



Financial Feasibility Analysis for FSM Business in Thailand

Case Study

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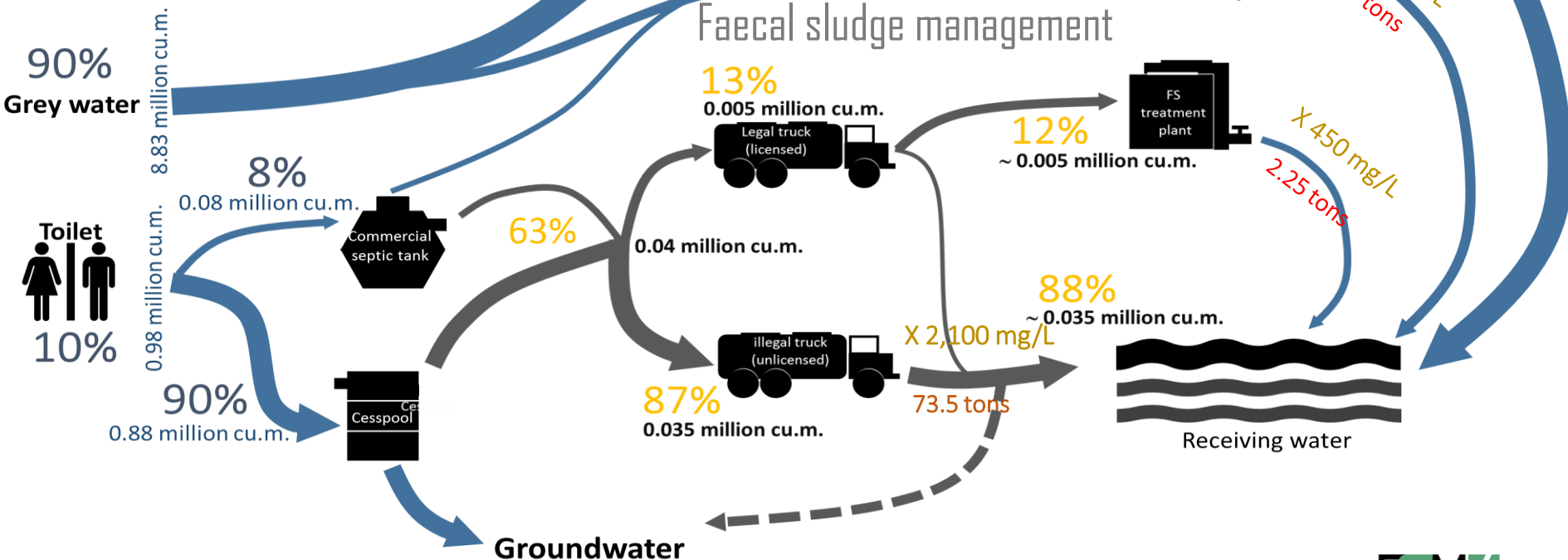


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Unveiled Sanitation Issues in Thailand

Daily production

Domestic wastewater management



Background: FSM in Thailand

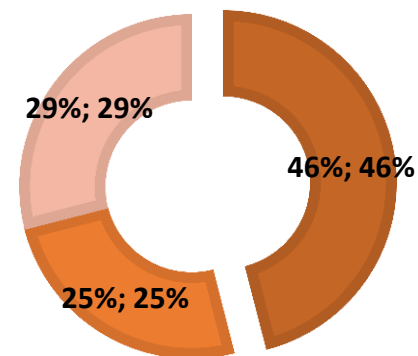


63 % Collection *

Treatment

- Service fee: **8.3 USD/m³**
- Budget support from Central Government
- No sanitation tax

FS TREATMENT PLANT



■ Non-existent ■ Out of use ■ In use

FSM Cost and revenue



WHAT SHOULD BE A SUSTAINABLE SOLUTION??



Introduction

- New innovation DEWAT technologies are being developed
- Current FS production still need proper management
- **Creation of profit making business model** is an opportunity to address untreated effluent and unsafe disposal



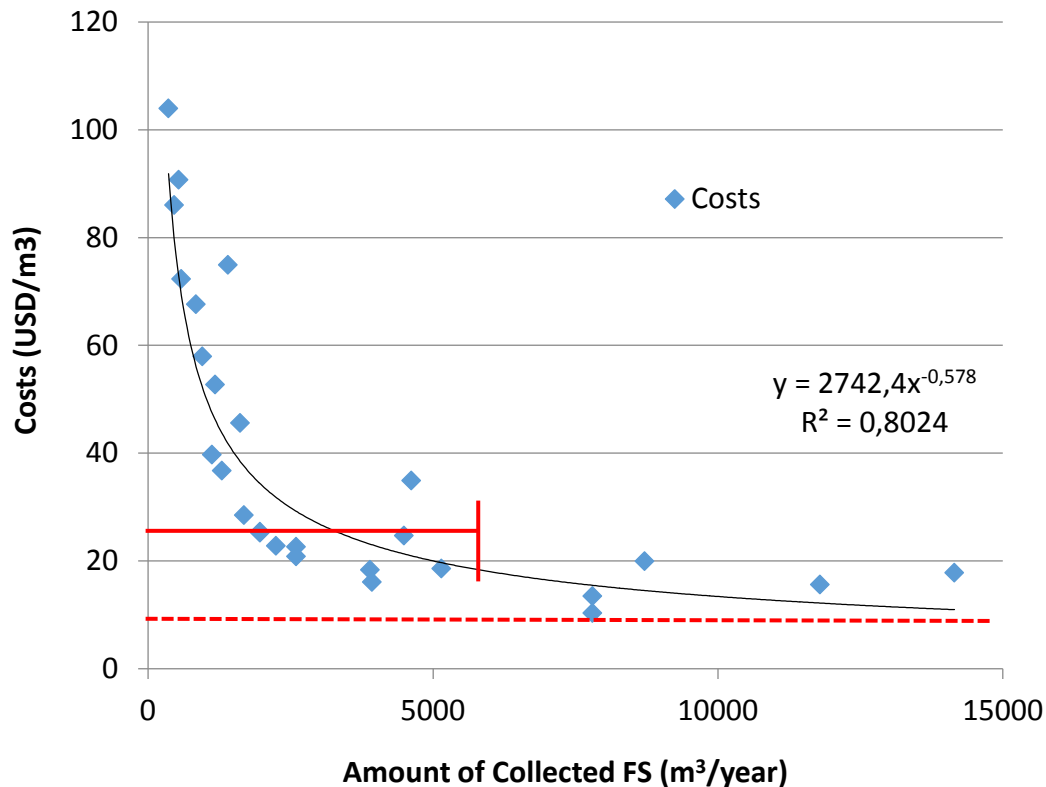
Objectives

- Provide an **overview of financial transactions and solutions of faecal sludge service providers** in Thailand
 - Collection and Treatment
 - Cost and revenue
 - Financial feasibility



Correlation of Cost and Collection

Scenario 1



How to cover operational cost?

Current service tariff: **8.3 USD/m³**

- Collection minimum of **88 m³/day**
Over treatment plant capacity

or

- Increase tariff by 140 % (**~25USD/m³**)
for minimum collection of **~25m³/day***

*Thailand case

Operation cost



Collected FS

FSM IRR and NVP

Scenario 1

Net Present Value (NPV) present value of an investment to consider business possibility.

Internal Rate of Return (IRR) If the IRR is higher than required rate of return, that project is considered.

All projects are lower and much lower than the required rate of return
NPV all negative

Possible project

needs more revenues, example: fee at 63 USD/m³

At require rate of return 10%

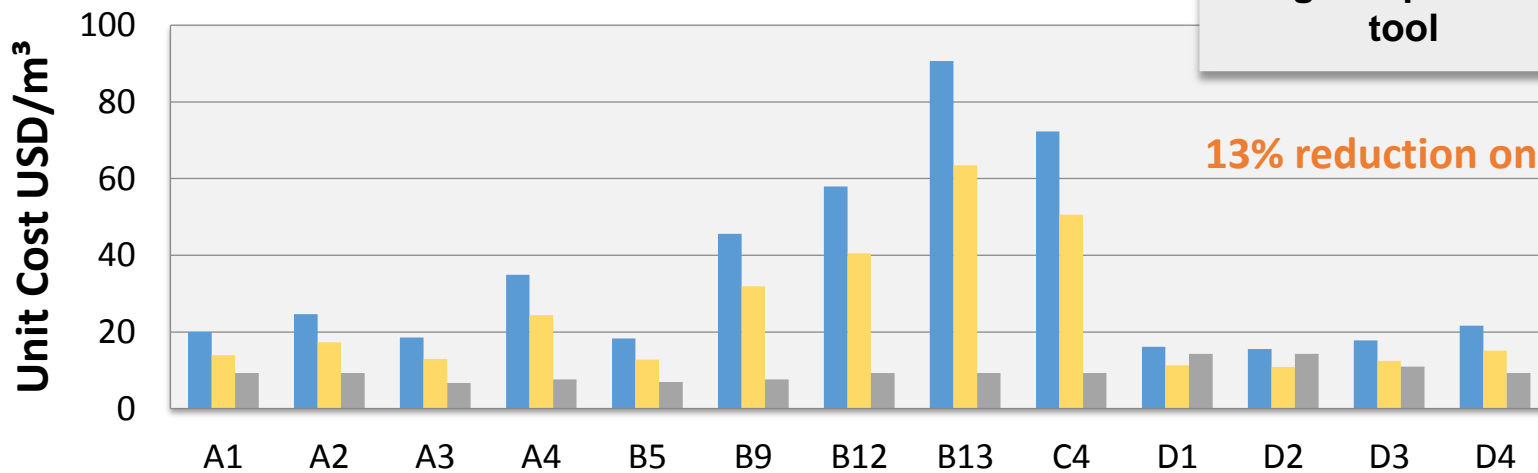
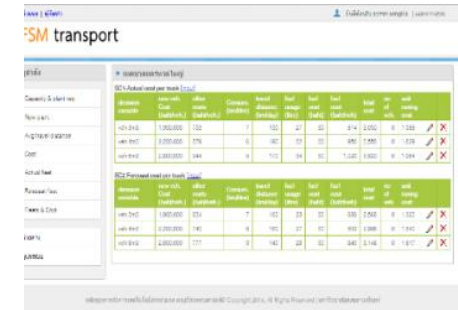
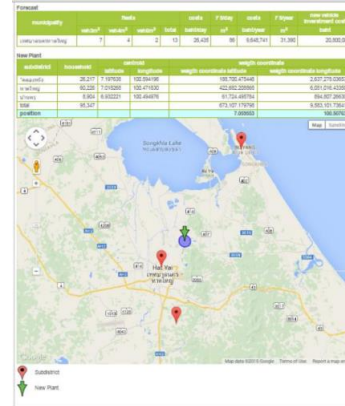
| Municipality | | Scenario 1 (treatment plant): Increase the FS treatment fee | | |
|-------------------|-----|---|---------------|--------|
| | | FS treatment fee (USD/m ³) | IRR | NPV |
| Public Providers | A1 | 6 | 16.32% | 86,615 |
| | A2 | 40 | 15.28% | 11,856 |
| | A3 | 53 | 15.26% | 30,313 |
| | A4 | 108 | 15.36% | 78,035 |
| | B5 | 78 | 15.04% | 907 |
| | B9 | 88 | 15.03% | 1,488 |
| | B12 | 27 | 15.64% | 10,585 |
| | B13 | 19 | 15.95% | 13,139 |
| | C4 | 60 | 15.28% | 839 |
| Private Providers | D1 | 71 | 15.28% | 4,418 |
| | D2 | 132 | 15.35% | 62,075 |
| | D3 | 63 | 16.38% | 87,162 |
| | D4 | 141 | 15.08% | 20,323 |
| | | 63 | Median | |

Planning and Logistic tool business model

Scenario 2

Output form the FSM logistic tool:

New treatment plan capacity and location
 actual number of treatment required
 faecal sludge collection
 transportation cost,
 number of truck required



■ Actual case ■ Logistics tool model ■ Revenues

Logistic planning tool
 13% reduction on unit cost

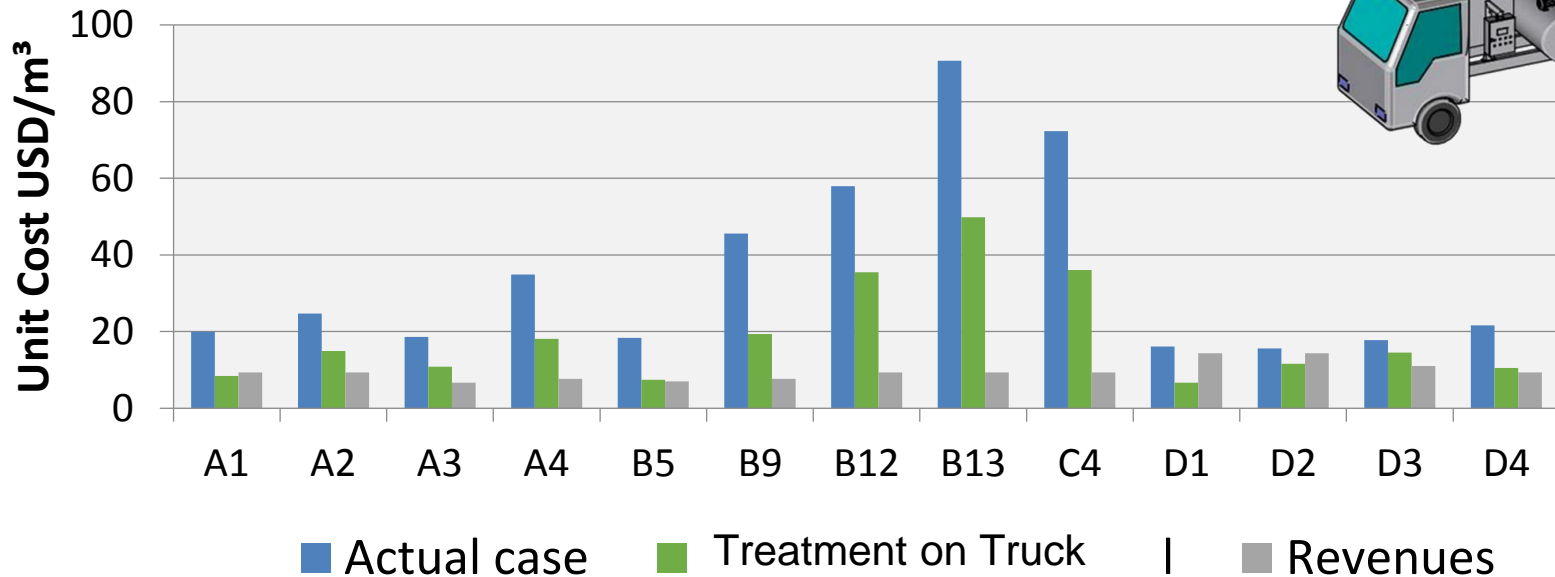
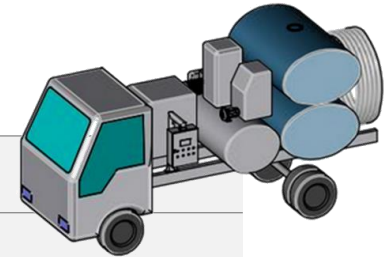
Treatment on truck business model

Scenario 3

Cost reduced:

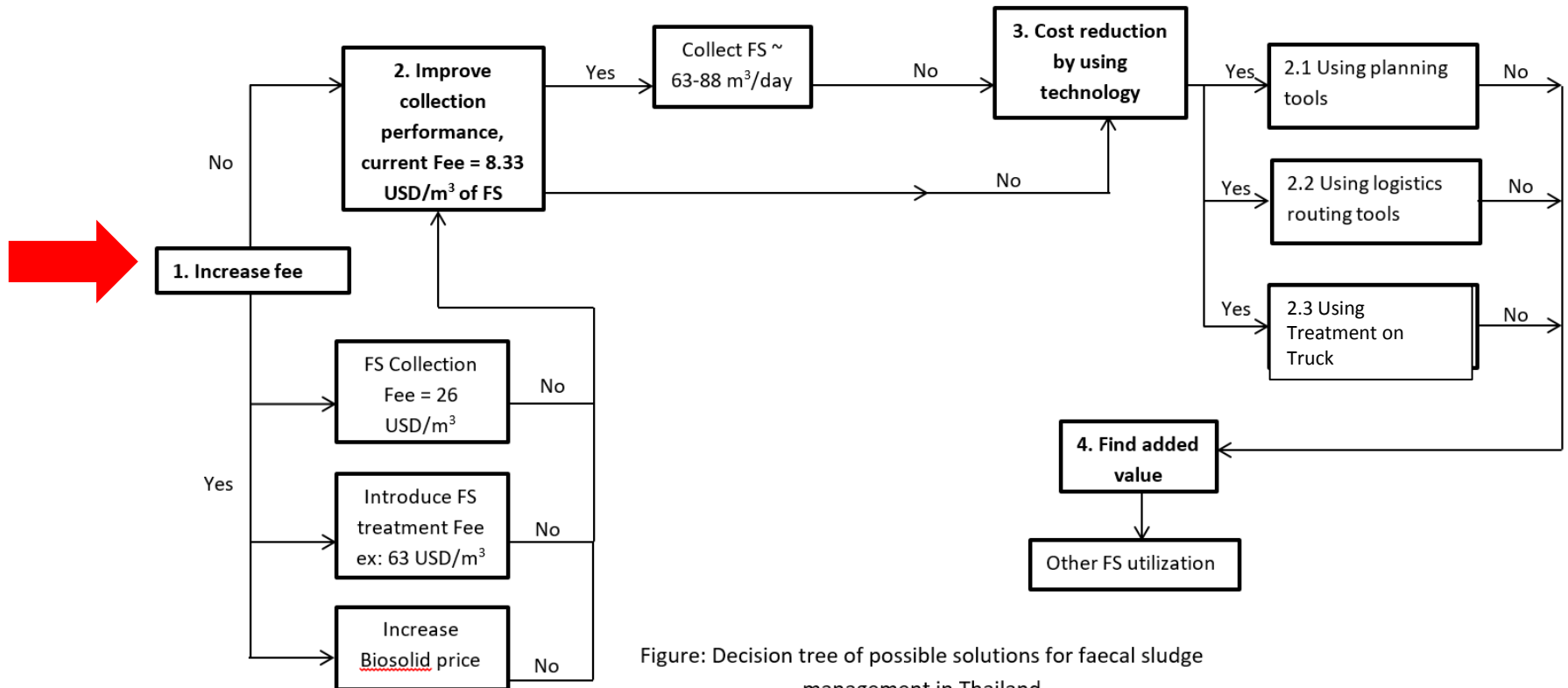
Treatment plant Investment, maintenance, operation, personal, material and monitoring

Transportation distance, collection and fuel



46% reduction on unit cost

Proposed solution for FSM business



Conclusion

- Current income is not sufficient to cover cost, only from collection fee
- FSM service operated at loss which may resulted from low service fee, inefficient logistic operation, less product utilization and inappropriate management.
- Solutions may need to be identified
 - Increase service fee
 - Improve FS collection performance with the current revenues
 - Cost reduction by using innovation technology and/or planning tool
 - Utilization of faecal sludge

For further information on the **FSM Toolbox** and the **Innovative Sanitation Technologies**

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Side Event:

23rd February, 2017

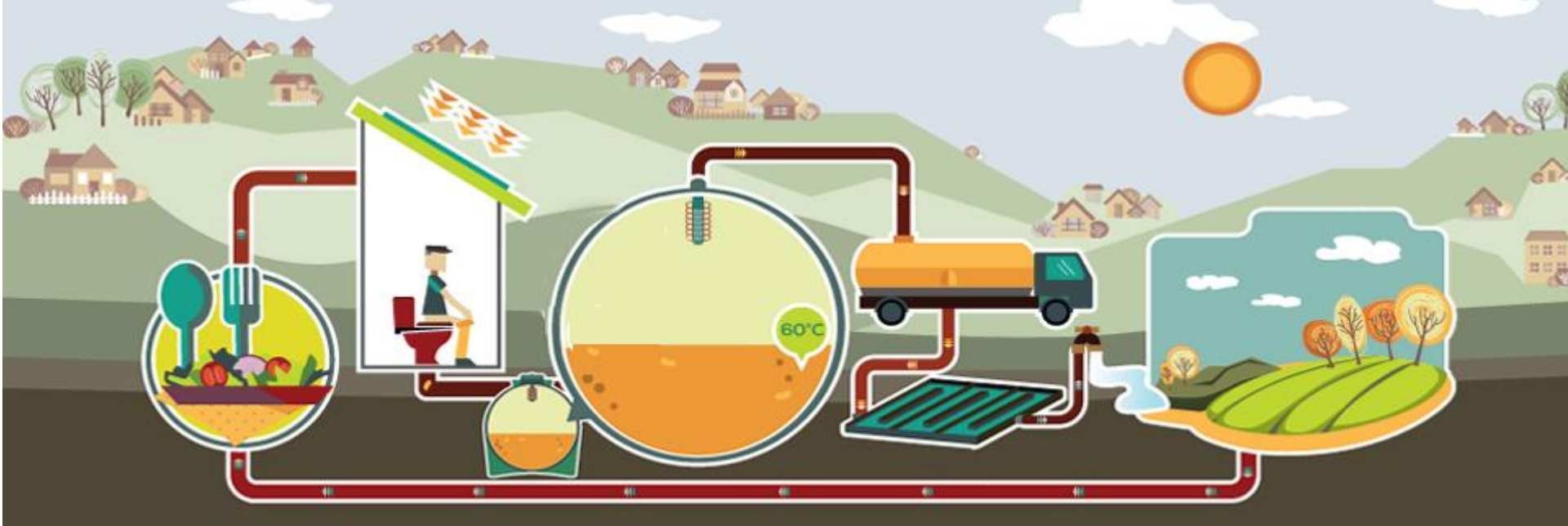
Sembian Annex



FSM

Faecal Sludge Management

TOOLBOX



Thank you for your attention

