Guidelines for designing MIS tools for Cities on FSM

**Presenter:** Ms Deepa Karthykeyan, Athena Infonomics

**Co-Authors:** Mr Kowshik Ganesh, Mr Amarsh Chaturvedi, Mr S.L.Sathiya Nesan, Ms Uzra Sultana
Step Wise Approach

STEP 1
Development priorities

STEP 2
Mapping data ecosystem

Enabling Environment

Implementation
Step Wise Approach

1. City Priorities
2. Mapping Data Ecosystem
3. Enabling Environment
4. Implementation
1. City Priorities
Assessment Criteria

- Capital Expenditure Decisions
- Operating Expenditure Decisions
- Citizen / Political interest
- Statutory Requirement
Mapping City’s Priorities:

An Illustration of Namakkal Municipality, Tamil Nadu

• Ensure compliance of onsite-systems with standards
• Regularize desludging behavior
• Ensure disposal at the designated STP
2. Mapping Indicators & Data Ecosystem
Assessment Criteria

- Availability (Openness of availability)
- Data Reliability / Validity
- Gap with ideal frequency
- Level of disaggregation
## Data Gaps, Requirements and Sources

<table>
<thead>
<tr>
<th>Developmental Priorities</th>
<th>Mapping Indicators</th>
<th>Availability of Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ensure compliance of onsite-systems with standards</td>
<td>• Classification of onsite sanitation systems</td>
<td>Available</td>
</tr>
<tr>
<td>• Regularize desludging behavior</td>
<td>• Compliance to design standards</td>
<td>Not Available</td>
</tr>
<tr>
<td>• Ensure disposal at the designated STP</td>
<td>• Last Desludging Date</td>
<td>Not Available</td>
</tr>
<tr>
<td></td>
<td>• Vehicle Tracking</td>
<td>Not Available</td>
</tr>
</tbody>
</table>
3. Enabling Environment
## Role of regulation & SOPs in supporting ‘data creation’

<table>
<thead>
<tr>
<th>Developmental Priorities</th>
<th>Mapping Indicators</th>
<th>Regulatory Backing</th>
<th>Standard Operating Procedures (SOPs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ensure compliance of onsite-systems with standards</td>
<td>• Classification of onsite sanitation systems</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>• Compliance to design standards</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>• Regularize desludging behavior</td>
<td>• Last Desludging Date</td>
<td>✓</td>
<td>✗</td>
</tr>
<tr>
<td>• Ensure disposal at the designated STP</td>
<td>• Vehicle Tracking</td>
<td>✓</td>
<td>✗</td>
</tr>
</tbody>
</table>
4. Implementation
Tracking Onsite Sanitation

Data Collection from HHs while Conducting Desludging Services

F.S. Collection System (F.S.C.S) is examined accurately

- New Construction
- Inspection & Approval by ULB
  - Building Plan Approval
- GPS
- HH Characteristics
  - Property Tax Number
  - Neighbourhood Assessment
  - Access by Road
  - Access from Road
  - F.S.C.S. Type
  - Access to F.S.C.S
  - Dimension of F.S.C.S
  - Commencement of Operations

- Existing Construction
- DESLUDGE
- Existing Construction
- DO NOT DESLUDGE
- Regular Desludging

F.S.C.S. Functional Status & Date of Desludging
# Standard Operation Procedure

<table>
<thead>
<tr>
<th>Monthly Schedule</th>
<th>Site Visit</th>
<th>Desludge &amp; Report</th>
<th>Safe Transportation &amp; Disposal</th>
</tr>
</thead>
</table>

- **Inspection Schedule**
- **Desludging Schedule**

- **Visit the Household**
- **Conduct Survey through mobile app**
- **Desludging service**
- **Inspects F.S.C.S and reports through mobile app**
- **Picture from site location**
- **Travel as per SOP**
  - Vehicle Speed | Shortest route optimization | Deviation from expected path | Idle time | March Out time | March In time
- **Disposal @ Designated Site**

---

**Picture from site location**

- **Visit the Household**
  - Conduct Survey through mobile app
  - Desludging service
  - Inspects F.S.C.S and reports through mobile app
  - Picture from site location
  - Travel as per SOP
    - Vehicle Speed | Shortest route optimization | Deviation from expected path | Idle time | March Out time | March In time
  - Disposal @ Designated Site
System Modeling

- **Citizen Services**
  - Empanel Private Players
  - Request for Services
  - Online procurement
  - Online Payments
  - Operator Rating & Grievance Reporting Systems

- **ULB**

- **State**
  - Decision Support Systems
  - Performance Assessment
  - Citywide & Statewide Planning

Central Database

Household | Private Player | ULB
Blue Print Design
Sanitation Management Information System

Dashboard
General
F.S Collection System
Desludge & Transport
Treatment & Reuse
Finance
Empaneled Professionals
Citizen Services

Population
13,439

Households
3305

HHs with Toilet
2105 (64%)

Location Type
- 3305, 100%

Width of Streets
- 164, 5%
- 2650, 80%
- Less than 3
- 3-6 m
- greater than 6

HH Type
- Others: 0%
- Society_Apartments: 0%
- Society_Individual_Houses: 5%, 152
- Single_Plot_Apartment: 4%, 128
- Single_Plot_Individual_House: 92%, 3024

Functional Toilet
No Toilet

Functional Toilet in House
- 1200, 36%
- 2105, 64%
- Yes
- No
Faecal Sludge Collection System - Layout

Sanitation Management Information System

Dashboard
General
F.S Collection System
Desludge & Transport
Treatment & Reuse
Finance
Empaneled Professionals
Citizen Services

F.S Collection System

<table>
<thead>
<tr>
<th>Type of F.S Collection System</th>
<th>Number of Shared facilities</th>
<th>Max number of H.Hs sharing the facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Septic Tank</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Single Pit</td>
<td>46</td>
<td>9</td>
</tr>
<tr>
<td>Twin Pit</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Others</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Has HHs desludged Before?

- Yes: 1772
- No: 53

Position of F.S Collection System – Underneath the toilet

- Accessible – 1247 (94%)
- Access from Road – Less than 50 feet – 1246 (99.9%)

Position of F.S Collection System – Away from the toilet

- Accessible – 858 (41%)
- Access from Road – Less than 50 feet – 856 (99.7%)

Shared F.S Collection System - 51

- Fractured Rock
- Clay Soil

Borewell Level: 16 - 56 m

Preferred F.S. Collection System

- Single Pit
- Septic Tank
- Twin Pit
- Ecosan

Hydrogeological Data

F.S Collection System Dimensions

- 0 - 250 Cubic Feet: 24% (501)
- 250 - 500 Cubic Feet: 33% (704)
- 500 - 750 Cubic Feet: 18% (382)
- 750 - 1000 Cubic Feet: 14% (295)
- 1000 - 2000 Cubic Feet: 9% (194)
- 2000+ Cubic Feet: 1% (29)
Desludge & Transport - Layout

Sanitation Management Information System

Desludging Operators by Vehicle Volume

Desludging Technology Type

Mechanised Mechanical Sludge Emptying Equipments

Manually Operated Mechanical Equipments

<table>
<thead>
<tr>
<th>Vehicle Number</th>
<th>Operator</th>
<th>Vehicle Type</th>
<th>Capacity</th>
<th>Track Vehicle</th>
<th>Adherence to schedule</th>
<th>Vehicle Inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN 40 5420</td>
<td>Arul Cleaning Services</td>
<td>Vacutug</td>
<td>1000 L</td>
<td>Click here</td>
<td>Yes</td>
<td>Dec 8, 2016</td>
</tr>
<tr>
<td>TN 40 5487</td>
<td>Raja Septic Tankers</td>
<td>Vacuum Tanker</td>
<td>8000 L</td>
<td>Click here</td>
<td>No</td>
<td>Jan 12, 2017</td>
</tr>
</tbody>
</table>
Thank You