Lesson Learned on Faecal Sludge Treatment Plant Over Passive Landfill Site

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Presentation Outline

i. FSM in Khulna

ii. Site Challenges

iii. Site Solutions

iv. Conclusions
FSM in Bangladesh (Khulna)

- Significant improvement in reduction of open defecation
- Effort to close sanitation loop greatly ignored
- Policies in place but lack translation into action
- Isolated initiatives on different parts of sanitation value chain
- Lack of coordination among the actors to implement the policies
SFD Khulna

[Diagram showing processes and statistics related to sanitation and disposal.]
FSM in Khulna

- land area of 45.65 square km with 1.5M population
- estimated annual volume of fecal sludge generation is 710,000 cubic meter
- Manual desludging around 81%
1. Awareness and demand for services in different areas of the city

2. Safe and affordable sanitation services for toilet construction and emptying

3. City wide service delivery, regulation, planning

4. Informed choice of treatment and re-use solutions, good operation and maintenance

Different Government Departments

Work with People
Community, Schools and Businesses

Learning

Emptiers and Toilet Builders

Investors, KWASA
Selected options for FTP

Selected Option for FTP: Planted drying bed (wetland) + Constructed Wetland

1. Vertical flow Constructed Wetland for Faecal sludge

2. Horizontal Subsurface Flow Constructed Wetland for percolate
Challenges for FTP site

- Scare land
- NIMBY syndrome
- Passive landfill - unstable earth risks for construction of civil infrastructures
# Excavation and Compaction

<table>
<thead>
<tr>
<th>Test of Soil</th>
<th>Sample-1</th>
<th>Sample-2</th>
<th>Sample-3</th>
<th>Sample-4</th>
<th>Sample-5</th>
<th>Sample-6</th>
<th>Sample-7</th>
<th>Sample-8</th>
<th>Sample-9</th>
<th>Sample-10</th>
<th>Required (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compaction</td>
<td>76</td>
<td>84</td>
<td>84</td>
<td>80</td>
<td>66</td>
<td>76</td>
<td>79</td>
<td>74</td>
<td>80</td>
<td>83</td>
<td>98</td>
</tr>
</tbody>
</table>
Site Solutions

- Earthen embankments - local expertise available due to massive fishing industries
Site Solutions

- Use of Geotextiles and High Density Polyethylene (HDPE) sheet
Site Solutions

- Distribution and receiving system
Site Solutions

- Filter media: Brick, gravel, reuse of plastic, sand
Commissioning
Implementation challenges

• Lack of competencies for non-conventional infrastructure

• Sourcing of materials
  – HDPE sheet – new in Bangladesh; no skill and material unavailability
  – Filter media- unavailability of filter media for example, stones and shredded PET bottles
Conclusion

• Application of flexible structure like holding pond can be used for FTP approaching on passive landfill site.
Thank-you

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