



Sanitation Capacity  
Building Platform

# Urban Sanitation Capacity Building Practitioners' Meet

*New Delhi, December 19, 2017*





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# Urban Sanitation Capacity Building Practitioners' Meet

## Background

Sanitation Capacity Building Platform (SCBP) is a platform on urban sanitation anchored by National Institute of Urban Affairs (NIUA), New Delhi, with support from Bill and Melinda Gates Foundation (BMGF) grant. Under SCBP, a practitioners' meet on urban sanitation capacity building was convened in New Delhi on December 19, 2017. National FSSM Alliance members, SCBP partners and collaborators who are doing urban sanitation/FSSM training and capacity building were invited to this meet.

Interim findings on urban sanitation study commissioned under SCBP in four states – Madhya Pradesh, Telangana, Karnataka and Odisha in July 2017 were shared by independent researchers. Similar such studies have been commissioned in December 2017 for 4 more states – Jharkhand, Rajasthan, Uttarakhand and Uttar Pradesh with an objective to develop a state-level perspective on urban sanitation and to use the research findings as inputs for developing FSSM training material under SCBP.

## Objectives

The purpose of the meet was to disseminate interim findings of urban sanitation study commissioned under SCBP in 4 states – Madhya Pradesh, Telangana, Karnataka and Odisha, as well as review of SCBP partners through experience sharing on developing content and delivering trainings in FSSM.

The practitioners' meet attempted to discuss the challenges and opportunities in urban liquid waste management sector. FSSM training modules prepared by NIUA with SCBP partners were shared with participants for peer review and inputs.

*(Annexure 1: Agenda)*

## Participants

The practitioners' meet witnessed participation from PMCs, AMRUT training entities and NGOs working on urban sanitation projects. In addition to SCBP partners and NIUA, various members of NFFSM Alliance and Bill and Melinda



Gates Foundation (BMGF) team also participated.

(Annexure 2: List of participants)

## Presentations

Depinder Kapur, Team Lead, SCBP commenced the proceedings with a brief introduction to the importance and objectives of the meet. Jyoti Dash, Programme Manager, SCBP presented FSSM landscape and challenges showcasing the present status of funding under AMRUT mission for Septage management in

India and highlighting progress of capacity building activities for FSSM under SCBP in Rajasthan.

The practitioner's meet consisted of two sessions:

- Urban Sanitation Research Findings (*sharing interim reports*)
- Panel Discussion on Capacity Building for Urban Sanitation (*discussing training delivery experience, training modules and way forward*)

### Presentation made during the Practitioners' Meet

Topic	Presenter	Organization	Annexure
FSSM: Landscape and Challenges	Jyoti Dash	NIUA	Annexure 3
Urban Sanitation Management in Madhya Pradesh	Rahul Banerjee	Individual Researcher, Bhopal	Annexure 4
Urban Sanitation Management in Karnataka	Avinash Krishnamurthy	Biome Environmental Trust, Karnataka	Annexure 5
Urban Sanitation Management in Telangana	Ramisetty Murali	Modern Architects for Rural India, Telangana	Annexure 6
Capacity Building for Results - FSSM, Sanitation	Dr. Malini Reddy	ASCI, Hyderabad	Annexure 7
FSSM Capacity Building Activities	Aasim Mansuri	C-WAS, CEPT University, Ahmedabad	Annexure 8

(Annexure 3-8: Presentations)

# FSSM: Landscape and Challenges

(Presenter: Jyoti Dash, NIUA)

Jyoti Dash, Programme Manager, SCBP presented FSSM landscape analysis under AMRUT Mission of the Ministry of Housing and Urban Affairs (MoHUA), Government of India. Some states are actively engaging in FSSM activities and have allocated substantial funding to construct FSTPs in various AMRUT towns such as Uttar Pradesh (INR 483 Crores for 47 towns), Jammu & Kashmir (INR 148.5 Crores for 5 towns), Chhatisgarh (INR 123.3 Crores for 9 towns), Jharkhand (INR 60.6 Crores for 2 towns) and Odisha (INR 25 Crores for 9 towns).

Under the SCBP capacity building support was provided in Uttar Pradesh in 2016-17, our strategy was to identify stakeholders for FSSM (Urban Development Dept, Jal Nigam, ULBs) and advocate with them the need for FSSM. We got them on board through initial training and exposure to Devanahalli, to incentivize them to encourage Urban Local Bodies to engage with SCBP on decentralised septage management. Capacity Building was scaled up once the support at the highest level of SBM Directorate Secretary Urban Development was achieved. To build FSSM capacity at scale, the state level nodal training institute (RCUES, Lucknow) anchored the organizing of trainings within the AMRUT training calendar and SCBP partners (CEPT, CDD, iDECK) provided expert trainers support. Through constant advocacy and support of SCBP, the State Government committed substantial funding under AMRUT for FSSM in 47 towns and approved the first DPR of the state for FSTP at Unnao as a pilot project. With the support of SCBP partners (WaterAid, CEPT, CDD Society), NIUA supported UP Government in undertaking a state wide assessment and submission of funds requirement under State Annual Action Plan (SAAP) for setting up FSTPs in all AMRUT towns and for developing the Draft UP State FSSM Operations Policy Guideline.

Initially, a similar strategy was adopted for Rajasthan in 2017-18, on the request of the Govt of Rajasthan to support small towns where sewerage connectivity was not likely soon. Accordingly a Rapid Assessment of Sanitation situation in 100 small towns with a population of less than 100,000 (under the Directorate of Local Bodies), was done in partnership with CDD Society. A state wide capacity building of staff of Urban Local Bodies of all the small towns emerged from this outcome. Open Defecation Free towns being the major priority of the state, the FSSM training input was modified to include this aspect as well.

SCBP planned the following capacity building intervention in Rajasthan in collaboration with the City Managers Association of Rajasthan (CMAR) and All India Institute of Local Self Government (AIILSG), Mumbai as the SCBP anchor partner for the state;

1. One-day orientation Training on FSSM for officials from all 191 ULBs
2. National Exposure visits to Sinnar (ODF, ODF+), Pune (Wastewater management) and Bengaluru (Devanahalli FSTP) for officials from selected cities
3. Specialized training on planning for FSSM for engineers from selected cities
4. International exposure visit to IWK, Malaysia for selected state and ULB officials was planned but could not take off.

## Lessons from SCBP

### Making FSSM acceptable at state level

In order to present an alternative to centralized Sewerage, a large State wide FSSM Capacity Building is needed to promote FSSM both as awareness and advocacy, the strategy of a few towns as pilot projects for technical interventions will not work.

More than one NFSSM Alliance Partner is needed to promote FSSM and to service the requirement of the state government ranging from Training to Policy Advise, Technology Options and Behaviour Change. One partner cannot conduct trainings at scale for large states with 100 plus ULBs.

A state level perspective for FSSM is helpful for advocacy. While the state governments and ULBs are interested in DPRs, care must be taken to ensure that concept DPRs do not become one off solutions for FSTPs in the state.

Small towns have limited funding and strong advocacy is needed at state level for prioritizing and allocating funds for FSSM. It was observed that most of the towns were struggling to achieve ODF status and hence, the strategy was altered to deliver what was required.

### Content and Quantum of Training

Our experience shows that a basic Orientation Module needs to define the Key Messages for each of the training sessions – so that the one day training is not a compilation of different sessions with varying content and messaging. The ToT on FSSM was useful in identifying the key messages and content. Nodal

The form and content of training has to be effective in communicating the basic understanding of what is FSSM and why it is needed. We need to communicate that FSSM is doable in terms of technology and affordable if done as a town wide ULB supply led initiative linked to tax or fee collection.

This needs to be demonstrated through practical exercises during the course with active engagement of trainee for better internalization, not just as information. Technology options should only be explained, not prescribed.

Advanced FSSM Training Module can come later when we are at the stage of implementation of some FSTPs.

FSSM has to be integrated with the understanding of city-level wastewater issues. The major problems small and large

towns face is the pollution of water bodies, lakes and river. A holistic view of urban sanitation is needed before you focus on FSSM. SCBP devised an Integrated Wastewater and Septage management Trainings with Ecosan Services Foundation (ESF), Pune for Rajasthan and for AMRUT nodal agencies.

Nodal AMRUT agencies and Academia can become vehicles for training and content development. Specially for second generation learnings on Contracting, Operations and Sustainability.

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## Urban Sanitation Management in Madhya Pradesh

*(Presenter: Rahul Banerjee)*

The presentation (Annexure 4) provided an overall review of the sanitation, septage and wastewater management situation in Madhya Pradesh with special emphasis on the three towns of Sheopur, Rewa and Jabalpur, which were selected for detailed study.

The large municipal corporations in the state cumulatively have the highest proportion of households followed by the Municipalities and the Nagar Panchayats. The proportion of households in the 32 AMRUT (Atal Mission for Rejuvenation and Urban Transformation) towns is 56 percent. The provision of services too is much better in the larger towns as compared to the smaller ones as per the Census 2011 Household Tables data.

The proportion of households with toilets in the whole population is 74.2 percent while that for Scheduled Castes (SC) is significantly lower at 54.2 percent and Scheduled Tribes (ST) are even lower at 47.7 percent. There is also a big difference between the AMRUT towns (AT) and the non-AMRUT towns (NAT) with the former having 83.5 percent of households with toilets and there being only 62.4 percent in non-Amrutt towns. Similarly the data for open defecation also show a poorer situation in the SC, ST and NAT categories. However, due to the Swachh Bharat Mission (SBM) there has been a reduction in open defecation and an increase in the proportion of households with toilets as 4,93,450 individual toilets and 18,896 community toilets have been constructed in the state under SBM.

Septic Tanks are the most used means of disposing of toilet waste at 67.5 percent for the total population. There is not much difference with the SC and the ST households with the latter having a greater proportion at 68.3 percent. However, there is a big difference between AMRUT and non-AMRUT towns with the former having 58.3 percent households with septic tanks as opposed to 83 percent for the latter mainly due to a lesser provision of sewerage systems in the latter. The proportion of pit latrines is very low across all categories but



this must have increased slightly with the implementation of the Swachh Bharat Mission since 2015. Provision of sewerage systems is low and especially so in non-AMRUT towns.

Most of the water is disposed in Open drains with Scheduled Caste households having the highest proportion of 53.6 percent. The Scheduled Tribe households had the highest proportion of 40.7 percent with no drains at all which is a very unhygienic situation. As before the AMRUT towns had a much better sanitation situation with much better proportions for closed drains, open drains and no drainage than the Non-AMRUT towns.

There is no reliable data with regard to the treatment of black and grey waste water that is carried out away from the households by open drains and sewers or septage emptied from tanks. These are mostly being discharged untreated into fields and surface water bodies.

The census data paint a dismal picture of the situation of

sanitation in urban areas of the state, especially so in the non-AMRUT towns which constitute almost half the total urban population. Some sewage treatment capacity has been installed in a few towns and the Central Pollution Control Board (PCB) Report on Inventorisation of Sewage Treatment Plants (STP) in 2015 gives the data for Madhya Pradesh which has 17 STPs having total treatment capacity of 482.23MLD. Out of 17 STPs, 03 STPs of capacity 6.75 MLD are Non-Operational.

Later, a STP of 12 MLD capacity has been constructed in Rewa which is still not operational because sewage lines have not been connected to it yet and a STP of 130 MLD capacity has become operational in Indore. Not only is this total installed capacity of 624.23 MLD only about 20 percent of the estimated generation of sewage and septage for the urban areas of the state of 3090 MLD but according to other more detailed assessments by the CPCB, the actual treatment being done was much less at 6 per cent.

The second CPCB report also says that the STPs were not being operated properly because of lack of qualified staff, supply of chemicals and electricity and upkeep and having not been cleaned regularly. As a result the treated effluent discharged from these STPs is of a polluted nature with values well above the prescribed limits, especially for the disease spreading coliform bacteria and most of the sewage coming to them was being bypassed and released into the nalas instead of being treated in the STPs. This assessment was confirmed by actual site visits made to these STPs.

### The Characteristics of the Three Study Towns

The proportion of households with toilets is the highest in the case of Jabalpur and lowest in the case of Sheopur as is to be expected given the increase in per capita income and per capita municipal expenditures with the size of the towns. The implementation of SBM since 2015 has resulted in more toilets being constructed but the situation is still deficient.

Septic Tanks remain the most popular means of disposal of toilet waste, even in large cities like Jabalpur which have some amount of sewerage. Thus, given the huge investments involved in laying sewers and constructing STPs, proper decentralised faecal sludge management will have to be the way ahead to ensure proper sanitation in the state.

Once again the situation in Jabalpur is better than for the other towns except in the case of open drains which are less for Rewa than for Jabalpur mainly due to the fact that Rewa has a very high proportion of households without any drains.

The slums had mostly single pit latrines which have been built recently with grants from the municipal corporation under the Swachh Bharat Mission. Many residents complained that despite their names having been enrolled for toilets, they had not got the same. The built up houses in the colonies nearby had septic tanks which released their outflow into the open drains. Consequently these drains carry contaminated water which is a breeding ground for pigs. Due to the inadequacy of the pit latrines in some congested slums, there are community toilets but even in these the septic tanks have outflows going into the nala behind the toilets. The closed drains get clogged

and they have to be cleaned from time to time. This cleaning is done by Dalit staff of the ULBs and like elsewhere in India they clean out the drains and leave the waste on the road. The single pit latrines have been constructed poorly given the very low grant amount of Rs 12000 per latrine and so are likely to fall into disuse soon.

Septic tanks too have mostly been built in violation of the norms prescribed by the CPHEEO. In most cases these are actually big leach pits with open bottoms. However, over time the sludge at the bottom reduces the leaching velocity and so there is some outflow into the open or closed drains. The outlets of these septic tanks or leach pits are below the level of the ground and so these will have to be closed and the sewage connected directly to the new sewer lines that are being laid in the towns of Rewa and Jabalpur. This is also necessary to ensure enough flow in the sewers. However, the householders with septic tanks or leach pits in both towns are reluctant to do this because of the costs involved in connecting their toilet lines with the sewers. There are inadequate provision for mechanical cleaning of septic tanks and so groups of Dalits clean septic tanks by hand in the more congested areas in clear violation of The Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013. Jabalpur Municipal Corporation has three new septage treatment plants of a daily capacity of 50,000 litres but they are mostly lying idle as both the Municipal Corporation and the private cleaners are still dumping the septage in the open due to the high cost of transporting it to these plants.

All the three towns have some underground sewer lines in both Government and private residential colonies. However, most of these are not connected to sewage treatment plants and where they are connected to them, these plants are not operational.

The polluted water from the open drains and the septage not only contaminates the surface water but also the ground water. Tests were carried out on various surface water and ground water sources in the study towns. The test results show the coliform, streptococci, ammoniacal nitrogen and total nitrogen values are above the prescribed limits and so most of the sources are polluted. This despite the fact that the samples were collected during the monsoons when greater flow in surface and ground water dilutes the pollution.

The staff strength of the Health and Sanitation Department of the studied towns is grossly inadequate. There is severe understaffing of the sanitation department which is affecting the provision of sanitation services, especially to the slum areas.

Extrapolating from the analysis presented in a study by the McKinsey Global Institute, the per capita revenue expenditure for Tier I Indian cities in 2017-18 was Rs 9000. The average revenue expenditure on urban services in Indian cities was only 2% of that in the UK, 9% of that in South Africa and 13% of that in China (MGI, 2010). Similarly the per capita capital expenditure for Indian Tier 1 cities in 2017-18 was Rs 7300. The capital expenditure on urban services in Indian cities was 4 per cent of that in the UK, 13 per cent of that in South Africa

Presentation made during the Practitioners' Meet

Item	Sheopur		Rewa		Jabalpur	
	Total (Rs Lakhs)	Per Capita (Rs)	Total (Rs Lakhs)	Per Capita (Rs)	Total (Rs Lakhs)	Per Capita (Rs)
Revenue Receipts	2112.40	2669	8075.76	3106	60400.13	5135
Revenue Exp.	2112.12	2668	7246.73	2787	39008.81	3316
Revenue Surplus	0.28		829.23		21391.32	
Cap Receipts	3800.0	4801	33683.76	12955	45778.56	3892
Cap Expenditure	3800.0	4801	37250.68	14327	67133.77	5708
Cap Deficit	0		3566.92		21355.21	

and 15 per cent of that in China. Clearly even in the case of Jabalpur, which is a Tier 2 city, the per capita expenditures are way below the Indian average. Only in the case of Rewa is there a high per capita capital expenditure because of the heavy investments under AMRUT for the laying of sewerage lines.

The low levels of revenue mobilisation and the high dependence on State and Central Government grants makes the finances of the ULBs very unsustainable and they are not able to offer proper sanitation services as described earlier.

### Affordability Analysis of Sanitation Services in Jabalpur

If the Jabalpur Municipal Corporation were to recover even full sanitation costs which it is not doing, then assuming total number of surcharge paying households to be 1.6 lakhs in 2015 (70 per cent of total households, as 30 per cent live in slums and are too poor to pay charges), the per household sanitation charge per month would be Rs 327. The Average urban monthly per capita consumer expenditure in the 66th round of the National Sample Survey Organisation survey for Madhya Pradesh in 2010-11 was Rs 1666 (NSSO, 2011). Assuming a household of five persons this gives an average monthly household consumer expenditure in 2010-11 of Rs 8330. Assuming an average annual consumer price inflation rate of 6% from 2010-11 to 2016 the average monthly household consumer expenditure in 2015-16 will be Rs 11147. Thus, the proportion of the cost recovery sanitation surcharge works out to 3 per cent of the average monthly household expenditure which is an unacceptably high proportion. The proportion of households who had a monthly per capita consumer expenditure less than the average is 70 per cent of whom the bottom 30 per cent have been exempted as being too poor to pay. Thus, as much as 40 per cent of the population would have to spend 3 per cent or more of their monthly expenditure on sanitation which is not affordable by any means. This, when the services are grossly inadequate.

### Conclusions and Recommendations

The foregoing discussion has made it clear that the sanitation situation in urban areas in Madhya Pradesh is in severe crisis. The sanitation services being provided and the plans for the future are environmentally and financially unsustainable and lacking in equity. Given the fact that centralised sewage collection and treatment is very expensive and ULBs do not have the capacity to generate resources to implement and maintain them, the policy of making one time investments through AMRUT to facilitate these will prove counter productive in the long run and further aggravate the situation. Consequently, there is an urgent need to explore other sanitation systems for urban areas than the centralised ones being proposed.

The reuse of stormwater through appropriate decentralised water harvesting techniques involving both surface and aquifer storage and the treatment and reuse of waste water will reduce the need for expensive drainage and water supply systems considerably. The design of buildings will have to be done in such a way as to save on water use and increase water storage and reuse. In the process the environment will also be conserved as extensive soil conservation and plantation activity will be undertaken in the unbuilt environment. This approach will bring about substantial benefits at less cost compared to further investments in solutions that rely only on technological fixes for water supply and waste water management problems. Moreover, decentralised solutions can be adopted by private parties who are financially capable of doing so on their own, thus considerably reducing the financial load on the ULBs. In the urban water management context this involves an optimal use of both groundwater and surface water sources and where feasible recharging, harvesting and reuse of storm and waste water.

# Urban Sanitation Management in Karnataka

*(Presenter: Avinash Krishnamurthy, Biome Environmental Trust, Bengaluru)*

In Karnataka, Belagavi, Kundapur and Vijayapura were selected for studying existing sanitation situation with a focus on the role of informal sector in this space. Given inadequacies and gaps in municipal service provision, there is a market response to these gaps. A very significant part of this market response are small informal enterprises that fill these gaps. These informal enterprises are found both in the water and sanitation spaces – common examples are water tankers, “honey suckers” or vacuum trucks that evacuate onsite sanitation systems and farmers using fecal sludge as fertilizer in different ways. Less commonly acknowledged examples, though equally prevalent are ring makers for pit toilets, waste water irrigation service provision enterprises and vegetable fresh-water based washing enterprises. These enterprise not only fulfill service provision needs, they achieve resource recovery and reuse. Furthermore they represent livelihoods, often for many poor people. The question usually raised is are they safe? The key research questions are (a) What are the useful lessons to be learnt from the solutions of the informal sector and (b) given such a wide spread prevalence informal sector can municipal policy achieve service provision, public health, resource recovery/reuse and livelihood all of them together

The interim report emphasizes

- a) all three towns, there is very significant dependence on groundwater for drinking and non-drinking purposes. Therefore groundwater contamination is an important route for health risks to realize. Thus maintaining groundwater quality should be an important objective of sanitation systems. In Vijayapura risks are low due to very low groundwater table. However both in Belagavi and Kundapur risks need to be monitored carefully as water tables are high.
- b) Significant existing and high potential of reuse of wastewater in irrigation in and around Vijayapura and Belagavi. Instances of reuse of wastewater by farmers in these towns have been documented. What is also seen is a conscious choice of lower risk crops by farmers, hygiene practices by farmers to ensure their own safety and in some cases conscious irrigation practices to ensure safe use of wastewater. What is also observed in Vijayapura is the washing of produce with freshwater before it is sent to the market thus reducing the health risks for consumers greatly. Further most of this produce has further risk barriers built-in such as peeling, washing and cooking at the consumption end before it is actually ingested by humans.
- c) treated faecal sludge is used as fertilizer for agricultural by farmers in Vijayapura and potentially in Belagavi towns. Here again farmers have developed practices of use of fecal sludge in a way that significant hazards are reduced when actually applied to crops. Fecal sludge is usually

composted and used or spread across fields during sowing time and given adequate time to dry.

- d) Kundapur, a coastal town has a culture of open wells and pit toilets in dwellings. It is a place with abundant rainfall and very high water table. It also has a history of Investment In piped water supply system which has gained limited acceptance by its people. Therefore investments in centralized “piped” infrastructure thinking may be of limited value and has to be accompanied with management of onsite systems. Waste waters and sludge are currently being discharged through informal small scale piped sewers into the estuary without treatment – however the tidal cycles just draw the waste water into the sea without causing local environmental or health issues.
- e) Other important informal sector players are Ring-makers preparing concrete circular rings for pits and septic tanks. They could be useful players in the supply chain to help enforce better onsite sanitation systems.

Key recommendations for the towns would be:

- a) Adequate drinking water quality monitoring to check if wastewater is contaminating drinking water sources – very importantly including public and private sources of water from groundwater. As a practice this is broadly missing.
- b) Regular correlation between health data (eg: cases of water borne diseases) and water quality to be done – this is a missing practice)
- c) In Vijayapura solidwaste chokes open drains where wastewater flows. So solid waste management should be given importance to clear up the open drains which the UGD opens out into. While STP will require investment until STP comes, Vijayapura can engage with its farmers and communicate a “safe and best practices for irrigation with waste water & reuse of fecal sludge” culture locally. This can be monitored by the town municipality periodically. Private honeysuckers can be asked to register with the municipality and discharge their trucks with specified farmers known to follow good irrigation and fecal sludge practices.
- d) Vijayapura’s key risk is contamination of water supply pipes in choked drains – this connects again to good solidwaste management.
- e) Belagavi needs to address discharge of untreated industrial effluent on a high priority basis. This would address its highest risk.
- f) Kundapur has to monitor its groundwater quality across the town regularly and engage with its citizen through public messaging about where groundwater quality is good and where it is not. In this way it will leverage its existing investment in piped water supply for best health benefits.
- g) All towns will greatly benefit with better enforcement

through building bye-laws better designed onsite sanitation systems.

- h) Most importantly all these towns could adopt the Sanitation Safety Planning Methodology as a tool to plan and improve its sanitation systems incrementally and continuously. This methodology allows towns to recognize where the maximum health and environment risks are in their existing systems and prioritise interventions

and investments in sanitation so that adequate risk barriers are created thus protecting public health and environment. This also ensures maximum return on sanitation investment. Further it helps integrate and recognize informal sector contributions when the risk they represent is not high, but will point towards corrective actions should they begin to represent higher risks.

## Urban Sanitation Management in Telangana

(Presenter: Ramisetty Murali, MARI, Telangana)

The new state of Telangana formed on 2nd June 2014 with the enactment of Andhra Pradesh Reorganization Act 2014 with Hyderabad as its capital. The urban population of the state is 1,37,24,566 spread across 73 Urban Local Bodies consisting of 6 Corporations, 42 Municipalities of all grades and 25 Nagar Panchayats and one Secunderabad Cantonment including the 13 urban agglomerations and 79 census towns as per 2011 census.

### Sanitation facts of Telangana State ULBs:

- As per the census report 2011, 91.62 percent of urban HHs in Telangana have access to toilets as compared to national figure of 81.4 percent.
- Open Defecation in Urban Local Bodies is 8.38 percent which is lower than the national average of 12.6 percent. There are 2,27,094 urban households practicing open defecation out of 27,11,202 total urban households in state as per the Census 2011.
- 57.07 percent of Telangana urban population are connected to Piped Sewerage networks(Under Ground Drainage-UGD) with 98.5 percent in Hyderabad. Apart from GHMC, only 3 cities have existing Underground Drainage facility. UGD facility in 4 towns of Telangana is under implementation.
- Lack of formal mechanism of septage management is leading to disposal of septage or fecal sludge into the water bodies, drains and open areas in and around the 73 ULBs of the state without any treatment .
- ULBs in the Telangana state on an average generate about 66287 MT of wastes per day, while the per capita of waste generation in the ULBs is in the range of 0.3-0.4 kg/ per day. The quantities of waste are growing 5 percent annually.



For the purpose of the study three towns i.e. Mahabubnagar, Siddipet and Karimnagar were selected. The sewerage, septage and fecal sludge management situation of these three towns is very dismal and the profile of the towns are shown in the table below.

### Following were the key observations shared from the study

**Siddipet town:** It was observed that the Sewer lines work execution starting from the highest elevation point to STP is not appropriate for maintaining perfect gradients and would also delay in commissioning the system. Distance between water supply and sewer lines is inadequate in narrow lanes of slums and old (core) city. Distance between water supply and sewer lines is inadequate in narrow lanes of slums and old city. Due to low quantity of sewage and less than 100 LPCD water supply in most of the areas, proposed Underground Drainage (UGD) network and STP may not be viable due to insufficient flows. Siddipet Municipality has not yet assessed financial and technical resources required for maintaining UGD and STP beyond 2 years of Defect Liability Period. Despite heavy investment for the capital works of UGD there is no significant gain in terms of wage employment for the local labour. The proposal to let the treated waste water from the upcoming STPs into the Chintal Cheruvu and Narsapur tank need careful impact assessment as it can deplete the dissolved oxygen

Parameter	Siddipet	Karimnagar	Mahabubnagar
No. of Wards	34	50	41
Population SKS 2014	1,39,690	3,01,885	2,60,000
Slums (Notified/Non notified)	41 (29/12)	58 (42/16)	41 (28/13)
% of Slum/BPL Population	34.82 %	11%	28.12%
Swatch Sarvekshan Rank (2017)	45	201	249
Qty. of Sewerage(Estimated MLD)	12	31.5	19.2
Status of drainage	Open Drains (UGD & STP under construction}	STP & UGD –only 5114 Hhs connected	Open drain
Drain Network (Kms)	225	Sewerage Network-385	180
Pucca	286		175
Kutchra			
STP Capacity (MLD)	STP-I – 7.25 STP-II – 10.85	38	STP of 10000 lt
Storm Water Drains (Kms)	10	35	14
Discharging into	Madannapalli Vaagu Yerra Cheruvu Mittapallikunta Vaagu	Gopalpur Cheruvu LMD	Peeda Cheruvu

in surface waters resulting in anoxic conditions, harmful to aquatic life.

The interim report recommends ensuring that upcoming 2 STPs have the provision for co-treatment of septage and sewage for which receiving stations must be provided. It is suggested that during the planning, implementation and O&M stages. It is essential to hold periodical inter departmental coordination meetings with all line departments to address problems related to aligning different networks, obtaining permissions, trouble shooting and to comply with the timelines. The plan for usage of treated waste water must be developed well in advance taking into account the available opportunities (public parks, Harita Haram plantation, Industries, Agri-Horticulture, Sprinkling on the roads during summer, irrigation for agricultural farms closely located around the town,etc.) and treatment standards shall be fixed according to this plan.

**Karimnagar:** UGD construction took 10 Yrs due to delays in getting permissions for land procurement for STP, road cutting on National high way for laying main trunks, lack of funding etc. Initially UGD network was laid without inspection chambers resulting in the system remaining dysfunctional. Out of the 30,000 ICs required only 2500 inspection chambers were installed. Recently State Govt. sanctioned another 25 crores for ICs and work needs to be commenced.

UGD network was laid without inspection chambers resulting in the system remaining dysfunctional and the current STP with 38 MLD capacity is highly underutilized. Strong protests have been carried out by the neighboring households against STPs since they produce high noise due to air blowers and foul odor gets generated. So it is recommended that noise levels of air blowers may be reduced by lowering the blower's fan speed, building silencers, making sound proof barriers and the foul odour could be reduced by complete aeration and setting in of anaerobic conditions. Standby options like valves and generators at STP along with sewer cleaning machinery need

to be integrated into annual O&M plans and budgets which are currently excluded.

**Mahabub Nagar:** The entire effluents of Mahabubnagar are carried by open drains and discharged into Pedda Cheruvu resulting into total pollution of surface and ground water in the impact zone. Solid waste and debris are dumped along these drains thereby causing blockages and overflows. The district has high incidence of water-borne diseases and mosquito breeding within urban settlements. Thus, side drains need to be covered with light weight RCC slabs and silt traps for smooth flow of wastewater. Delineation of mini catchments within the city areas is urgently required to adopt decentralized waste and storm water management.

Across these three towns, it is observed that number of insanitary toilets are high and practice of open defecation does exist despite these towns being declared as ODF. Technical gaps and deviations are found in Twin Pit Toilets Constructed (Single Pit, Bottom Sealing with Concrete, No Y Junction, Vent Pipes Fixed, No Distance between Pits, ....) and there are no Standard Design followed for Septic Tanks construction. Overflow from the Septic Tank is directly connected to open drains and in some locations presence of fecal matter was also noticed. There is lack of awareness amongst communities for regular desludging of septic tanks (once in 4-15 years). Manual scavenging observed in cleaning of the septic tanks and threat perception of loss of thier livelihoods is forcing these labor to protest the operation of emptying trucks. Generally the process followed by the local operators for pit emptying is that 15 to 20 lts of water mixed with surf, kerosene and bleaching powder is thoroughly mixed in septic tank before emptying which would kill micro organisms essential for anaerobic digestion.

Complete absence of safety devices, hygiene practices, insurance coverage etc for the labour and indiscriminate dumping of sludge/septage in open lands and water bodies

worsens the sanitation situation. The suggestions include developing reliable data base on the septic tanks, periodic consultation and sensitization meetings with Builders, Architects, Civil Engineers, Residents Welfare Associations, Mason's Unions, leaders of Slum and Town Level Federations of SHGs and other stakeholders to raise awareness and seek cooperation for proper construction and emptying of septic tanks. Further the FSSM guidelines to be implemented and monitoring for safe disposal, hygiene practices and use of safety gear by the sanitation workers.

ULBs are highly dependent on grants for providing core services due to higher revenue expenditure as compared to income. Inadequate staff, unfair work distribution between permanent

and outsourced staff and lack of technical know-how for technical operations leads to low productivity and ineffective monitoring on projects. Overall, it is observed that heavy emphasis is given on engineering and construction and least focus on environmental aspects, mobilizing the communities for joint actions and final outcomes. It is recommended that good plans need to be developed by all line departments with ULB for implementation and augmentation of own sources of income for meeting the O&M cost of assets created and operated by them. Adequate scientific understanding of Solid & Liquid Waste Management (SLWM), informed governance of the councilors and sound technical skills of the staff on O&M are the need of the hour for sustainability of sanitation projects across all ULBs.

## Panel Discussion



A panel discussion was held with SCBP partners and collaborators who are delivering urban sanitation and FSSM trainings and capacity building - on the experience of conducting trainings and developing appropriate content for training modules for variety of target audiences ranging from ULB officials, masons, private sector organizations, entrepreneurs and academic institutes.

Some excerpts from the panel discussion are presented below:

**Dr. Malini Reddy, ASCI, Hyderabad**

“We have conducted several types of trainings for urban sanitation, covering a large stakeholder base. One of our focus target groups of elected representatives, through a 3-day training module. Identifying change Champions is an important focus of our trainings and follow up post trainings.”



**Dhawal Patil, Ecosan Services Foundation, Pune**

“We have attempted to advocate for certain kind of technologies in our trainings, such as DEWATS. During the trainings on FSSM, we were asked by ULB officials about the management of effluents. This led us to the development of a module on Integrated Waste Water and Septage Management. It was also felt important to discuss in detail about the various containment systems as knowledge was found lacking. Our experience of conducting trainings shows that ULB officials may be keen to adopt FSSM or waste water management solutions, but they lack decision making powers to adopt these solutions, specially the smaller ULBs.”

**Rajesh Pai, BORDA-CDD Society, Bengaluru**

“ULB officials are interested in understanding technology options, working models as well as proof for the designs (compliance). As there aren't enough experiences, models and cases in India, it becomes difficult to convince the ULB officials. There are several challenges of imparting technology training for FSSM. Perhaps one way to go ahead can be to



conduct series of sensitisation program on different treatment methodologies, technology options (pick one treatment methodology and provide a beginning to end training) with the clear understanding on applicability, know which model needs to be applied where, the appropriateness of each model, proven case studies, land area requirements, treatment performance, costing related to capital and O&M etc. Understanding of faecal sludge characteristics as well as the design requirements among the engineers and practitioners are very limited. Hence, generic or introduction trainings are not sufficient to build the design capacities. It is important to have a high level specific training like a) understanding the faecal sludge in relation to wastewater, b) conceptualization of design (methodology), c) detailed design trainings on available or practiced treatment modules, its combination, as well as its applications etc, c) different reuse as well as safe disposal practices etc. Detailed sensitization training on a) capital costing as well as O&M requirement of each treatment module (activities, resource required), b) monitoring requirements. As one of the main challenge faced by the designers, practitioners as well as ULB officials to select the treatment option as well as implement the same is on the non-clarity compliance requirements. This can be a) different clearance to be obtained from the concreted department -land, EIA, Consents etc. b) discharge standard requirement for percolate (liquid) treatment as well as solids.

If we could develop and conduct sensitisation workshop in consultation with the concerned departments from the local, state or central departments, this will be very useful for faster implementation of FSM/FSTP on ground. Potential partners from the private sector need to be identified and ways to handhold them need to be designed so that they can play an active role along with ULBs.”

**Utkarsha Kavadi, AILSG, Mumbai**

“There have been some learnings from our capacity building work on FSSM from the work done by us in Maharashtra and more recently in Rajasthan. We cannot do a good capacity building intervention without the full support of the state. The state has to have a framework in place, is fully engaged with the capacity building programmes, it is difficult if it keeps changing its priorities. Having the right set of participants/officials attending the trainings is very important. Developing the right content has also been a challenge. Training modules should be appropriate, interactive and provide for peer learning. The training programmes provide a platform for peer learning among ULB officials, especially when they meet across states or across the size and type of ULBs in a state. This should be fostered in the agenda and participant list. We have realized that logistics is also important. Choosing the right location (venue) for trainings and seating arrangement, can enthuse participants. It is also felt important to have a review and monitoring mechanism in place for trainings. And to submit inputs to the state government from time to time on the action points emerging from trainings.”

**Dr. Debjani Ghosh, NIUA, New Delhi**

“We have been engaged in urban sector capacity building, trainings and monitoring right from the JNNURM days. Pre- and post-evaluations of training outcomes are being undertaken and are helpful. The outcomes of AMRUT trainings are evaluated by choosing a random sample of 2% from among AMRUT trainees and conducting a telephonic discussion with them. As part of AMRUT, all levels of ULB officials - senior, middle, junior - have to be trained. The requirement of a standardized module is unreasonable as a ‘one size fits all’ approach will not work. Different training entities can play a role in capacity building, not just a few nodal national institutes, but also NGOs who have experience of ground issues. Not just classroom trainings, other practical and innovative training methods can be considered for thematic trainings in issues like Behavior Change Communication and field based trainings



on technology or through workshops and learning events. It is important that various stakeholders are included among the trainers.”

**Aasim Mansuri, C-WAS, CEPT University, Ahmedabad**

“CEPT has extensive experience in supporting state governments and ULBs in capacity building, with partner



agencies like AILSG in Maharashtra and with SCBP all over India. In developing tools like SaniPlan and SaniTab, developed and implemented the Service Level Benchmarks for integrating FSSM for Maharashtra that can be expanded to other states. And also working within CEPT University on integration of urban sanitation and FSSM in the academic course curriculum with IHE-UNESCO. We have done Training of Trainers (ToTs) and also supported nodal AMRUT institutes in delivering trainings. Random trainings do not work. Exposure visits are very useful in training ULB officials as they want to see it to believe it. We have facilitated exposure visits for ULB officials of Rajasthan and these have resulted in instilling confidence among them in the training as well as the interventions. Including audio-visual components as part of the training methodology is also, we feel, very useful and engaged the attention of the audience.



**Shubhagato Dasgupta, Centre for Policy Research, New Delhi**

“CPR has a long standing experience in conducting trainings and capacity building. Capacity building challenges identified by all speakers highlight the need for the next phase of capacity building should focus on transferring of FSSM knowledge from ULBs to Community level. Both awareness and knowledge building need to be targeted for FSSM at community level.”

## Conclusion

There is a big gap in capacity building for FSSM in its different dimensions that we are grappling with today, from awareness and advocacy to technology, social, institutional, form and content of delivery. Adoption of National FSSM Policy 2017 has been a winning point. However, the challenge is its implementation.

It is important that marginalized communities do not get left out of the decentralized sanitation initiative under FSSM, as happened with sewerage sanitation.

There is a need to review and consolidate training modules being produced by all National FSSM Alliance partners.



# Way Forward

Key points emerging from the Practitioners' Meet

## Capacity Building and Advocacy for FSSM

- Need to include issues and voices of women and the excluded in capacity building training on sanitation (e.g. differently abled, minorities and migrants) and discuss issues and challenges they face. Involvement of NGOs and other special interest groups can be considered as trainers for ULBs.
- Champions for urban sanitation and FSSM are best advocates. Identifying them and follow up engagement in practical regular basis needed as a capacity building activity.
- Community participation and engagement in capacity building needs to be fostered by reaching out RWAs and other community organizations. There is scope for innovation.
- While capacity building can be used to advocate an agenda for change and FSSM, it is important to be cautious that advocacy and capacity building require two different skills sets.

## AMRUT level Training integration

- Need to have all hierarchies of ULB staff attending the FSSM training programmes and creative ways to address the differences in status and perceptions. In AMRUT, the mandate is to train all officials from 500 cities, irrespective of their level. These officials have to attend three trainings of three days each in a year. ATIs are empaneled training institutes and are the first point of trainings. Where the ATIs are not able to have trainings, other empaneled agencies are brought in.
- Training Module content developed for FSSM by the Alliance can be promoted as part of the AMRUT training in 2018-19.

## FSSM Technology Training Challenges

- FSSM Technology training needs to be strategized. A series of sensitisation trainings on different technology treatment options for septage, needs to be done. Picking one treatment methodology at a time and provide beginning to end training.
- Different thematic technical trainings needed. These may include understanding the faecal sludge in relation to waste water, conceptualisation of design and methodology of treatment, different re use options of treated sludge and septage.
- How to select a technology treatment option vs another. This can be done by generating a set of case studies and material for different technology options giving all details. Integrating this into training modules.
- Detailed sensitisation trainings on Capital and Op Ex aspects for each technology treatment option.

## Compliance Standards for FSSM

- Securing formal clearances and compliances for setting up

treatment plants. Including Land, EIAs, Consent to operate, State and Central Pollution Board certification. etc.

- Understanding of discharge standards for percolate(liquid) as well as solids.
- Need to conduct sensitisation workshops where all concerned departments from local to state and national level are represented and their doubts addressed.

## Scaling up of FSSM Capacity Building

- Need to reach out to all government staff, not just ULB officials since there is transfer from rural to urban sectors within government. Reaching out to Department of Personnel and Trainings (DoPT), National Skills Development Council, CPHEEO, Nodal AMRUT agencies, Academia and Universities. Existing FSSM Training Modules and materials can be shared, integration within existing curriculum prioritized followed by new Modules for short and long term courses in FSSM developed.
- Identifying potential Private FSSM partners. Ways to hand hold and support them over a period of time, need to be identified so they can work with ULBs.

## Improving Delivery of Capacity Building

- Need to synthesize capacity building material so that the same message or factual content is conveyed.
- Training of Trainers (ToT) on different topics of FSSM, to ensure quality delivery of trainings.
- Mass media and face to face campaigns needed to promote FSSM as one step ahead of Toilet Construction goal of SBM. Series of audio visual content for larger awareness and capacity building on FSSM is needed through TV, Radio and newsprint.
- Need to conduct Training Impact Assessment, to understand its effect as well as need for improvement.





*Invite*

**NATIONAL INSTITUTE OF URBAN AFFAIRS, NEW DELHI**

**Invites you to a practitioners' meet:  
Capacity Building for Urban Sanitation**

Sanitation Capacity Building Platform (SCBP) is a platform on urban sanitation anchored by National Institute of Urban Affairs, New Delhi, with support from a Bill and Melinda Gates Foundation grant. The platform, which comprises national and international agencies having expertise in technical, institutional and social aspects of urban sanitation, has been supporting state governments, cities/towns and other stakeholders in building capacities to plan and implement decentralised sanitation solutions, through an activity based capacity building input.

With the objective of sharing and peer learning, we invite you to the informal practitioners meet to discuss the challenges and opportunities in urban waste water management sector.

The workshop will comprise sessions on:

**Presentations on findings from ongoing research in select towns  
of Karnataka, Telangana, Madhya Pradesh and Odisha**

*These research studies, commissioned in July 2017, are aimed at understanding the current and emerging challenges in urban sanitation with a focus on faecal sludge and waste water management, issues surrounding sustainability and equity in existing and proposed sanitation and the contribution/impact of unsafe disposal and treatment on ground water and surface water bodies, if any. For the ultimate purpose of wider stakeholder engagement in FSSM and for developing up to date capacity building content for trainings.*

and

**A panel discussion on challenges and opportunities  
in capacity building in urban sanitation**

*Across the country, various agencies have been actively reaching out to towns and states to understand the sanitation situation, assess needs and develop customised capacity building programmes. These agencies are delivering capacity building activities for all stakeholders involved, including officials from urban local bodies, elected representatives and the private sector. The discussion is aimed to consolidate the learnings and discuss the way forward.*

**Date:** December 19, 2017, Tuesday  
**Time:** 2:00 pm – 5:30 pm Please join us for lunch at 1:00 pm  
**Venue:** Casuarina Banquet Hall, India Habitat Centre,  
Lodhi Road, New Delhi 110003

*For queries, please contact Chandni Nair (+91 9968726488)*

## Capacity Building for Urban Sanitation

Venue : Casuarina Banquet Hall, India Habitat Centre, Lodhi Road, New Delhi

Date : December 19, 2017, Tuesday

### AGENDA

1.00pm - 2.00pm	Lunch	
	SESSION	Presenters/Discussants
2:00pm – 2:10pm	Introduction	Depinder Kapur, NIUA
2:10pm – 2:30pm	FSSM: Landscape and Challenges	Jyoti Dash, NIUA
2:30pm – 3:45pm	City/Town Sanitation Research Findings <ul style="list-style-type: none"> <li>□ Current status and emerging urban sanitation challenges</li> <li>□ Sustainability (ULB level) and equity (access and affordability) concerns of existing and proposed sanitation solutions</li> <li>□ Contribution/impact of unsafe disposal and treatment on the ground water and surface water bodies if any</li> <li>□ Informal sector septic tank desludging operations: challenges and opportunities</li> <li>□ Suggestions for FSSM Capacity Building: content/focus/target audience</li> </ul>	Research Presentations followed by discussion:  <i>Presenters:</i>  Rahul Banerjee, Madhya Pradesh  Biome Environmental Trust, Karnataka  Modern Architects for Rural India, Telangana  Ranjan Panda, Odisha
3:45pm – 4:00pm	Tea	
4:00pm – 5:30pm	Panel Discussion  Capacity Building for Urban Sanitation and FSSM: <ul style="list-style-type: none"> <li>□ Training Content Development</li> <li>□ Form of Delivery</li> <li>□ Uptake</li> <li>□ Way Forward</li> </ul>	<i>Discussants:</i>  Depinder Kapur: NIUA Kavita Wankhade: IIHS Meera Mehta: CEPT University Suresh Rohilla: CSE Malini Reddy: ASCI Utkarsha Kavadi: AILSG Shubhagato Dasgupta: CPR Dhawal Patil: ESF Rajesh Pai: BORDA

### Urban Sanitation Capacity Building Practitioners Meet, 19<sup>th</sup> Dec 2017

Purpose of the Meet :

1. Dissemination of Interim Findings of Urban Sanitation Research
2. Review of experience of Developing Content and Delivering CB/Trainings in FSSM
3. All the SCBP Training Modules are ready as DRAFT Modules and are being shared for peer review. Request for inputs by 15<sup>th</sup> Jan 2018 please.

We have 3 presentations of interim findings of urban sanitation research : Rahul Banerjee(MP), Biome Team(Karnataka) and MARI team(Telangana)

Followed by a discussion with partners and collaborators who are doing urban sanitation/FSSM training and capacity building - on the experience of conducting trainings and developing appropriate content for Training Modules/Factsheets/Posters/AV material, etc.

#### SCBP experience of Developing Content and Delivering FSSM CB/Trainings

Our experience during the last 2 years of the Gates Foundation supported Sanitation Capacity Building Programme(SCBP) is derived from engaging with the states and ULBs for FSSM advocacy by offering them a bouquet of support(technical assistance and capacity building support) through SCBP partners.

A combination of short term and longer term goals of SCBP were developed through a practical engagement with towns and states. The Programme attempts to meet immediate requirements/goals of States/ULBs on one hand and addressing longer term learning and capacity building goals.

Longer term strategic and advocacy goal are for promoting decentralised FSSM as a viable alternative to centralized sanitation solutions and the enabling system level changes at the state and ULB level for FSSM to happen.

Perspective building, awareness and knowledge generation on FSSM at all levels and with different stakeholders, breaking the resistance towards low cost technology solutions for FSSM, and addressing system level changes(Policy, Municipal Bye Laws, Norms & Regulations, FSSM Operational and Policy instruments) and initiation of some successful pilot Septage treatment projects on ground.

Promoting FSSM as an appropriate(not the second best solution), is an advocacy challenge at national and state level(pitched against the priority of high capital cost and infrastructure solutions). SCBP partners contribution to moving this agenda forward is acknowledged, to be able to respond at short notice to the requests from State governments and deliver.

While one specific programme intervention may have a priority at any given time, the larger awareness of the urban sanitation context and the need for system wide change should not be lost.

Following training modules have/are being developed under SCBP:

- ToT Module on FSSM Planning(CEPT)
- FSSM Orientation Module(NIUA)
- Advanced FSSM Technology Module(CDD)
- Integrated FSSM and Waste Water Treatment Module(ESF)
- Masons Training Module(AIILSG, CDD, CFAR)
- ODF and FSM Module(AIILSG)
- Shorter modules are being developed(UMC) : Elected Representatives, Financing, Community Participation, International Experiences

All modules are being translated into hindi. Modules will be useful reference for master trainers and also for trainees.

#### SCBP Experience : some lessons

The SCBP functions as a platform of credible national expert agencies for FSSM capacity building support to states and ULBs. The Platform has supported FSSM capacity building intensively in UP and Rajasthan. And at a national level through an engagement with 5 Nodal AMRUT agencies and the development of FSSM training modules, reached out to more states(MP, Karnataka, West Bengal, Jharkhand) and has the potential to reach out to many more states and stakeholders(ULB officials, private sector, elected representatives, academia, NGOs and media).

1. Challenges faced since inception:
  - a. Starting with activities that should logically be done later(DPRs).
  - b. Constraints of nodal training institutes(their existing states and training calendars, lack of staff and resources with them and the centralized sanitation discourse that they have to handle)
  - c. Dealing with different institutional set ups in different states. Poorly resourced and staffed small town ULBs, the SBM Directorates at state level. Coordination with multiple para state agencies at state level and the ULBs.
  - d. ODF target pressure at state level leading to lower priority for FSSM.
  - e. Securing interest and engagement of appropriate ULB staff for Trainings.
2. Developing a perspective on small towns sanitation challenge. We were given 6 towns to initiate work. Through our own visits and engagement with small towns officials and seeing the status of sanitation and septage.
  - a. The problem of small towns - existing septage tanks, poor drainage, poorly staffed ULBs and the priority for large expensive infrastructure at the Municipal level.
  - b. The complex institutional eco system – small ULBs, District Collectors, SPCB, para state technical agencies, Bilateral project funding institutions, State level UDD, etc.
  - c. Since states(UP and Bihar) were asking for DPRs, we started with DPRs or else they would not have agreed to do capacity building trainings. The first round of exposure visit for UP officials to Devanahalli in Sept 2016, helped as an advocacy at the highest level.

3. State level engagement and creating an enabling policy environment.
  - a. Expanded engagement at state level(UP) where we got support and exited from Bihar.
    - i. SAAP budget for all 61 AMRUT towns FSTPs(with CDD support).
    - ii. State FSSM Policy – possible as a sub group activity with CEPT,CDD, WaterAid inputs.
  - b. Rajasthan – 100 towns study of septage challenges. Gave inputs to the IPE Global draft FSSM policy for the state.
4. Developing DPRs : mixed experience
  - a. We do not promote any specific technology for FSPTs as part of our FSSM training modules. The Rapid Assessment Tool that was prepared by NFSSMA for MoHUA in 2016 for preparing SAAP budgets, also does not prescribe any technology option.
  - b. Two DPRs were prepared in a relatively short time under SCBP(by CDD) – Unnao(UP) and Bhagalpur(Bihar). The Unnao DPR is being used as a standard model DPR for UP. The Bhagalpur DPR is not being considered in Bihar. The trade off in this is scaling up potential on one hand and a risk of promoting standardized solutions on the other. States are not yet willing to fund DPRs cost and there are few technical agencies who can prepare DPRs at low cost.
  - c. Since Devanahalli and the Leh FSTPs are the only FSTPs in operation today and are both using a gravity flow and filtering based sludge treatment systems with no mechanical or electrical input – these are being used as reference by some states.
  - d. Lack of Standard Operation of Rates for FSTP is a limiting factor for scaling up of FSSM.
5. Developing modules and content ;
  - a. SCBP partnerships(CDD, CEPT, iDECK, ASCI, ESF, UMC and AIIISG) expanded to meet the requirements – basic orientation for FSSM, Integrated waste water and FSM, ODF to FSM.
  - b. Tie up with a Nodal state training institute(AMRUT training) to merge FSSM training as part of the AMRUT trainings.
  - c. A one day basic orientation module on FSSM and integrating it within the 3 day training of AMRUT was considered adequate. Sessions – What is FSSM, Technology Options, Financing, Institutions and Norms(for trainings in UP in late 2016). Different experts and partners contributed to creating a buy in from nodal training institutes on FSSM and they developed their own module(RCUES). NIUA team also got trained. The shortcoming was a lack of consistency in what we wanted to convey. An absence of a written training module, that defined the scope and content, key messages for each session that needed to get through and some practical exercises that would form the basis of a basic orientation on FSSM.
  - d. The CEPT ToT for Planning and Financing for FSSM in Aug 2017 was useful in defining and finalizing the content, structure, flow of the one day basic

orientation training module on FSSM. The ToT module was developed and delivered for AMRUT nodal agencies.

- e. A training is different from a workshop. You repeat the same thing( the concept of sanitation value chain and its actionable agenda) in different sessions, to make the learning sink in. You have exercises that engage participants in making simple assessments of variables that are important for internalizing the core concepts of the training. For example the basic orientation module on FSSM now conveys : what is FSSM, what will it take for a ULB to operationalize it. The training conveys the learning that operational and financial viability of septage treatment is as low as Rs 1 per capita per day operational cost of decentralised FSTP operations. Besides other financing and planning information.
- f. We are pilot testing different training modules with ULB staff. The process of developing content and delivering trainings – is an important learning activity for trainers too. This workshop we see is one important step to come together and share the experience and lessons from both developing and delivering FSSM capacity building trainings.

Capacity building for FSSM is more than just delivering trainings and exposure visits. Existing capacity building modules(Eawag) are not contextualized for Indian context, leave alone for urbanization, financial, institutional and gender considerations.

- 6. Peer to peer learning through informal and formal workshops/meetings and visits and exchange programmes among different state and town officials and experts is one of the best options for capacity building.
- 7. No single agency or partner can deliver and meet the “end to end FSSM solutions” that the states are asking for today. Need to work together, share and collaborate. No gate keeping in knowledge and learning agenda ever possible.
- 8. Urban sanitation research is part of the larger learning, knowledge generation and advocacy aim for FSSM. It also generates valuable content for an expanded national level FSSM Capacity Building training modules, including up to date real time specific information on septage and sanitation status and cross checking with official data.
- 9. SCBP programme functions within the overall national FSSM push that has been given by all partners of NFSSMA and the PMU at SBM. The national policy, FSM4 and other advocacy, research and technology initiatives provide and enabling space for SCBP to achieve its aims.
- 10. Engagement with private sector, collaboration in research and projects with academic institutions and with media will advance the capacity building agenda.

NIUA Team : Mohit Kapoor, Jytoi Dash, Chandni Nair, Ankita Gupta, Doab Singh, Anand Iyer, Yogesh Bhatt, Depinder Kapur

19<sup>th</sup> Dec 2017

## Study of Urban Sanitation, Septage and Waste Water Management Terms of Reference

### Purpose of the Research

Deliverables of the research will be used as inputs into the training material for the Sanitation Capacity Building Platform(SCBP), that is a Gates Foundation supported urban sanitation programme initiative. We are not expecting an extensive quantitative academic desk research, but rather a field based research backed with secondary data of urban sanitation, septage and waste water management in a 3-4 towns per state, to understand the emerging urban sanitation, institutional and programmatic challenges.

### 1. Key Research Questions

1. What is the current status of sanitation, septage and waste water management in 3-4 towns of the state. Presenting the status in terms of quantitative and qualitative assessment of sewerage and septage management in each town. What are the technologies/systems in use? Or what are the current FSS management practices? These can be roughly categorised by residential/commercial/locality. Capacities of the existing sewerage system vs capacity currently required)
2. How sustainable and equitable are the existing and proposed sanitation, septage and wastewater disposal services in urban areas of the given towns of the state you wish to study. Place this in context to the Municipal Finances and Institutional structure of the Urban Local Bodies and the economic situation of the population in general and the poor in particular.
3. What is the septage containment, conveyance, disposal and treatment systems in each town? What is the business model for the private sector operators(study for a few operators)? Where this is done by the Municipality, what is their operational model?
4. What is the contribution if any of unsafe disposal and treatment, contributing to the contamination of ground water and surface water?
5. What are the possible improvements that can be brought about in septage and wastewater disposal in terms of provisioning and governance in urban areas of the state and the towns.

### 2. Research Focus

1. Primary and secondary data collection for 3-4 towns. And its contextualisation and assessment at the state level.
2. Laboratory testing of water quality of surface water (water bodies in the urban areas such as rivers, streams and lakes), ground water and potable water.
3. Municipal/ULB norms relating to septage and waste water disposal and adherence/non-adherence to the same
4. Actual operations of the ULBs, government departments
5. Faecal sludge operators, private and government: profile, organisational and operational structures, role. Special focus on private operators' profitability, business operations and relationship with ULB.

6. An analysis of the budgets and actual expenditures of ULBs related to sewage management, and that of private players if possible.
7. Comparison of the cost of sewerage based sanitation systems (as calculated from the budget data) with the Consumption Expenditure data of the National Sample Survey Organisation to determine the affordability and equity of these services.
8. Comparison of Septage and Sewerage treatment and disposal technology options, with norms specified by various statutes and manuals to determine the reliability and efficiency of these services.
9. Sanitation, septage and waste water management challenges in slums, and with that in central locations of the cities, to gain perspective of equity issues.

Depending on their expertise and knowledge and information available, researchers/consultants are expected to address most if not all of the above.

### 3. Methodology

The study would be based on primary and secondary data.

#### a. Literature review

- Review of literature on alternative wastewater disposal and management in India and other countries to arrive at possible remedial measures.
- Study of Town Plans, Detailed Project Reports and Performance Reports of various projects proposed or undertaken with funding from the Asian Development Bank (ADB), Jawaharlal Nehru National Urban Renewal Mission (JNNURM), Atal Mission for Rejuvenation and Urban Transformation (AMRUT) and other bilateral or donor agencies, as applicable.
- Analysis of the annual budget documents of the concerned municipal bodies and the State Government and the actual operation of the various departments concerned with wastewater management including Faecal Sludge and Septage Management

#### b. Primary data

- In-depth interviews with key informants in the Government, private sludge operators, contractors, ULB officials, elected representatives and from civil society
- Group discussions with Residents Welfare Associations, residential committees and other communities, especially those residing in poverty pockets in the core city

#### c. Laboratory testing of surface water, ground water and potable water

Justify the selection of the 3-4 towns in a state. Justify on the basis of their suitability to study. The proposal should list down the secondary data to be reviewed as input to the study, the criteria for shortlisting the 3-4 towns of the study, primary data collection and interviews, analysis of using any tools or frameworks, how the water testing will be done and how will the report format look like.

#### 4. Deliverables and Duration

S.No.	Deliverable	Content	Time of submission
1.	Factsheet / City Brief (2-4 pages) for each city	Sanitation, septage and waste water situation assessment of the city, major issues and recommendations. Institutional and programmatic landscape of urban sanitation in the state and in the 3-4 towns studied. Draft Report Structure to be shared with NIUA for approval.	Within three months
2.	Interim Report	Town wise sections for each town - for the 5 Key Research Questions of Section 2 of the ToR. Conclusions, Key Findings, Recommendations Final Report Structure/Table of Contents	End of fourth month
3.	Draft Final Report	Town wise findings and recommendations. A state level perspective of urban sanitation, wastewater, sewerage and septage situation and recommendations that are useful at state level.	Fifth month
4.	Final Report and PP	Final Report with an Executive Summary Power point	Sixth month

## Annexure 2

Name	Designation	Institution
Amita Pathria	Jr. Project Associate	AIIILSG Mumbai
Hari Haihyvanshi	Research Associate	AIIILSG Mumbai
Shweta Nagarkar	Research Associate	AIIILSG Mumbai
Utkarsha Kavadi	Director	AIIILSG Mumbai
Malini Reddy	Associate Professor	ASCI
Sricharann Seshadri	Sr. Consultant	Athena Infonomics
Chandra Nayak	Course Director	ATI Mysore
Jahnavi Pai	Consultant	BIOME
Avinash Krishnamurthy	Researcher	BIOME
Anand Yadwad	Researcher	BIOME
Roshan Shreshta	S.P.O.	BMGF
Madhu Krishna	S.P.O.	BMGF
Sakshi Gudwani	Programme Officer	BMGF
Priyanka Thompson	Project Manager	BMGF
Dhruv Bhavsar	Sr. Research Associate	C-WAS, CEPT University
Aasim Mansuri	Sr. Research Associate	C-WAS, CEPT University
Dr Meera Mehta	Prof. Emeritus	C-WAS, CEPT University
Dr Dinesh Mehta	Prof. Emeritus	C-WAS, CEPT University
Juhi Jain	Sr. Program Manager	CFAR
Deepak Sharma	Project Consultant	CFAR
Subhash Dhakad	Technical Project Consultant	CFAR
Gaurav Shringi	Project Officer	CFAR
Shubhagato Dasgupta	Sr. Fellow	CPR
Sujaya Rathi	Independent Consultant	CPR
Shantanu Padhi	Researcher	CSE
Krishnan Hariharan	Project Lead	DASRA
Rahul Banerjee	Director	Dhas Gramin Vikas Kendra
Siresha	Consultant Partner	DRS Research & Consulting
Dhawal Patil	General Manager	Ecosan Services Foundation
Dr M Snehalata	Regional Coordinator	FANSA, MARI
Dr P K Jha	Chairman	Foundation of Environment & Sanitation
Molly	Sr. Specialist	IIHS
Dr Shubha Reddy	Sr. Consultant	IIHS
Bhanupratap Sharma	H.O.D.	Indus University
Saket Kumar	Associate Director	KPMG
Tina Mathur	Associate Director-Gov	KPMG
Mayank Agarwal	Assistant Manager	KPMG
Anil Dutt Vyas	Professor	Manipal University Jaipur
R Murali	E.D.	MARI NGO
G Kondala Rao	CE(PH)	MARI NGO
Meenakshi Sundaram	Chairman	MYRADA
Mohit Kapoor	Programme Officer	NIUA
Doab Singh	Programme Officer	NIUA

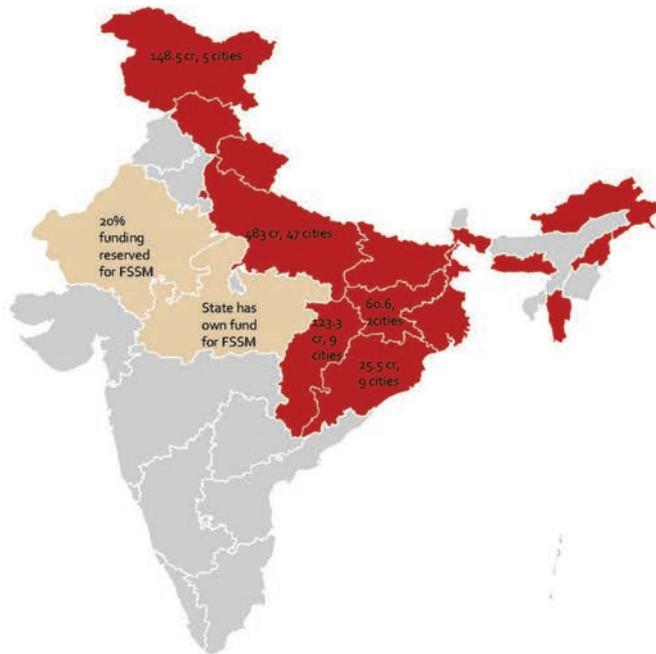
<b>Name</b>	<b>Designation</b>	<b>Institution</b>
Jyoti Dash	Programme Manager	NIUA
Utsav Choudhury	M&E Coordinator	NIUA
Abhishek Kapoor	National Program Manager	NIUA
Ankita Gupta	Programme Officer	NIUA
Chandni Nair	Programme Manager	NIUA
Aksheyta Gupta	GIS Expert	NIUA
Depinder Kapur	Senior Domain Expert	NIUA
Rahul S Varma	Sr. Consultant	PwC
Rajiv Reddy	Consultant	PwC
Dr A K Singh	Assistant Director	RCUES Lucknow
Rajeev	S.A.	SNV
R S Arun Kumar	Lead-Sanitation	Tide Technocrats
Pavithra	Deputy Manager	TTPL
Anupama Tripathi	Sr. Manager	Urban Management Center
Kanha Godha	Sr. Manager Sanitation	Urban Management Center
Anand Rudra	Senior WASH Advisor	USAID
R. K. Srinivasan	WASH Advisor	USAID
Mark Peters	Team Lead	USAID
Nafisa Barot	Executive Director	Utthan
Udayashankar Rao	Health Inspector	Vijayapura Municipal Council Karnataka
A Nagaraja	Chief Officer	Vijayapura Municipal Council Karnataka
Rama Shankar Sharma	Convenor	VISWASH-Bihar Network
Arumugam Kalimuthu	Project Director	WASHi
Abhishek Chatterjee	Project In-charge	WASHi
Meena Narula	Country Director	Water for People
Mamata Dash	Manager-Campaigns	WaterAid India
Snehal M Shah	Independent Consultant	
Pritpal S Randhawa	Independent Researcher	

# FSSM LANDSCAPE AND CHALLENGES

SANITATION CAPACITY BUILDING PLATFORM



## FSSM interventions under AMRUT



## FSSM interventions under AMRUT

Sr. No.	State	Fund under heading Sewerage and Septage (in Crores)	Actual Fund for Septage (in Crores)	No of cities	Name of the cities
1	Meghalaya	107.43	Project wise detail not available	1	Shillong
2	Arunachal Pradesh	59.64	Project wise detail not available	2	Naharlagun, Itanagar
3	Uttar Pradesh	2149.46	483.0	47	Agra, Allahabad, Ghaziabad, Kanpur, Lucknow, Meerut, Varanasi, Aligarh, Bareilly, Gorakhpur, Jhansi, Moradabad, Saharanpur, Amroha, Ayodhya, Azamgarh, Ballia, Banda, Baraut, Basti, Budaun, Bulandshahar, Chandausi, Etah, Etawah, Farrukhabad, Fatehpur, Ghaziapur, Hapur, Hathras, Jaunpur, Kasganj, Khurja, Lalitpur, Loni, Mathura, Maunath, Mirzapur, Modinagar, Muzaffanagar, Raibareli, Rampur, Shahjahanpur, Sambhal, Sitapur, Sultanpur, Unnao
4	Jammu & kashmir	3369.01	148.5	5	Srinagar, Jammu, Ananta Nag, Leh, Kargil
5	Chhattisgarh	447.40	123.3	9	Rajnandgaon, Korba, Bilaspur, Durg, Raipur, Raigarh, Ambikapur, Bhilai, Jagdalpur
6	Jharkhand	196.14	60.6	2	Chas, Giridih
7	Delhi	177.13	44.1	1	East DMC
8	Bihar	37.75	37.8	1	katihar
9	Uttarakhand	211.83	35.5	1	Kashipur
10	Odisha	167.26	25.0	9	Balasore, Baripada, Berhampur, Bhubaneswar, Cuttack, Puri, Rourkela Sambalpur, Bhadrak
11	West Bengal	297.59	15.0	1	South Dum Dum
12	Mizoram	13.73	7.73	1	Aizwal
13	Himachal Pradesh	27.07	3.75	1	Kullu
14	Nagaland	5.50	2.0	2	Kohima, Dimapur

## Type of support required by the states/ cities

### capacity building

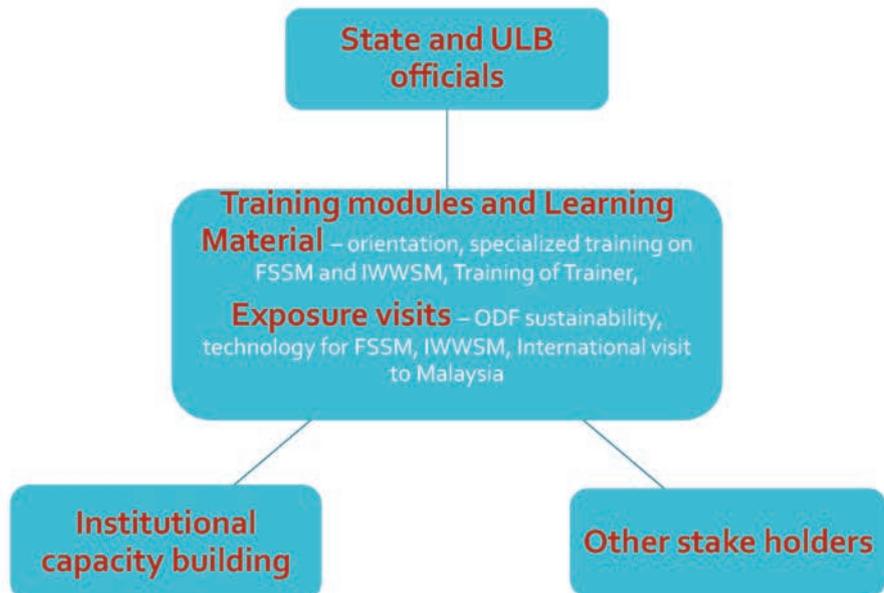
– trainings, learning materials, exposure visits, state/ regional level training institutes to anchor such trainings

### Technical

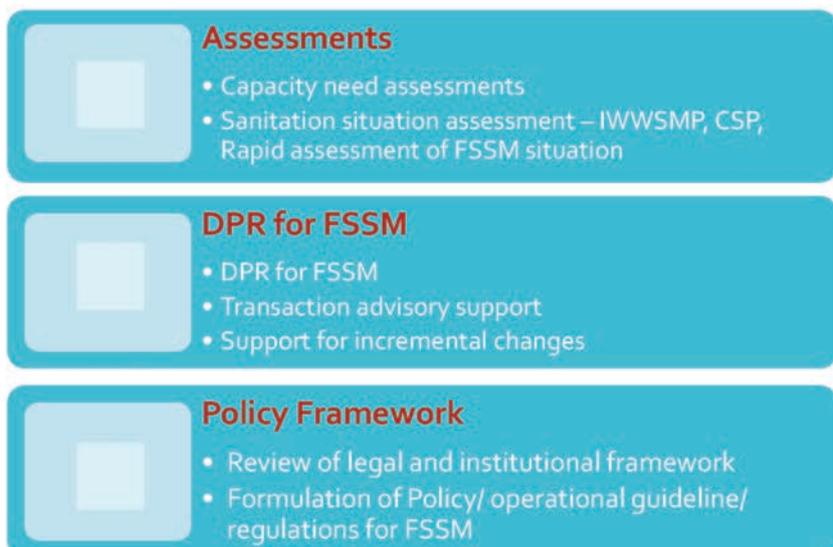
Assessments, DPR, transaction advisory, BCC and IEC, support for incremental changes

**Policy** - regulations, operational guideline, ULB level resolutions – defining the role of all stakeholders across value chain

## Capacity Building support by SCBP



## Technical Support by SCBP



Capacity Building  
Support for FSSM –

## Experiences from Uttar Pradesh

### Uttar Pradesh

#### SCBP strategy -

1. **Advocacy at state level-** Identification all nodal agencies (UD department, Jal Nigam, DLB), joint endeavor by SCBP partners for FSSM
2. **Identifying anchor agency-** RCUES for capacity building activities, DLB for technical activities

#### Achievements -

1. **Integrating training on FSSM into existing state level training framework** – training activities anchored by state training institute RCUES, SCBP provides support for learning material, training modules and resource persons
2. **Funding commitment for FSSM** - Support for budget estimation for FSSM intervention in AMRUT cities, 483 crore commitment for FSSM in 47 AMRUT cities, Pilot DPR for FSTP for Unnao
3. Support for developing **Policy Framework for FSSM** - Assessment of State level legal & institutional frame work for FSSM, Formulation of Operational Guideline for FSSM

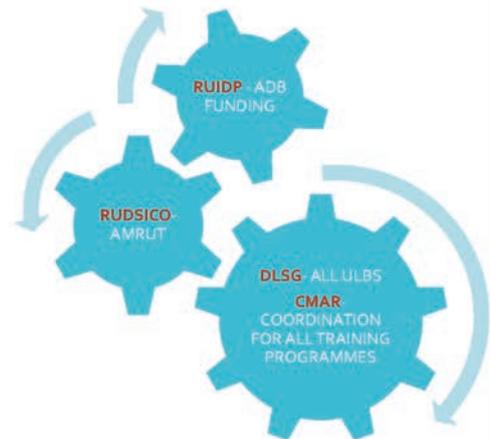
Capacity Building  
Support for FSSM –

## Experiences from Rajasthan

### Rajasthan

#### SCBP strategy -

1. **Advocacy at state level-** Identification all nodal agencies (UD department, DLSG, RUDSICO, RUIDP)
2. **Assessment of FSSM situation** - Rapid assessment of FSSM situation in 100 small cities, assessment of legal and institutional framework
3. **Identifying anchor agency** for all technical activities – **DLSG & CMAR** for capacity building activities, **UD & DLSG** for technical activities



Capacity Building Support for FSSM –

Experiences from Rajasthan

### Capacity Building strategy developed -



Capacity Building Support for FSSM –

Experiences from Rajasthan

### Challenges faced and strategy adopted

State wants **FSSM for small towns** with population below 1 lakh – CDD supporting state for DPR for FSSM for small towns, IWWSM studies undertaken with ESF to find out feasibility of FSSM/ Co-treatment/ complimentary solutions in bigger towns

**Towns struggling to achieve ODF status** – Orientation workshop module developed by AILSG focuses on ODF and FSSM as part of ODF sustainability

**Potential for FSSM** – mostly these towns have single pit toilets where overflow is directly connected to open drains.

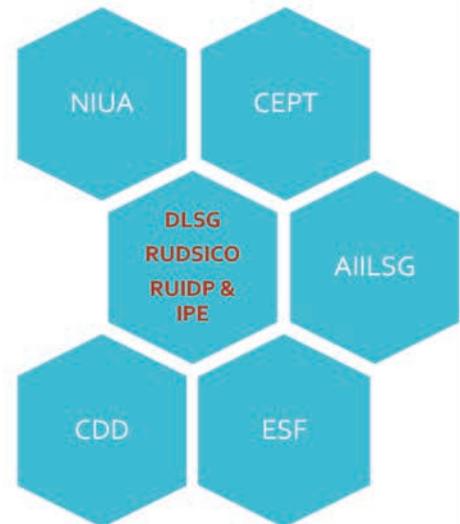
Exposure visits played a key role in motivating the officials  
IWWSM study taken up in few small towns

Capacity Building  
Support for FSSM –

## Experiences from Rajasthan

### Lack of funding for smaller towns –

- Strong advocacy at state level for prioritizing FSSM through synchronized effort of all partners
- State has issued directives for using FC funding on sanitation
- After the first pilot project RUIDP ready to take-up more cities for FSSM



[www.niua.org](http://www.niua.org)



National Institute of Urban  
Affairs (NIUA)  
Core 4B, India Habitat  
Centre, Lodhi Road  
New Delhi 110003



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[dkapur@niua.org](mailto:dkapur@niua.org)

# THANK YOU

# A CESSPOOL AWAITING CLEANING!!

RAHUL BANERJEE  
anar-kali.blogspot.com



STATUS OF FSSM IN M.P.

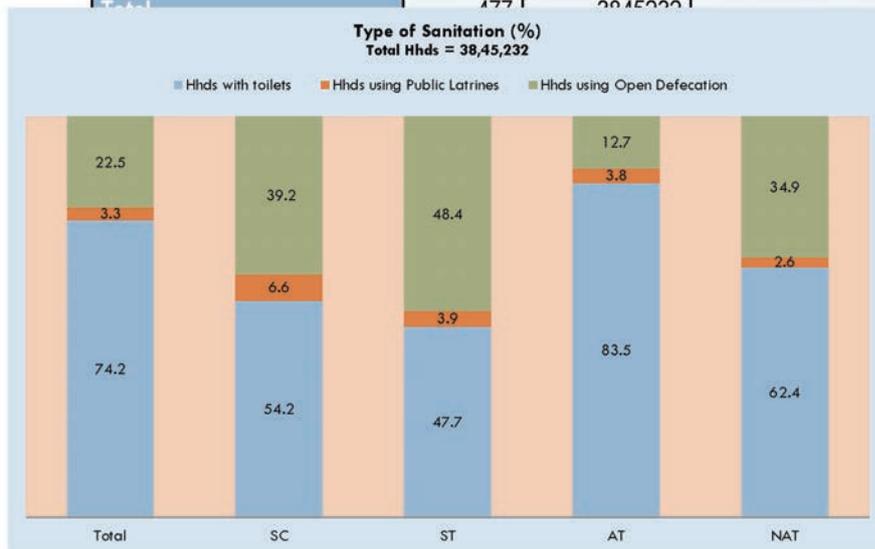
## Research Questions of the Study

2

- What is the current status of sanitation, septage and waste water management.
- What are the septage containment, conveyance, treatment and disposal systems.
- How environmentally and financially sustainable and socially equitable are the existing and proposed waste management systems.
- What is the contribution of unsafe disposal and treatment to the contamination of ground and surface water.
- What are the possible improvements that can be brought about in the wastewater and septage management.

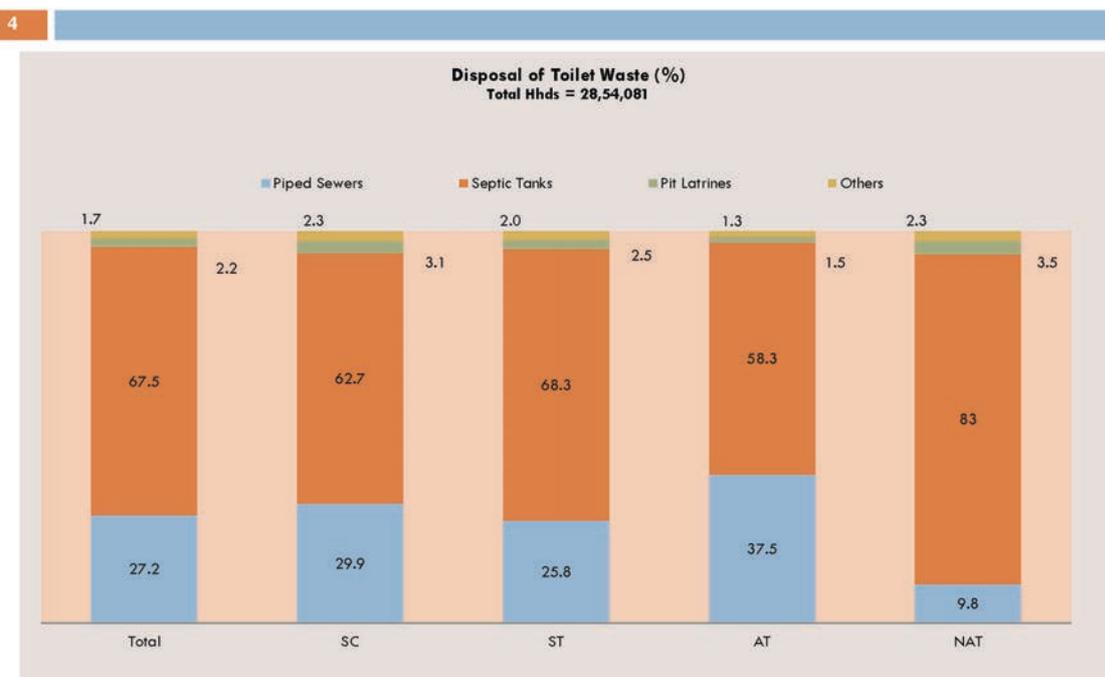
## M.P. Sanitation Situation 2011- I

Category	Number	Households	Proportion of Total Hhds (%)
Census Town	113	224932	5.8
Nagar Panchayat	249	744609	19.4
Nagarpalika	96	1170334	30.4
Mun. Corporation	14	1669597	43.4
Cant. Board	5	35760	0.9
<b>Total</b>	<b>477</b>	<b>38,45,232</b>	<b>100.0</b>



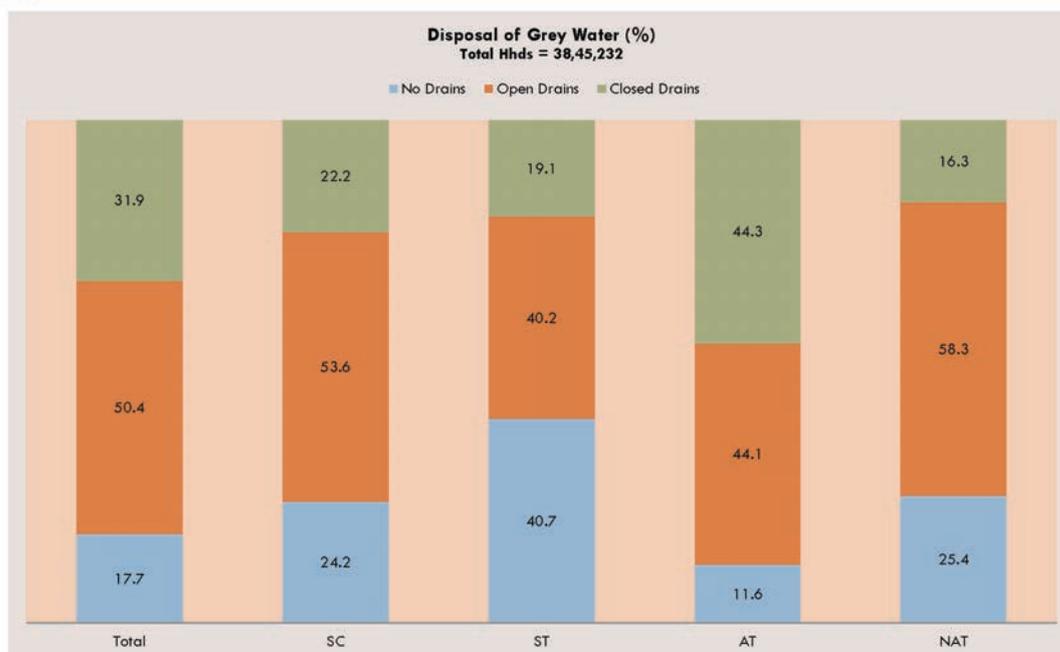
**SBM**  
No. of IHHL - 4,93,450  
No. of Public/Comm. Toilets - 18,896

## M.P. Sanitation Situation 2011- II



## M.P. Sanitation Situation 2011- III

5



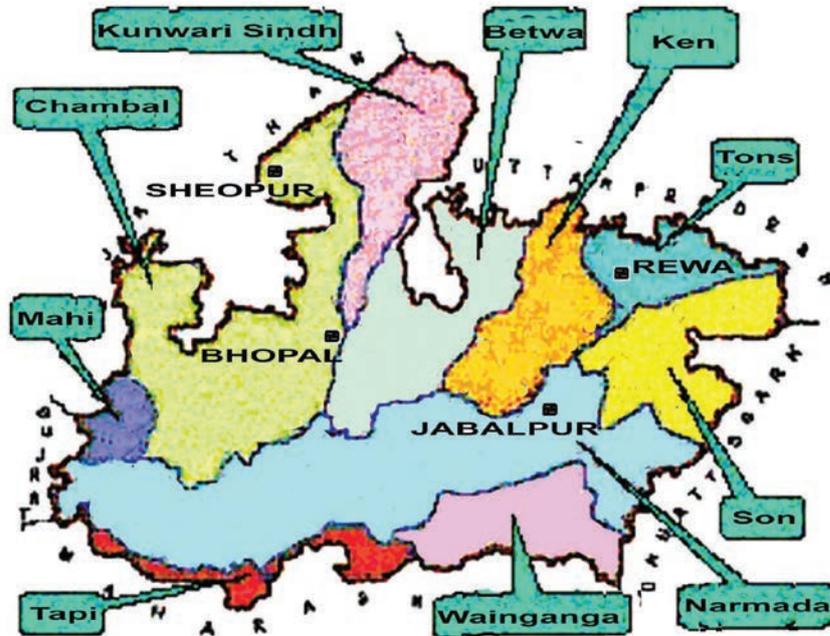
## M.P. Sewage Treatment Situation 2016

6

Sl. No	City/Town	STP Location	Year of Commissioning	Operadional Status	Installed Capacity (MLD)	Tech.	PCB Consent Status
1	Ujjain	Ujjain	Information not provided	Operational	52	WSP	Information not provided
2		Sadaval	2001	Operational	50	OP	Not Obtained
3	Gwalior	Lalitpura	2010	Operational	50	WSP	Obtained
4	Indore	Kabithkedi	2006	O&M by IMC through contractor	78	USAB	Not obtained
5		Kabithkedi	2009		12	USAB	
6	Burhanpur	Burhanpur	2009	Non-operational	6	OP	
7	Jabalpur	Gwarighat	2012	Operational	150	FAB	Expired
8	Bhopal	Maholi Dhamkheda	2001	Operational	25	WSP	
9		Badwai	2001	Operational	17	OP	
10		Gondermau	2001	Operational	2.36	OP	
11		Kotra Singhpur	2001	Operational	10	WSP	
12		Ekant Park	2008	Operational	8	OP	Not Obtained
13		Bawadia Kalan	1975	Operational	13.56	OP	
14		Mata Mandir	1959	Operational	4.56	BF	
15	Nagda	Nagda	Information Not Provided	Non-operational	-	KT	Information not provided
16	Vidisha	Vidisha		Operational			
17	Keolari	Keolari		Non - operational			

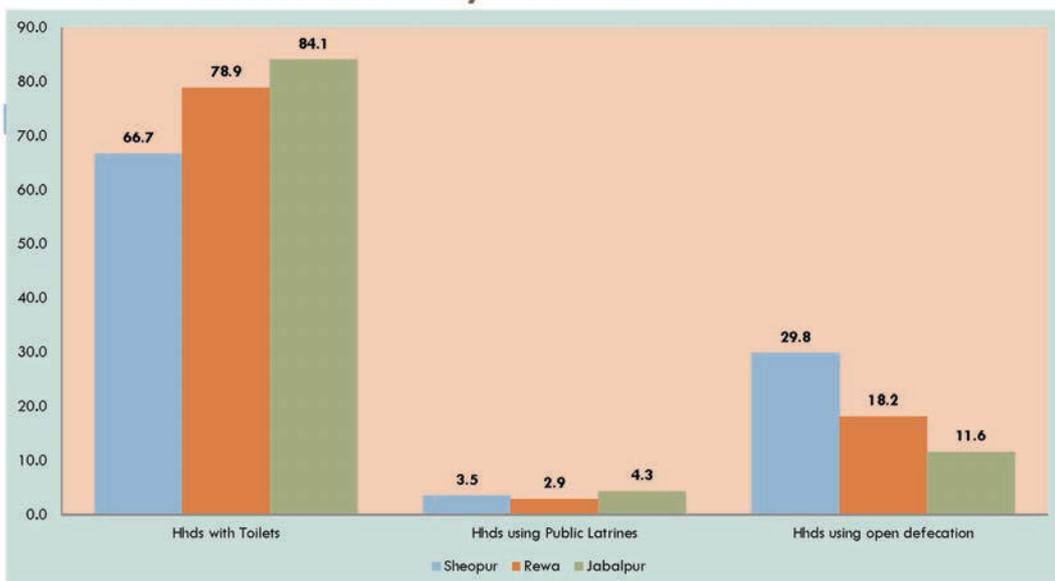
## Location of Study Towns in M.P.

7



## Sanitation Situation in Study Towns 2011 - I

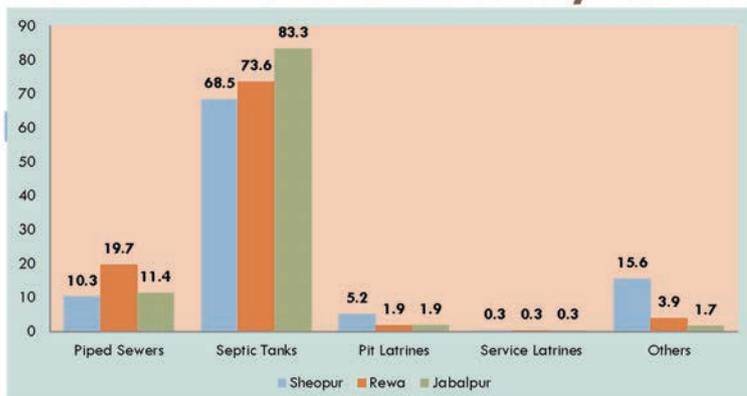
8



SBM	Constructed	To be Constructed
Sheopur	1000	570
Rewa	5239	46
Jabalpur	40000	400

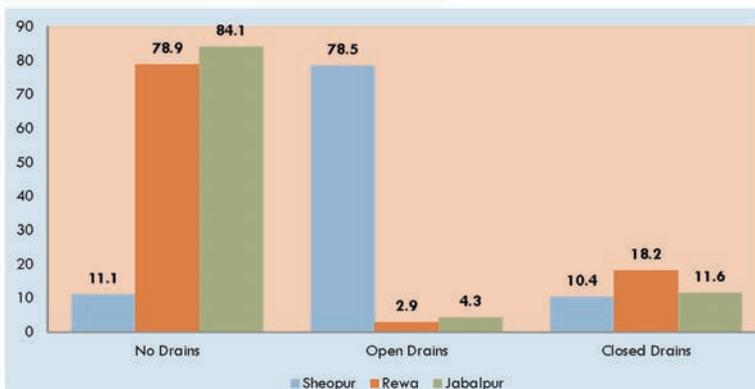
## Sanitation Situation in Study Towns 2011 - II

9



**Sheopur** – No Mechanised Tankers  
**Rewa** – One Corporation and One Private

The **JMC** has 3 big septic cleaning vehicles of 9000 litres and 5 of 4500 litres capacity. There is a private agency named **Narmada Safai Samrakshak Enterprises** which is Dalit owned and has 3 vehicles of 6000 litre capacity.



## Water Quality in Study Towns

10

Town	Type of Water Source	Test Parameters								
		BOD mg/l	TDS mg/l	TSS mg/l	DO mg/l	TC	FC	FS	AN mg/l	TN mg/l
Sheopur	Open Well	2	140	12	5.5	Present	Present	Present	1.5	4.5
	Borewell	1	240	8	8	Absent	Absent	Absent	1.5	7.5
	River	1	320	8	6.9	Present	Present	Present	1.5	12
	Nala	16	360	60	1	Present	Present	Present	1.5	3
Rewa	Open Well	1	880	8	5.2	Present	Present	Absent	1.7	6.2
	Borewell	3	670	8	5.7	Present	Present	Present	1.1	4.4
	River	2	150	14	5.4	Present	Present	Absent	1.4	4.1
	Tank	8	100	10	5.1	Present	Present	Present	0.3	4.7
	Nala	24	550	60	0	Present	Present	Present	12.3	29.4
Jabalpur	Open Well	1	210	8	0	Present	Present	Present	0	9.4
	Borewell	1	200	15	2.8	Present	Present	Present	0	5.4
	River	5	80	8	7.9	Present	Present	Present	0.3	4.6
	Tank	30	260	35	0	Present	Present	Present	1.4	20
	Nala	20	230	28	1	Present	Present	Present	0.3	4
Permissible Value		3	500	20	>5	Absent	Absent	Absent	Absent	Absent

## Financial Situation of ULBs in Study Towns (Rs Lakhs)

SHEOPUR	2017-18	Per Capita
Revenue Receipts	2112.40	2669
Revenue Exp.	2112.12	2668
11 Revenue Surplus	0.28	
Cap Receipts	3800.0	4801
Cap Expenditure	3800.0	4801
Cap Deficit	0	

REWA	2016-17	2017-18	Per Capita
Revenue Receipts	12701.73	8075.76	3106
Revenue Exp.	7503.31	7246.73	2787
Revenue Surplus	5198.42	829.23	
Cap Receipts	7353	33683.76	12955
Cap Expenditure	9169.24	37250.68	14327
Cap Deficit	1816.24	3566.92	

The per capita revenue expenditure for Tier I Indian cities in 2016-17 was **Rs 9000**. The average revenue expenditure on urban services in Indian cities was only 2% of that in the UK, 9% of that in South Africa and 13% of that in China.

The per capita capital expenditure for Indian Tier 1 cities in 2016-17 was **Rs 7300**. The capital expenditure on urban services in Indian cities was 4 per cent of that in the UK, 13 per cent of that in South Africa and 15 per cent of that in China.

JABALPUR	2015-16 (E)	2015-16 (A)	2015-16 Shortfall (%)	2016-17 (E)	2017-18 (E)	Per Capita
Revenue Receipts	38808.89	27498.87	29.1	48622.76	60400.13	5135
Revenue Exp.	29802.16	24230.96	18.7	36349.74	39008.81	3316
Revenue Surplus	9006.73	3267.91	10.4	12273.02	21391.32	
Cap Receipts	25459.35	19511.24	23.4	31582.52	45778.56	3892
Cap Expenditure	34453.2	13759.21	60.1	43782.25	67133.77	5708
Cap Deficit	8993.85	-5752.03		12199.73	21355.21	

## Impact of Financial Unsustainability

STAFFING OF SANITATION DEPARTMENT		Jabalpur		Rewa		Sheopur	
Post		Sanc.	Act.	Sanc.	Act.	Sanc.	Act.
12	Chief Health Officer	1	0				
	Health Officer	2	1	1	0		
	Assistant Health Officer	8	2	3	0	1	0
	Chief Sanitation Inspector	23	15	5	0	-	-
	Sanitation Inspector	45	17	9	2	1	0
	Assistant Sanitation Inspector	89	30	9	2	3	1
	Sanitation Supervisor	150	40	31	8	4	3
	Sanitation Workers (Permanent)	2256	1154	471	471	91	87
	Sanitation Workers (Contractual)		440		145		242

### AFFORDABILITY ANALYSIS

The Jabalpur Municipal Corporation has proposed in its budget for 2017-18 a sewerage surcharge per household of **Rs 1174**. The Average urban monthly per capita consumer expenditure in the 66th round of the National Sample Survey Organisation survey for Madhya Pradesh in 2010-11 was **Rs 1666**. Assuming a household of five persons this gives an average monthly household consumer expenditure in 2010-11 of **Rs 8330**. Assuming an average annual consumer price inflation rate of 6% from 2010-11 to 2017 the average monthly household consumer expenditure in 2017 will be **Rs 12525**. Thus, the proportion of the sewerage surcharge works out to **9.37** per cent of the average monthly household expenditure. The proportion of households who had a monthly per capita consumer expenditure less than the average is **70** per cent.

## PROBLEMS OF FSSM

13

1. The widespread perception due to the caste system that handling of faeces pollutes the person.
2. Reliance on illegal manual scavenging despite a stringent legislation (The Prohibition of Employment as manual scavengers and their Rehabilitation Act, 2013)
3. Septic Tanks or pits are often placed under toilets and sealed or with limited access.
4. Septic tanks are often oversized due to lack of technical competence. Thus, regular cleaning is not done and the householder waits for the tank to fill up.
5. Septic tanks are not accompanied by soak trenches or soak pits and effluent is released untreated.
6. Urban Local Bodies have inadequate services like suction tankers and trained human resources.
7. There are very few formal private tank cleaning service providers.
8. Most towns lack proper septage treatment.
9. There is a huge lack of awareness among the public about the serious health hazards of improper septic tank construction and FSSM. Especially affected are women and children who suffer most from the insanitary conditions.
10. Despite there being stringent laws like the Water (Prevention and Control of Pollution) Act 1973, the CPHEEO manual and Building Codes and Rules, these are all being flouted at will by all with the ULBs being the biggest culprits and the Pollution Control Boards being lax in their monitoring.



## The Watsan story : beyond the official

Learning from Informality in the water & sanitation space



### Cities / Towns Selected:

**Belagavi**  
**Kundapura**  
**Vijayapura**

### Key Research Questions:

Role of informal  
sector/informality

Can service provision, **public health**, **Resource recovery/reuse** and **livelihoods** be all achieved together ?

How can **Municipalities** respond to the **Informal space**?



# Belagavi

## Demography

**4,90,045**

Population in 2011\*

**5,65,000**

Current Population†

**2,43,508**

Females\*

**2,46,537**

Males\*

**57,902 (10%)**

Population in Slums\*

**1,11,874**

Total households\*

**9961 hectares**

Total Area\*

## Economy

**Chemicals, Drugs and  
Pharmaceuticals, Ink,  
Paints, Varnishes,  
Insecticides and fertilisers**  
Major Industries\*

**Groundnut Oil**

Important commodities\*

## Climate

**Northern Dry Zone**

Agro-climatic zone

**1,200 mm**

Rainfall

**July to October**

Rainy Season

**Black Clayey, Sandy Loam  
Soil**

## Agricultural Practices

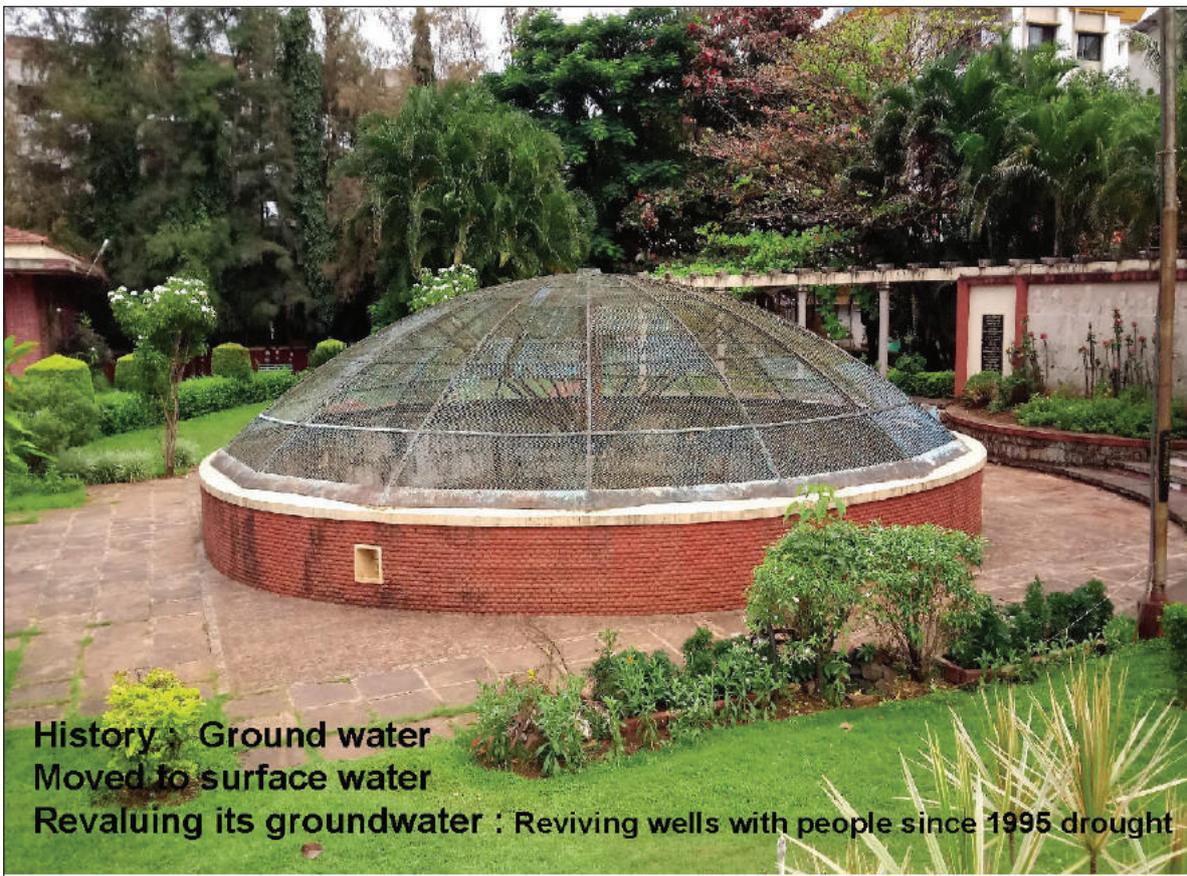
**Jowar, Maize, Paddy, Bajra**  
Cereals and Millets

**Sunflower, Groundnut,  
Sugarcane, Cotton, Tobacco**  
Commercial Crops

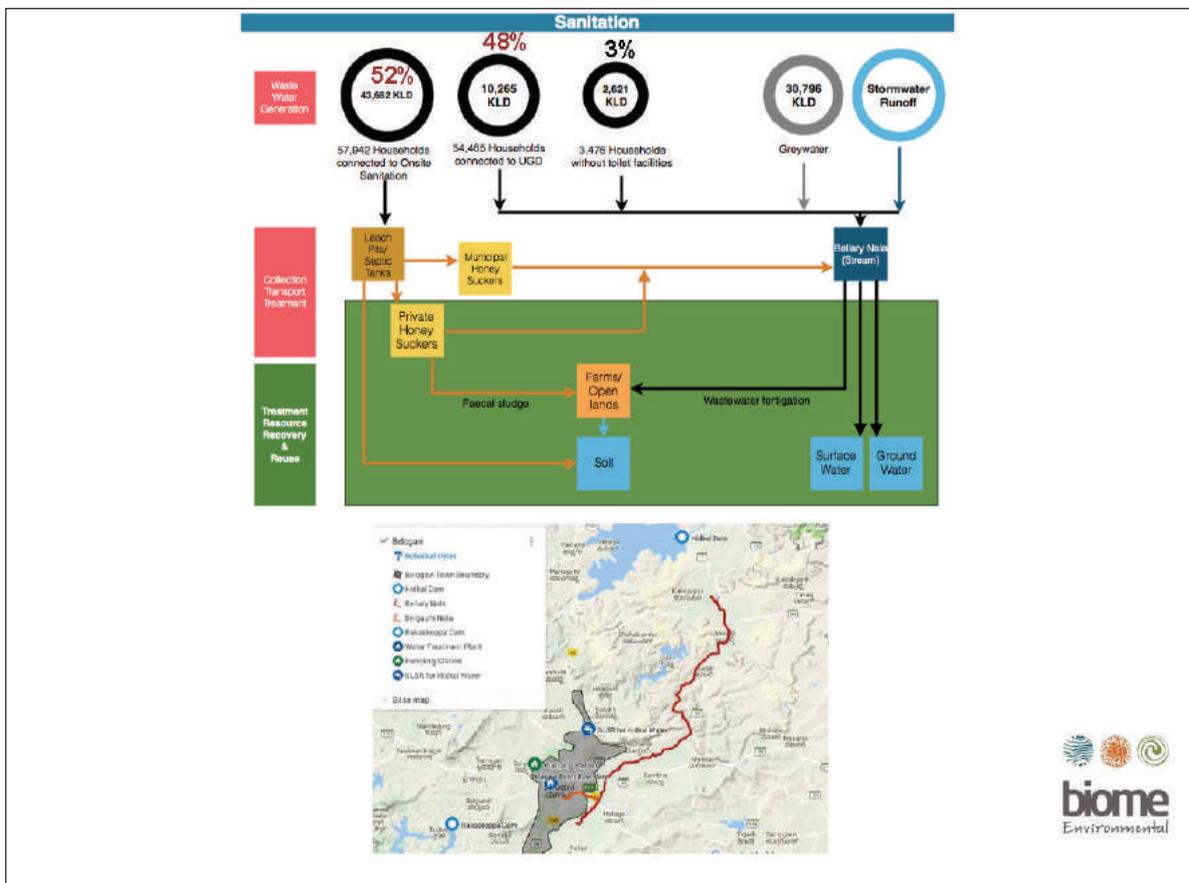
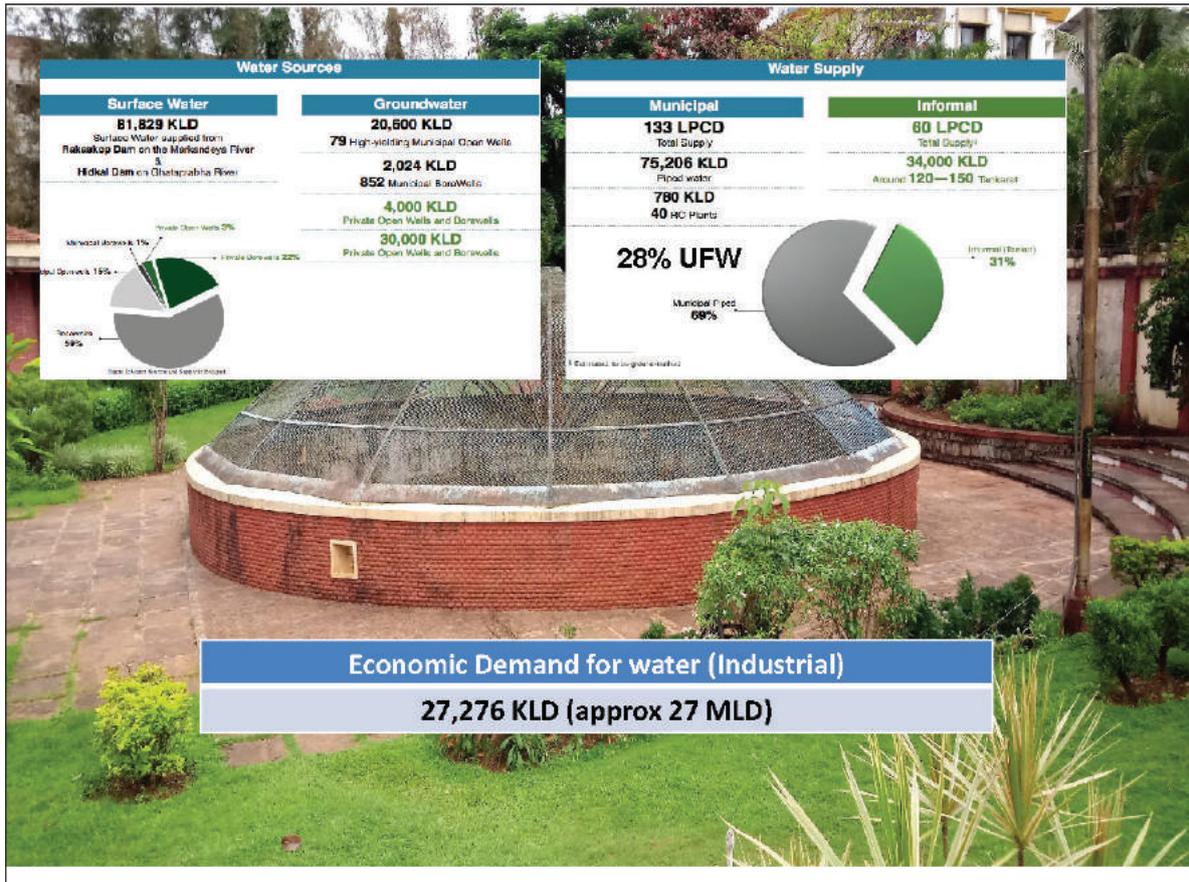
**Mango, Banana, Onion, Green  
Chilli, Potato**  
Horticulture

**Cashew, Coconut**  
Plantation

**Smart City Projects underway !**



**History** Ground water  
Moved to surface water  
**Revaluing its groundwater : Reviving wells with people since 1995 drought**





Basma Halagubha, one of the farmers who uses wastewater for irrigation

Agriculture reuses this waste water  
Industrial effluents also go down this  
"Bellary Nala". Secondary Research  
indicates less than danger levels  
Of contaminants

**Resource Recovery and Reuse**

**1,300 Farmers**  
Fertigating 2,000 hectares



Baswanth Chavala not only uses wastewater to irrigate his land but also pumps this water as far as 10-15 km and charges the farmers 40-50 rupees per hour



Paddy grows entirely using wastewater from Bellary Nala



Sl.No.	Project	Cost (Rs. In Crores)
<b>1</b>	<b>Solid Waste Management</b>	<b>46</b>
	- SWM including RDF plant	8
	- Integrated SWM	38
<b>2</b>	<b>Ground water management</b>	<b>11</b>
	- Improvements of lakes	10
	- Rain water harvesting in parks and gardens	1
<b>3</b>	<b>Water Supply</b>	<b>498</b>
	- 24x7 water supply and smart metering	9
	- Smart metering Water Supply	53
	- 24x7 Water Supply - Phase I	427
	- Road side drinking water kiosks	9
<b>4</b>	<b>Sanitation</b>	<b>227.5</b>
	- Public urinals and toilets	1.5
<b>75 MLD</b>	- Construction of STP, Uncovered UGD, Improvements/Rehabilitation of sewer lines	156
	- Primary and secondary storm water drains	70
	<b>Grand Total</b>	<b>782.5</b>

## SMART CITY PROJECTS



## Informal sector : work with it ?!



**Water Supply**  
**250 – 300 Livelihoods**  
 120 – 150 Private Water Tankers

**Sanitation**  
**3 Livelihoods**  
 1 Honeysuckers

**Resource Recovery and Reuse**  
**1,300 Farmers**  
 Fertigating 2,000 hectares



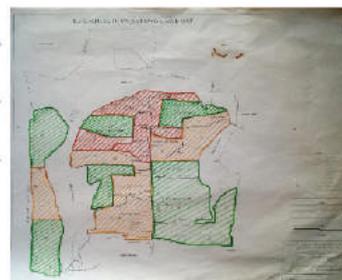
# Risks and Challenges (Watsan)

- Will Smart City projects address the longer term management dimensions – demand management, groundwater management, wastewater management in an integrated manner (sustainability)
- Enforcing Industrial waste water management (health & env risk)
- Groundwater quantity & quality monitoring (health & env risk)
- Solid and Liquid waste mixing inside town – potential to contaminate water supply. (health risk)
- Universal service – wat&san (equity)
- Does the town have a watsan-health linking perspective ?  
Groundwater ? Waste-water reuse for industry? Communication & public education (staffing & capacity)



# Kundapura

<p><b>Demography</b></p> <p><b>30,444</b> Population in 2011*</p> <hr/> <p><b>31,651</b> Current Population†</p> <hr/> <p><b>15,604</b> Females‡</p> <hr/> <p><b>14,840</b> Males‡</p> <hr/> <p><b>5,231</b> Population in Slums‡</p> <hr/> <p><b>8,460</b> Total households‡</p> <hr/> <p><b>1,401 hectares</b> Town Area</p>	<p><b>Economy</b></p> <p>Important commodities</p> <p><b>Agriculture</b> <b>Fishing</b></p> <hr/> <p><b>Climate</b></p> <p><b>Coastal Zone</b> Agro-climatic zone</p> <hr/> <p><b>4297 mm</b> Rainfall</p> <hr/> <p><b>June to September</b> Rainy Season</p> <hr/> <p><b>Red lateritic; Yellow loamy</b> Soil</p>	<p><b>Agriculture</b></p> <p><b>Paddy</b> Cereals and Millets</p> <hr/> <p><b>Cashew, Flowers</b> Commercial Crops</p> <hr/> <p><b>Coconut</b> Plantation and Horticulture</p>
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\* 2011 Census Report  
 † Current Municipal data  
 ‡ Town Municipal Council Kundapur, (2015). Public Disclosure Schedule.



## Water Sources

### Surface Water

**2,017 KLD**

Surface Water supplied from the Varahi River, 11 km from the town



The TMC has a metered water supply system

### Groundwater

**4,313 KLD**

Private Open wells and Bore-wells



Most households have an open well in the frontyard

A town full of wells in practically every house.



## Water Supply

### Municipal

**64 LPCD**

Average per capita Supply

**2,017 KLD**

Piped water

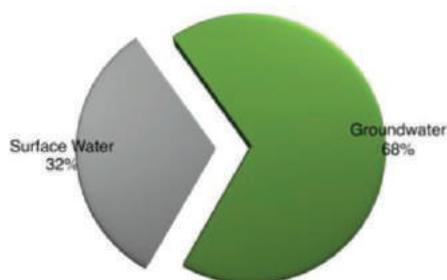
### Informal

**136 LPCD**

Average per capita Supply

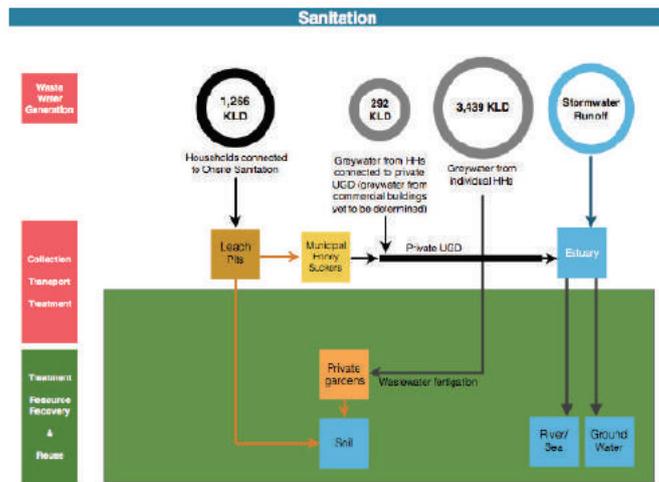
**4,313 KLD**

Private Wells and Borewells



Only approx 1/3<sup>rd</sup> of the town has taken connections





### The Existing "STP" : The backwaters



Waste water flows into these backwaters which heaves to the daily rhythm of the tides



**Proposed : UGD and a new 2.8 MLD STP**





## Risks and Challenges (Watsan)

- Is paid Infrastructure services a potential overhead/cost centre ? Is it really necessary? (sustainability)
- Groundwater quality monitoring (health & env risk)
- Solid and Liquid waste mixing inside town – potential to contaminate water supply. (health risk)
- Universal service – wat&san (equity)
- Monitoring of Backwaters area (health & env risk)
- Does the town have a watsan-health linking perspective ? Groundwater ? Marine Ecology ? Communication & public education (staffing & capacity)

# Vijayapura

## Demography

**34,866**  
Population in 2011\*

**39,000**  
Current Population†

**17,129**  
Females\*

**17,737**  
Males\*

**8,751 (25%)**  
Population in Slums\*

**9,500**  
Total households\*

**1,600 hectares**  
Town Area

\* 2011 Census Report

† Current Estimate according to the ULB

## Economy

Important commodities

**Silk Yarn**  
**Sarees**  
**Beedis**

## Climate

**Eastern Dry Zone**  
Agro-climatic zone

**750 mm**  
Rainfall

**July to October**  
Rainy Season

**Red Loamy**  
Soil

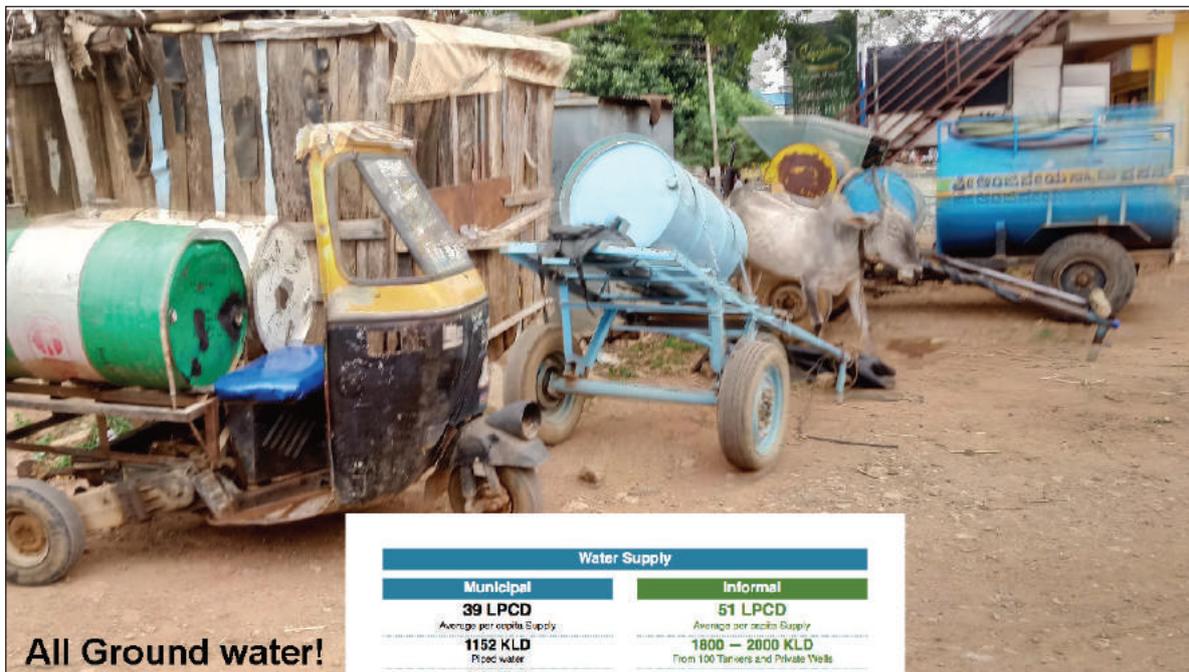
## Agriculture

**Ragi, Jowar**  
Cereals and Millets

**Mulberry, Fodder, Flowers**  
Commercial Crops

**Beetroot, Greens**  
Plantation and Horticulture

**Dairy, Sheep rearing**  
Animal Husbandry



**All Ground water!**

## Water Supply

### Municipal

**39 LPCD**

Average per capita Supply

**1152 KLD**

Piped water

**344 KLD**

2 Tankers

**8 KLD**

HO Plant

### Informal

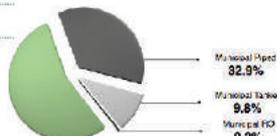
**51 LPCD**

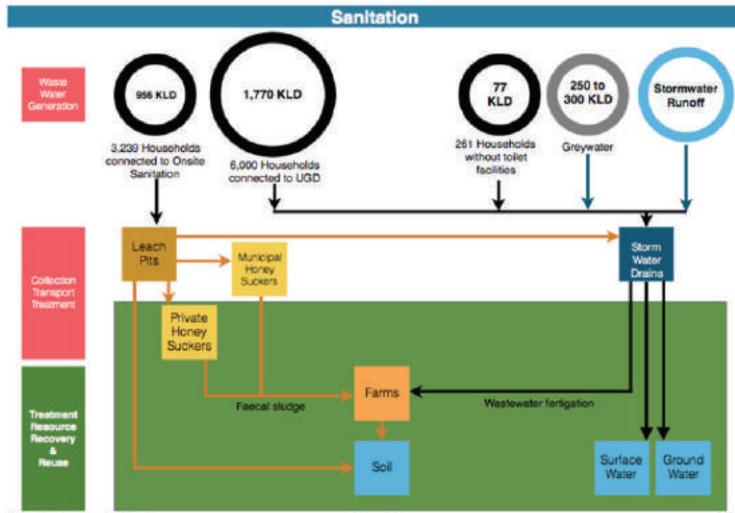
Average per capita Supply

**1800 - 2000 KLD**

From 100 Tankers and Private Wells

Informal (HO + Tanker) = 67.1%







## Risk mitigants embedded in chain



## Risks and Challenges (Watsan)

- Groundwater dependence (sustainability)
- High cost of water for the poor (equity)
- Universal service – wat&san (equity)
- Solid and Liquid waste mixing inside town – potential to contaminate water supply. (health risk)
- Is staffing enough? Does it have a watsan-health linking perspective? Groundwater? Agricultural reuse of water? (staffing & capacity)



## Informal sector : work with it ?!

### Land and Livelihood From the Informal Sector



#### Water Supply

**200 Livelihoods**

100 Private Water Tankers

**200 - 250 Livelihoods**

4 – 5 Vegetable Washing Units

#### Sanitation

**12 Livelihoods**

4 Ring Makers

**2 Livelihoods**

1 Honeysuckers

#### Resource Recovery and Reuse

**50 Small Farmers**

Fertigrating 40 – 80 hectares



## ANALYTICAL PERSPECTIVES



## State Wastewater reuse policy

### Benefits of Wastewater Reuse:

The reuse of wastewater offers the following benefits:

- **Decreased risks to human health and the environment** by reducing the release of untreated wastewater to the environment
- **Reliability of supply** for agricultural and industrial use to enhance economic output and employment opportunities, particularly as a coping strategy in view of climate change variability and associated water supply risks
- **Reduced energy consumption** associated with production, treatment and distribution of freshwater
- **Improvement in the financial sustainability** of Urban Local Bodies (“ULBs”) through recovery of the costs of wastewater treatment and supply, particularly to industry
- **Higher nutrient content in wastewater**, providing benefits for agricultural production



Mangement challenge	Belagavi	Kundapura	Vijayapura	Important potential responses
Demand Management	Important	Lots of water	Already low	Smart metering should tie up with block tariffs & communication
Ground water management	Important	Important	Important	Building bye-laws RWH, lake conservation etc, Groundwater quality monitoring
Waste water management	Important. <b>Look at Wastewater reuse for industry</b>	The Tidal rhythm takes care now?	Important	<b>get Agriculture sciences in and treat informal sector as part of solution.</b>
Fecal sludge management	Important	Important	Important	Building bye-laws for onsite-sanitation to be enforced, <b>get Agriculture sciences in and treat informal sector as part of solution</b>



Mangement challenge	Belagavi	Kundapura	Vijayapura	Important responses
Demand Management	Important	Lots of water	Already low	Smart metering should tie up with block tariffs & communication
Ground water management	Important	Important	Important	Building bye-laws RWH, c, y
Waste water	<b>Clear common themes for capacity building</b> <b>Ground Water Management</b> <b>Ground water quality monitoring</b> <b>Linkages with Health - health and environment monitoring</b> <b>Agricultural use of wastewater / fecal sludge</b> <b>Education and communication</b> <b>“Nudging” but working with the informal sector</b>			treat art of
Fecal sludge management				Important

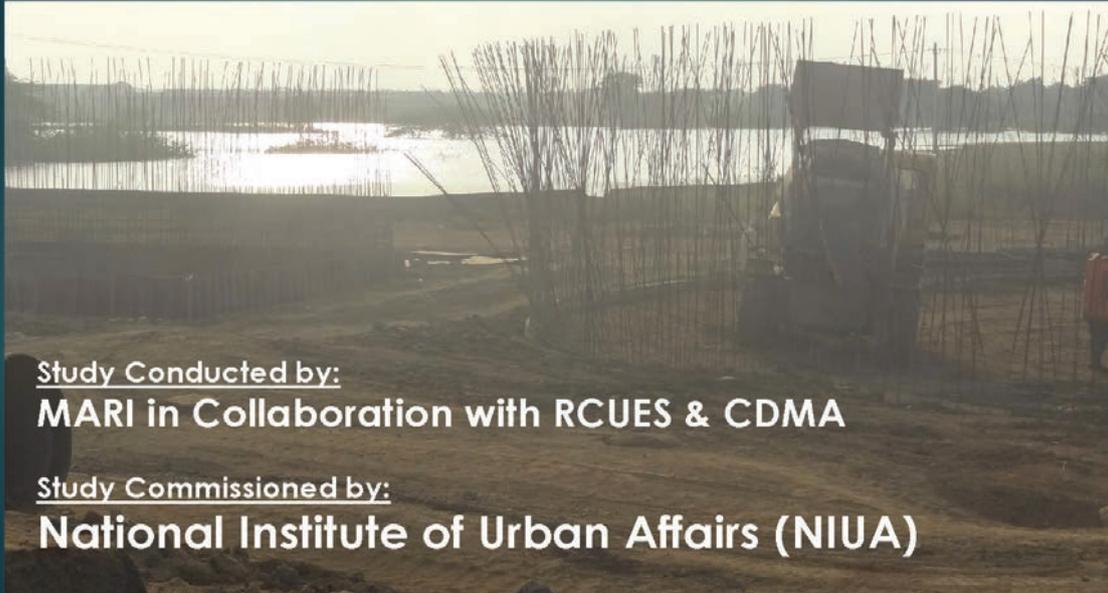


# WHO's SSP : A simple tool to manage sanitation – useful for Karnataka's ULBs



# Urban Sanitation Management in Telangana

(Mahabubnagar, Siddipet, Karimnagar)



## Methodology

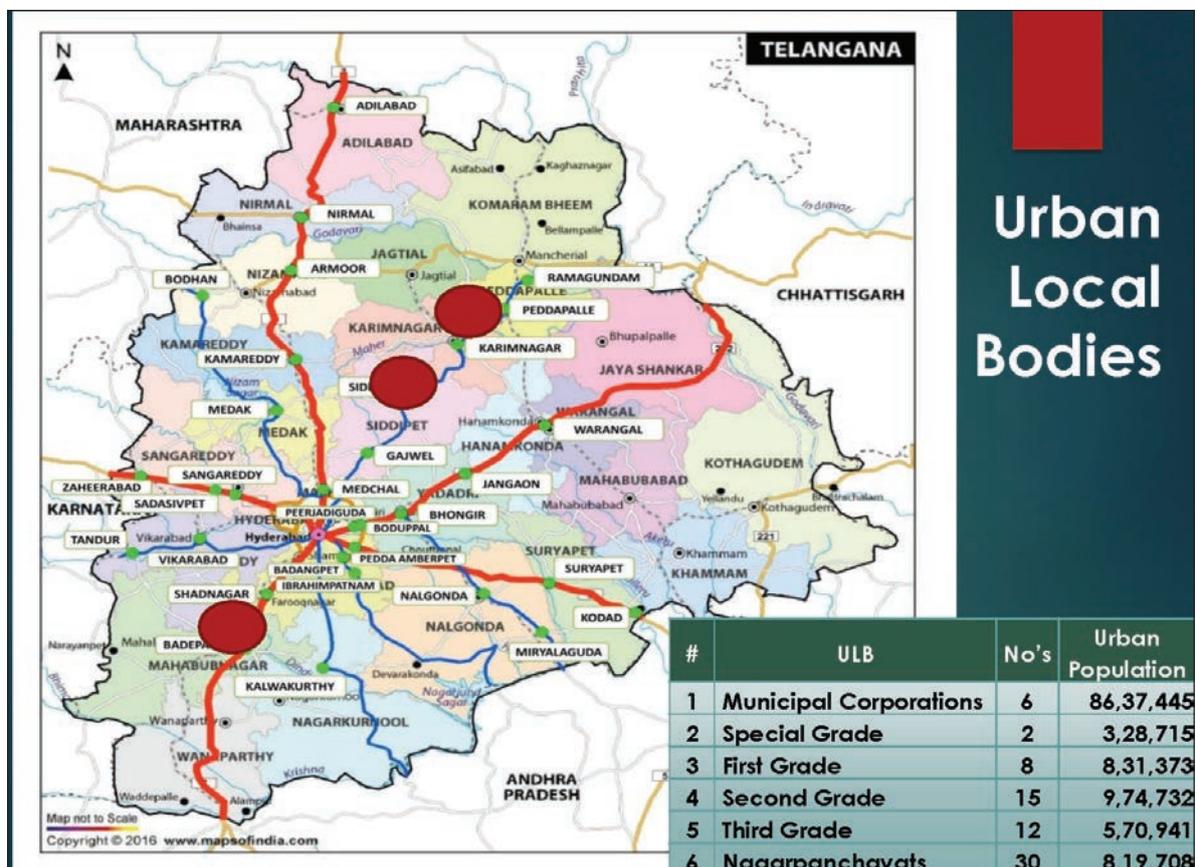
- ▶ Collaboration with RCUES and Research team composition, defining roles & responsibilities
- ▶ Consultation with the key officials in CDMA
- ▶ Preparation of checklist / listing data collection methods and sources
- ▶ Collection of data from secondary sources and 3-ULBs
- ▶ Preliminary field visits to the 3 towns by total team
- ▶ Meetings with all the 3 Commissioners, Chairpersons and Councilors
- ▶ Detailed interactions with staff teams (Water Supply, Sanitation, Town Planning, Finance, MEPMA, PHED, DMHO)
- ▶ FGDs with SLFs, TLFs, Slum Dwellers, Pit Emptiers, DRCC Entrepreneur, Contractors executing UGD works

## Methodology

- ▶ Transact walks in City area, Site visits to public toilets, IHHLs, DRCCs, Vermi Compost Units, Landfill areas, STPs, Water bodies, Sewerage Networks, etc.
- ▶ Collection of 60 Water Samples and the same is being analyzed by IPM.
- ▶ Preparation of Fact Sheets, Interim Reports
- ▶ Sharing of the key findings at NIUA meeting

## Next Steps

- ▶ Peer Review among the Team
- ▶ Revision of the Reports based on feedback from NIUA and Peer Review
- ▶ Sharing of the same with ULBs and CDMA for feedback.
- ▶ Finalization and Submission of Final Reports to NIUA



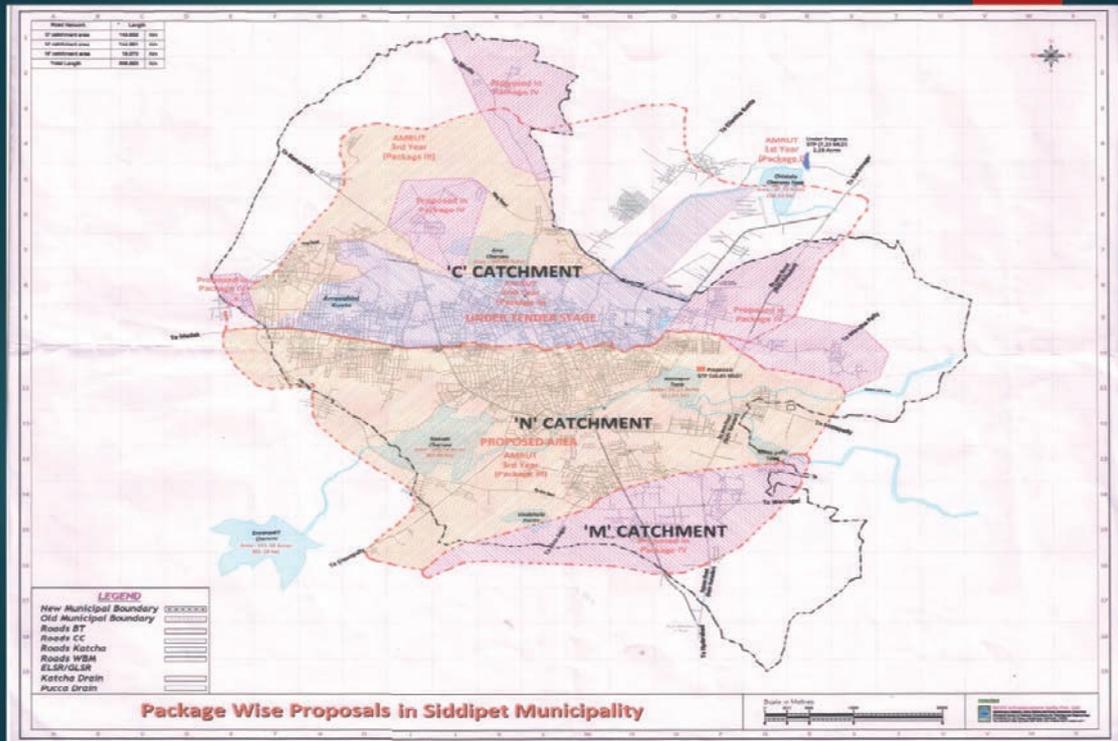
## Profile of the Towns

Parameter	Siddipet	Karimnagar	Mahabubnagar
Status of the Municipality	Special Grade	Corporation	Special grade
Extent of the city in Sq. Kms.	36.03	23.50	98.64
No. of Wards	34	50	41
Population SKS 2014(lakhs)	1.39	3.00	2.60
Households (SKS)	37,765	77,085	56,500
Slums (Notified/Non notified)	41 (29/12)	58 (42/16)	41 (28/13)
% of Slum/BPL Population	34.82 %	11%	28.12%
Swachh Sarvekshan Rank	45	201	249
GOI Funded initiatives	SBM & AMRUT	AMRUT & Smart City	SBM & AMRUT

## Sewerage System

Details	Siddipet	Karimnagar	Mahabubnagar
Qty. of Sewerage (Estimated MLD)	12	31.5	19.2
Current Status	Open Drains (UGD & STP construction in active progress)	STP & Main Trunklines of UGD completed, only 5114 households connected, rest open drain system	Open Drainage System
<u>Network (Kms)</u>			
Pucca	225	Sewerage Network-385	180
Kutchra	286		175
STP Capacity (MLD)	STP-I – 7.25 STP-II – 10.85	38	Old plan for 18 MLD with 4 STPs
Storm Water Drains (Kms)	10	35	14
Discharging into	Madannapalli Vaagu Yerra Cheruvu Mittapallikunta Vaagu	Gopalpur Cheruvu LMD	Peeda Cheruvu

## Sewerage Catchment: Siddipet



## Sewerage System - Siddipet : Observations

- ▶ Sewer lines work execution from the highest elevation point to STP is not appropriate for maintaining perfect gradients and would also delay in commissioning the system.
- ▶ Distance between water supply and sewer lines is inadequate in narrow lanes of slums and old (core) city.
- ▶ In view of the low density, scattered distribution of households in 'M' catchment, proposed UGD and STPs is not appropriate and viable due to low quantity of sewage.
- ▶ Despite heavy investment for the capital works of UGD there is no significant gain in terms of wage employment for the local labour.



## Sewerage System - Siddipet : Observations

- ▶ Many households are sceptical about connecting to UGD considering the expenditure and barriers due to existing construction.
- ▶ Below 100 LPCD in slums would cause inadequate flows and velocity
- ▶ The proposal to let the treated waste water from the upcoming STPs into the Chintal Cheruvu and Narsapur tank need careful impact assessment as it can deplete the dissolved oxygen in surface waters resulting in anoxic conditions, harmful to aquatic life.
- ▶ Municipality has not yet assessed financial and technical resources required for maintaining the UGD and STPs beyond 2 years of Defect Liability Period (DLP).
- ▶ Absence of reliable data to correctly assess the biological load on STP.



## Sewerage System – Siddipet: Recommendations

- ▶ Safe distance between water lines and sewers should be maintained as per CPHEEO manual so as to prevent contamination of water supply. In cases where it is not feasible, encasing of sewer mains may be preferred.
- ▶ Identify all the barriers and develop specific strategy to ensure that all households and other establishments are connected to UGD Network.
- ▶ Ensure that upcoming 2 STPs have the provision for co-treatment of septage and sewage for which receiving stations must be provided.
- ▶ In the 'M' catchment, Sewage treatment based on low cost/low maintenance options (including but not limited to Simplified Sewerage / Small Bore Sewerage , DEWATS, etc.) can be considered.

## Sewerage system- Siddipet Recommendations

- ▶ The plan for usage of treated waste water must be developed well in advance taking into account the available opportunities (public parks, Harita Haram plantation, Industries, Agri-Horticulture, Sprinkling on the roads during summer, etc.) and treatment standards shall be fixed according to this plan.
- ▶ During the planning, implementation and O&M stages, it is very essential to hold periodical inter departmental coordination meetings with all line departments (Town planning, Water supply, Telephone, Electricity, PHED, R&B, etc.) to address problems related to aligning different networks, obtaining permissions, trouble shooting and to comply with the timelines.
- ▶ It is essential to build inspection tracks adjacent to Trunk sewers to enable easy access to inspection vehicles to attend to repair and maintenance.

## Sewerage System, Karimnagar: Observations

- ▶ UGD construction took 10 Yrs due to delays in getting permissions for land procurement for STP, road cutting on National high way for laying main trunks, lack of funding etc
- ▶ Initially UGD network was laid without inspection chambers resulting in the system remaining dysfunctional. Out of the 30,000 ICs required only 2500 inspection chambers were installed. Recently State Govt. sanctioned another 25 crores for ICs and work needs to be commenced.
- ▶ Existing STP with 38 MLD capacity is very much under utilized as the current flow is only 2 MLD with 5114 houses connected (6.63%).
- ▶ strong protests against STPs (No buffer zone) from the households due to the high noise levels of air blowers and the odour generated from the STP
- ▶ Pollution of Maneru river due to indiscriminate dumping of septage and sludge in Catchment area of the river
- ▶ Storm water drains continue to get polluted due to sullage mixed with septage and drained into the local tank Gopal cheruvu.

## Sewerage System, Karimnagar: Recommendations:

- ▶ Accelerate the process for constructing ICs
- ▶ The noise level of the air blowers may be reduced by lowering the blower's fan speed, building in silencers, making sound proof barriers etc and the odour could be reduced by complete aeration and setting in of anaerobic conditions
- ▶ Both sewerage system & septage mgt. should be managed in parallel until all the households are connected to the network
- ▶ Entry barriers such as connection fees, sanction letters, permission for road cutting etc needs to be simplified and the households needs to be motivated and mobilized for 100% connections.

## Sewerage System, Karimnagar: Recommendations

- ▶ Stand by options like by pass lines/valves at STP, standby generators at pumping stations & STP, sewer cleaning machinery, flushing u/s sewers etc. need to be integrated into the annual O&M plans and budgets.
- ▶ Communities need to be
  - informed of ongoing UGD work,
  - motivated for 100% connections
  - educated on users responsibility to maintain sewerage system and avoiding fecal matter and sludge, silt and solid waste into sewer lines

## Sewerage System, Mahabubnagar: Observations

- ▶ The entire effluents of the city carried by open drains are discharged into Pedda Cheruvu resulting total pollution of surface and ground water in the impact zone.
- ▶ Dumping of solid waste and debris, siltation and encroachment of drains causing blockages and overflows and the same is further aggravated when storm water is flowing into the drains.
- ▶ Tertiary and secondary drainage lines in Veerannapeta, Patha Palamuru, Ramaiah Bowli, Kidwaipeta, Bageeratha Colony, etc. areas remain disconnected to the primary drain causing overflows.
- ▶ In many areas the shops and residents have covered drains with concrete or stone slabs due to which the drains cannot be accessed for cleaning and maintenance.
- ▶ District Malaria Officer revealed high incidence of diseases attributed to contaminated drinking water and mosquito breeding.

## Peddacheruvu with Solid and Untreated Liquid Waste -



## Different plantations at Mini STP at Laxminanagar, Mahabubnagar



## Sewerage System, Mahabubnagar: Recommendations

- ▶ Secondary and tertiary network lines remaining unconnected must be treated on high priority and interventions are needed for clearing encroachments, blockages and creating free flow passages.
- ▶ The performance data of mini STP (Sub-surface Flow Constructed Wetlands) need to be collected and participatory performance assessment of the same shall be done with multi-stakeholder (Councilors, RWAs, Sanitation Wing, Independent Experts) engagement so as to create buy-in for upscaling the same and dissuading the aspiration for UGD networks.
- ▶ Establishing STP at Peddacheruvu needs to be taken up immediately to treat the effluents and divert the flow downstream and thereby protect the Peddacheru.

## Sewerage System, Mahabubnagar Recommendations

- ▶ The side drains need to be covered with light weight RCC slabs/stainless steel grills and silt traps should be constructed.
- ▶ Municipality should enforce strict norms on users responsibility in protecting and maintaining the drains and they also need to be educated and motivated for same.
- ▶ Delineation of mini catchments within the city areas is urgently required to be able to adopt decentralized waste and storm water management
- ▶ Rain water harvesting, ground water recharge structures, soak pits, grey water usage for kitchen garden etc. to be promoted to reduce the inflows into the drains

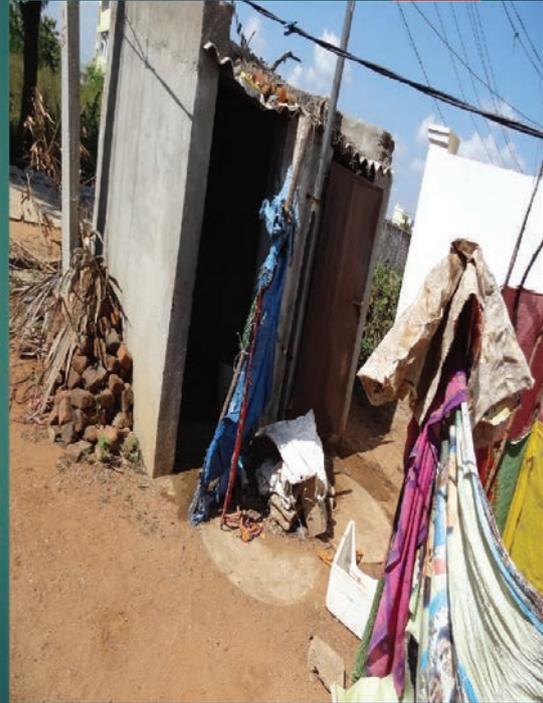
## Toilets and Septage Management

Details	Siddipet	karimnagar	Mahabubnagar
ODF declaration	2nd Oct 2015	Declared ODF by the Municipality and due for verification	Declared ODF by the Municipality and due for verification
Households' Access to Toilets	100%	100%	100%
# Public Toilets and seats	12 / 79 (53M, 26F, 1PWD)	17 / 96M, 69F	6 / 58 (includes men & women)
# Community Toilets	Nil	Nil	6



## Toilets and Septage Management – Observations

- ▶ Limited focus on ODF and no plans for FSSM
- ▶ Technical gaps and deviations in Twin Pit Toilet Construction (Single Pit, Bottom Sealing with Concrete, No Y Junction, Vent Pipes Fixed, No Distance between Pits, ....)
- ▶ No Standard Design for Septic Tanks and overflow from the Septic Tank is directly connected to open drains and in some locations presence of fecal matter was also noticed.
- ▶ Insanitary Toilets and practice of open defecation continue to exist.
- ▶ Poor hygiene and maintenance of Public / Community Toilets.
- ▶ Lack of awareness on hand hygiene and health benefits of safe disposal of fecal waste.



## Septic tank emptying Observations

- ▶ Threat perception of loss of livelihoods and opposition to emptying trucks from manual labour
- ▶ Emptying is done only when the septic tanks are full (once in 4-15 years)
- ▶ 15 to 20 lts of liquid mixed with surf, kerosene and bleaching powder is thoroughly mixed in septic tank before emptying which would kill micro organisms essential for anaerobic digestion
- ▶ Inaccessibility of toilets in slums as most trucks are of 2000 lts capacity

## Septic Tanks Emptying Observations

- ▶ Complete absence of safety devices, hygiene practices, insurance coverage etc for the labour ,
- ▶ Thorough washing of vehicles is done only when they need repairs and maintenance
- ▶ Indiscriminate dumping of sludge / septage in open drains, open lands , fringes of forest lands and water bodies is the common practice
- ▶ In majority of the cases capital investment (vehicle) is borrowed from private sources and earnings are inadequate for repayment, maintenance, compensation for driver cum operator and labour (mostly owners family)

## Toilets and Septage Management – Recommendations

- ▶ Streamline the database on different types of toilets and develop the inventory of Septic tanks in the city to be able to estimate the discharge quantities and to send alert messages on the emptying.
- ▶ Local Task Team to carryout social and technical audit of constructed toilets and initiate corrective actions.
- ▶ Municipality should update its knowledge and adopt an improved Universal Design for promoting all inclusive 'Public Toilets'.
- ▶ Comprehensive check list based self monitoring by the operators, supervision by local community organizations and Sanitation wing of the Municipality need to be institutionalized for effective maintenance of public toilets.

## Toilets and Septage Management– Recommendations

- ▶ Periodic consultation and sensitization meetings with Builders, Architects, Civil Engineers, Residents Welfare Associations, Mason's Unions, leaders of Slum and Town Level Federations of SHGs and other stakeholders to raise awareness and seek cooperation for proper construction and emptying of septic tanks.
- ▶ Service level benchmarks on FSSM must be maintained and monitored
- ▶ The sanitation workers and drainage maintenance staff need to be capacitated and engaged in disseminating key messages.
- ▶ The operators and personnel involved in septic tank emptying should be oriented on personal and environmental safety aspects.
- ▶ Municipality needs to initiate proactive measures to monitor compliance to safety norms by ensuring proper database, locally availability of safety gear,
- ▶ Provide support system for low cost capital for investing on emptying trucks.

## Solid Waste Management

Details	Siddipet	Karimnagar	Mahabubnagar
Quantity of Waste Generated (MT)	56.57	157	75
Collection (%)	>90%	>90%	>90%
Segregation at Source	<25%	Nil	<20%
Solid Waste Collection Vehicles Tractors/Autos/Tri-cycles	10/10/7	32/6/180	19/8/44
Sanitation Staff Regular/Outsource	68/184	158/797	142/288
DRCC	1	1	1
Composting	Partial quantity of market waste	Nil	Nil
Landfill Area (Acres)	10	7.5	2

## Solid Waste Management – Observations

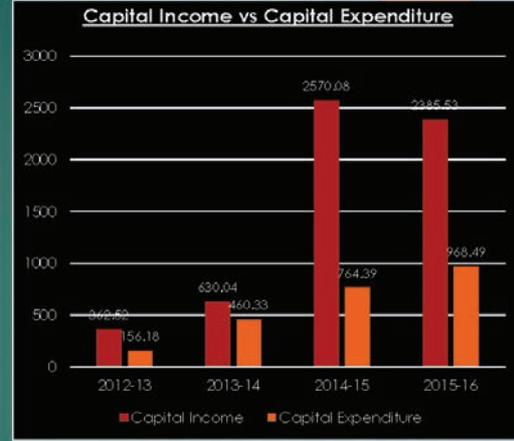
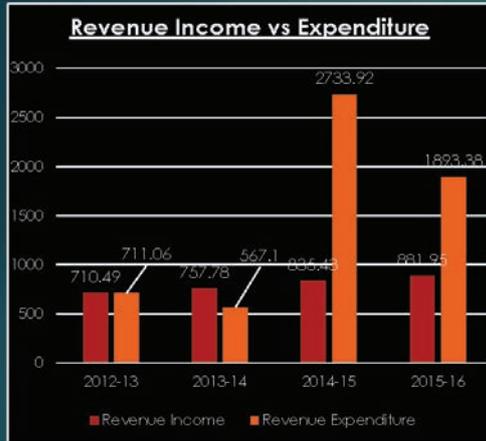
- ▶ No plans in implementation for integrated SWM including hazardous (bio medical, battery, plastic) and E waste
- ▶ High expenditure on Free distribution of Blue and Green Bins and Low / No emphasis on effective IEC strategies and tracking of the peoples behaviour.
- ▶ Despite having success in Pilot DRCCs no strategy for scaling up the same.
- ▶ Inadequate collection vehicles and insufficient collection staff coupled with low motivation and understanding of the importance of segregation.
- ▶ Lack of data for estimating cost of service and strategies to recover the same.



## Solid Waste Management - Recommendations

- ▶ Strategy should be in place to produce Vermi Compost and supply the same to villages around where there is good demand for the same.
- ▶ Capitalize on the learning from existing DRCCs and multiply the same by promoting enterprises with Rag Pickers, Sanitation Workers, Scrap Vendors and Women SHGs.
- ▶ Introducing the system of daily wet waste collection and weekly dry waste collection would improve the consistency and effectiveness of segregation.
- ▶ Standards to be developed and enforced on safe disposal of hazardous waste and prohibition of low value plastics.
- ▶ Mobilization of RWAs, Schools, Colleges, Traders Associations, Labour Unions, SHG Federations, CBOs, etc. in ensuring source segregation and safe disposal of solid waste.

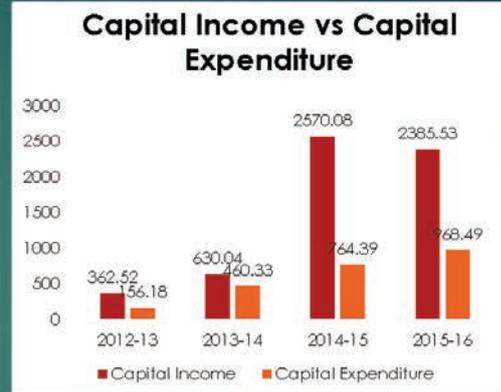
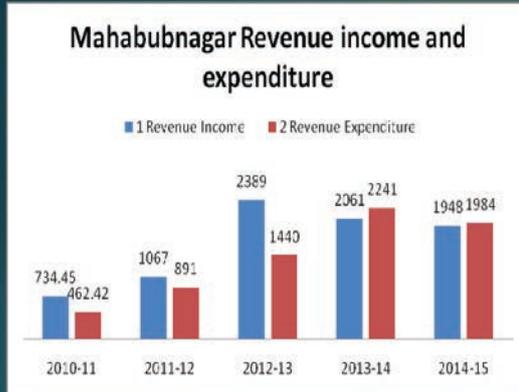
## Finances - Siddipet



### Demand Collection Balance Statement

#	Particulars	2015-16 (in Lakhs)			2016-17 (in Lakhs)		
		Demand	Collection	% of Collection	Demand	Collection	% of Collection
1	Taxes	422.63	367.63	87.0%	754.94	655.27	86.8%
2	Non-Taxes	853.63	647.43	75.8%	558.32	357.91	64.1%
3	Assigned Revenue	124.48	124.48	100.0%	144.49	51.07	35.3%

## Finances - Mahboobnagar



### Demand Collection Balance Statement

#	Particulars	2015-16 (in Lakhs)			2016-17 (in Lakhs)		
		Demand	Collection	% of Collection	Demand	Collection	% of Collection
1	Taxes	1660	1462	88.10	1714.15	1214.90	70.86%
2	Non-Taxes	1013	671	66.28	846.66	781.00	65.37%
3	Assigned Revenue	1544	1466	94.90	400.00	272.00	68.00%

# Finances

## Observations

- ▶ Disproportionate increase in Revenue expenditure compared to income resulting in huge revenue deficit and high dependency of ULBs on the grants for providing core services.
- ▶ Lack of vision and capacities to build / enhance revenue opportunities from urban infrastructure projects, expanding cities and own assets

## Recommendations

- ▶ ULBs own plan for augmentation of income implemented by a dedicated committee at the council level and task team from the staff of ULB, institutionalized mechanisms for review, monitoring and accountability of the same
- ▶ Reliable data on potential tax base
- ▶ Efficiency of assessment and collection methods
- ▶ Financial plan for O & M of new assets created

# Finances

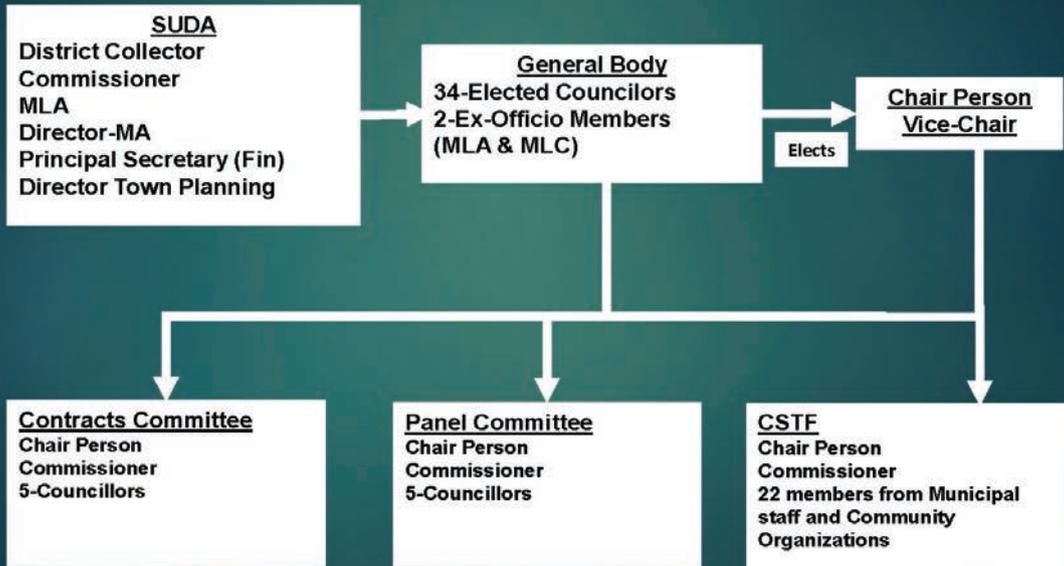
## Observations

- ▶ Slums and poorest neighborhoods lack engagement, bargaining capacity and thus lack investments for improving on basic services (SLBs)
- ▶ Lack of coordination and shared responsibility among Finance mgmt, Revenue, Town planning, Water and Sanitation wings resulting in loss and poor collection of taxes and non taxes

## Recommendations

- ▶ Disaggregated data on SLBs of slums and dedicated plans and investments to improve the same
- ▶ Ensure competent professionals, Prudential norms and controls to reduce mismatch between income and expenditure without compromising on quality of services and social equity

# Governance Structure of Siddipet ULB



# ULB staff Structure



## Siddipet Sanitation Wing Staff Structure

S. No.	Position	Total Sanctioned	Filled	Vacant
1	Environmental Engineer (AE Cadre)	1	-	1
2	Sanitary Inspectors	2	2	-
3	Health Assistants	2	2	-
4	Sanitary Jawans	9	6	3
5	Drivers	3	1	2
6	Cleaners	1	-	1
7	Garden Malis	3	3	-
8	Public Health workers	76	54	22
	<b>Total</b>	<b>97</b>	<b>68</b>	<b>29</b>
<b>Outsourced Staff</b>				
9	Sanitation workers		116	-
10	<b>Total current staff in sanitation wing</b>		<b>184</b>	<b>29</b>

## Mahbubnagar Overall Staff Structure

S. No.	Category of Post	Regular			Out Sourcing
		Total no of sanctioned posts	Posts filled up	Vacant Posts	
1	Administrative wing	32	24	8	10
2	Engineering wing	55	47	8	138
3	Town planning	14	5	9	-
4	revenue wing	10	9	1	-
5	Sanitary wing	200	142	58	288
6	Accounts wing	7	4	3	-
7	Birth and Death section	3	2	1	-
	<b>TOTAL</b>	<b>321</b>	<b>233</b>	<b>88</b>	<b>436</b>

## Karimnagar Overall Staff Structure

Category of Posts	Regular Sanctioned posts			Outsourced
	Total Sanctioned Posts	No of posts filled up	No of Vacant Posts	
Administration Wing	85	53	32	15
Engineering Wing	90	57	33	19
Public Health Wing	270	152	118	979
Accounts Wing	11	2	9	0
Revenue Wing	23	13	10	0
Town Planning Wing	16	11	5	0
<b>TOTAL</b>	<b>495</b>	<b>288</b>	<b>207</b>	<b>1013</b>

## Human Resources

### Observations

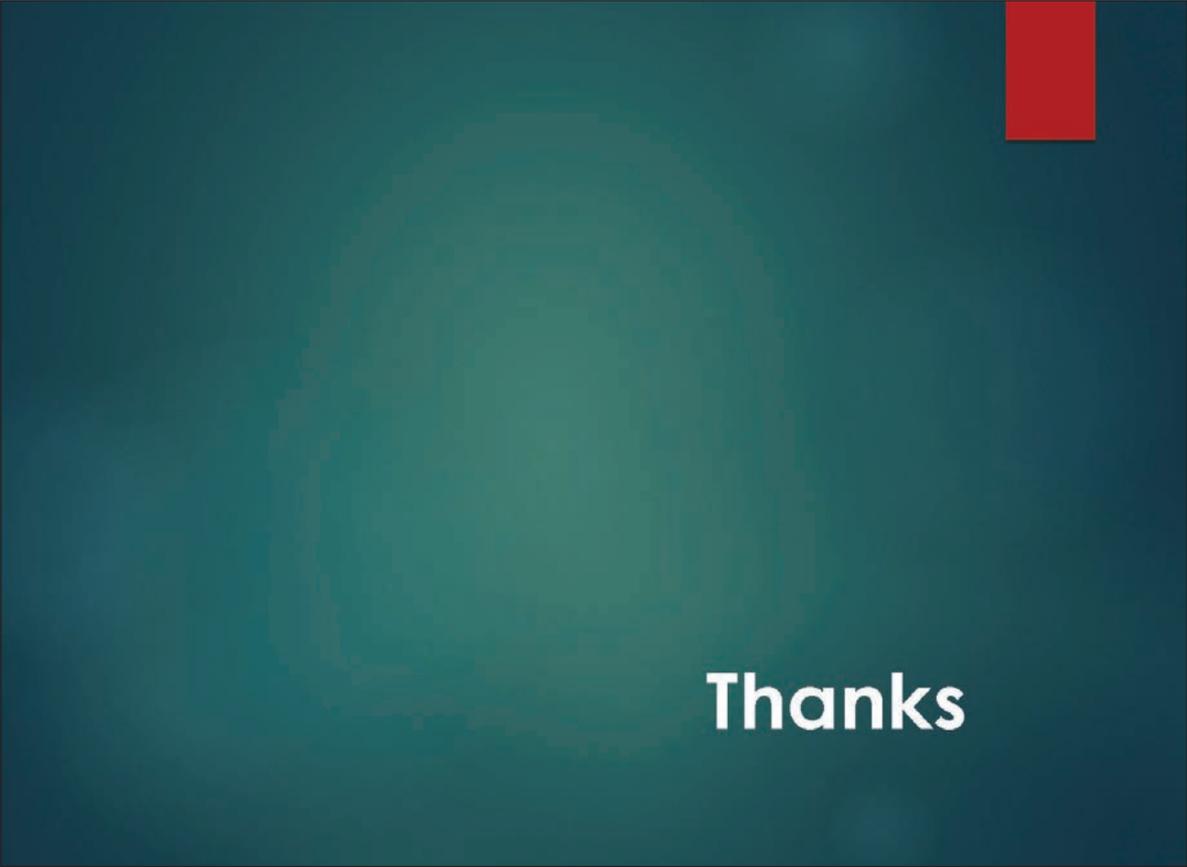
- ▶ Unfair work distribution and wages between permanent and outsourced staff leading to conflicts and tensions
- ▶ Inadequate staff, aged staff and vacancies remaining unfilled for long
- ▶ High turn over and diversion of sanitation personnel for non sanitation work
- ▶ Lack of interventions for motivation and skills upgradation
- ▶ Non technical staff given incharge of technical operations which require specialized skills.

## Overall Observations

- ▶ Heavy emphasis on engineering and construction and least focus on environmental aspects and desired final outcomes
- ▶ Swachh Sarvekshan rank and ODF is more like a target to be chased by the Municipal Commissioners and in the absence of shared aspiration and engagement of the community sustaining the results would be challenging
- ▶ Adequate scientific understanding of SLWM, informed governance by the councilors and sound technical skills of the staff on O & M needs to be ensured
- ▶ Good plans need to be developed and implemented for augmentation of own sources of income for meeting the O & M cost of the assets created (STPs, UGD network)

## Overall Observations

- ▶ Lack of monitoring and accountability to address the sanitation needs of the PWDs and vulnerable groups.
- ▶ SHG Leaders, TFs and SFs should be capacitated and effectively engaged to address the sanitation needs of the slums and MEPMA needs to be capacitated to facilitate such a role
- ▶ Effective strategies should be implemented for community and multi stakeholders engagement to ensure shared responsibility of the users in monitoring and maintaining the facility
- ▶ State level resource agency, pool of resource persons need to be created and the same should be linked to guide and support ULBs in choosing location specific approaches and technologies of SLWM



**Thanks**

## ASCI's approach

# Capacity Building for Results – FSSM/Sanitation

**Mission:** To create a **critical mass** of change champions to achieve FSSM/Sanitation outcomes

### Characteristics of the “critical mass of change agents”

1. **High potential** to influence FSSM outcomes
2. **Ease of** identification and **reaching** these stakeholders through any form of training channel :Required at 2 levels
  - **Policy/ Planning Level (mostly national and state level)**
  - **Implementation Level (mostly ULB / district level)**

<b>Influence</b>	<b>H</b>	MoHUA CPHEEO Commissioners Municipal Health Officers National NGOs/Think tanks NFSSM alliance DICCI Mission directors NUHM/ NULM/ Smart City Mission	State Minister – UD Regional Directors – MA&UD MP /MLAs PMO PS/CDMA LBSSNA – IAS officers Mayor /Chairperson District Collectors Media PHED Multilateral /bilateral agencies – WB/ADB/JICA FICCI/CII NITI Aayog CPCB, Environment Labs	
	<b>L</b>	FSM operators Social enterprises NGOs RWAs Urban poor Consultants Technology providers	EPC contractors Academic institutions /Engineering colleges ; Schools Town planning Departments PH /Sanitation workers Municipal engineers Masons Corporates, SPV (smart city)	
		<b>H</b>	<b>Interest</b>	<b>L</b>

## Our CB interventions

- Elected Representatives
- Commissioners
- Masons
- FSM Operators
- SHGs, RWA,CBO (FSSM & SS 218)
- Technology Providers
- Testing Labs
- FSSM mainstreamed in the Management Development / Leadership programs at ASCI for IAS officers
- 3 day programs on FSSM and Urban Sanitation offered twice a year (engineers, sanitary workers, municipal health officers)
- Integrated FSSM in programs on NUHM, Smart Cities
- CPCB
- Public Health Engineers
- Higher Education institutions, Schools
- Corporates, Social Enterprises
- NUHM (mayors/ chairpersons, commissioners, municipal health officers)

# FSSM capacity building activities . . .

## Training Modules

Themes	Trainees	Modules	Targets
FSSM Planning FSSM under AMRUT ODF sustainability with FSSM Including exposure visit Private sector participation in FSSM	Administrative heads of ULBs Elected representatives Sanitation Inspectors Trainers Consultants	1 day/ 2 day workshop Workshop session Exposure visit	Regional capacity building workshops ODF cities AMRUT cities

1 day/ 2 day training on FSSM Planning	1 day training on ODF Sustainability and FSSM	1 day training / workshop session on IFSSM toolkit	1 day training / workshop session on private sector involvement in FSSM
2 day Training of Trainers on FSSM	Workshop session on treatment technologies	Session on FSSM Planning, Financing and Technologies under AMRUT Training	Course outline on FSSM for academic institutes

## Tools for FSSM



**CEPT has trained ~1200 participants in FSSM**









