

Planning Workshop on FSM Toolbox

Session 2: FSM Planning Tools and Toolbox

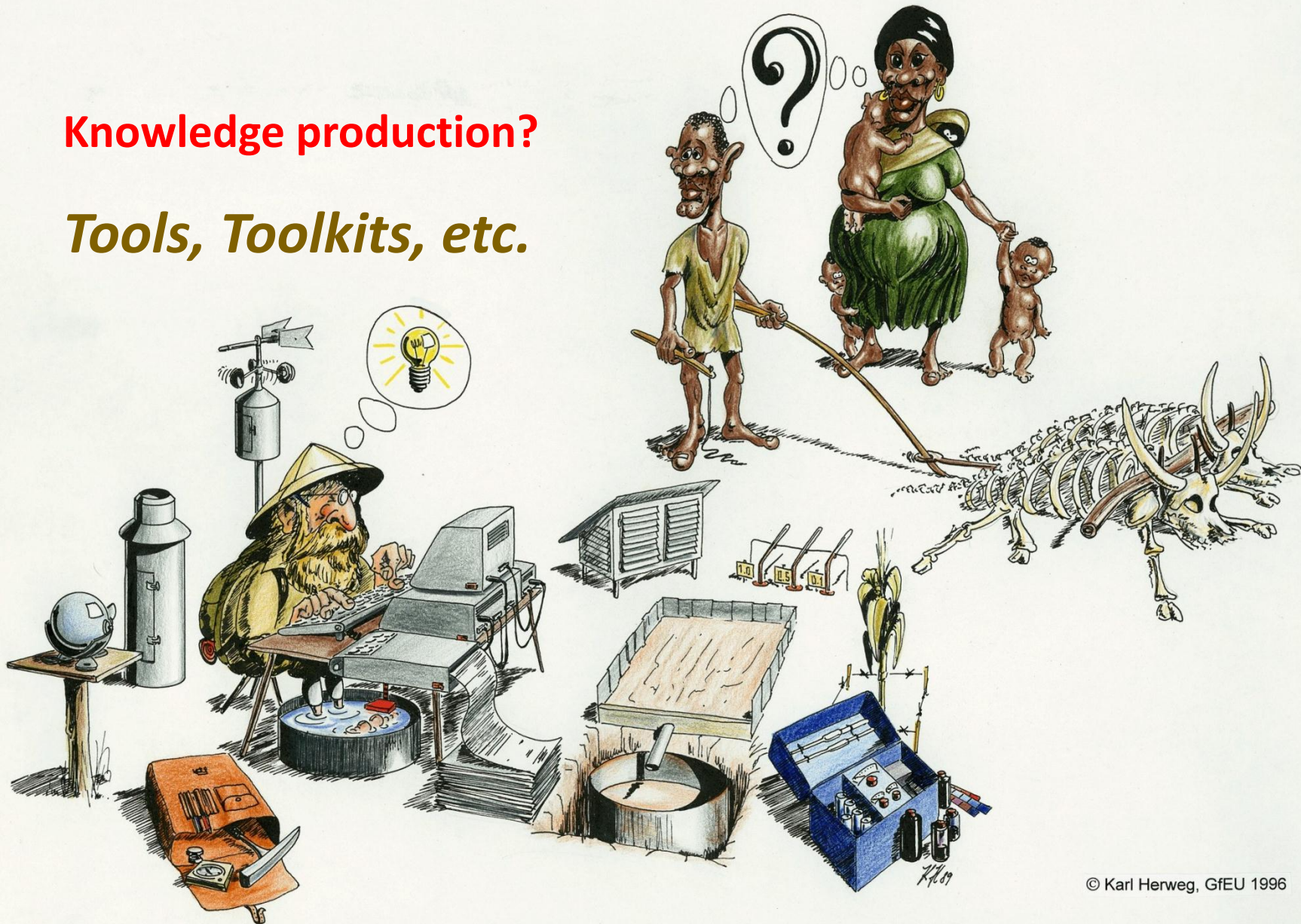
Updated Program

14.00 - 16.30	Session 2: FSM Planning Tools and Toolbox	
14.00 - 14.05	Introduction	Thammarat K.
14.05 - 14.20	- Diagnostic Tools and Guidelines for Fecal Sludge Management: <i>Update on the current WSP FSM work</i>	WSP
14.20 - 14.35	- Shit Flow Diagram Scale Up	GIZ
14.35 - 14.50	- Sanipath Brief Overview	Emory Univ.
14.50 - 15.00	- WSUP Excreta Management Ladder	WSUP
15.00 - 15.15	Coffee/Tea Break	
15.15 - 15.30	- FSM Toolbox: Concept and plans	AIT/hydrophil
15.30 - 15.45	- Initial findings of FSM toolkit mapping	AIT/hydrophil
15.45 - 16.00	- Lessons-learnt from similar toolkit initiatives	AIT/hydrophil
16.00 - 16.30	Feedbacks from city partners Synthesizing FSM tools and planning matrixes	All
16.30 – 18.30	Meeting of Advisory Panel of FSM Toolbox Project <i>(By separated invitation only)</i>	AIT/hydrophil

FSM Guru and Implementation

Knowledge production?

Tools, Toolkits, etc.





FSM Toolbox

Concept and plans
Initial findings & Lessons-learnt

Project: Development and Dissemination of Fecal Sludge Management
Toolkit for Investors, Planners and Consultants

Objectives of FSM toolbox

Enhance the capability of **key players** such as investors (donors), city planners/utility administrators and consultants in the **development of FSM projects** and businesses with competency preparatory **tools and resources**

Advisory Panel

No.	Name	Affiliation	Organization
1	Mr. Martin Gambrill,	Lead Water and Sanitation Specialist	World Bank, Washington DC
2	Ms. Isabel Blackett	Senior Sanitation Specialist	Water and Sanitation Program, World Bank, Washington DC
3	Mr. Ho Yueh Chuen (Peter)	Senior Consultant	ERE Consulting Group, Malaysia
4	Ms. Jing-Min Huang	Senior Urban Development Specialist	Asian Development Bank, Manila, the Philippines
5	Ms. Blomberg Malinne	Chief Financial Analyst	African Development Bank, Cote d'Ivoire
6	Prof. Meera Mehta	Professor Emeritus	CEPT University, India
7	Dr. Mbaye Mbéguéré	Project coordinator	Office National de l'Assainissement du Sénégal (ONAS), Senegal
8	Mr. Cheikh Toure	Director General	Environnement, déchets, eau (EDE), Senegal
9	Dr. Binay Shah	Water and Sanitation Specialist	Integrated Consultants Nepal (P) Ltd. (ICON), Nepal
10	Ms. Mai Flor	Executive Director	WaterLinks, the Philippines
11	Dr. Wijarn Simachaya	Deputy Permanent Secretary	Ministry of Natural Resources and Environment, Thailand
12	Mr. Teddy Gounden	Project Manager	eThekwini, Durban, South Africa
13	Mr. Dorai Narayana	Head of Department, Planning & Engineering	Indah Water, Malaysia

Core Team



Dr. Atitaya



Dr. Thammarat



Dr. Yuttachai

Regulatory



Institutional



Technology



Capacity Building and Advocacy



Financial



Monitoring



Information alone may not necessarily lead to behavior change ...*but what tools??*



Concept of FSM toolbox



Concept of FSM toolbox



Assess FSM situation

Poor Good

Developing

Benchmarking

matrix for selection of toolbox

Poor							
Developing							
Good							
Benchmarking							

Matching between "Situation" and "toolbox" of each key player in order to achieve "target"



Investor/Donor

City manager/Planner

Consultant

Tool mapping



Steps to develop FSM toolbox

1. Identify “Requirements” from key players

Types of tool for each key player in 7 aspects such as

- **Guidelines** for development of FSM projects
- Compilation of FSM **documents**
- FSM situational **analysis tool**
- Performance **monitoring tool**
- Interactive tools on FSM **technology selection**
- **FSM business and management models**
- **Advocacy tool** for stakeholder sensitization
- **Trainings module and courses**

7 Aspects



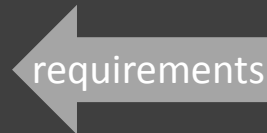
Investor/Donor



City manager/Planner



Consultant



**Consultative Workshop at Manila, Philippines
(2-3 June 2014)**

Types of tool for each key player in 7 aspects

Aspects	Types of tools (proposed)			
	Donor/Investor	City Planner/Utility Manager	Consultant	Common tool requirements
<i>Regulatory</i>	<ul style="list-style-type: none"> • Situation analysis methodology • Example of regulations (developed and developing countries) • Sample contracts • Case studies • Database of experts/consultants 	<ul style="list-style-type: none"> • Check list with set of criteria and indicators for FSM • Frameworks and guidelines on FSM regulations, legislations • Examples of ordinances and decree • Sample of licensing private operators • Case studies & best practices on FSM 	<ul style="list-style-type: none"> • Checklist / Factsheet • Situational assessment methodology (should cover policy review, baseline conditions, institutional aspects, stakeholders) 	<ul style="list-style-type: none"> • Samples of regulations, policies • FSM situational analysis methodology with a check list on criteria and indicators that should be followed
<i>Administrative & Institutional</i>	<ul style="list-style-type: none"> • Situation analysis methodology • Example of regulations (developed and developing countries) • Sample contracts • Case studies • Database of experts/consultants 	<ul style="list-style-type: none"> • Sample ToR for different aspects such as: • Understanding of regulatory framework, • Bidding and tender documents preparation • Sanitation planning (including maps) • Private sector partnership Tool (PPP Tools) • Decision making tool for selection of the approach 	<ul style="list-style-type: none"> • Check list and fact sheets to Identify the issue, present situation, need (target) • Gap identification • Licensing and operating standards 	<ul style="list-style-type: none"> • Samples of contracts, bidding documents, management model, case studies, database of experts
<i>Financial</i>	<ul style="list-style-type: none"> • Mapping of funding sources/uses /modalities • Technology selection tool to identify cost investment requirement 	<ul style="list-style-type: none"> • Factsheets / case studies on business planning • Analysis of different technical solutions & different financial models • Cost structure analysis (Tariff setting, etc.) • Market size • Rapid assessment tools • Resource mobilization tools 	<ul style="list-style-type: none"> • Checklist to estimate demands, market size? • Understanding of the cost structure • Tools to prepare business models for cost recovery 	<ul style="list-style-type: none"> • Tool to analyze the cost and benefits of different technical options and models

Types of tool for each key player in 7 aspects

Aspects	Types of tools (proposed)			
	Donor/Investor	City Planner/Utility Manager	Consultant	Common tool requirements
<i>Technology</i>	<ul style="list-style-type: none"> • Technology Decision Matrix 	<ul style="list-style-type: none"> • Comparative chart of the different technologies (eg. Sanitation Compendium) 	<ul style="list-style-type: none"> • GIS, Excel based • Comparative technological analysis tool • Transfer station options for optimization of travel time • Design of OSS system • Desludging system – trucks, pumps, Treatment, • Disposal and Reuse options • Baseline Data Management • Type and number of OSS • Checklist of type of technologies available 	<ul style="list-style-type: none"> • Comparative chart to analyze the technological options • Pros and cons of different options based on assessment criteria and indicators
<i>Advocacy</i>	<ul style="list-style-type: none"> • ICE materials • Case studies • Making connections between regulatory and enabling factors • Success stories to convince government agencies • Impact indicator • Build pressure from the grassroots level (bottom up) plus by-in at the top level 	<ul style="list-style-type: none"> • FSM Introductory tool • Checklist • Brochure explaining overall process on FSM • Impacts of no management/no regulation • Light format (brochure /leaflet) 	<ul style="list-style-type: none"> • Tools already exist –need to identify which one is appropriate • Program for public awareness and education – political, bureaucratic and local (all the stakeholders) • Tools for stakeholder engagement • Use the existing tools and streamline • Certification 	<ul style="list-style-type: none"> • Stakeholder awareness tools on FSM in the form of brochures, leaflets • Tools on public awareness • Effective communication and stakeholder sensitization modules
<i>Monitoring</i>	<ul style="list-style-type: none"> • Guideline for designing management information systems (MIS) 	<ul style="list-style-type: none"> • List of indicators on service provision, on impacts, on requirements and compliance to regulation ; • Sustainability indicators • Sources of verification; supervision visits; • Laboratory tests (on sludge, effluents, bio-solids or other) 	<ul style="list-style-type: none"> • Checklist Public opinion and outcome survey • Performance monitoring - Setting KPIs for service provider performance • Customer satisfaction survey • Certification • Environmental improvement 	<ul style="list-style-type: none"> • Guidelines and performance indicators for different audiences

Steps to develop FSM toolbox

2. Create tool for FSM Assessment (7 aspects)



Assess
FSM situation

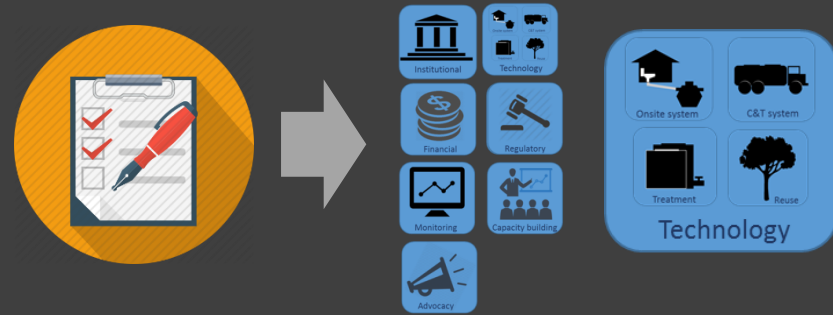
Poor

Developing

Good

Benchmarking

Concept of FSM assessment tool



Development of questionnaire



Scores



Statistical analysis and
Expert adjustment



FSM situation

Steps to develop FSM toolbox

3. Critical review, mapping and develop tools

4. Identify and determine toolboxes

7 Aspects



Core team + Advisory panel



Toolboxes for each aspect

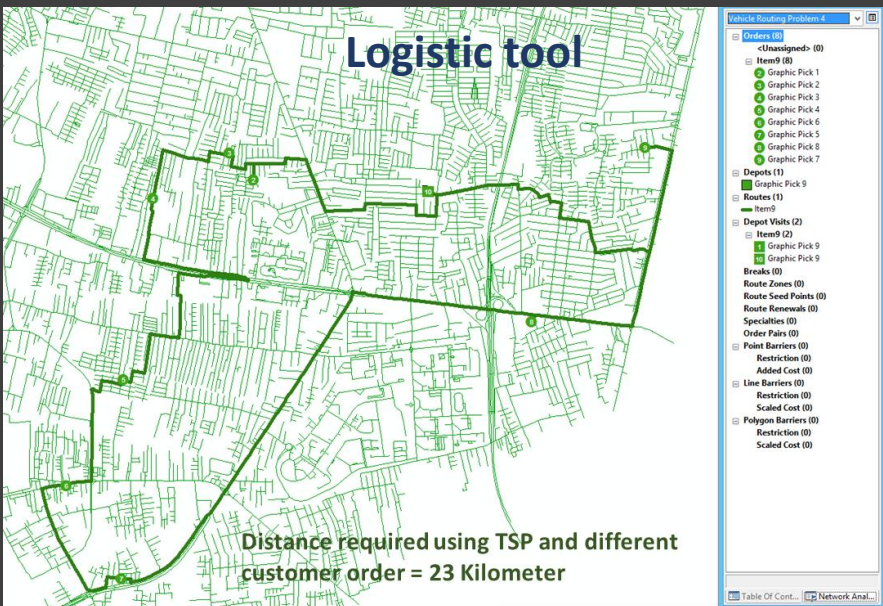
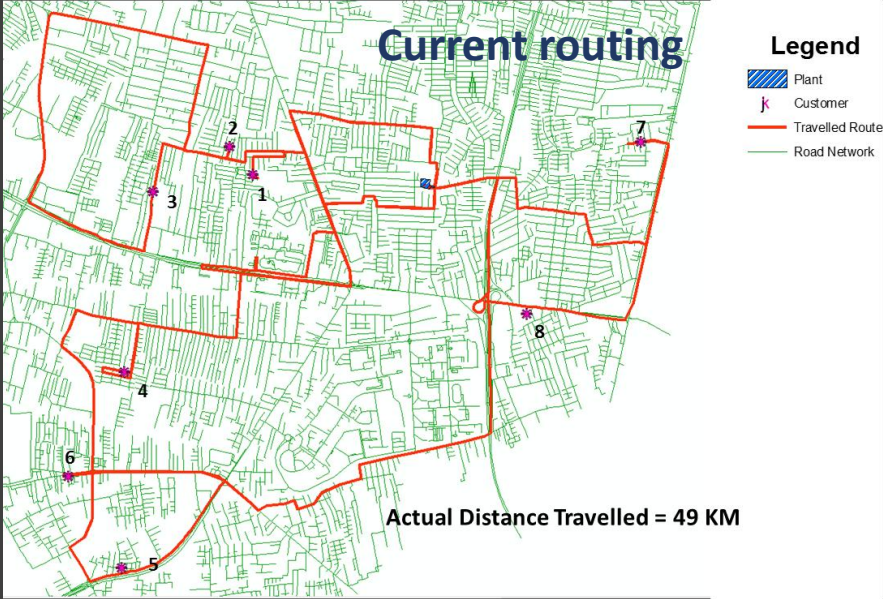
Example: Logistic tool

Finding problem

3. Travel to household/Truck Parking

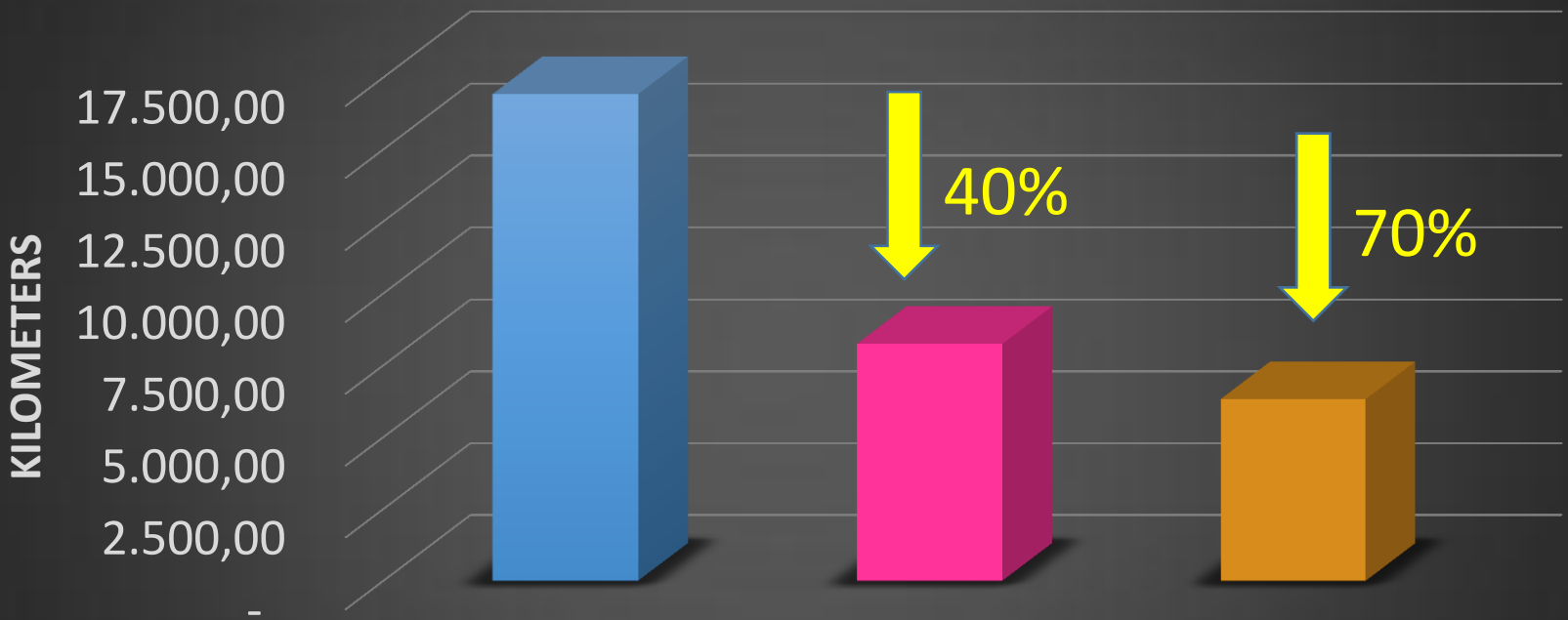


- A service route selection; FS truck driver decision and municipality's officer planning.
"Nearest location is usually served first"
- Private company: Investigate the DEWAT system to propose the emptying fee. (Random) If the household agree, they will start the desludge.
- Parking as close as possible to the household



Example: Logistic tool

Total Distance Travelled to Serve all Customers



Actual Cost Shortest Path TSP Cost

Cost

Logistic method

Example: Logistic tool



Planning tool



Menu

- Municipality
- Capacity & plant req.
- New plant
- Average travel distance
- Cost
- Actual feet
- Forecast feet
- Fleets & Cost

Actual									
municipality	fleets			costs		F 5day	costs	F 5year	new vehicle investment cost
	vehicle ²	vehicle ³	vehicle ⁴	total	total/day	m ²	total/year	m ²	total
กรุงเทพมหานคร	12	7	3	22	44,673	146	16,305,473	83,290	38,700,000

Forecast									
municipality	fleets			costs		F 5day	costs	F 5year	new vehicle investment cost
	vehicle ²	vehicle ³	vehicle ⁴	total	total/day	m ²	total/year	m ²	total
กรุงเทพมหานคร	7	4	2	13	26,435	86	9,648,741	31,390	20,800,000

New Plant									
subdistrict	household	centroid	centroid	weight	coordinates	centroid	weight	coordinates	centroid
		latitude	longitude		latitude	longitude		latitude	longitude
บางนา	26,217	7.197638	100.554195	193,700	475446	2,637,278	0.06532		
บางพลี	60,228	7.019289	100.471830	422,992	208998	6,081,016	0.33980		
บางนา	8,904	6.932221	100.494976	61,724	498784	894,807	0.266304		
total	95,347			673,107	179796	9,593,101	0.736416		
position						7.085553		100.507638	









- New treatment plant location
- No. and capacity of truck
- Operating cost
- Truck cost

Optimize routing → routine planning
 Finding the potential demand zone (customer)
 Logistic cost

GIS Oriented Networking and Service Optimization Technique for Faecal Sludge Management

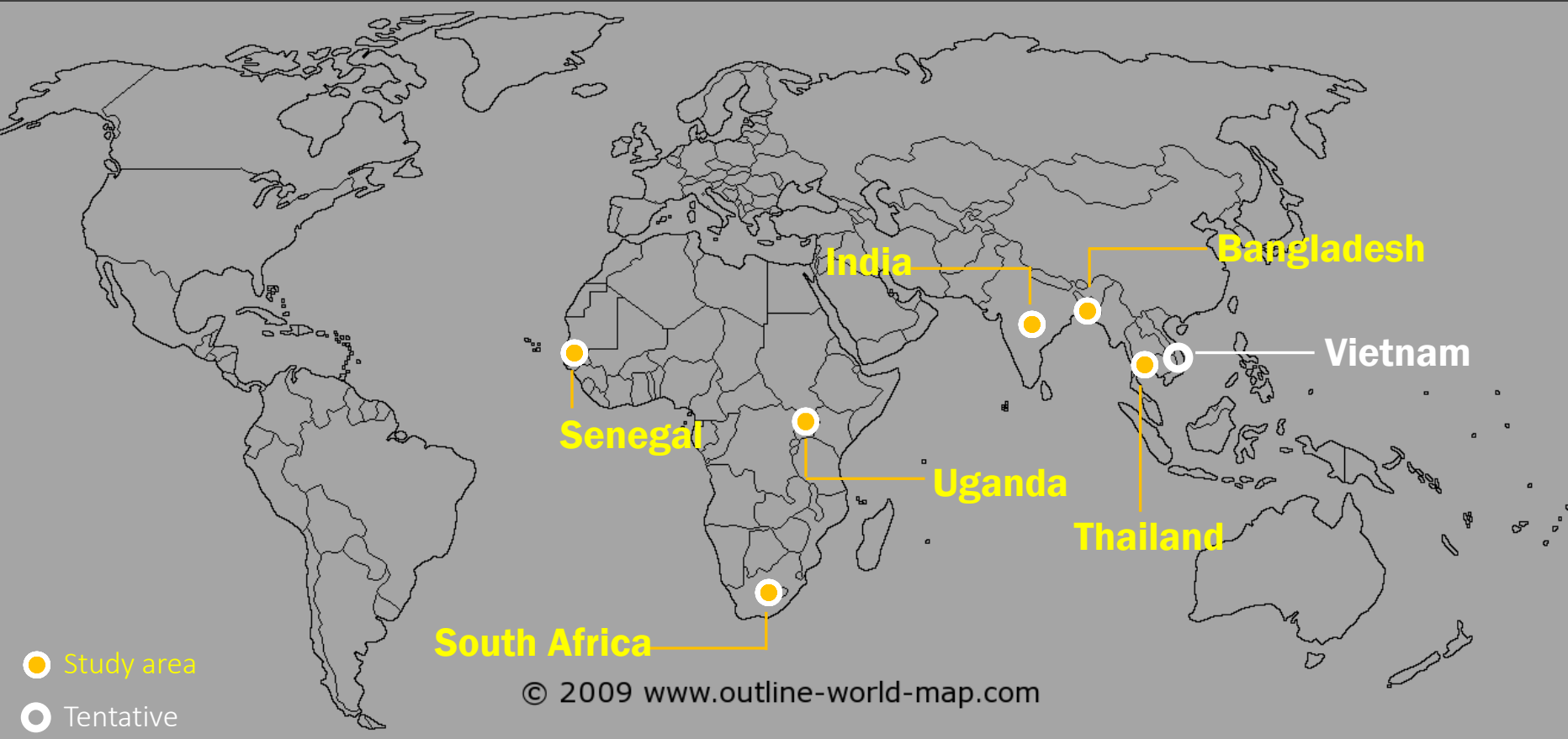
Steps to develop FSM toolbox

5. Create matrix for selection of toolbox

	 Institutional	 Regulatory	 Financial	 Technology	 Monitoring	 Capacity building	 Advocacy
Poor							
Developing							
Good							
Benchmarking	Identify the criteria						

6. Field testing, validation, dissemination and capacity building

Geographic location of case study (city-wide)



Sharing data, Disseminating and Capacity building

Key targets

Invention of toolbox: Intensive studies on **6 cities as reference**

Testing Effectiveness : Implementation on **selected 4 cities** based on FSM data availability

Capacity Building

- ➔ At least **2 development banks or investors** deploy FSM planning toolkits
- ➔ City planner/utility managers from at least **50 cities across Asia and Africa** aware of the availability of FSM planning toolkits
- ➔ At least **50 consulting companies** aware of the FSM planning toolkits

Steps to develop FSM toolbox

18-month Project plan

Identify "Requirements" from key players



Create tool for Assessment



Review, mapping and develop tools



Identify and develop toolboxes



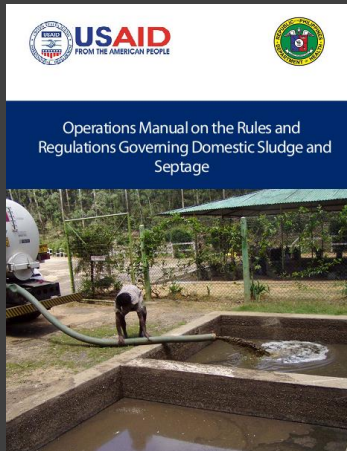
Create matrix for selection of toolbox



Field testing, validation, dissemination and capacity building

Step	Activities	Due date
1. Determination of requirement from "real case" and setting advisory panel	1.1 Selection of "Real Case" study town and representative of key players	February 2015
	1.2 Determination of "requirements" of key players	February 2015
	1.3 Setting up Advisory panel	January 2015
2. Delineation of available FSM toolkit vs. requirement	2.1 Collate and review available FSM toolkits	January 2015
	2.2 Synthesize lessons learnt from other developments of tools for practitioners	February 2015
	2.3 Selection on types of toolkits	March 2015
3. Formulation of toolkit packages/toolboxes	3.1 Development of contextual details of toolkits	March 2015
	3.2 Configurations of toolkit packages/toolboxes	June 2015
4. Field testing, validation and evaluation	Field testing, validation and evaluation in target countries	July 2015
5. Dissemination and capacity building	5.1 Determination of communication strategy (by disseminating and advocating toolkits)	September 2015
	5.2 Identification of strategic partners for "Training of trainers" (Regional training workshop)	October 2015

Examples of annexed documents



Guideline & Manual

OPERATION AND MAINTENANCE CONTRACT FOR SEPTAGE COLLECTION AND TREATMENT FACILITIES

This OPERATION AND MAINTENANCE AGREEMENT (the "Contract"), is between _____ (and referred to as the "Municipality") whose address is _____ (and referred to as the "Operator"), whose address is _____.

Background

The Municipality is the owner of the septage/wastewater treatment system (called the "Facility" which is located at _____). The facility is designed to receive and treat septic tank waste ("septage") from the service area described in the Municipality Septage Collection, Use and Rate Sheet (attached as Annex _____):

The Municipality desires to engage the Operator to operate and maintain the Facilities on behalf of the Municipality, and the Operator desires to accept such engagement:

The Municipality has agreed to pay the Operator for operating the facility the sum of _____ for the term of this Contract, at intervals and subject to the terms and conditions described in this Contract and its Annexes which are incorporated and part of this Contract.

NOW, THEREFORE, in consideration of the promises and the mutual covenants contained in this contract and performance of the same, the parties agree as follows:

Contracts or Agreement for design and operation

Note to Preparer:

(1) This is a sample contract for a "design-build-operate" septage waste treatment facility, hereafter referred to as a "DBO" contract. The contract can be modified to include only design and build without operating the facility. The contract can also include septage waste hauling if a single, municipality-wide operator is desired. The sample DBO contract uses a performance based compensation schedule.

(2) All underlined areas in the Contract and in the Annexes are areas that the Owner needs to define and/or decide to include in the Contract.

(3) This DBO Contract Example is for a three (3) stage payment according to Annex 6C. For this example the Contractor must verify of the operation costs according to the Schedules provided in their bid (Annex 5)

DESIGN-BUILD OPERATE AGREEMENT FOR A WASTE SEPTAGE TREATMENT FACILITY

THIS DESIGN/BUILD AGREEMENT with Fixed Price (referred to as the "Agreement" or "Contract" hereafter) is made and entered into by and between: _____ hereinafter referred to as the "Municipality" and _____ hereinafter referred to as the "Contractor".

Interactive Septage Management Toolkit

for
Developing Comprehensive Septage Management Programs



Septage Collection

+



Septage Transportation

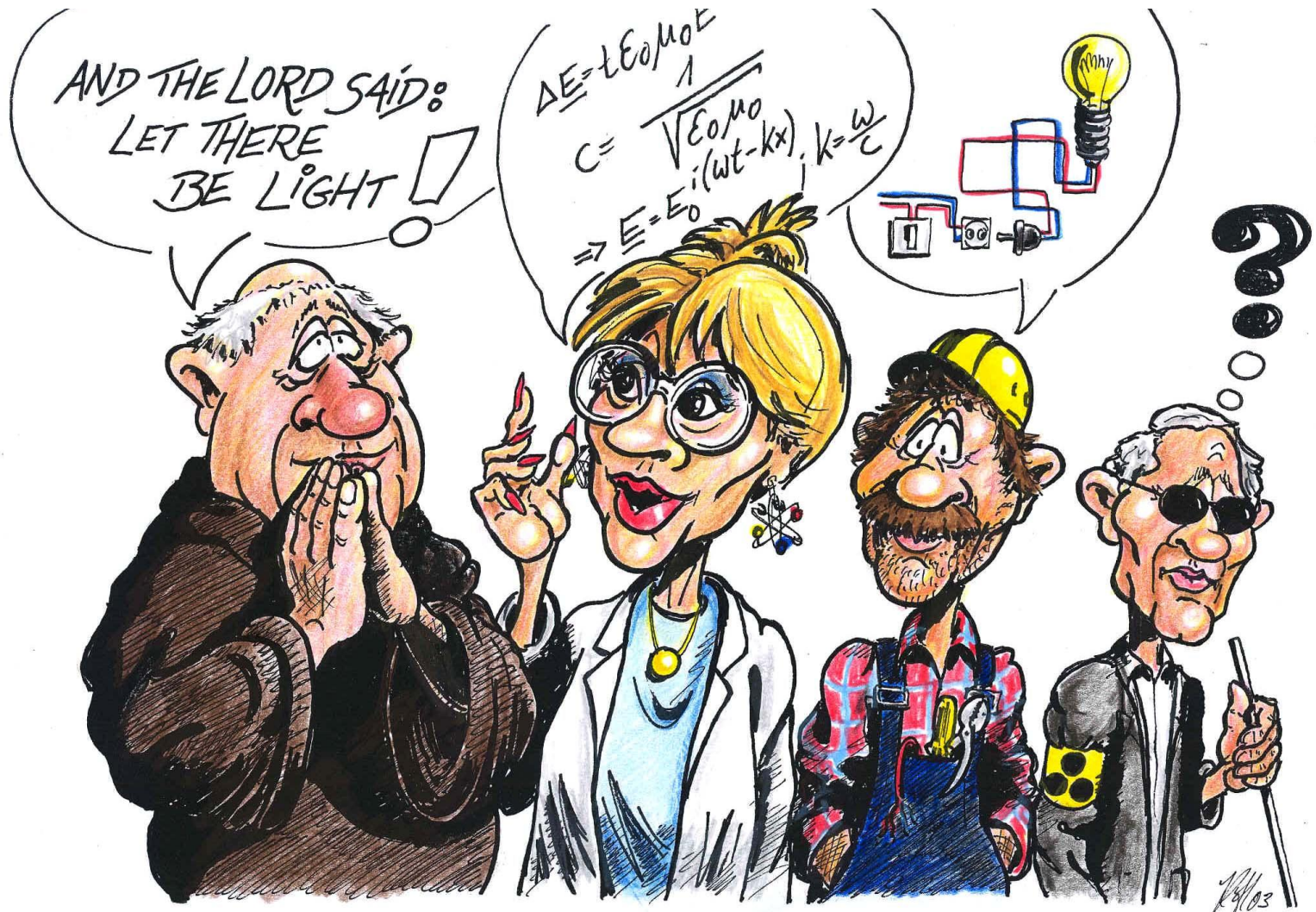
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Septage Treatment

Excel-based tool

Do we have a mutual understanding on FSM Tools, Toolkits, Toolbox?



Initial finding of FSM toolkit mapping

Criteria for mapping:

- **Scale for application;** Global, Regional and Local
- **Application;** Sanitation, Water, Wastewater, FSM
- **7 Aspects;** Institutional & Regulatory, Financial, Technology, Driven approach, Capacity building and Advocacy
- **Users;** Investor/Donor, City manager/planner and Consultant
- **Advantage & Limitation**
- **Type of tools;** manual, software, checklist etc.

Initial finding of FSM toolkit mapping

25 toolkits

Symbol	Name of Toolkits
T1	Sanitation : Urban Ecological Planning AAR 4525 FALL 2013
T2	Guidelind for the Planning and Implementation of Rural Sanitation Programs: for provincial and district officer
T3	Toolkit for Public Private Partnerships (PPP) in Urban Water Supply for the State of Maharashtra, India
T4	Public Water system Moitoring Plan Toolkit
T5	Guidelines for the Provision of Safe Water and Sanitation Facilities in Schools
T6	INEE Good Practice Guide Water and Sanitation
T7	The fecal sludge management (FSM) program in the island of Negros in the Visayas region of the Central Philippine
T8	A toolkit for monitoring and evaluating household water treatment and safe storage programs (HWTS)
T9	Structuring Private-Sector Participation (PSP) Contracts for Small Scale Water Projects
T10	Sanitation Marketing Toolkit
T11	Approaches to Private Participation in Water Services
T12	Sector Wide Investment and Financing Tool (SWIFT)
T13	The Rural Water and Sanitation Information System (SIASAR)
T14	Water and Sanitation for all: A practitioner's Companion
T15	A Review of Decision-Making Support Tools in the Water, Sanitation, and Hygiene Sector
T16	LEAN& WATER TOOLKIT (Achieving Process Excellence Through Water Efficiency)
T17	Water Energy Toolkit, Understanding the Carbon Footprint of Your Water Use
T18	Waste Water Treatment Works: UPPF Project Preparation Toolkit
T19	CUPPS- CheckUp Program for Small Systems
T20	Tariff Setting Guidelines- A Reduced Discretion Approach for Regulators of Water and Sanitation Services
T21	Private Sector Participation in Water Infrastructure- OECD Checklist for Public Action
T22	Integrating the Human Right to Water and Sanitation in Development Practice
T23	INEE Minimum Standards Toolkit: Hygiene Promotion and Water/Sanitation
T24	Benchmarking Water and Sanitation Utilities: A Start-up Kit
T25	WASH sustainability assessment tool_beta

Tools under development and other planning guidance

- WSP / Leeds/GIZ, SaniPath, etc.
 - City planners and Consultants
 - Assessment tool
- CSTEP, FSM App,
 - Consultant
 - Technology aspect
- CLUES, CLTS, ...

Initial finding of FSM toolkit mapping

Key player	Aspects	Toolkits																																
		Local toolkit									Regional toolkit							Global toolkit																
		W	W/W	S	WS			FSM	W	W/W	S	WS			FSM	W	W/W	S	WS			FSM												
				T1	T2	T3	T4	T5	T6	T7	T8	T9		T10	T11	T12	T13	T14	T15		T16	T17	T18	T19		T20	T21	T22	T23	T24	T25			
Donors/Investors	Regulatory									X											X		X					X						
	Institutional										X																							
	Financial												X										X											
	Technology																																	
	Advocacy																							X										
	Monitoring						X			X		X																						
	Capacity Building																																	

W = Water
W/W = Wastewater
S = Sanitation
WS = Water and Sanitation
FSM = Faecal Sludge Management

Initial finding of FSM toolkit mapping

Key player	Aspects	Toolkits																														
		Local toolkit									Regional toolkit									Global toolkit												
		W	W/W	S	WS			FSM	W	W/W	S	WS			FSM	W	W/W	S	WS				FSM									
				T1	T2	T3	T4	T5	T6	T7	T8	T9		T10	T11	T12	T13	T14	T15		T16	T17	T18	T19		T20	T21	T22	T23	T24	T25	
Planner	Regulatory					X						X	X			X			X				X	X	X		X	X	X			
	Institutional				X											X	X					X								X	X	
	Financial					X	X				X		X	X	X	X				X		X	X		X							
	Technology			X					X	X	X																			X	X	
	Advocacy								X	X								X				X					X	X	X	X		
	Monitoring					X		X	X	X	X			X			X	X														
	Capacity Building			X	X				X	X	X											X		X					X	X	X	

W = Water
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Initial finding of FSM toolkit mapping

Key player	Aspects	Toolkits																												
		Local toolkit									Regional toolkit									Global toolkit										
		W	W/W	S	WS			FSM	W	W/W	S	WS			FSM	W	W/W	S	WS			FSM								
				T1	T2	T3	T4	T5	T6	T7	T8	T9		T10	T11	T12	T13	T14	T15		T16	T17	T18	T19		T20	T21	T22	T23	T24
Consultant	Regulatory									X							X				X									
	Institutional			X				X								X													X	X
	Financial											X				X								X						
	Technology			X				X	X											X								X	X	
	Advacacy			X				X	X																		X	X	X	X
	Monitoring					X		X	X	X	X			X			X													
	Capacity Building			X	X				X							X													X	X

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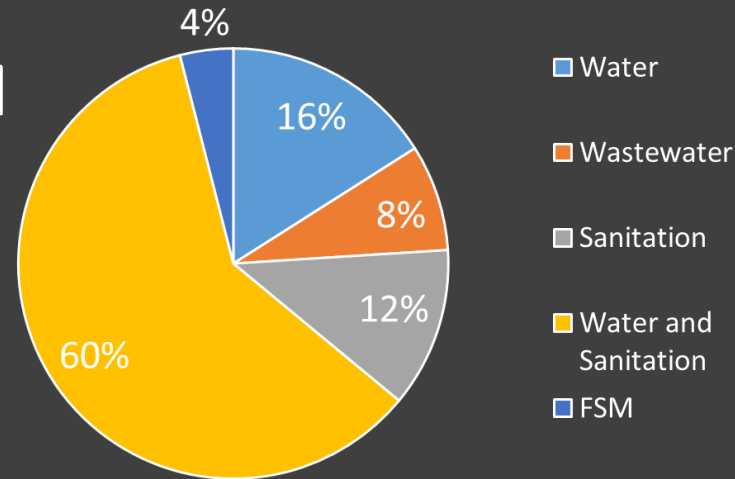
Gap of FSM toolkit mapping

Coverage synopsis of the reviewed 25 toolkits

	Donor/Investors	Planner	Consultants
Regulatory	Available in global and regional level	Available in global and regional level	No local toolkits available
Institutional	Only one in regional level	Much of toolkits in Global level	Few in regional level
	Only two in regional and global	Global and regional level	No regional toolkit
<p>Note: only one FSM toolkit available for Planner and Consultants in technology, monitoring and capacity building aspects !!!</p>			
Advocacy	Only one in global level	Many in global level	No regional toolkit
Monitoring	Only local and regional level	No toolkit in global level	Only local and regional level
Capacity Building	No toolkits available	Local and Global level	Only one in regional level

Gap of FSM toolkit mapping

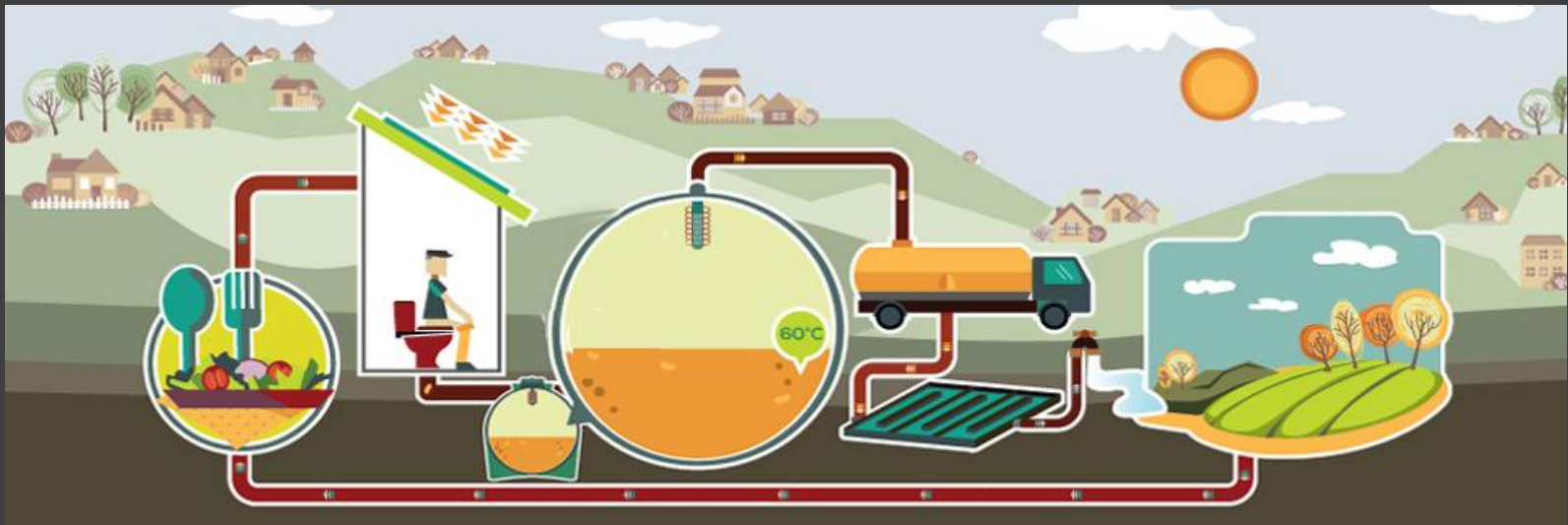
- Few toolkits for FSM



- Several tools need to **highlight FSM chain**
- Some available tools for **Planner and Consultant** but only few for **Donor/Investor**
 - Mostly focus on regulatory, finance and technology aspects
- Need an **assessment tool** to cover those 7 aspects
- Need for a **user-friendly selection mechanism** for tools in a toolbox!

Expected collaborations and partnership

- Tool/toolkit developers?
- Potential field-tested city?
- Shared documents/networks?
- Capacity building/training hub?



FSM Orchestra

- We'll Rock You!! -



AfDB/
ADB

City Manager/Planner

BMGF

Govt

Consultant