On site systems & desludging: experience and lessons from Malaysia

Dorai Narayana
July 2021
The beginning: poor sanitation & masterplans
SEWERED SYSTEMS:
“Gold Standard” recommended in masterplans

Ref: https://dpw.lacounty.gov/landing/wr/sewer/wwCollection.cfm
MUNICIPAL URBAN SANITATION PROGRAM

- Awareness programme
- Revolving fund
- Legal measures
- Incentives / disincentives

- Open defecation
- Direct discharges
- Insanitary systems

Improved pits
Septic tanks
MALAYSIA: SANITATION SYSTEMS

- Decentralised: 35%
- Centralised: 35%
- Septic tank: 14%
- Others: 16%

© dorainarayana 2021
1994 SANITATION / SEWERAGE GOVERNANCE

MINISTRY OF WATER

Regulate Services, technical, economic

Permit holder

Desludging, Construction

IndahWater

Operator Sewerage (Public Sewerage Systems)
Septic tank services

MINISTRY OF ENVIRONMENT

Regulate Effluent Discharges

- local to central governance
- policy, regulation, institutional
- co-management
- private sector involvement

© dorainarayana 2021
DESLUDGING:
1994 SHIFT

FROM (Local Authority)
• Demand emptying
• Payment on service
• No treatment

CONCESSION (Utility company)
• 100% scheduled emptying (2 year intervals)
• Monthly Tariff
• Treatment of all sludge

ISSUES
• Database
• Tankers
• Treatment facility
• Refusal

Success rate 30%
DESLUDGING

1994 TO 2008
• Scheduled Emptying: by utility
• Monthly tariff
• All sludge treated

POST 2008
• Liberalisation
• Owner may call any permit holder
• One off charges
• Sludge must be brought to utility facility for treatment

PRIOR TO 1994
• Demand Emptying
• No treatment

NEW REGULATION
• Utility to schedule
• Outsource emptying / transport to permit holders
• Sludge must be brought to utility facility for treatment
• Monthly tariff

© dorainarayana 2021
COST RECOVERY CONSIDERATIONS

- Emptying scheme:
  - Demand
  - Scheduled

- Tariff / costs:
  - Direct, indirect
  - On service/continuous
  - Subsidy / cross-subsidy

- Public goods – perceived benefit
- From user (direct) + beneficiary (indirect)
- Decouple charge & service
- Gradual: show results first
- Cross subsidies
DEDICATED SLUDGE FACILITIES

TREATMENT FACILITIES WITHIN SHORT DISTANCE OF ALL AREAS
INCREMENTAL INTRODUCTION OF TECHNOLOGIES
ENSURING QUALITY & COMPLIANCE OF NEW INFRASTRUCTURE

development control system, planning system coordination

✓ Approval: planning, design, inspection, commissioning and handover

✓ Guidelines, monitoring and oversight

✓ “Qualified person”, licensed contractor, approved products
DESLUDGING AND DISCHARGE OF SEWAGE SLUDGE

Desludging of septic tank:

Frequency: scheduled + demand
Fees
Methodology: SOP
Safety
Equipment maintenance
Records
## TRANSPORTATION CONTROL AND MONITORING SYSTEM

![Transportation Control and Monitoring System](image)

### Input Events Detail WQT4345

<table>
<thead>
<tr>
<th>Date &amp; Time On</th>
<th>Input On</th>
<th>Location On</th>
<th>Date &amp; Time Off</th>
<th>Input Off</th>
<th>Location Off</th>
<th>Duration</th>
<th>Driver Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-04-2016</td>
<td>Input1_On</td>
<td>2.16 06 N 102 17 03 E</td>
<td>21-04-2016</td>
<td>Input1_Off</td>
<td>2.16 06 N 102 17 03 E</td>
<td>00:01:01</td>
<td></td>
</tr>
<tr>
<td>21-04-2016</td>
<td>Input1_On</td>
<td>2.10 07 N 102 22 21 E</td>
<td>21-04-2016</td>
<td>Input1_Off</td>
<td>2.10 07 N 102 22 21 E</td>
<td>00:30:32</td>
<td></td>
</tr>
<tr>
<td>21-04-2016</td>
<td>Input1_On</td>
<td>2.16 07 N 102 22 21 E</td>
<td>21-04-2016</td>
<td>Input1_Off</td>
<td>2.16 07 N 102 22 21 E</td>
<td>00:37:32</td>
<td></td>
</tr>
<tr>
<td>21-04-2016</td>
<td>Input1_On</td>
<td>2.17 20 N 102 25 03 E</td>
<td>21-04-2016</td>
<td>Input1_Off</td>
<td>2.17 20 N 102 25 03 E</td>
<td>00:08:23</td>
<td></td>
</tr>
<tr>
<td>21-04-2016</td>
<td>Input1_On</td>
<td>2.09 01 N 102 29 17 E</td>
<td>21-04-2016</td>
<td>Input1_Off</td>
<td>2.09 01 N 102 29 17 E</td>
<td>00:18:31</td>
<td></td>
</tr>
</tbody>
</table>

Total On Time: 01:59:36

Credits: IWK


The SFD Promotion Initiative recommends preparation of a report on the city context, the analysis carried out and data sources used to produce this graphic. Full details on how to create an SFD Report are available at sfd.susane.org

© dorainarayana 2021
MALAYSIA TODAY

Containment

Emptying

Transport

Treatment

Offsite sanitation

WW contained: 75%

WW contained delivered to treatment: 72%

SN not contained: 5%

FS contained: 15%

FS contained - not emptied: 14%

FS not contained: 6%

Onsite sanitation

Local area

Neighbourhood

City

Key: WW: Wastewater, FS: Faecal sludge, SN: Supernatant

Safely managed

Unsafely managed

The SFD Promotion Initiative recommends preparation of a report on the city context, the analysis carried out and data sources used to produce this graphic.

Full details on how to create an SFD Report are available at: sfd.susana.org
The SFD Promotion Initiative recommends preparation of a report on the city context, the analysis carried out and data sources used to produce this graphic. Full details on how to create an SFD Report are available at: sfd.susano.org
WHAT WORKED

- Governance, regulations, institutional
- Private sector involvement
- Incremental technologies
- Stakeholder engagement
- Ensuring quality of containments
- SOPs, procedures
WHAT DID NOT WORK

- Big bang approach
- Lack of awareness programmes before the start
- Charging schemes
- Institutional inequity
thank you