



National Conference on Social Innovations
for Improving Urban Sanitation: Lessons for Scaling-up

Beyond Public Networks - Social Innovation Underlying Technical Solutions

Delhi

December 2016

About Shelter Associates (SA)

Shelter Associates has an international reputation which attracts volunteers from all over the world. It mainly comprises of-

- Architects,
- Social Workers
- Geographic Information Systems (GIS) Analysts and
- Community Workers

Our VISION

Every citizen having access to basic infrastructure and secure tenure, leading to a better quality of life.

Our PHILOSOPHY

- Collaborate with all stakeholders (Govt .to Community)
- Generate inclusive policies and effective, impactful, sustainable and scalable projects.

Our STRATEGY

- Generate spatial data for planning.
- Advocate for improved delivery of essential services
- Promote inclusive planning approaches.

OUR AREAS OF EXPERTISE

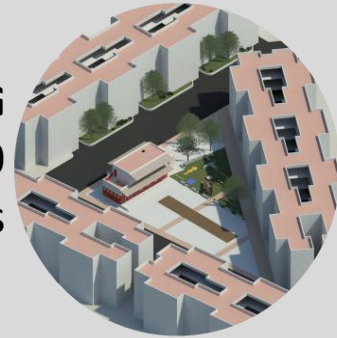
MAPPING & RESEARCH

Impacted 200000 households



HOUSING

Impacted 9000 persons



SANITATION

Impacted 70000 persons through direct sanitation & over 1.5 lakh persons through indirect sanitation



About SA

Shelter Associates' one of the founders and Executive Director, **Pratima Joshi** is an accomplished Architect with several distinguished accolades to her credit:

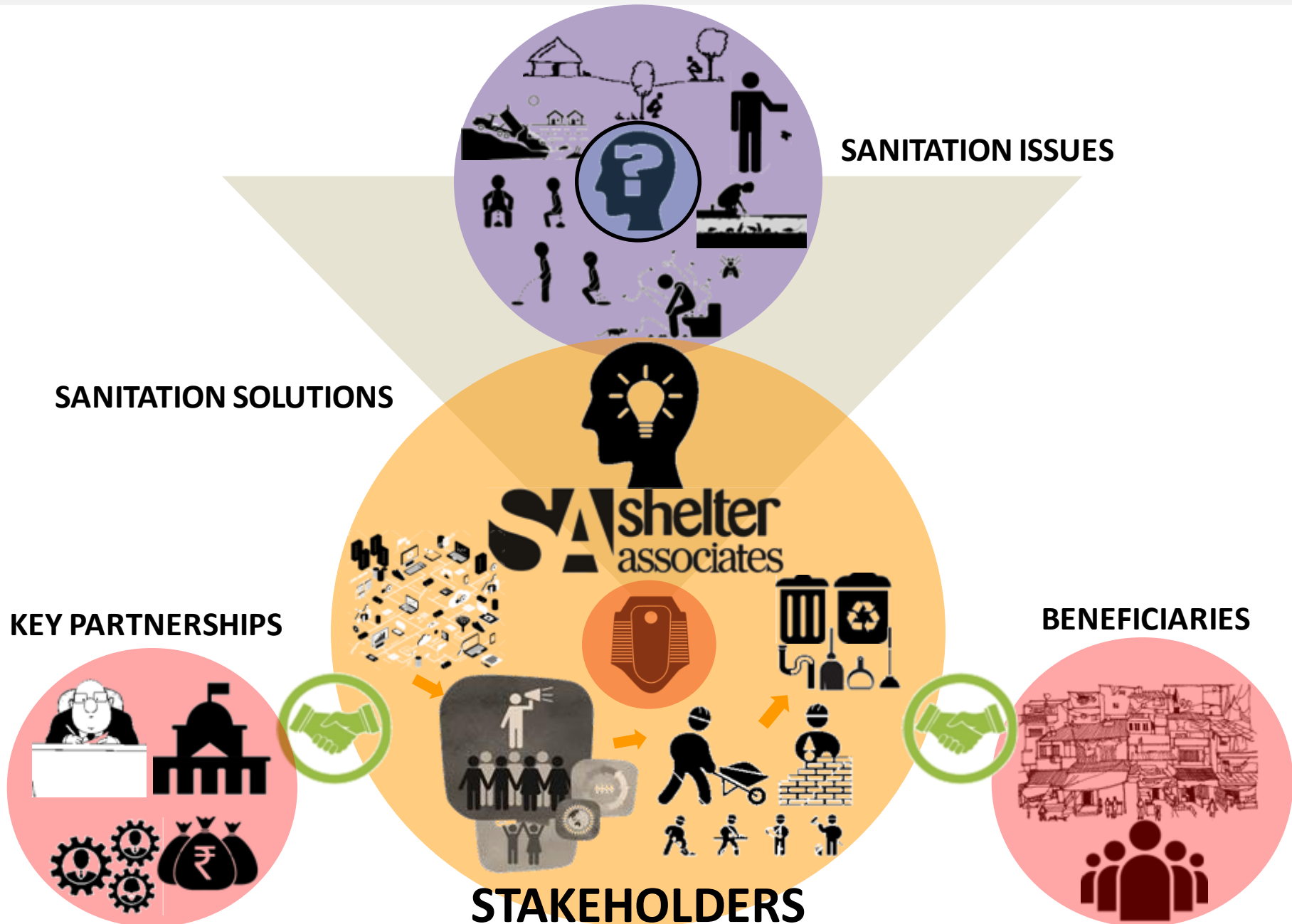
- A recipient of **Ashoka Fellowship**
- An **Aga Khan scholarship** holder
- Identified by the **British Broadcasting Company (BBC)** as one of the leading slum Architects of India and featured her in “**India Week**” program
- Recognized as the ‘**Amazing Indian**’ by Times Now

Shelter Associates has been working in the sectors of Housing and Sanitation for more than 20 years and is recognized for its outstanding work; Nationally and Internationally. Honors received by **Shelter Associates**

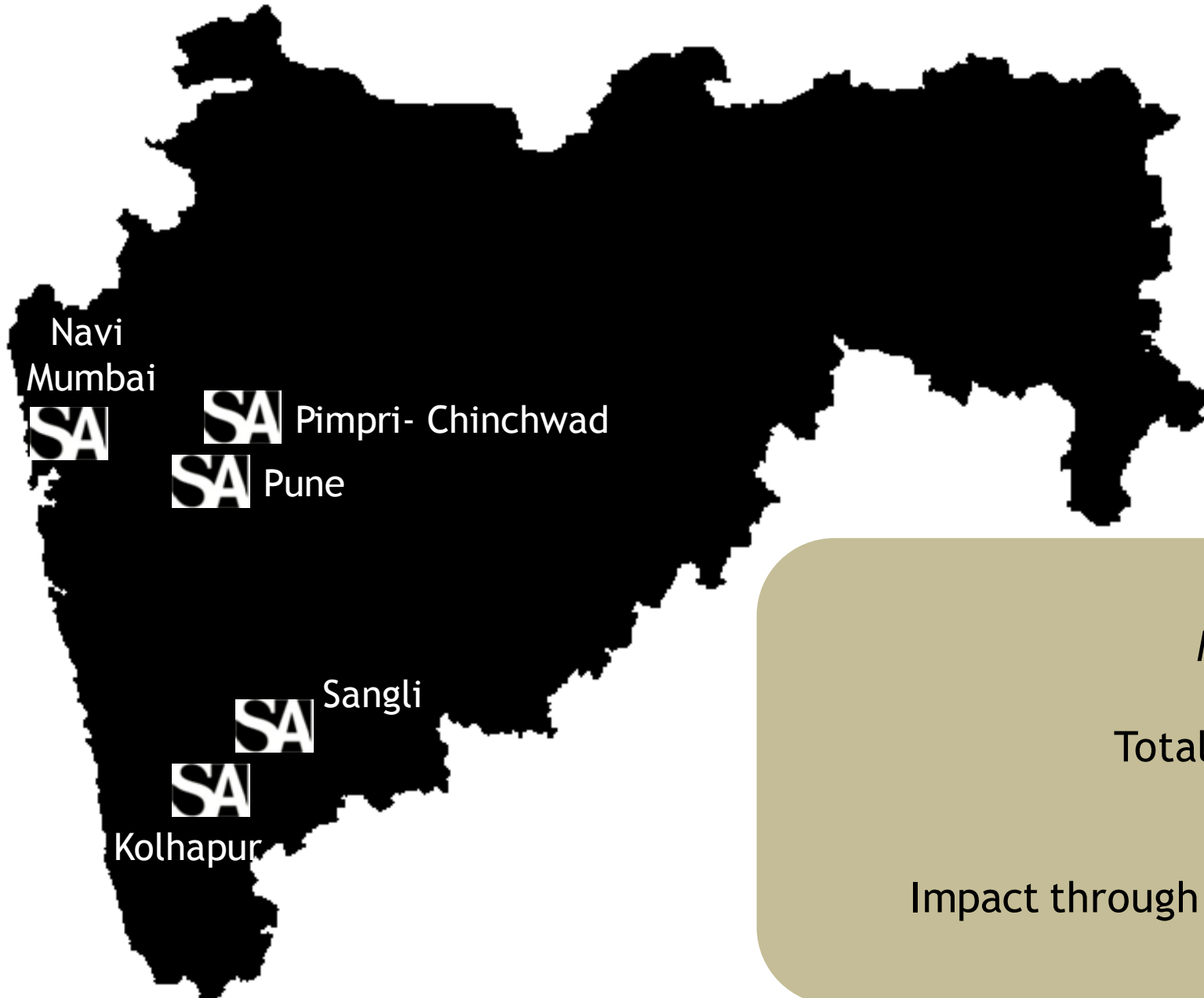
- **Google Earth Hero** title (The only one in India)
- Winner of **Google Impact Challenge**
- Winner of **2015 HUDCO Award for Best Practice in Sanitation**
- **TIMES NOW Award 2016** for ‘**Outstanding Contribution in Digital Social Innovation**’
- **Dasra Giving Circle**
- Featured in **UN Habitat’s** good practice database



What we do...



SA's presence



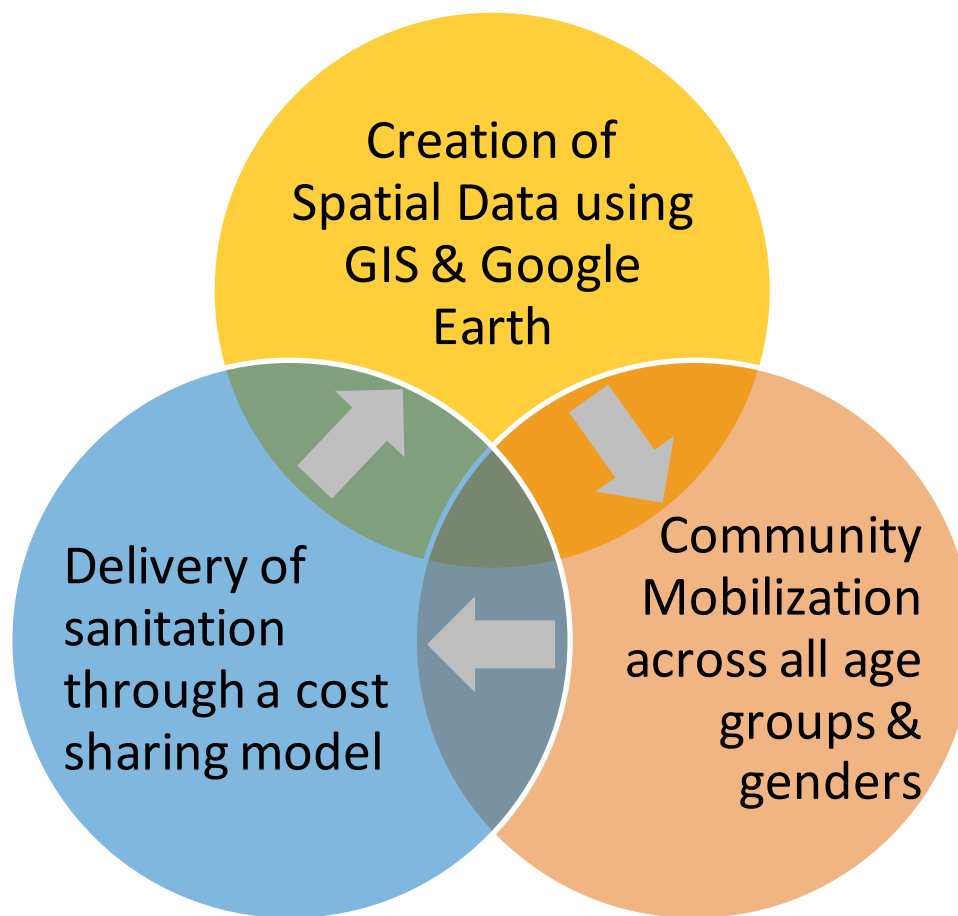
SA projects across
Maharashtra: 5 cities

Total impact: over 70,000
people

Impact through individual sanitation:
over 35,500 people

SA's Process... One Home-One Toilet

SA's sanitation model



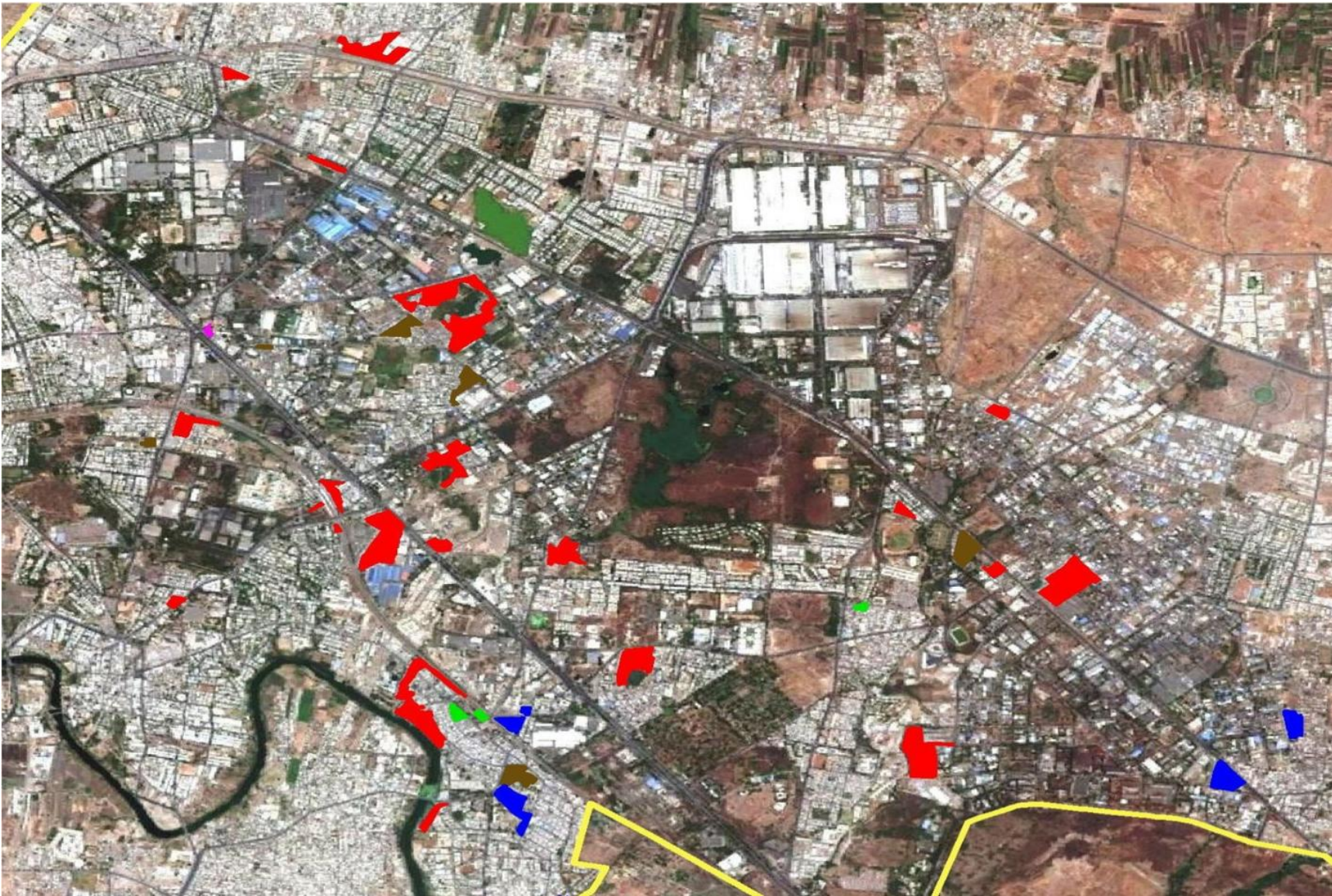
An aerial photograph of Santa Nagar, Airoli, showing a dense residential area with a grid-like street pattern. A semi-transparent, light-colored overlay is applied to the map, highlighting specific buildings and street segments. The overlay consists of a network of lines and rectangular shapes, suggesting a data-driven analysis of the urban layout. In the top right corner, there is a small circular logo with a stylized 'S' and 'A'. In the bottom right corner, there is a scale bar and the text 'Santa Nagar, Airoli'.

Data - Driven Approach

Scale 1:1000
0 15 30 45 60
Meters

Santa Nagar, Airoli

Spatial Querying across the Slums in City



- Slums with Open Defecation
(36/58 total slums = 62%)
- Open Defecation Free Slums
(22/58 total slums = 38%)

City-Wide Analysis on GIS Platform- Pimpri-Chinchwad









Spatial Querying within the Settlement



- Phase 1-Houses in **blue** can be connected immediately to the existing drainage lines shown in **green**
- Phase 2 Houses in **yellow** can be connected to the proposed drainage lines indicated in purple color.

Samta Nagar - Potential beneficiaries as per drainage coverage

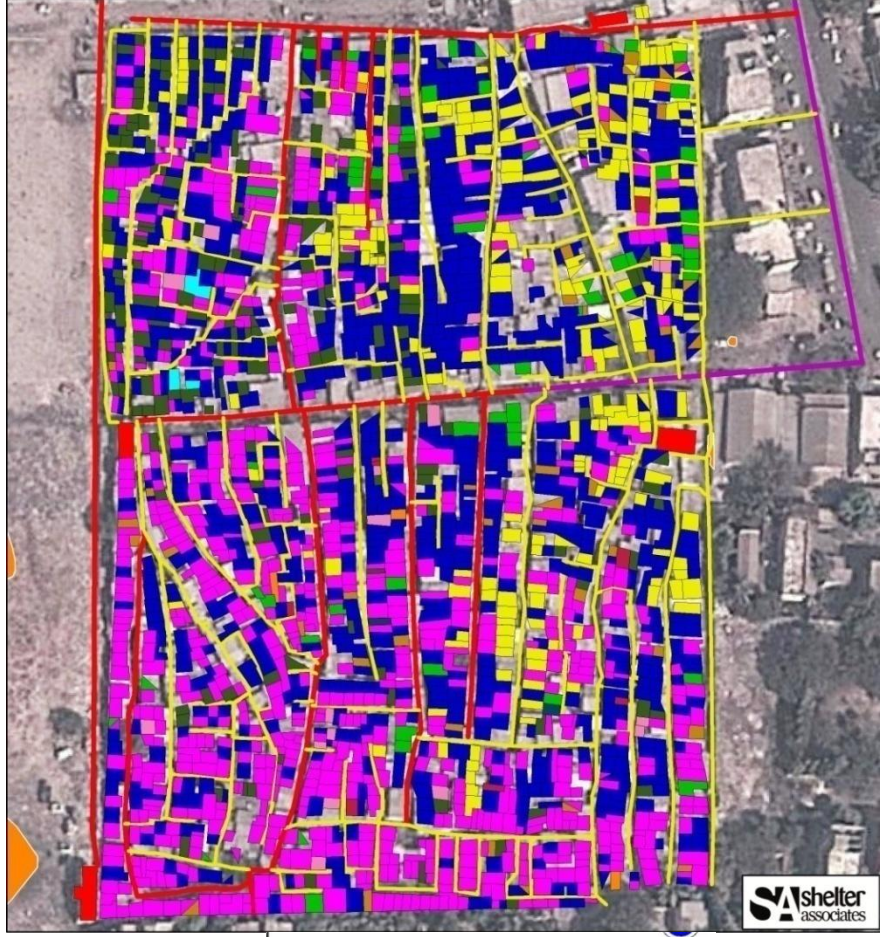


	HH can connect to existing drainage (260)		Proposed Drainage Line - 1104 m		Community Toilet (3)
	HH can connect to proposed drainage (305)		Existing Drainage Line		Total Houses (654)
	Existing individual toilet (89)		Drainage Slope		

Spatial Data to identify beneficiaries & monitor work progress



- Own Toilet (93)
- Use CTB (1630)
- Use CTB & Open Space (164)
- Shared Toilet (5)



- Toilets By SA (742)
- Used CTB (1052)
- Shared Toilet (5)
- Own Toilet (93)
- Toilets Given by Contractor (184)

Toilet seat to person ratio brought down from 1:99 to 1:59

Investment in Poverty/Sanitation Mapping

- Shelter Associates has demolished the myth that data collection and mapping are time consuming and expensive through its extensive use of data in all its work to date
- Our analysis also shows that a fraction amount of money invested in data-gathering and mapping gives excellent magnitude of targeted outcome

Location	No. Of Slums	No. of Households (HH)	Duration of Survey	Mapping and survey cost	Project cost (cost of toilet construction + expenditure on drainage lines)
Pune	107	47,232	5 months	50 L - 1% - 0.7%	50-70 Cr (28,000 Toilets)
Pimpri-Chinchwad	82	37,817	4 months	46 L - 1.4%	30.96 Cr (17,200 Toilets)*
Navi-Mumbai	10	6,553	2 months	10.50 L - 1.2%	6.36 Cr (4613 Toilets)
Kolhapur	42	8,452	3 months	12.50 L - 0.70%	17.8 Cr (6700 Toilets)

- Investment in the cost of survey and mapping in proportion to the entire project cost is **between 1% to 1.5%** which is extremely negligible
- This is a one-time investment, and the data made available can be used for various other purposes as well.
- *- Rapid Household Survey (RHS) is currently in progress in PCMC slums, hence the expenditure on drainage is yet to be factored in.

Minimal investments in survey leverages optimal output

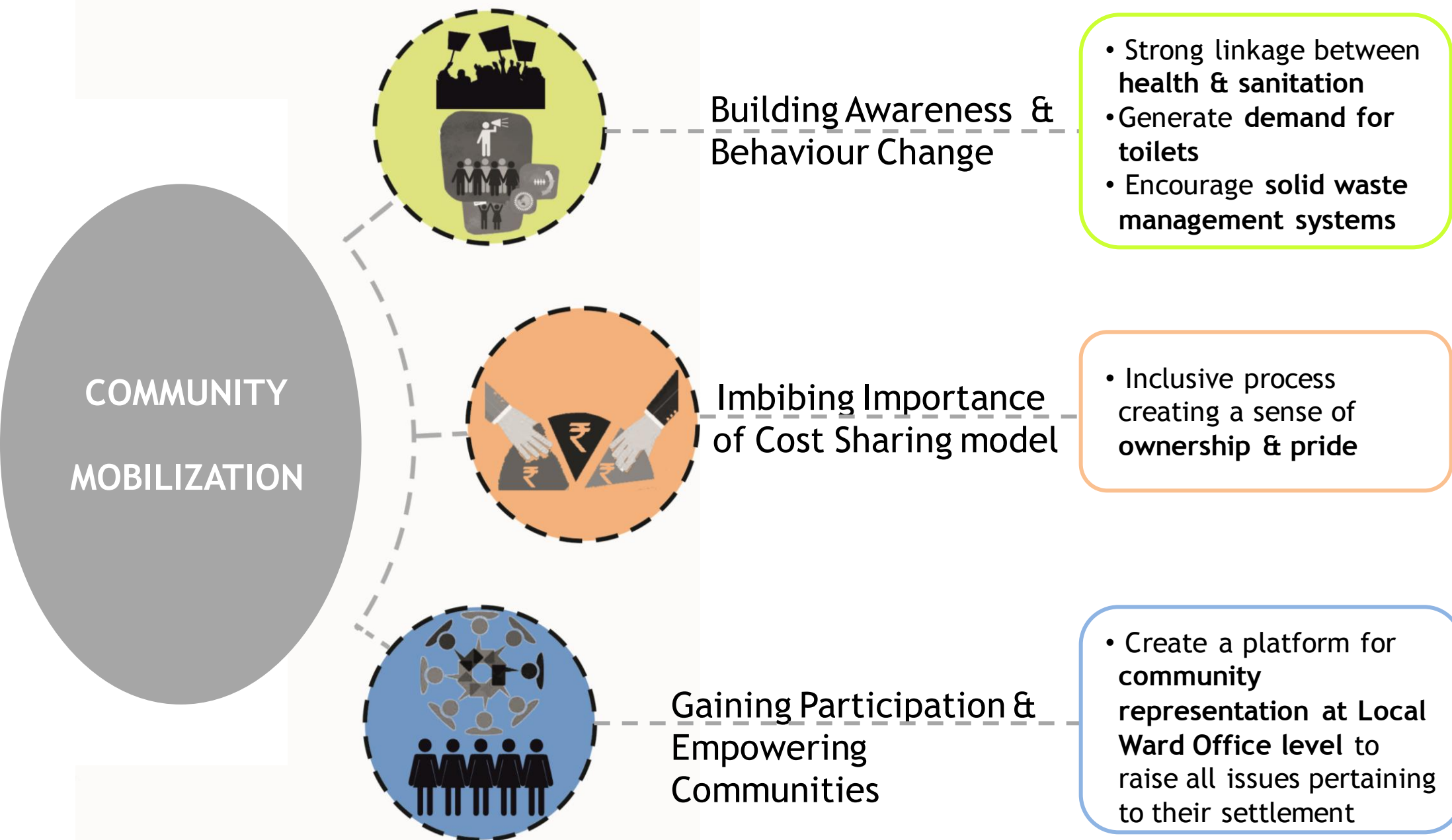
Category	Rate in Rs.	Cost in Rs.	Percentage
RIM and RHS Survey (7 slums surveyed)		10.5 Lakhs	1.6% of total project cost
Total length of drainage lines proposed- 6208m			
Laying proposed drainage	3,000	1.86 crores	30%
Toilets connecting to existing drainage-521 HH	21,000	1.1 Crores	17%
Toilets to be connected to proposed drainage-1619 HH	21,000	3.4 Crores	53%
Total project cost		6.36 crores	

Only **1.6% survey cost** leverages laying of drainage lines of 6208m across 7 slums and the entire project costs 6.36 Crores for NMMC





Community Mobilization



Empowering Communities



IEC Activities

ACTIVITY	OBJECTIVE	
Community meeting	To announce the project	
FGD with Women/Men/Adolescent Youth (Girls & Boys)	Behavior change activity to generate awareness & discussion around the topic of Sanitation, Health & Hygiene.	

IEC Activities

ACTIVITY	OBJECTIVE	
Transect Walk	A walk through the settlement along with the community, to primarily understand the situation of Sanitation and waste management, create a sensitivity of the problem, discuss the tentative action plan to resolve the concerned problem.	
Workshop/rally with Children	Conveying the importance of toilet, waste management behavioral changes to lead a dignified & healthy life	

IEC Activities

ACTIVITY	OBJECTIVE	
Committee formation meeting	Formation of committee of women who would oversee the project during it's implementation.	
Committee meeting	Announcing the formed committee to take up any civic issues with the Ward Office.	
Exit meeting	To declare completion of individual project.	



Process of Delivery of Individual Toilets

Process of Delivery of Individual Toilets

- The **door step delivery of construction material** serves a huge incentive for people to carry out toilet construction within a few days of time - much faster than the conventional way.
- This also incentivizes partial or full **upgradation of their houses**



The family signs an agreement with SA to complete building their toilet within 10 days after the material has been supplied. Material is supplied in 2 stages to avoid misuse and probable losses.

SA facilitates the construction of toilets on a **cost-sharing model** where SA provides the material for construction and the family bears the cost of construction

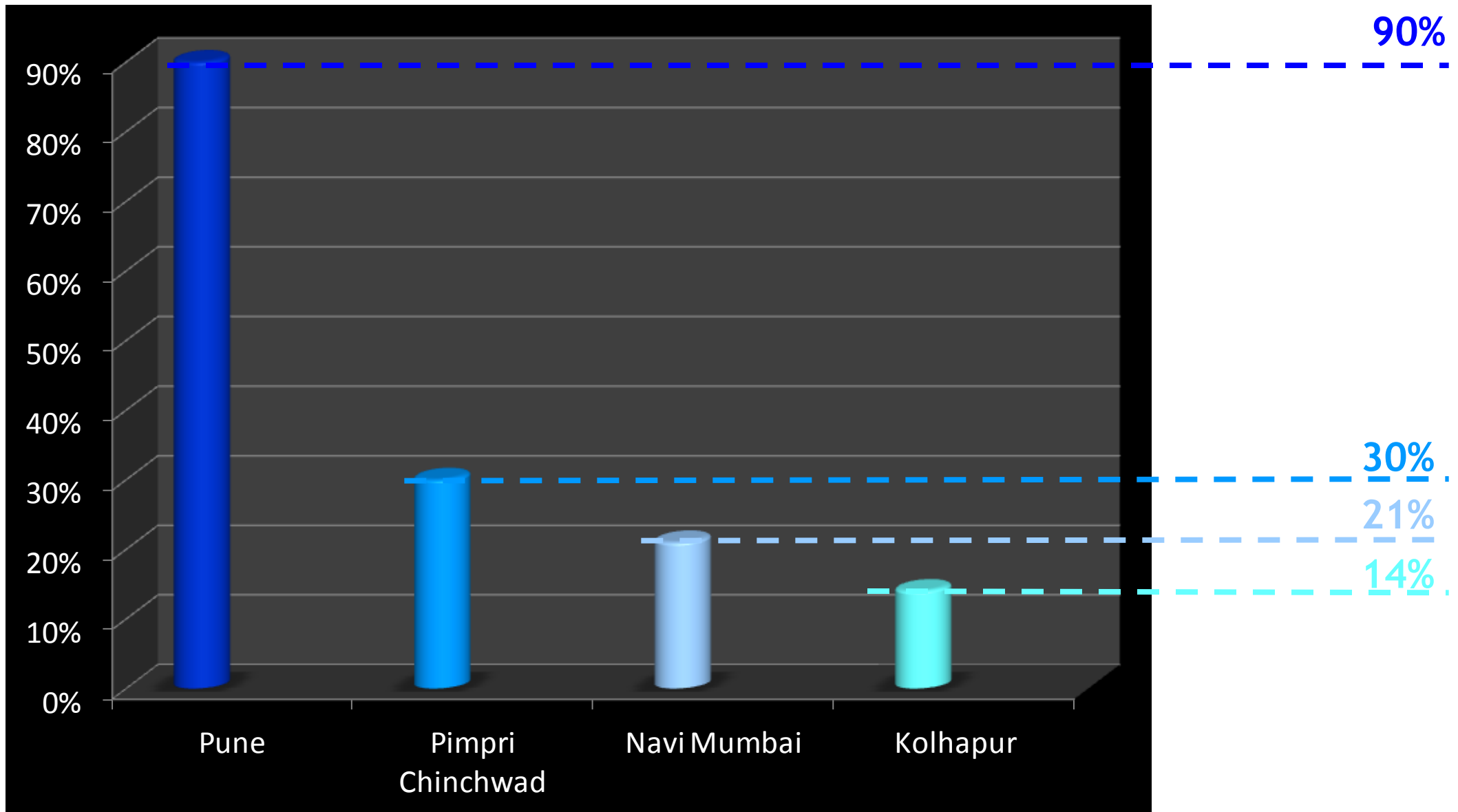
Engaging with Urban Local Bodies

- SA has built strong partnerships with Pune Municipal Corporation, Pimpri-Chinchwad Municipal Corporation, Kolhapur Municipal Corporation, Navi Mumbai and Sangli Municipal Corporation over years.
- We have contributed towards implementation of toilet construction under Swachh Bharat Mission (SBM).
- SA values and considers its partnerships with the Government as most critical to get the desired results.
- **SA's One Home One Toilet (OHOT)** has been adopted by the PMC & PCMC for implementing SBM in Pune & Pimpri-Chinchwad, making the cities a role model for other cities to follow suit.



Comparative Analysis across 4 cities- 1

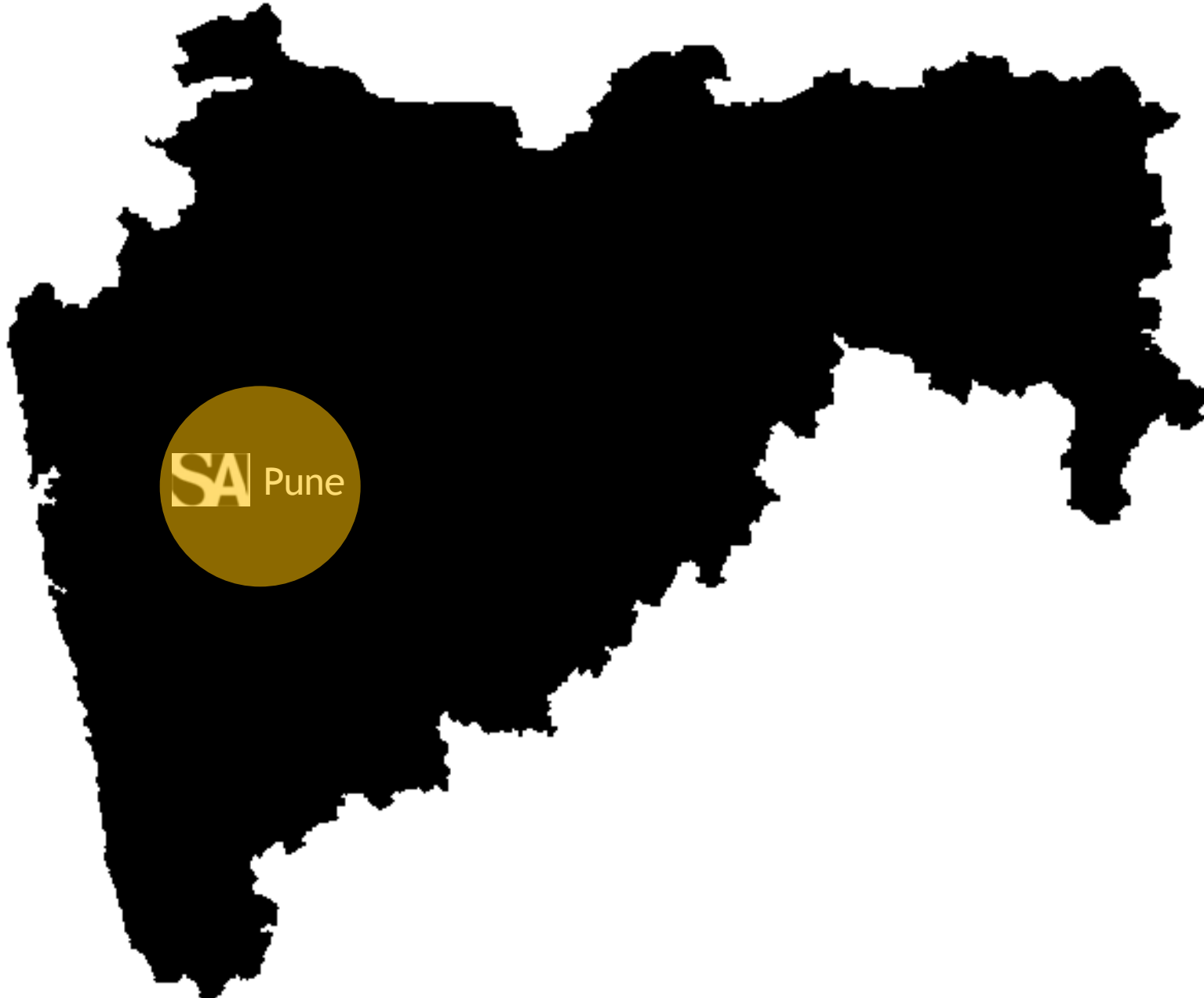
Drainage Network coverage status



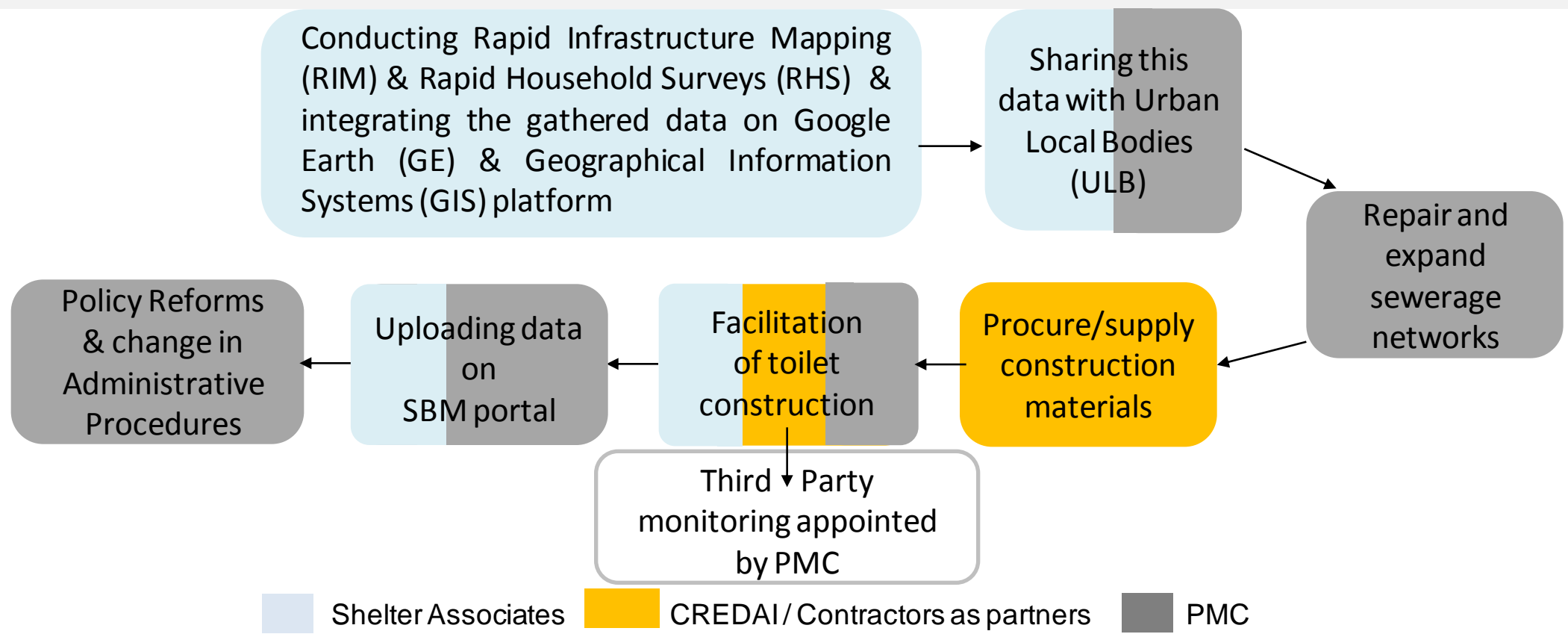
Comparative Analysis across 4 cities- 2

Location	No. Of Slums surveyed	No. of Households (HH)	Drainage Network coverage	Percentage of HH having individual toilet before SA's intervention
Pune	107	47,232	90%	28%
Pimpri-Chinchwad	82	31,096	30%	13%
Navi-Mumbai	10	6,553	21%	16%
Kolhapur	42	8,452	14%	15%

SA's presence- Pune

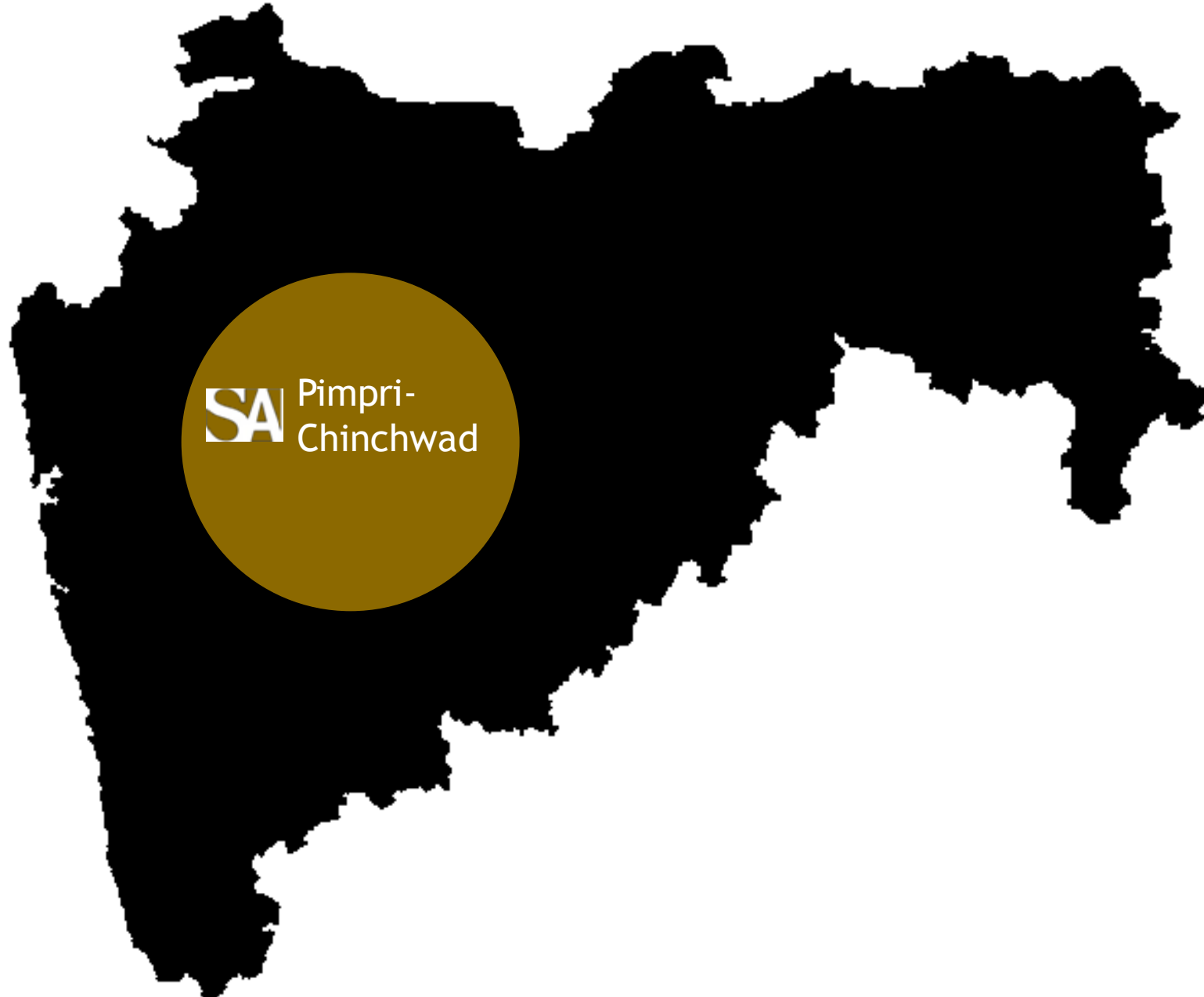


Scaling up by PMC using SA Model



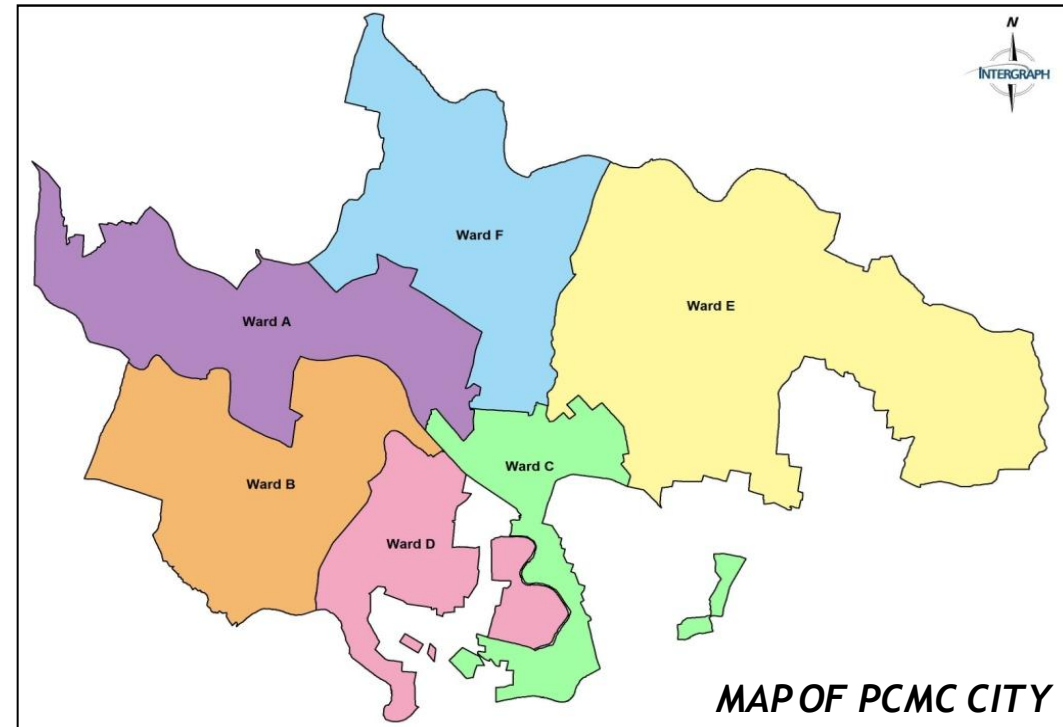
- Engaging **CREDAI (Builders' & Contractors' Association)** in the city for scaling up delivery of individual sanitation. There is no cost sharing as contractors bear the entire cost of materials and construction. Also there is no investment in awareness campaign or community mobilization.
- Pune stands **1st across India** in providing maximum number of individual toilets.
- PMC along with other stakeholders, has crossed the **27,000 mark** of total number of individual toilet facilitation in the slums of Pune in a short span of last 8-9 months.

SA's presence- Pimpri-Chinchwad



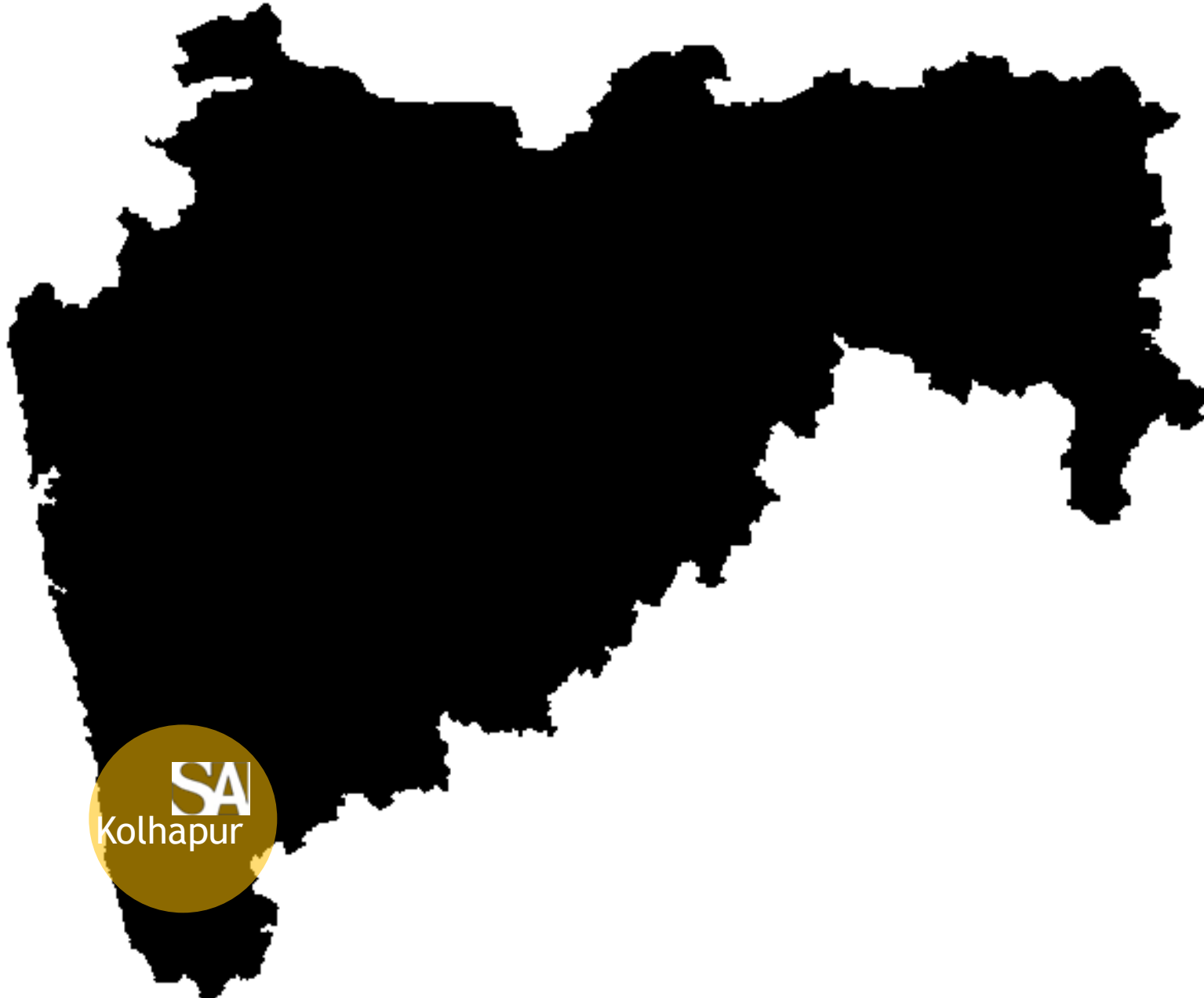
Overview of Pimpri- Chinchwad

- Having a decent amount of drainage network within the city, coverage seemed to be almost **absent within slums**.
- After SA's data mapping & analysis, this data was shared with PCMC.
- PCMC has taken lead in making sure every HH is able to connect to drainage lines.
- Funds are being pumped in by PCMC to get this additional network in place which includes-
augmenting/repairing/expanding/laying new drainage lines wherever need be.
- **PCMC has partially adopted our 'OHOT' model and they are scaling this model in delivering individual household sanitation across the slums of PCMC.**



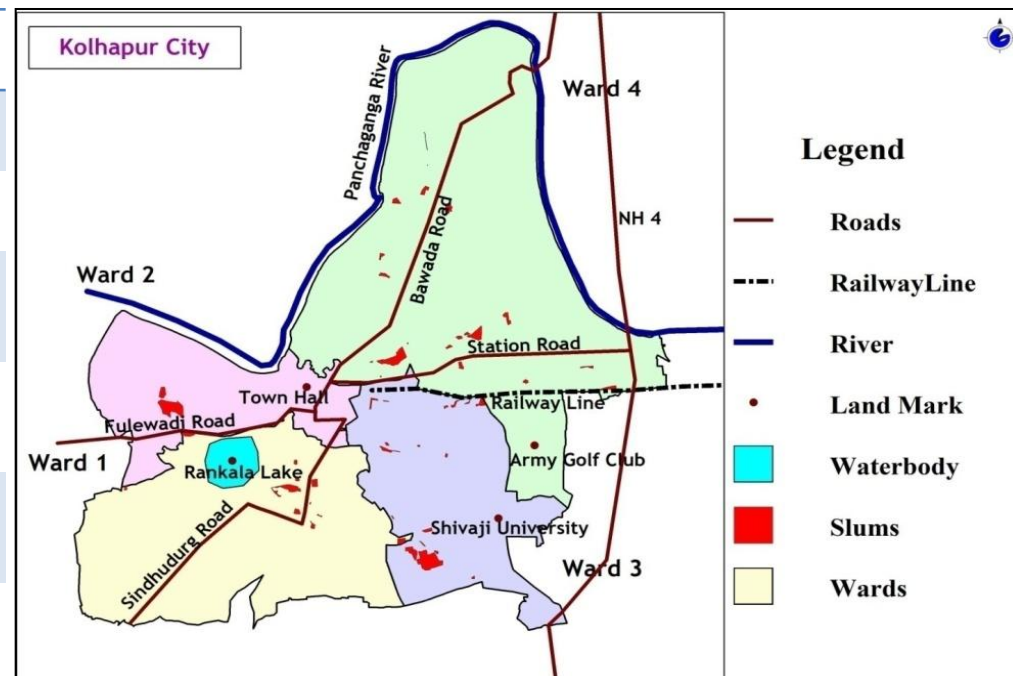
PCMC has already made financial provision for laying drainage lines in all **82 slums** of the city. Hence if **17,900 houses** need to get connected, the total cost of the project would be **approx. Rs. 44,775,2974**

SA's presence- Kolhapur



Overview of Kolhapur

Total No. of Surveyed Slums	42
Slums with Open Defecation	14
No. of Occupied Households	7,798
Approx. Households with Individual toilet	1,107 (15%)
Approx. Households using CTB / OD	6,691 (85%)
Unoccupied houses	653 (8%)
Total No. of CTBs in USE	73
Total No. Of Seats in Used CTBs	932
No. of Functioning CTB Seats	850 (91%)
Average Toilet Seat to Person Ratio	1: 37
Full Drainage Coverage	0
Functional CTB seats can be distributed (1seat =3 HHs)	2,350



- Out of 42 surveyed slums only **13** slums have **partial drainage coverage**. Across these 13 slums only **16% HH** have access to existing drainage lines.
- To achieve **ODF+** status approx. **5,300** toilets need to built.
- To achieve **ODF++** status approx. **6,300** toilets need to built.

Key Challenges

Sanitation Solutions

HH toilets connected to ULB Drainage Network

In regions, where partial drainage network is present, SA has mapped the same and indicated to KMC about it's expansion & laying of new lines wherever feasible

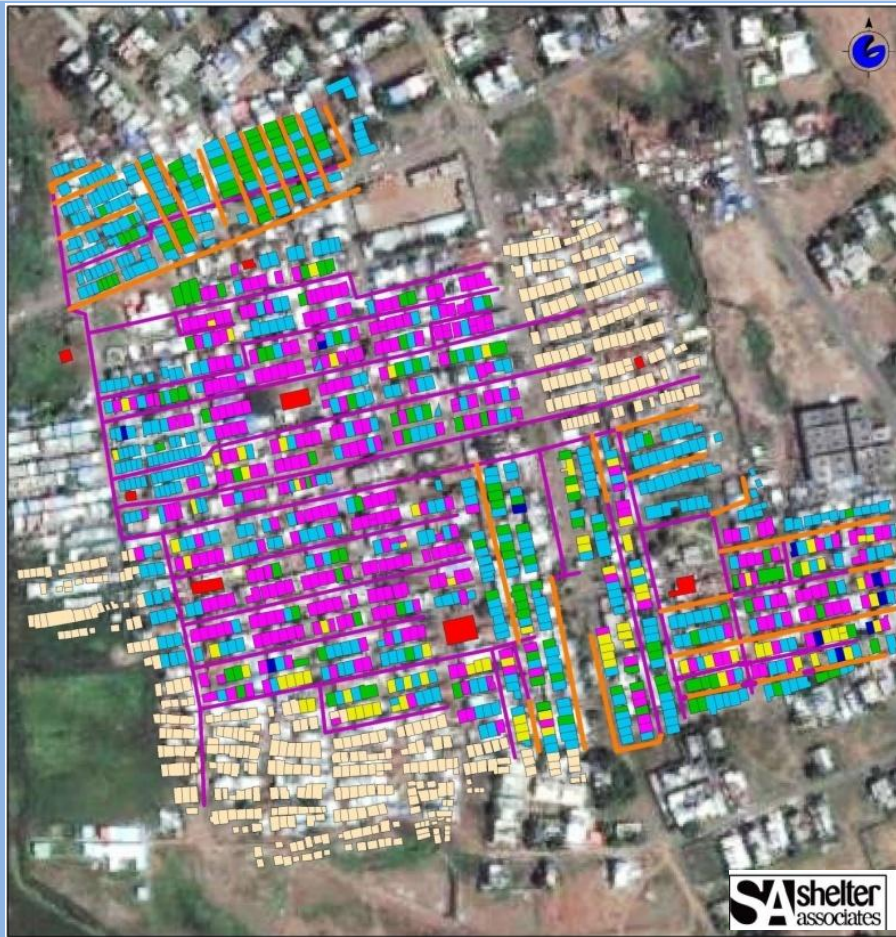
HH toilets connected to Septic Tanks

In regions, where drainage network is absent & scale of settlement is big, use of septic tanks has proven to be a suitable option

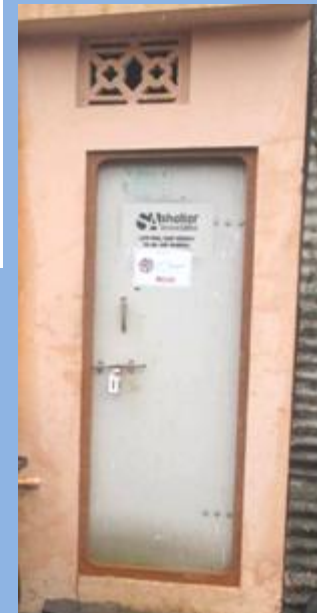
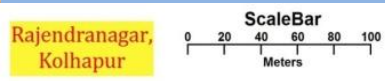
HH toilets connected to Biogas Plant

In regions, where drainage network is absent & scale of the settlement is moderate, biogas plant has been installed

HH toilets connected to ULB Drainage Network



Toilet Status	
■	Toilet Complete (357)
■	Under construction (89)
■	Construction not started (10)
■	Own Toilet (161)
■	Drainage line 6inch
■	Proposed Drainage Line - 1528m
■	CTB (8)
■	Houses under Reservation (422)
■	Total Houses (1573)



Rajendra Nagar

- Total Number of Households- 1573
- Drainage network coverage- Partial
- KMC took up the responsibility of expanding, relaying & connecting the drainage lines.
- Total number of individual household toilets facilitated by SA- 458 (phase 1)

HH toilets connected to Biogas Plant



Bondre Nagar

- Total Number of Households- 83
- Drainage network coverage- None
- Due to lack of drainage network, a biogas plant was installed which connects to the individual household toilets.
- This Biogas plant treats the sewerage let off by the individual household toilets. Gas produced is supplied to 1 household at present & is used as cooking fuel.
- Another 1-2 households will get connected in due course of time.
- Total number of individual household toilets facilitated by SA- 59

80



24 cubic metre



25'X30'=750 sq.ft.

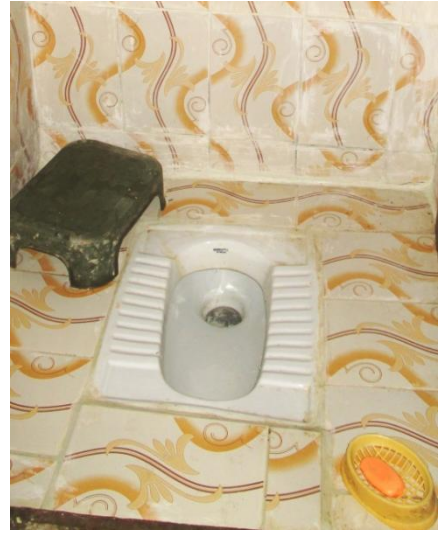
1000



300 cubic metre

9375 sq.ft.

HH toilets connected to Biogas Plant



बायोगॅस संयंत्रास जोडलेले शौचालय वापर व देखभाल Shelter associates

स्वास्थ्य संरक्षण खाती बायोगॅस संयंत्रास जोडलेले शौचालय खालील सूचनांचे पालन काटेकोरपणे करावे

- वापर**
 - प्रथमाभूत जास्त पाणी स्वच्छतेसाठी वापरावे.
 - शौचालयाचा वापर आर्चोटेराही करू नये.
 - नळ्याची सळी अर्धी (1/2) लिटरपेक्षा जास्त पाणी वापरू नये.
 - शौचालयाची सळी (x) लिटरपेक्षा जास्त पाणी वापरू नये.
- अफाई व देखभाल**
 - शौचालयाची सफाई पुरीक, हार्जिक, फिन्स व तीव्र पदार्थांनी करू नये.
 - शौचालयाचा वापर करताना, हात जोरात धुणे गरजेचे राहते.
 - शौचालयाचा वापर करताना, शौचालयाचा वापर करताना, या मिश्रणाने आरंभ करताना पुढे काढून घ्यावे लागू शकते.
 - शौचालयाचा वापर करताना, शौचालयाची सळी, प्लास्टिक इ. न घालू नये.
- अन्य सूचना**
 - बायोगॅस संयंत्रास जोडलेले शौचालय असलेल्या या क्षेत्रातील वस्तूला न घालू नये. बायोगॅस संयंत्रास जोडलेले शौचालय असलेल्या क्षेत्रात बायोगॅस संयंत्रास जोडलेले शौचालय घालू नये.

इतर बायोगॅस संयंत्रास जोडलेले शौचालय असलेल्या क्षेत्रात बायोगॅस संयंत्रास जोडलेले शौचालय घालू नये. बायोगॅस संयंत्रास जोडलेले शौचालय असलेल्या क्षेत्रात बायोगॅस संयंत्रास जोडलेले शौचालय घालू नये.

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HH toilets connected to Septic Tanks



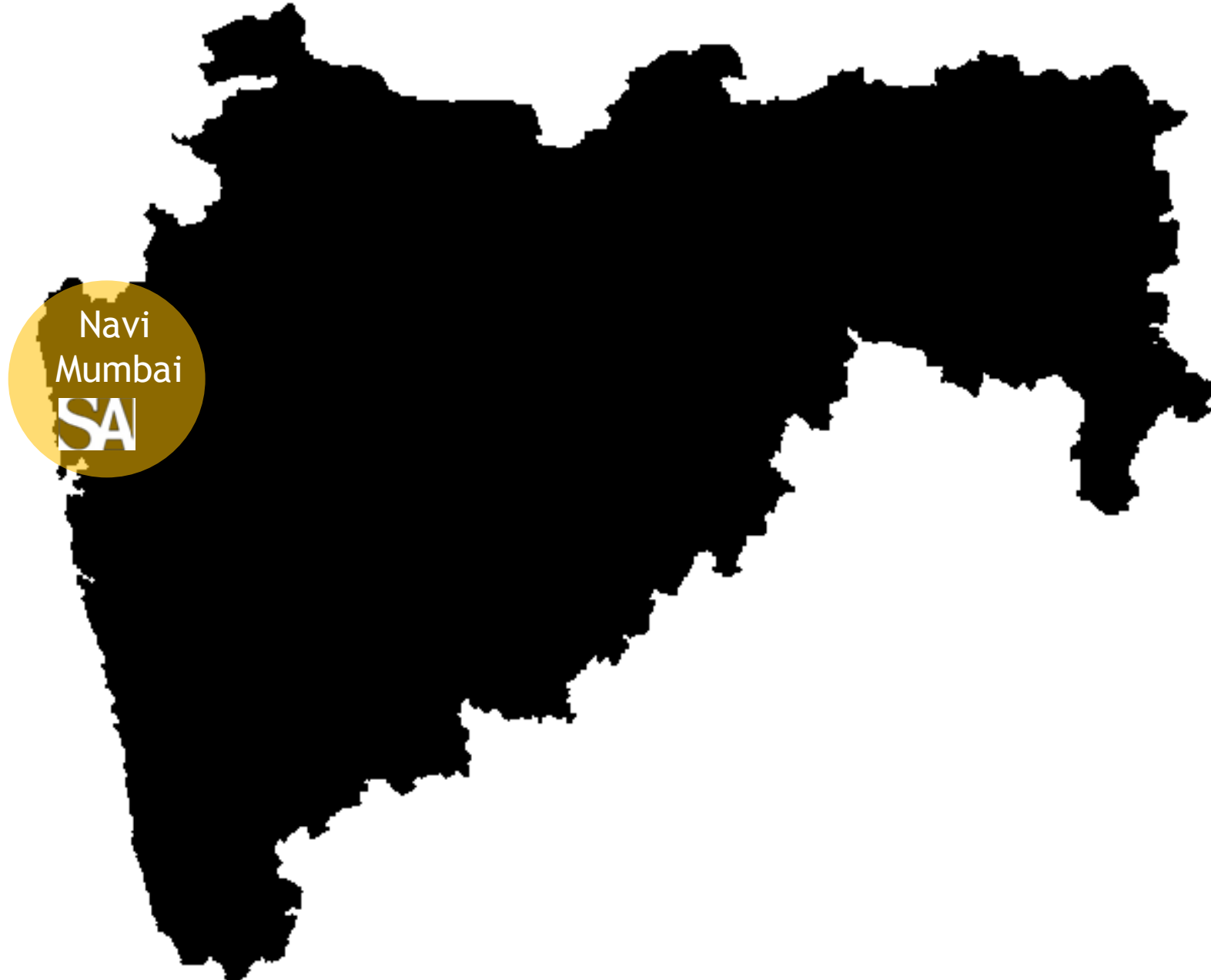
Vichare Mal, Ward 4, KMC

Vichare Mala

- Total Number of Households- 1176
- Drainage network coverage- None, absence of drainage network even in the vicinity.
- Due to lack of drainage network, SA is facilitating individual toilets connected to septic tanks-modified in design to cater to space crunch.
- As this settlement is not very well laid, the households are congested and the internal access roads to these households are very narrow, proving to be a challenging project under implementation.
- Total number of individual household toilets facilitated by SA- 10 (ongoing project)



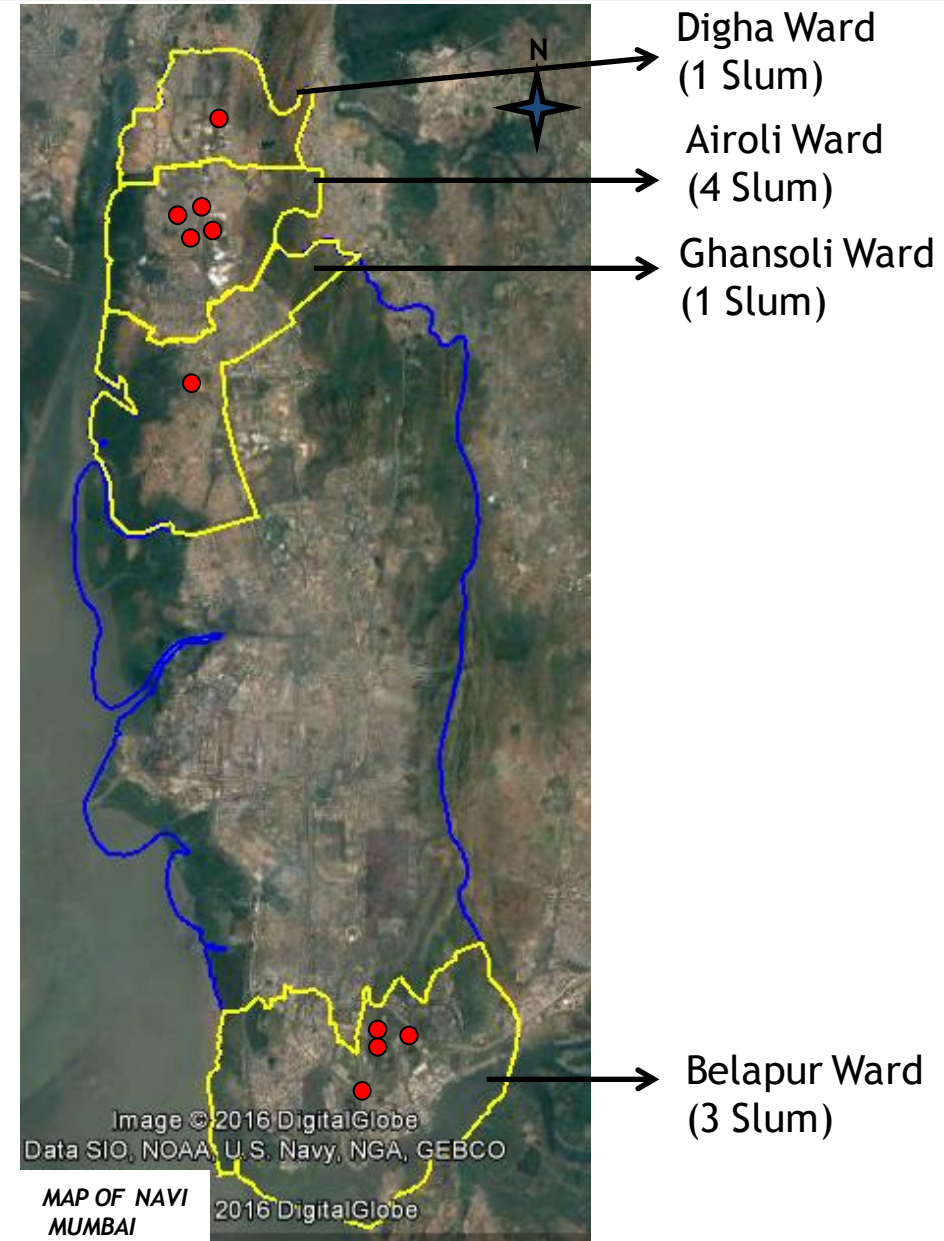
SA's presence- **Navi Mumbai**



Overview of Navi Mumbai

Total No. of Surveyed Slums	10
Total no. of Structures (4807 occupied)	6451
Households with Individual toilet	762 (16%)
Households using CTB / OD	4045 (84%)
Total No. of CTBs/Not in use	27/4
Total No. of CTB Seats in used CTBs	305
No. of Functioning CTB Seats	239 (78%)
Average Person to Toilet Seat Ratio	1:95
No. of Households that are willing to build individual toilets	1997 (50%)

Only 16% of HH have individual toilet. Thus, 4045 HH are dependant on CTB. However there are only 239 functional seats which leads to very high toilet seat to person ratio i.e 1:95. Because of this people are forced to defecate either partially or completely in the open space.



Digha Ward (1 Slum)
 Airoli Ward (4 Slum)
 Ghansoli Ward (1 Slum)
 Belapur Ward (3 Slum)

₹ Out of 6451 HH, 4807 were occupied at the time of survey, whereas remaining 1644 were locked broken, under construction, permanent locked and not giving information houses.

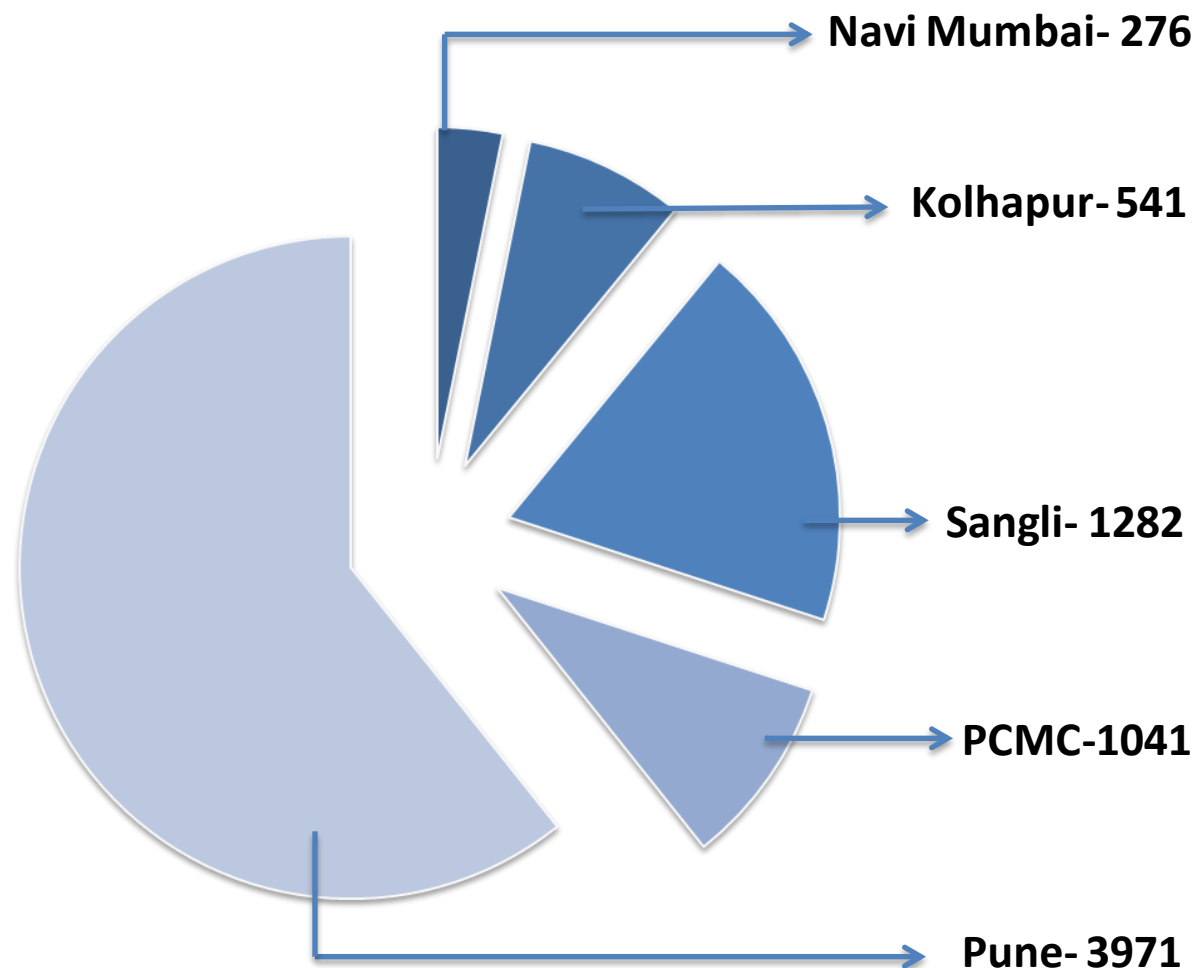
Direct Impact in Maharashtra

Total No. of Individual Toilets by SA-7111

SA projects across
Maharashtra: **5 cities**

Indirect impact through various means of
sanitation: over **70,000 people**

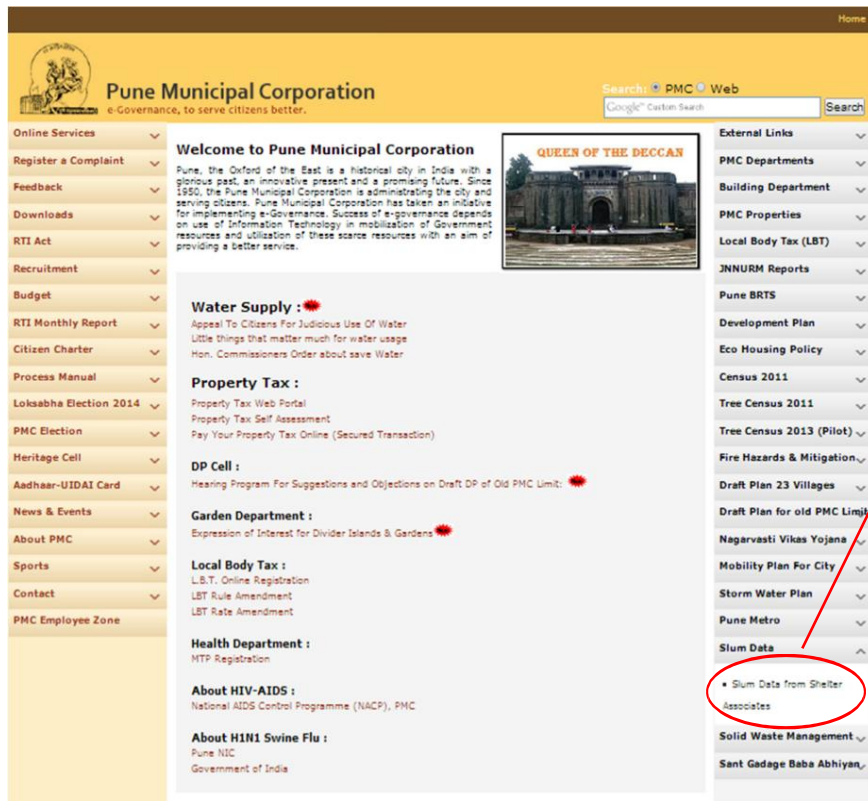
Direct Impact through individual
sanitation: over **35,500 people**



Customized Household Toilets facilitated by SA



ULBs link their website to SA's website



The screenshot shows the Pune Municipal Corporation website. The header includes the logo and the text "Pune Municipal Corporation e-Governance, to serve citizens better." Below the header, there are several sections: "Online Services" with a dropdown menu, "Welcome to Pune Municipal Corporation" with a sub-header "QUEEN OF THE DECCAN" and an image of a historical building, "Water Supply" with a sub-header "Appeal To Citizens For Judicious Use Of Water", "Property Tax" with a sub-header "Property Tax Web Portal", "DP Cell" with a sub-header "Hearing Program For Suggestions and Objections on Draft DP of Old PMC Limit", "Garden Department" with a sub-header "Expression of Interest for Divider Islands & Gardens", "Local Body Tax" with a sub-header "L.B.T. Online Registration", "Health Department" with a sub-header "MTP Registration", "About HIV-AIDS" with a sub-header "National AIDS Control Programme (NACP), PMC", and "About H1N1 Swine Flu" with a sub-header "Pune NIC Government of India". On the right side, there is a "External Links" section with a dropdown menu containing: "PMC Departments", "Building Department", "PMC Properties", "Local Body Tax (LBT)", "JNNURM Reports", "Pune BRTS", "Development Plan", "Eco Housing Policy", "Census 2011", "Tree Census 2011", "Tree Census 2013 (Pilot)", "Fire Hazards & Mitigation", "Draft Plan 23 Villages", "Draft Plan for old PMC Limit", "Nagavasti Vikas Yojana", "Mobility Plan For City", "Storm Water Plan", "Pune Metro", "Slum Data", "Solid Waste Management", and "Sant Gadge Baba Abhiyan". A red circle highlights the "Slum Data" link in the "External Links" section, with a red arrow pointing from the text box on the right.

Pune Municipal Corporation Website

Slum Data from SA linked to PMC Website—publicly accessible. This data is also validated by Govt.

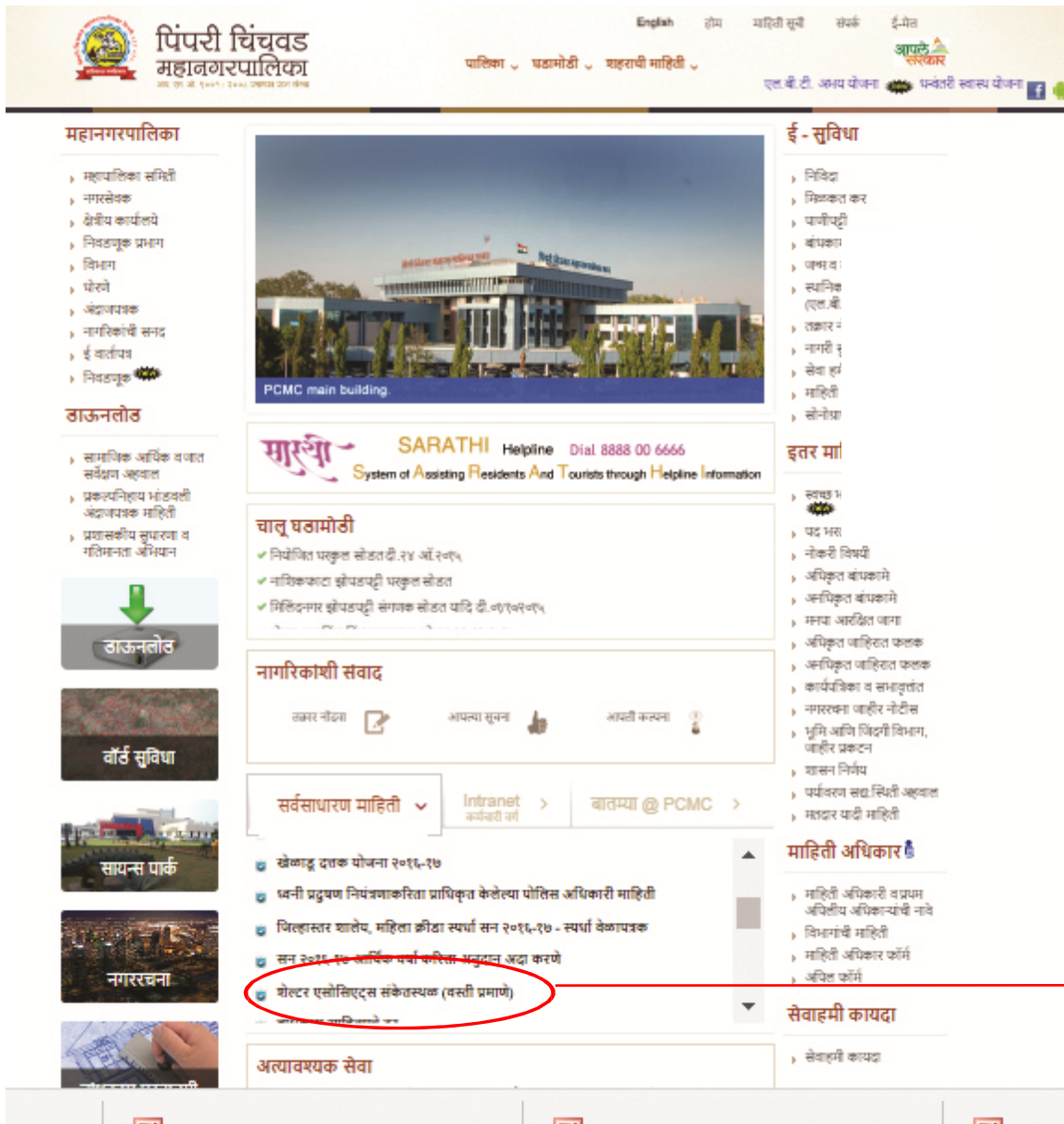
Kolhapur Municipal Corporation Website

Slum Data from SA linked to KMC Website—publicly accessible



The screenshot shows the Kolhapur Municipal Corporation website. The header includes the URL "www.kolhapurcorporation.gov.in/english/". Below the header, there are several sections: "Kolhapur Collectorate", "Maharashtra Tourism", "Govt of Maharashtra", "Complaints for Illegal Hoardings Banners" with a phone number "18002334598", "SPRS Slum Permanent Record System" with a link "Hawkers and Non Hawklers Zone Ward offices List 1 To 4", "National Pulse Polio vaccination campaign- 17 January 2016", "National Voters Day Rally - 25 January 2016", "Received Award for swachh maharashtra mission from Hon. Chief Minister Devendra Fadnavis", "General Body Proceedings", "Standing Committee Proceeding", "KMC General Election-2015", "e-newsletter", and "ādhar". A red circle highlights the "Slum Data From Shelter Associates NEW" link in the footer, with a red arrow pointing from the text box on the left. The footer also includes a "Hit Counter 521391" and a "Designed and Maintained by HGL Infosystems Limited" notice.

ULBs link their website to SA's website



Pimpri-Chinchwad Municipal Corporation Website

Slum Data from SA linked to PCMC Website— publicly accessible. This data is also validated by Govt.

Sanitation incentivising rebuilding of homes



- Almost **60%** of our beneficiaries in Ambedkar Nagar, Pune have either **partially** or **fully upgraded** their homes.

- It would be appropriate to state that SBM in Pune is in a way leading to partial fulfilment of the GOI's vision of Prime Minister's Awas Yojana (PMAY), where the objective is to ensure every family has a pucca home.





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Sustainable Sanitation Solutions for Urban India