

HOSHANGABAD CITY SANITATION PLAN



**Prepared by: Hoshangabad Municipality
Government of Madhya Pradesh
Water and Sanitation Program**

HOSHANGABAD- A BRIEF PROFILE

Municipality Established	1869
Population (2001)	97,424 (Class II)
Population growth	4.0% Annually
Estimated Population (2020)	195,653 people
Floating population (estimated)	15,000 daily
Wards	33
Slum Wards	15
Municipal Staff	357
Drainage	154 km (94 km pucca)
Water Supply	90 lpcd 56 deep tube-wells ; 71 handpumps
Public Sanitation	6 Public Toilets and 20 urinals
Community toilets	None

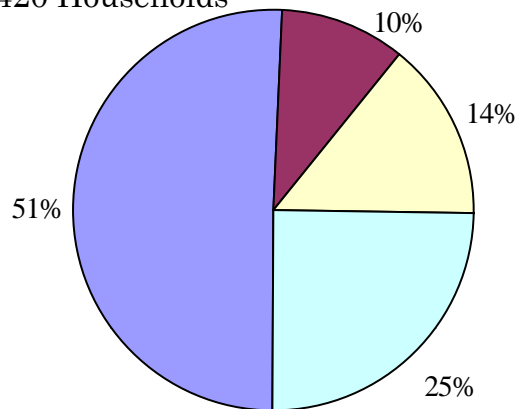
District headquarter, the town of religions importance, important tourist places nearby:

Receives a large number of floating population (1 lakh + peak days)

HOUSEHOLD SANITATION ARRANGEMENTS

o Household Sanitation Arrangements (2001)

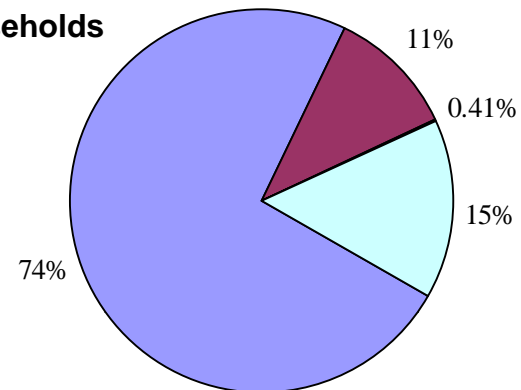
17,420 Households



■ WC ■ Pit Latrine ■ Other ■ No Latrine

n Household Sanitation Arrangements (Baseline survey ,2008)

15,515 Households



■ WC ■ Pit Latrine ■ Other ■ None

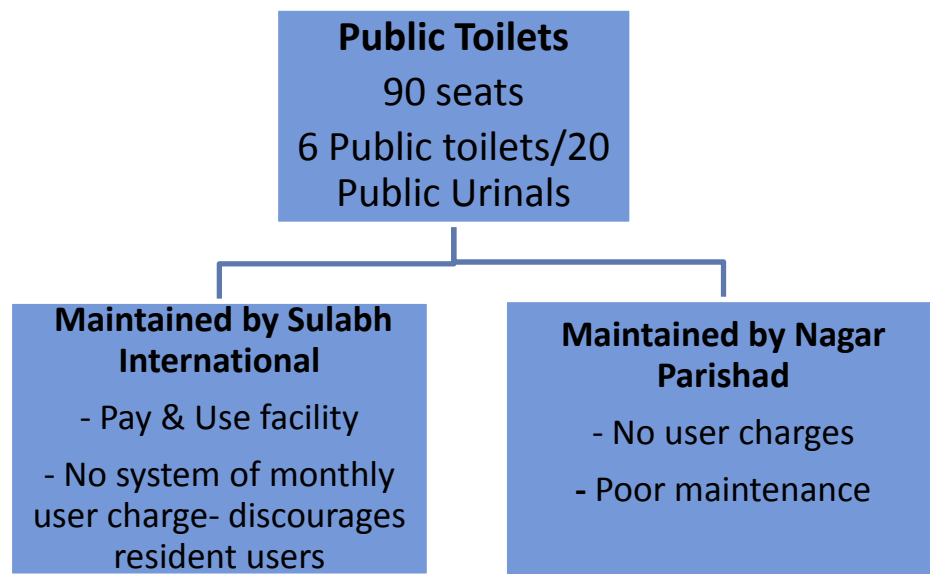
n Current Status

- 85 % household have individual sanitation arrangements
- 9/33 wards have 100 percent Sanitation Coverage
- 2215 (15 %) household lack individual sanitation arrangements

- 35 % use community toilets

PUBLIC SANITARY CONVENIENCES

- Public Toilets: Toilets used to cater to floating population



- Community Toilets: Toilets used to cater to needs of resident households lacking household sanitation facility: **None**

- n **Nearly 94 percent respondents across town agree that public sanitation facilities are inadequate**
- n **Only 7 percent are willing to contribute towards capital cost of common facilities**
- n **Only about 15 percent are willing to pay for operation and maintenance of common facilities**

Source : Hoshangabad Baseline survey, 2008

SEPTAGE MANAGEMENT

- Most important missing crucial aspect of city-wide sanitation as more than 11,000 septic tanks are in use.
- One Vacuum Truck for septage removal
 - Only about 10 – 15 septic tanks cleared every month
 - Rs 500 charged per clean up
 - Only about 180 septic tanks cleared every year
 - **Grossly Inadequate**
 - No information available on septic tank cleaning through private contractors
- *Untreated septage is disposed unsafely in the open*

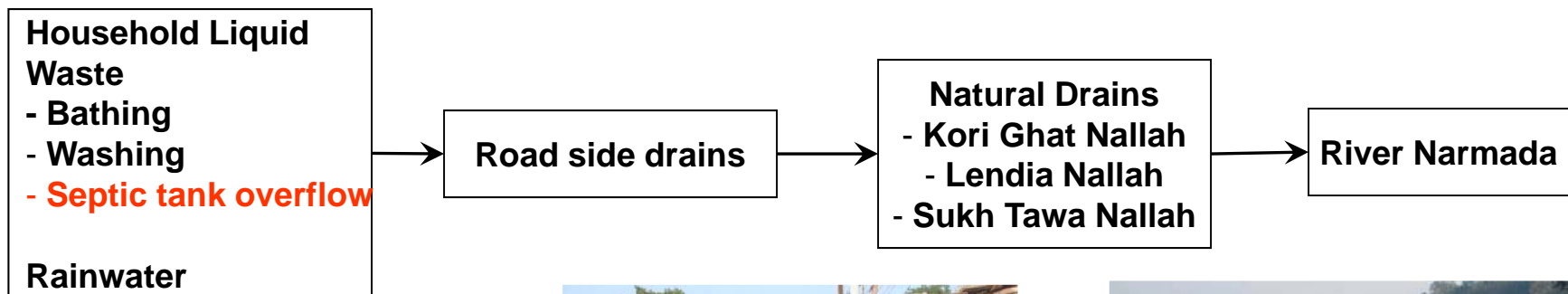


WASTEWATER COLLECTION, TREATMENT AND DISPOSAL

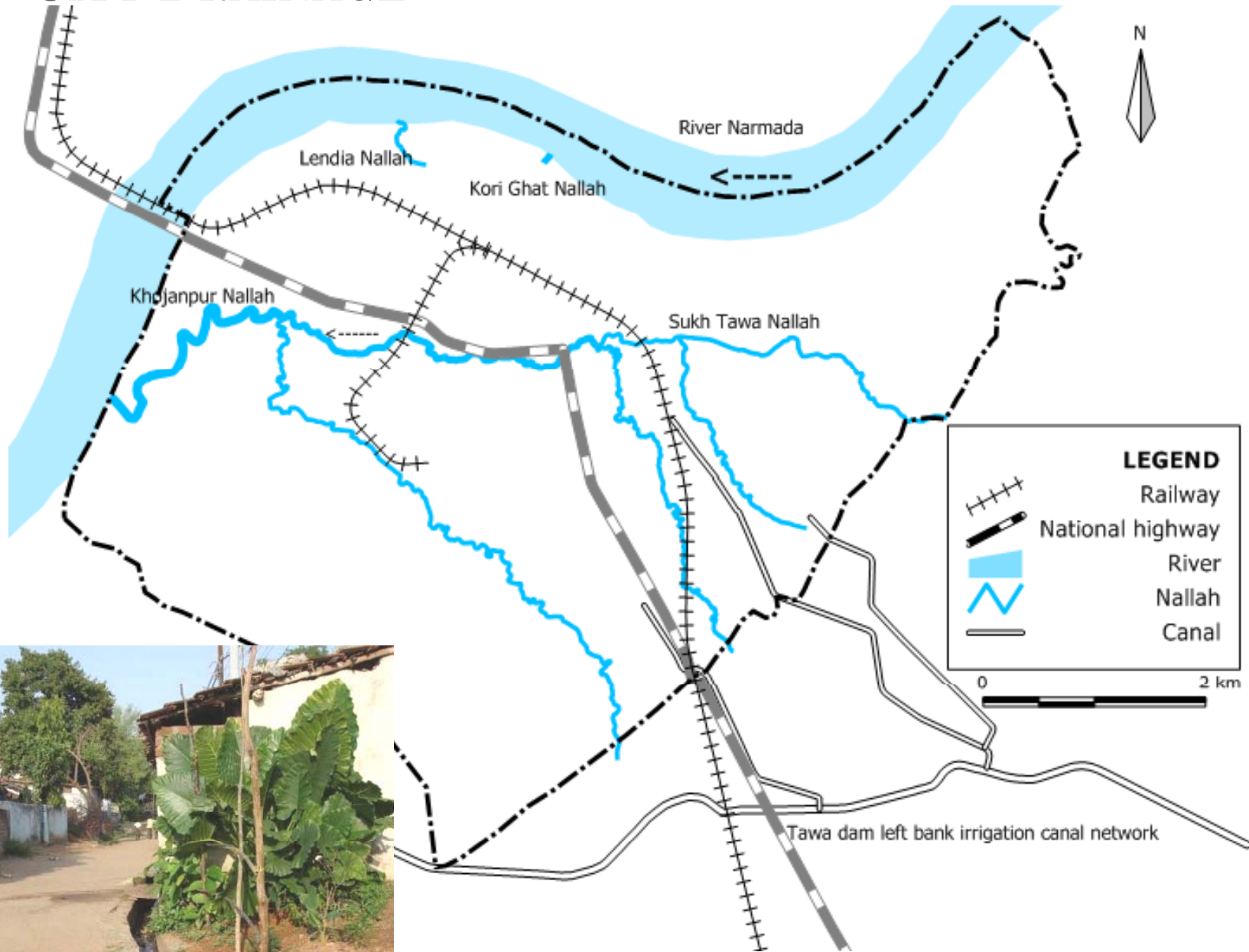
○ Wastewater Generation

- Current population : 128,000
- Water Supply : 90 *lpcd*
- Wastewater generated (80 % RETURN FLOW): 9.2 MLD
- Wastewater Treatment : None

○ Drainage



CITY DRAINAGE



INSTITUTIONAL ARRANGEMENT: PRELIMINARY ANALYSIS

- 33 member council : Mayor supported by CMO
- Current staffing
 - Health Officer position vacant
Sanitary Inspector oversees work
 - 235 safai karamcharis; 8 ward supervisors
 - Primary focus is SWM
 - Disposal of septage – handling and safety protocols doubtful
 - Ward and Mohalla committees
 - **5000+ members part of SHGs in 46 active groups**
 - **900 member of Comm Dev societies**

Analysis of legal and regulatory responsibility

- **MP Municipalities Act: ULB is empowered to ensure safe sanitation provisions in each building/land-parcel**
- **Penalty exists for non-compliance and nuisance, but not significant**
- **Standards and norms need to be specified through bye-laws or Building rules**
- **Formal Building approval process requires UDA approval and Municipality certification; latter not effective due to workload**
- **IUSP Guidelines provide for State/District/City San Comm. and Urban San Cell at State and City to facilitate CSP**
- **GoMP has legislated formation of Ward and Mohalla committees**

- **Design aimed at fixing Institutional responsibility and implementation roles that would Facilitate CSP Design and Work plans at disaggregated levels**
- **Put in place responsibilities for IEC, Supervision and M&E**
- **Enable milestone-bound evaluation**

SWM – EXISTING SITUATION

- 91 % Hhs dispose waste in open or drains; No door-to-door collection service by ULB
- 40 – 45 MTPD generated; only 300 T secondary storage capacity available
- Street sweeping and market waste collected daily
- Special cleaning of Ghats conducted after festivals
- Collection from bins & transportation of waste by ULB (6 vehicles deployed); Collection efficiency 70 – 75%
- No treatment: Waste land dumped at Idgah dump site (8 acres)
- Manpower: 80 ULB staff; 190 temporary workers
- Operational expenditure: 1.7 Cr.(Rs. 1400 - 1540/T)



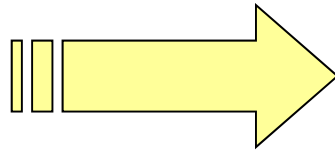
SWM – KEY ISSUES

- Lack of integrated planning and operations for collection and transportation
 - Excess storage capacity not being utilized
 - Storage bins & vehicles not compatible
- Understaffing, particularly at lower levels of sanitation staff
- Lack of compliance with regulatory requirements:
 - Door to door collection; segregation
 - Covered transportation
 - Treatment & Safe disposal
- High per ton cost, since only collection and transportation are being addressed



EMERGING ISSUES AND OPPORTUNITIES

WHY??



Sanitation is strongly linked to HEALTH and ECONOMIC Well being

<u>Issues</u>	<u>Opportunity</u>
Sanitation arrangements for remaining 15 percent households	National Urban Sanitation Policy/ IHSDP ILCS
Sanitation facilities for floating population	Public sanitation facilities under the National River Conservation Program
Septage / Wastewater Management	Integrated Urban Sanitation Program CSP
Sustainable Service Delivery	Hoshangabad selected for piloting Citywide Sanitation

City Sanitation Planning Process

Experience of engaging with Hoshangabad

Vivek Raman

Water and Sanitation Program

Vigyan Bhawan, New Delhi

2nd August, 2010

What is a city sanitation plan?

A comprehensive, holistic and city wide plan addressing universal access, safe collection, treatment and disposal of 100% liquid and solid wastes.

It is not a DPR

Key Points:

- Focus on Outcomes
- Non linear process
- Think city wide: systematically
- Plan long term –Set timelines
- Ensure all participate- political buy in
- Set clear institutional responsibility
- Not technology/infrastructure focused
- Sustainability/ O&M is key
- Regulatory framework
- Incentives/ M&E
- Support from Gol and States

Multi stakeholder participation

Awareness raising

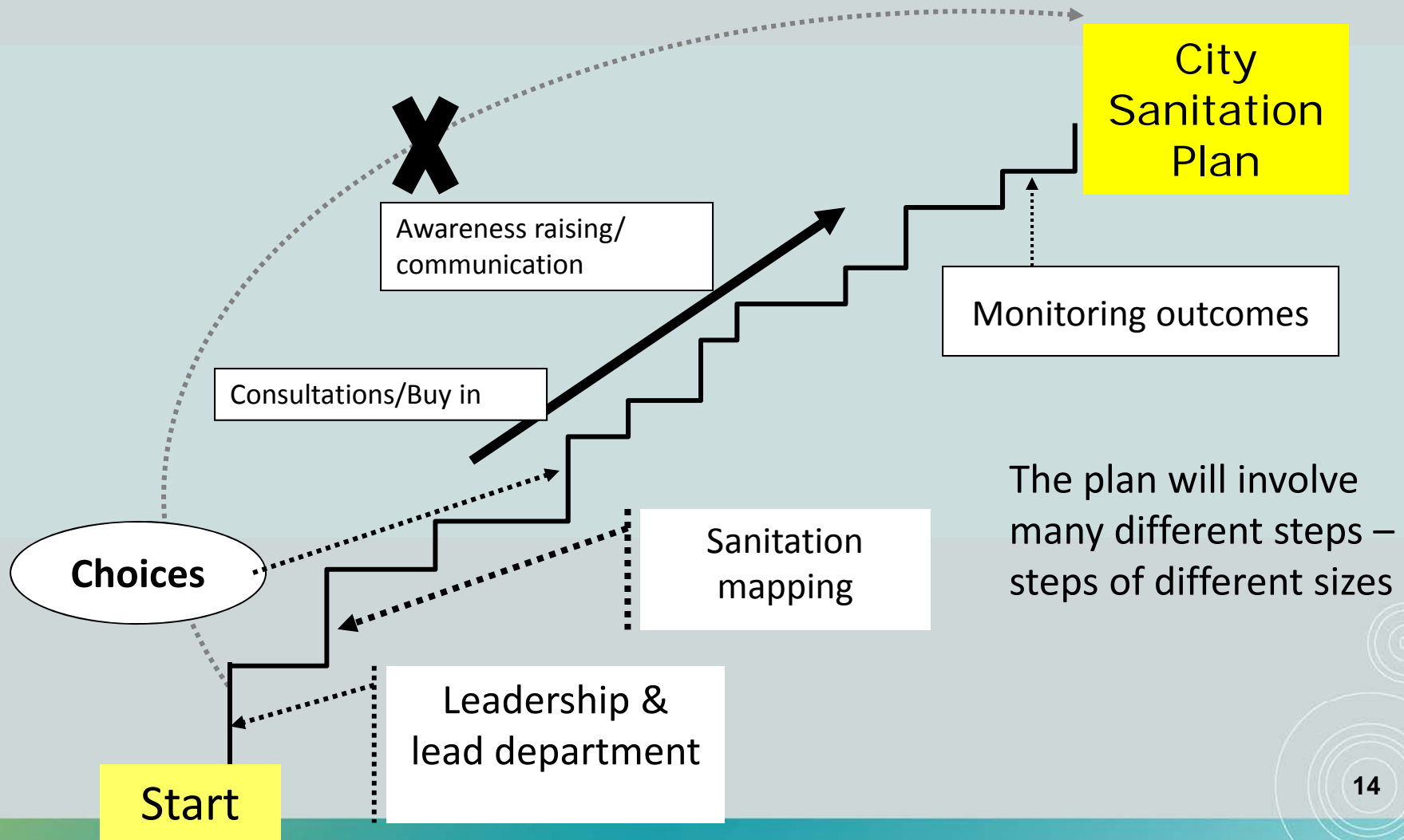
Special provisions for the poor

Baseline data collection

Appropriate technology choice

Capacity building/ Training

Develop a step-by-step sanitation plan



Set aim for Hoshangabad CSP after consultations

1. Universal access to all citizens
2. Reduce pollution in Narmada

Assess sanitation situation

Understand municipality strengths and constraints

Institutional/ Social mechanisms (including monitoring) to manage and provide services sustainably

Consider best options for city – One city will be different than next

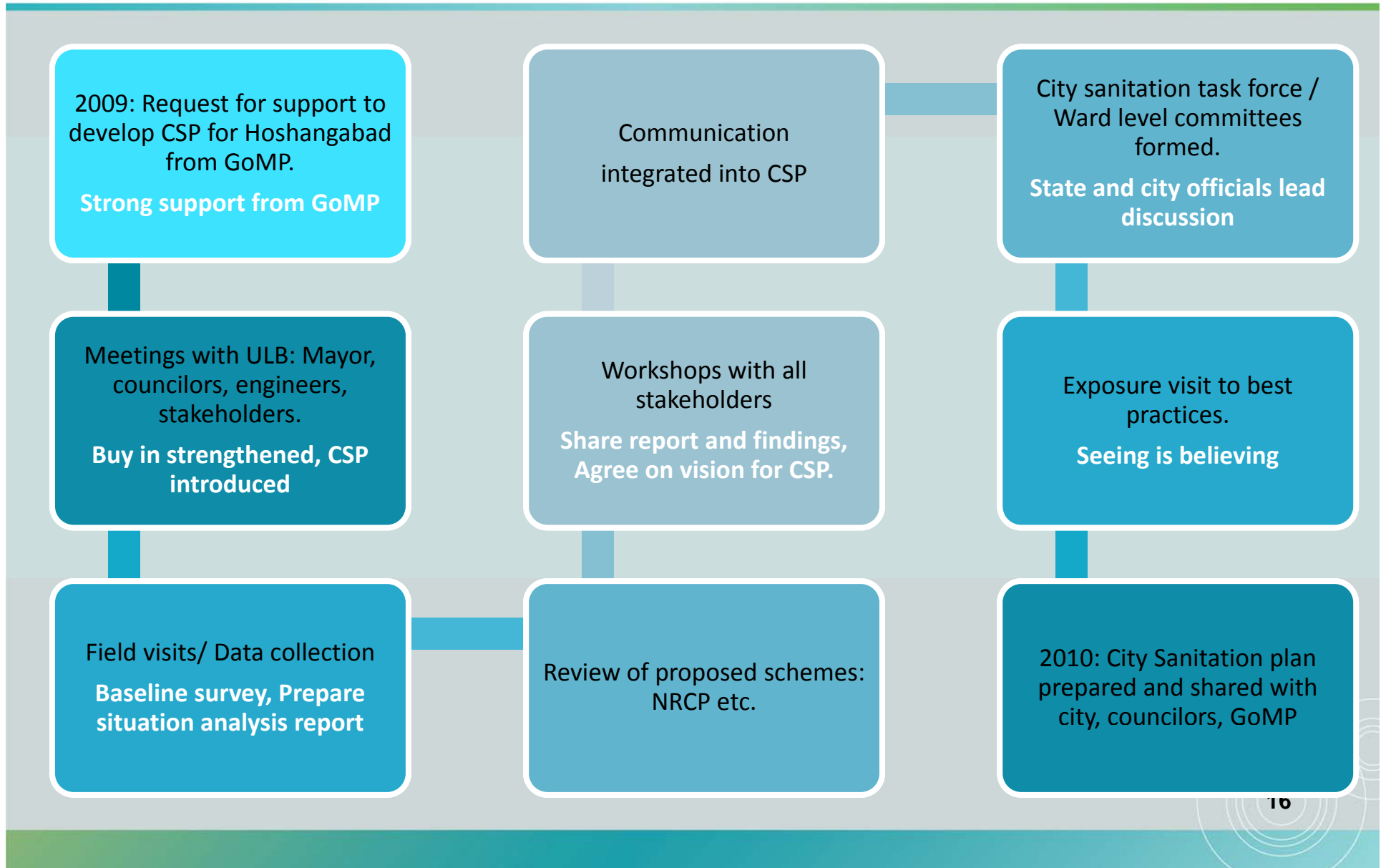
Calculate approximate costs for each option

Options for poor: Public/community toilets – Floating population



Request of
Hoshangabad

1. Ensure sustainability of the operations
2. Affordability ULB and citizens not to be burdened



Field Visits, Meetings, Study Tours, Workshops.....





- ✓ Baseline survey and initial reconnaissance (2008)
- ✓ Presentation of Situational Analysis (Jan 2009)
- ✓ Consultations with Council Members (Jan 2009)
- ✓ Discussed implications of proposed centralised sewerage and STP scheme on sustainable O&M and extension of services to households.
- ✓ Alternate options for town discussed (Centralised V/S Decentralised Wastewater Treatment) (June 2009)
- ✓ Exposure visit to best practices for replication (Feb 2010)
- ✓ Community mobilisation piloting: Formed in two wards. The women members from these committees assisted in validation of 'Baseline Survey' and identified 2,625 households that lacked sanitation facilities.
- ✓ Submitted proposal to GoI for construction of 2,625 individual toilets under ILCS

The CSP forms tenth milestone to achieve goal of city-wide sanitation for Hoshangabad.

The following steps are recommended next:

- ✓ Presentation of CSP Technical Options to the HNPP (Mar 2010)

Training for Council to detail CSP planning and implementation process

Hold meetings in wards: With ward sabha, SHGs and institutional associations

Final selection of sanitation technical option (choose combination/phases)

Identify gaps in rules/ legislation : draft appropriate rules and approvals

Define/operationalize institutional set-up: Ensure sustainable service delivery

Develop ward level action plan with commitments from ward members and mohalla committee representatives

Dove-tail household/establishment level action plan with fund flow and wastewater treatment works plan

Design M& E System

Implementation (including slum sanitation- management of community toilets or individual toilet construction)

Initially before CSP

NRCP scheme to provide sewer network (only trunk and branch) and STP at a cost of **Rs 10.3 crores**

ULB was requesting for additional funds for laying lateral sewerage network at a cost of about **Rs 25 crores**

No consideration of O&M expenditure to meet approx **Rs 6.6 crores** over 7 years

Now

Study tour to learn about decentralized wastewater plants, community sanitation completed.

City considering alternate wastewater treatment options.

Three locations (stress areas) identified to pilot decentralized wastewater treatment plants. (Funding options being considered)

ILCS Funds sanctioned for 2625 individual household toilets.

Septage management guidelines issued by state

GoMP scaled up CSP to 11 cities; learning from Hoshangabad

Iterative process: Intense engagement

Time required will vary according to size of city

Good baseline is crucial to see critical issues

Extensive consultation and coordination

Capacity constraints need addressing

Political buy in and state support crucial

Each town has unique opportunity and challenge

Financing requires support from state and GoI

“Seeing is believing”: Study tours very helpful

Need to adapt: Existing programs/ schemes

City sanitation plan

AIM OF THE HOSHANGABAD CSP

The city sanitation plan is a comprehensive, holistic and city wide plan addressing issues of universal sanitation (access to sanitation for all the citizens), safe collection, treatment and disposal of all wastes.

- Universal access to all citizens
 - Poor and un-served
 - floating population
- Ensure ALL liquid and solid waste is
 - safely confined and collected
 - treated and disposed
- Institutional mechanisms (including monitoring) to manage and provide services on sustainable basis.
- Adequate cost recovery to ensure sustainability of the operations

SANITATION OPTIONS FOR HOSHANGABAD

Sanitation Options considered for the town

- Fully On-site Sanitation
- Settled (small bore) sewerage
- Part on-site/ part off-site
- Simplified Sewerage with decentralized Wastewater Treatment Systems (DEWATs)
- Mixed System

Components:

- Improved Sanitation facilities for
 - resident population including the poor and slum populations
 - floating population
 - New population entering town
- Safe wastewater conveyance for onsite and offsite
- 100% Wastewater treatment;
- Septage management
- Disposal/ reuse/ recycling of treated wastewater

FIVE SANITATIONS OPTIONS CONSIDERED

1. Fully on-plot sanitation system:

- All domestic wastewater treated on site: septic tanks with soakaways and soak pits
- The septage is removed and transferred for further treatment and final disposal.

2. Settled (small bore) sewerage

- Internal plumbing modified to dispose liquid waste into existing septic tank or new interceptor tank.
- A small diameter sewer pipe is laid at flatter gradient to carry effluent from domestic wastewater.
- Septage from septic tanks is removed periodically, for further treatment and disposal

3. Part on site/ Part off site

- Domestic wastewater collected through a network of underground sewerage pipes and treated in wastewater treatment facility
- Households in uncovered parts use on-site sanitation systems and septage is treated periodically

4. Simplified Sewerage with decentralized wastewater treatment

- Wastewater from households is collected through a network of underground sewerage pipes
- Collected wastewater is treated in decentralized wastewater treatment facilities

5. Mixed Sanitation

- On plot sanitation: Septic tank with soak away and twin pit latrine
- Off plot sanitation: Simplified sewerage with decentralized waste water treatment systems

OPTION 5: MIXED SYSTEM: SIMPLIFIED SEWERAGE AND ON-SITE

Public Toilet

- Discharged into either on plot or into sewer network for treatment at decentralized plant
- Need approximately 250 seats to cater to 15000 people daily
- Currently have 90 seats; plans to add 90 more; Therefore require **70 seats additional**
- **Approximate Cost: Rs 35 lakhs (@ Rs 50000 per seat)**

Septage Management

- Approximately 13500 households on onsite systems in year 5
- Set up efficient septage collection system operated by municipality or private operator
- Treatment at sludge drying beds **@Rs 80 lakhs**; 8 trucks required **@ Rs 80 lakhs**
- low O&M expenditure **@ Rs 44 lakhs/** year; charge households. Charge approx Rs 650 per clean up

Wastewater Conveyance

- Approx 11000 households served by year 5
- Construct sewerage network (~ 29 km)
- Investments: Approx Rs 1.2 crores

Wastewater Treatment

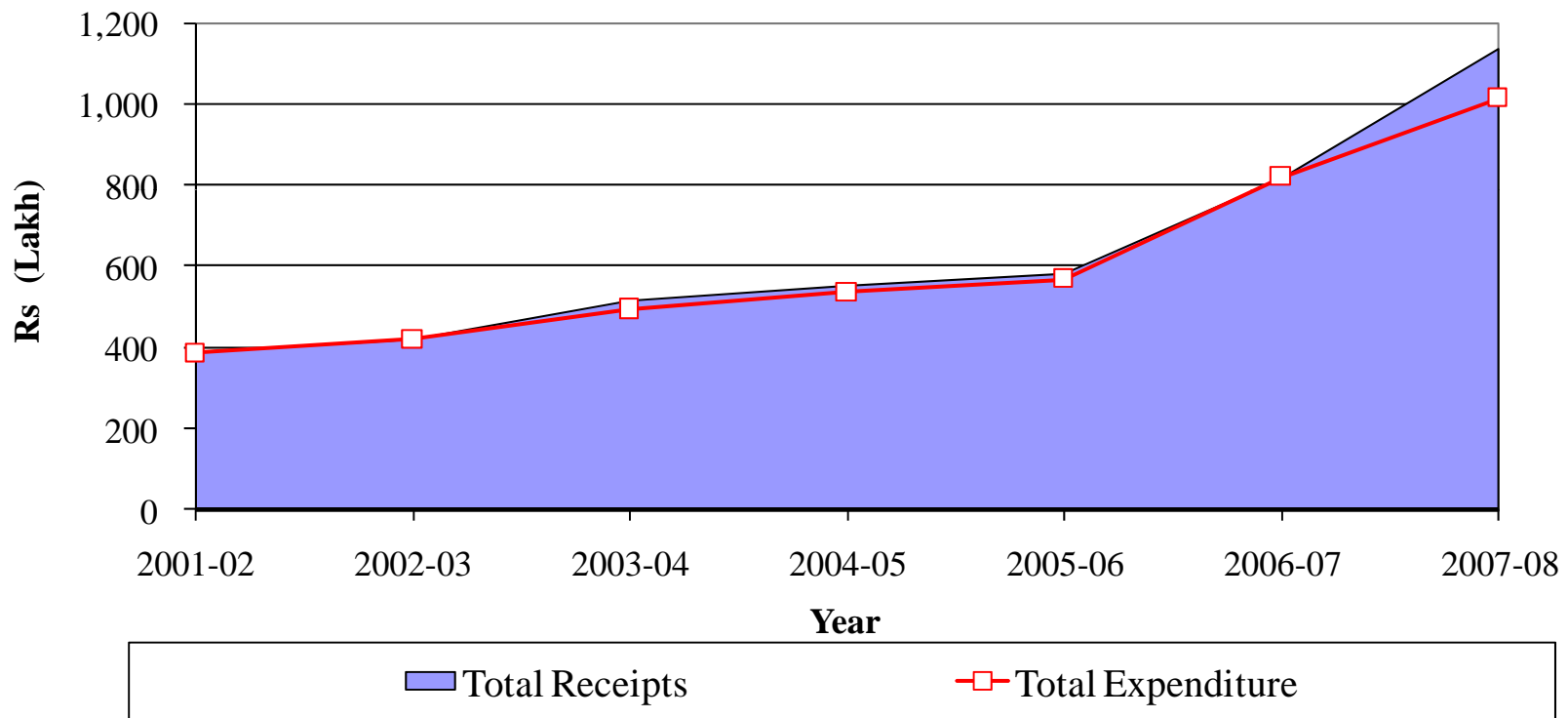
- Capacity required in 2020: 7.05 mld
- Decentralized waste water systems cost per MLD: Rs 1.6 crore: **Total: 11.5 cr (tertiary level)**
- O&M: Rs 30 lakhs: Households pay Rs 275/ annum
- Number of plants to be determined

Public investment:
Rs 14 cr

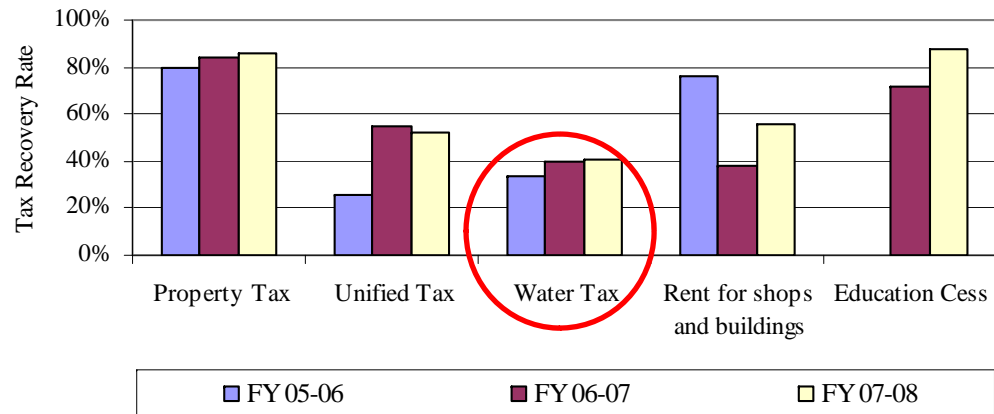
Household
investment:
Rs 16 cr (Avg Rs
5000/hh)

Municipal Finances: Revenue and Expenditure Trends

Hardly any balance left at the year end

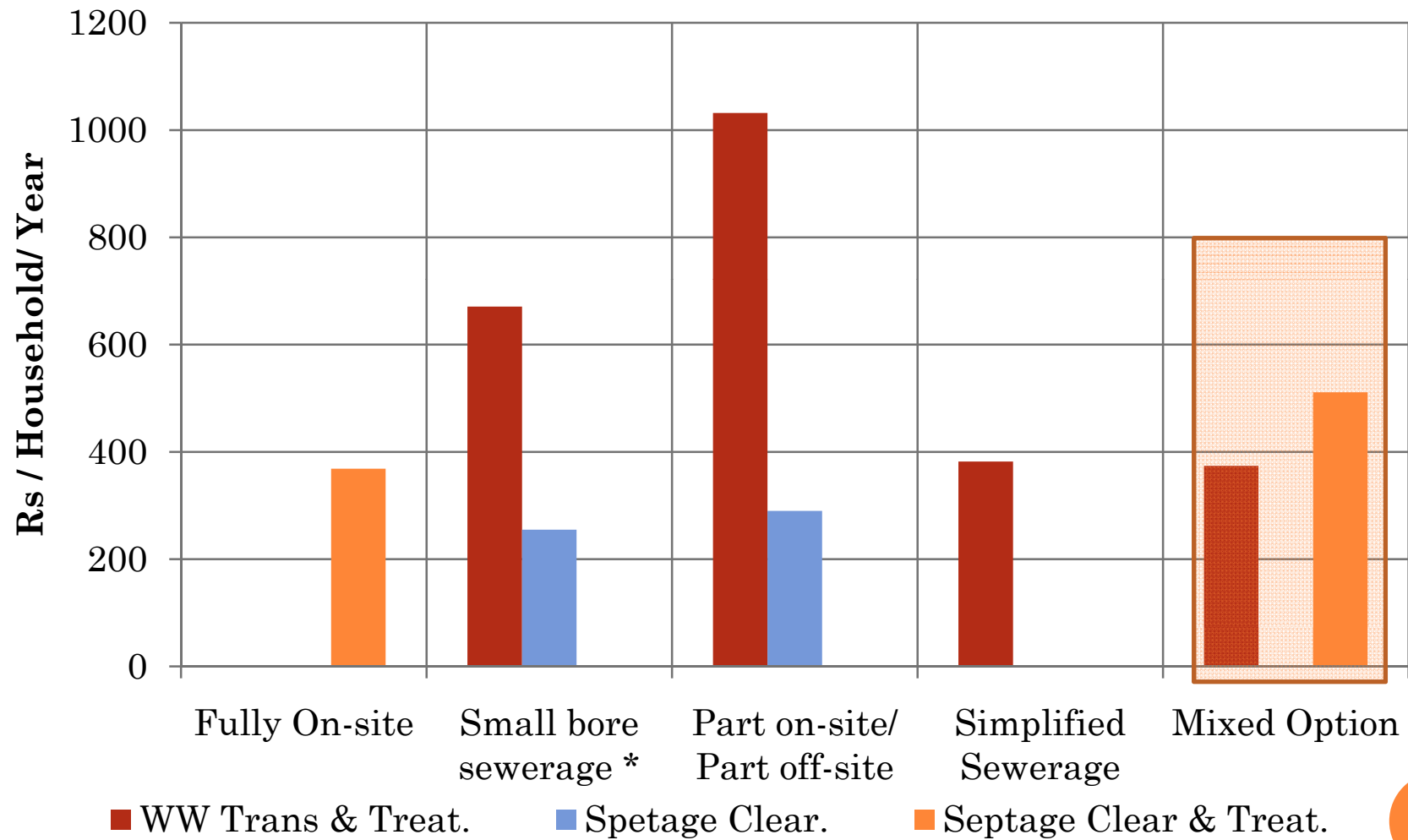


Municipal Finances: Tax Recovery



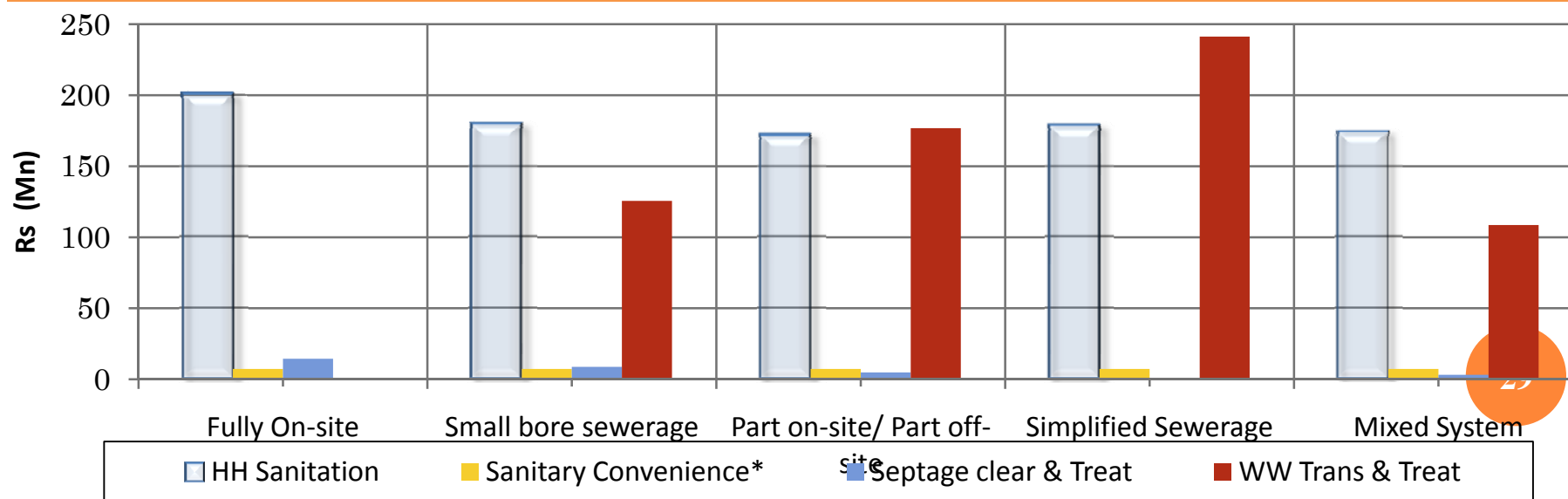
Trend in Recovery of Municipal Taxes							
Sl #	Component	FY 05-06		FY 06-07		FY 06-07	
		Demand	RoR	Demand	RoR	Demand	RoR
1	Property Tax	1,485,232	80%	1,883,267	84%	2,197,145	86%
2	Unified Tax	1,388,591	26%	1,691,187	55%	1,691,187	52%
3	Water Tax	2,909,280	34%	3,413,544	40%	3,467,304	41%
4	Rent for shops and buildings	2,260,712	76%	2,512,062	38%	2,922,768	56%
5	Education Cess			313,878	72%	313,878	88%

INDICATIVE USER FEES NEEDED FOR SELF-FINANCE SUSTAINABLE O&M OF THE CITY-WIDE SANITATION SERVICES



INDICATIVE INVESTMENT (HOUSEHOLDS AND PUBLIC) ESTIMATES FOR VARIOUS CITY-WIDE SANITATION OPTIONS

OPTION	Total (crs)	Public (cr)	Private/ Household (cr)	O&M Public Annual	O&M per household Annual
Fully onsite:	17.4	2.1	15.5	59 lacs	Rs 591 ST
Small bore sewerage:	31.8	14.7	17.9	1.8 crs	Rs 671 (WW) Rs 335 (ST)
Part on site/ part off site :	39.7	23	16.8	3.8 crs	Rs 1269 (ww) Rs 476 (ST)
Simplified sewerage:	43	24.3	18.9	53 lacs	Rs 205 (WW)
Mixed sanitation:	30.9	15	16.1	73 lacs	Rs 275 (WW) Rs 651 (ST)



CSP IMPLEMENTATION STRUCTURE

District Sanitation Cell

- Primary role of coordination in inter-agency matters; Supervision of environmental impacts of decisions for district;
- Approval of City Plans and Periodic reviews for state reports

City Sanitation Committee

- Support and Facilitate preparation and implementation of CSP;
- Will grant formal approvals and review progress

Urban Sanitation Cell (City)

- Executive body preparing CSP and responsible for implementation

Dedicated Sanitation Support Unit

- Dedicated team to assist USC in day-to-day operations

SOME ILLUSTRATIVE WORKING OPTIONS

Institution	Option 1 - Roles	Option 2 - Roles	Option 3 – Roles
City Sanitation Committee	Design and Supervision of CSP making use of existing interfaces – e.g. ward/mohalla committees, SHG network, etc. Technical tasks contracted out; campaigns contracted in parcels and coordinated	Define outcomes, focus on campaign and enabling interface institutions; Bring third party as partner for construction and O&M	Define outcomes, contract out technical design; frame guidelines for contracting and employ agency to manage implementation and O&M contracts; Enable interface institutions for campaigns and monitoring feedback
Urban Sanitation Cell with Support Unit			
Third Party Partners	Carry out contracted works	Brings in technical design skills and takes up contracted works	Brings in technical design skills, contract management skills and carries out work contracts (not same agency)
Needed at HNPP	Considerable technical design capabilities, communication management and Petty contract management capacities	High level of contract management skills; Post-commissioning core capacity needed for monitoring and management.	Clear outcome definition, milestones and financial loads. Need for active interfaces and checks through sub-ward feedback systems

BASIS FOR INSTITUTIONAL DESIGN

- Norms for Sanitation provision in buildings (including non-residential) and spaces where public congregate would require notification through Bye-laws
- Septage Management guidelines would need to be issued and creation of plot/building databases activated for effective monitoring
- SHG-network built under CDS – administered by UDA and district collector
- City Sanitation Plan including disposal will need to dovetail with development plans or peri-urban area and hence will need coordination with the District administration
- Need to activate Ward/Mohalla committees and ensure political leadership engagement
- Monitoring systems for reporting access to adequate/improved sanitation
 - One-time enumeration for database creation, communication to owners, systems for tracking compliance
 - Indicators for Public Health and Environment Quality to be tracked on continuous basis
- Dedicated Support Unit Structuring Options
 - All staff from GoMP cadre
 - Led by GoMP officer with additional competent staff on contract from market
 - Led By GoMP officer with support from NGO/Support Organisation
- Management role to be taken by HNPP will depend on technical and managerial support provided by GoMP-UADD and in-house capacities that can be made available to CSP
 - Structure remains, roles and weightages change (See last slide)

PROGRESS

- Thinking city wide for sustainable options
- Learnings from Hoshangabad scaled up to 30 cities who are developing CSPs
- Exposure visit to DEWATS, Ecosan etc now being replicated in the state.
- Hoshangabad becomes a model city a place for other to learn from.
- Septage management guidelines drafted by state
- Integrating all sources of funding to CSP (IHSDP, ILCS, NRCP)
- Demonstration DEWATS unit being implemented in city.
- GoI provided funding under ILCS to construct 2625 toilets- Will become open defecation free

SWM – PROPOSED IMPROVEMENTS

- Principles: - Use all available equipment in proposed system
 - Use available HNNP staff according to capacity

S. No	SWM Activity	Proposed System
1	Primary (D-to-D) Collection	<ul style="list-style-type: none"> • Mechanised auto-tippers, with 5 member crew each • Auto-tippers tip waste directly into dumper bins
1 (a)	Collection from Market Places	<ul style="list-style-type: none"> • Dedicated 2 member team for each market • Morning and afternoon sweeping & waste collection
1 (b)	Drain cleaning	<ul style="list-style-type: none"> • Dedicated 6 member team to clean all drains monthly
1 (c)	Road Sweeping	<ul style="list-style-type: none"> • Two member teams organized into beats • Major roads swept daily; minor roads once in two days
3.	Secondary Storage	<ul style="list-style-type: none"> • Use of existing 4.5 Cu M. dumper bins
4	Secondary Transportation	<ul style="list-style-type: none"> • Deployment of existing dumper placers. • To be augmented to ensure daily clearing of wastes
5	Treatment	<ul style="list-style-type: none"> • Phased reclamation of dump at Idgah • Establishment of compost facility
6	Disposal	<ul style="list-style-type: none"> • Development of Scientific landfill site at Bhaikhedi

MANPOWER & EQUIPMENT REQD.

Vehicle/Equipment	HNNP (additional)
Waste handled (Tons per Day)	42
Auto Tipper	28 (28)
Push Carts (with Auto Tipper)	125 (125)
Street / mkt Sweeping Push Carts	114 (114)
Dumper Bins	28 (0)
Dumper Placers	4 (2)
Tractors (Drain Cleaning)	1 (0)

Staff	Total Estimated Requirement	Proposed HNNP Staff	Proposed Private Operator(s) Staff
Auto Drivers	25	0	25
Auto Helpers	125	0	125
Street Sweepers	194	52	140
Market Sweepers	34	0	34
Drain Cleaners	6	6	0
Tractor Drivers	1	1	0
DP Drivers	7	7	0
DP Helpers	7	7	0
Total	399	73	326

- Private operators to handle D-to-D collection; market sweeping and 75% street sweeping
- HNNP staff to handle storage and secondary transportation

FINANCIALS FOR SWM

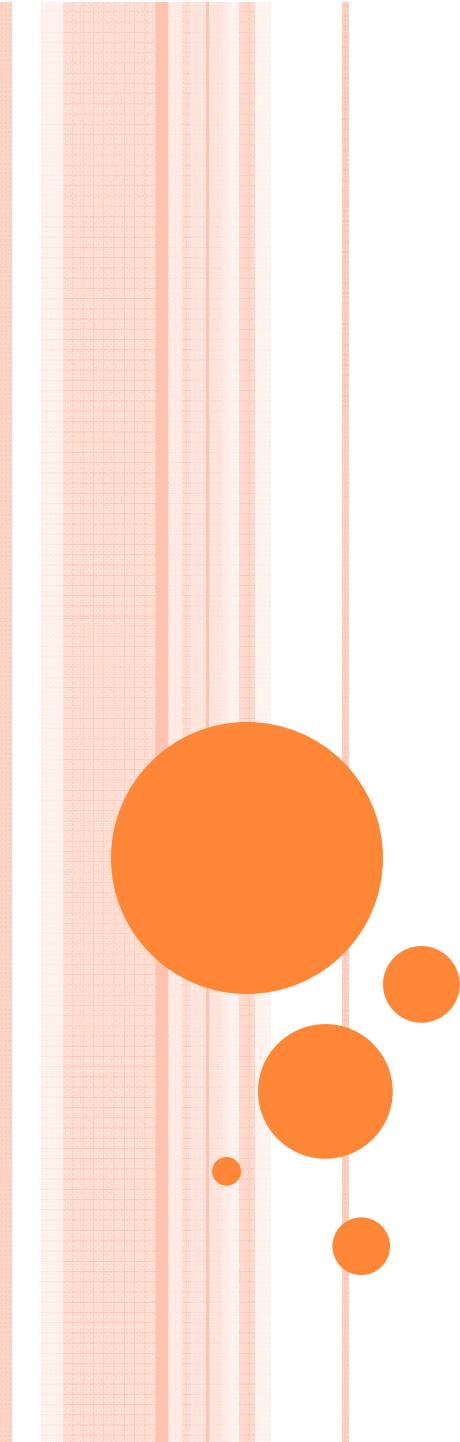
HNNP Outgoes: SWM

Payments to Private Operator	Rs. Lakhs
Payment to private operator @ Rs. 970 / Ton, 42 TPD	148.701
Extra for visitor waste (@ Rs. 485/Ton handled)	1.819
HNNP Operations (incl. secondary collection and transportation)	
O & M expenditure (excl. permanent staff salaries)	6.47
Permanent staff salaries	62.70
Total Outflow, Primary Collection & Transportation; Secondary Collection and Transportation	219.69
Incremental Spend (approx.)	51
Capital expenditure for additional system requirements)	23.77

HNNP Revenues: SWM

Category of User	Number	Proposed Charge Rs/month	Potential Revenue Rs./annum
Shops	910	35	382200
Kiosks	271	10	32520
APL Households	15000	20	3600000
Pilgrims	125000	5	6250000
TOTAL (Rs. lakh)			102.65
Revenues At 50% Collection Eff.			51.3

- Treatment: Compost Plant to be developed at Idgah site, on PPP basis
- Safe Disposal: Shared landfill to be developed (with Itarsi) at Baikhedi



FOR MORE INFORMATION REFER TO
HOSHANGABAD CITY SANITATION PLAN, 2010.
HOSHANGABAD SITUATIONAL ANALYSIS REPORT,
2009