



# PROJECT MANAGEMENT CENTER FOR EXCELLENCE

A.J. CLARK SCHOOL OF ENGINEERING  
Civil & Environmental Engineering Department



## PROJECT MANAGEMENT ADOPTION FOR SOCIAL PROJECTS OF BUILT ENVIRONMENT SECTOR

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*2017 Project Management Symposium*

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- ▶ To study parameters impacting Project Management adoption for planning and implementation of social projects of built environment sector
- ▶ Specially focused on PM adoption in Toilet Construction projects in India under Swachh Bharat Mission scheme
- ▶ Global literature study and Case Study approach adopted
- ▶ PM adoption in 5 case projects mapped to ten knowledge areas established by PMI

# INTRODUCTION

# Social Projects of Built Environment Sector



- ▶ Community-based construction projects
- ▶ Planned as a part of social welfare initiatives or taken up in response to natural disasters.
- ▶ Projects are often in the areas of habitat, health or education
- ▶ Benefit the community as a whole and are not focussed on business benefits.



- ▶ Primarily initiated by government departments, by corporates under CSR initiatives and facilitated by non-profit/non-governmental organizations (NGOs)
- ▶ Primarily executed in an informal manner and based in remote areas
- ▶ Executed with limited human resources and under constraints of funding (*Chui-ha and Tsz-ying, 2014*)
- ▶ Beneficiaries do not fund the project, do not have high technical and managerial capabilities and are not involved from the design stage (*Golini et al., 2015*)

- ▶ Volunteers are important part of project team
- ▶ Complex web of stakeholders
- ▶ Projects are reported to face unusual delays or even failures at times
- ▶ Cost management and stakeholder satisfaction are primary considerations (*Montes-Guerra et al., 2015*)
- ▶ Project Scope and Quality, two fundamental performance variables are less important (*Montes-Guerra et al., 2015*)

- ▶ Internal success
  - ▶ Achieving estimated Time, Cost and Quality
  - ▶ Implementing agency accountable to donors for these parameters
- ▶ External success
  - ▶ Achieving stakeholder satisfaction in terms of involvement, long term impact and economic sustainability

*Ref. (Golini et al., 2015)*



- ▶ PM principles primarily restricted to basic time and cost planning, with little attention paid to the formal PM processes of pre-planning and execution
- ▶ PMBOK is the most referred document for PM guidelines, though percentage of organizations applying it is low (*Montes-Guerra et al., 2015*)
- ▶ PM tools often have a scattered adoption (*Golini et al., 2015*)
- ▶ Logical framework methodology is most often used at all stages, though it is more appropriate only at the stage of initial planning and approval (*Montes-Guerra et al., 2015*)

- ▶ Techniques connected to budget control and progress monitoring are most often used (*Montes-Guerra et al., 2015*)
- ▶ Generally only electronic spreadsheet software are used and other PM software are not used (*Montes-Guerra et al., 2015*)
- ▶ Tools usage at a certain stage is influenced by use of tools at other stages (*Golini et al., 2015*)

# Stages of Tools Adoption



Stages	Tools
Stage 1	Progress reports, Logical framework
Stage 2 <i>Significant Impact on Internal Performance</i>	Cost accounting, GANTT diagram or project schedule, Risk analysis/management
Stage 3 <i>Significant Impact on External Performance</i>	Communication plan, Organizational chart or OBS, Milestone planning, Stakeholder matrix, Scope management, Contingency allocation, Responsibility assignment matrix
Stage 4	Work Breakdown Structure, Critical path method Issue log, Earned value management system

- ▶ Private or Non-profit organization
- ▶ PM maturity level of the organization implementing the project

*Ref. (Golini et al., 2015)*

- ▶ Project managers adopting a small set of basic tools are likely to manage only a few small projects
- ▶ Project managers adopting a wider range of tools are more likely to achieve higher internal and external success
- ▶ Tools adoption
  - ▶ results in achieving higher efficiency
  - ▶ helps projects to meet social objectives
  - ▶ contributes in management of limited resources

*Ref. (Golini et al., 2015, Montes-Guerra et al., 2015)*



# SWACHH BHARAT MISSION OR CLEAN INDIA MISSION

- ▶ A USD 29.25 billion flagship scheme of Government of India, launched in 2014
- ▶ Objective – Clean India by 2019
- ▶ Planned as a Program
- ▶ SBM (Gramin) for rural areas
- ▶ SBM (Urban) for urban areas

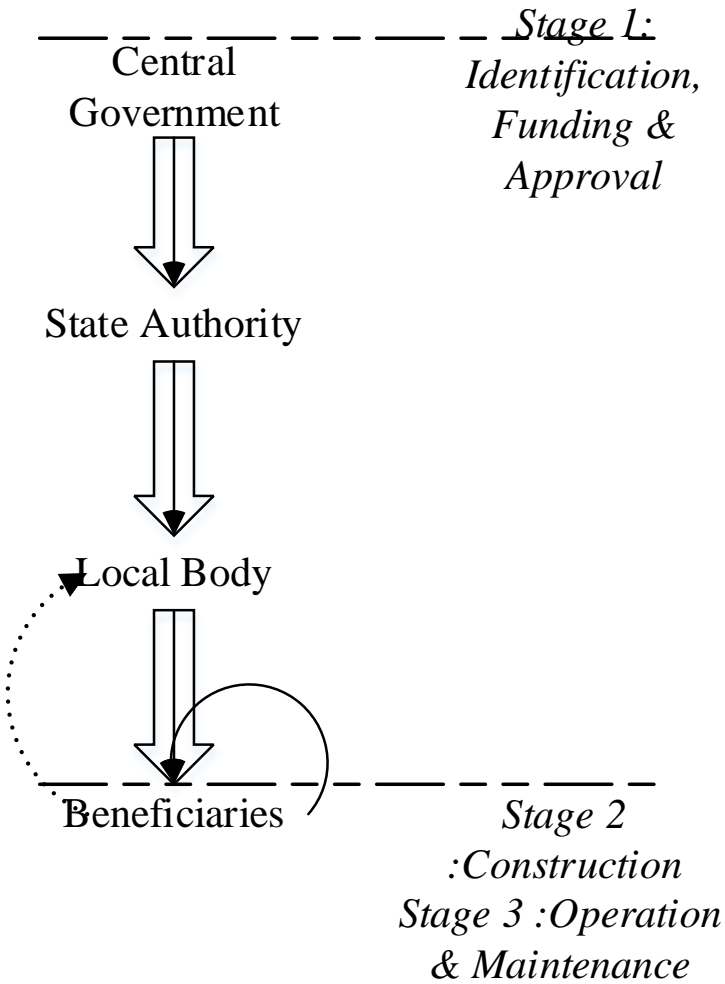
- ▶ Sub-objective – To make India Open defecation free by:
  - ▶ Construction of approx. 110 million toilets across the country
  - ▶ Bringing behavioral change
  - ▶ Capacity development of beneficiaries for effective usage, operations and maintenance of toilets
- ▶ School and College students identified as key stakeholders and potential agents of change *(SBM (G) Guidelines, 2014)*



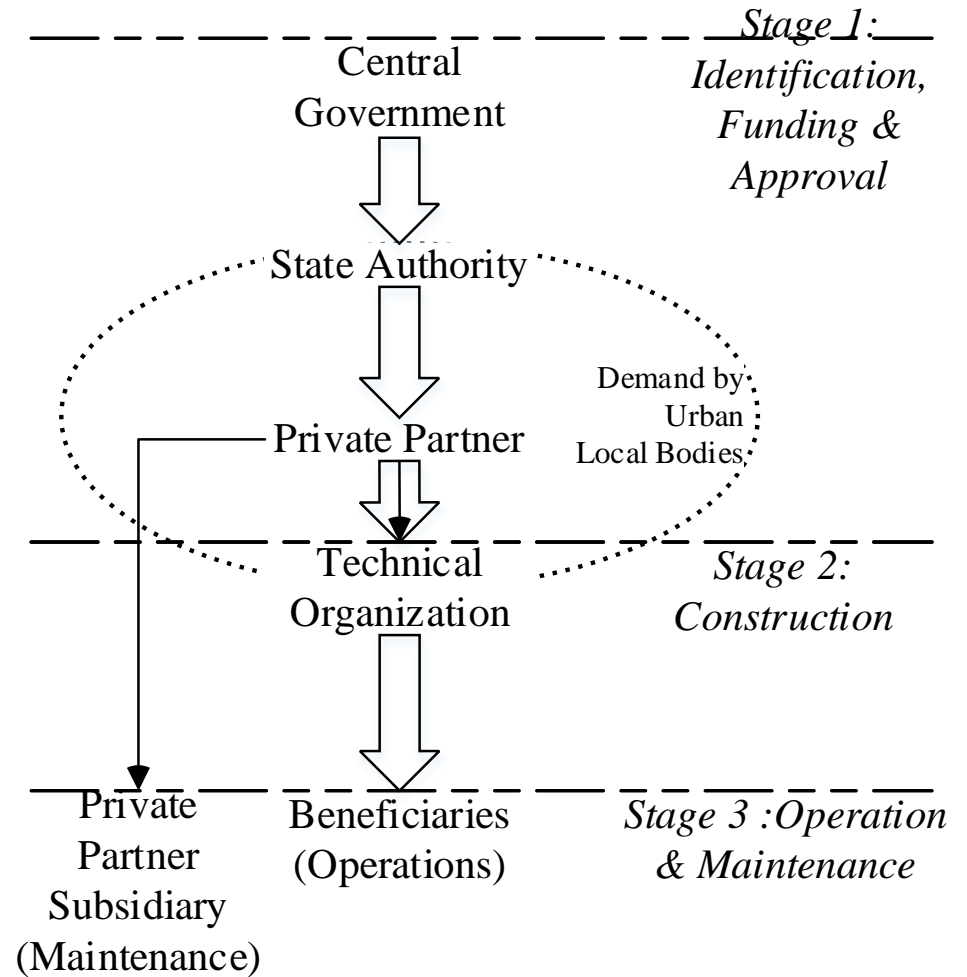
- ▶ Govt. stage based funding – USD 179/ individual household toilet (*SBM (G) Guidelines, 2014*)
- ▶ Corporate Social Responsibility (CSR) initiatives of Corporates
- ▶ 0.5% Swachh Bharat Cess (tax) levied at national level
- ▶ Public toilets constructed under PPP model
- ▶ A Fund or Swachh Bharat Kosh setup to receive donations from big and small corporates and from individuals

- ▶ Program / PM approach adopted at five levels of governance – Centre/ State/ District/ Block/ Gram Panchayat (village)
- ▶ Sanitation is a State subject – Each State has to prepare Implementation Framework and Roadmap for Planning, Implementation and Sustainability phases. Five year plans including annual plan for each year
- ▶ Monitoring of Outputs (Toilet construction) as well as Outcomes (Toilet usage)
- ▶ Progress reporting through photographic evidence
- ▶ Incentives for success of projects planned to be provided to facilitating organizations
- ▶ Program auditing as per Government Guidelines

# Implementation models

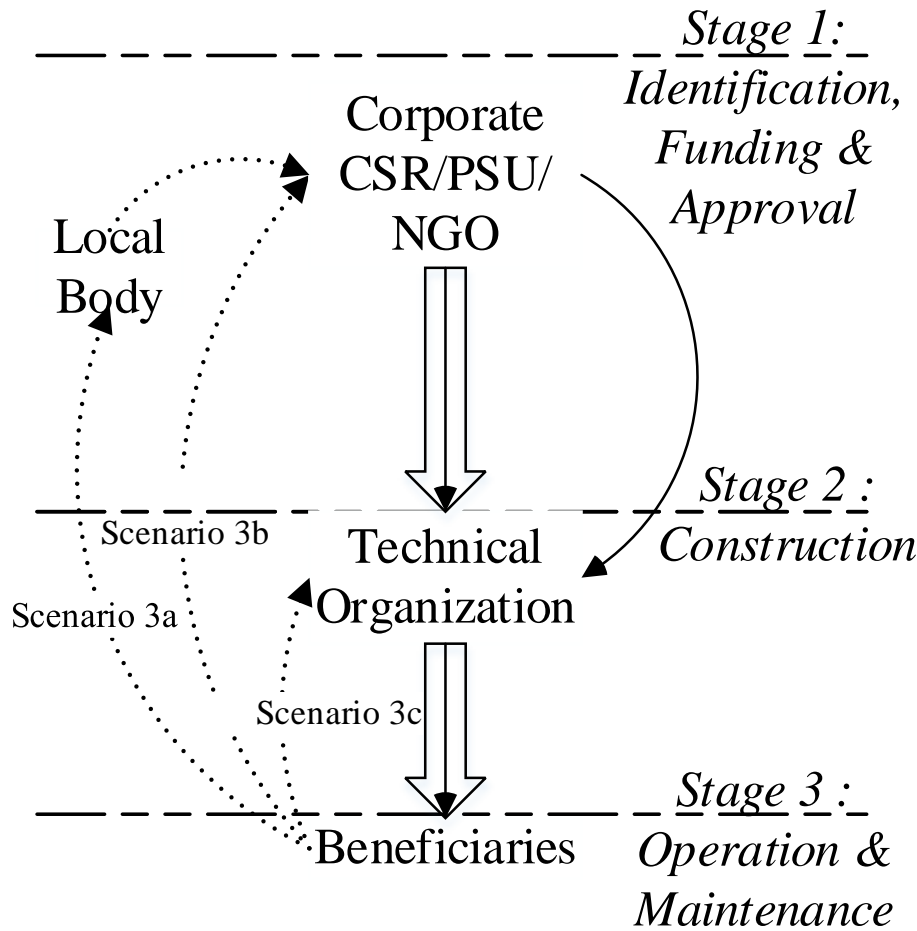


**Model 1: Individual Household Toilets**



**Model 2: PPP Mode Public Toilets**

# Implementation models



3a: Local Body identifies the need of the project through beneficiaries and the demand is communicated to the Corporate/PSU.

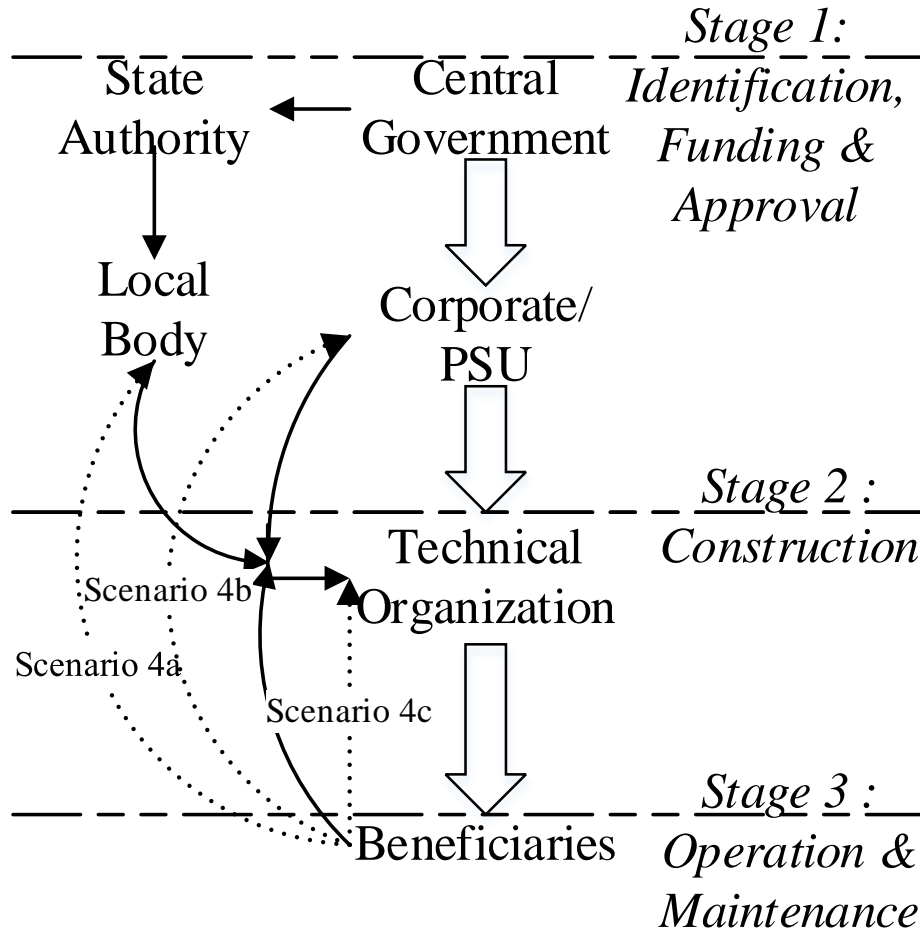
3b: The beneficiaries identify the need among themselves and approach the Corporate/PSU for the required project.

3c: The beneficiaries identify the need among themselves and directly approach the technical organization for the required project.

## Model 3: Corporate CSR/PSUs & Government



# Implementation models



4a: Local Body identifies the need of the project through beneficiaries and the demand is communicated to the Corporate/PSU/NGO.

4b: The beneficiaries identify the need among themselves and approach the Corporate/PSU/NGO for the required project.

4c: The beneficiaries identify the need among themselves and directly approach the technical organization for the required project.

## Model 4: Corporate CSR/PSU Self Funded

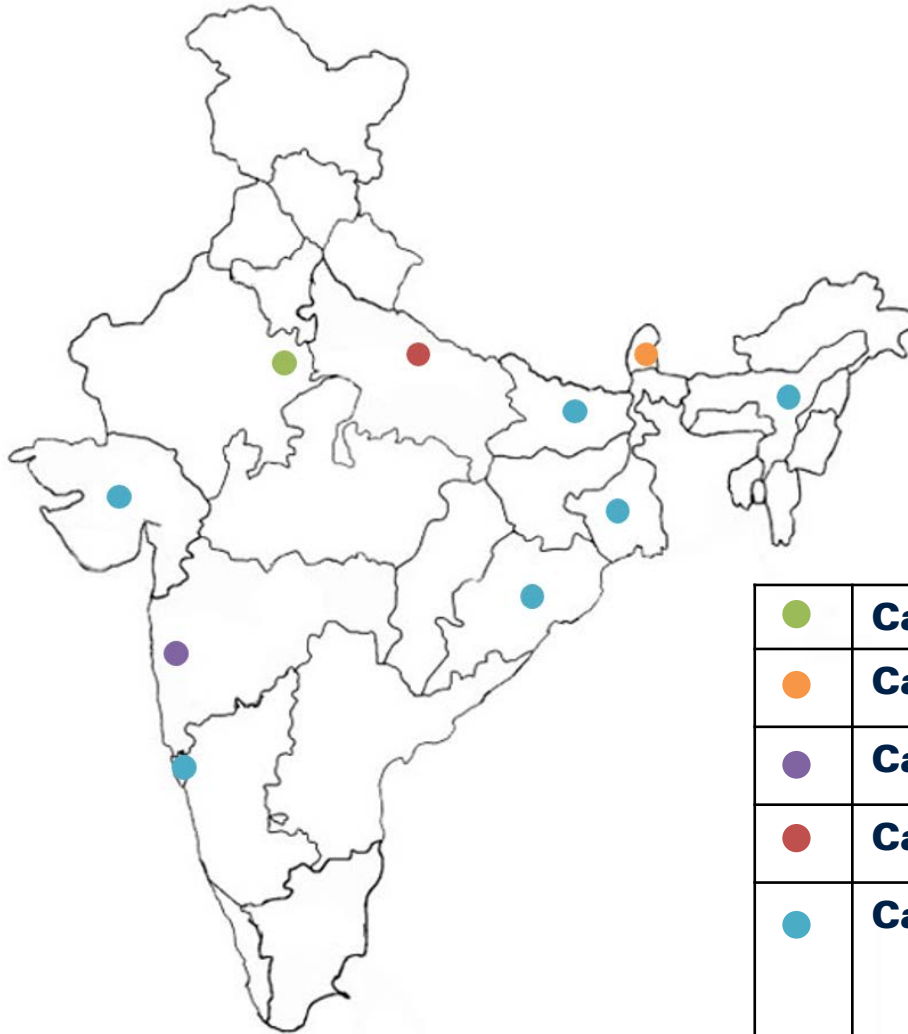
- ▶ Data collection and data structure inconsistencies
- ▶ Unauthorised habitation on the government land
- ▶ Inadequate space in the houses for individual toilets
- ▶ In remote areas non-availability of water and construction material
- ▶ Behavioral practice of open defecation
- ▶ Mishandling of taps and fixtures by beneficiaries
- ▶ Lack of water and sewage connections
- ▶ Poor construction quality and lax maintenance

*Ref. (FICCI and IPE Global, 2015; Deshpande, 2016)*

- ▶ Targets of toilets construction not being met (as per report up to March, 2016)
  - ▶ Household toilets in urban areas – Planned 2.5 million – Actual 0.6 million
  - ▶ Community and public toilets in urban areas – Planned 0.1 million – Actual 28,948
  - ▶ Toilets in Rural areas – Actual 16 million – Deficit 95 million
- ▶ Some toilets are not being used consistently
- ▶ Some beneficiaries are relapsing into the practice of open defecation

*Ref. (Hindustan Times, 27 April, 2016)*

# Case Studies



●	<b>Case Study 1</b>	<b>Alwar, Rajasthan</b>
●	<b>Case Study 2</b>	<b>Sikkim</b>
●	<b>Case Study 3</b>	<b>Pune, Maharashtra</b>
●	<b>Case Study 4</b>	<b>Uttar Pradesh</b>
●	<b>Case Study 5</b>	<b>Assam, Bihar, West Bengal, Odisha, Goa and Gujarat</b>



# Case 1: Construction of Individual Household Toilets in Bahadurpur Village, Rajasthan State



## Model 1 – Primary Case Study

- ▶ With the help of Gram Panchayats (GP), beneficiaries applied for government financial assistance of USD 179 for construction toilet
- ▶ Substituting this assistance with more funding from their side, the villagers were able to build household toilets just about meeting the basic recommended guidelines
- ▶ Construction was carried out either by the beneficiaries themselves or by hiring a local mason with limited supervision at the GP level
- ▶ Construction quality of toilets and subsequent maintenance is generally not of required quality



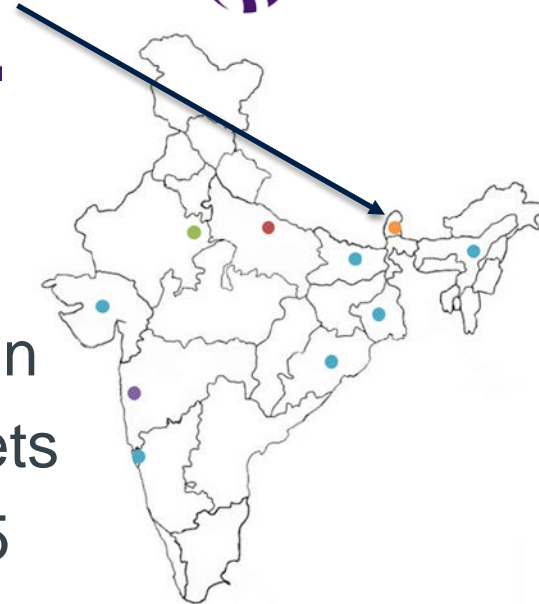


# Case 2: Construction of Household Toilets in Villages of State of Sikkim



## Model 1 – Secondary Case Study

- ▶ Under the initiative of declaring Sikkim State 100% ODF, 4391 households were identified in the East Sikkim district without individual toilets
- ▶ Construction period - 2013 to December 2015
- ▶ Selection of beneficiaries was done by Gram Sabha through surveys and visits.
- ▶ Construction of toilets was monitored at the Gram Panchayat level with technical support provided by the state engineers



<b>Partners</b>	<b>Kanchenjunga Conservation Committee (KCC), ASHA workers, Aganwadi workers, Self Help Groups</b>
<b>Local Authority</b>	Rural Management and Development Department (RMDD), Government of Sikkim



IHHL



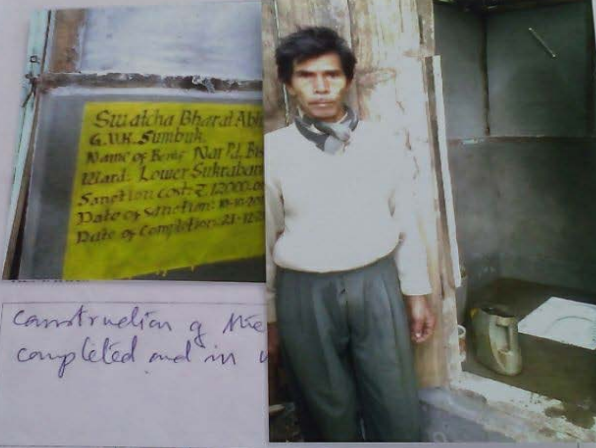
Verification by District Consultant  
Panchayat and  
Swahhata Prerak



STATUS REPORT OF INDIVIDUAL LATRINE

No. \_\_\_\_\_

Date: 22 Sadam  
 G. P. Unit: Sundeloy Ward: Lower Sukrabahary  
 Name: Mr. Pd. Bista F/Name: Lt. Manika Bdr. Bista




Construction of the latrine has been completed and in use.

Ward Panchayat: Sakundala Pradhan RDA: \_\_\_\_\_  
 Sachta Predeak: \_\_\_\_\_  
 Gram Vikash Adhakar: \_\_\_\_\_

STATUS REPORT OF INDIVIDUAL LATRINE

No. \_\_\_\_\_

Date: 22 Sadam  
 G. P. Unit: Sundeloy Ward: Lower Sukrabahary  
 Name: Santosh Ghising F/Name: Apam Das Ghising



Toilet has been completed.

Ward Panchayat: Sakundala Pradhan RDA: \_\_\_\_\_  
 Sachta Predeak: \_\_\_\_\_  
 Gram Vikash Adhakar: \_\_\_\_\_

Before, during and after reporting through photographs and report duly signed by ward panchayat, Junior Engineer and Rural Development functionaries at Gram Panchayat

# Case 3: Construction of Individual Household Toilets at Ganesh Mala Slum, Pune, Maharashtra State



## Model 1 – Secondary Case Study

- ▶ Individual Household Toilets constructed for 81 beneficiary families
- ▶ PMCorp. sponsored the cost of the toilet hardware and construction
  - ▶ P.M. Corp. received funds from the Centre and the State of USD 179/ toilet
  - ▶ P.M. Corp. supplemented the funding with its own contribution of USD 90/ toilet

(Associates, 2015 and PM Corp. website, “Individual Toilets”)

NGO Partner	Shelter Associates(SA)
Local Authority	Pune Municipal Corporation (PMCorp.)

# Case 3: Construction of Individual Household Toilets at Ganesh Mala Slum, Pune, Maharashtra State



## Model 1 – Secondary Case Study

- ▶ Shelter Associates was responsible for:
  - ▶ providing slum data identification of the beneficiary families
  - ▶ monitoring and supervision of the actual toilet construction
  - ▶ community mobilization for proper utilization of the provided individual toilets
- ▶ Construction was carried out by the beneficiaries by hiring trained masons or by themselves through adequate training



- ▶ Post occupancy evaluation by the NGO found that the toilets are being used by the beneficiaries as they have a sense of ownership
- ▶ Success of this project is now paving way for construction of additional 28,000 individual toilets within the next two years under the Swachh Bharat Mission



# Case 4: Construction of School Toilets in a District in State of Uttar Pradesh (UP)



## Model 3c – Primary Case Study

- ▶ Council identified beneficiaries, designed & constructed toilets under CSR initiative of the funding partner
- ▶ Identified beneficiaries were seven schools in a District in UP State
- ▶ Financial assistance was provided by the Client and the Council completed the construction of toilet blocks through its manpower & resources
- ▶ Post occupancy surveys conducted by the Council found that due to proper training & workshops given during the construction phase, beneficiaries have been using the toilets



Implementing Body | Govt. instituted apex organization/council

Funding Partner | Private engineering company

समा. मन सिंद बालिका विद्यालय रुकुमपुर रेणुका जीतपुर  
टाइलट निर्माण के कार्य एवं मी. का विवरण

**Date**  
**Activity**

दिनांक	कार्य-विवरण	कार्य करने वाले का नाम	कार्य होने वाली जगह
27/1/2015	ई. आटा	सबु सुब्बा, मनोज कुमार	पुष्प 3 निवास
28/1/2015	मी. की सुदई	सनेज, मनज केके के. के. के. के. के. के.	काका काशी सुदया
11/1/2015	पी. सी. के. कार्य	सबु सुब्बा, मनोज कुमार	सोनेर मोटे 0-10 काशी. के.
14/1/2015	मी. की ई. धिनाई कार्य	सबु सुब्बा, मनोज कुमार	0-10 काशी. के. के. के. के.
23/1/2015	मि. की काशी कार्य	सनेज, मनज केके के. के. के. के. के. के.	पुष्प काशी. के. के.
14/1/2015	मी. की ई. धिनाई	सनेज, मनज केके के. के. के. के. के. के.	सोनेर मोटे 0-10 काशी. के.
27/1/2015	मी. की ई. धिनाई	सबु सुब्बा, मनोज कुमार	ई. के. के. के. के. के. के.
18/1/2015	सि. की ई. धिनाई	सबु सुब्बा, मनोज कुमार	सनेज, मनज केके के. के. के. के. के. के.
19/1/2015	सनेज, मनज केके	सबु सुब्बा, मनोज कुमार	सोनेर मोटे 0-10 काशी. के.
21/1/2015	मी. की ई. धिनाई	सबु सुब्बा, मनोज कुमार	सोनेर मोटे 0-10 काशी. के.
22/1/2015	सनेज, मनज केके	सनेज, मनज केके के. के. के. के. के. के.	काका काशी. के. के.
23/1/2015	ई. धिनाई कार्य	सबु सुब्बा, मनोज कुमार	0-10 काशी. के. के. के. के.
24/1/2015	सनेज, मनज केके	सनेज, मनज केके के. के. के. के. के. के.	पुष्प काशी. के. के.
25/1/2015	सनेज, मनज केके	सनेज, मनज केके के. के. के. के. के. के.	सोनेर मोटे 0-10 काशी. के.
26/1/2015	सनेज, मनज केके	सनेज, मनज केके के. के. के. के. के. के.	सोनेर मोटे 0-10 काशी. के.
27/1/2015	सनेज, मनज केके	सनेज, मनज केके के. के. के. के. के. के.	सोनेर मोटे 0-10 काशी. के.
28/1/2015	सनेज, मनज केके	सनेज, मनज केके के. के. के. के. के. के.	सोनेर मोटे 0-10 काशी. के.
29/1/2015	सनेज, मनज केके	सनेज, मनज केके के. के. के. के. के. के.	सोनेर मोटे 0-10 काशी. के.
30/1/2015	सनेज, मनज केके	सनेज, मनज केके के. के. के. के. के. के.	सोनेर मोटे 0-10 काशी. के.
31/1/2015	सनेज, मनज केके	सनेज, मनज केके के. के. के. के. के. के.	सोनेर मोटे 0-10 काशी. के.

**Manpower required**

**Material and Tools and Plant required**

**Work Plan in Hindi (Local) Language**



# Case 5: Construction of School Toilets across six States in India



## Model 3c – Primary Case Study

- ▶ Under CSR initiative of PSU, NGO designed and constructed 1552 school toilets across six states
- ▶ Identification of beneficiaries was done by the NGO through surveys and interaction with the local authorities
- ▶ NGO carried out the construction of the toilets through its team of sanitary workers & masons headed by a Field Officer & a Supervisor.
- ▶ Project cost - USD 5.85 million
- ▶ Project Duration - one year (as per the scheduled timeline)



Implementing Body	NGO specialising in social sanitation solutions
Funding Partner	Oil and gas sector PSU

- ▶ Active stakeholder awareness programs were conducted by the NGO at pre-construction & post-construction stages
- ▶ Constructed toilets have a high success rate

# Analysis

# Mapping of PM Tools and Techniques Adopted



Tools Adopted		Case 1	Case 2	Case 3	Case 4	Case 5
<b>Stage 1</b>						
1	Logical Framework	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	Progress Reporting	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Expert Judgement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Stage 2</b>						
1	Project Scheduling (MS Excel/MSP)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	Cost Accounting	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Scope Management (Surveys/Interviews)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Formal Agreement/Work Order	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Inspection	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Stage 3</b>						
1	Organisation Chart	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	Responsibility Matrix/Chart	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Milestone Scheduling	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Communication Plan (Meetings/visits)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	MIS Reporting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	Procurement Negotiation (Tendering)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Quality Assurance (Third Party Audit)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8	Performance Reporting (Factsheets/Report)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
9	Capacity Building Workshops/IEC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
10	Quality Control (Inspection)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11	Scope Management(GIS Mapping)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	Stakeholder Analysis Matrix	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Stage 4</b>						
1	Issue Log	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	Work Breakdown Structure(WBS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Critical Path Method (CPM)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Earned Value Management System (EVMS)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Others</b>						
1	Post Occupancy Evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

- *All cases have adopted Logical framework methodology*
- *Formal time scheduling has been done only in Cases 4 and 5*
- *Progress reporting has been done in different formats in all cases as it is a requirement of the government established system*
- *Other tools are not adopted in all cases*

- ▶ Case 1 - Planning and implementation was totally assigned to the beneficiaries
  - ▶ PM adoption was only to fulfil the basic requirements of the guidelines
  - ▶ Construction quality is also of basic requirement
- ▶ Case 2 and Case 3 - examples of individual household toilets, but with structured intervention of local authorities, augmentation of funding by the authorities, as well as support by the self-help groups for changing community behaviour/behavioural practice
- ▶ Case 3 - PM adoption is more matured and post-occupancy evaluation has also been conducted
  - ▶ Success rate of toilets is higher



- ▶ Case 4 - - Implementing agency is a construction council
  - ▶ This resulted in quality design and construction
  - ▶ Adoption of formal PM including progress reporting and stakeholder analysis.
- ▶ . In Case 5 - Client was an oil and gas sector PSU with matured PM adoption in their core work
  - ▶ This contributed to establishing systems for internal success factors.

# Conclusions

- ▶ Structured Program Management/ Project Management approach of the government has given a framework to the projects for PM adoption
- ▶ PM tools are adopted formally if the financing, implementing or facilitating organizations have exposure to PM adoption in their core work or otherwise
- ▶ Single beneficiary finds it difficult to adopt these tools

- ▶ Since significant work in these projects is conducted or managed by volunteers, it is important to train volunteers in adoption of PM tools
- ▶ Post-completion evaluation is an important factor to validate benefits realization of these projects as it is important that projects' use is as envisaged at the planning stage
- ▶ Achieving planned Outputs and Outcomes are both important as benefits realization of these projects/programs are possible only if Outcomes are also achieved

- ▶ Associates, S. (2015). *PMC - SA Partnership Mode*. Available from: <http://shelter-associates.org/individual-toilet.php>
- ▶ Deshapande, D. (2016, December 28). “Beyond toilet construction – challenges for Swachh Bharat Mission (urban)”. Available from <http://www.accountabilityindia.in/beyond-toilet-construction-%E2%80%93-challenges-swachh-bharat-mission-urban> (Accessed in February 2017)
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# Questions and Discussion

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