

Learning from the Demonstration of FSM Value Chain

Satkhira, Bangladesh

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Background

Throwback Satkhira-2013



- High population density (4600people/km²)**
- 38% people directly use inland water for daily WASH**
- 99% people use OSS**
- Municipality never offers FSM**
- No designated place sludge disposal**
- Around 80 emptiers**
- No idea on safety gears**

FSM Context

Throwback Satkhira-2013



- No Mention of FSM in Budget**
- No FSM in ADP**
- 34% illegal sewerage connections**
- 23% HH took emptying service in every 1-3 years**
- 21% HH took emptying service in every 5-7 years**
- No Public awareness on FSM**
- Final destination of sludge was mostly inland water bodies**

Resource Recovery

Our Approach

**Recovering waste water for
agriculture**

**Reducing pathogenic part of
sludge and use as soil
conditioner**



Methodology

How FSM is Planned in Satkhira

Toilet with OSS System

Demand Creation of Pit-Emptying Services

Mass awareness against illegal sewerage connections

Sludge stored in Containments

Containments with illegal connection with drains

Innovating low-cost technologies for sludge emptying, transportation & disposal

Scooped traditionally by sweepers & disposed

Contaminating the wetlands/fresh water

Capacity Building of Conservancy Section and Sweepers

Creating STP & demand generation of end product

Interventions

pre conditions for acceleration of FSM demo

**Orientation on FSM
and Exposure Visit**

Satkhira Municipality &
Department of Agriculture Extension

**Capacity Building
Activities**

Municipal Dwellers as Emptying Clients
Food Consumers

**Advocacy with Local
Level Stakeholders**

Conservancy Section & Pit Emptiers
Waste Collectors

**Awareness Raising
Activities**

Treatment Plant Operators

Urban Farmers (Small & Large)

Peri-Urban Farmers

LISA based gardeners & Big Gardeners

**Field Level
Demonstration**

Vegetable Vendors & Retailers

Compost Dealers, Producers & Sellers

Technologies

Innovative, low cost & sustainable technologies



Interventions

post launching phase findings-FSM Satkhira

In 2016-

Treated 150,000 liters of sludge

Produced 12 MT sludge cake with \$1,240 as market price

Release 130,000 liters of treated waste water

01 sweepers association has formed including 07

The association did \$ 5,435 business

Sweeper's efficiency enhanced around 2 times

Regular occupational hazard reduced

Medicine cost reduced from \$8 to \$1.2 per month



Findings

Nutrient in Dried Sludge

Compost Comparison (Nutrient Profiling)

Compost Type	N	P	K	S
Faecal Compost	1.40%	1.14%	0.36%	1.20%
Minimum Requirement by SRDI	05.-4.0%	0.5-3.0%	0.5-3.0%	0.1-0.5%
Cow-dung Compost	1.20%	1.00%	1.60%	0.13%
Kitchen Compost	0.92%	0.51%	1.25%	0.08%

Findings

Field Demo

Radish 60-70 days Circle (16 units)	Only Soil	Soil+SC+PCF	Soil+OCF
Total Land	1 Sq. Meter	1 Sq. Meter	1 Sq. Meter
Fresh Yield	2.2 Kg	4.8 Kg	4.7 Kg
Investment	12 BDT	27 BDT	31BDT

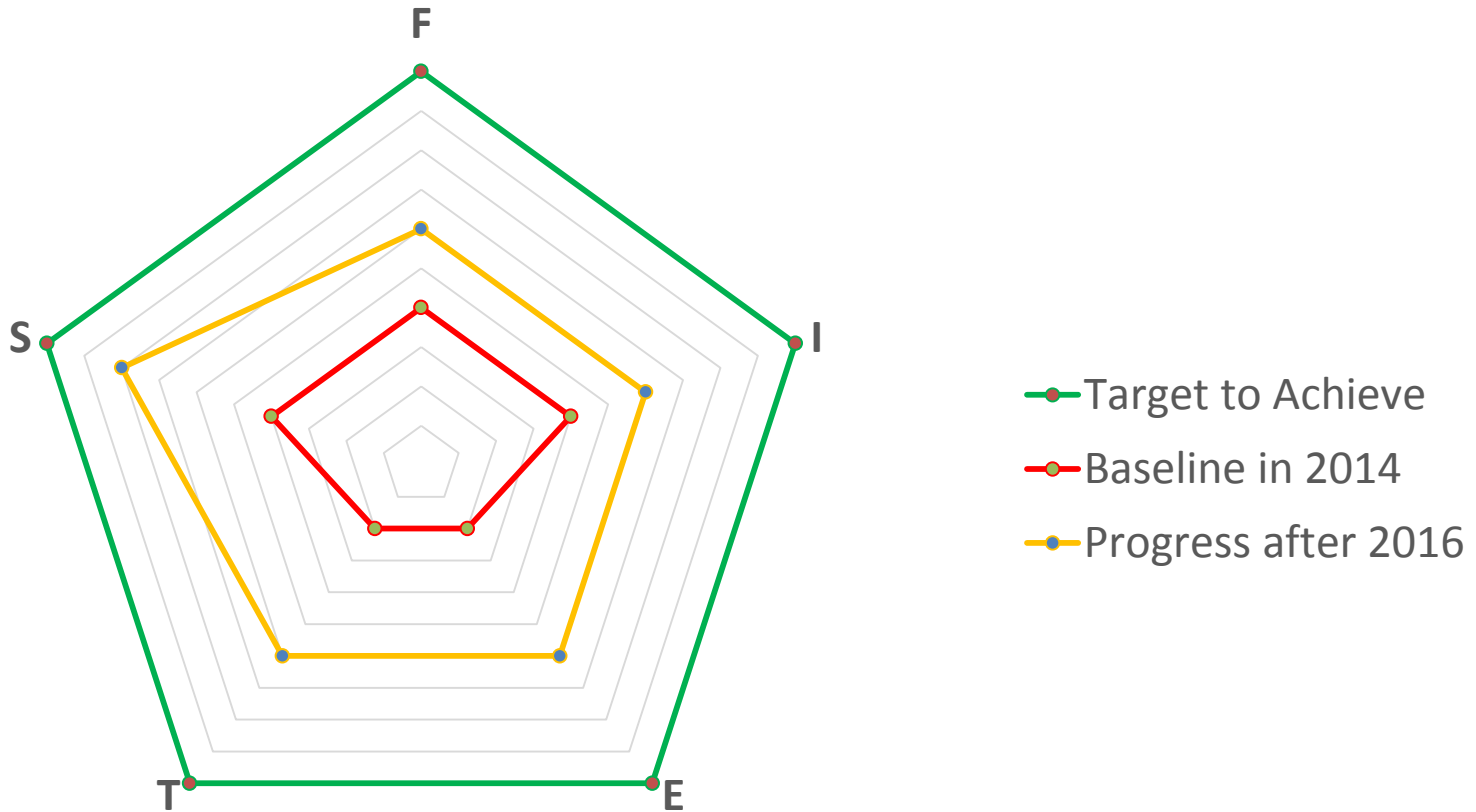


Red Amaranths 30-40 days Circle (16 units)	Only Soil	Soil+SC+PCF	Soil+OCF
Total Land	1 Sq. Meter	1 Sq. Meter	1 Sq. Meter
Fresh Yield	450 gm	800 gm	825gm
Investment	10 BDT	22 BDT	24 BDT

SC- Sludge Compost; PCF- Prescribed Amount of Chemical Fertilizer; OCF- Overdone of chemical fertilizer/the traditional amount use by the farmers

Overall Findings

Periodic Change in the FSM Demonstration



- F** Financially Profitable for the Sweepers
- I** Institutionalization of Emptying Service
- E** Environment Friendly Disposal/Dumping
- T** Use of Sustainable Technology for Emptying & Transportation
- S** Social Acceptancy of Emptying Job & Sludge Compost Use



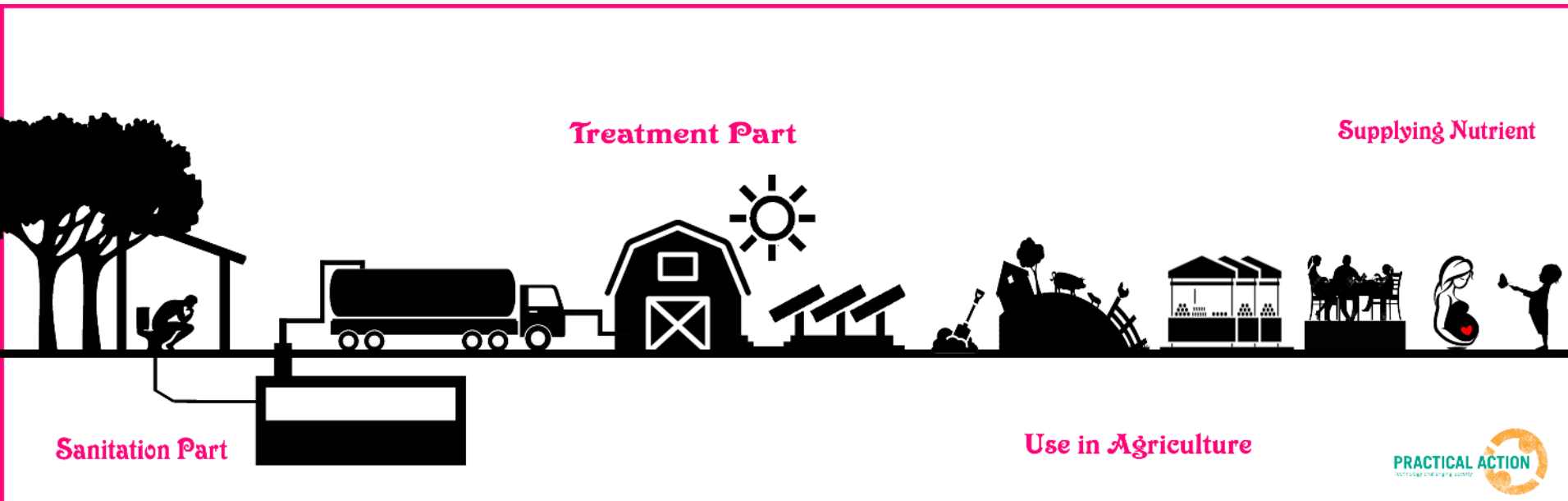
Findings

Nexus with Urban Agriculture & Food Security

- ❑ Satkhira Municipality have 1980 ha. of Agricultural Land
- ❑ Yearly demand of Chemical fertilizer is 1,700 MT & Compost is 2,650 MT
- ❑ There is a potential demand of 4300 MT compost inside the Municipality area
- ❑ Farmers use 3times more fertilizer than prescribe, increase production cost.
- ❑ It leave pathogenic residue in crops, later transmitted to human body.
- ❑ Soil lose essential micro nutrients (B, Fe, Ca, Mg, S) due to lack of compost use
- ❑ Prescribed amount of chemical fertilizer with compost can bring expected production, is less production cost and don't left harmful residue.
- ❑ Treated waste water (with allowed amount of BOD & COD) can use in agriculture

The Value Chain Offers

- ❑ Reduced use of chemical fertilizer
- ❑ Recondition of the soil with micro-nutrients
- ❑ Enhanced urban agriculture/food production
- ❑ Less untreated waste in open areas/water bodies/public places
- ❑ Less to No FS in Fresh Water Ecology
- ❑ Generating Green and dignified Jobs for sanitation workers, small urban farmers, organic compost producers and marketers



Challenges

Learning from Demonstration

- ❑ Institutional and Regulatory Framework on FSM in Bangladesh is yet to be approved by the GoB
- ❑ No national level Septic Tank Inspection Modality
- ❑ Illegal Sewerage Connections and unsafe sludge dumping with inadequate enforcement mechanisms
- ❑ FSM is not mainstreamed in Municipality Master Plan, Annual Budget and Annual Development Plan
- ❑ Undignified livelihood for pit-emptiers
- ❑ Lack of awareness on safe food production at producer and consumer level



Lessons Learned for Scale Up

- ❑ Inter-departmental coordination among different govt. line agencies
- ❑ Integration with large scale govt. project
- ❑ Promote the sanitation service system as dignified and socially acceptable
- ❑ Mass awareness raising on demand generation for regular pit-emptying & against illegal connection
- ❑ Legal enforcement to control illegal connection and proper septic tank construction
- ❑ Promoting safe food and urban based agriculture among producer groups, large retailers and consumers



Thanks for your concern.....

