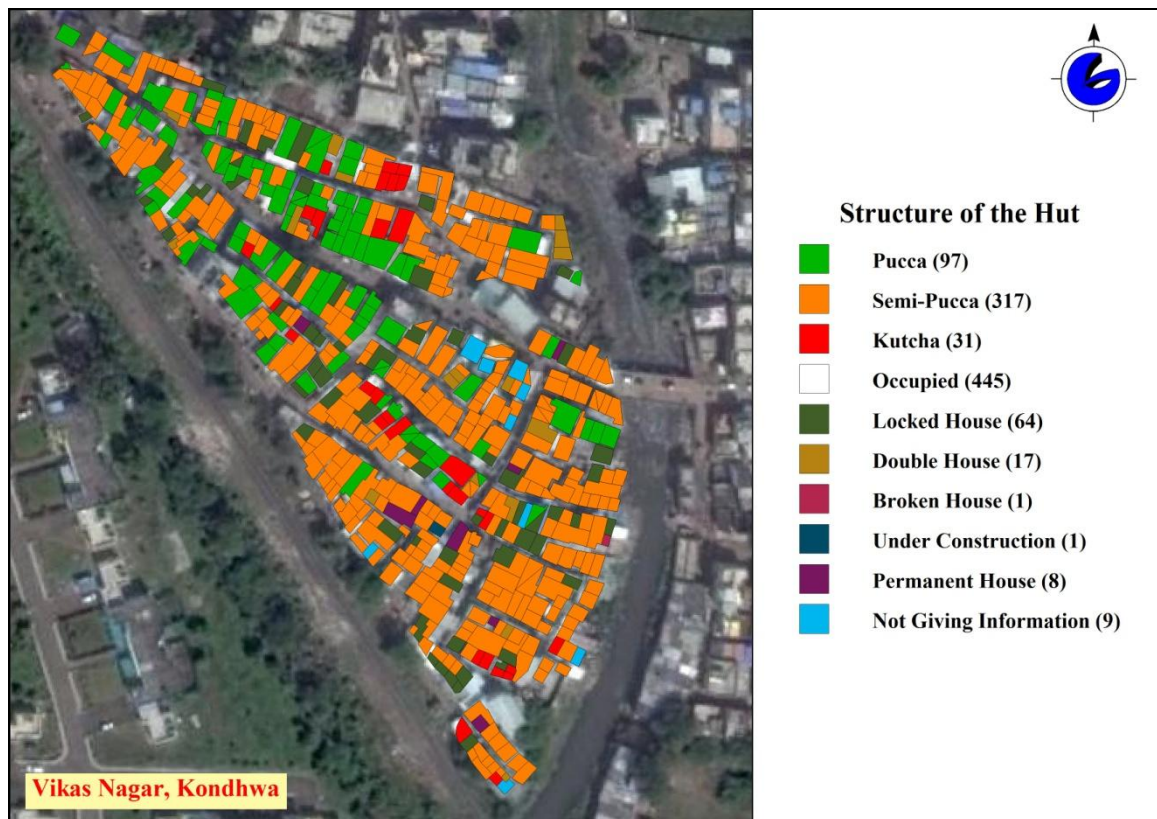
Slumname	House number	Type of House	Occupancy	Type of structure	full name family head	House Area in Sq.ft	No of family members	Ownership status	Current place of defecation toilet	the Individual toilet is connected to	Type of Water Connection	of Door To Door Collection	Interested in Individual toilet	If YES why1	If YES why2	If YES why3	If YES why4	If YES whyN
Vikas Nagar, G 1	1	Occupied	Pucca	vijaya pardeshi	600	6	Own House	Individual	-	Directly	Individual	Garbage b	Not applic	Not applic	-	-	-	Not
Vikas Nagar, G 2	2	Occupied	Semi-Pucca	son I Singh	250	10	Tenant	Individual	-	Directly	Individual	Garbage b	Not applic	Not applic	-	-	-	Not
Vikas Nagar, G 3	3	Occupied	Semi-Pucca	salma Younis khan	180	5	Tenant	Individual	-	Directly	Individual	Garbage b	Not applic	Not applic	-	-	-	Not
Vikas Nagar, G 4	4	Occupied	Pucca	laxman Singh pardeshi	250	3	Tenant	Individual	-	Directly	Individual	Garbage b	Not applic	Not applic	-	-	-	Not
Vikas Nagar, G 5	5	Occupied	Semi-Pucca	nilesh jagtap	250	3	Own House	Individual	-	Directly	Individual	Garbage b	Not applic	Not applic	-	-	-	Not
Vikas Nagar, G 6	6	Occupied	Semi-Pucca	ratant tikhe	250	6	Own House	Individual	-	Directly	Individual	Garbage b	Not applic	Not applic	-	-	-	Not
Vikas Nagar, G 7	7	Occupied	Semi-Pucca	vilas dadu bhalerao	250	3	Own House	Individual	-	Directly	Individual	Garbage b	Not applic	Not applic	-	-	-	Not
Vikas Nagar, G 8	8	Occupied	Semi-Pucca	rosaya yerpalan	250	3	Own House	Individual	-	Directly	Individual	Garbage b	Not applic	Not applic	-	-	-	Not
Vikas Nagar, G 9	9	Occupied	Semi-Pucca	akabar Karim khan	250	5	Own House	Individual	-	Directly	Individual	Garbage b	Not applic	Not applic	-	-	-	Not
Vikas Nagar, G 10	10	Occupied	Semi-Pucca	rajyia samir shaikh	250	3	Own House	Community	-	Not applic	Individual	Garbage b	Yes	For better	-	-	-	Not
Vikas Nagar, G 11	11	Occupied	Semi-Pucca	Abdulgani shaikh	250	6	Own House	Individual	-	Directly	Individual	Garbage b	Not applic	Not applic	-	-	-	Not
Vikas Nagar, G 12	12	Occupied	Semi-Pucca	rajayshree pawar	180	4	Own House	Shared toilet	-	Directly	Individual	Garbage b	Yes	For better	-	-	-	Not
Vikas Nagar, G 13	13	Occupied	Semi-Pucca	Vikram pilley	180	5	Own House	Individual	-	Directly	Individual	Garbage b	Not applic	Not applic	-	-	-	Not
Vikas Nagar, G 14	14	Locked House																
Vikas Nagar, G 15	15	Occupied	Pucca	subhi pilley	250	5	Own House	Individual	-	Directly	Individual	Garbage b	Not applic	Not applic	-	-	-	Not
Vikas Nagar, G 16	16	Occupied	Semi-Pucca	pandurang madake	250	4	Own House	Individual	-	Directly	Individual	Garbage b	Not applic	Not applic	-	-	-	Not
Vikas Nagar, G 17	17	Occupied	Semi-Pucca	nasarin shaikh	250	3	Own House	Individual	-	Directly	Individual	Garbage b	Not applic	Not applic	-	-	-	Not
Vikas Nagar, G 18	18	Occupied	Semi-Pucca	kundan Singh	180	7	Own House	Individual	-	Directly	Individual	Garbage b	Not applic	Not applic	-	-	-	Not
Vikas Nagar, G 19	19	Occupied	Pucca	ramesh jayraj pilley	180	2	Own House	Individual	-	Directly	Individual	Garbage b	Not applic	Not applic	-	-	-	Not
Vikas Nagar, G 20	20	Occupied	Semi-Pucca	urmila kivale	250	1	Own House	Community	-	Not applic	Individual	Garbage b	Yes	For better	-	-	-	Not

Following are the standard queries which are generated using Geographical Information System (GIS) for each and every slum of every ward. The queries generated are about the following indicators:

- Structure of the household
- Ownership status of the house
- Area of the house in sq ft
- Current place of defecation
- Kind of connection of Individual toilets
- Interested in Individual toilets or not
- Facility of waste collection
- Type of toilet preference

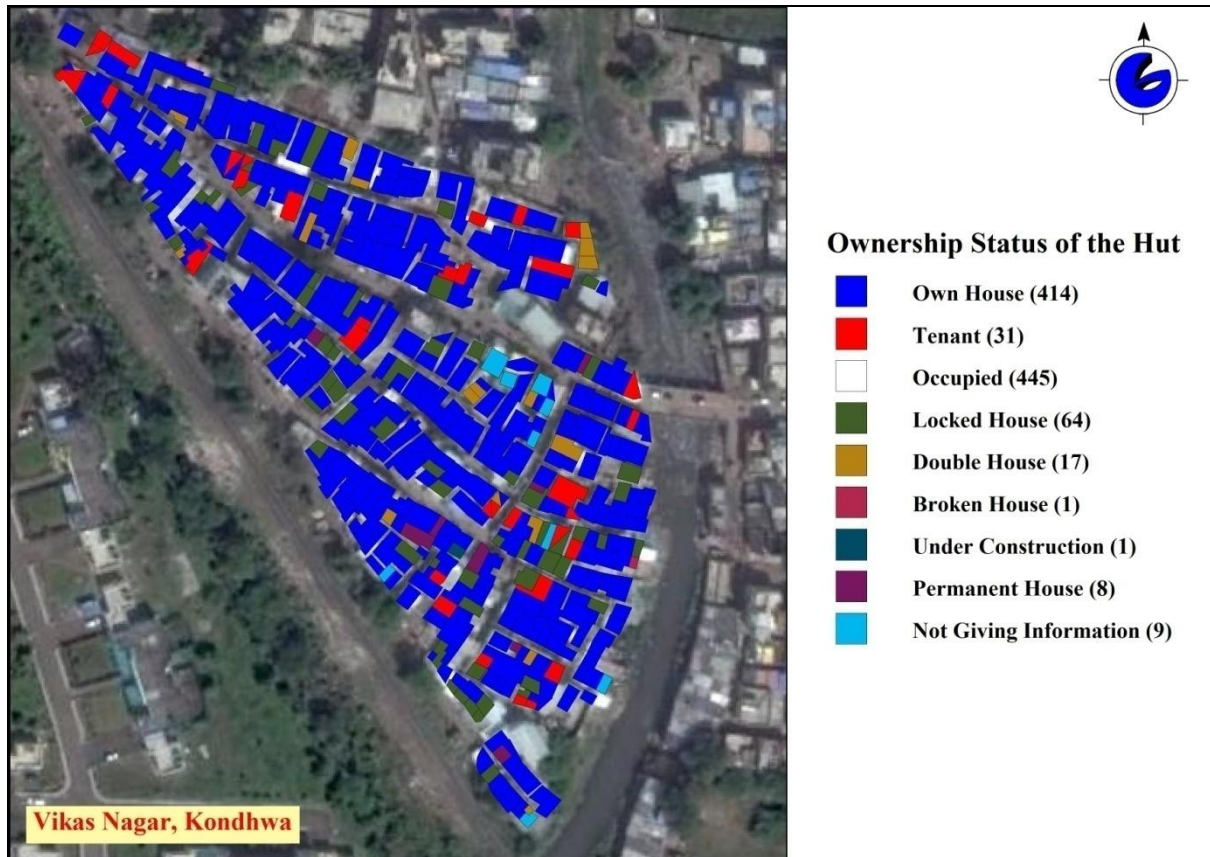


Given below are the GIS queries of one slum of Vikas Nagar in Kondhwa ward as an example with an explanation of how the query can be used.



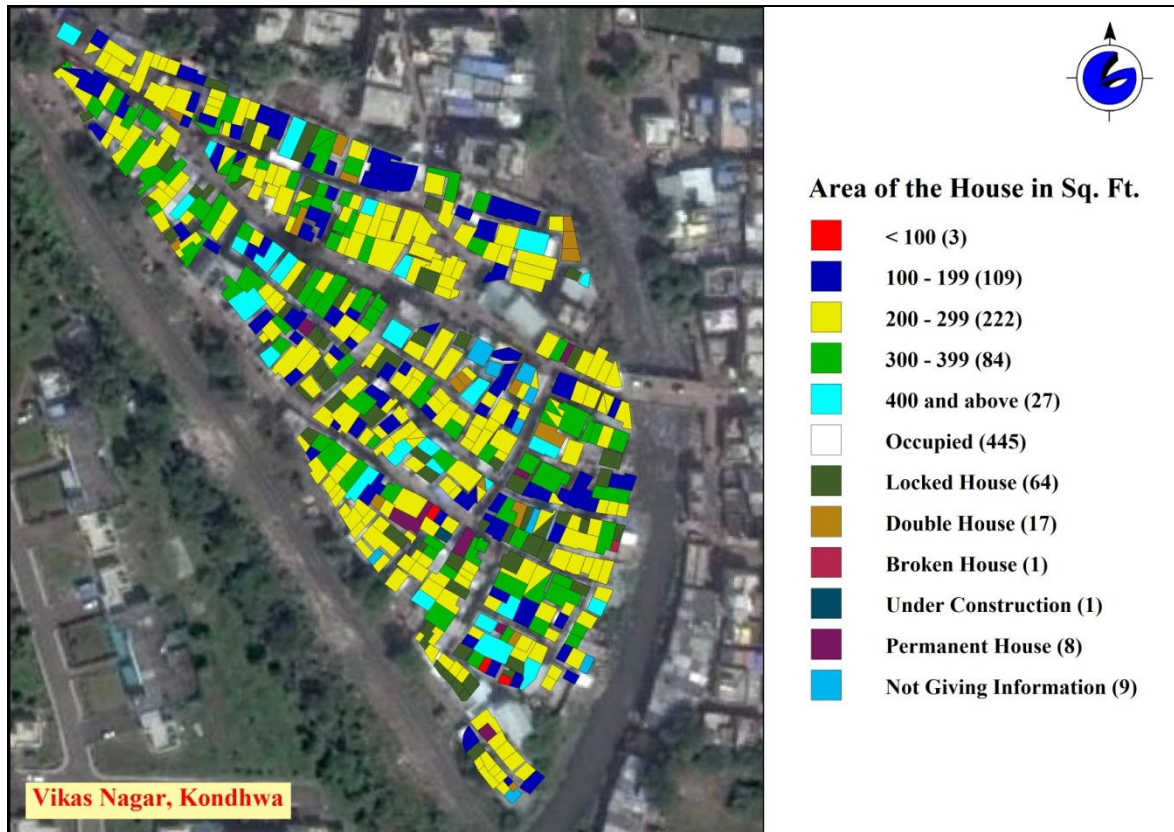
*Map1: Structure of the Hut*

- Above map shows the detailed structural information of the Vikas Nagar slum in Kondhwa ward. This information gives an idea that almost 90% houses are semi-pucca/pucca which is an advantage for building individual toilet.
- From the map, unoccupied houses like locked, double (houses owned by the same individual in the vicinity of his/her living house), broken, houses under construction, and permanently locked can also be easily located.



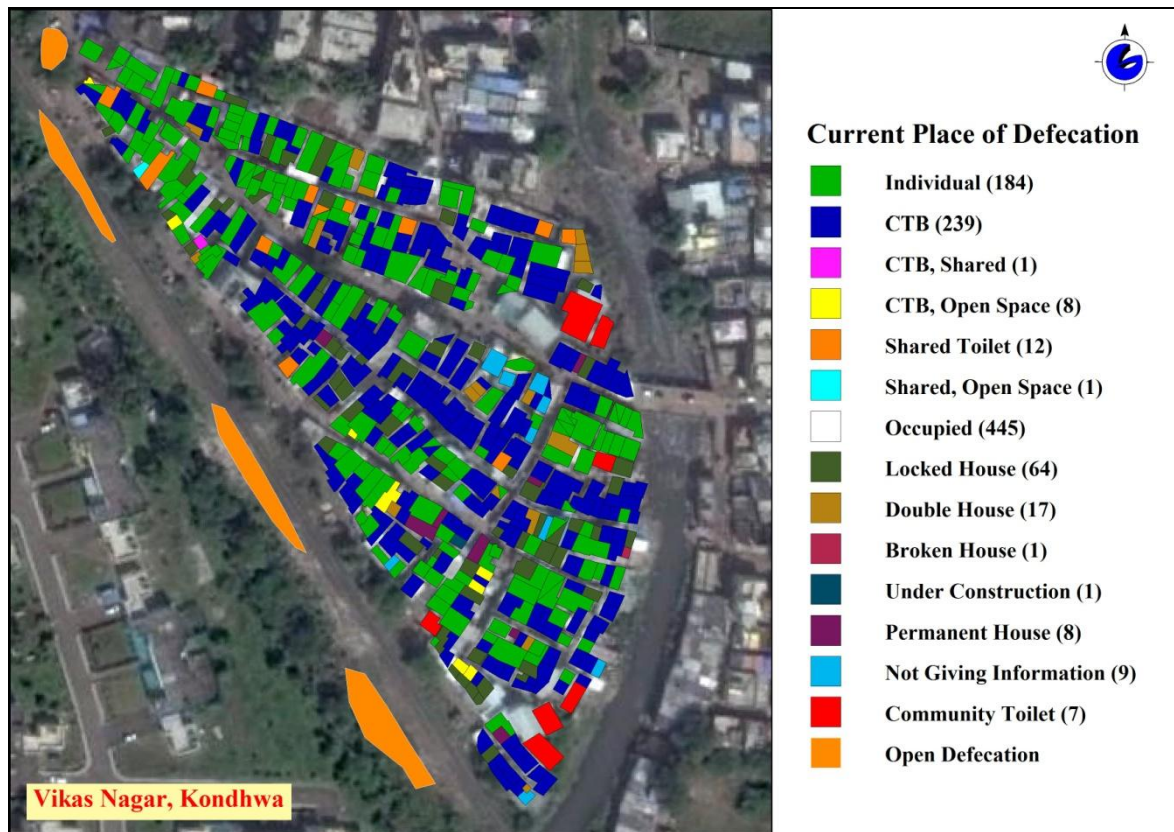
*Map 2: Ownership Status of the Hut*

The ownership status gives us the information about owners and tenants, thus helping us to draw up agreements with owners to begin the process. If there are more tenant families, then it may hamper our implementation process and in this case the owners and tenants would need to be mobilised together.



*Map 3: Area of the House in Sq. Ft.*

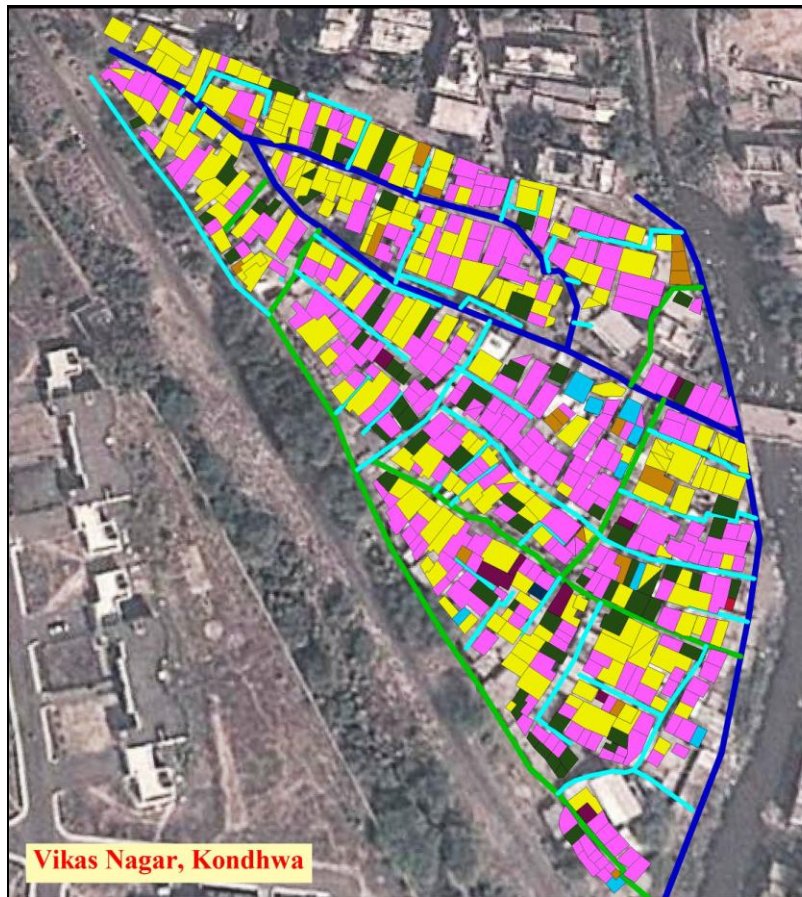
The above map gives a clear picture about the area of the households in the slum which helps to plan the construction of toilet especially before approaching the households with small house area. The extensive experience of Shelter Associates provides innovative ways to build toilet inside the houses whose area is even less than 100 sq. ft.



**Map 4: Current Place of Defecation**

The above map helps us strategize overall intervention plan of Individual Sanitation by:

- visiting families practicing open defecation or using CTB, accurately
- reduces the chances of selecting fake beneficiaries
- calculate 'toilet seat to persons ratio' accurately
- capture post intervention impact
- inviting families who have household toilet to share their experiences of owning toilet in the house to mobilise people who do not have one.



### Where the Individual Toilet is Connected To ?

<span style="color: yellow;">■</span>	Sewer Lines (184)
<span style="color: magenta;">■</span>	Not Applicable (261)
<span style="color: darkgreen;">■</span>	Locked House (64)
<span style="color: brown;">■</span>	Double House (17)
<span style="color: red;">■</span>	Broken House (1)
<span style="color: darkblue;">■</span>	Under Construction (1)
<span style="color: purple;">■</span>	Permanent House (8)
<span style="color: cyan;">■</span>	Not Giving Information (9)
<span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	Occupied (445)
<span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	Total Houses (545)
<span style="color: cyan;">—</span>	DrainageLine10inch
<span style="color: green;">—</span>	DrainageLine12inch
<span style="color: blue;">—</span>	DraiangeLine18inch

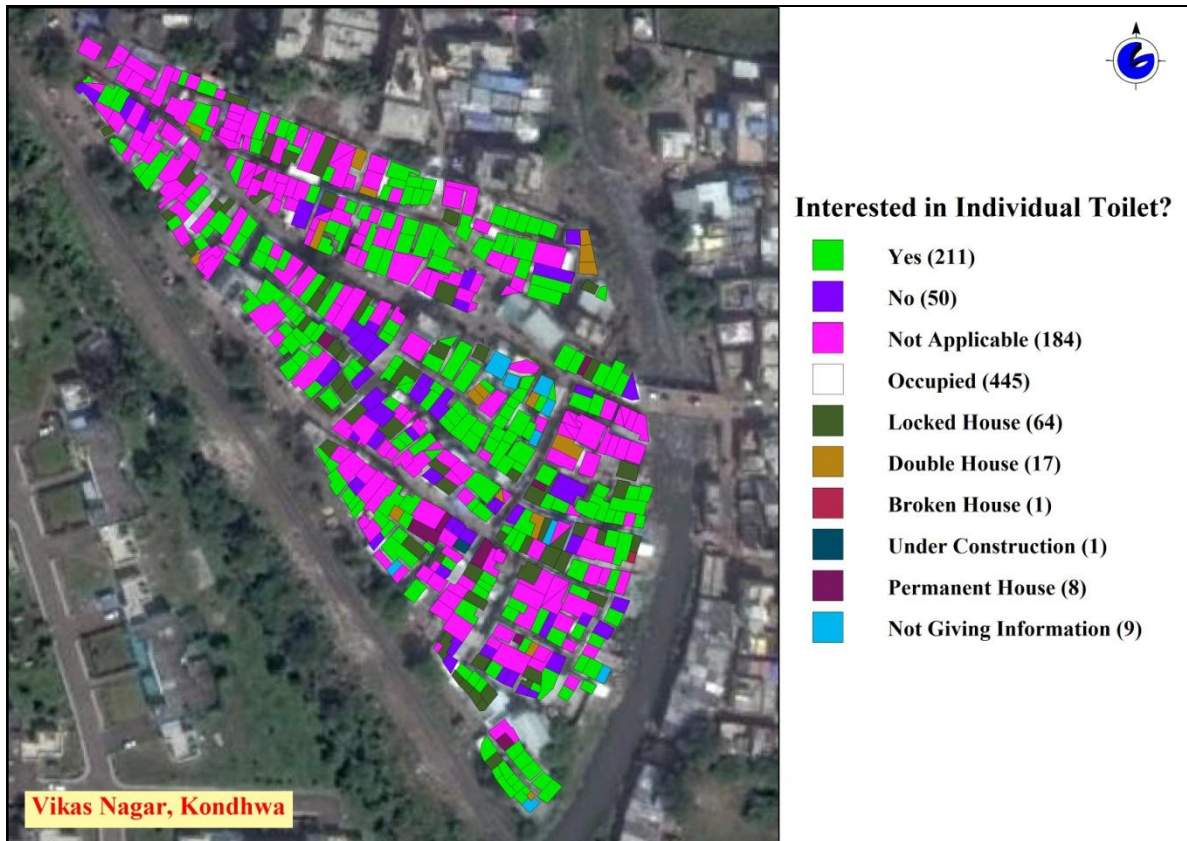
Vikas Nagar, Kondhwa

*Map 5: Where the Individual Toilets are connected to?*

The above map shows where the households have connected their toilets to. It also helps in:

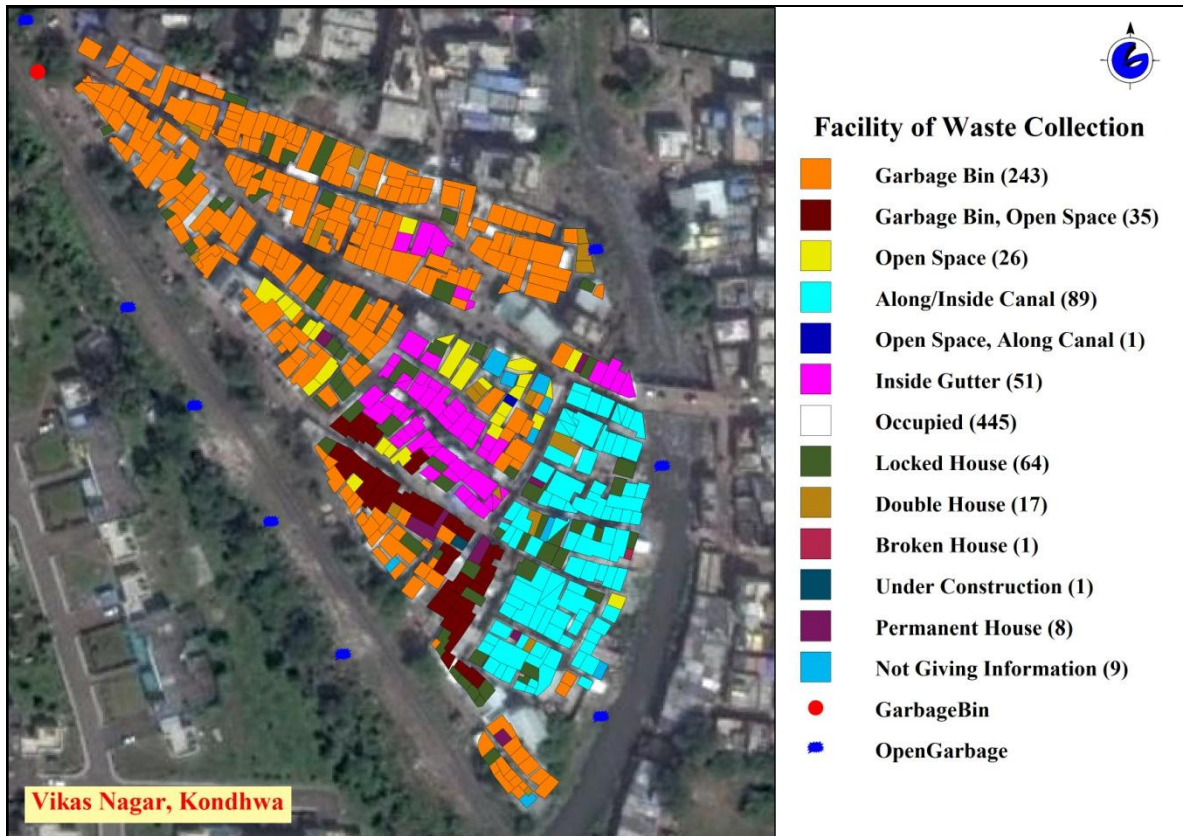
- Identifying the houses who do not have access to existing sewer lines
- Marking the lanes where maintenance/replacement/laying new lines is needed





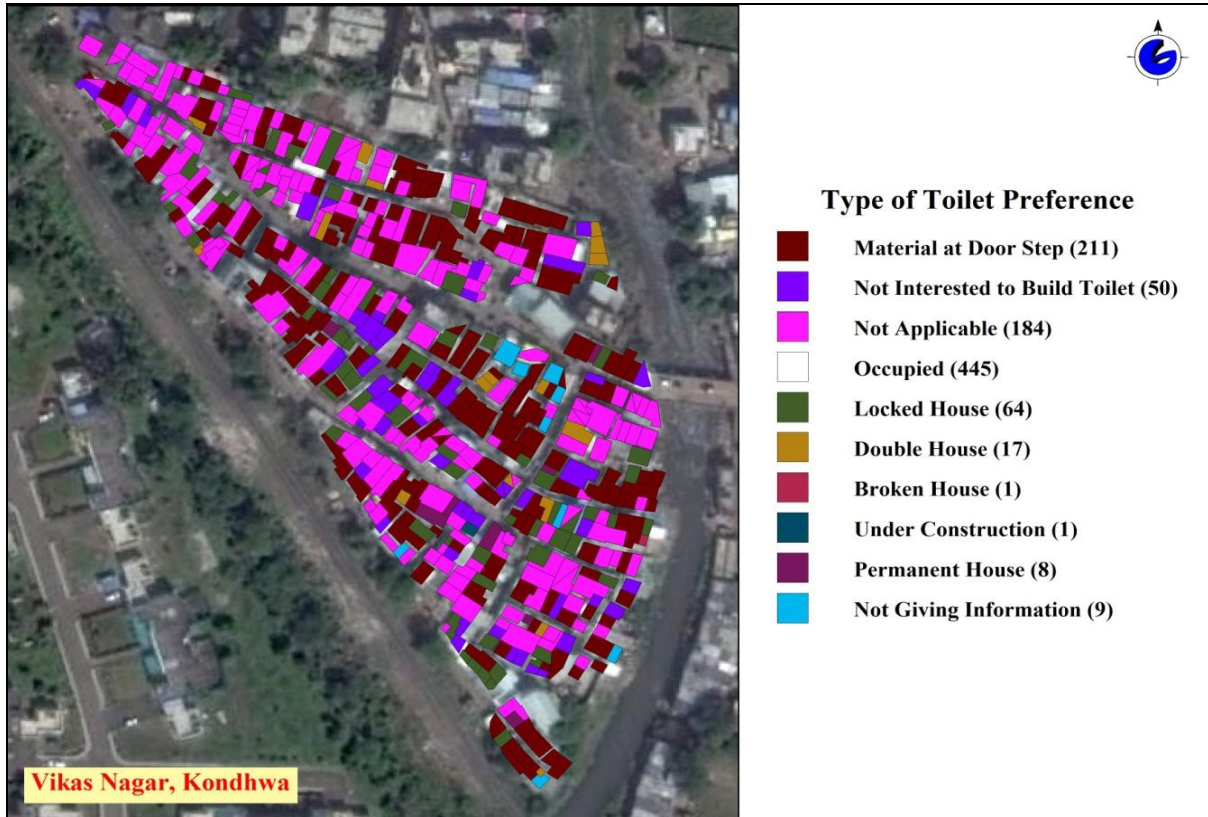
*Map 6: Interested in Individual Toilet?*

This map pinpoints the households who have already shown their willingness to build individual toilets. It also helps the implementing agency to plan community awareness outreach programs to target especially those families who are not interested in having their toilet.



**Map 7: Facility of Waste Collection**

This map helps us to understand the practices regarding the disposal of waste in the respective slum. From the map it is clearly seen that majority of the families dump garbage in a bin or throw in open space/inside canal/inside gutter as there is no facility of door to door waste collection in this settlement. This information will help ward officials to address issues such as improvement in the waste collection (setting facility for door to door collection).



**Map 8: Type of Toilet Preference**

This map helps the contractor to locate houses to carry the material as close as possible to the house of the beneficiary. It is also known from this map about the preference of most of the households goes to the material at door-step to build a customized toilet to fit in their house instead of getting a prefab one.

## Conclusion

The Rapid Household Data done across 107 slums covering 46,644 households' shows that 75% (28,792 HH) of the people do not have individual toilets in their houses of which 70% (20,222 HH) are interested in getting a toilet in their house given a chance. The data collected has provided us with lists of such people who can become the prospective beneficiaries (20,222 HH) under the Swach Bharat Mission (SBM) and these can easily be identified since we have also mapped and numbered all the households. The data also shows that currently in the absence of a toilet in their homes, these people are either using the Community Toilet Blocks (CTBs) or they are defecating in the open. Therefore the ratio of the CTBs is 1:51 currently which can be brought down to a ratio of 1:15 if all these 20,222 HH that are interested can be given a toilet through the SBM. The data obtained from this process has been shared with all the respective 15 wards of PMC such that they can begin with the work of identifying the interested people and ensuring that they get an individual toilet in their home under the SBM scheme.

## Recommendations

The important objective of SBM is to eliminate open defecation practices and to provide individual sanitation to the slum dwellers. Based on Rapid Household Survey findings, the following recommendations are made;

### 1. Set a target to reach all interested families

SA has shared data with every administrative ward along with GIS queries. Each ward can easily reach out to the already identified beneficiaries in their respective wards. It will help with speedy improvement of the project in terms of providing individual toilets.

### 2. IEC for not interested families

30% of the households are showing no interest in taking up toilets. The spatial data helps pinpoint families who are not interested in having individual toilets. It is important to raise awareness amongst these families and encourage them to invest in their household toilet. Hence the PMC/ administrative wards can collaborate with different local NGO's to plan and implement the IEC activities to motivate these already identified households. PMC can draw the target for engaging NGO/SHG and monitor the progress via keeping track on the data.

### 3. Drainage work on priority

Some of the drainage lines are choked-up, which is one of the main reasons for families not showing interest in the individual sanitation program. There are drainage related issues because of lack of periodic maintenance and sometimes lack of carrying capacities or even inadequate gradient to cater to many households. PMC can simultaneously lay larger diameter drainage lines or clean the existing lines followed by concreting the line from inside. It will be helpful to extend the usages of it.



4. Provide toilet to all needy families irrespective of being tenant or owner of the house

PMC can make its mandate to all house owners to avail individual toilet for their tenant too. The umbrella rule for this issue can resolve the constraint and all the families can build the toilet and give importance to the best interest of both.

5. IEC for small houses

There is a general misconception that community families will refuse to build toilets in their homes as they are small. However, the extensive experience of SA has proven otherwise. While SA records the size of the huts in their surveys and pinpoints those that are less than 10 sq.mts., it does not rule out the possibility that those families will not opt for a toilet. There have been several instances where families have opted for a toilet even in homes that are less than a 10 sq.mts. SA has helped families to customize toilets in available place. The photos of innovatively built toilets in small houses can be shown to the beneficiaries to get their doubts cleared before beginning the construction process. It has been observed that families plan and renovate their homes to make space for a toilet. [See Annexure #3]

6. Convert CTB work as shared toilets

Once the target for interested families is met 100%, then the load on CTB will be substantially reduced. Based on the comparison shown in the chart 1B, toilet seat to person ratio will be brought down to 1:15. PMC can then easily divide the existing CTB seats amongst the remaining families who are still using the CTB and allocate one toilet seat between 3 to 4 families and ensure that they start maintaining these toilets themselves. This will help reduce the burden of maintenance of the CTBs which is currently on the PMC.

7. Plan systematic intervention on waste management

One of the objectives of SBM is to have proper waste management in slums. The same data can also be used to plan systematic intervention and develop a good monitoring system for better waste management within the slums along with GIS map.

## Annexure I: List of Surveyed Slums

Sr. No.	Ward Name	Slum Name
1	Aundh	Gopi Chawl, Bopodi
2	Aundh	Bhau Patil Padal, Bopodi S.N. 37A/38
3	Aundh	Indira Vasahat, Aundh, S.N.79/80
4	Aundh	Sanjay Nagar, Spicer College Aundh, S.N. 12
5	Aundh	Ambedkar Vasahat, D.P.Road, Aundh, S.N. 159/160
6	Aundh	Bopodi S.N.26.
7	Bibwewadi	Ambedkar Nagar, Market Yard
8	Bibwewadi	Prem Nagar, Market Yard
9	Bibwewadi	Anand Nagar, Bibwewadi
10	Dhole Patil Road	Gautam Nagar, Pathare Vasti, Mundhawa
11	Dhole Patil Road	Jahangir Nagar, Hadapsar
12	Dhole Patil Road	Kharadkar Vasti 1+2 Shahu Nagar, Mundhawa
13	Dhole Patil Road	Kharadkar Vasti 2 Mundhawa
14	Dhole Patil Road	Makad Vasti, Laxmi Nagar, Hadapsar
15	Dhole Patil Road	Rajiv Gandhi Nagar, Mundhawa
16	Dhole Patil Road	Shahu Nagar , Mundhawa
17	Dhole Patil Road	Shinde Vasti, Hadapsar
18	Dhole Patil Road	Survodya Colony, Mundhawa
19	Dhole Patil Road	Aagwali Chawl, Ghorpadi Gaon
20	Dhole Patil Road	Rajiv Gandhi Nagar, Koregaon Park
21	Dhole Patil Road	Bhimsanghtana Rajratan Tadiwala Road
22	Dhole Patil Road	Lokseva Kapila Diary, Tadiwala Road
23	Dhole Patil Road	Lohiya Nagar, Hadapsar
24	Ghole Road	Janwadi Janta Vasahat S.N. 101/1
25	Ghole Road	Ghode Vasti Near Lumbini Society
26	Ghole Road	Sangamwadi Kachi Vasti 2
27	Ghole Road	Pandav Nagar, Gunjalwadi 261
28	Ghole Road	Khairawadi Ganeshkhind road near chaphekar putla.
29	Ghole Road	Vaiduwadi Asha nagar S.N.102/1
30	Ghole Road	Veer Chaphekar Vasti Near Canal Ganeshkhind road.1108.
31	Hadapsar Road	Gosavi Vasti, Hadapsar
32	Hadapsar Road	Samarth Nagar, nr. Narmada Kisan Kamble school, Hingne Mala
33	Hadapsar Road	Chamcham Nagar Parshi Vihir 1, Hingne Mala
34	Hadapsar Road	Kamthe Vasti, Kamthe mala
35	Hadapsar Road	Dawari Vasti, Hadapsar
36	Hadapsar Road	Malwadi, Hadapsar



Sr. No.	Ward Name	Slum Name
37	Hadpsar Road	Jijamata Nagar, Hadapsar
38	Hadpsar Road	Pandher Mala, Hadapsar
39	Hadpsar Road	Vetalbaba Vasahat, Hadapsar
40	Hadpsar Road	Sainath Vasahat, Gadital, Hadapsar
41	Hadpsar Road	Ramoshi Ali, Hadapsar
42	Hadpsar Road	Rajiv Gandhi Nagar, Shankar Math, Hadapsar
43	Kasba Vishrambaug	Indira nagar, 52 chawl
44	Kasba Vishrambaug	Ramabai Ambedkar, Behind Nilayam Talkies
45	Kasba Vishrambaug	Aambil Odha
46	Kondhwa	Bhim Nagar, Ghorpadi
47	Kondhwa	Dobar Wadi, Ghorpadi
48	Kondhwa	Marimata Nagar, Ghorpadi
49	Kondhwa	Shakti Nagar, Ghorpadi
50	Kondhwa	Vikas Nagar, Ghorpadi
51	Kondhwa	Rajiv Gandhi Nagar, Salunke Vihar, Kondhawa
52	Kondhwa	Ram mandir
53	Kondhwa	Bhim Nagar, Kondhawa
54	Kondhwa	Zambare Vasti, Upper Indira Nagar
55	Kondhwa	Kamela vasahat near azad mitra mandal
56	Kondhwa	Mahatmaphule Vasahat, kondhawa khurd
57	Kondhwa	Samta Nagar, Kondhawa
58	Kondhwa	Siddharth Nagar, Kondhwa
59	Kondhwa	Panchsheel Nagar, Ghorpadi
60	Kothrud	Kishkindha Nagar, Paud Road
61	Kothrud	Bhimnagar, Paud Phata
62	Kothrud	Jaibhawani Nagar, Paud Road
63	Kothrud	More Shramik Vasahat , Paud Phata
64	Nagar Road	Khulewadi, Lohagaon S.N.147
65	Nagar Road	Surya Nagar Pune Nagar Road
66	Nagar Road	Panchsheel Nagar Yerwada Pune S.N. 154
67	Nagar Road	Weikfield Ramwadi Pune S.N.30
68	Nagar Road	Ambedkar Nagar Near Sundarabai Marathi School old Mundhwa Road
69	Nagar Road	Bhat vasti, Yerwada, Pune S.N. 8
70	Sahakar Nagar	Indira Audyogik vasahat, Gultekadi
71	Sahakar Nagar	Taljai Vasahat, Sahakar Nagar
72	Sahakar Nagar	Tangewala Colony, Aranyeshwar



Sr. No.	Ward Name	Slum Name
73	Sahakar Nagar	Padmavati Vasahat, Padmavati
74	Sahakar Nagar	Aranyeshwar Vasahat, Aranyeshwar
75	Sahakar Nagar	Ambedkar Nagar, Near nala, Laxminagar, Parvati
76	Sahakar Nagar	Jai malhar zopadpatti, Sant nagar Aranyeshwar
77	Warje Karve Nagar	Vadar Vasti, Karve Nagar, S.N.53
78	Warje Karve Nagar	Gosavi Vasti, Happy colony, Kothrud, S.N.25,159,160
79	Warje Karve Nagar	Laxminagar, Kothrud, S.N.26
80	Yerwada	Barmashell, Indira Nagar, Airport Road, Lohgaon
81	Yerwada	Ramabai Ambedkarnagar, Vishrantwadi
82	Yerwada	Bharat Nagar, Alandi Road, Yerwada
83	Yerwada	Suraksha Nagar / Nehru Nagar, Yerwada
84	Yerwada	Adarsh Indira Nagar, Alandi Road , Yerwada
85	Yerwada	Ganesh Nagar, Yerwada
86	Tilak Road	Jaibhawani Nagar, Parvati
87	Tilak Road	Mahadev Nagar, Hingne Khurd
88	Tilak Road	Sathiasara, Dattawadi
89	Tilak Road	Sai Nagar/Khorad Vasti, Hingne Khurd
90	Tilak Road	Tukai Nagar, Hingne Khurd
91	Tilak Road	Jai Hanuman Nagar, Parvati
92	Tilak Road	Sr. No. 130 Dandekar Pool
93	Tilak Road	Gurudatta Nagar, Dattawadi
94	Tilak Road	Shahir Anna Bhau Sathe Nagar, Parvati
95	Tilak Road	Vighnaharta/Ambedkar Nagar/Chal Wadi, Dattawadi
96	Tilak Road	Gosavi vasti, vadgaon budruk
97	Tilak Road	Gosavi Vasti nr. Smsanbhoomi
98	Dankawadi	Chitraban
99	Bhawani Peth	Bhavani Mata Mandir, Bhavani Peth, 824
100	Bhawani Peth	Doke Talim Nana Peth S.No.12,13,13/1,2
101	Bhawani Peth	Nade Galli, Ganesh Peth 223,237,231
102	Bhawani Peth	Balaji Temple, Bhavani Peth
103	Bhawani Peth	Ekbote Colony Ghorpadi Peth 365
104	Bhawani Peth	Ekbote Colony, Ghorpadi Peth 296
105	Bhawani Peth	Harka Nagar Bhavani Peth 512
106	Bhawani Peth	Chudaman Talim, Bhavani Peth, 717, 740
107	Bhawani Peth	Pimple Mala, Ganj Peth 278





## Annexure 2: Toilet Situation across Pune City

	All Pune	Zone 1	Zone 2	Zone 3	Zone 4
Total No. of Surveyed Slums	316	70	106	74	66
Approx. No. of Households	1,06,700	23,529	39,812	18,069	25,290
Slums with Open Defecation	86 (27%)	15 (22%)	24 (23%)	15(20%)	32(48%)
Households with Individual toilet	30,000 (28%)	7,370 (31%)	9,313 (23%)	4,845 (27%)	8,777(35%)
Households using CTB/ OD	76,000 (72%)	16,159 (69%)	30,499 (77%)	13,224 (73%)	16,513(65%)
Total No. Of CTBs	682	182	258	135	107
Total No. Of CTB Seats	8,548	2,389	3,214	1,488	1457
Total No. Of Functional CTB Seats	7,741	2,266	2,739	1,462	1,274
Average Person to Toilet Ratio	44	35	55	45	60
Full Drainage Coverage	91%	90%	88%	96%	88%

Note: Cells in RED show poor performance



## **Annexure3: Innovative ways of building toilets in small houses**

