



Addressing the Urban Sanitation Challenge

Ground realities and emerging opportunities

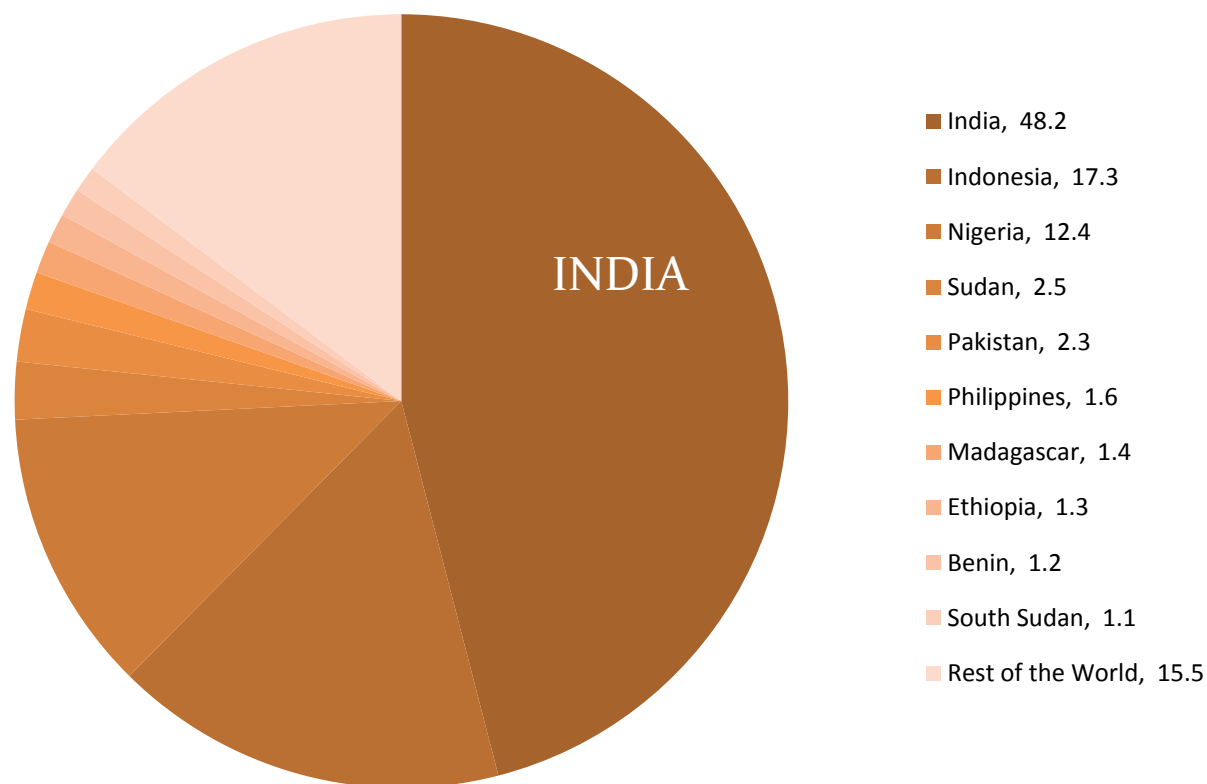
Meera Mehta

Symposium on Urban Sanitation Challenges in the Developing World

BIRAC, Bangalore Nov 6 2014

Challenge of Open Defecation

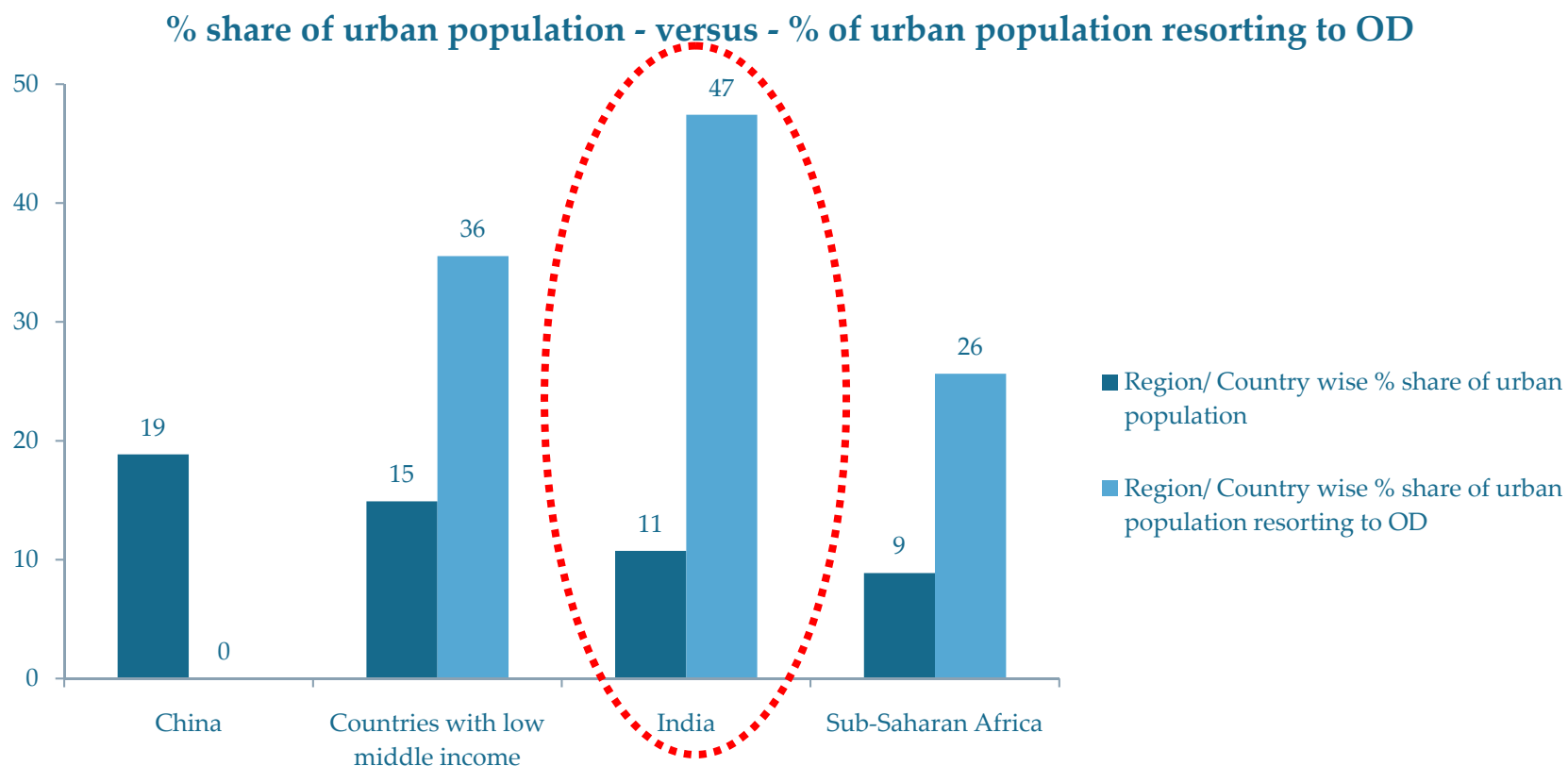
**Globally, 100 million people in urban areas
resort to open defecation
Of these 48% are in India**



Source: Based on information from WHO / UNICEF Joint Monitoring Programme (JMP – 2013) for Water Supply and Sanitation; Retrieved on 20th Sep 2013 from <http://www.wssinfo.org/data-estimates/table/>

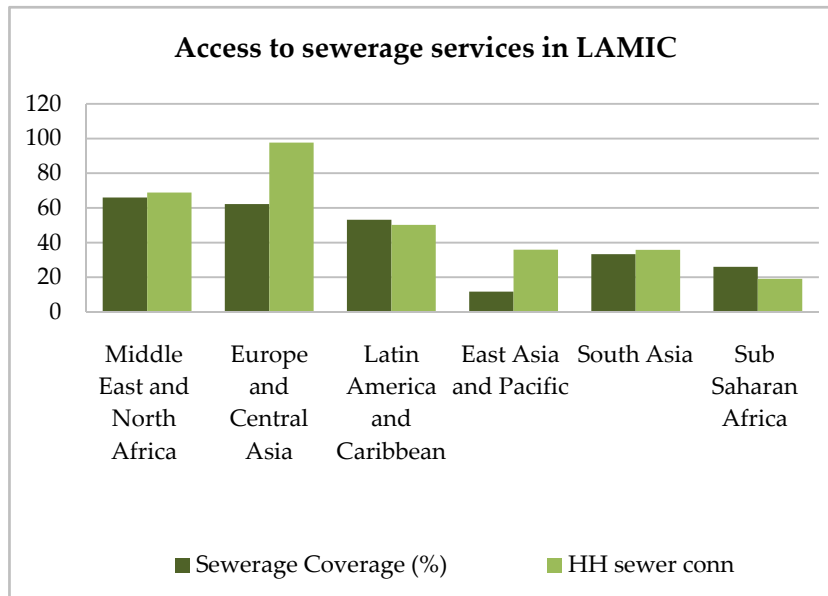
India story – faltering on sanitation!

Share of urban population for India is **11%** as compared to
India's share **47%** of urban population resorting to open defecation

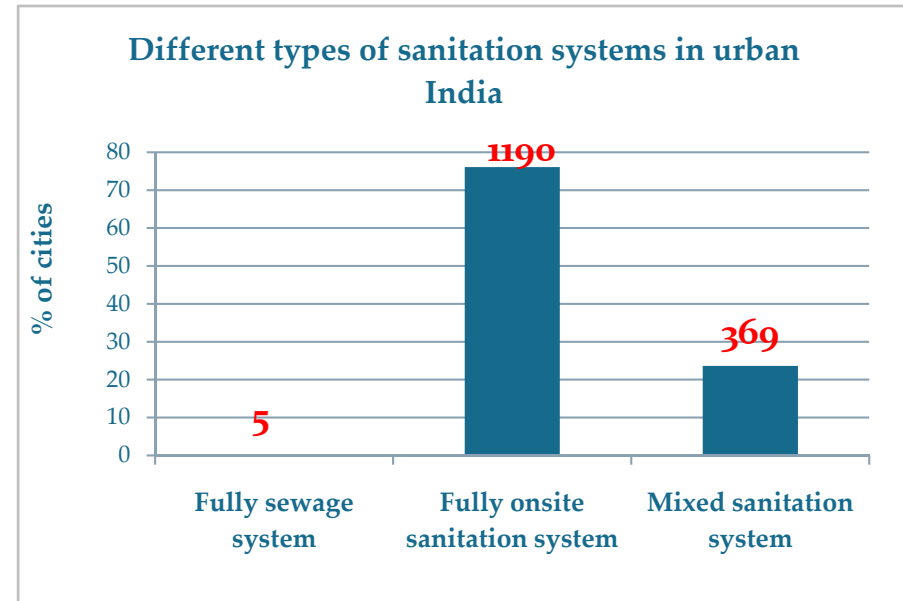


Source: WHO / UNICEF Joint Monitoring Programme (JMP – 2013) for Water Supply and Sanitation; Retrieved on 20th Sep 2013 from <http://www.wssinfo.org/data-estimates/table/>

Challenge of waste water



Source: IBNET(2011), WHO (2010)



Source: CEPT University, PAS Project

- ✓ JMP-WHO data for 2010 suggests **limited access to sewerage connections across most regions** except ECA
- ✓ In India – only 5 cities have universal sewerage systems whereas **nearly 1200 cities have fully onsite systems**

Global goals and targets beyond 2015

From July 2013 Report of the UN Secretary General

A life of dignity for all: accelerating progress towards the Millennium Development Goals and advancing the UN development agenda beyond 2015

*“No person should go hungry, lack shelter or **clean water and sanitation**, face social and economic exclusion or These are **human rights, and form the foundations for a decent life.**” (p.3)*

From JMP's Post-2015 group for WASH

- ✓ Universal access to adequate sanitation at home (2040)
- ✓ Complete elimination of open defecation (2030)
- ✓ Sustainability and progressively eliminating inequities

From UN- Open Working Group on SDGs July 2014 zero draft

- ✓ Proposed Goal 6: Ensure availability and sustainable use of water and sanitation for all
- ✓ By 2030 universal access to safe and affordable water and adequate sanitation and hygiene for all
- ✓ Improve water quality by **reducing pollution, doubling wastewater treatment and increasing recycling and reuse** by x% globally

Why is urban sanitation important?

- ❑ **Much greater negative externality of poor sanitation in urban areas**
- ❑ Significant public health impacts of open defecation
 - stunting, outbreaks of diseases: **higher in urban due to density**



Increasing priority of government

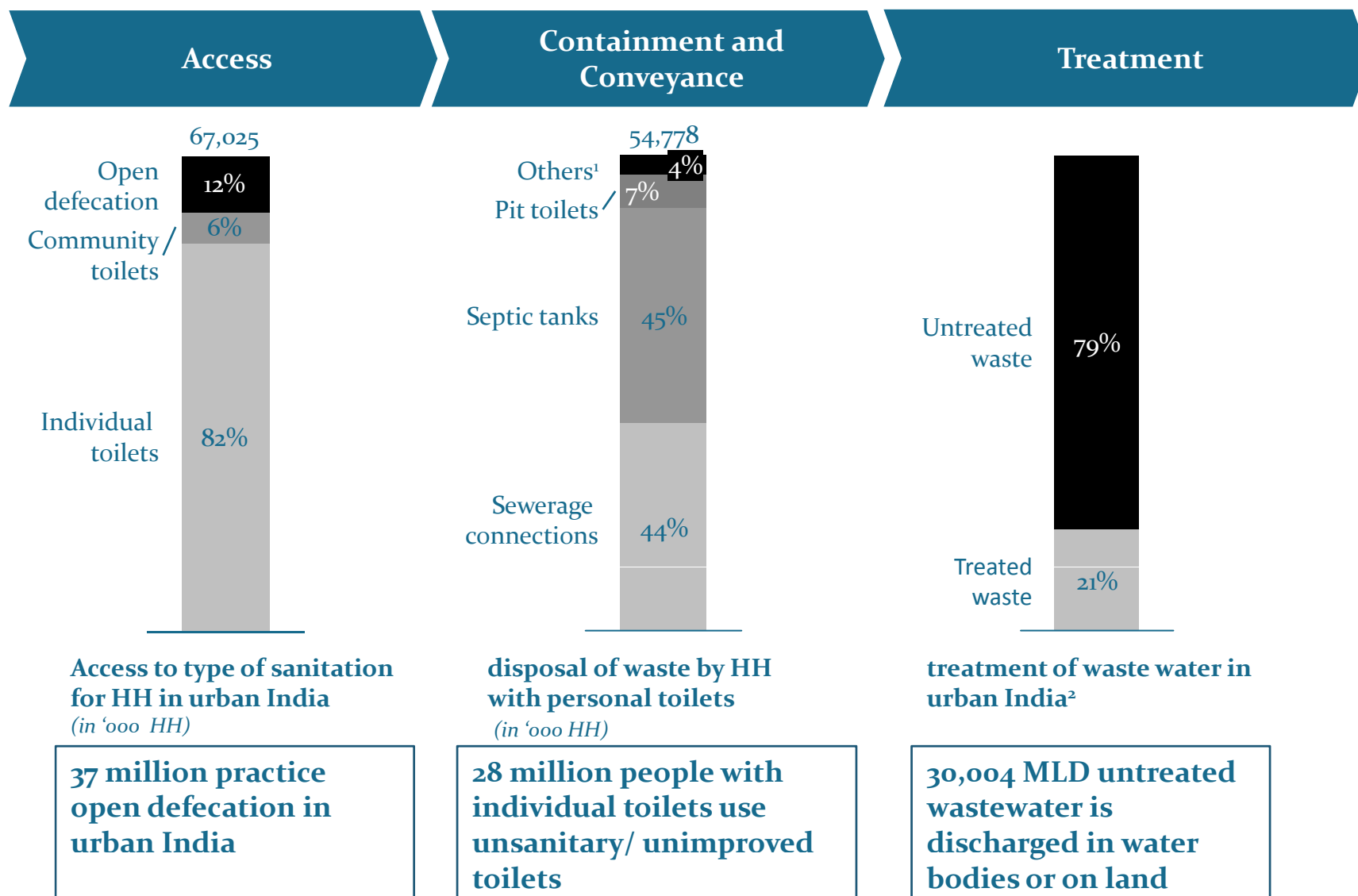
“Pehle shauchalaya, phir devalaya...” “First toilets, then temples...”

Narendra Modi, Prime Minister of India
At a function organized in New Delhi for the youth, October, 2013

The Union Cabinet approval to an ambitious 5-year Swatchh Bharat Mission covering all 4041 statutory towns starting Oct 2, 2014 with a focus on elimination of open defecation and

Swatchh Bharat Programme for Urban Areas: PIB, Government of India Cabinet, September 24 2014

There are large gaps in urban sanitation service chain



Note: (1) Others category includes census categories of “pour flush toilets-other systems, night soil disposed into open drain and latrines serviced by humans and animals”, (2) based on “Status of Sewage Treatment in India” report by Central Pollution Control Board of India (CPCB), 2005

Source: Analysis of access, and containment and conveyance is based on information from Census of India 2011

Service components in urban sanitation

Goals of improved sanitation	Service components in the value chain				
	User interface	Collection and /or storage	Conveyance	Treatment	Reuse / disposal
	Access		Waste Management		
Equity and access					
Public health					
Environment					

Source: Mehta, Meera and Mehta Dinesh (2013), "City sanitation ladder: Moving from household to citywide sanitation assessment", Journal for Water, Sanitation and Hygiene for Development, IWA Publishing, forthcoming.

Major Challenges in Urban Sanitation

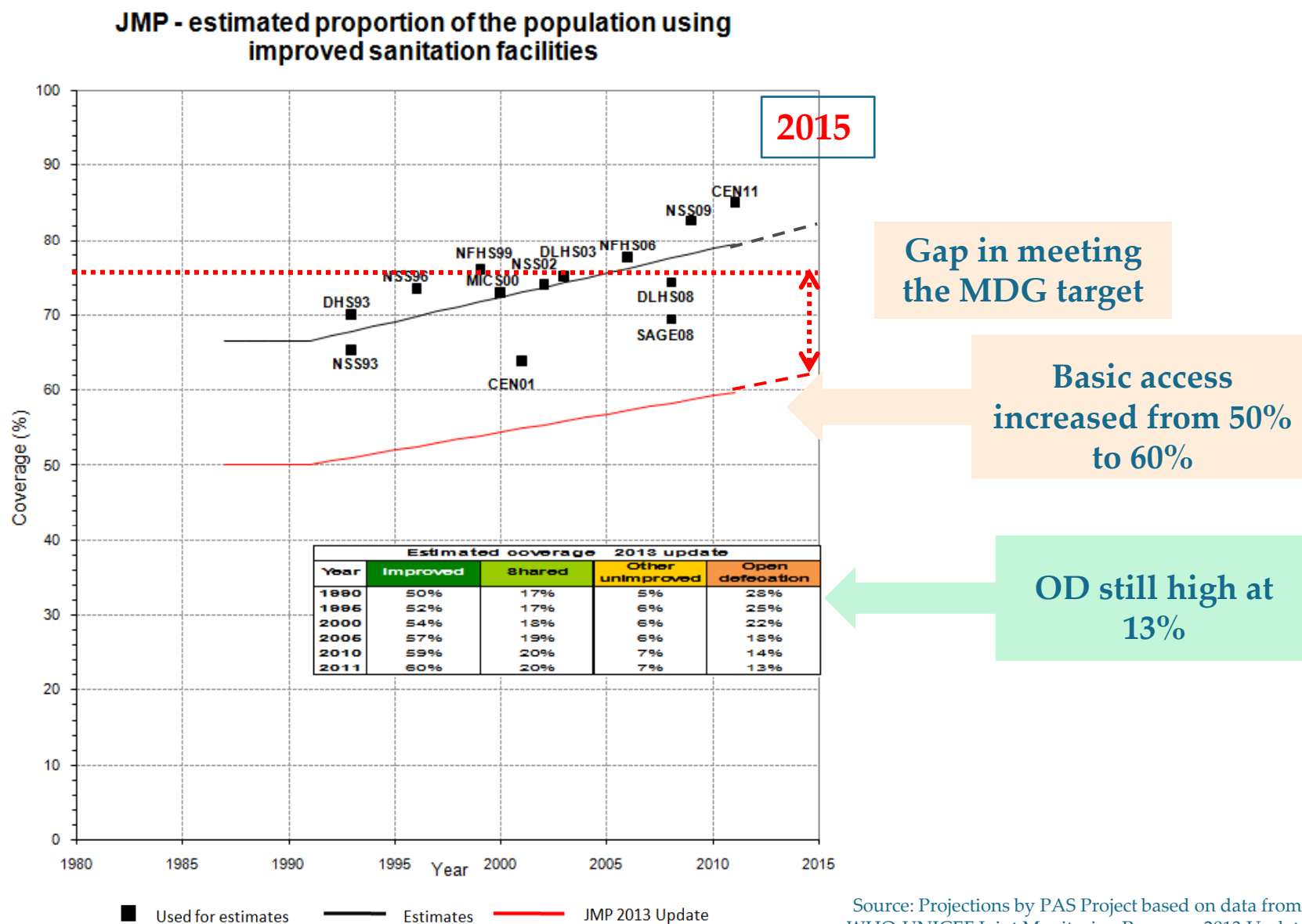
- **Access and equity**
 - ✓ Eliminate open defecation
 - ✓ Ensure universal access to adequate sanitation

- **Waste water management**
 - ✓ Treatment of waste water /fecal sludge – collection, conveyance and treatment
 - ✓ Reuse of treated waste water and sludge

- **Financing and governance**
 - ✓ Institutional capacity at local level, regulation
 - ✓ Financing options and mechanisms

Eliminating open defecation

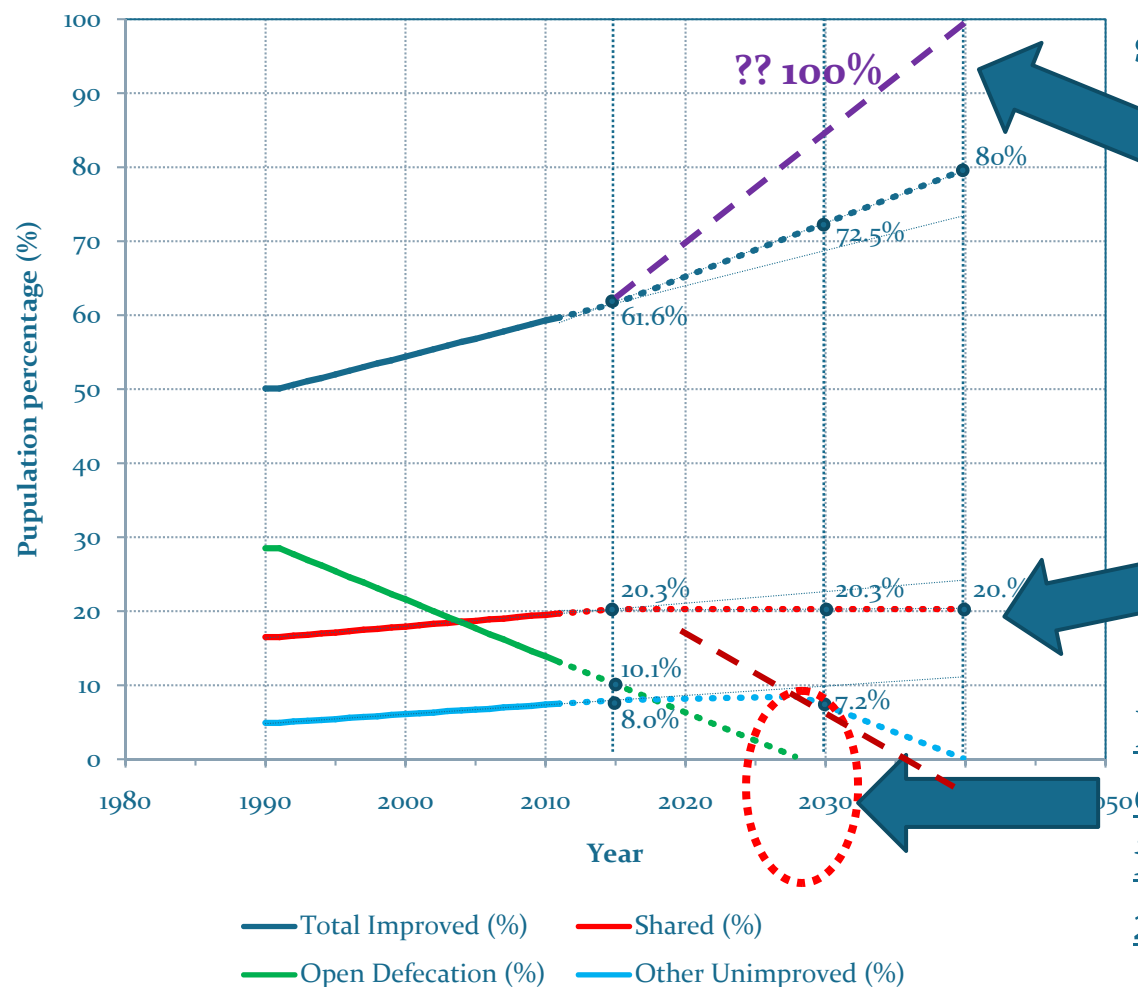
Progress on MDG – missing the target?



Source: Projections by PAS Project based on data from WHO-UNICEF Joint Monitoring Program, 2013 Update

Progress on new 'SDG' – by 2030 / 2040?

Estimated proportion of the population using improved sanitation and population resorting to OD



Policy changes needed for universal improved sanitation by 2040

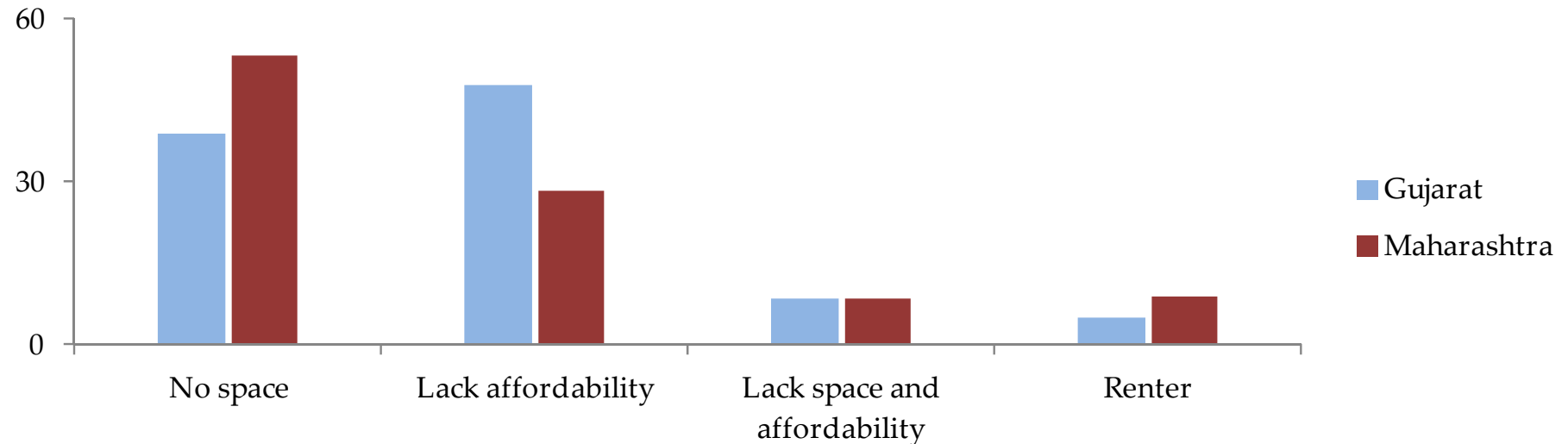
The rate of increase for 'improved sanitation at home' will need to increase significantly – double/triple

Need to convert community toilets by promoting sharing by 5 households/ families

Based on past trends open defecation from urban India is likely to be eradicated by 2028.



Space and affordability constraints



- Latent demand?
- Two main reasons for not having “own toilets” in our cities”
 1. **Lack of space to build an own toilet**
 2. **Lack of affordability to meet the toilet costs**

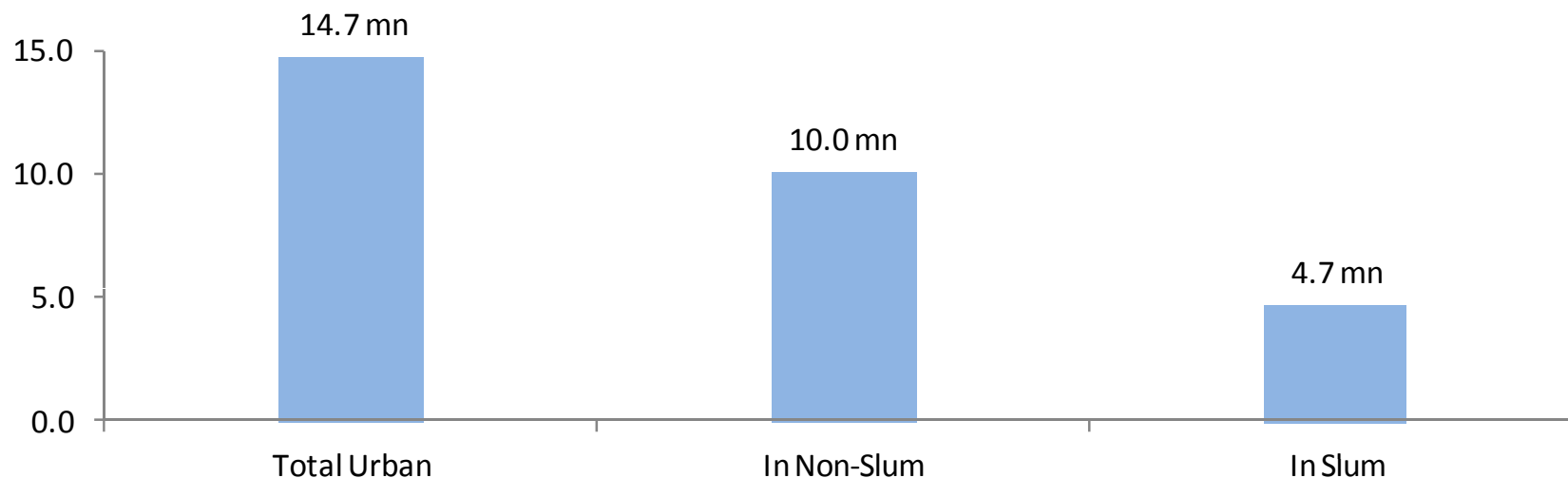


Latent demand for “Own toilets”

Based on the 2011 Census of India, there is high latent demand for ‘own toilets’ in urban India at **14.7 million households**.

(This could be much higher given the definition used in Census)

Two-thirds of this demand is in “non-slum” areas.



Demand led scheme for improved sanitation

Support to Wai & Sinnar for developing Demand Based Own Toilet Schen

- Each household to be provided with a subsidy of INR 5000 per household for individual toilets or toilets shared by up to four households
- In our surveys, households expressed a willingness to contribute between INR 4000 – 6000 upfront for a toilet
- Given this willingness to pay, households will be able to afford a toilet if ~3 – 4 of them share a toilet

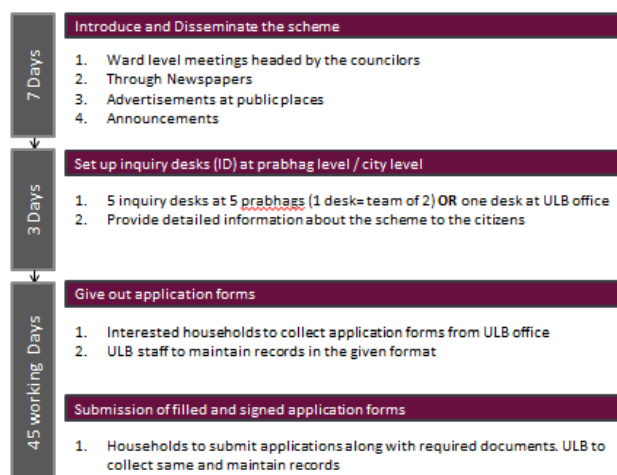
Scheme details	Number of households sharing a toilet			
	Households (Subsidy - INR 5,000/HH)			
	1	2	3	4
Cost per toilet (in INR) ¹	~30,000	~30,000	~30,000	~30,000
Subsidy per toilet provided by the ULB	5000	~10,000	~15,000	~20,000
Effective cost per HH	~25,000	~10,000	~5,000	~2,500

- Estimated willingness to pay upfront per household is ~INR 4000 – 6000² implying that 3-4 households can come together to afford a toilet directly
- An assessment is being made of potential for consumer financing through micro-finance institutions, commercial banks, credit cooperatives, and self-help groups

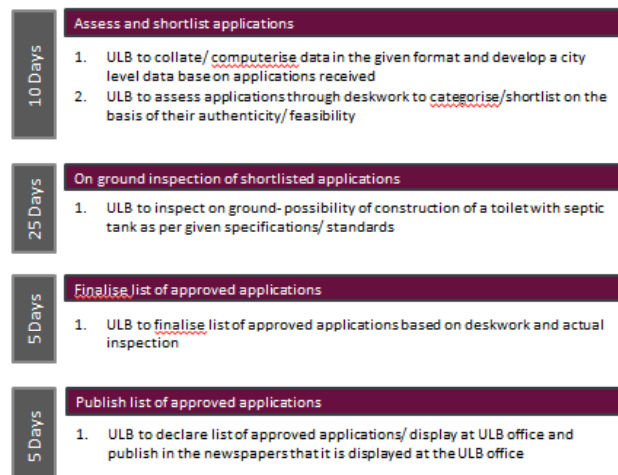
Note: (1) Based on standard government schedule of rates and local contractor estimates, estimate includes cost of superstructure and septic tank (2) Based on 2013 focus group discussions with ~30 households each in Wai and Sinnar

Unlocking the latent demand through a partial incentive subsidy scheme...

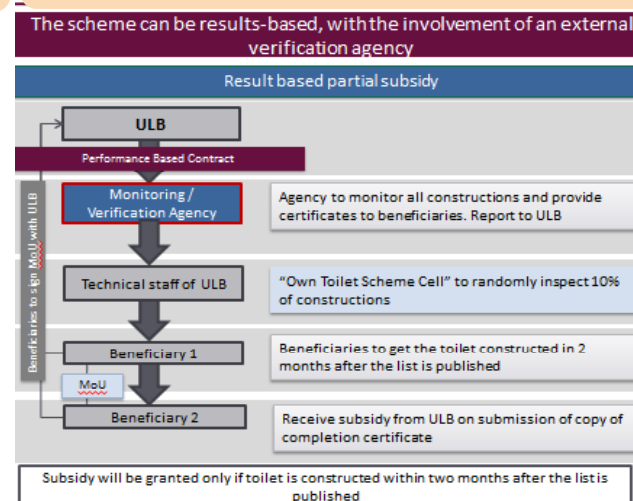
1. Dissemination of scheme and receiving applications



2. Shortlisting of beneficiary



3. On-ground Implementation



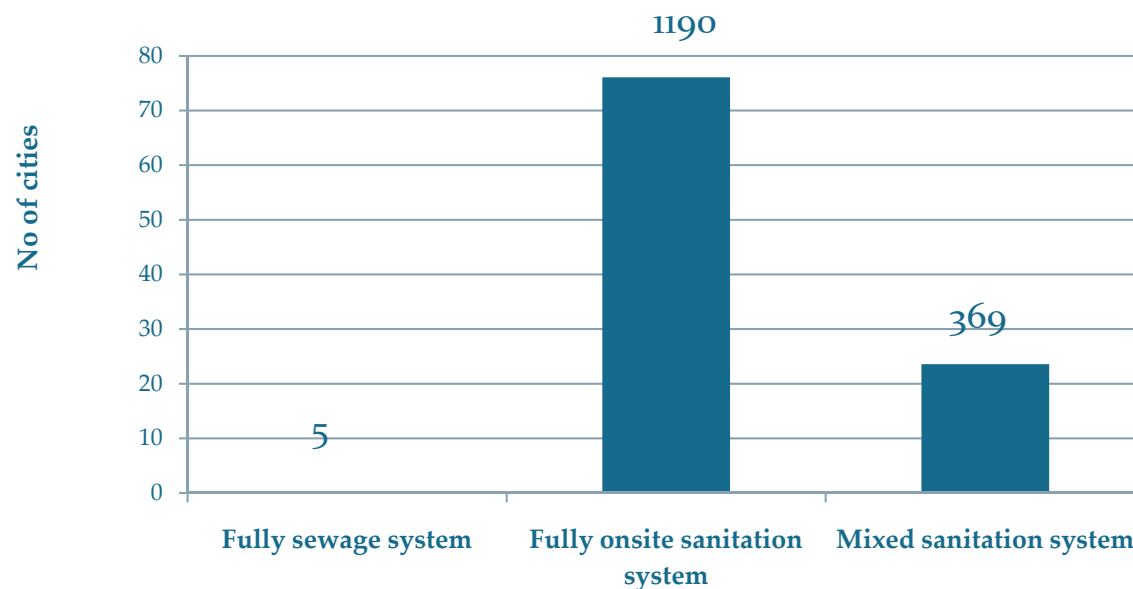
Addressing affordability constraint

- **Partial subsidy** through a **demand based scheme** at city level can address affordability concerns to some extent
- Household surveys suggest that most households that lack own toilets will **require access to credit** to build a toilet. There is some willingness to take a loan to build a toilet
- How do we get **potential lenders to lend in a city** that develops a local city level program?

Options for waste water management

Sanitation systems in Urban India

Different types of sanitation systems in urban India



- ✓ Only 5 cities are reported to have 100% sewerage system
- ✓ Nearly 1200 cities have fully onsite sanitation systems

76 % of cities in **India** are fully dependent on **on-site sanitation systems**

24% are dependent on **mixed sanitation systems**

Source: Based on the SLB data submitted to GOI by 16 states covering 1564 cities

Onsite sanitation – emerging questions

38.2% URBAN HHs HAVE **SEPTIC TANKS**



Are septic tanks linked to soak pits

Are they built as per Codes / Specifications ?

How often are they cleaned ?

Where does the effluent flow ?

What happens to the SLUDGE?

Support to Citywide Strategies

CSP– Support to small and mid-sized cities

These cities were selected by the Maharashtra Jeevan Pradhikaran and the Water Supply and Sanitation Department of Maharashtra for the development of City Sanitation Plans (CSPs) with the support of CEPT University



Support to cities in state of Maharashtra, India

City Sanitation plan options for the cities



Citywide sanitation improvement plans with non-conventional systems that would have the same outcomes



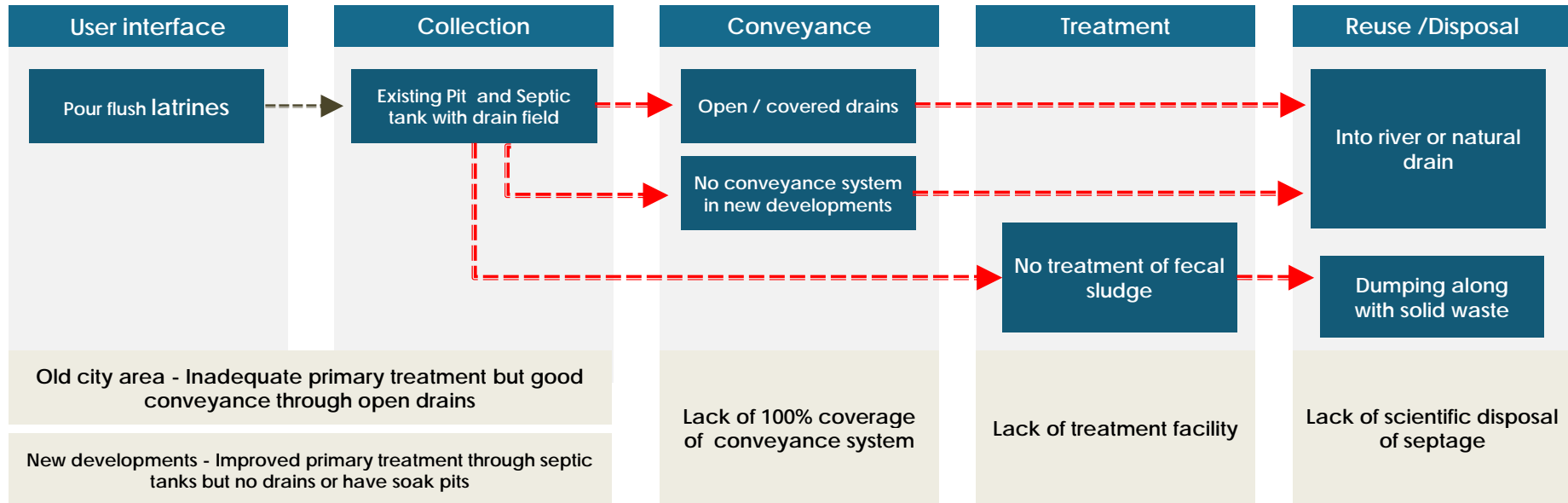
Key Activities in Preparation of City Sanitation Plans

Based on local priorities the following solutions have been short-listed for each city



Implementation of citywide solutions based on local priorities

Existing situation in cities



-----➔ Missing links in Sanitation value chain



Existing Sanitation situation in small cities



USER INTERFACE

**COLLECTION/
STORAGE**

CONVEYANCE

TREATMENT/ DISPOSAL

Septage collection: Inappropriate design and location of household septic tanks often makes access difficult for regular cleaning and emptying

Individual toilets

Septic tanks are below the toilets and don't have access



Inaccessible septic tanks with sealed tops



Septic tanks often empty into drains



Community toilets

In many toilets, septic tanks located behind the complex



2 Chambered septic tanks located behind community toilets



Newer toilets have 2-3 chambered septic tanks with access covers



Wastewater collection and conveyance: Current issues

Effluent and grey-water being discharged into drains



Widespread clogging of drains



Current status of disposal of wastewater and septage in cities

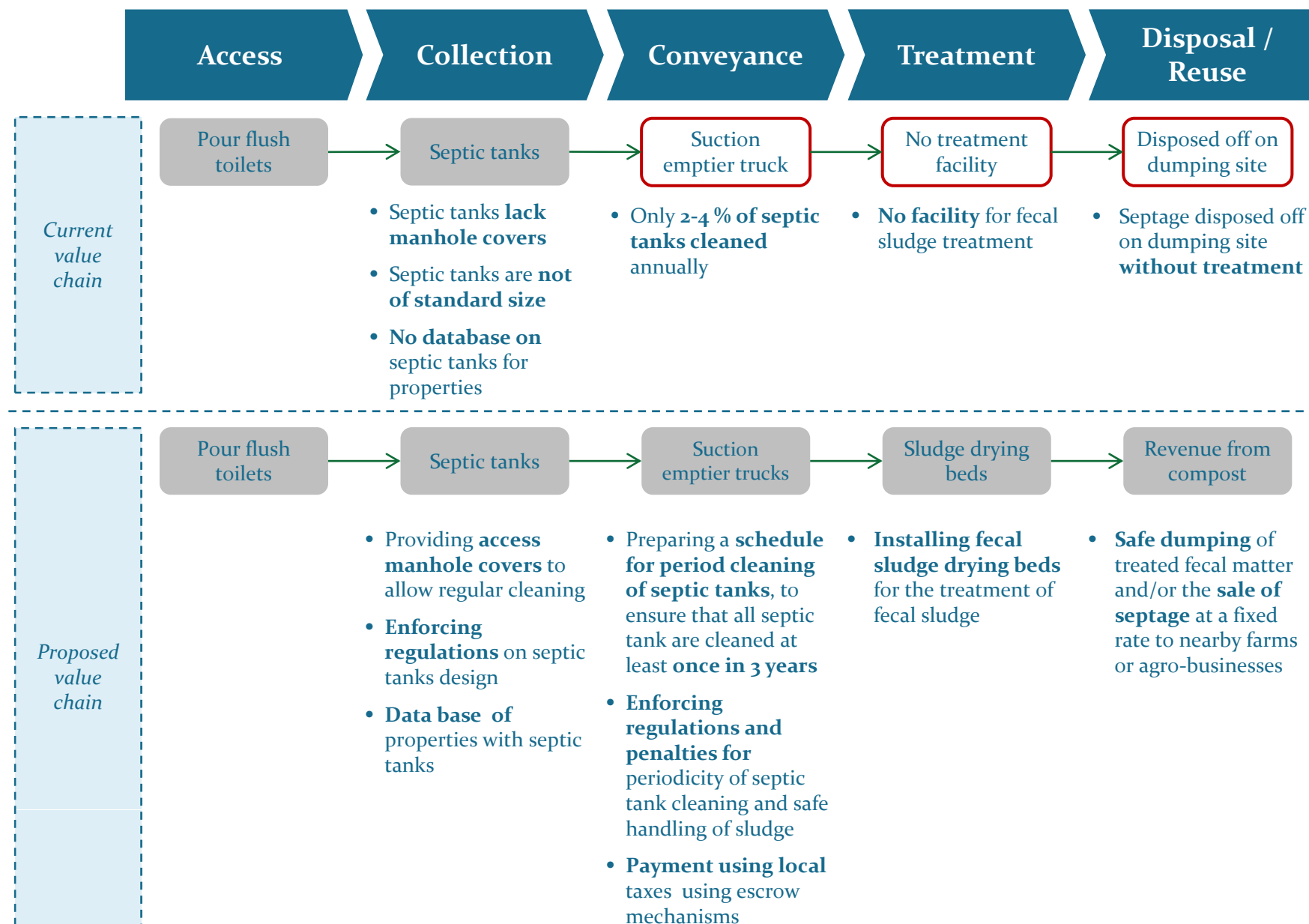
Wastewater dumps into the river



Septage is disposed off in the open



End-to-end integrated fecal sludge management (IFSM)



From complaint redressal to a regular IFSM service

Current septage management practice

~2-4% of tanks cleaned per year
(once in >8-10 years)



Recommended septage management practice

~33% of tanks cleaned per year
(once in 3 -5 years)

Current barriers

- 1 Cleaning is done **on-call** by the household, who do not see the need for regular cleaning

The **cleaning services** of the ULB are currently treated as a **complaint redressal** system for overflowing septic tanks rather than a regular cleaning and maintenance service
- 2 Each town has only **1 truck, owned and operated by the ULB**
- 3 Households pay ~INR **400-1000** to get **tanks cleaned**, but only once in >8-10 years when the tanks overflow

Proposed solution

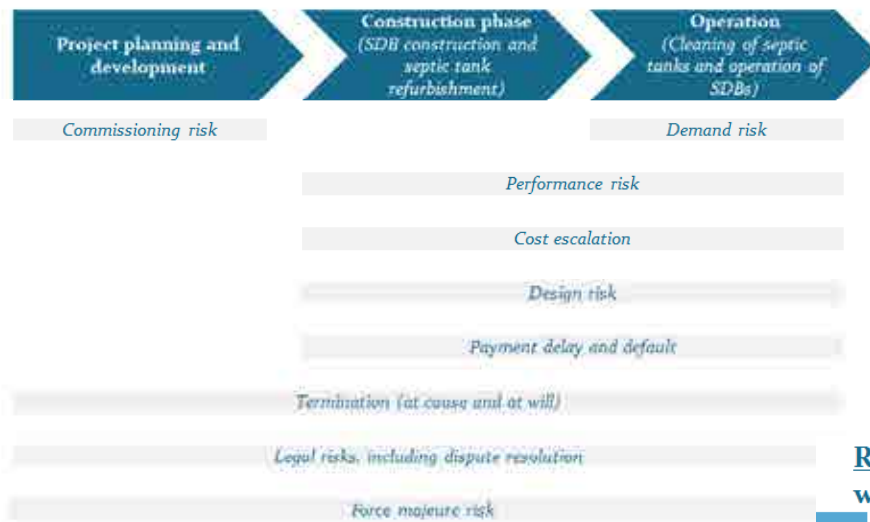
- 1 Septic tanks will be cleaned on a **pre-determined schedule**

Regulations and penalties will be set in place to **ensure periodic cleaning**

Awareness generation activities will educate households about the need for regular cleaning
- 2 Each town will get an additional **1- 3 trucks to meet service standards**, which will be **operated by a private player**
- 3 **Local taxes levied** by the ULB as **per municipal act¹** will be used to **recover the operating expenses** for regular cleaning

Good risk mitigation and allocation can attract good contractors and help reduce contract price

Risk mitigation: There are several types of risks that must be managed across the lifecycle of any public private partnership



Source: ADB, "ToolKit for Public Private Partnerships in Urban Water Supply for the State of Maharashtra, India; Ministry of Finance, Government of India, "PPP Toolkit for Improving PPP decision-making processes in water and sanitation, FPIAF, Vijay Sarna, "Risks in PPP projects in Western India"

Concerns about addressing the risks were raised by private sector during interactions

Several **risks** involved during **lifecycle** of the **project**, where **PPP** is involved.

These need to be **addressed**

Risk mitigation: Private players highlighted a number of concerns with public private partnerships that need to be addressed

Termination

"The contract should have a clause defining a 3 month notification period in case of termination. It should also have a dispute resolution mechanism."

– Kadam Enterprises

Delayed payments

"Ideally, bills should be cleared in 30 days, and for late payments, interest should be paid at the rate of 8% per annum."

– Manisha Enterprises

Transparent procurement

"We would rather not deal with the ULB directly, there are always issues with internal politics. If there is a mediator in between then we would be interested."

– Envicare

Cost escalation

"For a fixed-fee contract for regulated schedule, we cannot offer 24 hour emergency service. We will only work 8 hours a day, otherwise it is likely that we will over-use our truck."

– Aditya Enterprises

"Another key issue is the escalation of fuel costs. The contract should clearly account for that."

– ZR Enterprises

Performance risks

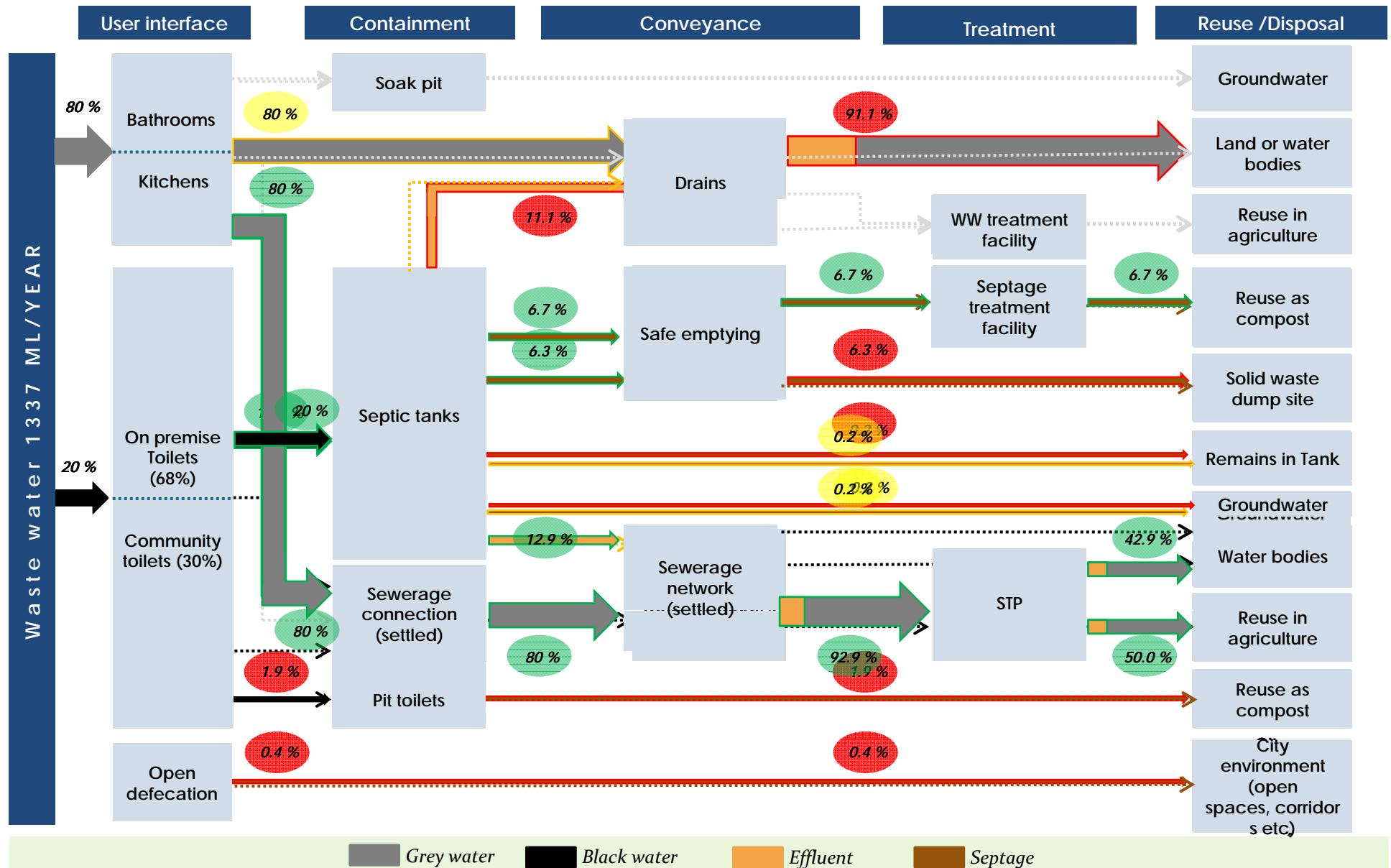
"If we work on a regulated schedule, it will be difficult to get household signatures. That will become complicated, and I don't want my payment to suffer."

– Ugale Septic Tank Cleaning Services

"I have tried to do a regulated schedule on my route, but that has been difficult. People always say, 'come back later', and it falls apart."

– Aditya Enterprises

Wastewater flowchart of the WSP - Wai





Financing options for sanitation

Leveraging funds for making cities ODF

□ **Demand led schemes**

- Active participation of state and urban local governments with locally led schemes with applications from households
- Partial subsidies to unlock latent demand

□ **Leverage limited public funds by exploring innovative new sources of funds**

- Facilitate access to affordable credit for all households
- Policy changes to increase credit flows – Explicit focus on sanitation in Priority Sector Lending (PSL)
- Explore new sources of funds

Evidence on household finance for sanitation

Most MFI and HFI records show 99%+ repayment record

A number of MFIs have provided toilet loans

- Guardian has supported over 27000 households with toilet loans
- Water.org support to 20 MFI partners
- ESAF, SKSRDP, Grameen Koota have also provided sanitation loans

Besides MFIs, there are other institutions

- Cooperative sector
 - Coop banks, and Coop credit societies
- Scheduled commercial Banks
 - housing improvement loans SBI, HDFC Bank, etc.
- HFIs –
 - housing improvement loans e.g. GRUH, others

But, additional funds are needed

- High potential demand in the country for **household level sanitation finance (credit)** – Loan fund of ~Rs 20,000 crore - to achieve full coverage of own toilets
- In the past availability from public funds (GoI's ILCS, state government programme – e.g. Nirmal Gujarat, MSNA etc) was less and failed to leverage additional funds – **Swatchh Bharat Program for urban areas envisages a partial subsidy of ~ Rs 5000** (allocation ~Rs 5000 crore) – so need to leverage additional funds
- MFI lending is **limited and faces constraints**: high costs, need to consider sanitation as part of 'productive assets', difficulty in meeting mobilisation costs, added costs of new product and monitoring

Funds are needed for three purposes

- ❑ **Partial Subsidies** to unlock demand and improve affordability
- ❑ **Debt funds for on-lending** by lenders – MFIs, HFIs, AHFIs, - at affordable and competitive rates
- ❑ **Support grants**
 - For lenders to meet mobilization /monitoring costs, which cannot be easily covered through capped margins
 - For Cities/ ULBs to meet costs of technical support in preparing demand led schemes, monitoring
 - For statewide /local campaigns, awareness generation

What is required to make all cities OD free in 5 years

INR Crores		
Investments for toilets	64,447	Assuming it takes INR 30 thousand to build a toilet
Partial incentive subsidy	12,371 (19%)	Assuming Rs 5000 per HH for all households not having a toilet
HH Savings	10,392 (16%)	Assuming Rs 5000 and Rs 3000 for APL and BPL HHs respectively
Loans	41,684 (65%)	
Loan Fund	22,755	Considering repayment period of 3 years – returnable capital
Grants	14,678	Subsidy + support costs
Support costs	2,306	Administration, technical assistance to HHs and monitoring costs, awareness generation
Partial incentive subsidy	12,371	
Leverage	4.39	Investments/Public costs
	8.78	If half of the public costs are mobilized through CSR , etc.

Source: Estimates based on analysis by the PAS Project, CEPT University, using data from Census of India 2011 and base. Monetary figures are in current prices.

Potential sources of funds

□ Government/ donors

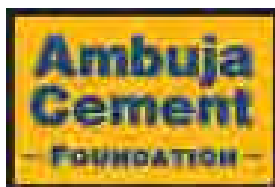
- ✓ Government of India, state government, donors through **increased allocation to household sanitation**
- ✓ **Local governments from their own funds** to meet partial subsidy costs

□ New sources

- ✓ **CSR** as per the provision in the new Companies Act
- ✓ **Social impact investors** emerging as a potential new source..
- ✓ **Crowd funding** for defined social causes
- ✓ Increased flows from **commercial banks** through PSL policy changes

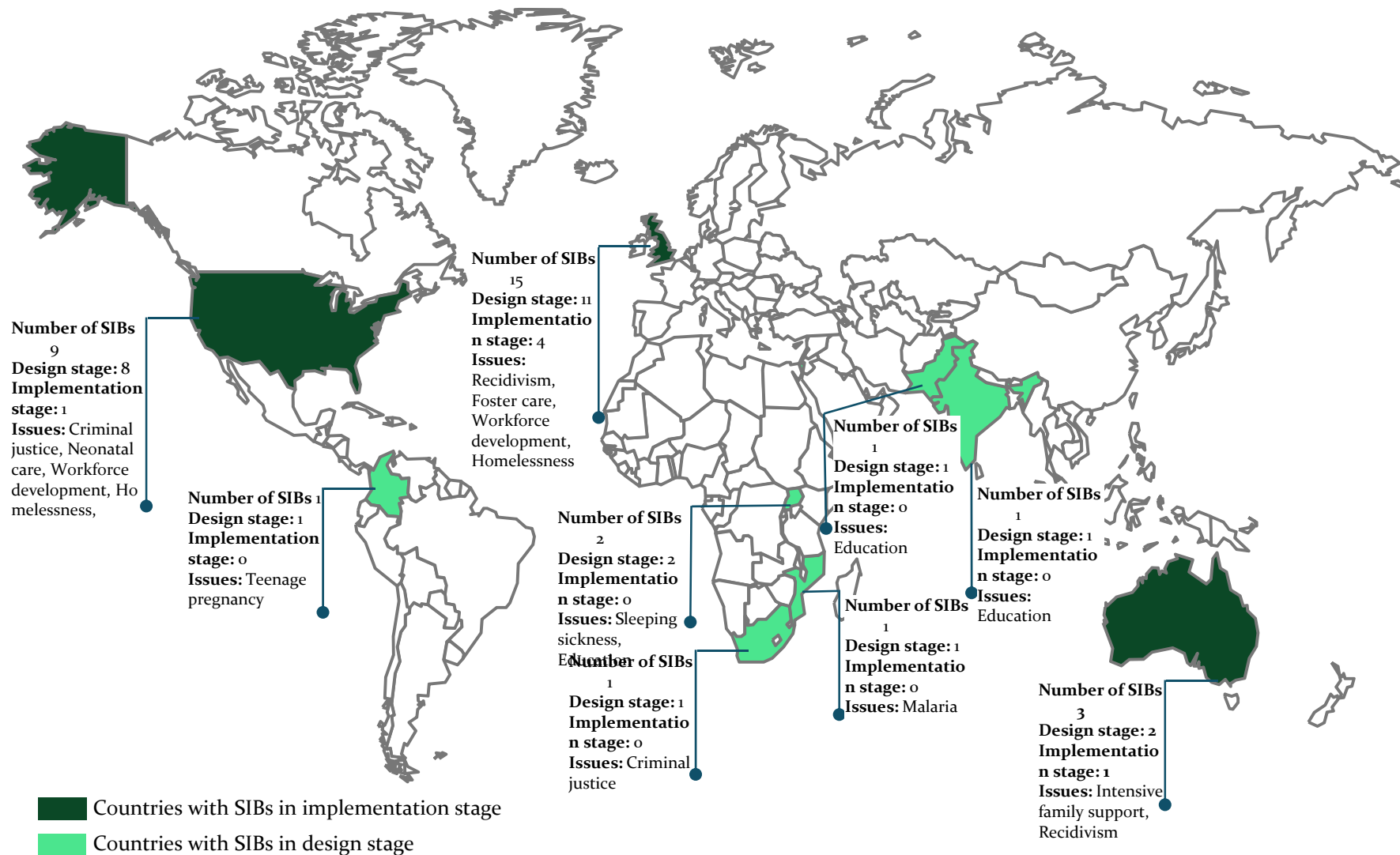
CSR – a potential new source

- The Companies Act, 2013 allows new models of social engagement by mandating that large companies spend 2% of their three-year average annual profit towards corporate social responsibility (CSR)
 - ✓ potential estimated annual flows from CSR of **Rs 17,000 Crores**
- Though sanitation is included in the list of activities, it is still challenging to direct **CSR funds to urban sanitation**
- Many companies already active in sanitation space but largely in rural areas – HUL, Ambuja Cement, ACC, Amul, GAIL, NTPC



Its community development work is based on its mission and underscores our belief in communities and in our role as catalysts to bring in change.

SIBs have been used globally to generate investment for a range of social issues



Social impact investors

- Social impact investors emerging as a potential new source.. **High net worth individuals (HNI), Institutional social investors, Foundations**
- ▣ For example, a recent 3-year Debt Funds for Cancer Cure by HDFC Mutual Fund mobilized about Rs 77 + Rs 180 crore. **The dividend from this was provided to Indian Cancer Society.** The first HDFC-CC Debt Fund provided Rs 11 crore to ICS in two years.

**HDFC DEBT FUND FOR
CANCER *cure* 2014**
A 3 year closed ended capital protection oriented income scheme®



Crowdfunding is fast emerging as an important source



2012- More than 450 Crowdfunding Platforms

- 2011- Amount raised US\$1.5 billion
- 2014- amount increased to US\$ 5.1 billion

Crowdfunding Platforms- Approaches and Experiences

Spacehive

Crowdfunding- Civic Projects

- First funding platform for **Civic Projects**
- Fee charged from Project conceptualizer only when targeted goal is achieved

Milaap

Indian Micro-lending Platform

- Crowd provide interest-free loan to Milaap, no interest charged to lenders, Milaap charges 5% fee from Field Partners
- **Funds construction & renovation of toilets for individual households in rural & semi-urban areas**
- Till June 11, 2014; **1733 sanitation loans** and have overall raised US\$ 1,506,655 with 9,785 loans

Crowdfunding under the purview of SEBI

- Equity and debt based Crowdfunding under SEBI purview
- SEBI has invited suggestions from industry and markets regarding different possible structures for crowdfunding within existing legal framework

Fund mechanisms to capture new sources

Possible structures at different levels

- **National /state - Urban Sanitation Development Impact Fund (USDIF)**
 - ✓ to mobilize debt funds for on-lending at affordable costs
 - ✓ to meet the support costs of potential lenders
 - ✓ Sourced by CSR, government/donor funds, commercial banks through PSL

- **State / City sanitation fund (CSF)**
 - ✓ to meet support costs for city governments
 - ✓ to provide partial subsidy to households
 - ✓ Sourced by CSR, local benefactors, government/donor funds

Summary recap – 1

- Emerging national (and global) priority on sanitation and particularly on **eliminating open defecation**
- High latent demand for 'own toilets' in urban areas, to facilitate this need to look for **innovative finance**
 - ✓ Public funds are used to **LEVERAGE** additional resources
 - ✓ To ensure that the new schemes are **DEMAND** led and not supply driven
- It is necessary to evolve **appropriate fund mechanisms to capture and channel** the new sources to finance institutions, households and cities
- For waste water management, the need is to focus on **onsite sanitation systems**. Build **capacities of local governments to develop and manage PPP contracts**

Summary recap - 2

- In the new urban sanitation campaign, key roles will need to be played by **urban local governments and 'potential lenders'** – who will work with households to ensure construction and use of toilets, and undertake PPP contracts

- Ensure appropriate **Policy /programs**
 - ✓ Include sanitation loans as a part of **Priority Sector Lending**
 - ✓ Use of CSR for sanitation through **an appropriate fund mechanism rather than only directly on projects**
 - ✓ **State government to promote city level ODF Plans and PPPs for IFSM services**

Thank you

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