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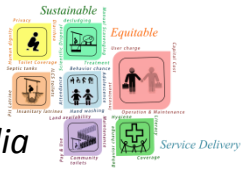
Leadership through Learning

WARANGAL MUNICIPAL CORPORATION
వరంగల్ నగరపాలక సంస్థ

City-Wide Delivery of Sustainable and Equitable Sanitation Services in Warangal, India



Warangal city - Overview

- Second largest city in the state of Telangana (New state in India)
- Population: 0.61 million (2011) ; Area : 110 sq.km
- Total no. of slums – 182
- Slum population – 21%

- Historical and cultural city with high potential for tourism (GoI declared Warangal as a Heritage city under HRIDAY scheme)
- Warangal has many lakes/water bodies (sources of drinking water)
- Identified as one of the Smart Cities under '100 Smart City Programme' of GoI.

Warangal city - Overview

- Service delivery situation in Warangal *reflects typical urban* situation of Telangana (68 ULBs) as well as 430 + Class I towns in India (which accommodates over 70% of urban population)

- Warangal Ranked 340 out of 407 cities and score 26/100 on sanitation ranking (GoI).

- Sewerage /reticulated system is *unreachable* in the years to come; environmentally unsustainable too.

- Need to adopt *alternate approaches* to improve public health and environmental quality and to realize the economic potential of cities such as Warangal.

City Vision

- **“Warangal city aspires to be the centre of heritage and cultural tourism, an inclusive and futuristic city providing high quality services with universal access including the poor. It will be slum free, citizen friendly, well governed and environmental friendly city”.**

- **“Warangal city to become totally sanitized, healthy and livable and ensure and sustain good public health and environmental outcomes for all its citizens with a special focus on hygienic and affordable sanitation facilities for the urban poor and women”.**

Source: Revised CDP, SSA and revised CSP

Aim of this partnership programme

- Promoting *non-networked* innovative options across sanitation value chain in Warangal *in a PPP format* that is equitable and sustainable and

- an *enabling policy environment*, PPP framework, mechanisms for compliance and tracking progress on key indicators, ensuring accountability and transparency and

- *capacitating* and strengthening of municipal system.

Service delivery situation – Water supply

- Source of water supply – Kakatiya canal & ground water
- Low per capita water availability and coverage gaps
- Low service quality, low pressures (pit taps) and high NRW
- Water quality is sub-optimal
- Increasing dependence on ground water

Indicators	Status	Units
Water availability	58-65	LPCD
Coverage (HH tap)	69.7	%
Extent of metered connections (?)	1	%
Hours of Supply	Alternate day for 1 to 2 hours	
Extent of Non Revenue Water	54	%
Quality of water supply (??)	77	%

Service delivery situation – Drainage

- Coverage of drains - 88 %
- Coverage of pucca drains – 42 % .
- Drains join three major *Nallahs ;* outfall into 7 lakes ; contamination of drinking water and ground water

1. Koti Cheruvu
2. Waddepalli Cheruvu
3. Bandam Cheruvu

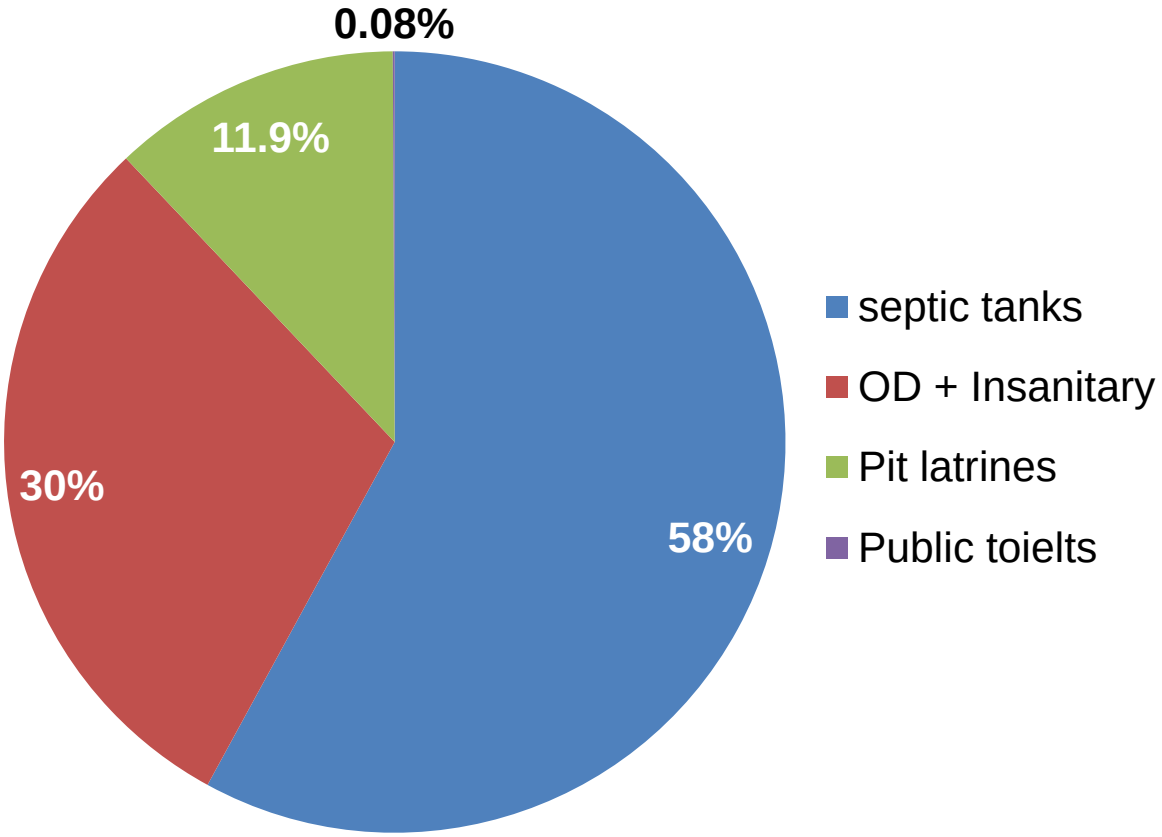
5. Chinna Adepalli Ceruvu
6. Akkalama
7. Nagaram Cgeruvu

Service delivery situation - Sanitation

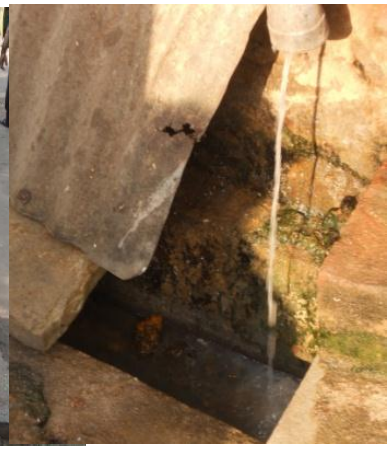
Key problem areas :

1. Coverage of toilets /OD
2. Slum sanitation
3. Public toilets / community toilets
4. Sanitation from bulk generators – hotels /institutions
5. WASH in Schools
6. Fecal sludge collection, transportation and disposal
7. Waste water discharge into lakes /water bodies

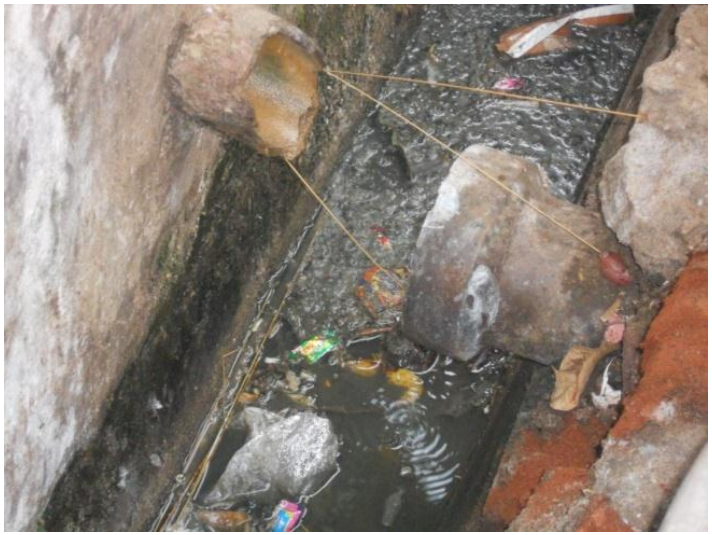
1. Sanitation situation - Toilet typology



Toilet coverage



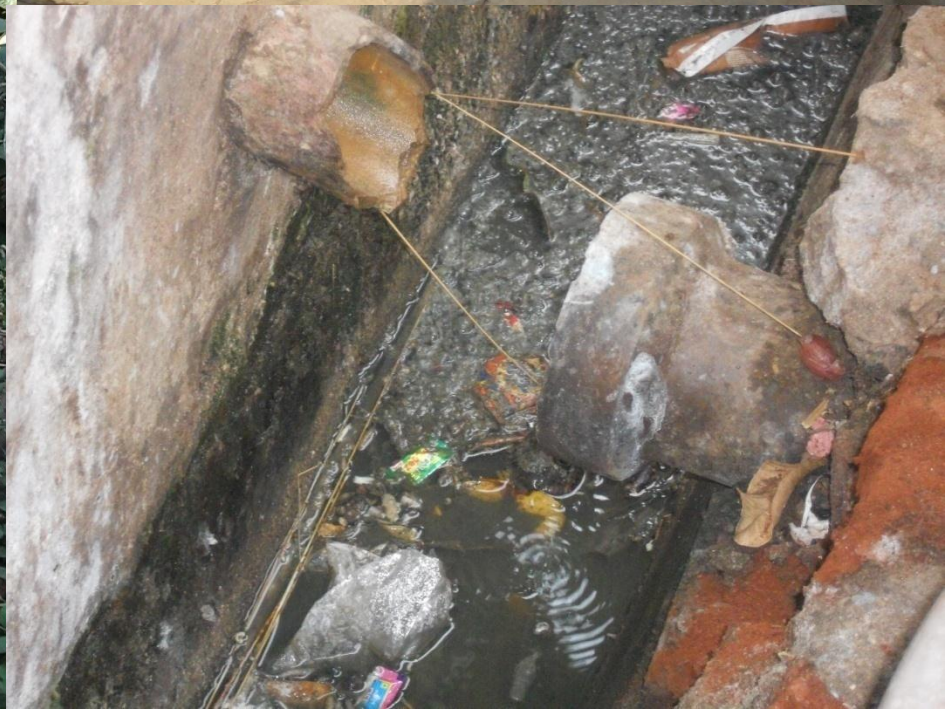
Dysfunctional pit latrines



Prevalence of Insanitary toilets

Dysfunctional community toilets

Badly designed septic tanks

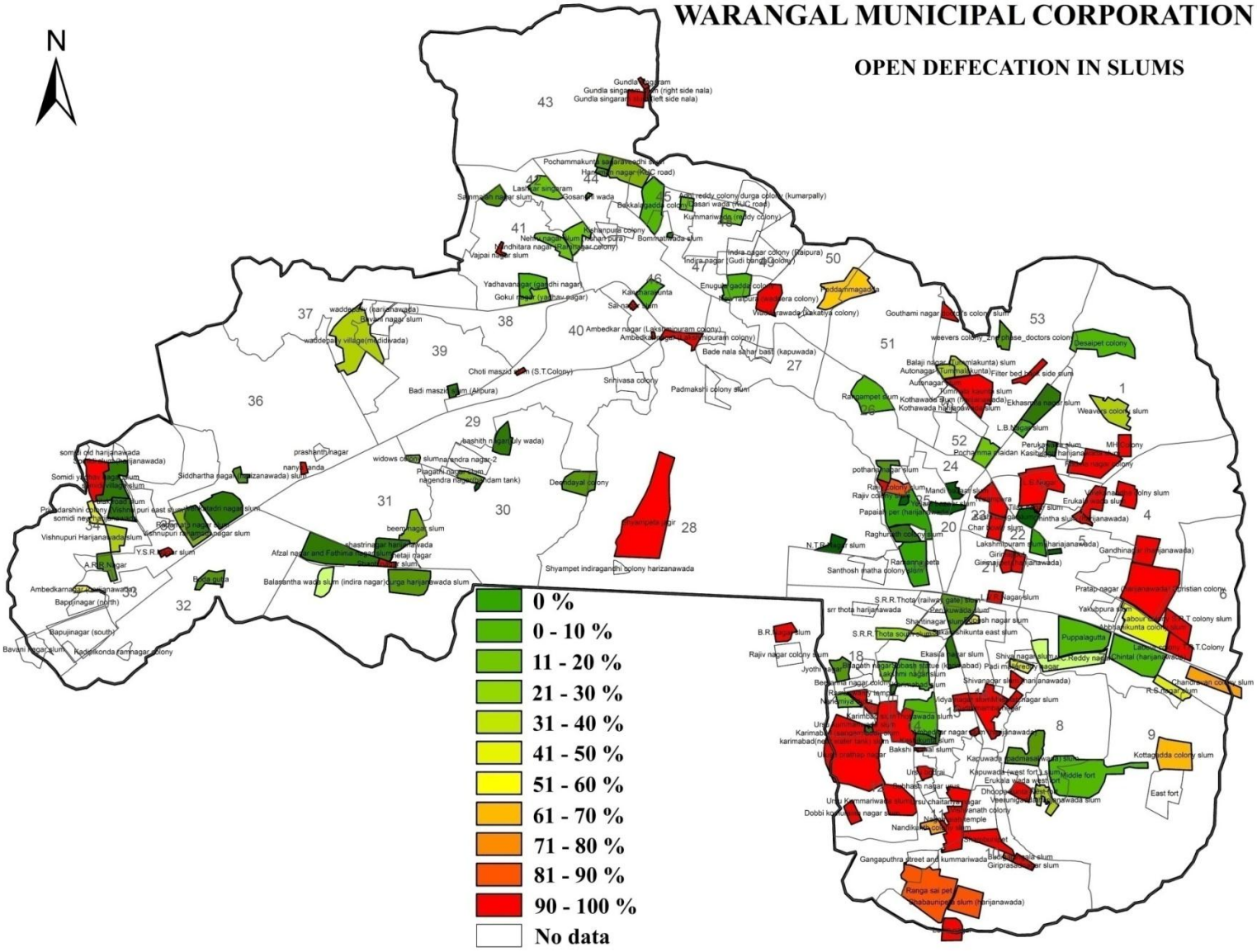


Issues

- Inadequate toilet coverage – resulting in OD
- High prevalence of insanitary toilets
  - *Lack of space, weak regulatory controls by WMC, lack of finance and low level of awareness*
- Dysfunctional pit latrines – connected to drains
  - *Poor design, construction and maintenance practices*
- Sub-optimal performance of septic tanks; out flow connected to open drains.
  - *Over sized, lack of standardization of design and construction practices, weak regulation*
- Lack of functional community toilets
  - *Absence of good O & M models*

2. Sanitation situation – Slums

OD locations



2. Sanitation situation – Slums

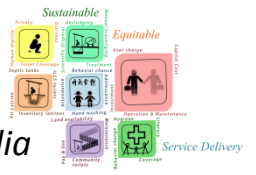
	Slum Name	total number of HH	OD	Typology of toilet			
				Septic tank	Pit latrines	Insanitary	Others (pay and use)
1	Indira nagar and Balasantha Wada	104	85%	3%	12%		
2	peddammagadda	548	5%	41%	5%		
3	OS nagar	299	49%		44%	7%	12 %
4	laxmipuram	276	40%	16%	21%	11%	
5	Nagamaya temple	243	72%	6%	12%	10%	
6	BR nagar	214	84%	0%	15%	1%	

2. Sanitation situation – Slums

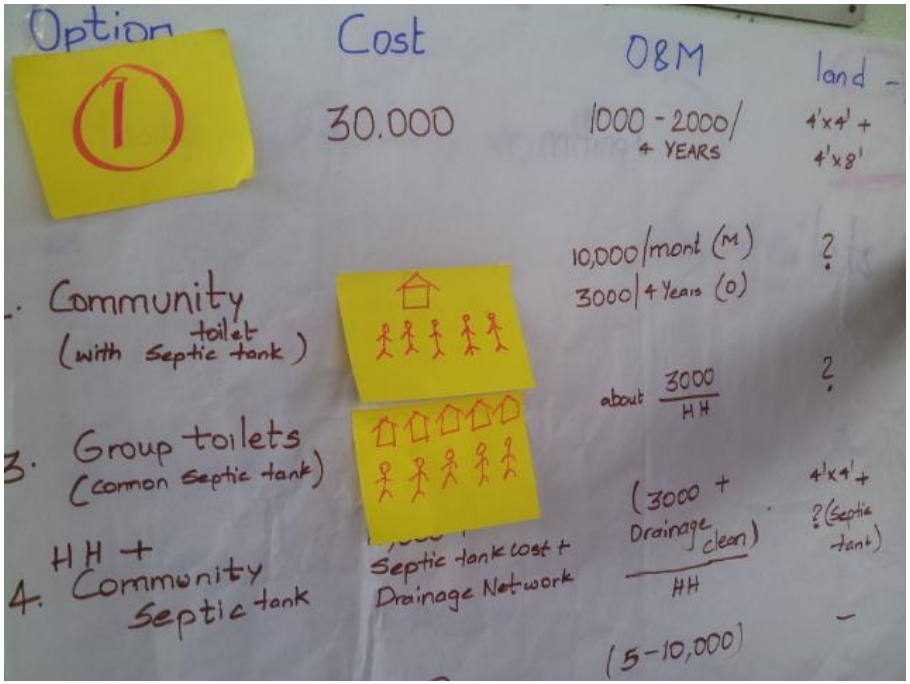
Preference

			Land availability	
	Slum Name	Options preferred	Individual	Community/group
1	Indiranagar and Balasanthawada	Individual toilets	yes	Yes
2	Peddammagadda	individual toilets		Yes
		community or group		
3	OS nagar	individual toilets	Yes	
4	laxmipuram	Community toilets		
		Group toilets		
5	Nagamaya temple	Individual toilets	yes	
6	BR nagar	Individual toilets	yes	yes
		Group toilets		

- Individual toilets are mostly preferred – Subject to availability of financial aid
- Community toilets - wtp to cover O&M cost.



2. Sanitation situation – Slums



2. Sanitation in Slums - Issues

- High demand for individual toilets, where ever land is available.
- Absence of credit facility for toilet construction – *MF institutions have expressed interest*
- Financing community toilet through municipal budget/CSR; Communities are ready to cover O&M cost.
- Need professional management for O&M.
- Need for alternate approaches to deal with insanitary toilets in slum areas *(eg : small bore sewer + DEWAT/community septic tanks)*

3. Sanitation situation – Public toilet

- 24 existing public toilets.
- Existing public toilets are inadequate in comparison to the demand.
- No separate facility for women
- City needs additional 100 plus public toilet blocks
- Toilets are built on Public Private Partnership (PPP) - five agencies.
  - land was provided by Municipal Corporation
  - Capital and O&M by private operator
  - lease period of 13 years 9 months
- Week SLA's w.r.t design, disposal of sludge, O&M and monitoring

4. Sanitation situation : Bulk generators

- Warangal has many institutions, colleges, gated communities, hotels etc.
- Partially functional septic tanks – outflow is discharged into open drains contaminating water bodies.
- Potential to introduce DEWAT systems /recycling options in a PPP format (DFBOT or DBOT)
- Needs regulatory amendments and effective implementation.

Waste water discharge into water bodies

5. Sanitation situation –Schools

- Over 220 government schools, managed by education department.
- Toilets are inadequate and dysfunctional ; No separate facilities for girls, Poor O&M, no hand washing facilities, inadequate source of water for drinking and quality maintenance, absence of hygiene education

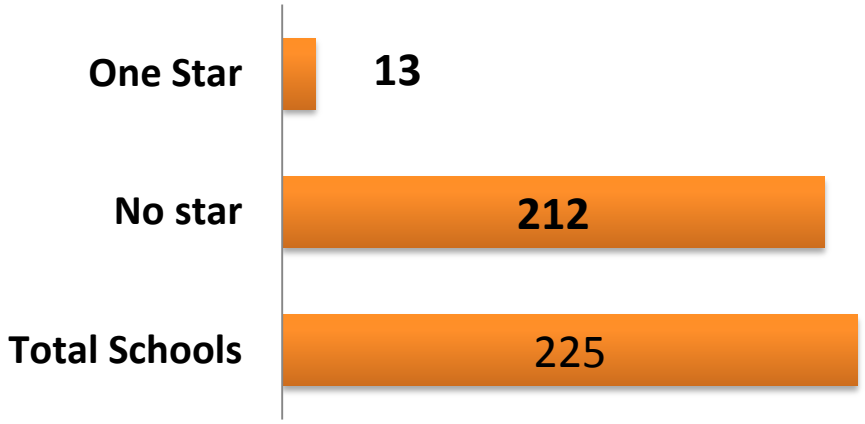
Rajiv Vidya Mission (RVM) constructed toilet blocks in disrepair

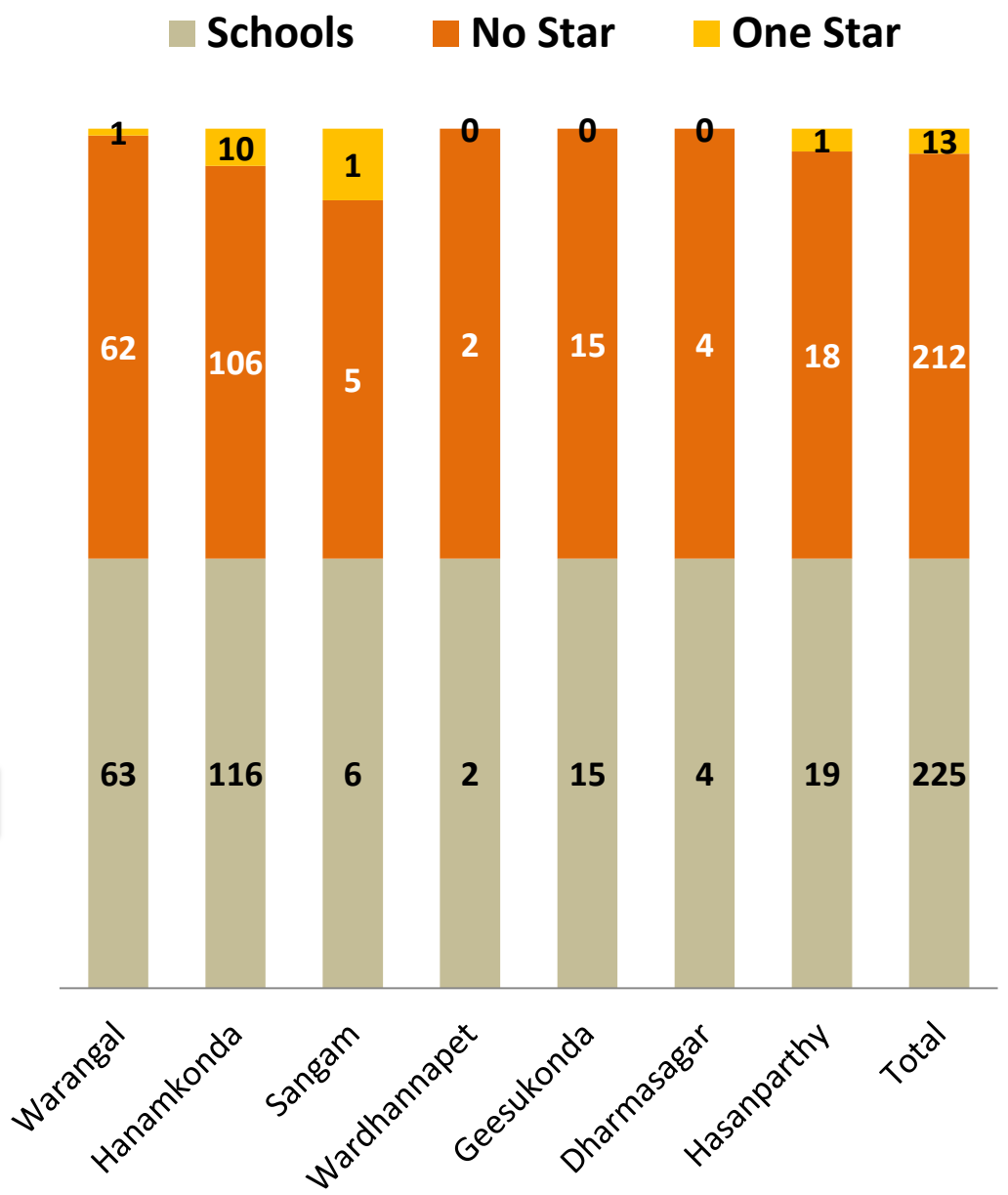
Human waste in urinals

Unclean and non-functional toilet and urinal facilities

Benchmarking of WASH in Schools

1. Ratio of toilet seats to students?
2. Whether toilets are functional ?
3. If dedicated attendant is available for cleaning toilets ?
4. If there is access to water supply for drinking and for toilet maintenance ?
5. Methods of solid waste disposal
6. Toilets having safe waste water disposal system
7. Functionality of hand-washing facilities
8. Practice of hand-washing
9. Provision of hygiene education

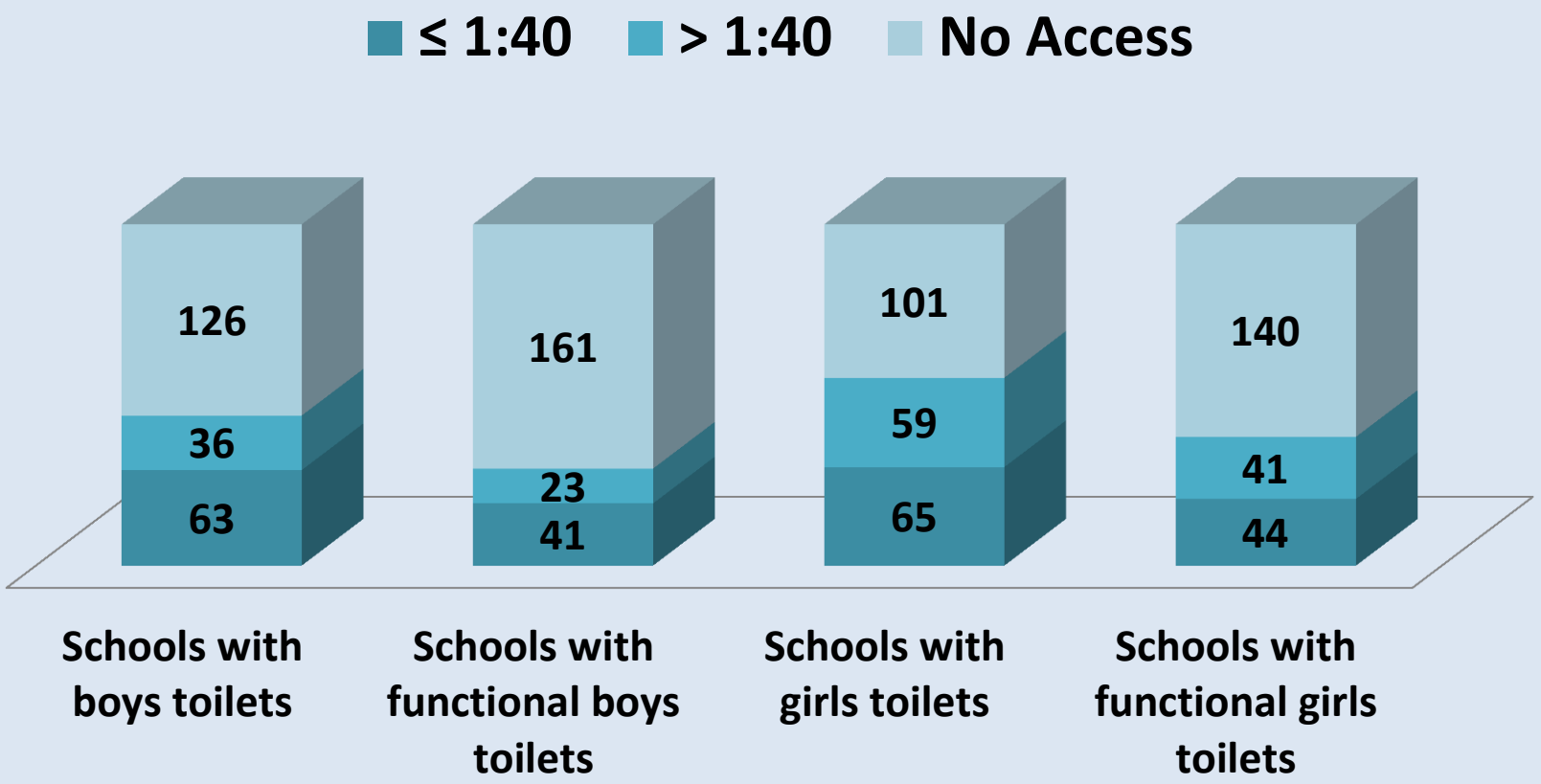




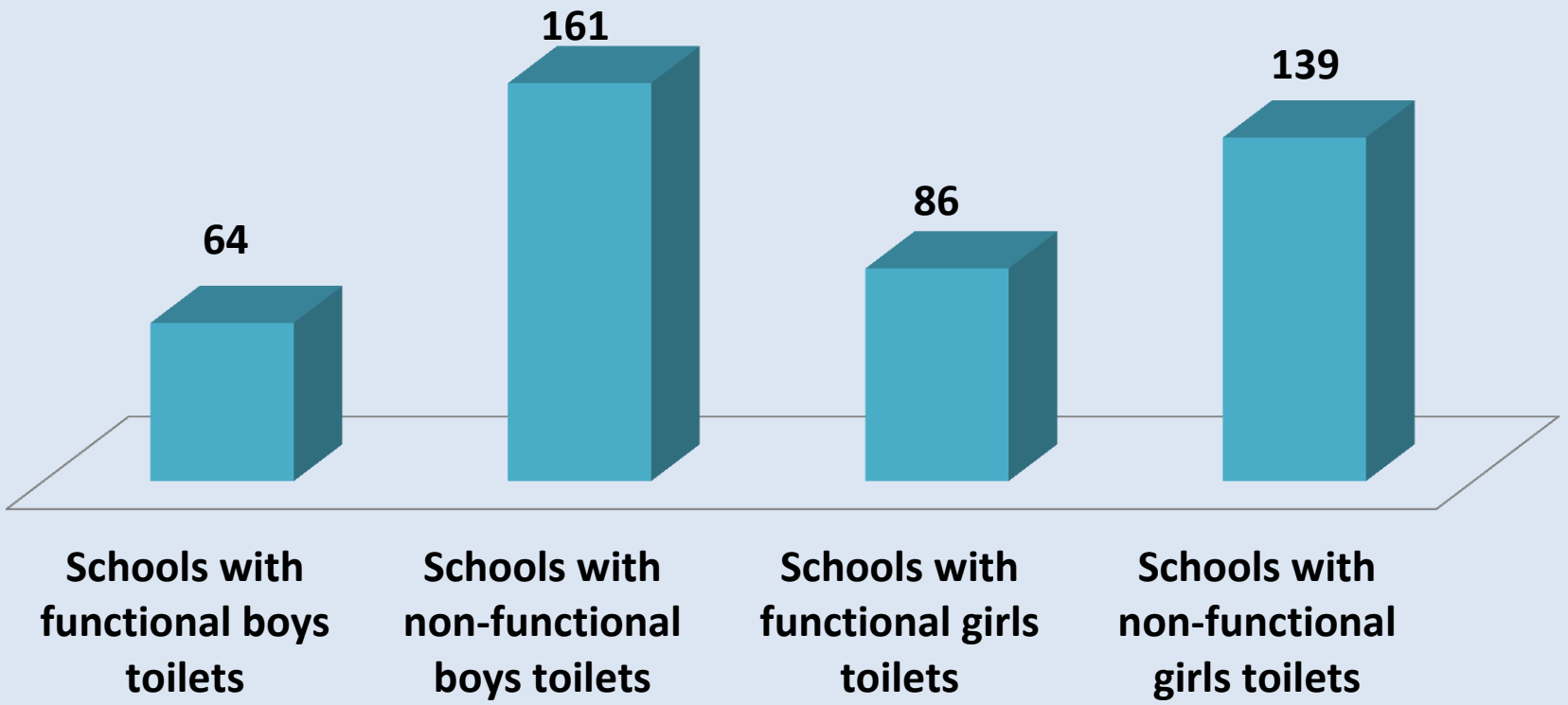
Administrative Staff College of India
Administrative Staff College of India

1. Students to toilet seats ratio

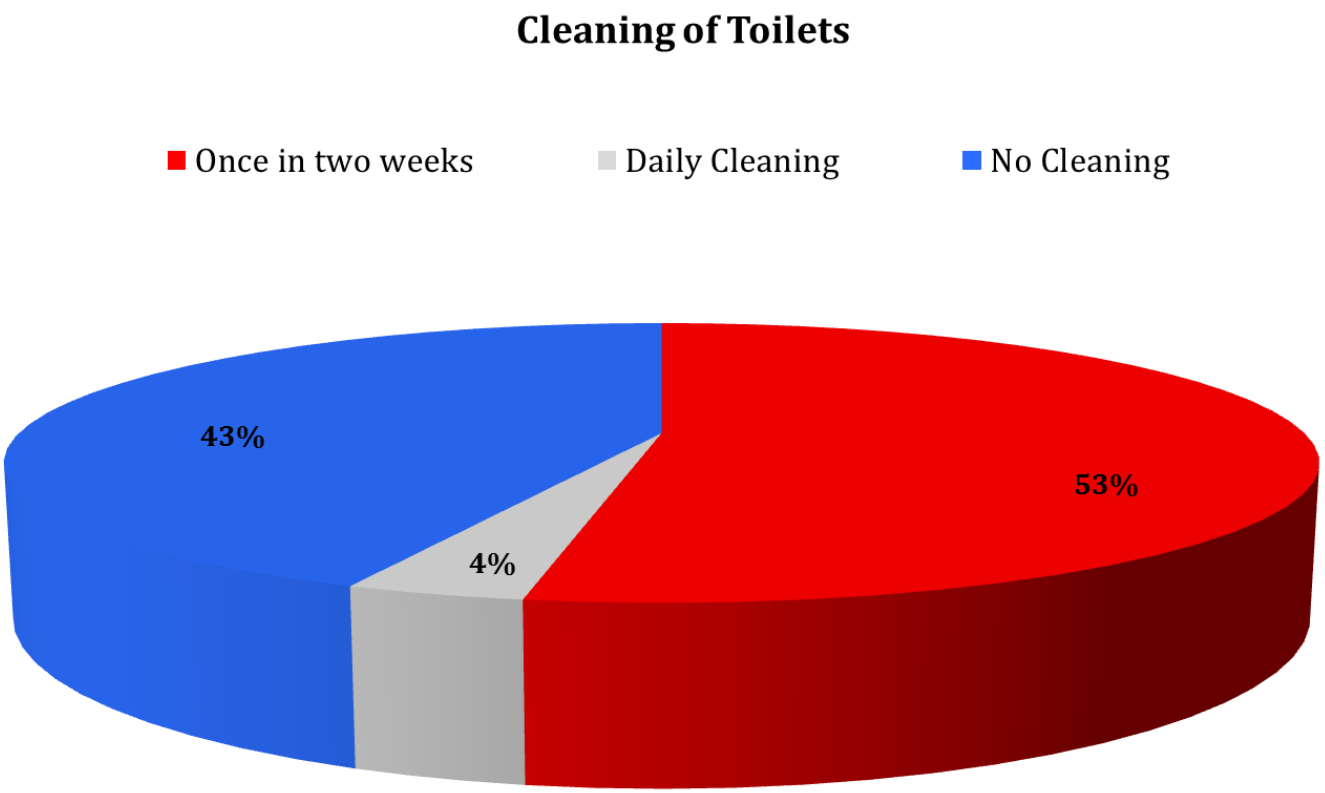
Sarva Shiksha Abhiyan stipulates that there should be atleast 1 toilet for every 40 students



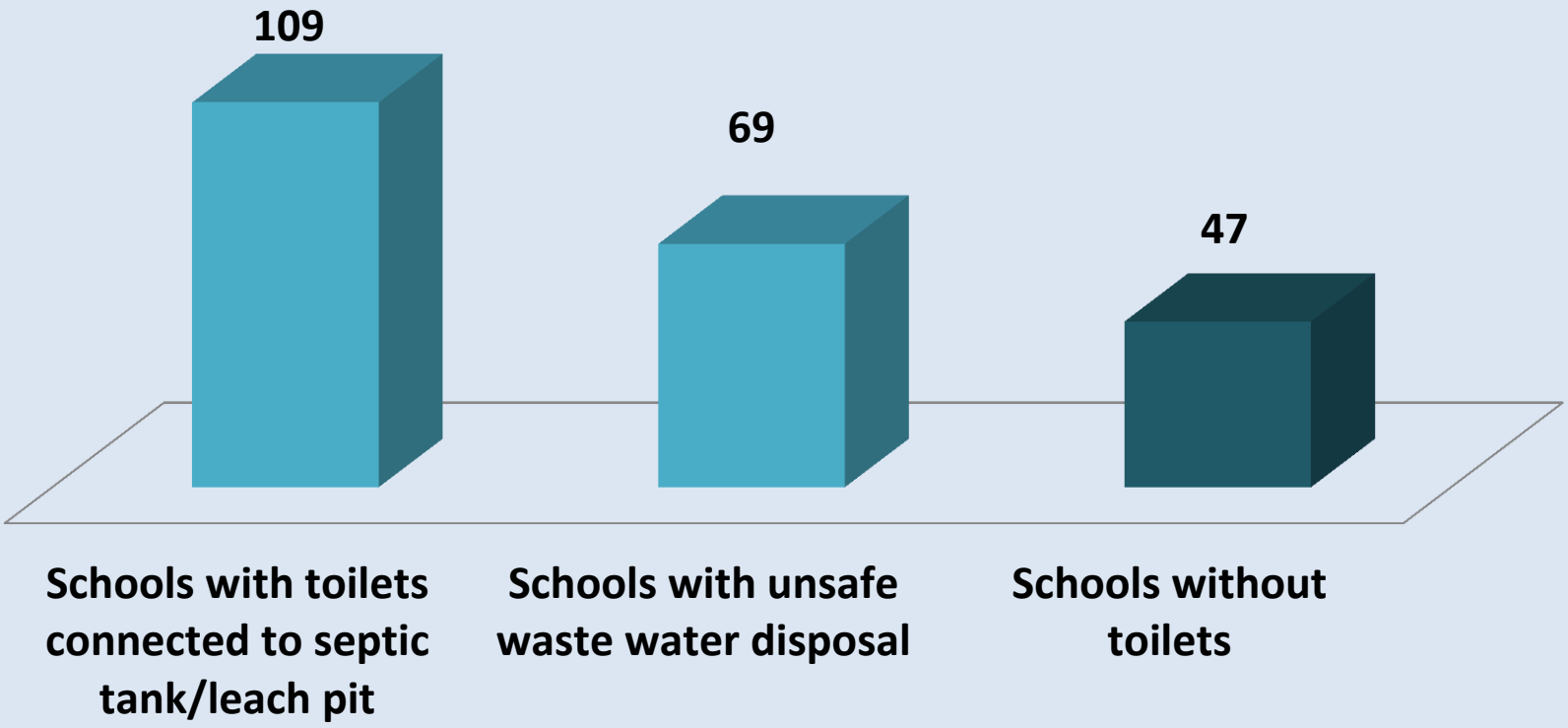
2. Functionality of toilets



4. Operation & Maintenance Of toilets



8. Safe disposal of waste water from toilets

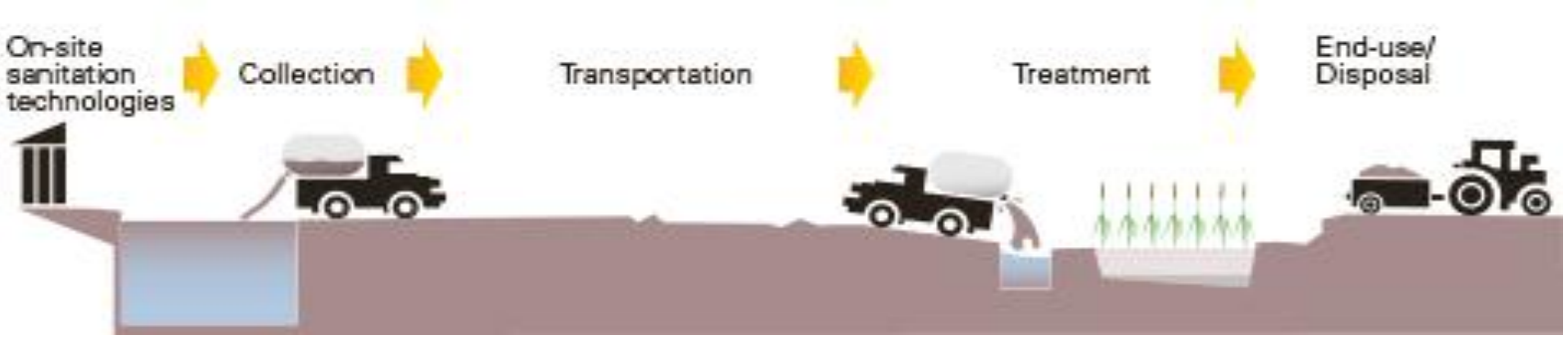


School WASH – Issues

- Inadequate number of toilets (*especially for adolescent girls*)
- Many toilets blocks are dysfunctional because of absence of O & M (*PPP option for O & M*)
- Complete absence of hand-washing facility
- Absence of treatment of waste water and sludge
- Absence of hygiene education

Cost effective approaches

6. Sanitation situation – Fecal Sludge management



1. Unscientific collection & transportation
2. Disposal of fecal sludge in 20 different locations causing public health and environmental concerns.
3. Estimated waste quality – 40-60 cum/day
4. Driven by two private operators – unregulated

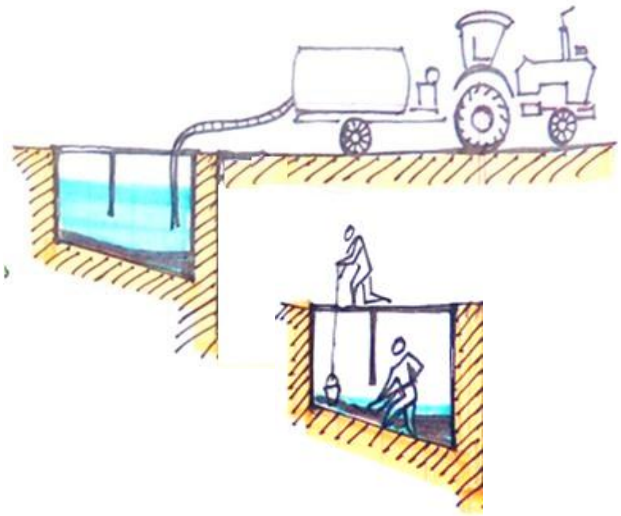
Fecal Sludge Management – Over view

PRIVATE OPERATOR

- 2 Private Player

1. Vivek Singh
2. D.S Rao

Private operator



1

- 5000 liters – 1 vehicle
- 4000 liters – 1 vehicle
- 3000 liters - 2 vehicles
- **Total - 4 vehicles**

2

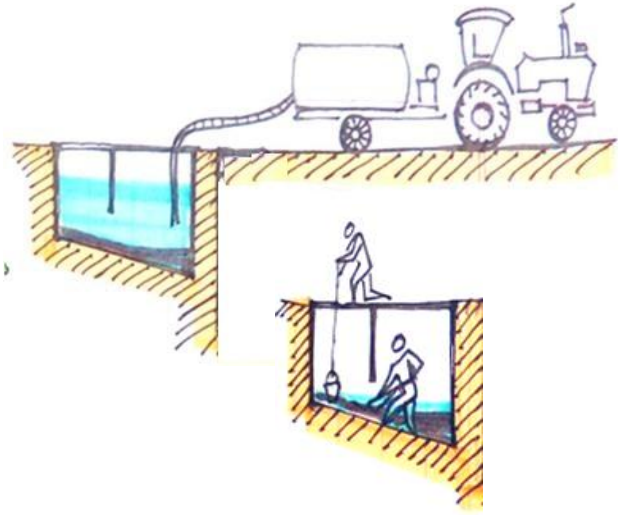
- 4000 liters – 1 vehicle
- 3000 liters - 1 vehicles
- **Total - 2 vehicles**

- Vehicles are provided by SC corporation under employment orientation scheme.


GULFAR

Fecal Sludge Management – Over view

Private operator



Disposal

- Dredging cost varies from Rs. 3000 – 4000 depending on the condition and dimensions of pit
- Manual Scavenging for left out Sludge – Rs. 2000 - 3000

Fecal Sludge Management – Over view

PRIVATE OPERATOR

- NO TREATMENT
- Disposed in **agriculture fields /available lands**
- **15 to 20 Km** away from city
- Areas
  - Manikonda
  - Nakapally

Typical disposal location

6. Sanitation situation – FSM

- Responsive PPP operators
- Indiscriminate disposal of septage in different public places /agriculture fields.
- Unregulated collection and transportation
- Lack of safety procedures.
- Lack of standardization w.r.t to frequency of emptying
- Treatment and disposal - Amenable for PPP
- Identified suitable land for establishing STP

7. Waste water discharge in to lakes

- Drains carrying fecal sludge are joining lakes/water bodies.
- Potential to introduce small bore sewer with DEWAT system in low income areas
- Potential for establishing waste water treatment systems at inlet points leading to water bodies.

Key sanitation Challenges in Warangal – Summary

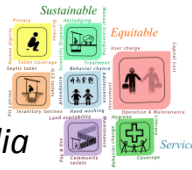
1. Lack of septage treatment and unscientific disposal
2. Lack of proper emptying and transportation of septage
3. Absence of regulation of septic tanks, emptying and transportation and disposal of septage practices at the local level
4. Inadequate public toilets
5. Wide spread open defecation in slums due to lack of sanitation access and facilities
6. Institutions lack safe disposal of effluent from septic tanks
7. Septic tank effluent is connected to drains and gets discharged into water bodies
8. Inadequate and dysfunctional Water, Sanitation and Hygiene facilities in schools.
9. Lack of awareness and limited capacity of ULB and other stakeholders with regard to effective on site sanitation system across the sanitation value chain

Observations

- Greater acceptance of non-networked options at the policy level
- Vibrant private sector - sanitation is amenable for PPP – public toilets, STP, O & M of community toilets etc.
- Need for innovative financing for toilet construction
- Evidence based advocacy – data
- Need for technology/design innovations (low income areas)
- CSR funds and business processes.
- Need for robust regulations, standardization of processes and capacities
- Strong M & E

Proposed interventions

1. **Septage Treatment Plant**
2. **Improving Emptying and Transportation of Septage**
3. **Regulatory Framework for Fecal Sludge Management at the Local Level**
4. **Provision of Public Toilets**
5. **Slum Sanitation and Open Defecation Free Slums**
6. **Improving Water, Sanitation and Hygiene (WASH) in schools**
7. **Capacity building, IEC, Networking and M&E**
8. **Influencing the Eco-system at the State Level**



Initial steps

- M & E framework – for tracking results
- Training of WMC in M & E
- PMC established
- CENA – Training plan
- State Sanitation Task Force
- City Sanitation Task Force
- Citizen report card on sanitation
- Behavior research – schools/low income areas/Women
- Strengthening Public toilets system – revised SLAs
- STP site location / treatment technology
- Technology vendors meet
- PPP agreements drafted (DBOT)

Thank you