



3rd International  
Faecal Sludge Management  
Conference



# Urine Diversion Toilet Waste Removal in eThekweni Municipality

# Business Partnership Modeling

FSM3  
Hanoi – Vietnam  
January 2015



# Technical and Financial Support

Bill and Melinda Gates Foundation (BMGF) and UK Department for International Development (DFID)

- City Partnerships for Urban Sanitation Services Delivery
- Phase 1 Planning complete
- Phase 2 rollout starting



# EThekweni Municipality

- Second largest industrial hub
- Fastest growing urban area
- Major tourist destination
- South Africa's major port



FSM3



Khanyisa  
PROJECTS

# Ethekwini Municipality cont.

- Population 3.7 million
- Urban population 2 million
- Rural population 1.7 million
- 27 Treatment works combined flow of 400 ML per day



# Background

- Over 80 000 UD double vault toilets installed in rural areas
- EThekweni Decision
  - Provide safe economically feasible sludge removal option



# Problem Statement

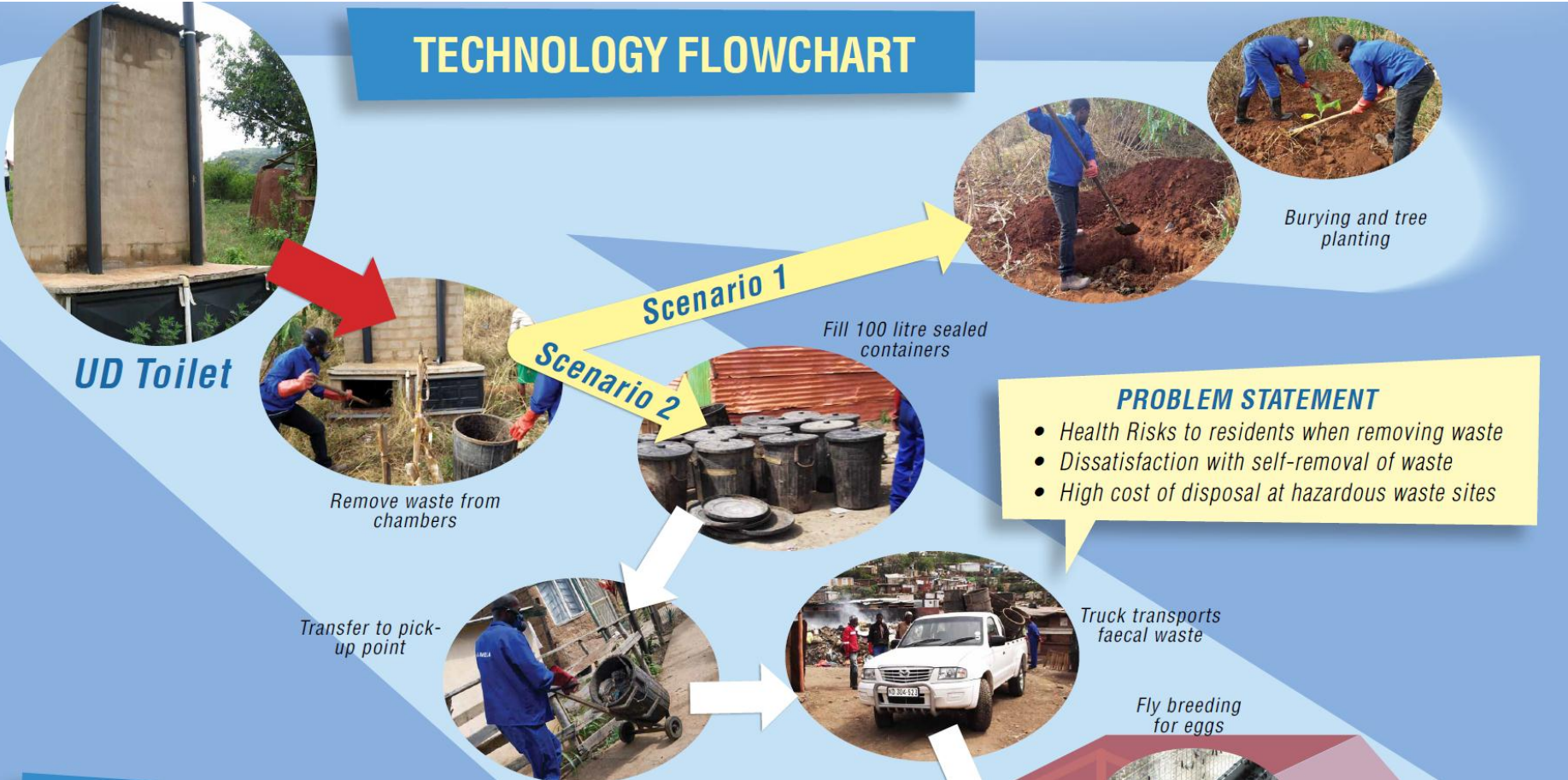
- Faecal degradation and pathogens die off not as effective as envisaged
- High risks to households and environment
- Service level inconsistencies

# Key Challenges

- Health and Environmental compliance
- Transport costs
- Identify beneficial use of faecal waste
- Meeting expectations of communities
- Identify opportunities for participation of private sector and residents
- Sustainability of local business entities

# The BSF Faecal Waste Recycling Process

## TECHNOLOGY FLOWCHART







# Fly Breeding



Photograph - Newco



Photograph - Newco



# Bioconversion



# BMGF Phase 1 Activities

- Institutional Analysis
- Environmental and Health Compliance Study
- Concept Testing
- Business Modelling
  - UD waste removal
  - Processing of waste
- Procurement / Contract Options
- Policy Development
- Contractor Support Framework



# Business Modelling: UD Sludge Emptying and Disposal

- Modelling exercise to estimate costs for Scenario 1 and 2
- Assumptions
  - Number of UDs
  - Sludge volumes (0,6 and 0,8m<sup>3</sup> per UD)
  - Labour requirements and costs
  - Travel and transport requirements
  - Supervision and overheads
  - Costs associated with disposal (burial and tree planting or processing)

# Business Modelling: Black Soldier Fly (BSF) Processing Plant

- BSF identification as suitable processing technology
- Engagement with Specialist
- Identification of site for pilot plant
- Infrastructure options
- Business modelling based on 10 tons and 20 tons of faecal waste
- Business feasibility study – viability over 3 years and 5 years – different CAPEX arrangements

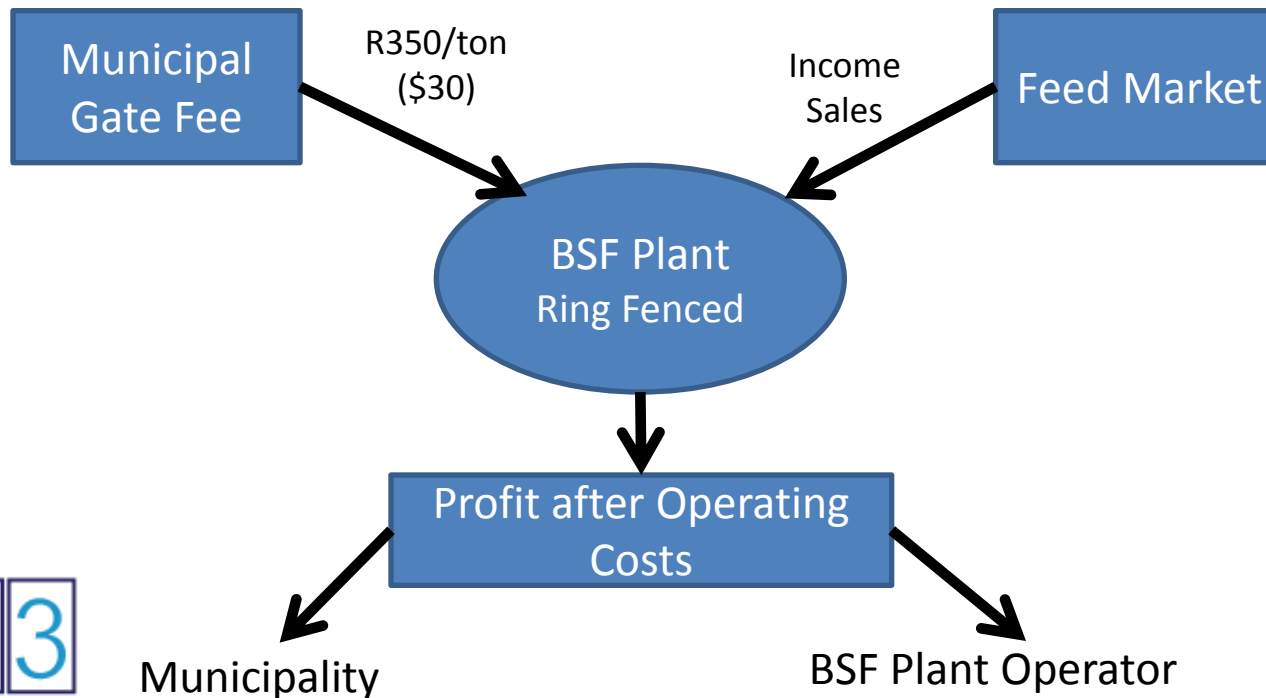
# Selected Procurement Options

- **Waste removal element:**
  - Standard tender using an incentivised contract
  - Detailed specification ensuring adherence to health, safety and environmental requirements
  - Pricing on a per task basis
  - Use of local teams
  - Tender process will exclude contractors with limited experience

# Selected Procurement Options

- **BSF Processing Plant**

- Service Level Agreement for O & M
- Approval to deviate from normal tender procedure
- Uncertainty on costs and income
- Proposed financial mechanism





# Contractor Support Framework

- SA has identified vibrant small, medium and micro enterprise development (SMMEs) as key to economic growth
- UD waste removal program ideal for development of SMMEs
- Use of a business incubator

# Thank You

