

# ➤ A review of innovative financing options for urban sanitation

September, 2014



CEPT University



# Acknowledgements

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The Performance Assessment System (PAS) project aims at developing systems for measurement, monitoring and improvement of urban water supply and sanitation (UWSS) performance in Gujarat and Maharashtra. The PAS Project is funded by the Bill and Melinda Gates Foundation. It is being implemented by the CEPT University.

This report provides findings of the study conducted by Dalberg Global Development advisors, Mumbai to explore opportunities to attract innovative financing (public and private) in urban sanitation models in India in order to address the sanitation challenge and identify appropriate solutions. The study was conducted over the period of August 2013 to July 2014.

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# Objectives and overview

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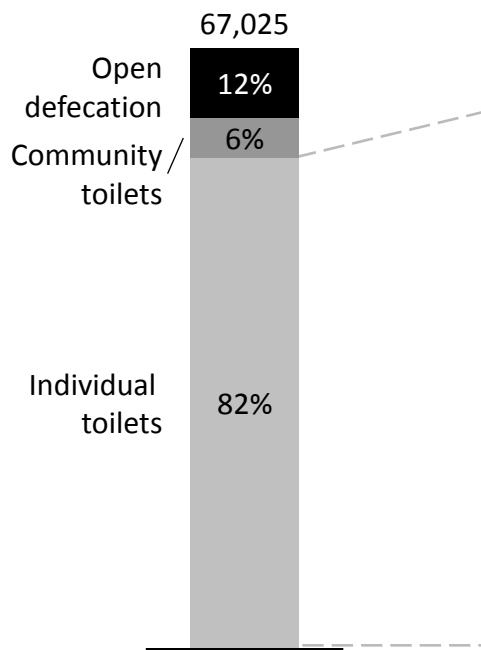
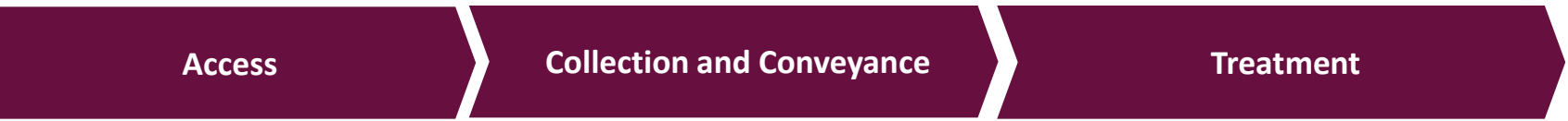
- **There is a significant opportunity to improve sanitation outcomes in urban India**
  - **Access** : ~37 million people practice open defecation in urban India
  - **Collection & conveyance**: ~28 million people with individual toilets use unsanitary methods of disposal of waste
  - **Treatment & reuse**: ~79 % of the wastewater is discharged in water bodies or on land without any treatment
- **Seizing the opportunity requires large scale investment and innovative business models** to address key gaps across the sanitation value chain
- **The study was to explore opportunities to attract innovative financing (public and private) in urban sanitation models in India in order to address the sanitation challenge and identify solutions at scale.** The scope of the project was to answer four key questions:
  - What is the current state of sanitation in urban India?
  - Which business opportunities can be established to improve sanitation services?
  - What are the financing options and players who would invest in these models?
- This document provides an assessment of different sources of finance and assesses their use across various business opportunities for urban sanitation in the Indian context

# Outline

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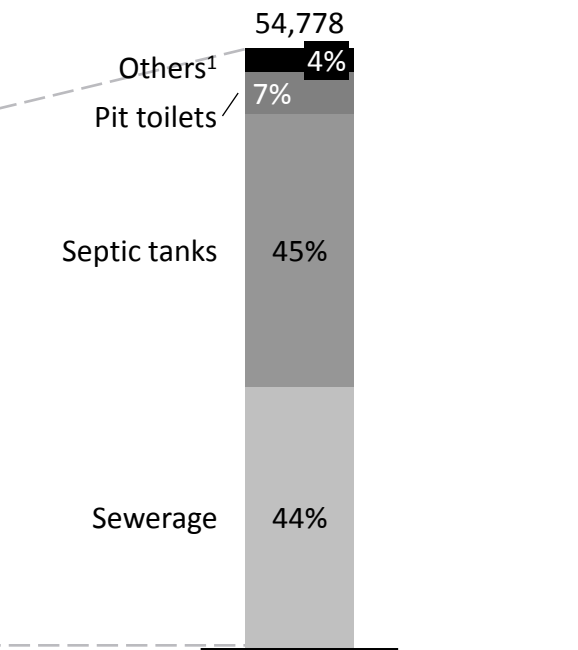
- **Context of urban sanitation in India**
  - Assessing sources of finance
  - Funding options for business opportunities in urban sanitation

# There are large gaps in sanitation in urban India, especially in access to toilets and treatment of waste



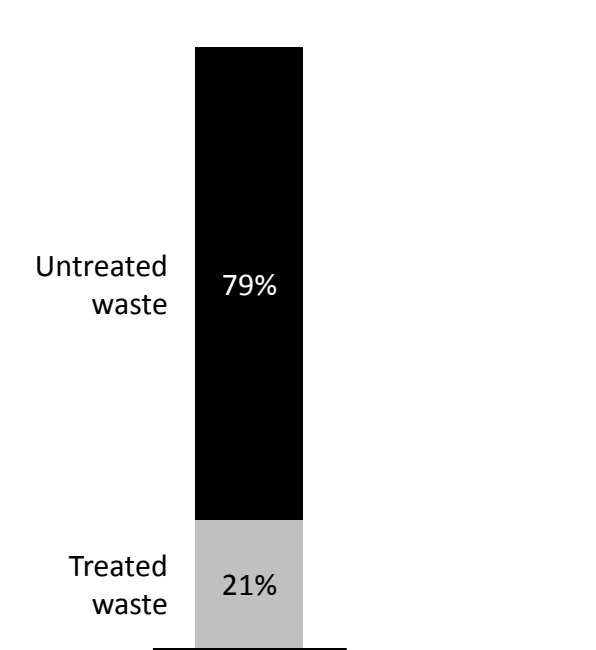
**Access to type of sanitation for HH in urban India**  
(in '000 HH)

**37 million people practice open defecation in urban India**



**Methods of disposal of waste by HH with personal toilets in urban India**  
(in '000 HH)

**28 million people with individual toilets use unsanitary methods of disposal of waste**



**Analysis of treatment of waste water in urban India<sup>2</sup>**

**30,004 MLD untreated wastewater is discharged in water bodies or on land**

Note: (1) Others includes primitive methods of C&C such as pour flush toilets-other systems, night soil disposed into open drain and latrines serviced by humans and animals, (2) "Status of Sewage Treatment in India" report by Central Pollution Control Board of India (CPCB), 2005

Source: Based on Census of India 2011

# The National Urban Sanitation Policy (NUSP), 2008 aims to fulfill these gaps to provide universal sanitation services in urban India

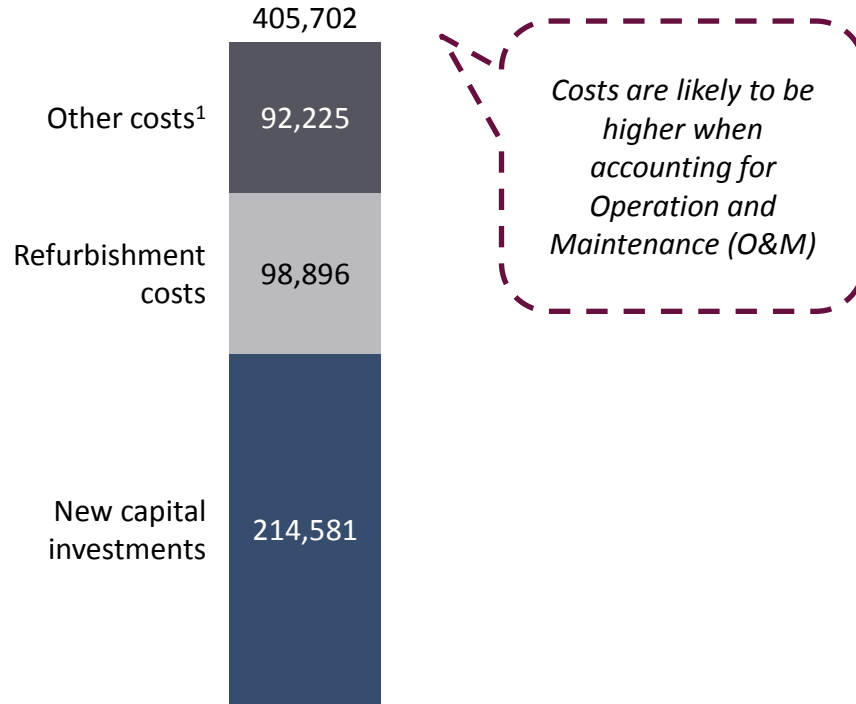
*The Ministry of Urban Development's (MoUD) National Urban Sanitation Policy (NUSP), 2008 focuses on improving sanitation facilities across the value chain, generating awareness, and bringing about institutional changes to ensure sustained efforts in sanitation*

## Key goals

<b>Access</b>	<ul style="list-style-type: none"><li>• Providing 100% access to improved sanitation in urban India by 2025</li></ul>
<b>Collection and Conveyance</b>	<ul style="list-style-type: none"><li>• Extending coverage and ensuring proper functioning of sewerage systems</li><li>• Promoting proper disposal and treatment of sludge from on site installations</li></ul>
<b>Treatment and reuse</b>	<ul style="list-style-type: none"><li>• Promoting recycle and reuse of waste for non potable applications</li><li>• Ensuring safe collection and disposal of waste</li></ul>
<b>Awareness</b>	<ul style="list-style-type: none"><li>• Generating awareness about sanitation and its linkages to public and environmental health</li></ul>
<b>Institutional changes</b>	<ul style="list-style-type: none"><li>• Strengthening ULBs to provide sustainable sanitation services delivery</li><li>• Mainstream planning and implementation related to sanitation</li><li>• Strengthening policy and regulatory framework particularly for onsite sanitation/FSM</li></ul>

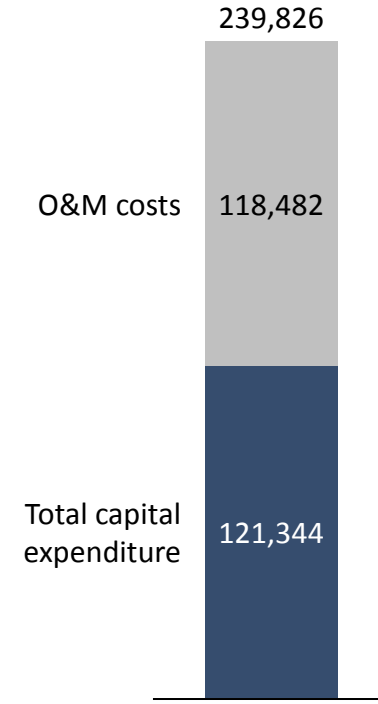
# Estimates of the investment needed to fill these gaps range from ~2.3 lakh Cr. to 4 lakh Cr. over a 10 year period

**Total investment required for the Total Urban Sanitation Programme (TUSP) over 10 years**  
(INR. In Cr. at 2013 prices)



*The TUSP estimates include providing universal sanitation services to all urban households (HH) covering 72% with sewerage systems and 28% with on site facilities*

**Total investment required<sup>2</sup> for sewerage networks in urban India over 10 years as per HPEC<sup>3</sup>**  
(INR. In Cr. at 2012-13 prices)

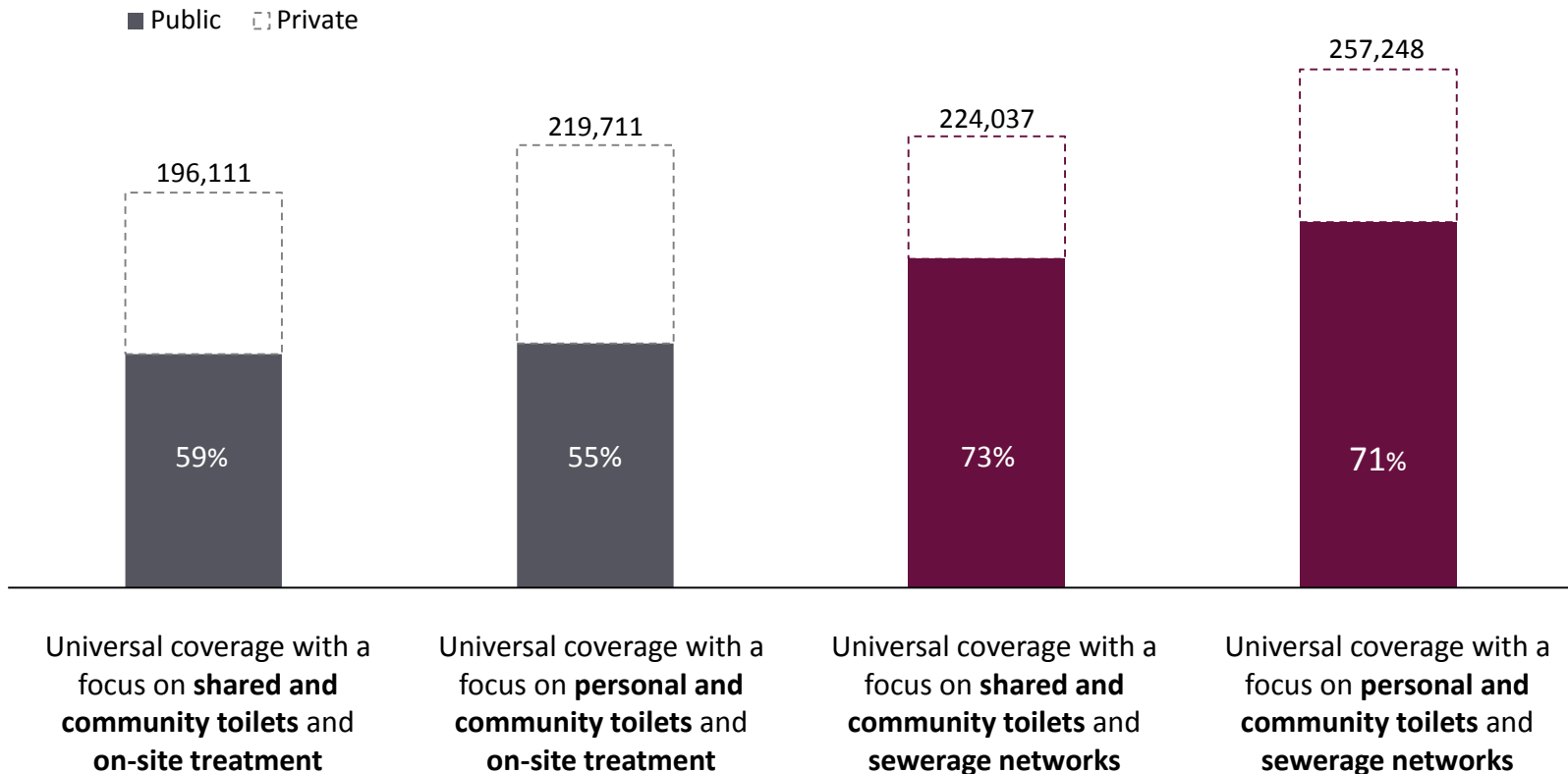


*The HPEC estimates include underground sewerage network for all cities and 100 % collection and treatment of waste water*

Note: (1) Includes cost escalation, administrative, IEC, capacity building and training costs, cost for mechanical cleaning of tanks and sewers and cost for recycling (2) The total investment required for ten years is assumed to be half of the investment required for 20 years as per HPEC report and inflated to 2013 prices (3) High Powered Expert-Committee for estimating the investment requirements for urban infrastructure services

# CEPT estimates for achieving universal coverage - between ~2.0 and 2.6 lakh Cr. over 10 years, depending on approach

Total investment required<sup>1</sup> on new infrastructure for achieving universal sanitation under different scenarios (INR. In Cr. at 2013 prices)



*Investment required is likely to be higher if cost of replacing old infrastructure is considered*

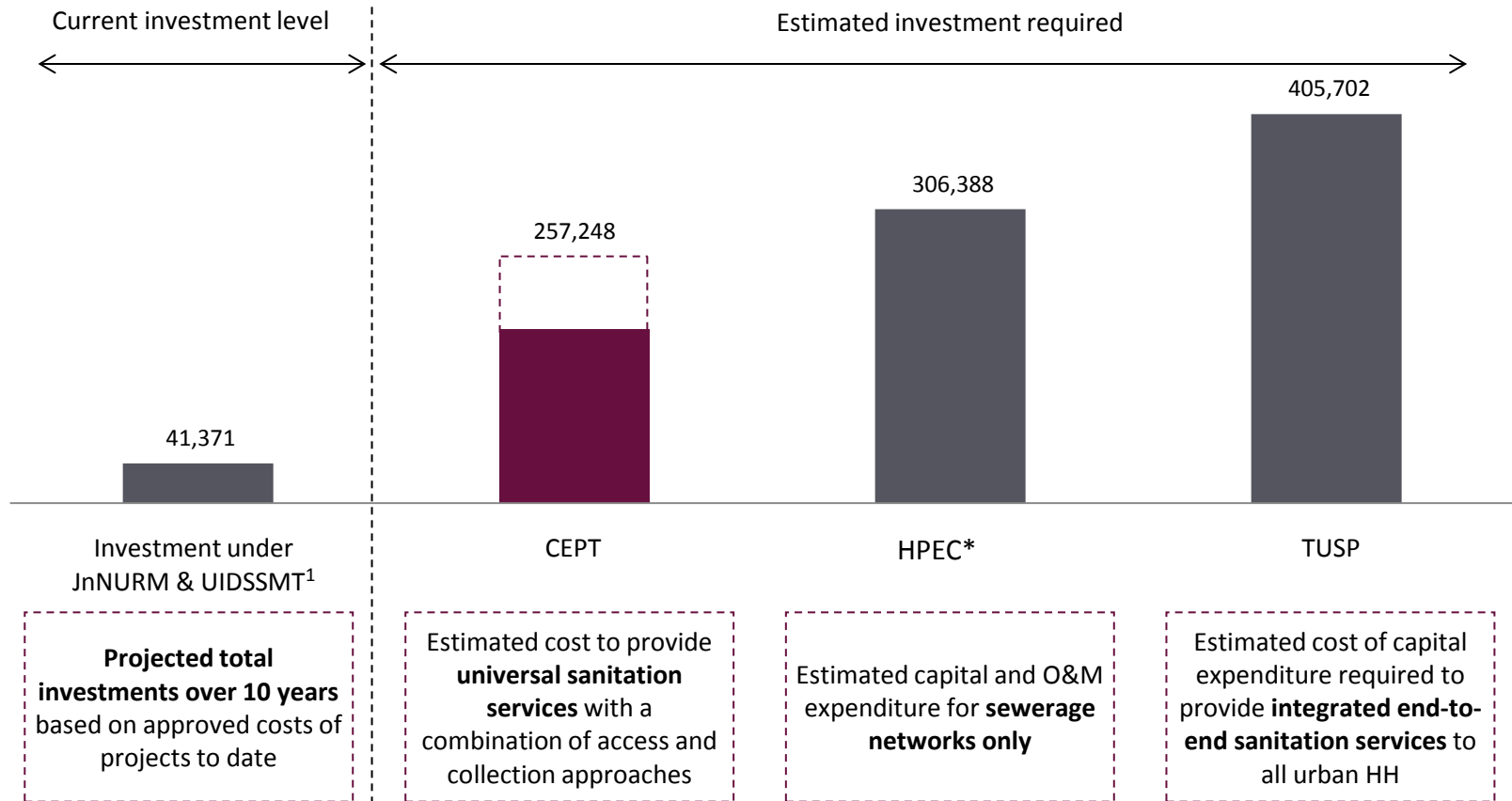
Note: (1) Includes IEC, establishment and project management costs

Source: CEPT analysis using census information for 2011



# Existing funding under government schemes such as JNNURM and UIDSSMT is unlikely to meet investment requirements to achieve universal sanitation

Comparison of planned and required investment in sanitation in urban India for a 10 yr. period  
(INR. In Cr.)



*Flagship government schemes such as JnNURM and UIDSSMT have invested heavily in sewerage projects, however yearly investments will need to be much higher in order to meet requirements*

Note: (1) Projected investments under JnNURM and UIDSSMT assumes that the approved cost will be spent in 10 year period

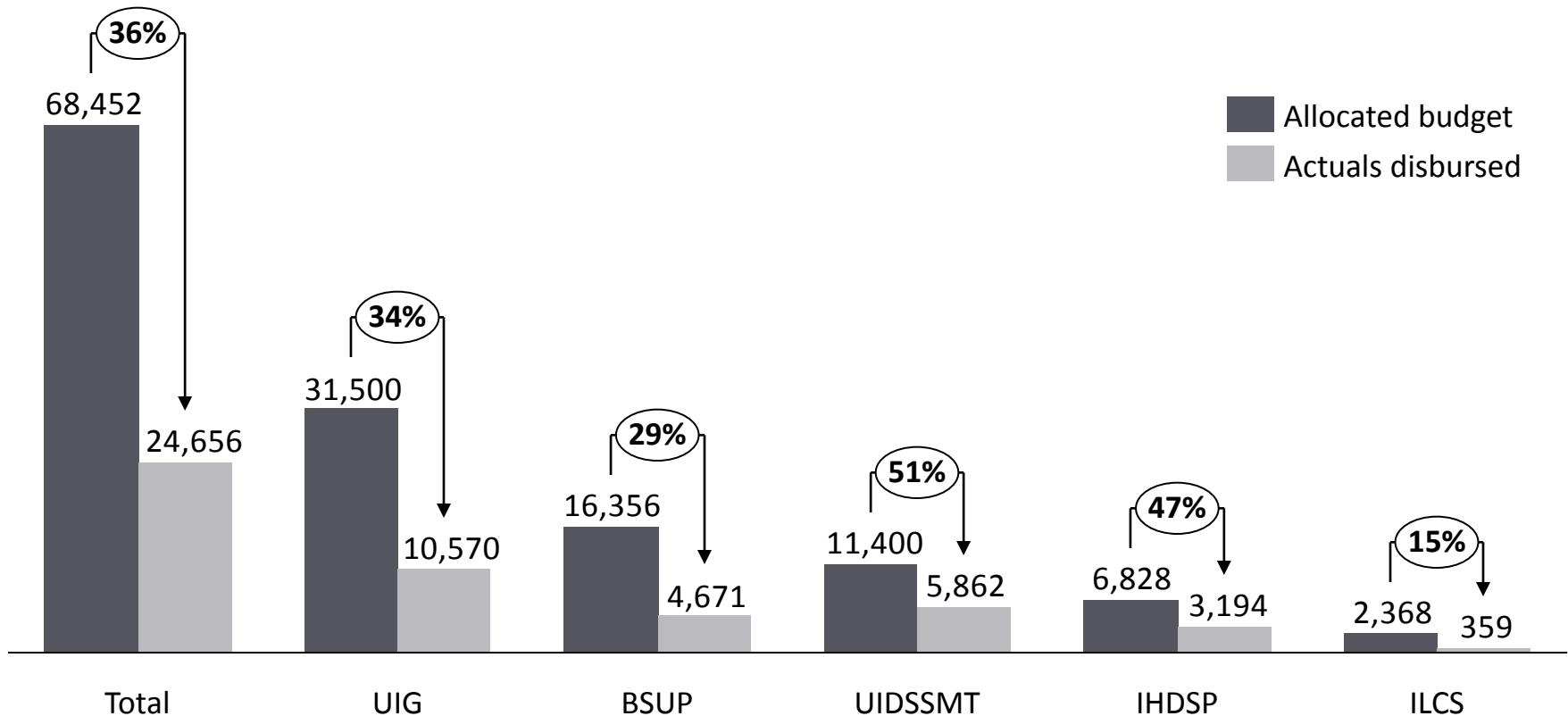
\* Escalation at 6% added to HPEC estimates based on 2009-10 prices

Source: CEPT data, Dalberg analysis

# Less than 40% of the total INR 68,000 crores allocated to central government schemes for urban development has been disbursed

## Cumulative budget for Central government urban development schemes

Allocation\* versus expenditure (in Rs. Crore) as reported in 2010



***While the released disbursement is much lower than the allocated amount, total approved project cost is higher than allocations resulting in a large time lag and financing gap for registered projects***

# Outline

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- Context of urban sanitation in India

- **Assessing sources of finance**

- Funding options for business opportunities in urban sanitation

# Landscape of sources of funding for urban sanitation

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- **Review landscape of sources of funding for urban sanitation**
  - **Central and state government schemes**
  - Multilateral / bilateral donors
  - International foundations
  - CSR initiatives/foundations
  - Commercial banks
  - Infrastructure finance companies
  - MFIs
  - Social impact investors

# We have identified three major categories of central government schemes that support sanitation improvement in urban India

Category	Relevant scheme/s	Water/sanitation focus	Implementing body
City-wide urban infrastructure development schemes	<b>Jawaharlal Nehru National Urban Renewal Mission (JNNURM)</b> <ul style="list-style-type: none"> <li>Urban Infrastructure Governance (UIG)</li> <li>Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT)</li> </ul>	Infrastructure development projects relating to water supply and sanitation, sewerage and waste management in 65 major cities (UIG) and other small and medium towns (UIDSSMT)	Ministry of Urban Development (MoUD)
Slum redevelopment and urban housing schemes	<b>Jawaharlal Nehru National Urban Renewal Mission (JNNURM)</b> <ul style="list-style-type: none"> <li>Basic Services for the Urban Poor (BSUP)</li> <li>Integrated Housing and Slum Development Program (IHDSP)</li> </ul> <b>Rajiv Awas Yojana</b>	Setup of housing and basic amenities for the urban poor – water supply, sewerage, drainage, community toilets/baths, drains and waste management in 65 major cities (BSUP) and other towns (IHDSP) Formalizing slum communities with access to basic services – this scheme is still in a pilot phase	Ministry of Housing and Urban Poverty Alleviation (MoUHPA)  Ministry of Housing and Urban Poverty Alleviation (MoUHPA)
Project financing schemes for basic housing infrastructure	<b>Housing and Urban Development Corporation (HUDCO)</b> <ul style="list-style-type: none"> <li>Integrated Low Cost Sanitation Scheme</li> </ul>	Conversion/construction of low cost two pit pour flush latrines for economically weaker sections of the society in all Indian cities and towns	Ministry of Housing and Urban Poverty Alleviation (MoUHPA) – Housing and Urban Development Corporation (HUDCO)

# Funding eligibility and patterns of financing in each scheme varies by city category, project type and central/state government participation (1/3)

Scheme	Funding eligibility criteria	Pattern of financing
<p><b>Urban Infrastructure Governance</b></p>	<p>Eligible cities</p> <ul style="list-style-type: none"> <li>• Cities with population &gt; 4 million per the 2001 census</li> <li>• Cities with population &gt; 1 million but lesser than 4 million per 2001 census</li> <li>• Cities of religious/tourist importance</li> </ul> <p>Eligible water and sanitation projects</p> <ul style="list-style-type: none"> <li>• Water supply (desalination plants)</li> <li>• Sewerage and solid waste management</li> <li>• Construction of drains and storm drains</li> <li>• Preservation of public water bodies</li> </ul>	<ul style="list-style-type: none"> <li>• 100% central grant to implementing agencies – which can be ULBs, third party implementers or SPVs (special purpose vehicles) set up for project execution</li> <li>• Project-specific financing for eligible sectors will be subject to approval of the Central Sanctioning and Monitoring Committee (CSMC) of MoUD/ MoUEPA before disbursement is granted</li> </ul>
<p><b>Urban Infrastructure Development Scheme for Small and Medium Towns</b></p>	<p>Eligible cities</p> <ul style="list-style-type: none"> <li>• All cities/towns as per 2001 census, excepting cities/towns covered under the UIG scheme</li> </ul> <p>Eligible water and sanitation projects</p> <ul style="list-style-type: none"> <li>• Water supply (desalination plants)</li> <li>• Sewerage and solid waste management</li> <li>• Construction of drains and storm drains</li> </ul>	<ul style="list-style-type: none"> <li>• 90% grant - sharing of funds is in the ratio of 80:10 between Central Government &amp; State Government and the balance 10% could be raised by the nodal/implementing agencies from the financial institutions</li> <li>• The State Level Sanctioning Committee will sanction all projects under this scheme</li> </ul>

# Funding eligibility and patterns of financing in each scheme varies by city category, project type and central/state government participation (2/3)

Scheme	Funding eligibility criteria	Pattern of financing
<b>Basic Services to the Urban Poor (BSUP)</b>	<p>Eligible cities</p> <ul style="list-style-type: none"> <li>• Cities with population &gt; 4 million per the 2001 census</li> <li>• Cities with population &gt; 1 million but lesser than 4 million per 2001 census</li> <li>• Cities of religious/tourist importance</li> </ul> <p>Eligible water and sanitation projects</p> <ul style="list-style-type: none"> <li>• Projects on water supply, sewerage, drainage, community toilets and baths</li> <li>• Sewerage and solid waste management</li> <li>• Construction of drains and storm drains</li> </ul>	<ul style="list-style-type: none"> <li>• For cities with population &gt; 4 million and population &gt; 1 million but lesser than 4 million per 2001 census – 50% central grant, 38% state/ULB parastatal share and minimum 12% beneficiary contribution*</li> <li>• For other cities – 80% central grant, 8% state/ULB parastatal share and minimum 12% beneficiary contribution*</li> </ul>
<b>Integrated housing and slum development programme</b>	<p>Eligible cities</p> <ul style="list-style-type: none"> <li>• All cities/towns as per 2001 census, excepting cities/towns covered under the BUSP scheme</li> </ul> <p>Eligible water and sanitation projects</p> <ul style="list-style-type: none"> <li>• Provision of physical amenities like water supply, storm water drains, community baths, sewers, community latrines</li> </ul>	<ul style="list-style-type: none"> <li>• Central assistance in the form of a grant – 80% of the cost is borne by the Central Government, 8% by the State/ULB and a minimum 12% contribution by the beneficiary*</li> </ul>

Sources: Annual Report 2010-2011, Ministry of Urban Housing and Poverty Alleviation

\* Beneficiary contribution is 10% in the case of SC/ST/OBC

# Funding eligibility and patterns of financing in each scheme varies by city category, project type and central/state government participation (3/3)

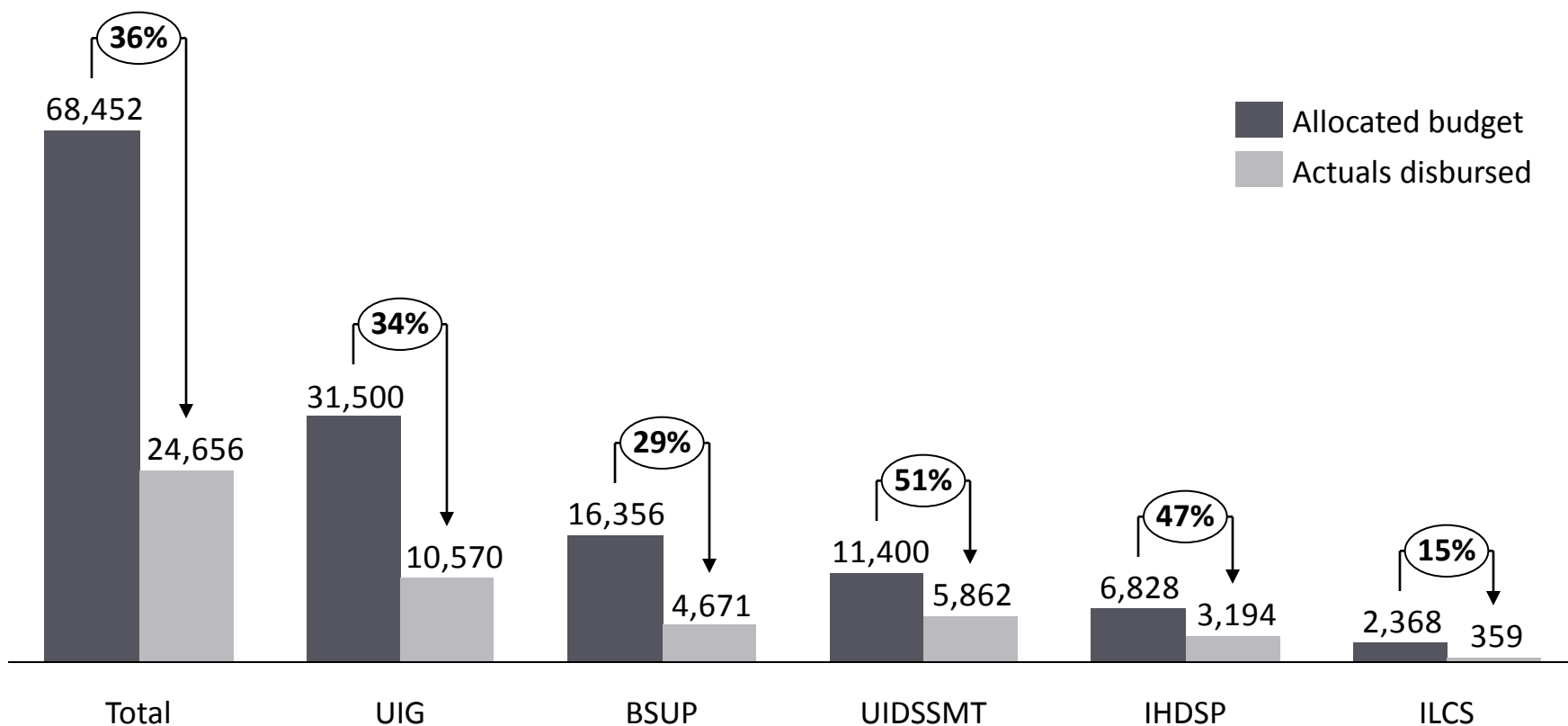
Scheme	Funding eligibility criteria	Pattern of financing
<b>Integrated Low Cost Sanitation Scheme</b>	<p>Eligible cities</p> <ul style="list-style-type: none"><li>All towns from states and union territories where dry latrines exist in economically weaker households are covered in this scheme</li></ul> <p>Eligible water and sanitation projects</p> <ul style="list-style-type: none"><li>Replacement/construction of two pit pour flush latrines</li></ul>	<ul style="list-style-type: none"><li>A mix of subsidy from the Central Government and loan from the HUDCO – Central subsidy is 75%, state subsidy is 15% and beneficiary contribution is 10%. The upper ceiling cost of a pour flush latrine is Rs. 15,000.</li></ul>



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## Cumulative budget for Central government urban development schemes

Allocation\* versus expenditure (in Rs. Crore) as reported in 2010



***While the released disbursement is much lower than the allocated amount, total approved project cost is higher than allocations resulting in a large time lag and financing gap for registered projects***

# There is potential to collaborate with a set of complementary government initiatives across the sanitation value chain

	Description	Opportunity
State pooled water and sanitation funds	<ul style="list-style-type: none"> <li>Cities such as Ahmedabad, Bangalore and State level financial intermediaries have begun to raise debt for municipal infrastructure by accessing capital markets through issuing debt instruments- a recent example is the <b>Water and Sanitation Pooled Fund (WSPF) created by Tamil Nadu</b> and registered as Trust under the Indian Trust Act 1882</li> </ul>	<ul style="list-style-type: none"> <li>Set up of a <b>pooled entity/trust in partnership with a third party private/public funder</b> to make the Urban Local Bodies (ULB) a part of the active debt markets</li> </ul>
Integrated urban health initiatives	<ul style="list-style-type: none"> <li>The National Advisory Committee to the GoI has made recommendations to strengthen the ULBs as the nodal bodies for delivery of urban health and sanitation programme - <b>PRIs and Urban Local Bodies (ULBs) are slated to become the focal point of community action for health</b></li> </ul>	<ul style="list-style-type: none"> <li>Set up of <b>district and urban pilot projects to test</b> the decentralized implementation of health programmes and services</li> </ul>
Fuel generation for energy and agriculture	<ul style="list-style-type: none"> <li><b>National Biogas and Manure Management Programme</b> provides for central subsidy in fixed amounts to improve sanitation in villages by linking sanitary toilets with biogas plants</li> </ul>	<ul style="list-style-type: none"> <li>Set up of <b>sanitation linked community level biogas plants</b> with the support of central subsidies available (between Rs. 2000 and Rs. 8000 per family biogas unit)</li> </ul>

# Viability Gap Funding (VGF) is a central government scheme which supports large scale PPP projects in defined sectors of infrastructure

## Overview of the scheme

### Description

- Introduced by the Ministry of Finance, Department of Economic affairs, it seeks to financially support the PPP projects in infrastructure up to 20% of their cost
- Capital grant is provided as support from the government's viability gap fund. The scheme is for Public Private Partnership projects undertaken by the government or its agencies, where the private sector partner is selected through open competitive public bidding
- State government or its agencies that own the project can provide additional grants out of their budget not exceeding further 20% of the total cost of the project

### Eligibility

- The project should be implemented i.e. developed, financed, constructed, maintained and operated for the project perm by a private sector company which is selected through open competitive bidding
- The PPP Project should be from one of the sectors mentioned above
- The project should provide a service against payment of a pre-determined tariff or user charge

### Sectoral focus<sup>1</sup>

- Infrastructure in urban areas such as roads, bridges, airports, power, urban transport, telecommunication water supply, sewerage, solid waste management among others
- Infrastructure projects in SEZs and internal infrastructure in National Investment and Manufacturing Zones
- Capital investment in the creation of modern storage capacity including cold chains and post-harvest storage
- Education, health and skill development
- Agricultural infrastructure including irrigation

### Total disbursal

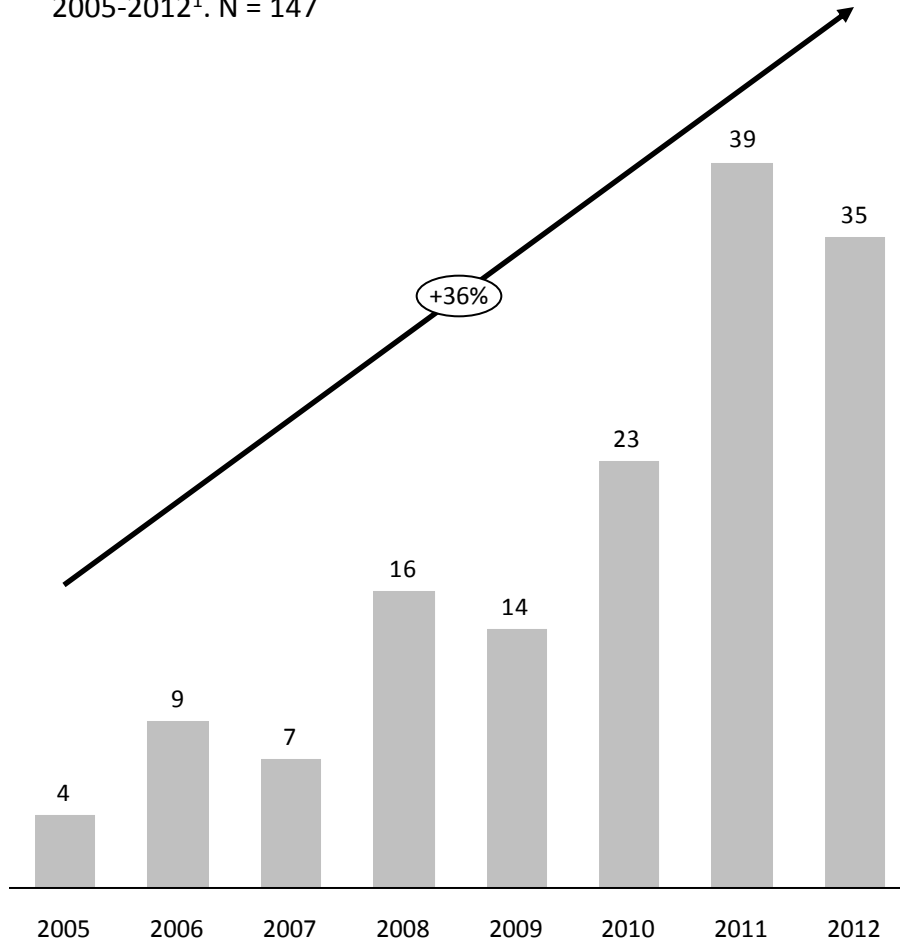
- Since, the inception of the scheme in 2005, a total of 149 projects have been approved with a total VGF approval (In Principal) of ~INR 15,600 crores and total VGF approval (Final) of ~INR 4,400 crores

<sup>1</sup>Not exhaustive

# Number of approved projects have increased by ~35% every year

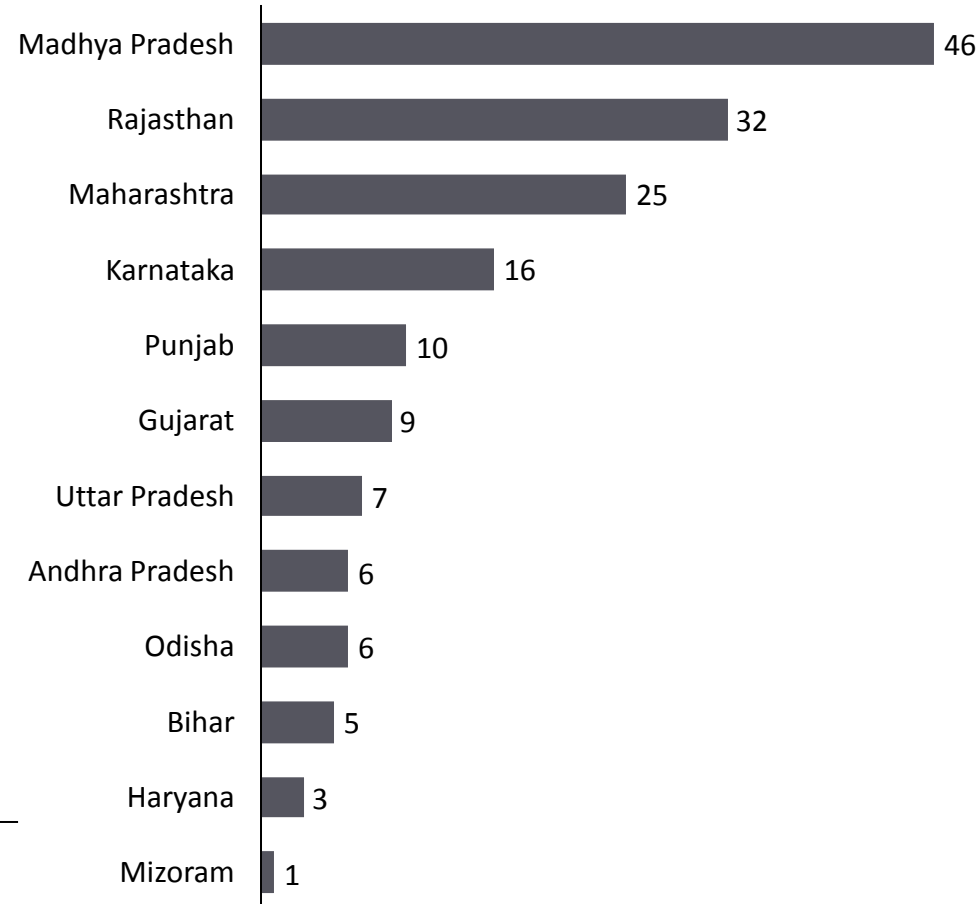
## Number of approved projects by years

2005-2012<sup>1</sup>. N = 147



## Number of projects considered by states

2005-2013. N = 166



<sup>1</sup>2013 ignored since only 2 projects have been approved in the current financial year

# India Infrastructure Project Development Fund (IIPDF) fund allows states to receive assistance at the development stage of PPP projects

## Overview of the scheme

### Description

- Formed in 2008, with a corpus of INR 100 crores, it is a revolving fund designed to support the development of PPP projects that can be offered to the private sector. Specifically, IIPDF is a mechanism through which the sponsoring authority (States or its executing agency) can source funding to cover a portion of PPP transaction costs such as feasibility, environmental impact studies, financial restructuring, legal reviews and development of project documentation

### Terms of funding

- The fund assists 75% of the project development expenses incurred by the sponsoring authority in the form of interest free loan
- The amount of funding is recovered from the sponsoring authority only if the bid is successful
- Sponsoring authority needs to co-fund up to 25% of transaction costs to ensure commitment by the sponsoring authority to the procurement and ownership of the project

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<sup>1</sup>Not exhaustive

# Municipal development funds (MDFs) allow local bodies to raise funds for infrastructure projects

## Overview

- MDFs are usually set up as parastatal organizations focused on municipal credit supply. They evolve to become financial intermediaries focusing on municipal credit hence acting as transitional instruments for self-sustaining municipal credit systems
- MDFs allocate loan capital to local government investment projects following similar procedures like the multilateral organizations, while reaching far more local authorities and smaller investment projects than it would be efficient for multilateral organizations

## Type 1

## Description

The first type of MDF operates as a substitute for government grants to local authorities. Capital (mixture of loans and grants) is supplied at below-market rates. MDFs use the favorable terms of lending to impose stricter standards of project preparation on localities and to incorporate central or state government investment priorities in determining which projects should be funded

## Type 2

The second type of MDF serves as a bridge to private credit market by facilitating private sector lending to the municipalities. MDFs in this model lend at market rates of interest to financial institutions or provide supporting services to them. Financial institutions in turn lend to municipalities and undertake due diligence for selected projects and accept credit risk

## Examples

**Tamil Nadu Urban Development Fund (TNUDF)** launched in 1988 and financed by the World Bank, aims to serve as a link between civic infrastructure financing needs and domestic capital markets for ULBs. TNUDF is now managed by an asset management company, a joint venture between the TN government and private investment companies. Hence there is private-sector management expertise in the selection and financing of subprojects which can be funded by TNUDF or private agencies. It also facilitates access for creditworthy municipalities to private capital market

**FINDETER, Colombia** is a market-oriented MDF. It operates as a rediscount facility for commercial bank lending to the municipal sector. FINDETER supplements the banks' project appraisal capacity and thus improves the technical quality of their lending, but the banks take the commercial risk. FINDETER has a poverty alleviation mandate that it has tried to fulfill by giving particular attention to institutionally weak small towns and by favoring investments in essential services -- mainly water and sanitation

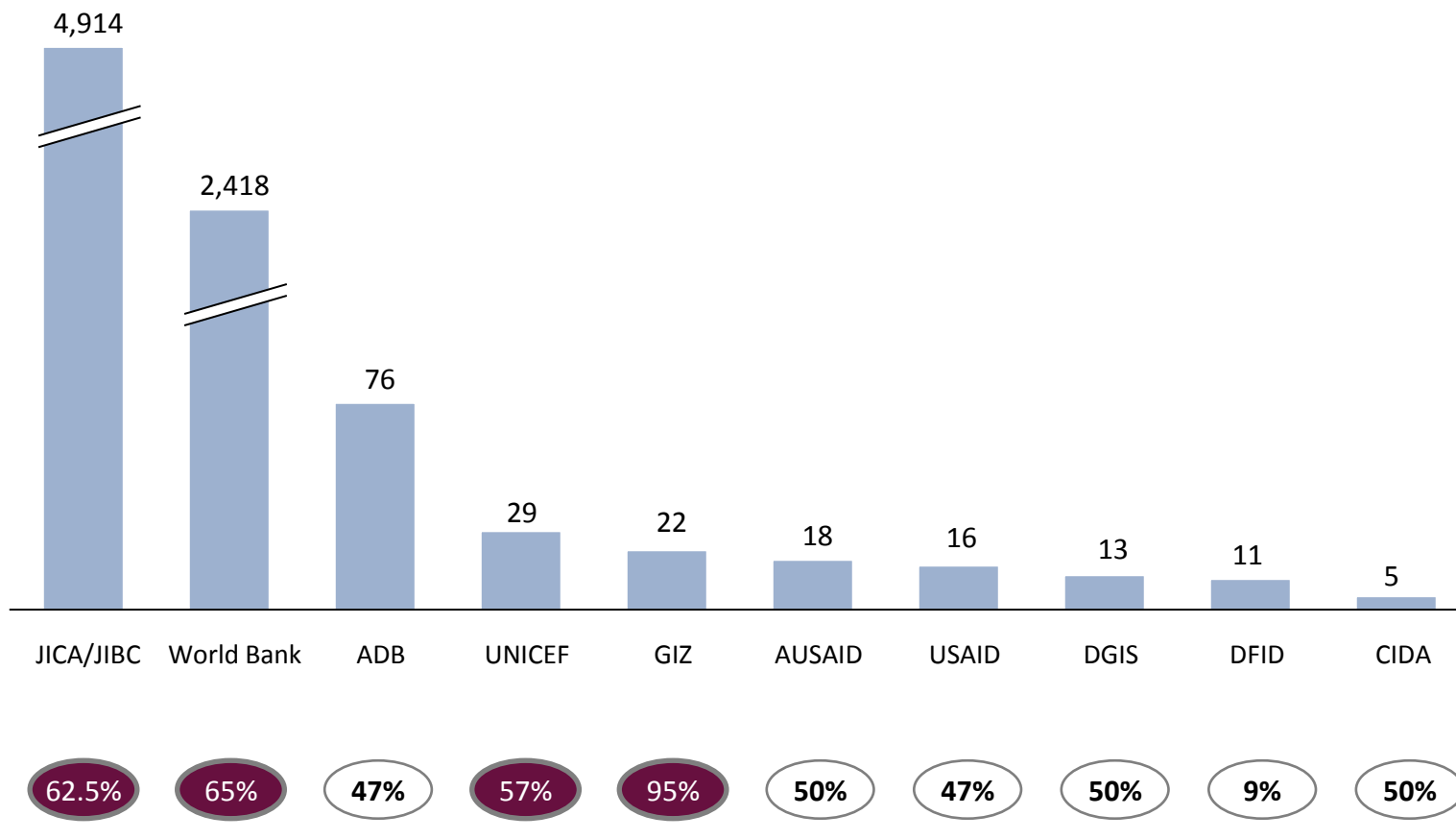
# Landscape of sources of funding for urban sanitation

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- **Review landscape of sources of funding for urban sanitation**
  - Central and state government schemes
  - **Multilateral / bilateral donors**
  - International foundations
  - CSR initiatives/foundations
  - Commercial banks
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# JICA, World Bank and ADB are the leading funders of sanitation projects in India

**Total commitment of investments in water sanitation<sup>1</sup> projects in India by top 10 donors**  
2007 – 2011. In USD Millions



<sup>1</sup>Includes 50% of unclassified commitments in 'Basic Water and Sanitation and Water and Sanitation (Large systems)'

Source: OECD donors database, Dalberg analysis

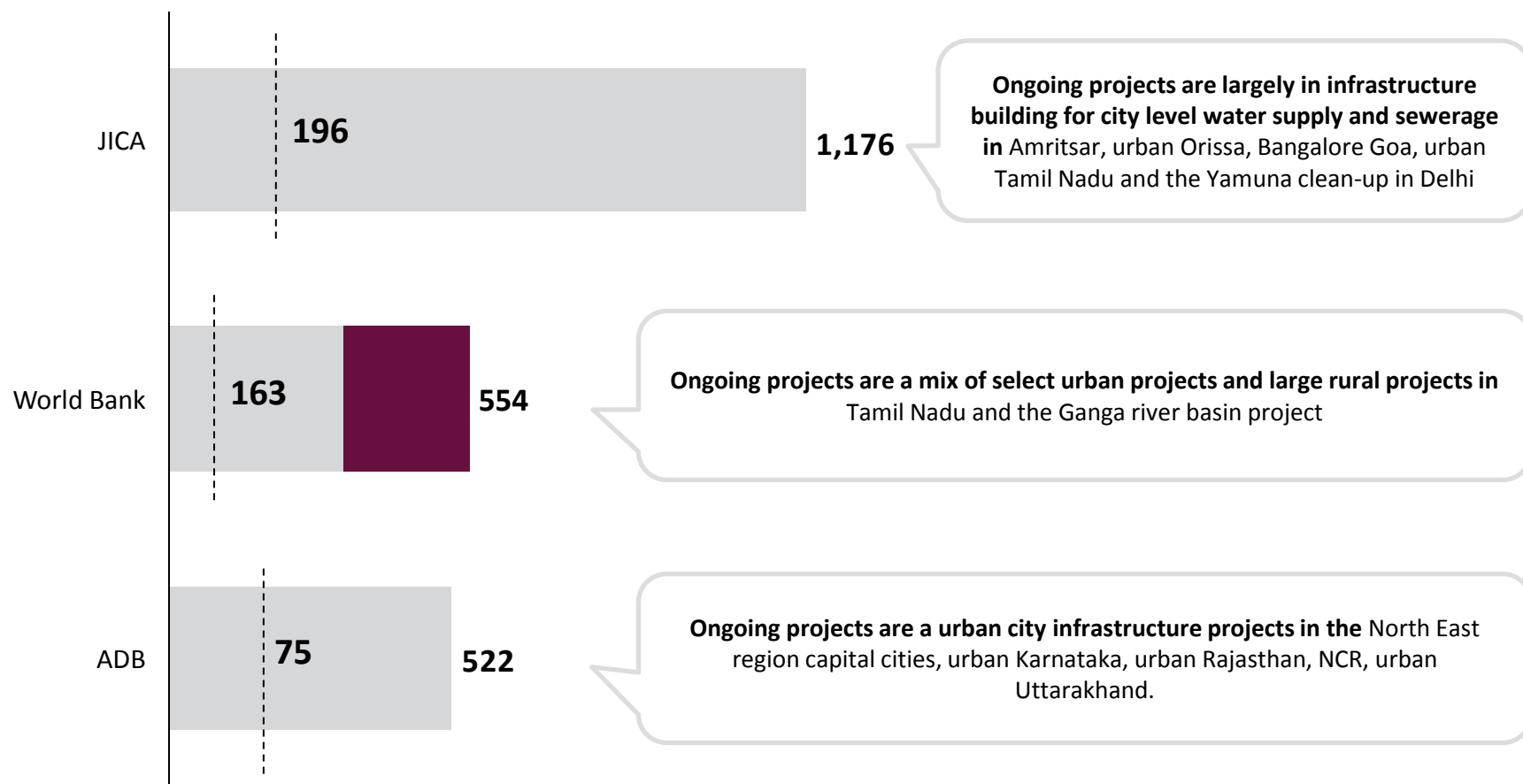


# Within donors, JICA and ADB are heavily urban focused with recent investments in large-scale sanitation infrastructure

## Total commitment by top 3 donors for urban sanitation in current projects

Total in USD Millions. Average in USD Millions

Urban Rural ----- Average investment

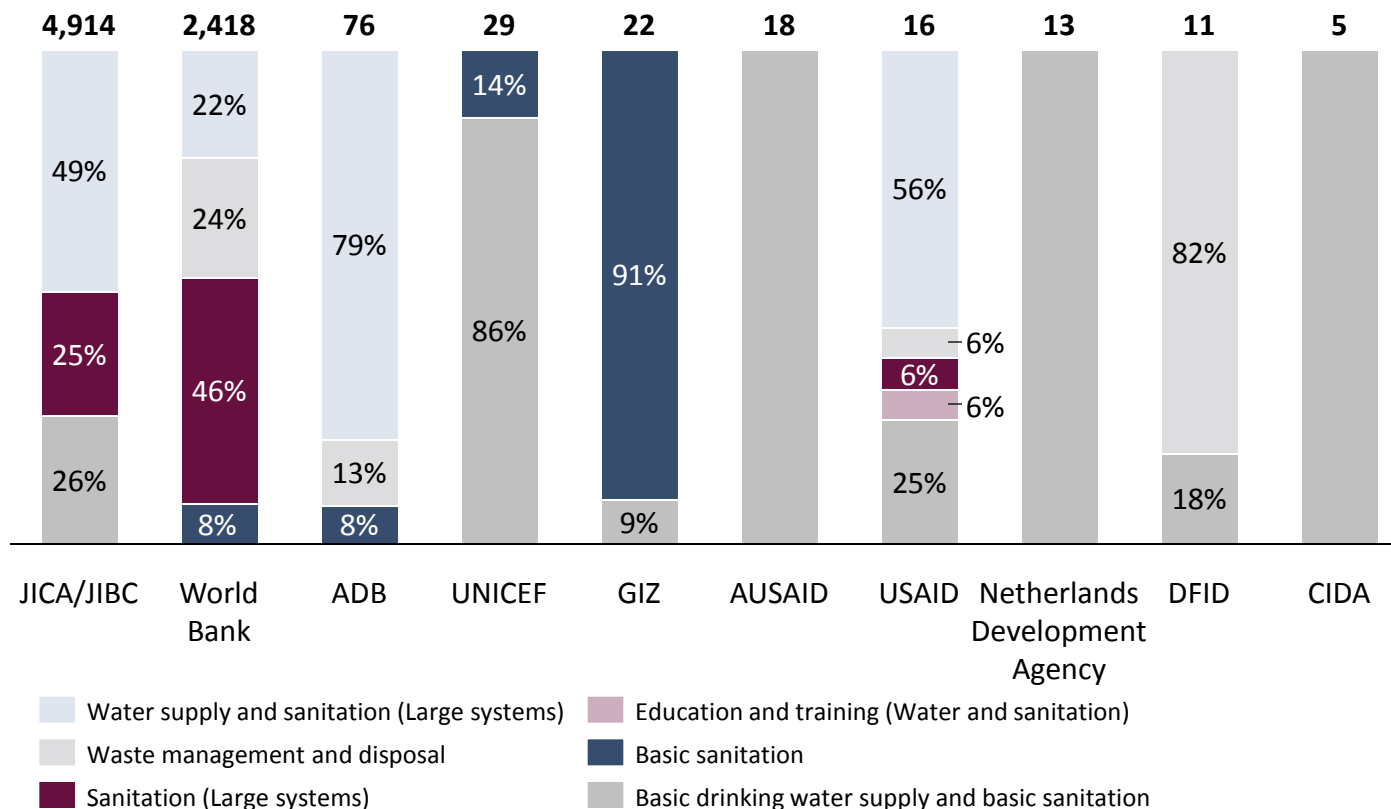


<sup>1</sup>Commitment includes investment in 'water and sanitation'

# Large donors are infrastructure focused and small donors are focused on developing decentralized solutions for sanitation

## Breakdown of investment of top 10 donors across different sectors in sanitation

2007 – 2011. In %. Total in USD Millions



Note: Definition of terms

- 1) Basic Sanitation: Latrines, on-site disposal and alternative sanitation systems, including the promotion of household and community investments in the construction of these facilities
- 2) Sanitation (Large systems): Large scale sewerage including trunk sewers and sewage pumping stations; domestic and industrial waste water treatment plants
- 3) Waste Management and disposal: Municipal and industrial solid waste management, including hazardous and toxic waste; collection, disposal and treatment; landfill areas; composting and reuse
- 4) Water supply and Sanitation (Basic and Large): Investments in water and sanitation space by donors however not explicitly classified

Source: Dalberg analysis

# Entrepreneurs have various options to access funding and technical assistance from donor agencies

	<u>Overview</u>	<u>Process</u>	<u>Funding</u>
<b>JICA</b>	<b>BoP Business Assistance.</b> Supports Japanese business expansions and cross-country partnerships that involve the BoP as consumers or create a good that has positive social outcomes. It also supports 'inclusive business' where the BoP serve as a part of the supply value chain	Calls for proposals are periodically made on the basis of which applications received are screened. 3 calls for proposals have been made since 2010 and 52 proposals have been awarded	Funding is given up to ~USD 0.5 million (0.2 million for SMEs) for each selected proposal
<b>DFID</b>	<b>Global Poverty Action Fund.</b> It supports projects focused on poverty reduction and pursuit of MDGs	Projects are selected on the basis of demonstrable impact on poverty, clarity of outputs and value for money. Civil society organizations need to apply through a concept note form	Funding is provided as per the requirements of the project up to a maximum of GBP 250,000
<b>Asian Development Bank</b>	<b>Private Sector Loans.</b> Financial assistance is provided to private sector projects in the form of debt among other types of assistance (mezzanine, equity, TA). Funds from commercial sources are leveraged to finance projects in core sectors of infrastructure, capital markets and finance	Applications are invited with details about the project, implementation, management, economic, environmental cost among others. They are then screened by ADB and due diligence is undertaken	Loans (senior, subordinate) are offered at rates which factor in rates prevalent in the country and associated risks. Both floating (Libor plus spread) and fixed rate loans are offered. The value of loans is up to 25% of the project cost.

# JICA is currently focused on various urban water and sanitation projects where as World Bank is not explicitly focused on water and sanitation

	Name of project	Description	Duration	Budget for sanitation (in USD)	Geographic focus
World Bank	National Ganga River Basin Project	To help National Ganga River Basin Authority build capacity of institutions to enable management of long term Ganga clean up and conservation. Investments in infrastructure to reduce pollution through wastewater management, solid waste management among others	2011 - 2019	220 million	Uttarakhand, U.P., Bihar, Jharkhand, West Bengal
	3 <sup>rd</sup> Tamil Nadu Urban Development Project	To assist in improving the delivery of urban services through enhancing the quality of urban infrastructure such as water supply , sanitation among others and strengthening the institutional and financial framework	2005- 2014	105 million	Tamil Nadu
JICA	Amritsar Sewerage Project	To develop sewerage systems and reliable sewage treatment to improve hygiene and living conditions for local residents in Amritsar	2007 - 2014	74 million	Punjab
	Orissa Integrated Sanitation Improvement Program	To develop sewerage systems and reliable sewage treatment to improve hygiene and living conditions for local residents in selected urban areas of Orissa	2006 - 2013	163 million	Orissa
	Bangalore Water Supply and Sewerage Project	To expand water supply and sewerage facilities, comprehensive improvement of water business management and conducting awareness activities in slum areas	2006 - 2013	285 million	Karnataka
	Goa Water Supply and Sewerage Project	To expand supply of safe and stable water supply and sewerage services . Constructing and expanding sewerage facilities in Margao, Mapusa and North Coastal Belt	2007 - 2014	219 million	Goa
	Tamil Nadu Urban Infrastructure Project	To expand safe water supply and sewerage facilities for small and medium local cities in Tamil Nadu by providing long-term funds through Tamil Nadu Urban Development Fund	2008 - 2013	86 million	Tamil Nadu
	Yamuna Action Plan (Phase 3)	To improve the water quality of River Yamuna by modernization of sewage treatment plant rehabilitation and replacement of the existing sewerage system in National Capital Territory of Delhi	2011 - 2018	329 million	Delhi

# ADB is currently conducting multiple projects focused on urban infrastructure across various states in India

Name of project	Description	Duration	Budget for sanitation (in USD)	Geographic focus
Bihar Urban Development Investment Program	To expand the access to better quality and sustainable urban water supply and sewerage services for vulnerable households in selected urban areas in Bihar	2012 - 2012	20 million	Bihar
North East Region Capital cities Development Investment Program	To assist the capital cities of North Eastern states in physical improvement of urban infrastructure in water supply, sewerage and sanitation systems	2011 - 2027	117 million	Tripura, Mizoram, Sikkim, Nagaland, Meghalaya
Assam Urban Infrastructure Investment Program	To increase access to quality water supply, sewerage, transportation and social amenities for residents of Guwahati and Dibrugarh	2012 - 2017	30 million	Assam
North Karnataka Urban Sector Investment Program	To assist Karnataka government in meeting urban sector investment plan and providing water supply systems, sewerage systems, drainage, urban road resurfacing and junction improvements	2006- 2015	163 million	Karnataka
Rajasthan Urban Sector Development Investment Program	To assist selected urban areas in Rajasthan increase access to quality water supply, sewerage, transportation and social amenities	2007 - 2017	70.3 million	Rajasthan
National Capital Region Urban Infrastructure Financing Facility	To assist National Capital Region Planning Board to leverage its resources to improve quality of public health and environmental urban services and other capacity enhancements	2010 - 2016	34.3 million	Delhi
Uttarakhand Urban Sector Development Investment Program	To increase Access of the urban population to water supply and sanitation facilities in 31 urban towns	2008 - 2016	87.6 million	Uttarakhand

# Activities of other bilateral agencies are largely focused on supporting existing government programs to improve sanitation (1/2)

	Name of project	Description	Duration	Budget for sanitation (in USD) N.A.	Geographic focus
UNICEF	Childs Environment Program	To support the government's flagship programs of Total Sanitation Campaign and National Rural Drinking Water Program to improve access to and use of sanitation facilities and to provide adequate safe water to every rural household in India	2008 - 2012	N.A.	Bihar, Uttar Pradesh, Rajasthan, Orissa, Madhya Pradesh, Jharkhand, Chhattisgarh, Assam, West Bengal, Maharashtra, Gujarat, Andhra Pradesh, Karnataka, Tamil Nadu and Kerala
GIZ	Support for the National Urban Sanitation Policy (NUSP)	To assist the Ministry of Urban Development in attaining goals outlined in NUSP. At national level, GIZ has helped with evaluation of city sanitation plans and is working with CBSE to improve sanitation in number of schools throughout India. At the state level, it's supporting states in preparing state sanitation strategies. At the city level, city sanitation planning documents are being prepared for municipal bodies	2011- 2019	N.A.	Himachal Pradesh, Chhattisgarh. Andhra Pradesh, Karnataka, Kerala, Maharashtra, Uttar Pradesh and Madhya Pradesh
USAID	Innovative Financing for Water Supply, Sanitation and Wastewater Treatment Infrastructure	Several models of innovative financing for water related infrastructure have been pioneered in developing countries. Development Credit Authority (DCA) permits USAID to issue partial loan guarantees to private lenders	N.A.	N.A.	India, Philippines, South Africa and Indonesia
Netherlands	Spatial Planning, Water Management and Mobility Management	To enable greater cooperation in the areas of - Spatial planning, urban and regional planning and development and architecture; Water management in terms of Water supply and sanitation and governance structures among other areas	20013 -	N.A.	Pan India

## Activities of other bilateral agencies are largely focused on supporting existing government programs to improve sanitation (2/2)

	Name of project	Description	Duration	Budget for sanitation (in USD)	Geographic focus
DFID	Sector Wide Approach to Strengthening Health (SWASTH)	To increase the quality of essential nutrition, health and water and sanitation services especially for the poorest people and excluded groups. In particular, increase the number of people with sustainable access to an improved sanitation facility 16.8 to 40 million	2008 - 2016	33 million	Bihar
	Orissa Health Sector Support	To increase the use of quality health, nutrition and sanitation services by the poor. In particular, increase the number of people using all sanitation facilities from 9 to 16 million	2008- 2015	2.7.million	Orissa
	Support Program for Urban Reforms in Bihar	To help identified Urban Local Bodies to provide better urban services and attract private investment	2009 – 2016	13.5 million	Bihar
	Madhya Pradesh Urban Services for the Poor	To strengthen pro poor governance to enable affordable and sustainable access to quality services for the urban poor	2006 - 2013	9 million	Madhya Pradesh
	Madhya Pradesh Urban Infrastructure Investment Project	To provide sustained and equitable access to basic services and infrastructure(including access to water & sanitation for over 300,000 additional people and safe drinking water for over additional 170,000 people by March 2015	2013 - 2015	13 million	Madhya Pradesh
CIDA	Integrated Community Driven Development for Rural Poor	To support community driven sustainable development and to improve the living conditions for rural poor in Andhra Pradesh. The program includes improving the living conditions with the provision of safe water , sanitation , improved access to basic education and skills training and dissemination of best practices from stakeholders	2012 - 2017	0.23 million	Andhra Pradesh

# Landscape of sources of funding for urban sanitation

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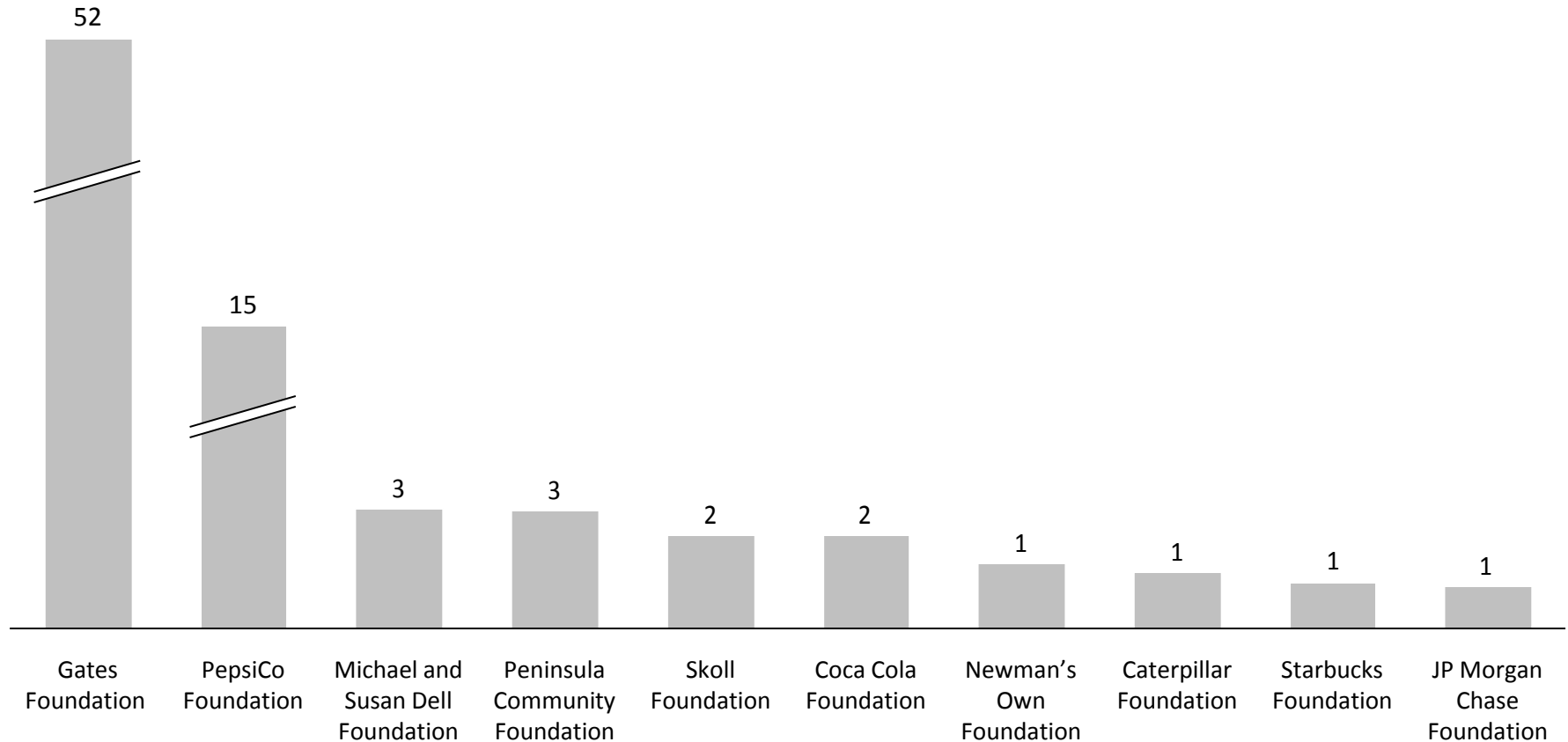
- **Review landscape of sources of funding for urban sanitation**
  - Central and state government schemes
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  - MFIs
  - Social impact investors



# Foundation funding in the sector is dominated by US based organizations

## Total investments made by foundations in sanitation<sup>1</sup> in India

In USD Millions, since 2004



<sup>1</sup>Includes unclassified commitments in 'Water and Sanitation'

Source: Washfunders database, Dalberg analysis

# Bill & Melinda Gates foundation has contributed across domains of knowledge generation, scaling innovative models and capacity building in sanitation

Recipient	Description	Duration	Budget for sanitation (in USD)	Geographic focus
Project Concern International	For Project Parivartan to improve key family health and sanitation behaviors in Bihar among the most marginalized populations - the neglected castes of the Mahadalits	2012 -	15 million	Bihar
Project Concern International	To build and strengthen community-based structures in Bihar to enable behavior change to increase coverage of key family health and sanitation interventions, improve social accountability for health and sanitation and promote sustainability of impact	2011 - 2016	15 million	Bihar
Centre for Environmental Planning and Technology	To support state and urban governments in India to develop sustainable benchmarking of water supply and sanitation services	2008 - 2013	9.8 million	Maharashtra and Gujarat
Water for People	To catalyze sanitation business opportunities supported by local finance and to demonstrate a sustainable, scalable approach to increase sustainable sanitation service delivery	2012 - 2017	5.7 million	India, Malawi and Uganda
Sesame Workshop	To promote hygiene and sanitation among children and families in high-need areas of Bangladesh, India, and Nigeria by shaping culturally appropriate messages for each country	2013 -	2 million	India, Bangladesh and Nigeria
London School of Hygiene and Tropical Medicine	For cluster-randomized, controlled field trial in Orissa, India, to assess the effectiveness of basic sanitation to reduce diarrheal disease and lower the prevalence and intensity of worm infection	2010 - 2013	1.5 million	Orissa
Samagra Off-Grid Utilities	To introduce clean sanitation in slums in India through a business that leverages the existing network of local entrepreneurs	2011 - 2013	0.1 million	Karnataka

Bill and Melinda Gates Foundation

# PepsiCo and Michael & Susan Dell foundation focus on consumer finance to improve access to sanitation

	Recipient	Description	Duration	Budget for sanitation (in USD)	Geographic focus
PepsiCo Foundation	Water.org	To act as a catalyst to introduce microfinance to the water and sanitation sector and provide household water connections and toilets	2008 - 2012	15.7 million	Maharashtra, Tamil Nadu, Andhra Pradesh, Orissa and Karnataka
	Save the Children Federation	To increase access to water, sanitation, and hygiene for mothers in high-need areas. It also promotes more articulated and integrated health and environmental approaches	2009 - 2010	1.7 million	Bangladesh
Michael and Susan Dell Foundation	Mahila Housing SEWA Trust	To extend microfinance support for water and sanitation services for urban poor and as a part of Inclusive Cities Initiative	2007 - 2011	2 million	Gujarat
	Andhra Pradesh Mahila Abhivruddhi Society	To provide integrated access to clean water and sanitation, including installation of required infrastructure, in urban slums through Microfinance Delivery Channel	2007 - 2012	0.42 million	Andhra Pradesh
	Friends of Women's World Banking	To provide support to develop a sustainable model to enable the urban poor in India to access water and sanitation services through availability of micro-credit	2008 - 2010	0.12 million	Pan India
	Bharat Integrated Social Welfare Agency (BISWA)	To provide microfinance-enabled access to water and sanitation services	2009 - 2010	0.11 million	Orissa

# Landscape of sources of funding for urban sanitation

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- **Review landscape of sources of funding for urban sanitation**
  - Central and state government schemes
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# The Companies Bill, 2013 allows new models of social engagement & is expected to improve the pool & quality of funding from Corporates

*The Parliament of India has recently approved the new Companies Bill, which mandates that large companies spend 2% of their three-year average annual profit towards corporate social responsibility (CSR)*

## Key provisions of the bill

1

Every company having net worth of INR 5000 million or more\* during any financial year is mandatorily required to spend at least 2 percent of the average net profit of past three financial years on specified CSR activities.

2

With regard to implementation, only project based investments, and not mere donations, will be accepted as CSR. Baselines surveys, social impact assessment and meticulous evaluation including documentation is mandatory along with training and re orientation of the staff.

3

Though the CSR provisions under the Act required minimum 3 directors for constitution of CSR committee to comply with the new provisions.

4

CSR projects / programs may also focus on integrating business opportunities with social and environmental priorities and processes in order to create shared value.

## Implications

**The funding pool for development activities becomes larger.**

Around 8,000 companies would fall under the Bill's ambit and this mandate would translate into an estimated CSR spending of Rs 12,000-15,000 crore annually.

**The onus to report impact will create more strategic and focused CSR portfolios.** Corporate houses will begin to look beyond the traditional lens of "charity" and develop succinct CSR strategies with potential for large-scale social and economic impact.

**Involvement of company executives will ensure strong alignment with professional values of the business units.** CSR units will no longer remain siloed units within large corporates and can be well integrated to the company's core business operations.

**CSR activities will be more sustainable and aligned to business strategy.** Companies will be able to fund for-profit social enterprises and engage in activities that 'indirectly' promote their brand value.

We will review provisions of the bill, ongoing work and planned social investments by corporates due to the CSR bill in detail

Note: \* Or turnover of INR 10000 million or more or net profit of INR 50 million or more

Source: <https://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/taxnewsflash/Documents/india-sept20-2013no4companies.pdf>;  
[http://articles.economicstimes.indiatimes.com/2013-09-05/news/41803586\\_1\\_csr-corporate-social-responsibility-india-incf](http://articles.economicstimes.indiatimes.com/2013-09-05/news/41803586_1_csr-corporate-social-responsibility-india-incf)

## Some of the major Corporates in India have invested in Water and Sanitation Projects as a part of their Corporate Social Responsibility (CSR) (1/2)

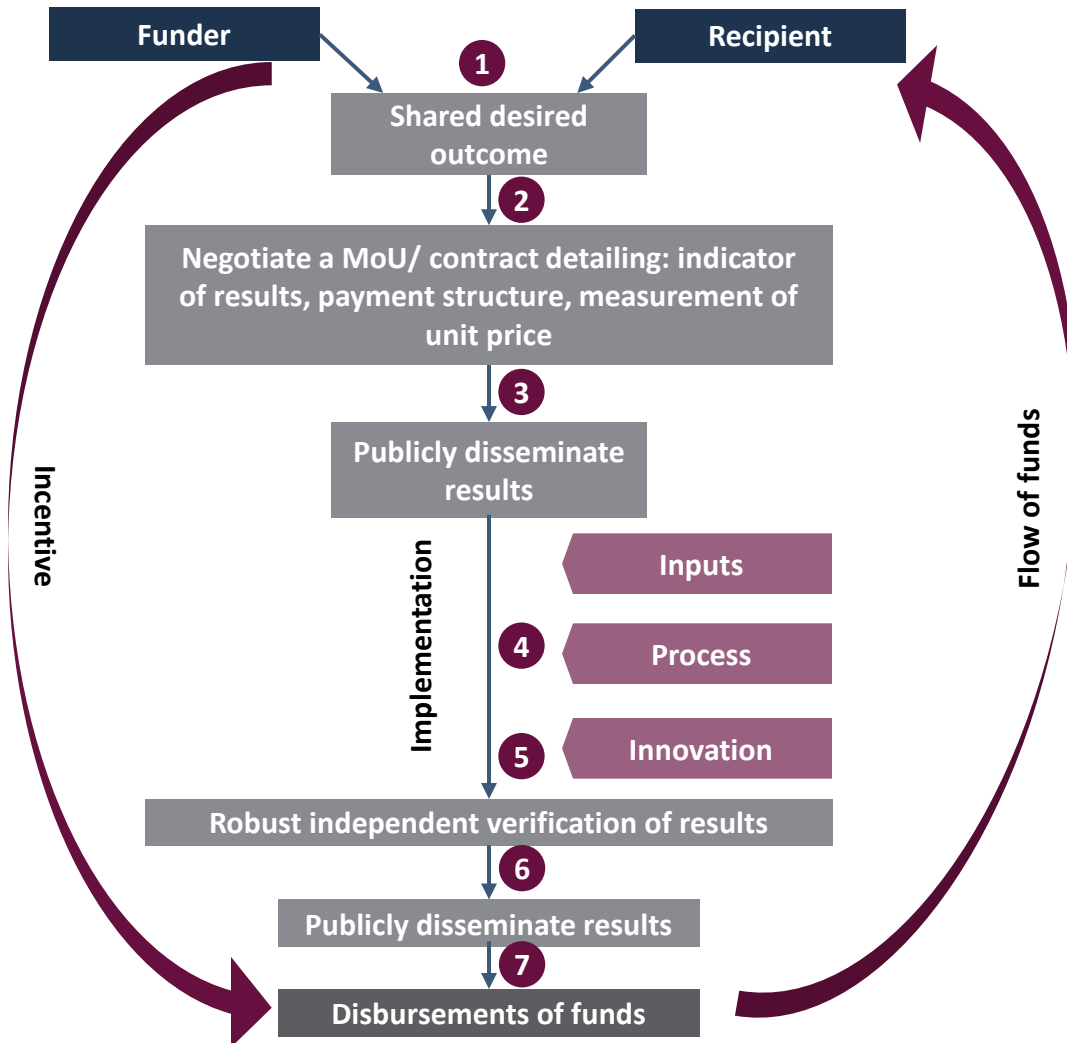
	Company	Description	Budget For CSR (2012-2013)	Geographical focus
FMCG	<b>Hindustan Uniliver Ltd. (HUL)</b>	<ul style="list-style-type: none"> <li>Unilever Foundation and Domestos, HUL's toilet hygiene brand support UNICEF's Community Approaches to Toilet Sanitation (CATS) Program.</li> <li>CATS aims to promote demand for Sanitation through Community Awareness</li> <li>Domestos educates customers and raises awareness about the Sanitation Crisis.</li> </ul>		India, Gambia, Ghana, Nicaragua, Nigeria, Pakistan, Philippines, South Sudan, Sudan and Vietnam.
	<b>Nestle</b>	<ul style="list-style-type: none"> <li>Sponsors the construction of sanitation facilities for female students in village schools around their factories.</li> <li>37 sanitation facilities invested in by Nestlé so far, benefiting over 15,000 female students.</li> </ul>		Tamil Nadu, Karnataka, Haryana, Punjab, Uttarakhand, Himachal Pradesh
	<b>Amul</b>	<ul style="list-style-type: none"> <li>Has initiated a Rural Sanitation Campaign with the aim of making the milk producers community OD free.</li> <li>Has prepared a model low cost toilet block which costs Rs. 11,500 per unit.</li> <li>Provides interest free loans to the milkmen to purchase the toilet block. The loan amount is recovered by deducting Rs. 100 from the monthly salary.</li> </ul>		Gujarat
Cement	<b>ACC Ltd.</b>	<ul style="list-style-type: none"> <li>Aims to provide better Sanitation facilities for families living around their factories.</li> <li>Spent 1.48 Cr in 2012 on health and sanitation programs. Built 7 community toilets and 310 household toilets.</li> <li>Installed new sewage treatment plants in Jamul and Chanda.</li> </ul>		Maharashtra, Jharkhand

## Some of the major Corporates in India have invested in Water and Sanitation Projects as a part of their Corporate Social Responsibility (CSR) (2/2)

	Company	Description	Budget For CSR (2012-2013)	Geographical focus
Cement	<b>Ambuja Cement</b>	<ul style="list-style-type: none"> <li>The Ambuja Cement Foundation(ACF) works to make villages open defecation free (ODF), build drainage systems, construct soak- pits and septic tanks and raise awareness about health and sanitation.</li> <li>Has worked with the Govt. of Uttarakhand in the field of sanitation. ACF helped construct 40 low cost toilets in Navagram, Panjehra and Dugri villages.</li> <li>In Maharashtra, ACF collaborated with UNICEF and the Zilla Parishad of Chandrapur, to implement an intensive program on sanitation.</li> <li>In 2013, constructed 964 Toilet blocks , 2 Sulabh Sauchalayas and 793 soak pits in Maharashtra.</li> </ul>		Maharashtra, West Bengal, Punjab, Rajasthan
Public Sector Undertaking (PSU)	<b>GAIL</b>	<ul style="list-style-type: none"> <li>Drinking water and Sanitation is one of seven focus areas for their CSR expenditure. Has taken up projects for improving local hygiene and sanitation practices by constructing nallas and improving the sewerage system in areas where GAIL has its presence.</li> <li>Has collaborated with Sulabh Sanitation Mission Foundation in the villages of Guna (Madhya Pradesh) and Auraiya (Uttar Pradesh) to sensitize villagers on the importance of sanitation.</li> <li>The organization has also initiated projects that contribute to improving local sanitation practices through construction of nallahs and pipelines and reconstruction of drainage systems in rural areas near its project offices.</li> </ul>	<b>73 Cr</b>	Uttar Pradesh, Madhya Pradesh
	<b>NTPC</b>	<ul style="list-style-type: none"> <li>Promotes development of sanitation facilities in areas close to its power stations.</li> <li>Kahalgaon (BIHAR) station has taken up infrastructure development work including construction of facilities for sanitation and drinking water in 6 villages.</li> </ul>		Bihar

# In addition, results based grants can also be effective in generating new funding from CSR initiatives and other funding sources

Illustration of example financial flows



## Investors and recipients come together to specify project goals and time frame

- 1** Funders and recipient with a business opportunity who share common desire for impact come together to create the results based grant model in sanitation
  - 2** Memorandum of understanding is negotiated which includes details of the business opportunity, pre-defined metrics of impact, scale of impact, measurement of outcomes and a time frame
  - 3** The following MoU is then shared through channels of information
  - 4** The recipient executes the business opportunity in sanitation through an implementation partner. Certain operational aspects may be outsourced further to enable faster scaling
  - 5** An independent agency evaluates the business opportunity and the potential impact after the agreed time frame
  - 6** Based on the evaluation, the results are shared through channels of information
  - 7** Based on the evolution report, disbursement of funds is made to the recipient on the basis of level of impact achieved
- 1** **If the program meets its targets**  
The program may be scaled up in other areas or may be continued
  - 1** **If the program does not meet its targets**  
The program may be modified to overcome the barriers faced and re-launched or discontinued if it is unviable



# Landscape of sources of funding for urban sanitation

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- **Review landscape of sources of funding for urban sanitation**
  - Central and state government schemes
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  - MFIs
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# Policies to encourage commercial lending can be leveraged by entrepreneurs to raise funding for their business ventures

## Overview of Policy

## Key players

### Micro and Small Enterprise

- Micro and Small Enterprises (investments in plant and machinery under INR 5 crores) are included in 'priority sector' as mandated by the RBI. Large and domestic commercial banks have to lend 40% of their adjusted net bank credit (ANBC) to these sectors (18% specifically to agriculture). 60% of total advances to MSE should go to micro enterprises (investment in plant less than INR 25 lakhs)

- **State bank of India.** Various schemes geared towards small enterprises at various stage. From start up (SBI Smile) to long term debt (Open term loan)
- **ICICI Bank.** Secured loans offered up to INR 5 crores for SMEs and up to INR 1 crore under Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) scheme of SIDBI
- **SIDBI.** Assistance offered in the form of Growth, Equity Capital and Working capital through discounting receivables

### Infrastructure lending

- Under RBI's new guidelines for 'Infrastructure lending', lending for projects on water and sanitation which consist of Solid Waste Management, Water supply pipelines, Water treatment plants, Sewage collection, Treatment and Disposal system, Irrigation (dams, channels, embankments etc.) and Storm Water Drainage System are classified as those under infrastructure by lending institutions

- **Infrastructure Leasing and Financial Services Ltd.** Assistance offered through Pooled Municipal Debt Obligation Fund (PMDO) which can be accessed by a bankable sponsor having a demonstrable execution plan for the project with a ULB as a counter party
- **India Infrastructure Finance Company.** Financing offered through 'Scheme for financing viable infrastructure projects' where long term debt is made available to companies up to a total of ~30% of project cost

### Community lending

- National Bank for Agriculture and Rural Development (NABARD) provides grant support to Non Government Organizations (NGO), Regional Rural Banks (RRBs), District Central Cooperative Banks (DCCBs), Urban Cooperative Banks (UCBs), Farmers, Clubs, Individual Rural Volunteers (IRVs) for promoting Self Help Groups (SHGs). RBI also mandates reporting of lending to SHGs separately and strategy of SHG ending to be included in plans of banks

- **NABARD – SHG linkage program.** NABARD provides financial as well as grant assistance for training, capacity building, skill development, exposure visits for the SHG members
- **ICICI Bank.** Unsecured loans at low rates of interest are given to SHGs up to a maximum of INR 75,000 per SHG for a total duration of 36 months

# Landscape of sources of funding for urban sanitation

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# Major Infrastructure Funding Companies in India have invested in Water and Urban Infrastructure Projects (1/2)

## Products Offered

## Relevant Projects

### IL & FS

#### Project Debt Syndication

- Provides solutions for raising debt from comprehensive structuring & fund raising to actual financial closure
- Advised and/or completed transactions exceeding USD 10 billion

#### Mezzanine Finance

- Fills the gap between what traditional lenders provide and what sponsors want from debt sources

#### Structured Debt and Asset-based Finance

#### Tirupur Water Supply and Sewerage Project

- PPP of Govt. of TN, IL&FS & Tirupur Exporters Association
- Includes construction of a sewerage system for Tirupur Municipality
- Total Cost Of Project: Rs. 1023 Cr

#### Nanded-Waghala Water Supply, Sewerage and Storm Water Drainage Project

- PPP with Govt. of TN to provide drinking water and sanitation to residents & pilgrims
- Total Cost Of Project: Rs. 350 Cr

### IDFC

#### Senior Debt Financing

- Collateralized through pledge of all or part of the sponsors' equity holding in the borrower or an assignment of rights or by the cash flow receivables of the project
- Recourse to the project assets in the event of any default
- Typically bears fixed rate interest

#### Mezzanine Finance

- Comprises of preference capital and subordinated debt
- Subordinated in right of payment to senior debt
- Carry higher risk as compared to senior debt but have the potential of earning higher returns

#### Municipal Solid Waste Processing Plant, Rajkot

- Project completed through its portfolio company, Hanjer Biotech
- Added 18 operating facilities with 7,200 TPD of capacity across 7 municipalities

#### IDFC assisted the Municipal Corporation of Delhi (MCD) in its solid waste management.

Willing to finance projects that demonstrate visibility in terms of contractual arrangement for supply of municipal solid waste between the urban local body and the company, arrangements for sale of power, compost and other by-products, and disposal of the residual waste.

# Major Infrastructure Funding Companies in India have invested in Water and Urban Infrastructure Projects (2/2)

	Products Offered	Relevant Projects
<b>SREI Infrastructure Finance Ltd.</b>	<p><b>Project Finance</b></p> <ul style="list-style-type: none"><li>Extend financing up to 75% of the project cost</li><li>Secured by project assets and repaid entirely from project cash flows</li></ul> <p><b>Structured Finance</b></p> <ul style="list-style-type: none"><li>Integration of bridge finance and term loan</li><li>Maturity not exceeding 5 years</li></ul> <p><b>Non-Fund Based Credit</b></p> <ul style="list-style-type: none"><li>Letter Of Credit</li><li>Bank Guarantee</li></ul>	<p><b>Invested Rs. 50 Cr. In Swach Environment (SREI Group)</b></p> <ul style="list-style-type: none"><li>Focus on Municipal water, sewage, industrial water treatment etc.</li></ul> <p><b>Awarded the PPP with Delhi Jal Board and Veolia Water for the Nangloi Water Plant which involves distribution and treatment.</b></p>
<b>IIFCL</b>	<p><b>Scheme for Financing Viable Infrastructure Projects</b></p> <ul style="list-style-type: none"><li><b>Long Term Debt</b> provided by the IIFCL to the company where the average maturity for repayment exceeds 10 years</li><li><b>Subordinate Debt</b></li></ul> <p><b>Take Out Financing Scheme</b></p> <ul style="list-style-type: none"><li>Available only for projects which have achieved financial closure and have a residual debt tenor of at least 6 years.</li></ul>	<p><b>Invested in 6 projects in Urban Infrastructure</b></p> <ul style="list-style-type: none"><li>Total project Cost: Rs. 29,898 Cr</li><li>Gross amount sanctioned by IIFCL: Rs. 2,454 Cr</li><li>225% increase in the gross sanctioned amount from the previous year.</li></ul>

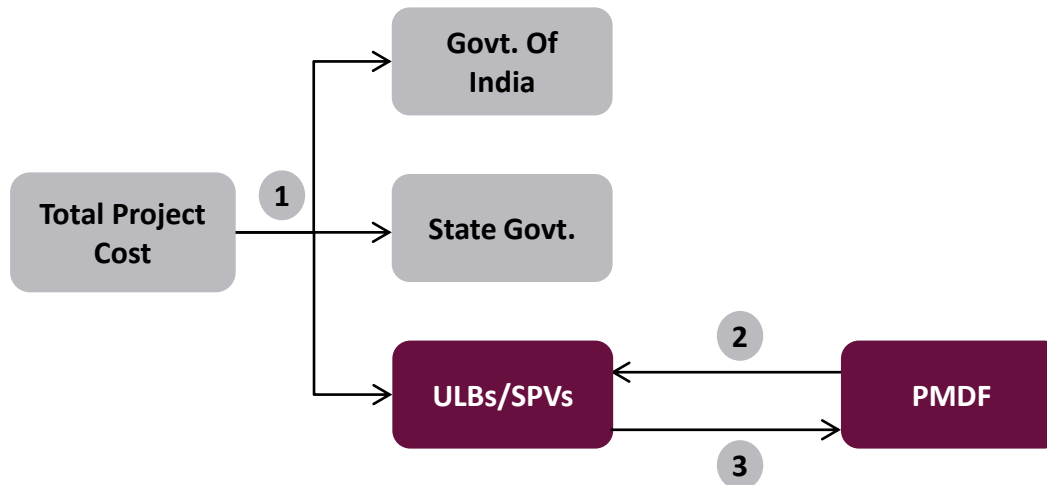
# Pooled Municipal Debt Obligation Facility (PMDOF) has been created by IL&FS and IIFCL to invest in Urban Infrastructure Projects.

## Project Overview

Structured through a partnership of 15 Banks/Financial Institutions including IL&FS to supplement government funding to urban local bodies(ULBs) and Special Purpose Vehicles (SPVs) promoted under PPP arrangements, to implement urban infrastructure projects for Water Supply and Sewerage, Solid Waste Management etc. under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM).

## Salient Features

- Corpus: Rs. 2750 Cr. (2006) extended to Rs. 5000 Cr ( 2011)
- Interest Rate: Floating Rate based on Current Market Conditions
- Tenor: 13 years (Maximum)
- Moratorium: 3 years (Maximum)



- 1 Under JnNURM, 50% of total project funded by Govt. Of India, 30% by State Govt. and 20% by ULBs.
- 2 PMDOF provides commercial debt to the ULBs/SPVs to provide financial assistance.
- 3 The ULBs/SPVs are expected to repay the debt at the market level interest rate within the stipulated tenor.

# Landscape of sources of funding for urban sanitation

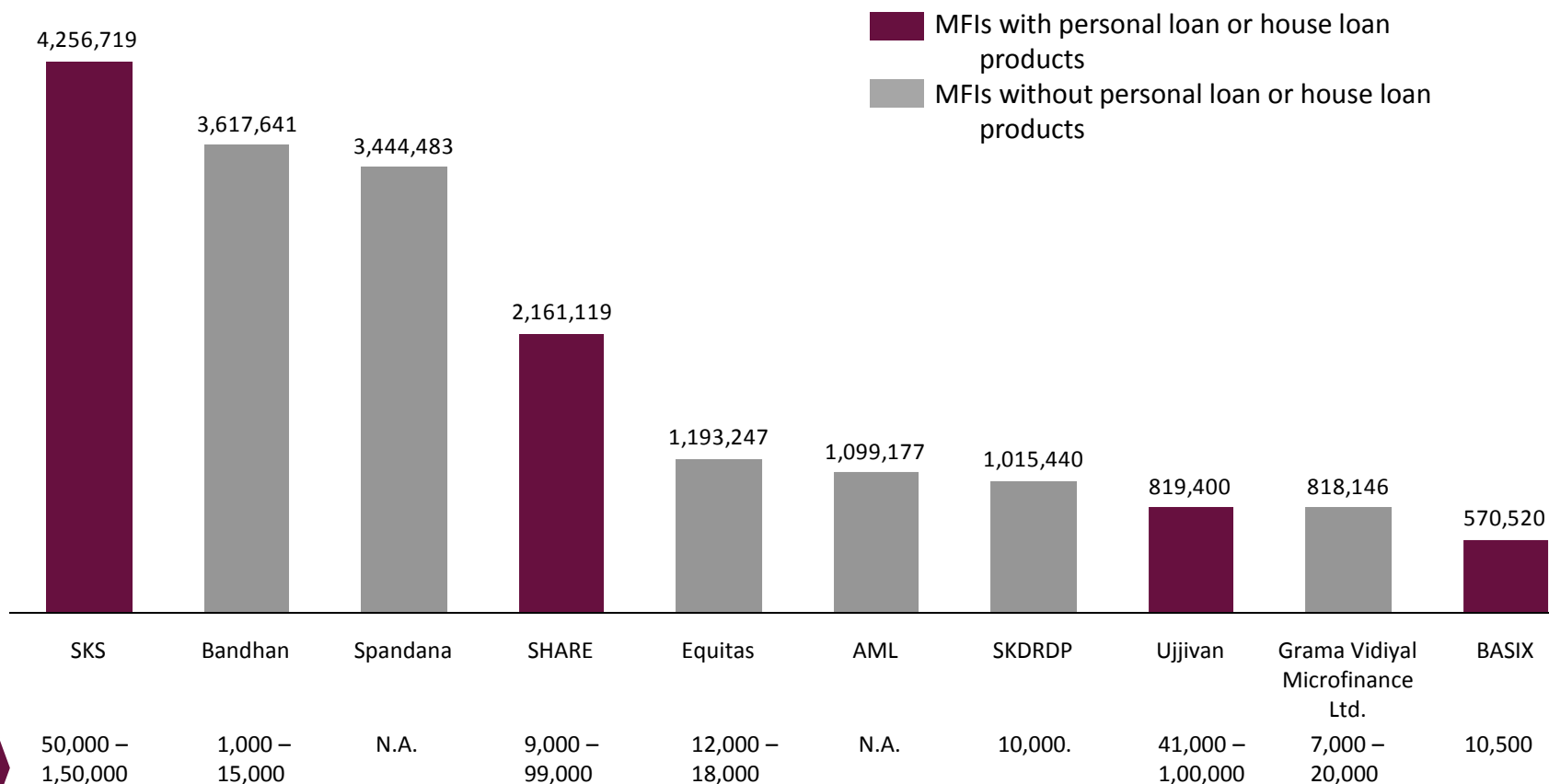
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# The largest MFIs in India carry out micro lending operations but only a few have non income generating loan products

**Top 10 MFIs by number of borrowers**

*As of 2011*



**Average loan size (INR)**



# Landscape of sources of funding for urban sanitation

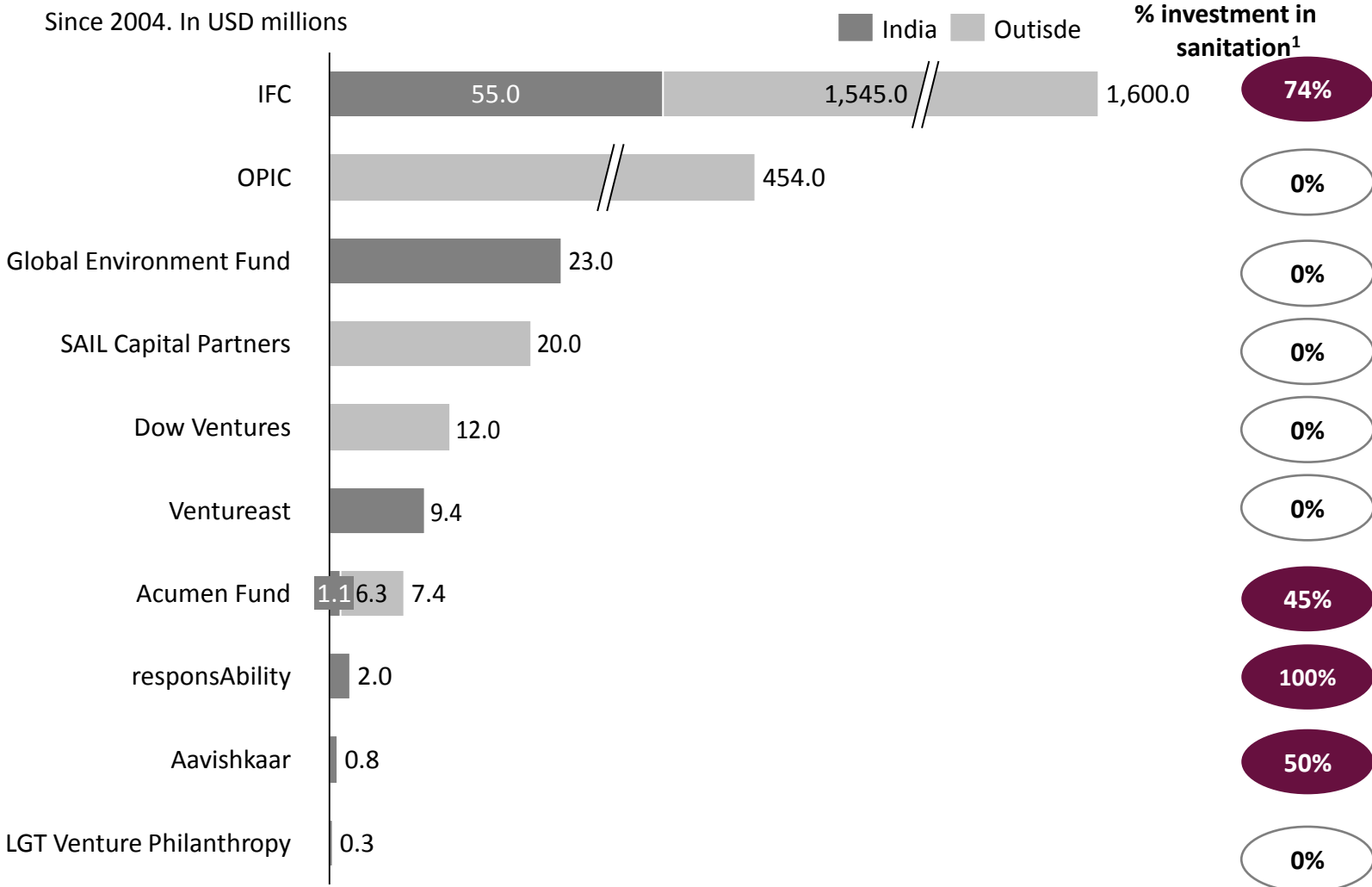
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# There are only a few funders who have invested purely in sanitation; of the total investment in water and sanitation only ~4% is in India

## Investments made by PE/VC in decentralized models in water and sanitation

Since 2004. In USD millions



Note: List of social investors were selected from among the member of Global Impact Investing Network and Dalberg's proprietary knowledge

<sup>1</sup>Includes investments in 'Water and sanitation'. Excludes investments only in water

\*Other investments of undisclosed amount made in water and sanitation

Source: Dalberg analysis

# The portfolio of impact investors in sanitation in India is focused towards financing decentralized models of sanitation

Investor	Investments made	Description of investments
<b>Acumen Fund</b>	<ul style="list-style-type: none"> <li>• USD 1 million in Guardian in India</li> <li>• USD 0.75 million in Ecotact in Kenya</li> <li>• USD 0.5 million in Sanergy in Kenya</li> </ul>	Acumen Fund has provided patient capital to Guardian in India which is an MFI focused on micro lending to households to purchase water and sanitation assets. In Kenya, Ecotact is focused on construction of community toilets and Sanergy is focussed on the entire sanitation value chain from access to sustainable disposal
<b>Aavishkaar</b>	<ul style="list-style-type: none"> <li>• Total investment of 0.8 million in Saraplast and WaterLife</li> </ul>	Aavishkaar has taken a 21% stake in Saraplast which provides portable toilet sanitation services in communities to tackle the issue of open defecation. Aavishkaar has also taken a stake in WaterLife which operates mini water purification plants in rural areas
<b>responsAbility</b>	<ul style="list-style-type: none"> <li>• 2 million in Saraplast</li> </ul>	responsAbility invested in Saraplast which provides portable toilet sanitation services in communities to tackle the issue of open defecation. The investment is geared to help the company to increase its footprint to achieve scale
<b>IFC</b>	<ul style="list-style-type: none"> <li>• 5 million in Vishwa Infrastructures and Services Pvt. Ltd.</li> <li>• 15 million in Ramky Infrastructure</li> </ul>	<p>IFC has provided long term debt to Vishwa infrastructures, a turnkey contractor involved in developing integrated water supply and waste water projects. It has also provided equity investment and debt to Ramky infrastructure, a company working the sector of waste treatment and management.</p> <p>Going forward, IFC has plans to massively scale up investments in water and sanitation space with ~USD 300 million committed in fiscal year ending 2012 alone</p>

# Social investors who have made investments in water are also a good source for potential organizations to raise funding

Investor	Investments made	Description of investors
<b>OPIC</b>	<ul style="list-style-type: none"> <li>• USD 250 million in DISI Water PSC</li> <li>• USD 200 million in Fixed Rate Funding and Liquidity</li> <li>• USD 3 million in Sweet Water Pakistan</li> <li>• USD 0.8 million in Natura Beverage</li> <li>• USD 0.3 million in Golden Cypress Water</li> </ul>	Overseas Private Investment Corporation is the U.S. government's development finance institution which works with the U.S. private sector to help them gain footholds in emerging markets and catalyse revenues. It provides investors with financing, guarantees, political risk insurance among others
<b>Global Environment Fund</b>	<ul style="list-style-type: none"> <li>• USD 23 million in Saisudhir Infrastructures</li> <li>• Undisclosed investments in Duoyuan Global Water and Companhia de Saneamento do Parana</li> </ul>	Global Environment Fund is a global alternative asset manager dedicated to energy, environment and natural resources sectors. They seek to deliver favourable risk adjusted investment returns through a diverse portfolio comprising of organizations with high growth potential
<b>SAIL Capital Partners</b>	<ul style="list-style-type: none"> <li>• USD 10 million in WaterHealth International</li> <li>• USD 10 million in M2 renewables</li> </ul>	SAIL Capital Partners is an investor in energy and water technology companies with a focus on sustainable innovation and growth. It seeks to identify high return opportunity at relatively low risk and co invests with a high value added partner
<b>Dow Ventures</b>	<ul style="list-style-type: none"> <li>• USD 2 million in Clean Filtration Technology</li> <li>• USD 10 million in WaterHealth International</li> </ul>	Dow Ventures is an investment arm of the Dow Chemical company which focuses on pursuing strategic investments that enable and accelerate Dow's business growth by targeting sectors like water, renewable energy and agriculture
<b>Ventureast</b>	<ul style="list-style-type: none"> <li>• ~USD 9 million in Saisudhir infrastructures</li> </ul>	Ventureast is an Indian centred VC fund with investments across sectors and across stages of business. They help the supported organizations through infusion of equity capital, mentoring and provision of networking opportunities
<b>LGT Venture Philanthropy</b>	<ul style="list-style-type: none"> <li>• USD 0.25 million in Driptech</li> </ul>	LGT Venture Philanthropy is an impact investor supporting organizations with positive social and environmental impact. They help the supported organizations through financial capital, mentoring and networking opportunities

## Beyond existing investors in the water and sanitation space in India, we have identified other potential social impact investors (1/2)

Name of investor	Description	Size of investment (USD)	Sector focus
Calvert Foundation	Nonprofit organization that connects impact investors with people in underserved communities through its Community Investment Note. The Note, is available in various terms and rates, invests in organizations in developing relevant solutions in target areas	420 million	Affordable housing, Education, Environment, Fair trade, Financial inclusion, Health, Job creation and Women's empowerment
Capricorn Investment Group	Private, independent investment firm for clients who seek a global impact driven portfolio. It seeks to make uncompromising quality, ethical, fair, long-term oriented investments	3.5 billion	Climate change, Rural electrification, Food and Agriculture, Health and Water
DOEN Foundation	DOEN supports the early efforts of entrepreneurs operating within two themes, Green and Inclusive Economy (e.g. Climate Change, Designing New Economy and Social Entrepreneurship) and Culture and Cohesion, by providing subsidies, loans, and/or equity investments	180 million	Fair trade, Renewable energy, Social ventures, and MSME financing
FMO	FMO is the Dutch development bank. FMO supports sustainable private sector growth in developing markets by investing in social entrepreneurs	8.5 billion	Financial institutions, Energy, Agribusiness, Food and Water

Note: Social investors were selected from among the relevant members of Global Impact Investing Network who have a presence in India

Source: Global Impact Investing Network, Dalberg analysis

## Beyond existing investors in the water and sanitation space in India, we have identified other potential social impact investors (2/2)

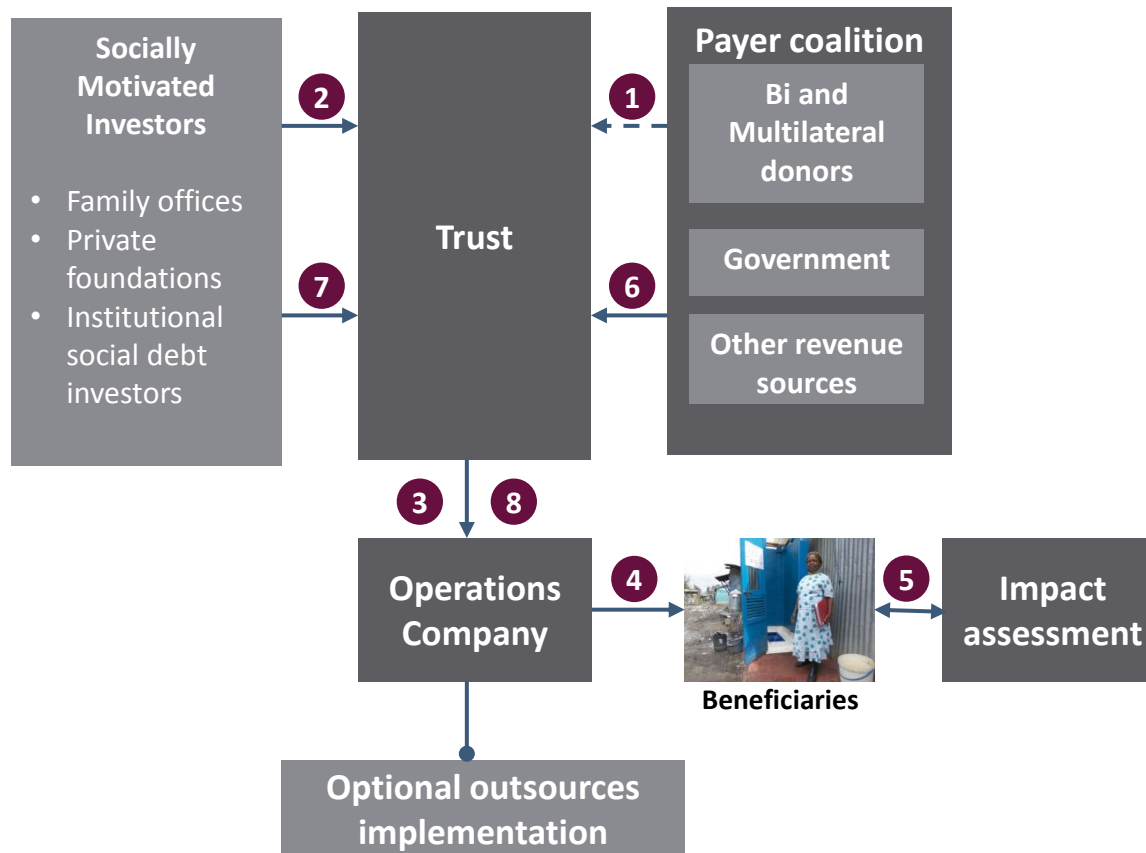
Name of investor	Description	Size of investment (USD)	Sector focus
Gray Ghost Ventures	Impact investment firm providing market-based capital solutions to entrepreneurs who address the needs of low-income communities in emerging markets	N.A.	Microfinance, Social ventures and Education
Lok Capital	It is a venture capital fund investing in enterprises serving the lower income and base of the pyramid (BoP) segments in India. Lok Capital is complemented by Lok Foundation, a charitable trust set up in 2001 to promote financial and social inclusion by means of targeted grants, technical support, research, and advocacy	90 million	Financial inclusion, Education, Health, Livelihoods
Omidyar Network	It is a philanthropic investment firm dedicated to harnessing the power of markets to create opportunity for people to improve their lives. Omidyar Network aims to foster entrepreneurial behavior, economic activity, and job creation through its investments	622 million	Consumer internet and Mobile, Financial inclusion, Government transparency, Entrepreneurship, Property rights
SNS Impact Investing	It is the development investment department of SNS Asset Management. SNS Impact Investing creates value for stakeholders by promoting organizations creating value through funding, mandates and/or advisory services	N.A.	Microfinance and SME focused investments

# Entrepreneurs can also seek funding and organizational support from various incubators and events held by entrepreneurship focused bodies

	Overview	Process	Funding
IIM Ahmedabad	<b>Healthcare incubation.</b> The Piramal Prize is a partnership between Piramal Foundation and Centre for Innovation, Incubation, and Entrepreneurship at IIM Ahmedabad to encourage start ups tackling challenges in India	The prize is divided into that for emerging ventures and established organizations. Applications are invited from the entrepreneurship cell website	Winners in both the category get a cash award of INR 1,00,000. Emerging ventures also receive perks such as office space, operational support, mentoring, and access to additional financing
Indian School of Business	<b>iDiya – Social Venture ideas competition.</b> It aims to encourage social entrepreneurship by being a platform to access mentoring, angel funds and incubation	Teams need to register for the annual competition in the specified format. The initial screening is done by ISB and further selection are made by relevant partners/judges	iDiya has a provision of extensive mentorship in the 2 <sup>nd</sup> round of the competition along with networking events. Winners receive seed funding and further mentorship
E Cell, IIT – Mumbai	<b>Pitch it – Platform to secure growth funding.</b> It caters to a target group of start-ups who have received seed funding and/or have their beta product ready and are looking for growth capital. It's a platform for early stage startups to pitch in their plans in front of a panel of Angel Investors	Teams need to register for the annual competition in the specified format. The screening is done by entrepreneurs and industrialists with final selections made by the Angel investors	Finalists receive the opportunity to participate in networking events. Capital and relevant mentoring is awarded to the winners
UnLtd India	<b>Incubation for social enterprises.</b> UnLtd India works with social entrepreneurs to help them to accelerate impact and prepare organizations for scaling and further investment	Applications are invited from social entrepreneurs which are screened to determine the potential social impact, leadership credentials of management and potential for mutually beneficial partnership between the investee and UnLtd India	UnLtd India has various programs such as seed funding, bootcamp (intensive accelerator), shared spaces for working and networking events

# For example, social impact bonds could be utilized by market players in collaboration with multiple agencies to fund business opportunities

## Illustration of example financial flows



### Investors disburse initial principal against Payer Coalition commitments

- 1 Payer coalition commits capital to be paid based on results in a selected sanitation business opportunity
  - 2 Investors disburse upfront capital to fund program operations of the business opportunity
  - 3 Trust disburses investor capital to Operations company
  - 4 Operations company may outsource some aspect of program implementation to enable faster scaling
  - 5 Independent impact assessment declares whether operations company hit certain pre-defined impact targets in sanitation
- If the program meets its targets**
- 6 Payer coalition releases full commitment to Trust
  - 7 Trust disburses full commitment to repay investor's principal with interest
  - 8 Contract with Operations company extended
- If the program does not meet its targets**
- 6 Payer coalition releases only partial payment to Trust
  - 7 Trust repays only part of principal to investors
  - 8 Contract with Operations company terminated, program ends and funding eases

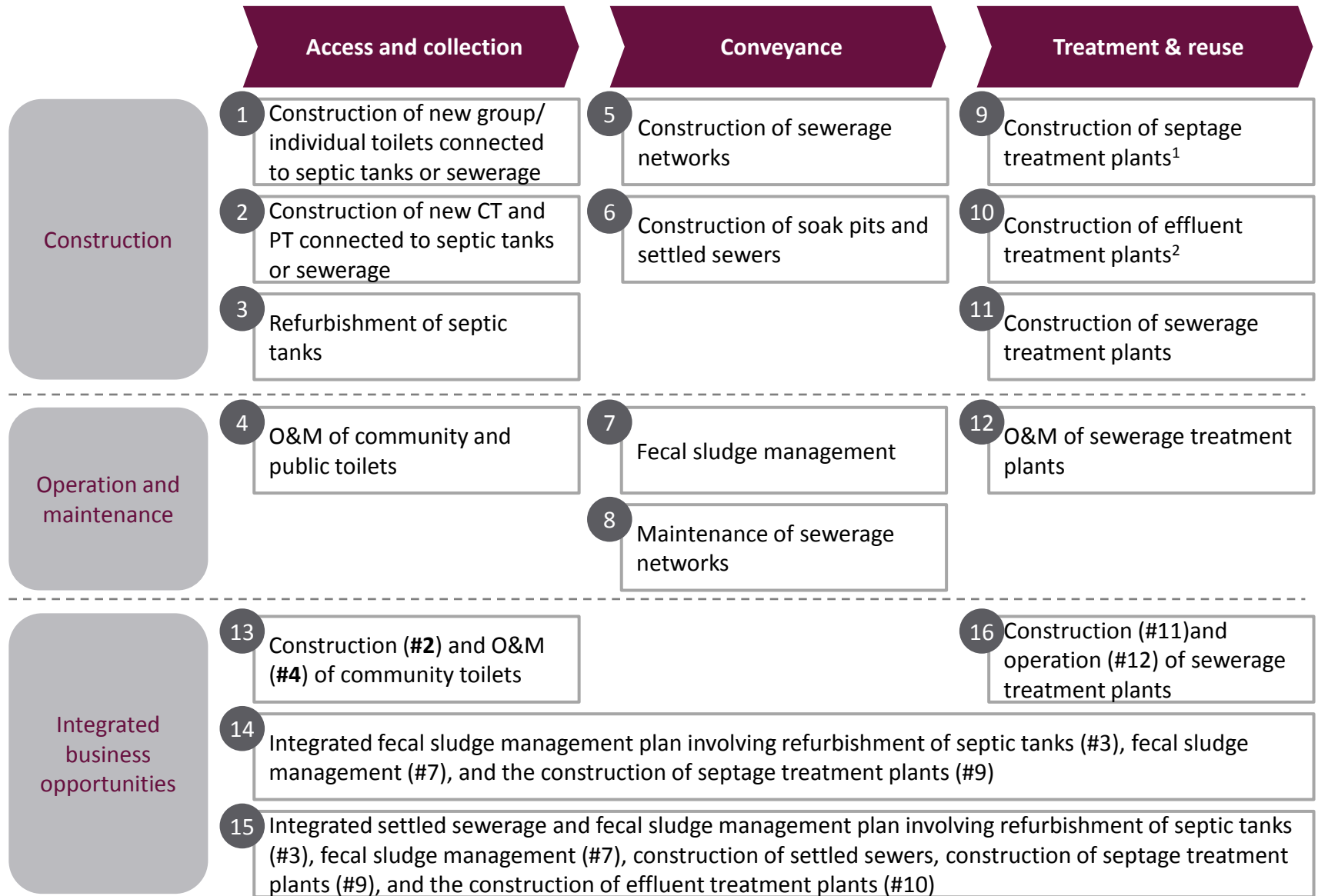


# Outline

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- Context of urban sanitation in India
- Assessing sources of finance
- **Funding options for business opportunities in urban sanitation**

# We have identified 16 business opportunities with the potential to improve sanitation outcomes across the value chain



Note: (1) Technology used: Sludge drying beds (2) Technology used: Facultative aerated lagoon

Source: Dalberg analysis

# These business opportunities are evidenced by a large variety of existing public and private players (1/2)

Business Opportunities	Description	Examples of existing players
1 Construction of new group/ individual toilets connected to septic tanks or sewerage	<ul style="list-style-type: none"> <li>Business opportunity catering to demand for personal and shared toilets by HH practicing open defecation</li> </ul>	<i>Uniloo (Ghana), EZ Toilets- IDE (Cambodia), LooWatt (Madagascar), 3S Shramik (India), Sanishop (Cambodia)</i>
2 Construction of new CT and PT connected to septic tanks or sewerage	<ul style="list-style-type: none"> <li>Business opportunity catering to demand for improved sanitation by HH practicing open defecation unable to get personal toilets</li> </ul>	<i>Dignified Mobile Toilets (Nigeria), 3S Shramik (India)</i>
3 Refurbishment of septic tanks	<ul style="list-style-type: none"> <li>Business opportunity for refurbishment of septic tanks to allow easy access for cleaning</li> </ul>	<i>Local contractors</i>
4 O&M of community and public toilets	<ul style="list-style-type: none"> <li>Business opportunity to execute contracts for maintenance of community toilets in cities across slum and non slum areas</li> </ul>	<i>Gramalaya (India), Hype Integrated Communications (India), 3S Shramik (India)</i>
5 Construction of sewerage networks	<ul style="list-style-type: none"> <li>Business opportunity for constructing sewerage network for new and existing toilets without access to sewerage</li> </ul>	<i>Vishwa infrastructure (India) Ramky Infrastrucutre (India)</i>
6 Construction of soak pits and settled sewer	<ul style="list-style-type: none"> <li>Business opportunity for constructing soak pits and settled sewer for toilets with septic tanks for safe conveyance of wastewater</li> </ul>	<i>Clearford industries (Canada), SANIMAS (Indonesia), AREM (Mali)</i>
7 Fecal sludge management	<ul style="list-style-type: none"> <li>Business opportunity for maintenance of septic tanks through periodic cleaning, sludge conveyance and disposal</li> </ul>	<i>Blue star enviro services, Global Enviro Engineers (India), Bear Valley Ventures - Tiger toilets (Tanzania), 3S Shramik (India)</i>
8 Maintenance of sewerage network	<ul style="list-style-type: none"> <li>Business opportunity for maintenance of sewerage networks to ensure safe conveyance of waste to treatment plants</li> </ul>	<i>FCC services (Spain), MACE (U.A.E.)</i>

# These business opportunities are evidenced by a large variety of existing public and private players (2/2)

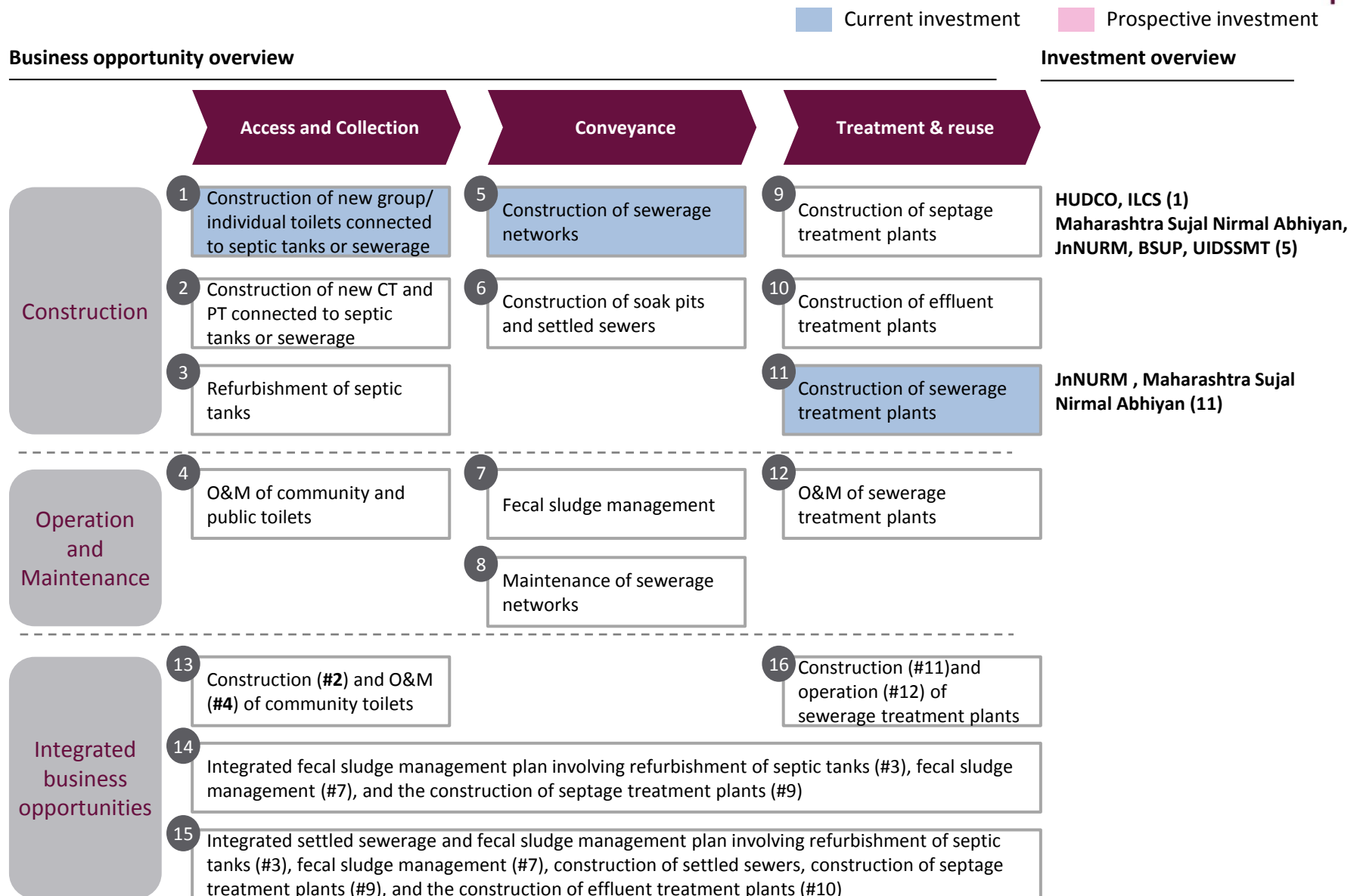
Business Opportunities	Description	Examples of existing players
9 Construction of septage treatment plants	<ul style="list-style-type: none"> <li>Business opportunity for augmenting decentralized treatment capacity for treatment of fecal matter from septic tanks</li> </ul>	<p><i>Sandec (Ghana, Senegal, Uganda), SANIMAS (Indonesia)</i></p>
10 Construction of effluent treatment plants	<ul style="list-style-type: none"> <li>Business opportunity for treatment of solid-free effluents</li> </ul>	<p><i>BORDA (Germany), CDD (India), Waste Enterprisers (Ghana, Senegal, Uganda), SANIMAS (Indonesia)</i></p>
11 Construction of sewerage treatment plants	<ul style="list-style-type: none"> <li>Business opportunity for augmenting waste treatment capacity for sewerage</li> </ul>	<p><i>Thermax (India), Ramky Infrastrucutre (India)</i></p>
12 O&M of sewerage treatment plants	<ul style="list-style-type: none"> <li>Business opportunity for operation and maintenance of centralized treatment plants</li> </ul>	<p><i>General Electric (U.S.A.), Veolia (France)</i></p>
13 Construction and O&M of community toilets	<ul style="list-style-type: none"> <li>Business opportunity to construct and operate community toilets</li> </ul>	<p><i>Sulabh (India), Ecotact (Kenya), 3S Shramik (India)</i></p>
14 Integrated fecal sludge management plan (IFSM)	<ul style="list-style-type: none"> <li>Business opportunity to construct, operate community toilets and engage in treatment of waste</li> </ul>	<p><i>Sanergy (Kenya), Peepoo (Kenya), 3S Shramik (India)</i></p>
15 Integrated settled sewerage and FSM	<ul style="list-style-type: none"> <li>Business opportunity for the conveyance and treatment of septage and effluents from septic tanks</li> </ul>	<p><i>CDD (settled sewer and treatment plants), 3S Shramik (FSM and treatment plants)</i></p>
16 Construction and operation of sewerage treatment plants	<ul style="list-style-type: none"> <li>Business opportunity to construct and operate centralized waste treatment plants</li> </ul>	<p><i>Veolia (France), Degremont (France)</i></p>

# We analyzed a variety of sources of funding and identified their sanitation-interests based on their historical investment patterns

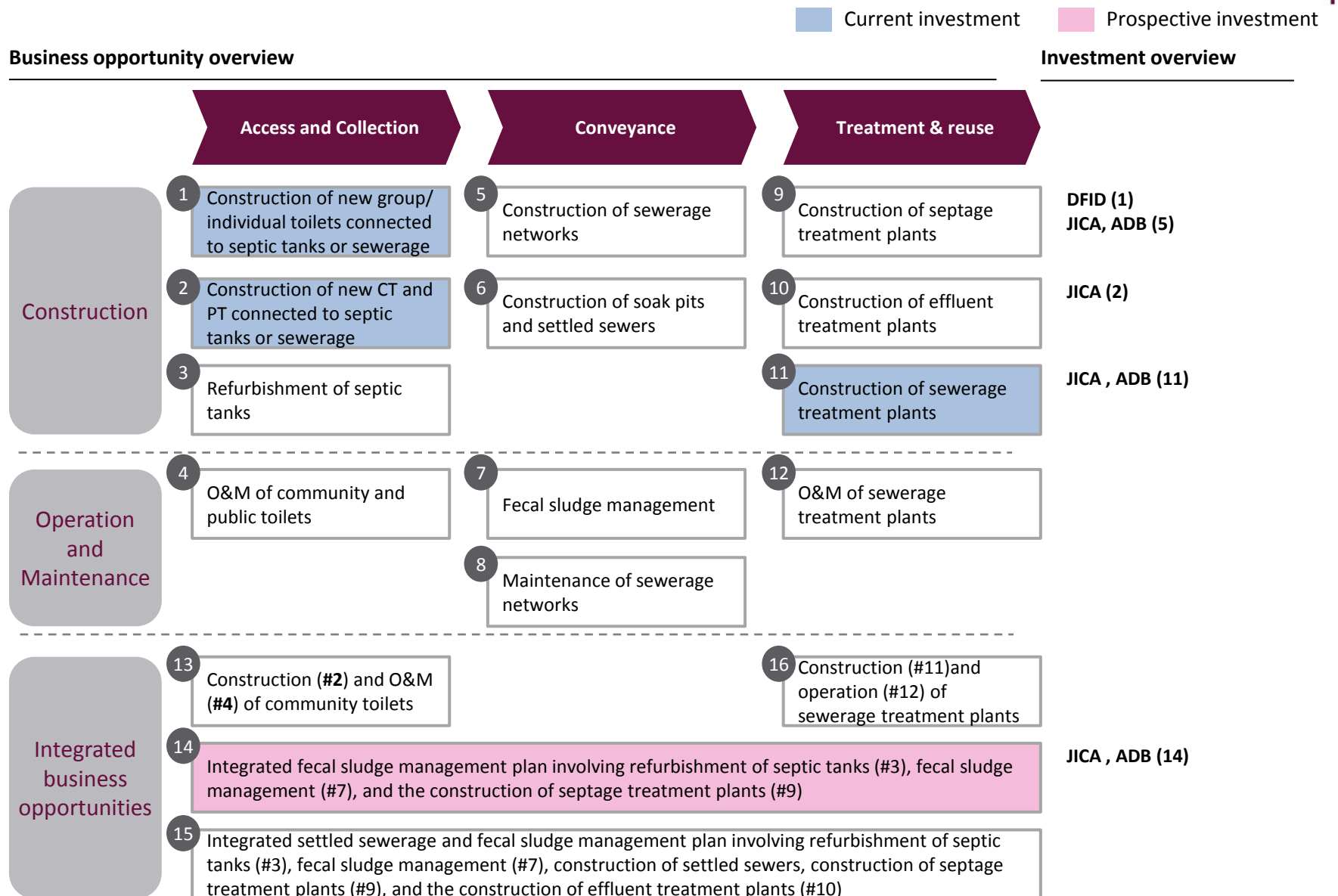
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- **Through analyzing current and historical activity, we discovered that:**
  - Central and state government schemes cater to small towns and cities and aim to provide sanitation infrastructure across the value chain
  - Bilateral and multilateral donors invest in large scale sanitation projects which build infrastructure for conveyance and treatment of waste
  - Major foundations around the world are funding organizations which provide decentralized solutions for access to sanitation
  - CSR initiatives of major corporates are focused around providing access to sanitation in areas of their presence
  - Banks have the potential to provide financing for viable medium scale decentralized sanitation projects
  - Infrastructure finance companies have the potential to fund large-scale, high cost projects focusing on conveyance and treatment of waste
  - Microfinance institutions are providing microcredit to households to increase access to sanitation facilities
  - Social impact investors are focused on decentralized models for sanitation with IFC investing in sewerage projects
- **The following pages (65-72) go through the above in detail**

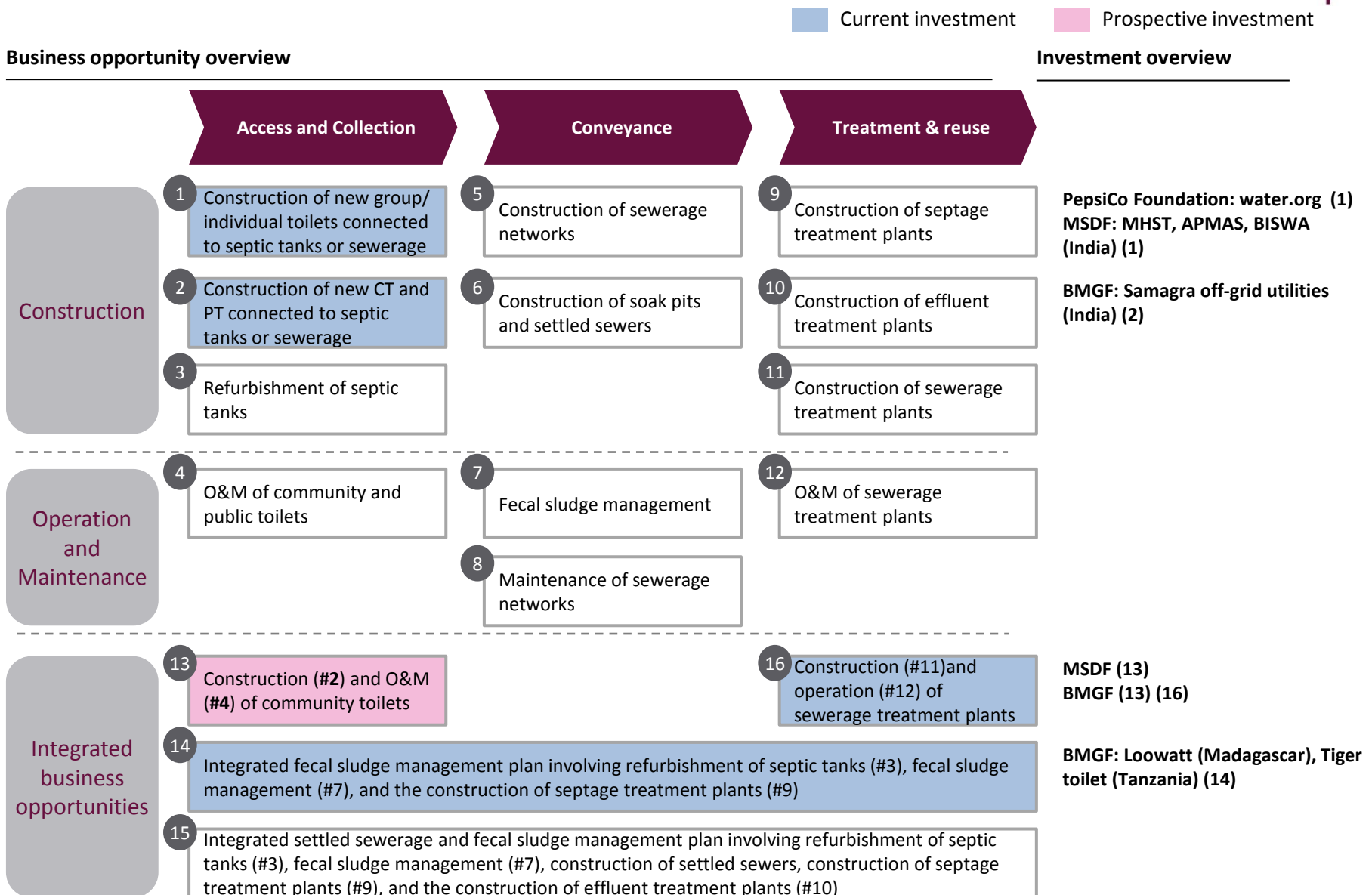
# Central and state government schemes cater to small towns and cities and aim to provide sanitation infrastructure across the value chain



# Bilateral and multilateral donors invest in large scale sanitation projects which build infrastructure for conveyance and treatment of waste

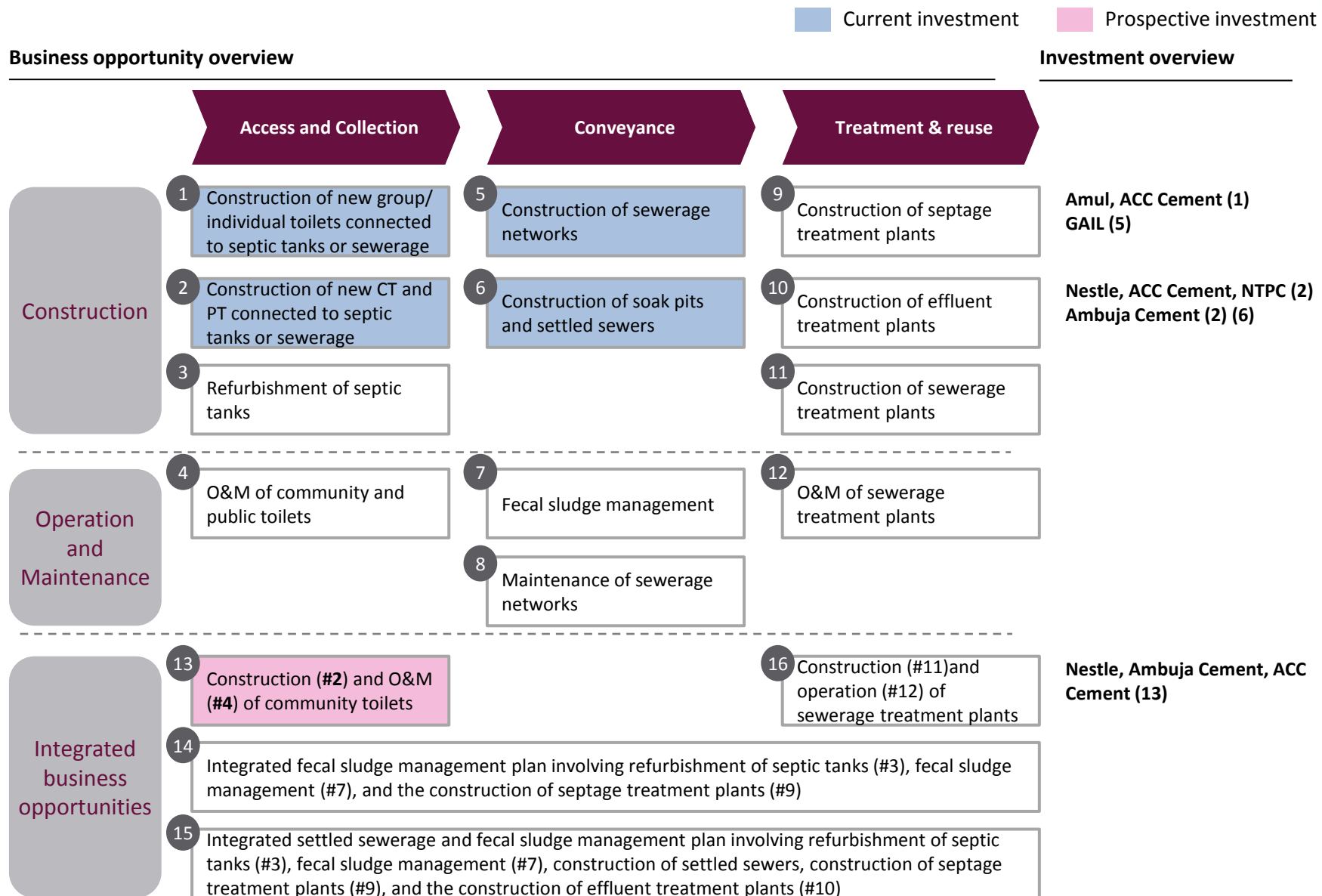


# Major foundations around the world are funding organizations which provide decentralized solutions for access to sanitation

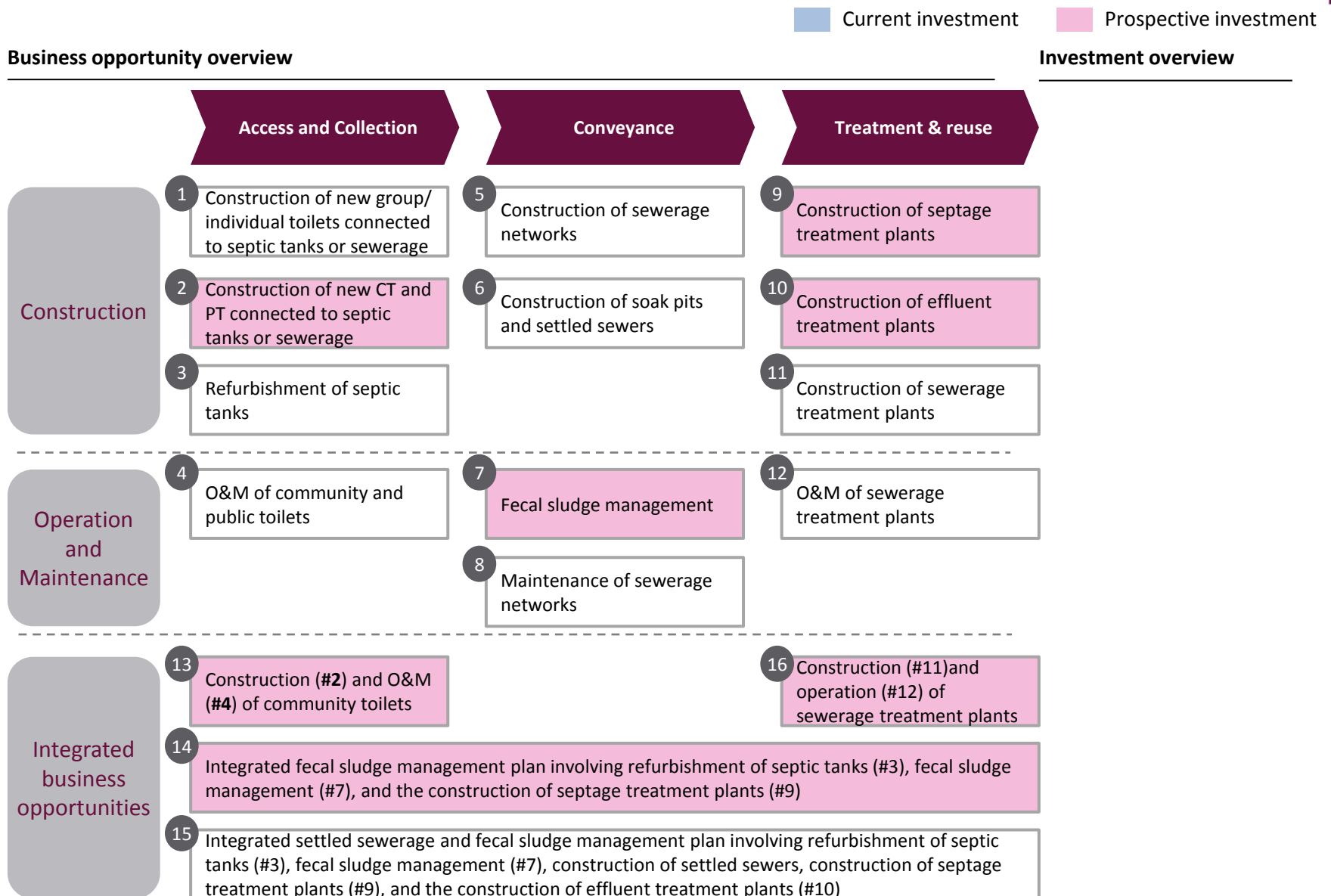




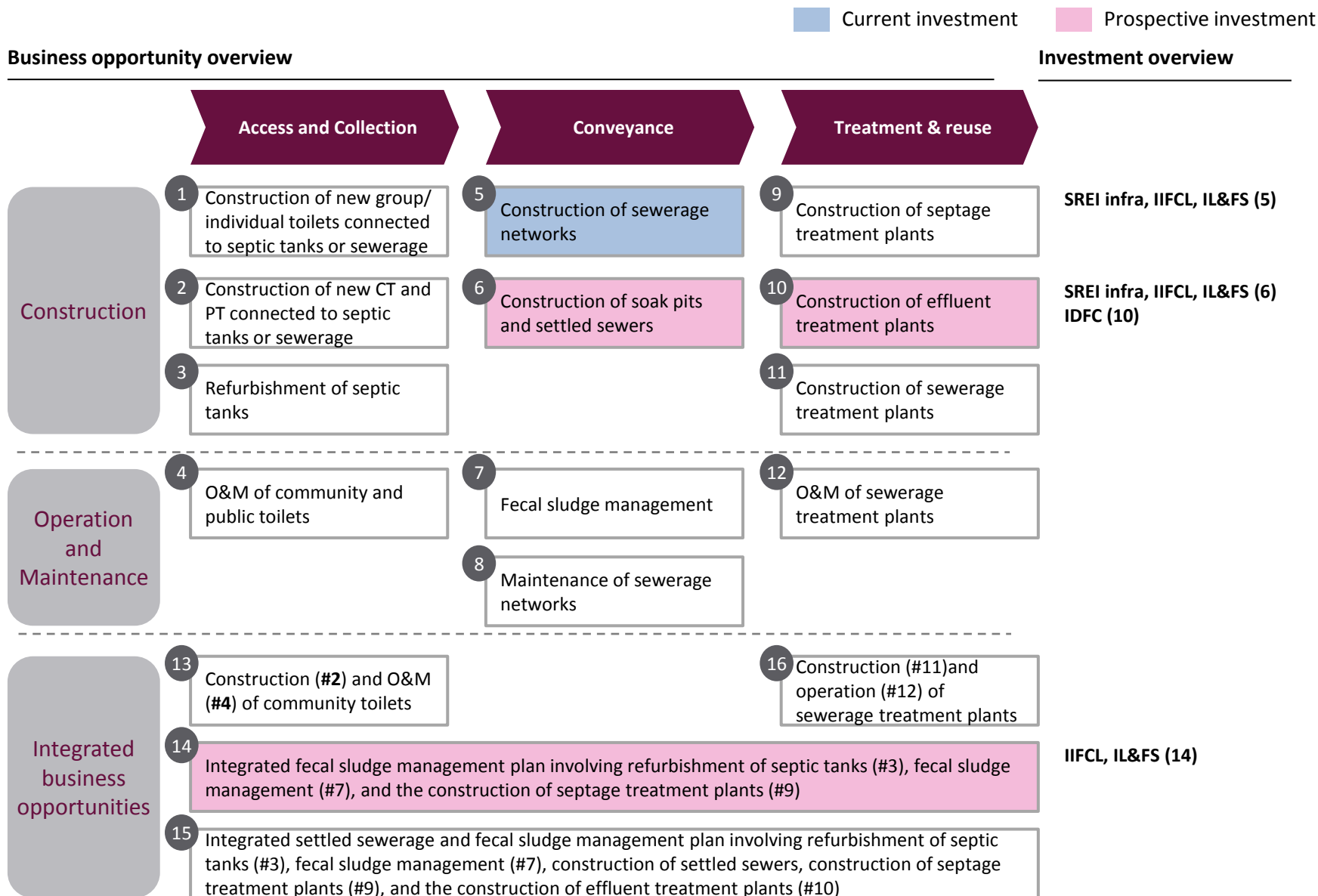
# CSR initiatives of major corporates are focused around providing access to sanitation in areas of their presence



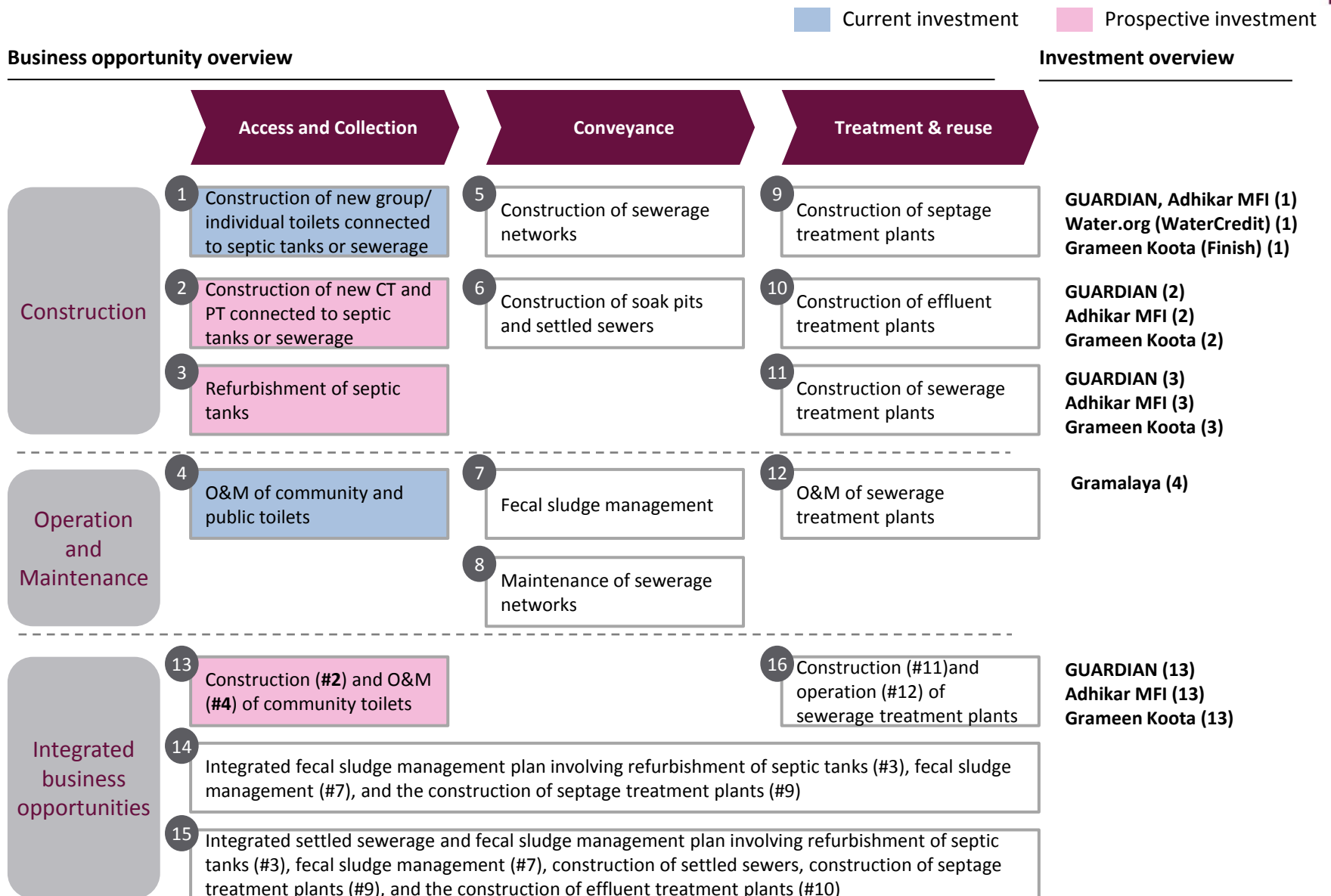
# Banks have the potential to provide financing for viable medium scale decentralized sanitation projects



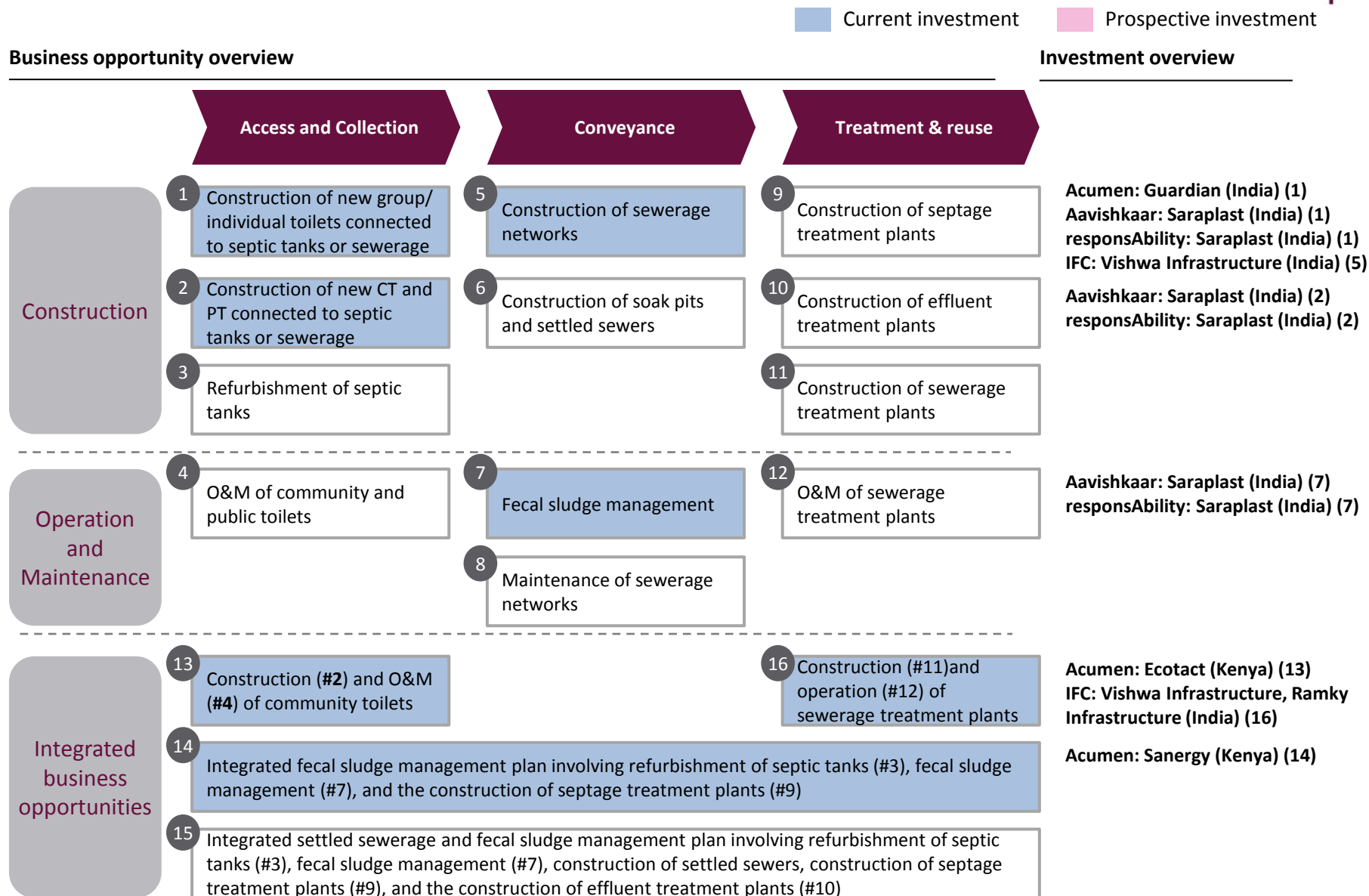
# Infrastructure finance companies have the potential to fund large-scale projects focusing on conveyance and treatment & reuse of waste



# Microfinance institutions are providing microcredit to households to increase access to sanitation facilities



# Social impact investors are focused on decentralized models for sanitation with IFC investing in sewerage projects



# To summarize there is potential for funders to invest across a wide range of business opportunities ...(1/2)

<b>Business Opportunities</b>	<b>Source of funding</b>							
	<b>Government schemes</b>	<b>Bi/Multilateral donors</b>	<b>International Foundations</b>	<b>CSR activities</b>	<b>Commercial banks</b>	<b>Infrastructure companies</b>	<b>MFI</b>	<b>Social impact investors</b>
<b>1</b> Construction of new group/ individual toilets connected to septic tanks or sewerage	●	●	●	●			●	●
<b>2</b> Construction of new CT and PT connected to septic tanks or sewerage	●	●	●	●	●		●	●
<b>3</b> Refurbishment of septic tanks							●	
<b>4</b> O&M of community and public toilets							●	
<b>5</b> Construction of sewerage network	●	●		●		●		●
<b>6</b> Construction of soak pits and settled sewer	●			●		●		
<b>7</b> Fecal sludge management					●			●
<b>8</b> Maintenance of sewerage networks						●		

● Current investment    ● Prospective investment

# To summarize there is potential for funders to invest across a wide range of business opportunities ...(2/2)

Business Opportunities	Source of funding							
	Government schemes	Bi/Multilateral donors	International Foundations	CSR activities	Commercial banks	Infrastructure companies	MFI	Social impact investors
9 Construction of septage treatment plants				●		●		
10 Construction of effluent treatment plants				●	●	●		
11 Construction of sewerage treatment plants	●	●				●		
12 O&M of sewerage treatment plants						●		
13 Construction and O&M of community toilets			●	●	●		●	●
14 Integrated fecal sludge management plan (IFSM)		●	●		●	●		●
15 IFSM and construction of settled sewers connected to effluent treatment plant		●						●
16 Construction and operation of sewerage treatment plants			●		●			●

## Appendix – Business profiles



# Loowatt



Loowatt

## **Description**

- Loowatt Ltd. Is a private firm based in London
- The loowatt toilet is a revolutionary waterless toilet system that generates energy from human waste. It has been tested in London and is currently in pilot phase in Madagascar
- The toilet currently uses anaerobic digestion for treatment however it can be connected to other forms of treatment mechanisms as well

## **Products Offered**

- Loowatt Energy Unit: Is a waterless toilet system which uses a sealing mechanism to contain human waste within a biodegradable film with an odor-inhibiting system. The waste is then stored in a cartridge beneath the toilet, which is emptied periodically depending on the level of usage. From the cartridge the waste is emptied into a digester which converts it into natural gas and fertilizer. The sealing unit can be built into toilets of any specification using local material.

## **Sectoral Focus**

- Sanitation
- Waste Management

## **Reach**

- Madagascar
- Sub Saharan Africa

## **Future plans**

- 100 waterless toilets serving 3000 people by 2015

## **Target Users**

- Urban areas

## **Core Technology Used**

- Storage: Mechanical sealing
- Treatment: Anaerobic digestion

## **Ownership Structure**

- Private ownership

## **Funding Sources**

- Bill and Melinda Gates Foundation ( \$1 million, 2013)

## **Revenue Model**

- Pay per use
- Sale of biogas and fertilizers



## Description

- A Nairobi-based company established in 2008 to improve urban sanitation for low-income communities
- Provides facilities for sanitation and drinking water on pay-per use basis.

## Products Offered

- **Ikotoilet:** Flagship model of Ecotact. Aims to provide sanitation facilities through a decentralized system. Ikotoilet has developed a toilet mall concept which collects urine for reuse and rainwater to be used when needed.
- **Ikotoilet Plus:** Is the first mobile vacuum toilet system in Africa. Helps to significantly reduce water consumption.
- **Ikomaji:** Is a partnership between Ecotact Limited, Trunz Water Systems AG and Africa centric. They are solar powered water systems which provide safe drinking water in high traffic market areas.

## Sectoral Focus

- Sanitation
- Water

## Reach

- Kenya
- Looking to expand to other parts of Africa

## Scale

- Total Investment: \$757,000
- Lives impacted: 300,000

## Target Users

- Urban Low-income groups

## Core Technology Used

- **Ikotoilet :** low-flush system with waterless urinals for men and sanitary bins for women
- **Ikotoilet Plus:** mobile vacuum system connected to a bowl
- **Ikomaji:** solar powered ultra filtration and reverse osmosis .

## Ownership Structure

- Incorporated with PPP.

## Funding Sources

- Private and Impact Investing funds

## Revenue Model

- Pay-per-use on Site, Rental, Advertising

## Cost Drivers

- Staff, cleaning supplies, utilities, marketing, office, corporate services

# Sulabh



## Description

- A non-profit voluntary social organization which aims to liberate scavengers by providing cost-effective sanitation.
- Builds low-cost pay-per-use toilets catering to the lower-middle class population in India.

## Products Offered

- **Sulabh Shauchalaya:** Is an eco-friendly, economically affordable flush compost toilet which uses Indigenous technology that can be constructed using local labour and materials. Connected to two pits where each pit is designed for 3 years' usage and used alternately. In about two years, the sludge gets digested and is almost dry and pathogen free, thus safe for handling as manure.
- **Biogas Plant:** Produce biogas using waste from public toilets and recycle and reuse effluents through simple and convenient methods..

## Sectoral Focus

- Sanitation

## Reach

- Pan India

## Scale

- Number of public toilets constructed: 8000
- Number of Biogas plants constructed: 200

## Target Users

- Urban, Rural Low-income groups

## Core Technology Used

- Sulabh Shauchalaya: Pour-Flush Compost toilet
- Biogas: anaerobic fermentation by methanogenic bacteria

## Ownership Structure

- Voluntary Social Organization.

## Funding Sources

- Cost of construction: Local Government Bodies
- Cost of maintenance: Pay-per Use

## Revenue Model

- Pay-per-use on Site

## Cost Drivers

- Staff, cleaning supplies, utilities, marketing, office, corporate services

# 3S Shramik ( Saraplast Pvt. Ltd.)



## Description

- 3S SHRAMIK, a brand of Saraplast Pvt. Ltd., is a social enterprise which provides facilities for portable sanitation and liquid waste management.
- The company manufactures, services/cleans portable and other public restrooms for un-served settlements and slums.
- Works on a Pay-per-use model.
- Provides a toilet bank which can be used in case of disaster.
- Looking to provide sustainable solutions to provide improved sanitation facilities in schools.

## Products Offered

- **Portable Toilet Cabins:** They are easy to construct, low-cost portable toilet cabins which can be set up in any region. Produced in three models: Global, Aspen and PJ.
- **Urinals:** Standalone urinals are easy to transport and are typically installed in crowded urban areas.. Produced in two models: Kros and Sputnik.
- **Septic Tank Cleaning:** Provide facility for cleaning using Hi Tech imported vacuum pumps and a high pressure jetting mechanism for quick cleaning.

## Sectoral Focus

- Water
- Sanitation

## Reach

- Pune, Mumbai, Delhi, Chennai and Bangalore

## Scale

- Revenue for 2012: Rs. 15 Crore

## Target Users

- Low income groups in Urban and Rural areas

## Core Technology Used

- Low cost toilet cabins/urinals connected to storage tanks

## Ownership Structure

- .Private ownership

## Funding Sources

- Private Investment Funds

## Revenue Model

- Fixed revenues from the company that operates the toilets.

## Cost Drivers

- Installation, staff, corporate services

# Sanitation Ventures: Tiger toilets

## **Description**

- Sanitation ventures is a project of the London School of Hygiene and Tropical Medicine, aimed at finding solutions for waste management of pit latrines
- It focuses on developing new and innovative on-site sanitation concepts which can be scaled up for commercial use
- The prototype was tested in Centre for Alternative Technology (CAT), UK and subsequently in Dar Es Salaam, Tanzania

## **Products Offered**

- Tiger toilet: Is a prototype model which consists of a pour-flush toilet connected to a two-part tank via a delivery pipe. The human waste is digested by worms inside the tank and the material they in turn produce is broken down further by aerobic bacteria. When one part of the tank is full, the waste is directed to the other part. After a period of six months the waste is safe to be disposed. The tank is small in size and is constructed using local material, hence reducing the cost of construction

## **Sectoral Focus**

- Sanitation
- Waste management

## **Reach**

- Dar Es Salaam, Tanzania

## **Future Plans**

- Plan to launch a model in the market by 2014

# Sanitation Ventures

## **Target Users**

- Domestic latrine users

## **Core Technology Used**

- Anaerobic digestion
- Bio filter technology

## **Ownership Structure**

- Run by the London School of Hygiene and Tropical Medicine

## **Funding Sources**

- Bill and Melinda Gates Foundation

## **Revenue Model**

- NA

## **Cost Drivers**

- Installation, staff

# Bremen Overseas Research & Development Association (BORDA)



## **Description**

- BORDA is a non-profit international development organization based in Bremen, Germany.
- Aims to improve living conditions of disadvantaged communities through the expansion of Basic Needs Services in the areas of decentralized sanitation, water and energy supply as well as wastewater and solid waste disposal.

## **Products Offered**

- **Decentralized Wastewater Treatment Solutions (DEWATS):** is an effective, efficient, and affordable solution which provides treatment for both industrial and domestic wastewater. The materials used for construction are locally available and hence the cost of installation and maintenance is low.

## **Sectoral Focus**

- Sanitation
- Water
- Waste Management

## **Reach**

- South & South-East Asia
- Southern Africa

## **Target Users**

- Urban and Rural Low-Income Groups

## **Core Technology Used**

- Sedimentation, Floatation, Anaerobic filter, Anaerobic Reactor, Gravel Filter

## **Ownership Structure**

- Non-Profit Social Organization

## **Funding Sources**

- BMZ (German Federal Ministry for Economic Cooperation and Development), CEU (Commission of the European Union), the Free Hanseatic City of Bremen, WSP (Water and Sanitation Program), UNDP and other International Donor Organizations.

## **Revenue Model**