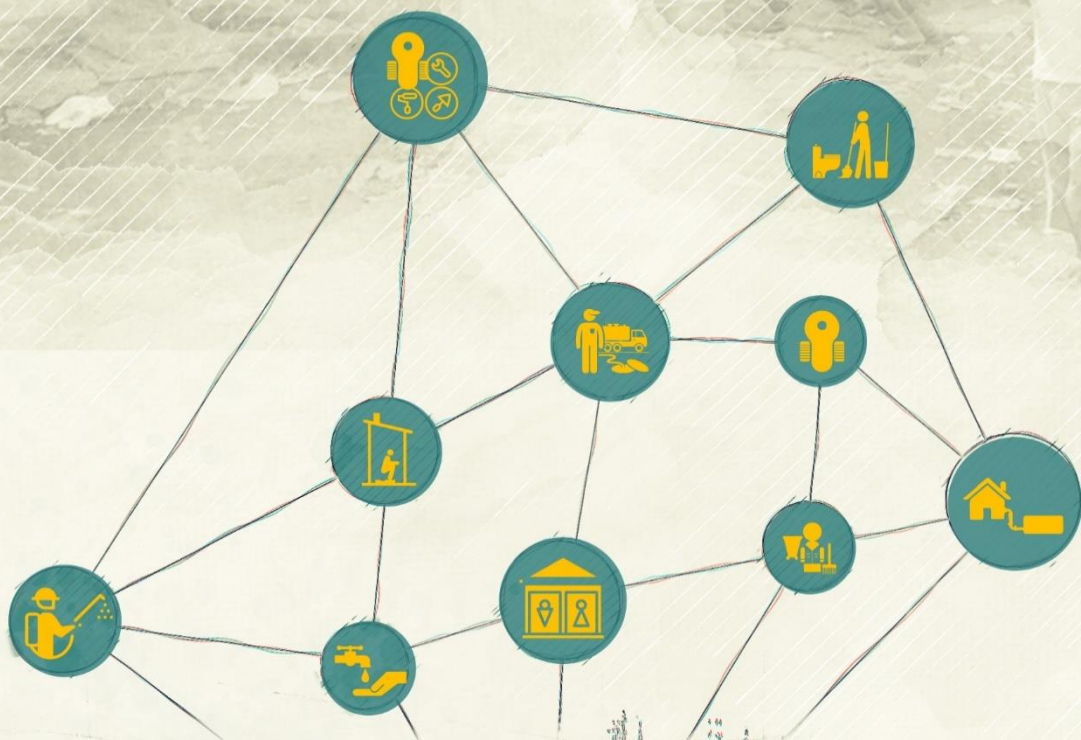


Community Sanitation in Mumbai

A Recommendation Note



United Nations Children's Fund, Mumbai
All India Institute of Local Self Government, Mumbai



Community Sanitation in Mumbai

A Recommendation Note

This report is an abridged version of an in-depth study that was undertaken to analyse the situation of community sanitation in the city of Mumbai. It was prepared by All India Institute of Local Self Government (AIILSG), Mumbai with funding from UNICEF. The main objective of this endeavour was to develop a “Recommendation Note” as a first step towards developing a comprehensive ‘Community Sanitation Policy’ for Mumbai in the future.

In the present pandemic situation, wherein face to face interviews and site visits were not possible, data was predominantly collected via in-depth desk research. An exhaustive Framework that included all the main domains of the sanitation value chain was developed to guide the same. A review of community sanitation policies and programs in New Delhi, Kolkata, Bangalore, Ahmedabad and Hyderabad was also undertaken to derive key learnings from them, if any. Virtual meetings with MCGM officials, Subject Experts and NGO representatives along with telephonic discussions with concerned staff in aforementioned Municipal Corporations was undertaken. This was followed by a ‘Stakeholder Consultation’ with representations from UNICEF (India, State and Mumbai sector experts), senior government officials, subject experts and NGO representatives. The main analysis and inferences of this study was shared with them. The insights generated through this entire process were incorporated in the final “Recommendation Note” that clearly delineated the short, mid and long term actions that MCGM could undertake to mitigate the gaps that were identified in the entire sanitation value chain.

The Report is presented in three Parts – Part 1 contains the analysis of the Community Sanitation Scenario in Mumbai; Part 2 outlines the ‘Key Inferences and Recommendations’ that emerge and finally, Part 3 captures the sanitation scenario in the cities of New Delhi, Kolkata, Bangalore, Ahmedabad and Hyderabad.

Acknowledgements

This report is the result of tireless efforts from a number of individuals who guided and shaped it at various points in its development.

AILSG Mumbai

Mr. Ranjit Chavan, President, AILSG
Mr. Rajiv Agarwal, IAS (Retd.), Director General, AILSG

Lead

Ms. Utkarsha Kavadi, Sr. Ex. Director, AILSG Mumbai

Consultant

Dr. Padma Desai, Consultant, Architect and Urban Planner

Team

Ms. Shweta Nagarkar, Project Manager, AILSG Mumbai
Ms. Amruta Paranjape, Project Manager, AILSG Mumbai
Ms. Priyadarshika Das, Research Associate, AILSG Mumbai
Ms. Prachi Mendhe, Research Associate, AILSG Mumbai
Mr. Shailesh Chalke, Programme Assistant, AILSG Mumbai

In Consultation with

Mr. Santosh Mujumdar, Deputy Municipal Commissioner, Sewerage Projects, MCGM
Dr. Ajit Salvi, Executive Engineer, Sewerage Operations, MCGM
Mr. Anand Jagtap, Ex-OSD, MCGM
Ms. Seema Redkar, Ex-OSD, MCGM
Prof. Amita Bhide, Tata Institute of Social Sciences
Mr. Dayanad Jadhav, Triratna Prerna Mandal
Ms. Prachi Merchant, MCGM Development Plan team, AILSG Mumbai

Delhi Urban Shelter Improvement Board
Centre for Advocacy and Research, Delhi
Urban Management Centre, Ahmedabad
Local Governments of Delhi, Ahmedabad, Bangalore and Kolkata

UNICEF Maharashtra

Ms. Rajeshwari Chandrasekar, Chief Field Office, UNICEF Maharashtra
Mr. Yusuf Kabir, WASH Specialist and Emergency and DRR Focal Point, UNICEF Maharashtra
Mr. Anand Ghodke, WASH Officer, UNICEF Maharashtra

Table of Contents

Part 1: Community Sanitation in Mumbai - Situation Assessment	1
<i>Introduction - The Present Report</i>	2
<i>Status of Community Sanitation in Mumbai – An Overview</i>	2
<i>Public Toilets</i>	4
<i>Gaps in Empirical Data and Actual Status on the Ground</i>	5
<i>Organizational Structure of Sanitation</i>	7
<i>Financial Allocations</i>	7
<i>Administrative Procedure for CTs</i>	7
<i>Tendering Procedure for New CBTs</i>	8
<i>Operation and Maintenance (O&M)</i>	8
<i>Community Participation and Gender Inclusivity</i>	10
<i>Sewerage System in Mumbai – Exclusion of Slums</i>	10
<i>Conclusion</i>	11
Part 2: Key Inferences and Recommendations	12
Part 3: Community Sanitation in Selected Cities in India	20
<i>Selected References</i>	37

List of Charts, Figures, Maps and Tables

Chart 1	Slums and Land Ownership	2
Chart 2	CTs by Agencies	3
Chart 3	Availability of Water	6
Chart 4	Availability of Electricity	6
Chart 5	Sewerage connections.....	10
Figure 1	Clean Toilets due to User Engagement	9
Figure 2	Cleaning via Monthly Contributions.....	9
Figure 3	Rapid Deterioration in New Block	9
Figure 4	Unhygienic Conditions.....	9
Figure 5	Overflows from CTs	10
Table 1	Community Toilet Blocks and Seats	5
Table 2	Public Toilet Blocks and Seats.....	5
Map 1	Construction of Community Toilets by Agencies	3
Map 2	Dependency of Persons per seat and Male Female Distribution	4
Map 3	Availability of Water and Electricity in Community Toilets	6

Abbreviations

AIILSG	-	All India Institute of Local Self Government
AMC	-	Ahmedabad Municipal Corporation
BCC	-	Behaviour Change Communication
BBMP	-	Bruhat Bengaluru Mahanagara Palike
BWSSB	-	Bangalore Water Supply and Sewerage Board
CAG	-	Comptroller and Auditor General
CB	-	Cantonment Board
CBO_s	-	Community Based Organization
CSP	-	City Sanitation Plan
CSR	-	Corporate Social Responsibility
CT	-	Community Toilet
CTB	-	Community Toilet Block
DDA	-	Delhi Development Authority
DEMS	-	Department of Environment Management Services
DJB	-	Delhi Jal Board
DP	-	Development Plan
DUSIB	-	Delhi Urban Shelter Improvement Board
EDMC	-	East Delhi Municipal Corporation
FSI	-	Floor Space Index
FSSM	-	Faecal Sludge & Septage Management
GIS	-	Geographic Information System
IHHL	-	Individual Household Latrine
IEC	-	Information Education Communication
JSC	-	Jan Suvidha Kendra
JJ	-	Jhuggi - Jhopri
KMC	-	Kolkata Municipal Corporation
KSDB	-	Karnataka Slum Development Board
NDMC	-	North Delhi Municipal Corporation
M & E	-	Monitoring and Evaluation
MCD	-	Municipal Corporation of Delhi
MCGM	-	Municipal Corporation of Greater Mumbai
MHADA	-	Maharashtra Housing & Area Development Authority
MIS	-	Management Information System
MLA	-	Member of the Legislative Assembly
MLD	-	Million Litres per Day
MP	-	Member of Parliament
MSDP	-	Mumbai Sewerage Disposal Project
NGO	-	Non-Governmental Organization
NGSY	-	Nirmal Gujarat Shauchalaya Yojana
NOC	-	No Objection Certificate
NUSP	-	National Urban Sanitation Policy
O & M	-	Operations and Maintenance
ODF	-	Open Defecation Free
PT	-	Public Toilet
RCC	-	Reinforced Cement Concrete

SBM	-	Swachh Bharat Mission
SDMC	-	South Delhi Municipal Corporation
SNP	-	Slum Networking Program
SOP	-	Standard Operating Procedures
SRS	-	Slum Rehabilitation Scheme
SSP	-	Slum Sanitation Program
STF	-	Sanitation Task Force
SWM	-	Solid Waste Management
SUSS	-	State Urban Sanitation Scheme
TDR	-	Transfer of Development Rights
UN	-	United Nations
UNICEF	-	United Nations Children's Fund



Part 1

**Community Sanitation in
Mumbai
Situation Assessment**

Introduction - The Present Report

A strong narrative for supporting safe sanitation has emerged due to the guidelines provided by national and state level policies and programs like the ‘National Urban Sanitation Policy (NUSP)’, ‘Swachh Bharat Mission (SBM)’, ‘State Urban Sanitation Strategy (SUSS)’ and ‘Faecal Sludge and Septage Management (FSSM)’. Adequate access to and availability of sanitation is being increasingly recognized as not simply an activity of providing functional toilets, but also one that includes all links in the entire sanitation value chain. This ‘mainstreaming’ of sanitation acknowledges its larger role in creating sustainable and inclusive cities.

In this background, the focus of the present study is on the metropolis of Mumbai and the sanitation scenario within it. Funded by UNICEF and prepared by All India Institute of Local Self Government (AIILSG), Mumbai, its main objective is to develop a “Recommendation Note” as a foundation for a more detailed “Policy for Community Sanitation for Mumbai” to follow in the future. The present report is an abridged version of a detailed report that was prepared. It commences with a brief background of the status of community sanitation in Mumbai, then proceeds to summarize the main inferences and preliminary ‘Recommendations’.

Status of Community Sanitation in Mumbai – An Overview

Mumbai, originally a group of seven islands has undergone a metamorphic change to emerge as the financial and commercial capital of India. Census 2011 had pegged its population at 12.4 million, landlocked in just over 480 square kilometre. It had reported a total slum population of 41 per cent. Out of the total slum households, almost 33 per cent had access to Individual household latrine (IHHL), 64 per cent depended on public latrines and open defecation stood at only 3 per cent. Majority of the slums were situated on private lands (48 per cent), followed by State and Central Government (34 per cent) with only 18 per cent under MCGM ownership. Spread all over the city, some wards indicated extremely dense slum clusters. In the present context, official reports suggest the slum population to be anywhere between 50 to 60 per cent of the total.

Over the years, various official reports, including Mumbai’s own Development Plan (DP), have painted

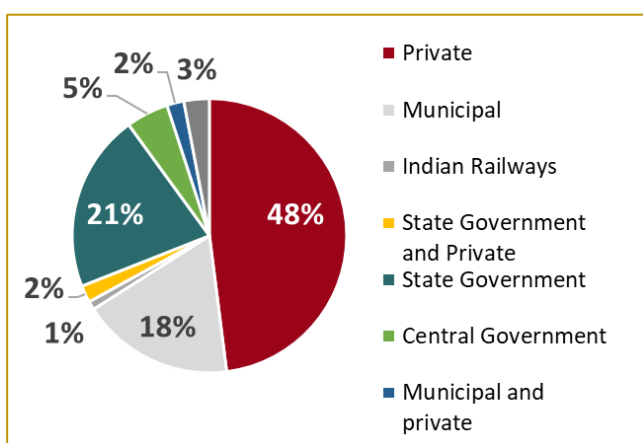


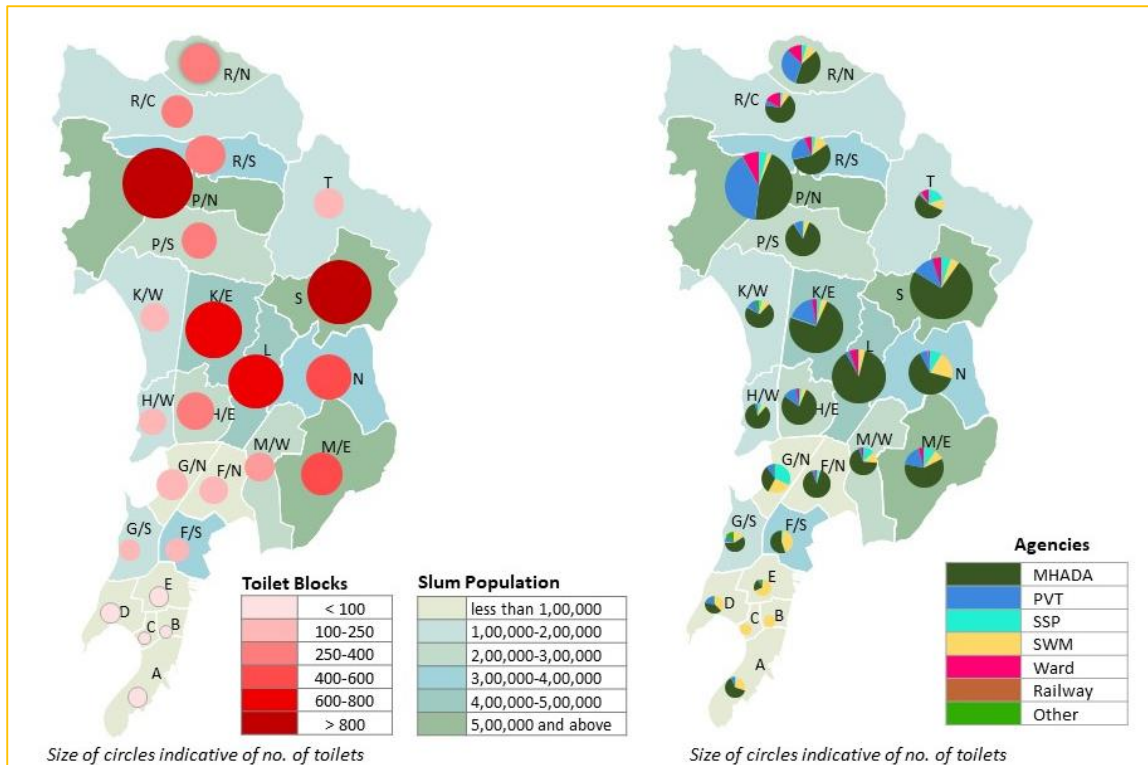
Chart 1 Slums and Land Ownership (Census 2011)

a very grim picture of sanitation and admitted to fundamental gaps in both adequacy and availability¹. Indeed, provision of sanitation infrastructure continues to be challenging due to topographical, legal, ownership, community and eligibility issues that surround slums. The ‘Slum Improvement Wing’ under Municipal Corporation of Greater Mumbai (MCGM) built ‘Community Toilets (CTs)’ on its own lands. Under the Mumbai Sewerage Development Program (MSDP) toilet blocks continue to be built under Slum Sanitation Program (SSP). The demand driven, participatory, partnership based approach of the previous MSDP-I has

lost its steam in the current MSDP II which has a ‘public works’, engineering orientation. Multi storeyed, RCC, toilet blocks with high specifications are currently provided under it. In the 23 year

¹ UN-Habitat, 2006; A Bombay First – McKinsey Report, 2003; Chief Minister’s Task Force Report, 2004

period (1997 to 2013) 922 toilet blocks with 41,306 seats have been constructed, most connected to septic tanks (71 per cent) with 24 and 5 per cent having sewerage connections and aqua privy tank respectively². MHADA, under the MP and MLA funds is not permitted to build new blocks but to only to retrofit or repair them.



Map 1 Construction of Community Toilets by Agencies

Over the years, if construction of toilets by agency is considered - MCGM has built 2734 CTs through their normal course of work and 225 under SSP, Maharashtra Housing and Area Development Agency (MHADA) 4318 whereas those constructed by Non-Governmental Organizations (NGOs), Community Based Organization (CBOs) and State Department (Public Works) together stand at 422, with 'Others' having built 2264³. However, the models followed by MHADA, a state government agency and provider of the larger city wide toilet infrastructure and MCGM differ significantly.

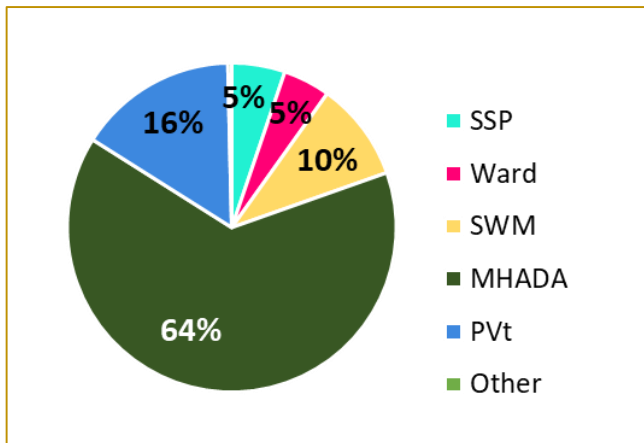


Chart 2 CTs by Agencies (MCGM Survey 2015)

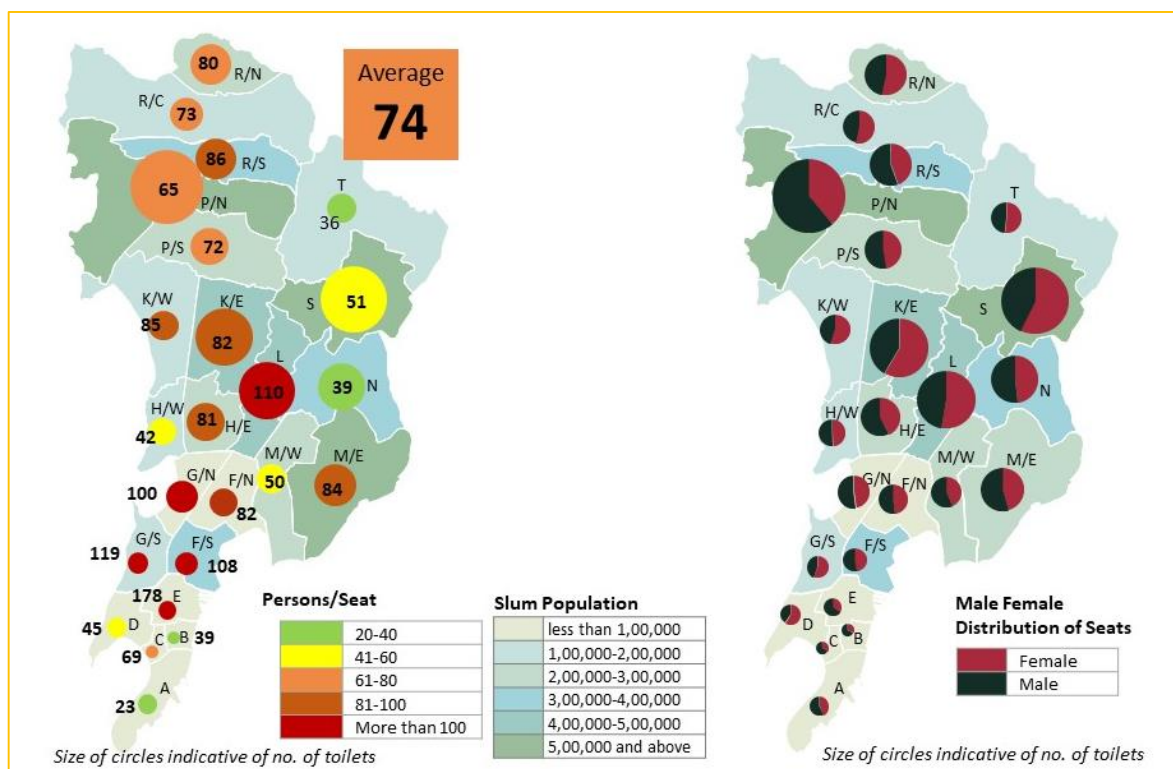
MCGM has no jurisdiction over MHADA toilets. Further, the Slum Rehabilitation Authority (SRA) under the Government of Maharashtra (GoM) aims for a 'slum free' Mumbai via private sector involvement by adopting a total demolition-redevelopment model via its Floor Space Index (FSI) and Total Development Rights (TDR) incentives to builders. This directly conflicts with the capital intensive, high specifications RCC toilet blocks that continue to be

² Patil, M., 2020

³ CRISIL, 2012

constructed under SSP (MSDP II) in city’s slums. These state and city level disparities emerge as a significant barrier to unifying the efforts of sanitation provision under a consolidated model.

Ward level data suggested that there were only a few wards that had adequate seats, most indicating acute loads sometimes going up to 110 / seat. The average load stood at 70 / seat. Almost an equal distribution of male and female seats was noted with one seat per 42 males and 34 females (Map 2). No special consideration vis-à-vis gender or differently abled was noted.



Map 2 Dependency of Persons per seat and Male Female Distribution

Public Toilets

The scarce data available on Public Toilets (PTs) suggest provision under two modalities - One – Construction, Operation and Maintenance (O & M) handled by MCGM; and Two – Construction, O & M handled by third party⁴. In PTs, number of seats are clearly skewed in favour of men, standing at 64 per cent (71 per cent if usage of urinals is included). The user fee structure indicates Rs. 2 for toilet use and Rs. 3 for bath. There are 258 toilets being operated by Sulabh, emerging as the dominant agency in the O&M of PTs in the city. Some PTs generate revenue via advertising. However, MCGM has not mandated any ‘Standard Operating Procedures (SOPs)’ for the O&M of PTs. Similarly, no systematic and regular monitoring and performance audits are undertaken for PT Operators. For both the CT and PT infrastructure, no structural audits are regularly undertaken. Clearly, there is a total lack of supervision and evaluation of the PT infrastructure in the city on a regular basis.

⁴ CRISIL, 2012

Community Toilet Blocks and Seats		
Year	2014-15	2020
CT Blocks	8417	9861
Male seats	40982	68796
Female seats	38776	68599
Specially abled	-	2192
Total seats	79758	139587

Table 1: Community Toilet Blocks and Seats⁵

Public Toilet Blocks and Seats		
Year	2013	2020
No. of blocks	1035	-
Male seats	8305	9646
Female seats	5136	3237
Specially abled	-	242
Total seats	13441	13125

Table 2: Public Toilet Blocks and Seats⁶

After Census 2011, only need based, one time efforts appear to have been undertaken by MCGM, i.e. GIS mapping of sewerage system, cadastral mapping of slum boundaries and a PT/CT list. These efforts, although laudable, contain only minimal skeletal data and do not give any insights on performance or actual O&M on ground. Thus, a cohesive, city wide updated data inventory on sanitation is absent. Similarly, although a ‘City Sanitation Plan (CSP)’ was prepared for Mumbai, the actual commitments towards its goals remain unclear. A similar case was observed in case of the city’s DP wherein no specific slum sanitation goals were outlined, as notionally all slum level decisions were under the purview of SRA (Discussion with Experts involved in DP preparation). Thus, most efforts post Census 2011, appear to be disjointed and ad hoc, often responding to the crisis situations on ground.

Post Census 2011, slum and ward level studies undertaken by independent organizations reveal serious deficiencies on the ground. We turn to this picture now.

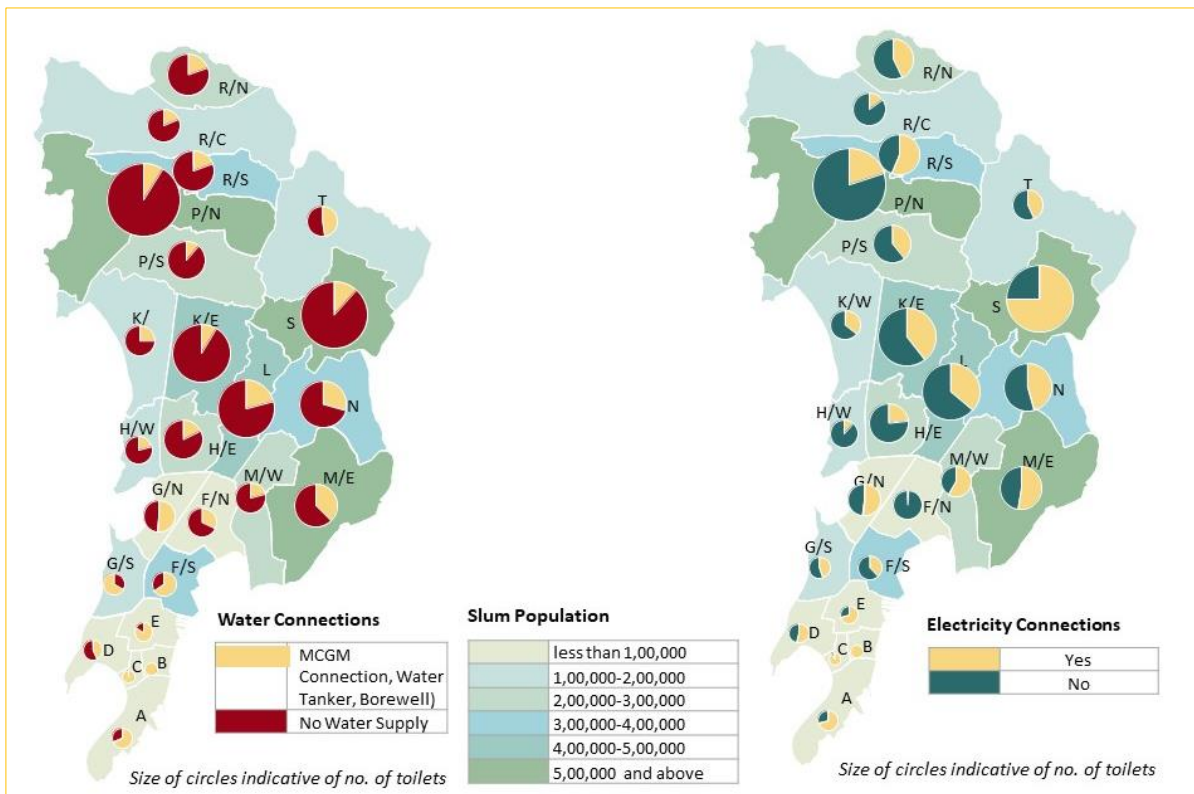
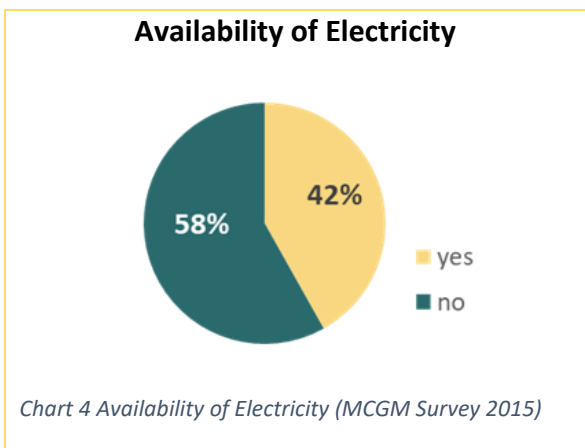
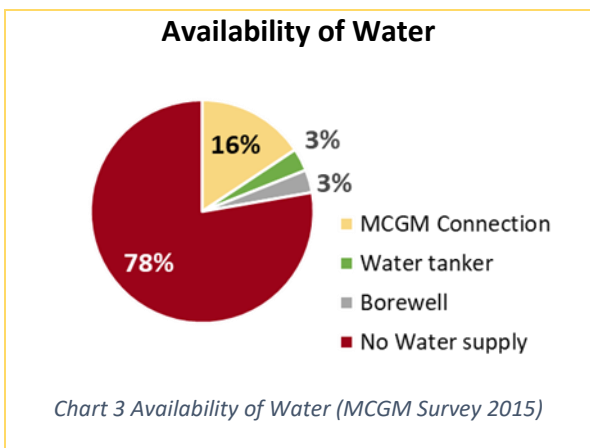
Status of Sanitation Status on the Ground

Availability of water indicates a precarious situation with 78 per cent blocks having no water connection. This negatively impacts hygienic and cleanliness in facilities rendering them filthy and unusable. 58 per cent did not have electricity which makes them unsafe for women, children and elderly. In older SSP blocks, showing severe dilapidation, the ‘pay and use’ system has disintegrated into a ‘free’ one. Thus, these multi storeyed blocks, in dire need of structural repairs, in some cases have become a hazard. Extreme load on facilities i.e. in CTs 74 per seat (rising to 119/seat in some clusters) and in PTs, 696 per seat (males) and 1769 per seat (females), clearly point towards an infrastructure under severe stress. No operator presence, overflowing sewage and ‘capture’ of blocks due to an operator/slum leader nexus is noted. Some cluster level data as well as field work of NGOs also suggests a strong latent demand for IHHL. NGOs working closely with the CBOs have demonstrated an efficient and workable model of IHHL in some slum clusters (Discussion with ex MCGM Officials). Similarly, ‘Shared Toilet’ models display much better functional conditions⁷.

⁵ MCGM Survey, 2015; PRAJA Report, 2020

⁶ MCGM Survey, 2015; PRAJA Report, 2020; Patil, M., 2020

⁷ Desai, P. 2014; Patil, M. 2020



Map 3 Availability of Water and Electricity in Community Toilets

Some such field level studies peg the total lack of toilet seats to 21,885 thereby effectively denying access to approximately 6.5 lakh slum dwellers (considering a norm of 30/seat). A more serious situation arises in the connectivity of toilet blocks to the city sewerage network. Only 28 percent are connected to city sewer network with majority having septic tanks. With load overflows are common as immediate or timely desludging by MCGM is not undertaken. These micro level studies also suggest serious lapses in O & M issues with facilities barely operating under any system to assure regular cleaning and upkeep⁸ (Discussions with Sector Experts and ex MCGM Officials). Serious gaps in faecal sludge management are noted with unscientific methods of storage and discharge. MHADA toilets quickly fall into a state of disrepair within 3-4 years due to substandard materials as well as construction methods used. They thus get trapped in a ‘build-rebuild’ cycle.

⁸ CORO, 2019

MCGM's own one-time Structural Audit undertaken in 2018 after an incident of CT collapse that killed users echoed this precarious on-ground situation. Out of 1706 CTs audited, 32 per cent indicated severe hazardous conditions, with demolition being the only option. Although a similar audit for MHADA toilets was proposed, it was not undertaken.

If just the toilet infrastructure is considered there is a clear and acute lack of adequate toilet seats. Even in the already existing infrastructure, mere availability of seats does not automatically imply their accessibility, appropriate functional conditions and sustainability. Inadequacy in water availability and electricity especially in MHADA toilets is evident. Similarly, collection, and transport of faecal sludge from onsite sanitation systems indicates lapses.

In recent years, Corporate Sector (under Corporate Social Responsibility (CSR)) and MCGM partnerships have given rise to a 'Suvidha' model of toilet blocks. These have a number of innovative and advanced technological features. These facilities have separate male, female and specially-abled toilets, facilities for menstrual hygiene, handwashing stations, shower/bathing areas, washing machines and children's play area. In some, efforts at rainwater harvesting facilities and recycling of used water has also been attempted. However, this model needs to be systematically evaluated for its financial and O&M sustainability via 'break even analysis' for it to be considered as a replicable and scalable model for the entire city.

Organizational Structure of Sanitation

Mumbai has 24 wards grouped into seven administrative zones, further sub divided into three main areas – the Island City, Western Suburbs and Eastern Suburbs. Sanitation is handled the 'Sewerage Operations Department' which operates and maintains the sewage collection, conveyance, pumping, treatment and disposal system which is brought in place by the 'Sewerage Projects' and the 'MSDP' Departments.

Whereas in the first phase of SSP, MSDP-I was autonomous body with an organizational structure and decision making separate from MCGM, in the second phase, post World Bank withdrawal, it was merged within Sewage Management and Operations Departments. The previous bottom up, participatory approach involving CBOs in designing, building and managing CTs was abandoned. Presently, construction of CTs is within a routinized 'civil work', 'toilet seat provision', project orientation.

Financial Allocations

An analysis of the Budget Allocation vs. Actual Expenditure on toilet construction for 3 years studied (2013-2016) indicates that allocation has systematically reduced. If the budget estimates for construction and repairs is compared over the years, it is apparent that the expenditure for construction for CTs has decreased substantially whereas the expenditure for repairs has increased. About 67 per cent of total budget allocation for CTs is used for their repairs. A similar decrease is noted in Budget Allocation and the Actual Expenditure on CT construction for three years. No such figures for PTs are available.

Administrative Procedure for CTs

Presently, all existing blocks built by MHADA can only be repaired or retrofitted, for which a specific administrative procedure is in place. This involves a chain of decision-making from local Corporators onwards to ward, zonal and head office levels for its scrutiny. After final sanctioning, in the actual

construction of MHADA toilet, no adherence to specifications is mandated. Similarly, regular supervision and quality checks during construction are not undertaken. There are no formal or 'handover' procedures outlined. These 'free' toilet blocks have no formal O&M procedure put in place. Resultantly, under heavy usage loads and lapses in O&M, these blocks deteriorate rapidly. After this, they typically get caught in a repeated "build-rebuild" cycle.

New toilet blocks by MCGM are constructed under SSP prototype, which has undergone many design changes. Presently, these are two-storeyed RCC structures following higher design, technical and construction norms. The community hall on the third floor, envisaged to be a place for Information, Education and Communication (IEC) and community activities, has been abandoned after reports of its misuse by local Corporators and slum leaders. A formal Memorandum of Understanding (MoU) for 'handover' is signed between MCGM and CBOs which undertake the O&M of these CT blocks.

Tendering Procedure for New CBTs

The MCGM follows a prescribed procedure for new constructions of toilet blocks under SSP. Within it, eligible contractors are chosen for the Planning, Designing & Construction of RCC CT blocks (Ground / Ground +1/ Ground +2 storied) via standardized process of tendering. Vigilance norms prescribe that MCGM receives photographic evidence of the work at nine stages of the project cycle. Direct monitoring via regular site visits is not a prescribed practice as no official verification or 'quality checks' are systematically undertaken by MCGM.

Operation and Maintenance (O&M)

O&M of CTs is under two modalities – a) MHADA and b) SSP

a) MHADA Toilets

As mentioned earlier, in this modality there is no 'handover' or a formal O&M protocol put in place and thus the actual day to day functioning is entirely left to the devices of the user community. A wide range of informal arrangements in functionality and maintenance thus emerges⁹. At one end of the spectrum are clean CTs (new and old), with well-defined, albeit informal collectives that operate the facility by collecting monthly charges from user households and engaging a cleaner. A smaller prototype of a "Shared toilet" (4 to 7 toilet seats), under lock and key appears to be preferred option with well-functioning toilets.

⁹ Desai, P., 2014

Figure 1 Clean Toilets due to User Engagement



Figure 2: Cleaning via Monthly Contributions



Source: Desai, P., 2014

Figure 3: Rapid Deterioration in New Block



Figure 4: Unhygienic Conditions



Source: Desai, P., 2014

Contrasting with this are CTs in completely derelict and unhygienic conditions. With community rivalries, repeated evictions, locational / topographical disadvantages, indiscriminate use by passer-by's, these facilities indicate heavy load, low user engagement and extreme dilapidation.

b) SSP CTs

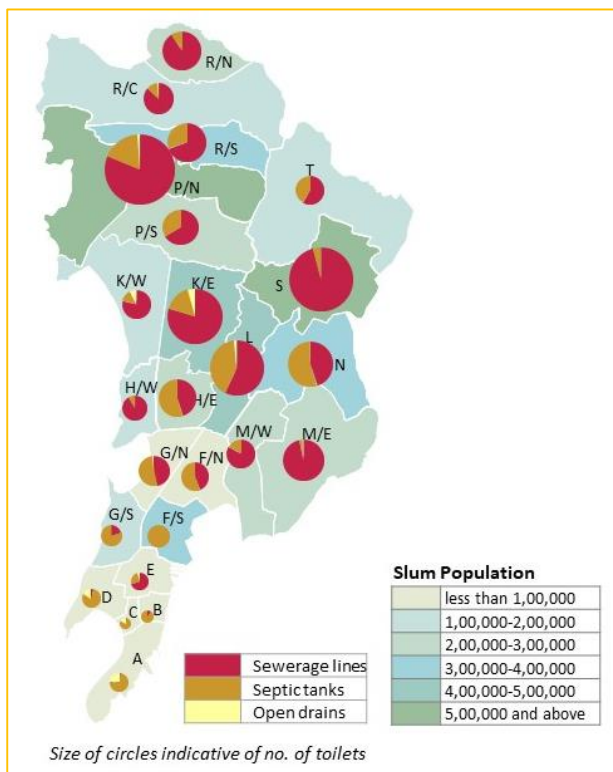
Herein, MCGM enters into a MoU with CBOs / Operators with a formal 'handover' of the CTs for O&M. Henceforth, the functionality of the same is completely controlled by the CBO/Operators, who charge user fees (per use or monthly). MCGM completely withdraws from the scene. Audited yearly accounts by Operators are submitted to MCGM. There is no institutionalized system of regular monitoring or supervision of these blocks thus handed over. In this scenario too, SSP blocks show a wide range of on-site conditions. In very old blocks the 'pay and use' has disintegrated into a 'free system' over time. These are in a state of complete disrepair barely suggesting skeletal services¹⁰. Whereas newer facilities indicate better upkeep and functionality. Higher specifications and technical standards also deter frequent wear and tear. However, the day to day operations do not adhere to prescribed formats of SSP but have witnessed many field level innovations. Due to delays in resolving complains received from CBOs/Operators for major repairs, clogging and overflows from such blocks is a common sight.

¹⁰ Patil, M., 2020

Community Participation and Gender Inclusivity

Safe sanitation incorporates not simply provision of toilet blocks but also changes in the hygiene behavior of users. Neither MHADA nor MCGM has any formalized system for IEC or Behavior Change Communication (BCC) campaigns. Clearly, the softer components of the sanitation value chain, i.e. removing the stigma around sanitation, increasing user ‘agency’, creating a sense of ownership and responsibility amongst stakeholders, and gender inclusivity, remain completely devalued. Intermittent sensitization or rallies take place without an integrative vision or mission guiding the same. However, persistent and effective multi-stakeholder participation in Mumbai slums during the present pandemic times, spearheaded by MCGM to mitigate against the spread of the coronavirus, has been

applauded all over the world. This has thrown open the possibility of developing a viable model in the future.



Sewerage System in Mumbai – Exclusion of Slums

Mumbai indicates a precarious sewerage scenario with only 84 per cent of developed area and 68 per cent of population under its coverage. It generates 2146 million litres per day (MLD) of which only 1098 MLD is treated and 1048 MLD untreated sewage is directly discharged into the sea and creeks¹¹. In slums, only 28 per cent are connected to city sewers, 70 per cent have septic tanks and 2 per cent directly discharge in open nallas, gutters or water bodies.

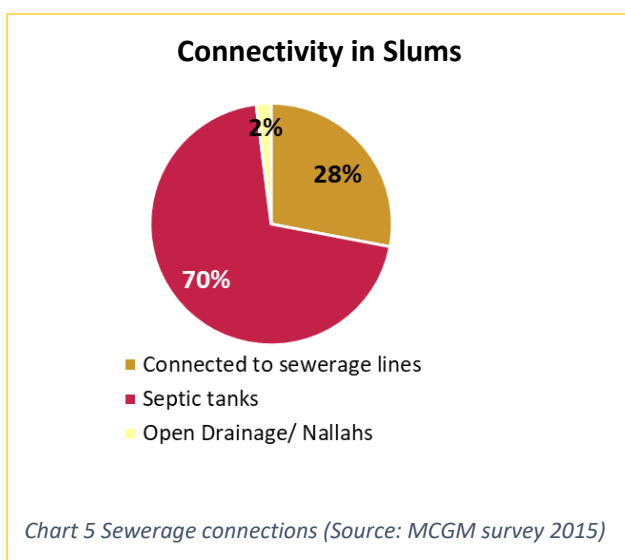


Figure 5: Overflows from CTs

¹¹ CAG Report, 2016

MSDP was launched to augment and manage the entire FSSM chain. However, a ‘Performance Audit’ undertaken by the Comptroller and Auditor General (CAG) of India in 2016 revealed serious mismanagement, ad hoc planning, lack of coordination and financial irregularities. For instance, for laying newer sewer lines and upsizing existing ones only 43 per cent (i.e. 50 out of the 116 kms) work was executed. Rehabilitation of old sewer lines similarly indicated a very miniscule per cent of execution (i.e. only 17 percent). There was no comprehensive and integrated plan for the coverage of unsewered slums. Miscommunication and overlapping jurisdictions of the state and city level agencies resulted in delays and financial overruns. Resultantly, overflowing sewage and direct discharge in water bodies is a common sight from CTs and PTs.

Conclusion

Admittedly the overall sanitation scenario in Mumbai does not paint a very encouraging picture. Although at some points in its sanitation journey MCGM has demonstrated willingness to usher in reform via radical programs the severe deficiencies are hard to ignore. Presently, sanitation efforts in Mumbai appear to be disjointed as MCGM adopts a ‘toilet seat’, civil construction orientation in building CTs and PTs and struggles to create an adequate and sustainable sewerage network in the city. Within this limited perspective, the holistic sanitation value chain approach seems to have been circumvented. In addition, conflicts in approaches between the state and local government bodies and overlapping jurisdictions also leads to delays and lack of accountability.

At the same time, despite the above, it also needs to be acknowledged that providing and maintaining a safe sanitation infrastructure in a complex and dense city like Mumbai is an extremely challenging task. The persistent efforts of MCGM and indeed all the other stakeholders involved in sanitation in the city, will have to be recognized and applauded.

What now follows are the ‘**Key Inferences and Recommendations**’ for Mumbai based on the preceding analysis of the community sanitation scenario in the city. Adopting a temporal approach, these Recommendations have been categorized as – Short, Mid and Long Term, under each specific category. This lends itself not only to indicating the relative urgency of the task / initiative in hand but also its ultimate integration into a more comprehensive, holistic sanitation value chain approach for Mumbai.

It is hoped that this note will act as a foundation for developing an inclusive and sustainable “Community Sanitation Policy” for Mumbai.

Part 2

**Key Inferences and
Recommendations**

Key Inferences and Recommendations

Gaps / Issues Identified		Recommendations		
		Short term (up to 6 months)	Mid-term (up to 2 years)	Long term (up to 2-4 years)
A	INSTITUTIONAL			
i)	NEED FOR MAINSTREAMING SANITATION			
	<ul style="list-style-type: none"> • Current Focus on Mainstreaming Sanitation - at national levels under NUSP, SBM, FSSM not matched with a clear SUSS and integration of MCGM with GoM priorities and policies. • Reduction in ranking under 'Swacch Survekshan' 	<ul style="list-style-type: none"> • Need for matching prioritization at MCGM level with decisive Policy Commitments. • Mobilising the Political and Bureaucratic willingness around sanitation as a 'preventive' measure 	<ul style="list-style-type: none"> • Developing integrated "City Sanitation Policy" with a Clear Vision and Specific Commitments 	<ul style="list-style-type: none"> • Ensuring Institutional commitment for sustainable sanitation policies and programs
ii)	INTEGRATING ORGANIZATIONAL MULTIPLICITY			
	<p>Conflicting Goals and Approaches of Multiple Organizations –</p> <ul style="list-style-type: none"> • Approach of SRS (total demolition) contrasts with that of SSP (capital intensive multi-storeyed toilet blocks) • Overlapping jurisdiction of state and city level authorities leading to delays, non-co-ordination and wastage of resources 	<ul style="list-style-type: none"> • Assessing overlaps in roles and responsibilities of multiple organisations 	<ul style="list-style-type: none"> • Developing a 'Single Window' approach with MCGM as a nodal agency • Phase wise Action Plans to achieve specific, time bound targets 	<ul style="list-style-type: none"> • A 'Steering Committee' - for guidance on priorities, strategies, allocations and co-ordination. • Representatives from all Relevant Stakeholders (Necessary legislative and regulatory reforms for same)

Gaps / Issues Identified		Recommendations		
		Short term (up to 6 months)	Mid-term (up to 2 years)	Long term (up to 2-4 years)
iii)	ADDRESSING DIFFERENCE IN APPROACHES OF MHADA AND MCGM			
	<ul style="list-style-type: none"> MHADA toilets with poor technical & construction standards and lack of water / electricity A very large stock trapped in a repeated cycle of “Build-Rebuild” MCGM has no control over this process MCGM has different model for provision of toilets 	<ul style="list-style-type: none"> Re-examining MHADA Model 	<ul style="list-style-type: none"> Assessing the possibility of uniform city wide approach for provision of toilets at MCGM level 	<ul style="list-style-type: none"> MCGM to emerge as a singular authority to plan, design and implement all toilets (except for specific Land parcels)
B	DATA BASED PLANNING			
	<ul style="list-style-type: none"> Lack of data based city wide planning Lack of updated data – e.g. lists of PTs/CTs, GIS mapping of Sewerage Network and Cadastral Mapping lack details on performance and operations No ‘Performance Indicators’ of the entire Sanitation Value Chain. ‘Discrepancies’ in Official and Field data Qualitative assessments indicate extreme high loads, OD, unscientific storage and discharge, lack of water and electricity, unhygienic and unsafe conditions and structural dilapidation 	<ul style="list-style-type: none"> Creating a city wide ‘Sanitation Data Inventory’ for in depth, real time, accurate information on sanitation scenario in city 	<ul style="list-style-type: none"> Developing a ‘Data Generation and Management System’ – Linked to decision making Learnings from Ahmedabad Municipal Corporations’ ‘GIS enabled MIS system 	<ul style="list-style-type: none"> Sustained use of real time/updated data for planning at various stages and levels
C	TOILET INFRASTRUCTURE			
	<ul style="list-style-type: none"> High population dependent on CTs Acute deficits in toilets seats Very old stock in hazardous state Sanitation not one-time ‘toilet provision’ activity 	<ul style="list-style-type: none"> Planning for accelerated provision for city wide sanitation infrastructure Shedding the ‘one size fits all’ approach 	<ul style="list-style-type: none"> Exploring all different models which are demand responsive for assuring adequacy and accessibility Demolishing hazardous stock 	<ul style="list-style-type: none"> Moving towards 100% coverage of toilets as per re-worked norms for Mumbai

Gaps / Issues Identified		Recommendations		
		Short term (up to 6 months)	Mid-term (up to 2 years)	Long term (up to 2-4 years)
		<ul style="list-style-type: none"> • Rethinking persons per seat norms • Inclusivity of gender, children differently abled 	<ul style="list-style-type: none"> • Adhering to standards and norms for design, specifications and civil construction focussing on entire value chain • Exploring innovative technology & design options 	
i)	COMMUNITY TOILETS (SSP MODEL)			
	<ul style="list-style-type: none"> • Lack of ‘Community Participation’ under MSDP II • Old SSP toilets in a state of disrepair. • ‘Pay and Use’ disintegrated into a ‘free system’ • Newer blocks built with a ‘public works’ orientation 	<ul style="list-style-type: none"> • Involving user community for demand responsiveness. • Formalizing representation of NGOs working with CBOs in decision making within MCGM organizational structure 	<ul style="list-style-type: none"> • Reviving the participatory, demand based SSP approach as under MSDP I 	
ii)	PUBLIC TOILETS			
	<ul style="list-style-type: none"> • Lack of adequate information on PTs • Seats skewed in favour of men • Extreme load on seats • Little control or knowledge of Operators and their O & M model with MCGM • PT Provision based on ‘perception’ and not on scientific, empirical ‘needs assessment’ • Some PT infrastructure suggests ‘capture’ by specific Operators 	<ul style="list-style-type: none"> • Creating an updated database for PT infrastructure • Comprehensive, integrated planning based on real time, empirical data 	<ul style="list-style-type: none"> • Standardizing O & M systems • Providing adequate seats for females • Regular ‘Performance Audits’ of Operators to introduce accountability in O&M- Learnings from Ahmedabad 	<ul style="list-style-type: none"> • Creating transparent procedures for award of contracts • Implementation of integrated plan for PTs
iii)	IHHL			

Gaps / Issues Identified		Recommendations		
		Short term (up to 6 months)	Mid-term (up to 2 years)	Long term (up to 2-4 years)
	<ul style="list-style-type: none"> • Latent demand of IHHL existing in many slum clusters • Households preferring IHHL if conditions permit 	<ul style="list-style-type: none"> • Assessing scalability from the existing pilot projects in slum clusters undertaken by NGOs • Very high % of IHHL coverage in Hyderabad and Ahmedabad to be assessed for replicability in Mumbai. 	<ul style="list-style-type: none"> • Developing strategy for incentivising IHHL • Planning for gradual shift from CTs to IHHL 	<ul style="list-style-type: none"> • Implementing plans for IHHL provision
iv)	SHARED TOILET MODEL			
	<ul style="list-style-type: none"> • Shared Toilet’ model a preferred and workable arrangement - safe, clean, accessible and well managed • Suggests user control and engagement 	<ul style="list-style-type: none"> • Exploring shared toilets as a viable model 	<ul style="list-style-type: none"> • Developing strategy for promoting shared toilets where IHHLs are unviable • Assessing possibility of converting CTs to shared toilets 	<ul style="list-style-type: none"> • Increasing coverage of shared toilets over CTs
D	FINANCIAL ASPECTS			
	<ul style="list-style-type: none"> • Downward trend observed in overall budgetary allocations for sanitation • Current budgetary allocations with emphasis on repair rather than construction of toilet facilities. • Apart from technological upgradation, no other gender consideration within the gender budget 	<ul style="list-style-type: none"> • In-depth study of MCGM budgetary allocations with departmental expenditures to be assessed. • Exploring funding options by linking up city initiatives under National & State level initiatives • Engage in ‘Break Even Analysis’, especially of PTs under CSR to design viable and sustainable models 	<ul style="list-style-type: none"> • Budgetary allocations based on ‘Life Cycle Costs’ analysis of different sanitation models to assure sustainability • Exploring viable partnerships with private sector • Gender budget should address gender specific needs of community sanitation 	<ul style="list-style-type: none"> • Exploring funding options from international donor agencies

Gaps / Issues Identified		Recommendations		
		Short term (up to 6 months)	Mid-term (up to 2 years)	Long term (up to 2-4 years)
			<ul style="list-style-type: none"> • Cost benefit analysis to aid MCGM's Sanitation Investment Planning 	
E	TENDERING PROCEDURES			
	<ul style="list-style-type: none"> • CT blocks construction (SSP) relies on photographic evidence of work at 9 stages. • No formal system for 'quality checks' during actual construction of blocks. • Inconsistency in undertaking Major repairs as per MoU, leading to structural deterioration, major clogging & overflows 	<ul style="list-style-type: none"> • Designing SOPs for supervision and quality checks of toilets • Creating formal feedback & 'Complaint Redressal' System for timely action for major repairs. 	<ul style="list-style-type: none"> • Assessing innovative tendering mechanism of other cities like New Delhi for replicability in Mumbai 	
F	O & M			
i)	MHADA TOILETS			
	<ul style="list-style-type: none"> • No formal 'Handover' process • No formal O&M procedure followed • Rapid deterioration in facilities • Wide range of mechanisms evolved by User Collectives for day to day operations 	<ul style="list-style-type: none"> • Studying on-field participatory models that demonstrate efficient, long term management systems 	<ul style="list-style-type: none"> • Exploring possibilities of all sanitation delivery processes under the ambit of MCGM 	
ii)	SSP Toilets			
	<ul style="list-style-type: none"> • No procedure for Systematic and Regular Monitoring after formal 'handover' • MCGM completely withdraws from scene • Aspect of community mobilization and involvement in MSDP I almost eliminated in MSDP II • Actual arrangements on ground not adhering to prescribed SSP format • Blocks 'appropriated' by CBO-Operators 	<ul style="list-style-type: none"> • Re-introducing component of Community Mobilization and Involvement (MSDP I - SSP) • Reinforcing IT-enabled pilot projects already underway in Mumbai • Undertaking regular appraisals of SSP network • Developing SOPs for O&M of community toilets 	<ul style="list-style-type: none"> • Developing system for sustained role of MCGM after 'handover' to CBO • Studying participatory, bottom up O&M mechanisms of New Delhi 	<ul style="list-style-type: none"> • Reconciling disparities between SRS and SSP

Gaps / Issues Identified		Recommendations		
		Short term (up to 6 months)	Mid-term (up to 2 years)	Long term (up to 2-4 years)
	<ul style="list-style-type: none"> • Older blocks misappropriated by Contractors/ or private players for commercial activities • Older blocks fallen to disrepair with ‘pay and use’ disintegrating into a ‘free’ system 	(initiatives already underway)		
iii)	PRESENCE OF CORPORATOR – CONTRACTOR - OPERATOR LOBBY			
	<ul style="list-style-type: none"> • Indications of strong nexus between the contractors-slum leaders and officials noted • ‘Build-rebuild’ cycle of MHADA toilets perpetuated by this nexus. • Some reports suggest the same in SSP model. 	<ul style="list-style-type: none"> • Assuring political & bureaucratic commitment to sanitation goals mitigate against misappropriation • Technology enabled monitoring systems, to ensure transparency 	<ul style="list-style-type: none"> • Creating mechanisms to provide a platform for ‘voice’ of users • Building transparent systems that assure accountability 	
G	MONITORING AND EVALUATION			
	<ul style="list-style-type: none"> • Lack of an Institutionalized M & E Mechanism • Lack of formal and periodic Auditing Systems (for Structural, Financial, O & M) • No formal system of ‘Contractor/Operator Performance Audits’ • Desludging and complaint redressal system weak 	<ul style="list-style-type: none"> • Building quick and efficient ‘Complaint Redressal System’ 	<ul style="list-style-type: none"> • Developing comprehensive and sustainable IT enabled M&E systems for city wide sanitation • Conducting periodic third party Audits - performance (operators & contractors), financial, structural, O&M 	Institutionalizing M&E systems for assuring sustainability
H	IEC AND BCC			
i)	AWARENESS GENERATION			
	<ul style="list-style-type: none"> • In-adequate city level efforts for awareness generation around sanitation and all the aspects of the entire value chain • ‘Softer’ aspects of value chain devalued 	<ul style="list-style-type: none"> • Developing city level IEC and BCC strategy 	<ul style="list-style-type: none"> • Continuing the present intensive IEC BCC activities undertaken in the pandemic on long term basis • Developing SOPs for same (already underway) 	

Gaps / Issues Identified		Recommendations		
		Short term (up to 6 months)	Mid-term (up to 2 years)	Long term (up to 2-4 years)
ii)	STAKEHOLDER/ COMMUNITY ENGAGEMENT			
	<ul style="list-style-type: none"> Sanitation is still viewed from a ‘toilet seat provision’ with a ‘civil works’, exclusive engineering orientation Micro initiatives of NGOs with involvement of CBOs throwing up successful models 	<ul style="list-style-type: none"> Mapping of existing stakeholders & their activities in community sanitation. Adopting a flexible demand based approach to capture users ‘willingness to pay’ 	<ul style="list-style-type: none"> Exploring the possibility of active role of stakeholders in planning process Incentivising user engagement Developing participatory bottom-up M&E systems 	<ul style="list-style-type: none"> Institutionalizing role of stakeholders
I	SEWAGE / SEPTAGE DISPOSAL			
i)	DESLUDGING FACILITIES			
	<ul style="list-style-type: none"> Lack of adequate data of the demand based desludging facilities Delays in desludging response leading to persistent overflows Lack of monitoring system for desludging activities 	<ul style="list-style-type: none"> Evaluating redressal time of complaints and adequacy of desludging procedures 	<ul style="list-style-type: none"> Developing guidelines, SOPs Acquisition of adequate vacuum trucks and permission to licensed private service providers Using IT enabled systems to monitor real time status 	<ul style="list-style-type: none"> City level planning for septage management for non-network areas Assessing scheduled desludging models
ii)	CITY WIDE SEWERAGE NETWORK			
	<ul style="list-style-type: none"> Exclusion of slums from network CAG suggests serious contraventions MHADA toilets using Aqua Privies spillage of black water into nearby water bodies, storm water drains, nallas. Clogging, overflows due to delayed desludging Extension and augmentation of sewer network constrained due to overlapping organizational plans and jurisdictions 	<ul style="list-style-type: none"> Assessing the possibility of extending sewerage network to un-sewered clusters Assessing septage collection and disposal systems of MHADA toilets 	<ul style="list-style-type: none"> Integration of multiple organizational plans and jurisdictions 	<ul style="list-style-type: none"> Assessing feasibility of de-centralized system Amendments in legislations to bring septage management under the purview of MCGM.

Part 3

Community Sanitation in Selected Cities in India

Ahmedabad
New Delhi
Bengaluru
Kolkata



Status of Community Sanitation in Ahmedabad

Ahmedabad - Introduction¹²

Ahmedabad is the largest city in the State of Gujarat situated in the western part of India with the population of 5.5 million residing in 466 sq.km of area. The area was increased in 2010 to include the newer developments in the periphery. Over the years, Ahmedabad has introduced a number of pioneering policies and programs in the urban planning sector. Numerous studies have chronicled these initiatives, lauding its far reaching vision and impact. Resultantly, Ahmedabad is often considered as a 'model city' due to its proactive administration. By 2031 Ahmedabad is projected to have a population of 10 million and will be included in the top ten megacities of the world.

¹² This abridged note is part of a larger Report that was prepared for developing a 'Recommendation Note' for Community Sanitation in Mumbai. Along with Ahmedabad, similar reports for Bangalore, New Delhi, Kolkata and Hyderabad are also available.

Slums in Ahmedabad

According to Census of India an increasing growth trend of population was observed from 1971 to 2001. Post 2010, the population of slum dwellers has declined from 25.8% to 13% (Census 2011) due to de-notification of slums post their upgradation¹³. As per Census 2011, the slum population comprises of 13% of the total population residing in 691 slums of the city.

Administrative Setup

Ahmedabad has a decentralised mode of Urban Governance with the general body comprising of Municipal Commissioners, Mayors and Engineers. This hierarchical structure is mandated to take all the policy decisions at city level regarding budget allocations, sanctions as well as planning and management of programs. The city is divided into 6 zones headed by Deputy Municipal Commissioners and the 64 administrative wards in the city are headed by Ward Officers having clearly delineated roles and responsibilities¹⁴.

Administrative setup for Sanitation

A clearly defined administrative structure in the 'Ahmedabad Municipal Corporation (AMC) outlines the roles and responsibilities of the respective departments for handling sanitation activities in the city. The Engineering Department is responsible for building toilet blocks and infrastructure with the support of designated staff at zonal and ward level. Similarly, the Health and SWM Departments handle the Operation and Maintenance with officers and staff at each requisite level.

Programs related to Sanitation in Slums

Since the 1970's, AMC has given prominence to improvement of sanitation infrastructure in the city. Adopting a 'pro-poor' approach, the focus of AMC has been on slum upgradation by provision of adequate water and toilet facilities in clusters. AMC has partnered with numerous NGOs and Human Rights Group in the city to facilitate of community development and social reform¹⁵.

Since a number of decades AMC has been taking decisive steps to address the paucity of services in the slums of the city and launching innovative programs to address the same. For instance, a slum survey conducted in 1974 by AMC identified all the existing slums in the cities. 'Family Cards' were issued to all the households and a resolution was passed to grant eligibility to all slum dwellers for individual services. 'Individual Toilet Scheme' introduced in 1990 enabled slum dwellers to construct IHHL with 20% contribution from beneficiary household and the remaining 80% from AMC. This scheme was later modified to 90:10, further reducing the contribution of funds from beneficiary slum dwellers.

'The Slum Networking Program (SNP)' also known as 'Ahmedabad Parivartan', another pioneering initiative by AMC, initiated in the year 1996 had a forceful impact in changing the sanitation scenario of the city. Within a participative framework, the slum community was viewed as a partner and owner of the services provided. Hugely successful and replicable, this program has garnered international attention and awards for its achievements. '500 NOC Scheme' introduced in 2002 has been

¹³ (Darshini Mahadevia, 2014)

¹⁴ (Centre, 2012)

¹⁵ (Darshini Mahadevia N. B., 2018) , CITY RÉSUMÉ AHMEDABAD

instrumental in getting legal water and sewerage connections through a small payment of Rs 500/- to the tax department. A huge number of IHHLs (i.e. 61010 – till 2014) were constructed under the state level scheme Nirmal Gujarat Shauchalaya Yojana (NGSY)¹⁶ since 2006.

This focus and mainstreaming of sanitation has gathered momentum with construction of IHHL and improvement of CT/PT since the launch of Swachh Bharat Mission (SBM) in 2014. Ahmedabad has consistently retained its position in the top 6 performing cities in the Swachh Survekshan conducted at National level. Indeed, Ahmedabad has demonstrated a clear vision and matched it with sustained efforts till date to upgrade and provide sanitation infrastructure to the slums through various innovative programs.

Sanitation Scenario

Despite 63% of slums being located on private lands, eligibility for water and sewerage connections is granted to all slum dwellers irrespective of their land tenure. The slums have a high percentage (77%) of IHHL availability¹⁷ and only 23% percent are dependent on community and public toilets. A 'Technical Audit' operationalized in 2013 by AMC indicated that the availability of CT/PT in the city was more than the demand, a situation seen in very few cities. The sewerage connectivity stands at 90% which greatly contributes to the provision of IHHL. AMC's insistence on enlarging the city sewerage network thereby making IHHL provision possible has resulted in adequacy and accessibility of sanitation infrastructure. However, the city is at a stage where improvement of these facilities is needed.

Key initiatives of AMC

A third party Technical Audit was carried out in 2013 and 2018 to assess the existing facilities based on certain parameters to understand the conditions of CT/PT. This enabled AMC to bring changes and improvements in the existing system, for e.g. rating of contractors enabled to improvise on the contractual agreements and penalise agencies that were underperforming. Recommendations by the third party were incorporated in order to improve the gaps identified. In 2010, GIS mapping of all existing slums and their infrastructure with in partnership with a private agency was operationalized. Subsequently a 'Slum Atlas' which published which corroborated the official slum figures with the ground level data. A consolidated, real time picture of the slums is also available in the form of 'Slum MIS' on AMC portal which is daily updated. This helps AMC to identify gaps, monitor the ground level situation, get sustained feedback and take informed decisions for corrective and timely actions.

Indeed, AMC has been very proactive in assessing the status and quality of sanitation facilities in the city. It has shown a far reaching vision followed by consistent and integrated action to cover all the slums of the city via various the programs launched from time to time. Following key inferences can be drawn from the case of Ahmedabad.

Inferences:

- A simplified administrative structure within AMC for with clearly delineated roles and responsibilities has led to efficient management of the various aspects of the sanitation value chain.

¹⁶ (SBMU--Gujarat, 2014)

¹⁷ (AMC, September 2014)

- Continuous and sustained efforts of AMC over the years in the area of Community Sanitation i.e. – IHHL provision schemes, 80:20 implemented and amended as 90:10 based on shortcomings, increasing sewerage network of the city to include slums – indicated a clear plan and strategy for sanitation.
- Provisioning of basic facilities irrespective of the tenure status has proven to be a crucial aspect in improving the sanitation infrastructure.
- Supply of CT / PT is more than its demand – a unique feature seldom observed in the case of other ULBs.
- Today, in slums, around 90 percent are directly connected to city sewerage network, an accomplishment that needs a special mention.
- Initiatives with partnership with CBOs, private parties such as ‘Technical Audits’, Slum MIS, undertaking GIS mapping of slums shows political and bureaucratic commitment and willingness to prioritize Community Sanitation appears to be high.
- The active policies and strategies has led to behaviour change and awareness in the citizens, due to active involvement of the NGOs, CBOs.

Evidently, AMC has adopted a proactive approach in understanding the Community Sanitation scenario in the city and taking concrete measures to mitigate the emerging gaps. It has demonstrated a sustained commitment towards its Community Sanitation goals and emerged as a model for other cities to follow.



Status of Community Sanitation in New Delhi

Delhi - Introduction

Delhi represents a complex governance structure with a vast area of 1484 sq.km encompassing a Municipal Council, a Cantonment Board and three Municipal Corporations. It has a population of 16.87 million as per census 2011 and population density of 11320 person/sq.km. According to UN report 2018, Delhi could be the world's most populous city by 2028 with 37.2 million people¹⁸.

¹⁸ (www.weforum.org, 2019)

Slums in Delhi

Informal settlements in Delhi are categorized in three main ways - Unauthorised Colonies, Jhuggi - Jhopri (JJ) clusters, and Resettlement Colonies. Out of these three, JJ clusters are the most vulnerable to demolitions and evictions as they have no legal standing. Not surprisingly they lack the most basic facilities. There are approximately 675 JJ¹⁹ clusters covering about 0.6%²⁰ of the total area. Despite 99% of these settlements located on public lands i.e. the DDA, agencies under Central Government and State Government, conditions within the JJ clusters indicate acute deficiencies in basic services.

Administrative Setup

The Municipal Corporation of Delhi (MCD) was trifurcated into 3 individual corporations for better delivery of services. 95% of the area lies with the MCDs i.e. North Delhi, South Delhi and East Delhi Municipal Corporations respectively and only 3% of the area lies with the New Delhi Municipal Council and Delhi Cantonment Board²¹. The city is divided into 12 zones and 134 administrative wards.

Agencies Responsible for Sanitation in Delhi

Delhi has a state level agency, i.e. the 'Delhi Urban Shelter Improvement Board (DUSIB)', designated as the nodal agency responsible for sanitation in slums. Another state level body -, the 'Delhi Jal Board (DJB)'- is responsible for the water and sewerage. At the city level, the respective MCD is responsible for sanitation in the areas under their jurisdiction. The 'Department of Environment Management Services (DEMS)' co-ordinates the city level sanitation activities and a dedicated 'Sanitation Task Force (STF)' has been created to handle sanitation tasks at zonal level. Teams of 'Sanitary Superintendents (SS)', 'Chief Sanitary Superintendents (CSS)', and 'Sanitary Inspector (SI)' are created under STF at various levels with clearly delineated roles and responsibilities²².

Programs related to sanitation in slums

Research suggests assuring adequacy and accessibility to sanitation has not been a priority for Delhi. Some intermittent initiatives and programs appear to have been undertaken from time to time. For instance, the three pronged strategy has been in operation since 1980s under DUSIB, i.e. a) environmental improvement in urban slums with emphasises on improvement of JJ clusters regarding sanitation; b) redevelopment and c) resettlement of JJ clusters. The provision of public toilets at different locations and maintenance of community toilets is under the 'Member of Legislative Assembly Local Area Development Scheme' (2009) of the MCD councillor funds. The city administration till 2017 did not promote activities under SBM as evident from the CAG report published in 2018. Thus, no specific sanitation related projects were undertaken, specifically regarding provision of CT / PT or IHHL in the city under SBM.

¹⁹ (Swetha Balachandran, 2018)

²⁰ (Saroj Kumar Sahu, 2012)

²¹ (Gyana Ranjan Panda, 2013)

²² (Sheikh, 2008)

Slum Sanitation Scenario

As per the Census 2011, 50% of total slums households have IHHL and 37.5% are dependent on CT / PT, with 12.5% resorting to open defecation. The community toilets in slums are known as 'Jan Suidha Complexes (JSCs)' and come under the jurisdiction of DUSIB. The CT / PT located in the city are the responsibility of the MCDs. As per a recent gap analysis by DUSIB only 15000 seats are required to make the slums ODF. Although no toilet construction undertaken under SBM till 2017²³, Delhi still has managed to bridge the gap sufficiently. More data on this aspect needs to be gathered to ascertain the exact situation as scenario on the ground paints a different picture. For instance, field level studies highlight many issues suggesting less preference of using the CTs by households due to insanitary conditions of the toilets, poor maintenance, and overcrowding, safety, and design issues.

Sanitation Improvement Initiatives in the city

DUSIB and other service provider agencies along with the help of NGOs and CBOs have undertaken some efforts to improve the sanitation scenario in slums. Some specific programs based on participation and partnerships have indicated success. For instance, initiatives such 'Adarsh Basti' (Model Slum) wherein successful partnership between DUSIB, NGO and CBO have emerged which have resulted in noticeable improvements in slum sanitation²⁴. Important aspect of this arrangement has been the formal recognition of various CBOs by the Government bodies and constant support and facilitation provided by the NGO. The community engagement has brought about a bottom up approach towards planning and implementing various activities thus enabling agencies to understand grass root level issues and respond appropriately.

Similarly DUSIB, DJB, EDMC with the help of NGO and the communities formulated ward level plans²⁵ for sanitation in 9 selected slums of EDMC. Detailed plans have been drafted with consultations of community members, officers, users and contractors to understand the local needs and issues, identify gaps and make provision accordingly. EDMC has signed MoU with the CBOs for transfer of 'Operation and Maintenance (O&M)' of the community toilet blocks.

DUSIB carries out IEC and BCC activities in the slums at regular intervals in partnership with number of NGOs, trust and CBOs present in the city to bring in behavioural change in the slum dwellers for general hygiene, eliminate OD practices etc. All the activities are regularly updated on their website²⁶.

Operation and Maintenance of Toilets

Since 2002, a range of O & M arrangements are seen in Delhi – from auctioning the O and M of toilets to multiple agencies to giving all toilets to single agency, or even creating a revenue based model²⁷. Experiments with such multiple models have not exactly been successful due to various reasons, such as, poor monitoring, presence of vested interests of the contracted agencies, appropriation of toilets blocks etc. In 2018, Delhi Government announced user charge free community toilets in the city after which monitoring mechanism of the contracted agency was strengthened to make the model sustainable. The contracted agency is given Rs.1800-2000 per month per seat for maintenance.

²³ (CAG, 2018)

²⁴ (CFAR, 2019)

²⁵ (CURE, 2012-2013)

²⁶ (delhishelterboard, 2020)

²⁷ (Asia, 2007)

Performance guarantee of 5% to be given by contractor to the MCD or DUSIB as a security deposit. 1-year performance based renewal contracts have been introduced to ensure positive results.

Complaint Redressal and Monitoring Mechanism of DUSIB

DUSIB has dedicated a 24x7 control room to monitor and address all complaints received through landline and dedicated WhatsApp service. This is flashed on all their JSC display boards. Dedicated teams headed by Executive Engineers are allocated to solve any issues raised, within a time limit of 24 hours on priority basis. Further, DUSIB has dedicated team for monitoring all JSCs. Every week 200-250 JSCs are checked & detailed reports are shared with Engineers at Divisional level. Necessary actions are taken on reports. The contracted agency is required to give daily updates to DUSIB.

This elaborate mechanism of feedback, supervision and monitoring is a unique feature in the O & M of the sanitation infrastructure. It has resulted in good performance of the contractors in maintaining these toilets. Few surveys done in selected wards of EDMC and SDMC show DUSIB operated toilets are better maintained than MCD toilets. In addition to this, community led tracking tool has also been developed by DUSIB facilitated by NGO in selected slums wherein designated committees are formed to monitor JSCs on day to day basis. The colour coded report generated by them is also submitted to the EE at divisional level. This framework is used by DUSIB in many ways – to monitor the on ground status of infrastructure, gather relevant feedback on performance, redress the complaints received and understand the gaps, and specific actions to be undertaken to mitigate them. A positive impact has been seen in terms of performance of agencies, willingness of the communities to use JSCs has increased and less OD has been observed in the slums. DUSIB has been awarded 'SKOCH AWARD GOLD' for monitoring of JSCs in 2018. Evidently, the case of Delhi offers a complicated picture vis-à-vis sanitation. Although there are severe gaps, some aspects, especially of the O&M system deserve special mention. Some of the key inferences are as follows.

Inferences

- Creation of a Nodal body (DUSIB) for slum sanitation can be viewed as a positive aspect which was instrumental in provisioning sanitation facilities in the slums.
- Successful partnership Models have been experimented between public sector, CBOs, NGOs. This has created participatory climate where tripartite arrangement between DUSIB, CBOs & NGOs, within a formalized structure, results in better feedback from ground & quick response to gaps.
- "Adarsh Basti" model and "Ward level Sanitation" plan are some such initiatives wherein the above mentioned partnership model appears to be working efficiently.
- Formal recognition of CBOs by the administration by acknowledging their crucial role in sanitation, has created increased sense of ownership and responsibility within user communities.
- Delhi appears to have demonstrated the willingness to experiment with different O&M models over the years. Analysing the gaps in previous models it introduced innovative features in the later ones, thus attempting to bridge the identified gaps.
- The move to make all CTs free of charge was another innovative effort. To assure quality of the facility and regular upkeep, a 'bottom up' monitoring mechanism was a special feature. Within this, an elaborate system of regular feedback, and supervision not only from the users but also from the ward offices, assured quick complaint redressal and timely repairs. This was one of ways in which CT infrastructure was kept running and well maintained.
- Allotting sufficient budget to make this model sustainable has also been an important factor.
- "Community led tracking tool" is an innovative method of involving communities in maintaining their own facilities.



Status of Community Sanitation in Bengaluru

Bengaluru - Introduction

Bengaluru, with a population of 8.4 million spread over 741 sq. km, is the third most populous city and fifth-most populous urban agglomeration in India²⁸. In 2007, the Government of Karnataka embarked on an initiative to create the “Bruhat Bengaluru Mahanagara Palike” (BBMP), by merging a number of wards, city and town municipal councils and villages. A mammoth exercise it amalgamated a total of

²⁸ (Census, 2011)

100 wards of the erstwhile 'Bangalore Mahanagar Palike', seven neighbouring City Municipal Councils (CMC), one Town Municipal Council and 110 villages around the city in order to create the single governing body, the BBMP²⁹.

Slums in Bengaluru

The data on the number of slums in Bengaluru differs drastically in the last decade. For instance, in 2016, KSDB data indicated a total of 542 slums in the city, out of which 246 are notified and 296 are non-notified³⁰. Contrasting this, in 2014 KSDB pegged the same figure to be 597, out of which 388 are notified and 209 non-notified³¹. Thus, official reports in last 10 years present fluctuating slum figures ranging from 8% to 16%.

Administrative Structure

BBMP is in charge of the civic administration of the city. The 'Solid Waste Management (SWM)' department of BBMP is the nodal authority for the community sanitation infrastructure in the city, including the construction of new toilet blocks, repairs, renovation, reconstruction of old toilet blocks and O&M of community toilets. 'Bangalore Water Supply and Sewerage Board (BWSSB)', a parastatal body, is in charge of planning water supply and sewerage services for the city. 'Karnataka Slum Development Board (KSDB)' is the state-level body in charge of environmental improvement, clearance and redevelopment of the slums. There are 198 wards divided into 8 administrative zones. The SWM Department of BBMP is headed by a Special Commissioner, with a Chief Engineer in charge for all the zones, and Executive engineers in charge at the ward level. BWSSB is led by a Chairman and the other seven members of the Board are appointed by the State Government. The BWSSB's Waste Water Management department is headed by a Chief Engineer in charge for all the zones, with Executive engineers in charge of various zones.

Programs related to Sanitation in Slums

Bengaluru has witnessed a number of initiatives in the past years in the field of sanitation. The 'BWSSB-AusAID Master Plan Project' was implemented during the period, in the late 1990s. The Community Development Component of the Project worked on examining and testing options for improved services to the urban poor³² in 2000-2002. BWSSB in its endeavour to replicate and upscale the ideas and concepts of the pilot projects extended water supply and underground services to the slums under 'Package programme'³³. The Social Development Unit (SDU) of the BWSSB in its endeavour to replicate and upscale the ideas and concepts of the pilot projects continued the work to extend water supply and underground services to the slums being covered under the 'Package Program' which was a joint infrastructure expansion program of the City Corporation and BWSSB implemented between 2003-2006 to cover the entire city with water and sewerage network in systematic manner. The SDU worked in close coordination with- NGOs and CBOs- and other social intermediaries. Slums coming under the jurisdiction of newly added areas and partially developed wards were covered under the 'Package Programme' in a systematic manner. Residents in slums were motivated to avail the opportunity to legally connect to BWSSB water supply and sewerage system, through relaxed procedures for slum to

²⁹ BBMP, 2010

³⁰ (KSDB, 2016)

³¹ (Manasi & Lata, 2017)

³² (Connors, 2005)

³³ (Bhide & Waghle, 2016)

get connections. It also offered a rationalized reduction in the connection rates to slum households³⁴, with an affordable pricing policy for slums.

Sanitation Scenario

The core area of Bengaluru, the oldest urban settlement of the city, has the most concentration of slums. A good network of IHHL is noted in this area due to number of initiatives undertaken over the years. For instance, KSDB provided housing facilities with toilets via PMAY and individual toilets were constructed in the slums by BBMPs, raising accessibility of IHHL in the core city slum areas to almost 67 per cent³⁵. It is also observed that most of the community toilet infrastructure is concentrated at this core, central area of the city. It is important to note that Bengaluru has a much higher number of PTs to CTs - 495 to 44.

Bengaluru has witnessed a 44.57 per cent increase in population during 2011 compared to the 2001 census. Whereas the population in the core area has risen only by 17 per cent, that in the peripheral areas indicates an extremely accelerated growth at 116 per cent³⁶. Most of the population growth has been absorbed in the outer peripheral areas as compared to the core areas that have more or less remained constant. Thus, one of the most challenging issues facing Bengaluru in the recent years has been the extensive enlargement of the Municipal limits due to the addition of larger peripheral areas within its jurisdiction. This has led to severe gaps in management and service delivery in these areas. In addition to recognized slums, a large number of poor households live in mixed settlements, i.e. in unrecognized low-income settlements and in villages that are surrounded by the expanding urban sprawl (urban villages). Most such areas have acute gaps in the sanitation infrastructure³⁷. One noteworthy aspect in the sanitation scenario of Bengaluru is that there the CT infrastructure is observed *only in the core area* of the city, beyond which there is a total absence of the same. Thus, of critical importance is to extend the same to acutely deficient areas that have been recently added within the city limits.

Key Initiatives in Recent Times

Current initiatives in the city have been undertaken predominantly by three central agencies, namely, the BBMP, BWSSB and KSDB. In this, the most decisive initiative since 2019 has been the preparation of the 'City Sanitation Plan (CSP)' by BBMP wherein 538 new CTs seats have been proposed. The CSP is expected to substantially alleviate the gaps in sanitation value chain. Taking a housing perspective, KSDB has been providing dwelling units to slum dwellers under PMAY since 2015. These units include toilets under their purview. This program is being implemented in five phases and targets 20,427 households in the BBMP area. The 3rd agency, BWSSB, under its slum development approach is providing both water supply and sanitation facilities to 362 slums that have been identified in the newly added areas. This project was taken up in two phases under JICA Funds, at a total cost of Rs 91 crores³⁸. Providing individual water and toilet connections were also the part of the programme apart from water supply and disposal of sewage. This program indicates a good performance with Phase I component having achieved 100% of its targets whereas Phase II showing 92% target achievement.

³⁴ (Connors, 2005)

³⁵ (Manasi & Lata, 2017)

³⁶ (Patil, 2015)

³⁷ (Bhide & Waghle, 2016)

³⁸ (BWSSB Official Website, n.d.)

Role of Stakeholders

In Bengaluru the NGO community has always been a very important actor in the urban scenario. Instrumental in advocating for the needs of the slum dwellers, it has demanded improved performance, transparency and accountability from the governmental bodies. Grassroot level collective, like the Karnataka Slum Dwellers' federation, KKNSS, has also actively lobbied for slum dwellers' right to safe sanitation amongst other basic services. Such NGOs and local groups have been working in slums for decades in fields ranging from housing and infrastructure to public health. NGOs like AVAS, APSA and DEEDS have maintained a long-standing presence in slum communities with close and active mobilization on a range of issues confronting them. They have established self-help groups, campaigned for better housing and sanitation infrastructure in slums. Through persistent IEC efforts they have brought about behavioural changes in the slums communities³⁹. Resultantly, they have long standing presence in slums and a collaborative, trusting relationship with their target groups – the slum communities.

In conclusion, although Bengaluru continues to struggle with an exponentially enlarged municipal jurisdiction that has put extreme strain on its resources and created acute gaps in sanitation infrastructure, the efforts of BBMP, BWSSB and KSDB are noteworthy. The CSP under preparation promises to bring about a perceptible change in the sanitation situation of the city. BWSSB and KSDB, with their urban planning and housing orientation also appear to be making a decisive change in the overall conditions in slums. Together, it is hoped that Bengaluru will be able to mitigate the sanitation challenges that it currently faces.

Inferences

- One of the most noteworthy feature in the case of Bengaluru is the exponential expansion in its Municipal limits in recent years. Consequently, this has led to acute gaps in services, including sanitation, in the areas that have been recently added. The need to address this issue on an urgent footing is demonstrated by the CSP that is being prepared for the city.
- 'Package Program' designed by BWSSB was one of the earliest examples of inclusive slum sanitation efforts by the government. This concept garnered international attention and recognition and continues till date.
- Bengaluru's approach of integrated, demand-based planning and implementation of basic services with a slum focus has been instrumental in providing IHHL facilities in the slums.
- BBMP, in coordination with parastatal body, BWSSB, has demonstrated the willingness to engage with NGOs for provision of sanitation infrastructure in slums. This can be viewed as a good development.
- The provision of IHHL has been strengthened due to inclusion of the SBM approach within the city.
- Another notable initiative was making all CTs free of user charge. By creating a workable monitoring process in place, the upkeep of these CTs has been assured.
- NGOs have been a vocal and active part in the urban planning and sanitation fields in the city of Bengaluru. Their involvement in macro and micro level sanitation efforts have created awareness in the beneficiaries and general citizenry.

³⁹ (Connors, 2005)



Status of Community Sanitation in Kolkata

Kolkata - Introduction

With a population of 4.5 million residents, Kolkata is the seventh-most populous city in India. Spread over an area of just 206.08 sq.km.⁴⁰, it one of the most dense mega-cities in the country with a density of 21, 829 persons per sq. km. 'Kolkata Municipal Corporation (KMC)' is responsible for the administration and provision of civic infrastructure in the city's 144 administrative wards that are grouped into 16 boroughs.

⁴⁰ (Census, 2011)

Slums in Kolkata

Slum-dwellers account for one-third of Kolkata's total population. This amounts to 14,09,721⁴¹ people living without adequate basic amenities in the 5000 over-crowded slums of the city. The slum population density is extremely high averaging around 6604 persons per square kilometers⁴². In Kolkata, slums refer to both bastis and squatter settlements. Bastis are legally recognized settlements in which KMC provides basic services such as water, sanitation, garbage removal, and occasionally electricity. Basti huts typically are permanent structures that are protected against demolitions by the government. In contrast to this, 'squatter' settlements are illegal clusters of mostly impermanent houses predominantly located along canals and railway lines⁴³.

Administrative Structure

KMC is responsible for the administration as well as provision of civic infrastructure in the city of Kolkata. Management of community sanitation is under KMC and done by the 'Basti Department' whereas management of sewerage is done by the 'Sewerage & Drainage Department'. Each department is headed by a chief engineer/ director general.

Past Initiatives on Slum Sanitation

In 1949, the city passed the first Calcutta Thika Tenancy Act. This legislation protected the tenants against eviction by the landowners. This legislature was an early demonstration of the willingness of the administration to address conditions that existed in hutments on private lands⁴⁴. In the early 1960's a study by WHO raised serious concerns of public health risks - in particular those arising due to the deplorable conditions in the Bastis. Following this a high-level planning effort, the 'Basti Improvement Programme (BIP)' was taken up with support from the Ford Foundation. BIP aimed at conversion of unsanitary toilets, provision of water taps, surface drainage facilities, construction and widening of roads and pathways, and provision of street lighting and waste disposal facilities within the bastis⁴⁵. The Calcutta Urban Development Programme (CUDP) was taken up from 1980, with assistance from the World Bank and it was implemented in 3 phases. It worked on enhancing access, equity, and affordability in 2400 slums. The slum sanitation infrastructure was integrated with the city system. Further, 50% of the IHHLs in slums, and CTs built on with septic tanks were connected to the city sewerage system⁴⁶. A 'City Sanitation Plan' was prepared in 2010 by KMC, after the launch of the NUSP.

Current Situation of Sanitation in Slums

Kolkata has 384 public toilets⁴⁷ and 96 community toilets⁴⁸ in the city. At the city level, KMC has undertaken the mapping of slum clusters. However, data on sanitation conditions at city or ward levels, between 2010 and 2020 does not exist in a consolidated or updated form.

⁴¹ (Census, 2011)

⁴² (Bisset, 2016)

⁴³ (Kundu, 2008)

⁴⁴ (Schenk, 1989)

⁴⁵ (Ramaswamy, 2008)

⁴⁶ (Duza, 2003)

⁴⁷ (KMC, Kolkata Municipal Corporation, n.d.)

⁴⁸ (SBM, n.d.)

As per a survey done by KMC in 2010, 1 community toilet was catering to around 1,136 persons in some of the wards. But, from KMC's previous experience and considering space constraints, it was assumed that at least 1 community toilet per 400 households would be required in these wards, which called for requirement of more community toilets⁴⁹.

Current Initiatives

KMC initiated the 'Kolkata Environmental Improvement Project (KEIP)' in the 1999, with funding from 'Asian Development Bank (ADB)' to improve environmental conditions of Kolkata, primary in wards added after 1984. Under the project, Sewerage and Drainage Master Plans and Slum Improvement Master Plan were prepared for city⁵⁰. Out of 6 main components of the project, 2 components were dealing with improvement of slums in the city. The pan-city Slum Improvement component dealt with improvement of sanitation conditions of 85 slums in the core KMC areas from ward 1 to 100, included repairing and restoring neighbourhood access lanes; constructing sewerage and drainage lines and water supply lines; constructing, repair and renovation of toilets; baths and urinals⁵¹.

The canal improvement and resettlement component of the project dealt with the rehabilitation of slums along the canal side to VAMBAY/BSUP units with IHHL services within the units. Around 88% of the households identified were relocated to the new housing units, while 12% avoided the relocation. The KEIP Project had planned to re-develop the vacated canal banks as green walkways, in order to ensure they were not encroached again. Unfortunately this was not the case, as the vacated land got encroached again with both new settlers and the extended families of the multigenerational households who had moved to the relocation flats⁵².

The state of West Bengal has chosen not to participate in the 'Swachh Bharat Mission-Urban (SBM-U)', 'Swachh Survekshan (SS)', and the 'SMART' City initiatives launched by the central government. Thus, they remain excluded from the financial benefits that could have accrued if they had decided to join these initiatives.

Role of Stakeholders

There are many NGOs, working in the slums of the city at the micro-level to raise awareness about sanitation. NGOs like CFAR and World Vision have worked with slum dwellers towards formation of the forums to mobilize community members and enable them to raise demands and work with other key stakeholders on sanitation. Due to these efforts, a system of 'public hearings' was developed wherein the community members could present their needs and priorities regarding sanitation, sewerage services and water to the KMC officials and other concerned departments. This system has also yielded a participatory system wherein community members have been allocated critical roles, acting as surveyors, managers and service providers, in the various aspects of the sanitation value chain. Generating income by getting involved in the implementation of sanitation related activities on the field has thus enhanced their livelihoods. In addition, Community management committees (CMCs) have been registered as self-help groups under National Urban Livelihood Mission (NULM), enabling them to access financing and livelihood training⁵³.

⁴⁹ (KMC, City Sanitation Plan for Kolkata, 2010)

⁵⁰ (ADB, 2014)

⁵¹ (ADB, 2014)

⁵² (Shaw & Saharan, 2018)

⁵³ (CFAR, 2019)

Inferences

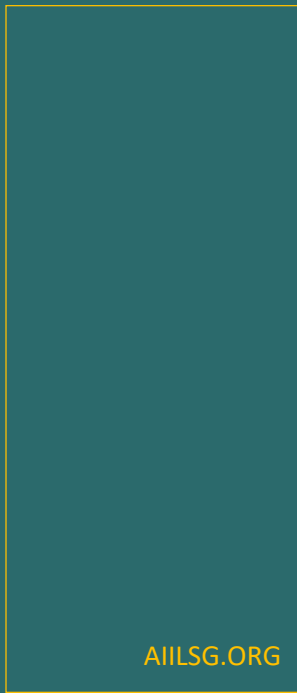
What is evident in the case of Kolkata are the multiple initiatives that have been undertaken over the years for improving the deplorable conditions of slum dwellers. However, these have been disjointed and ad hoc, lacking a holistic perspective.

- ‘Kolkata Urban Improvement Project’ of was a good initiative undertaken by the city, with inclusive slum sanitation efforts by the government, demand-based provision of sanitation services in slums
- The city appears to follow the overall NUSP guidelines but local level approaches do not always seem to follow the central government framework.
- KMC has made a ‘City Sanitation Plan’, however implementation of the same remains weak.
- An adversarial relationship between the Central and State governments is evident thereby creating a strong political impasse. This greatly impacts both the Planning and implementation of specific programmes in the city.
- For instance, Kolkata did not participate in SBM-U nor the Swachh Survekshan or SMART city initiatives of the central government ultimately losing out on the policy and financial linkage that could have facilitated better delivery systems for sanitation in the city.
- There is an acute lack of consolidated and updated city level data on community sanitation vis-à-vis its adequacy and accessibility post the Census 2010.
- Involvement of various NGOs has been observed to have a positive impact on the sanitation delivery process. City and cluster level program undertaken by them, have components of IEC and BCC thereby raising awareness in the beneficiary communities. This has also led to advocacy for sanitation with the authorities and a participatory, demand based approach in some NGO mediated initiatives that were under taken.

Selected References

- ADB. (2014). *Audit Report for KEIP*. Kolkata: ADB.
- AMC, C. U. (September 2014). *Ahmedabad Slum Free City Action Plan*. Ahmedabad : Ahmedabad Municipal Corporation , CEPT.
- Asia, W. a.-S. (2007). *Public Toilets in Urban India, Doing Business Differently*. Water and Sanitation Program-South Asia.
- BBMP. (2010). *Final Report on City Development and Slum Upgradation Strategy of Bengaluru*. Bengaluru: Cities Alliance.
- Bhide, A., & Waghle, S. (2016). *Report on Situational Analysis of Urban Poor in Pune, Nagpur and Bangalore*. Tata Institute of Social Sciences, Mumbai.
- Bisset, M. (2016). *Slums of Kolkata*. Kolkata: Jan Seva Social Centre Baseline study.
- (n.d.). Retrieved from BWSSB Official Website:
https://www.bwssb.gov.in/com_content?page=3&info_for=3
- CAG. (2018). *Report of the Comptroller and Auditor General of India on Social, General and Economic Sectors (Non-Public Sector Undertakings) for the year ended 31 March 2017*. Delhi: Government of National Capital Territory of Delhi.
- Census. (2011). Retrieved from <https://www.census2011.co.in/census/city/215-kolkata.html>
- Census. (2011, August 11). *Mumbai Municipal Corporation Percentage of Slum Population*. Retrieved from Census India: censusindia.gov.in/
- Centre, U. M. (2012). *City Sanitation Plan*. Ahmedabad : Ahmedabad Municipal Corporation.
- CFAR. (2019). *Tracing Sanitation in Informal Settlements, A three city report on status of sanitation*. New Delhi: CFAR.
- CFAR. (2019). *Tracing Sanitation in Informal Settlements A three city report on status of sanitation*. Kolkata.
- Comptroller and Auditor General of India. (2017). *Annual Technical Inspection Report of ULBs*.
- Connors, G. (2005). *Engaging with Citizens to Improve Services*. Bengaluru: Water and Sanitation Program, South Asia World Bank.
- CRISIL. (2012, October 16-17). *City Sanitation Plan for Mumbai, Innovations for Scaling up to Citywide Sanitation*. Retrieved August 16, 2020, from [https://www.pas.org.in/Portal/document/ResourcesFiles/WorkshopPDFs/Citywide%20Sanitation%20Workshop/7_CSP%20Mumbai%20\(A%20Kantak\).pdf](https://www.pas.org.in/Portal/document/ResourcesFiles/WorkshopPDFs/Citywide%20Sanitation%20Workshop/7_CSP%20Mumbai%20(A%20Kantak).pdf)
- CURE. (2012-2013). *Area Sanitation Plan Ward 219 and Ward 229*. Delhi: CURE.
- Darshini Mahadevia, N. B. (2018). CITY RÉSUMÉ, AHMEDABAD. *Centre for Urban Equity (CUE)*, 23.
- Darshini Mahadevia, R. D. (2014). City Profile: Ahmedabad. *Centre for Urban Equity (CUE)*, 74.
- delhishelterboard*. (2020, October). Retrieved from delhishelterboard:
https://delhishelterboard.in/main/?page_id=8062
- Desai, P.A. (2014). *Sanitation in Slums of Mumbai, A view from the field*. Retrieved August 14, 2020, from <https://pas.org.in/Portal/document/PIP%20Application/Sanitation%20Report%20Padma%20Final.pdf>
- Duza, M. B. (2003). *Kolkata for Mother and Child A Case Study- Responding to Local Needs: Urban Slums Project*. Kolkata: World Bank.
- GOI, 2. C. (2011). *censusindia.gov.in*. Retrieved from censusindia.gov.in:
<https://censusindia.gov.in/DigitalLibrary/MFTableSeries.aspx>
- Grace Mundu, R.B Bhagat. (2008). *Slum conditions in Mumbai with reference to access of civic amenities*.
- Gyana Ranjan Panda, T. A. (2013). Public Provisioning in Water and Sanitation Study of Urban Slums in Delhi. *Economic & Political Weekly*, 5.
- International Institute for Population Sciences. (2016). *Prevailing Basic Facilities in Slums of Greater Mumbai*.

- International Institute of Population Sciences. (2015). *Factsheet on Housing, Water and Sanitation Survey of Slums in Mumbai*.
- KMC. (2010). *City Sanitation Plan for Kolkata*. Kolkata: Kolkata Municipal Corporation.
- KMC. (n.d.). *Kolkata Municipal Corporation*. Retrieved from Kolkata Municipal Corporation: <https://opencity.in/data/kolkata-municipal-corporation-kmc-pay-and-use-toilets-list-2018>
- KSDB. (2016). Retrieved from Karnataka Slum Development Board: <http://164.100.133.69/ksdb/Pages/Slum-Statistics.aspx>
- Kundu, D. N. (2008). *Slums of Kolkata*. Institute of Wetland Management & Ecological Design.
- Manasi, S., & Lata, N. (2017). *Toilet Access among the Urban Poor – Challenges and Concerns in Bengaluru City Slums*. Bengaluru: The Institute for Social and Economic Change, Bangalore.
- Mcfarlane, C. (2008). *Sanitation in Mumbai's informal settlements: State, 'slum', and infrastructure*. Municipal Corporation of Greater Mumbai. (2009). *Mumbai Human Development Report*. Municipal Corporation of Greater Mumbai. (2011). *Disaster Risk Management Master Plan, Mumbai*. Municipal Corporation of Greater Mumbai. (2014). *Development Plan for Greater Mumbai 2014 – 2034, Preparatory Studies*.
- Patil, B. S. (2015). *Bengaluru Restructuring- WAy Forward-*. Bengaluru: BBMP.
- Patil, M. (2020, May 15). *Community Toilets in Mumbai- History, Perspective and Future*. Retrieved October 9, 2020, from https://www.pas.org.in/Portal/document/ResourcesFiles/Community_Toilets_in_Mumbai_History_Perspective_and_Future%20_Bigpresentation.pdf
- PRAJA Foundation. (2020). *Status of civic issues in Mumbai*.
- Ramaswamy, V. (2008). Basti Redevelopment in Kolkata. *Economic and Political Weekly*.
- Saroj Kumar Sahu, G. B. (2012). Emissions inventory of anthropogenic PM_{2.5} and PM₁₀ in Delhi during Commonwealth Games 2010. *ELSEVIER*, 11.
- SBM. (n.d.). *Swachh Bharat Mission-Urban*.
- SBMU--Gujarat. (2014). *SBMU -Gujarat*. Retrieved from SBMU -Gujarat: <http://sbmu-gujarat.in/Projects/nirmal-gujarat-sauchalay-yojana-7>
- Schenk, W. C. (1989). *Slum Diversity in Kolkata*. University of Pennsylvania.
- Sharma R. N., & Bhide A. (2005). *World Bank Funded Slum Sanitation Programme in Mumbai : Participatory Approach and Lessons Learnt*. Retrieved August 28, 2020, from https://www.researchgate.net/publication/262125084_World_Bank_Funded_Slum_Sanitation_Programme_in_Mumbai_Participatory_Approach_and_Lessons_Learnt
- Shaw, A., & Saharan, T. (2018). *Urban development-induced displacement and quality of life in Kolkata*. Kolkata.
- Sheikh, S. (2008). *PUBLIC TOILETS in Delhi:An emphasis on the facilities for Women in Slum/Resettlement Areas*. Centre for Civil Society .
- Swetha Balachandran, K. E. (2018). *TOWARDS A NEW URBAN FUTURE IN DELHI Policy Analyses and Recommendations for the Delhi Urban Shelter Improvement Board*. Princeton: Woodrow Wilson School of Public and International Affairs at Princeton University.
- TARU and WEDC . (2005). *Study of World Bank Financed Slum Sanitation Project in Mumbai*. Retrieved September 5, 2020, from http://www.mumbaip24seven.in/reference/TARU_Sanitation_Volume_I_SSP_I_Review_Final_Report.pdf
- University, C. (2014). *ahmedabad slum atlas*. Ahmedabad: CEPT.
- World Bank. (2003). *Reaching the Poor through Sustainable Partnerships: The Slum Sanitation Program in Mumbai*.
- www.weforum.org. (2019, Feb 06). Retrieved from World Economic Forum: <https://www.weforum.org/agenda/2019/02/10-cities-are-predicted-to-gain-megacity-status-by-2030/>
- YUVA, Watson and Montgomery. (2001). *Slum Sanitation Project, survey and impact analysis MCGM*.



AIILSG.ORG