Understanding Sanitation Options in Challenging Environments

Isabel Blackett

WATER AND SANITATION PROGRAM

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Overview
Sanitation in Challenging Environments

- Objective
- Country approach
- Indonesia’s challenging areas
- Settlement characteristics, sanitation conditions and practices
- Different ways forward
- Challenges and messages to remember
Objective of Study on Sanitation in Challenging Environments

To understand and address the need for improved sanitation options for environments where well known conventional or low cost options are not applicable due to adverse geographical, climatic or topological conditions.
### How Many People are Affected in East Asia?

<table>
<thead>
<tr>
<th>Country</th>
<th>Estimated population affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>&gt; 9 million</td>
</tr>
<tr>
<td>Cambodia</td>
<td>1.4 – 2.2 million</td>
</tr>
<tr>
<td>Lao</td>
<td>1 – 1.5 million</td>
</tr>
<tr>
<td>Philippines</td>
<td>&lt; 5 million</td>
</tr>
</tbody>
</table>

In just four countries, over 16 million people live in challenging environments where they are unable to build conventional or low cost sanitation options.
Country Approach to Identify Challenges

Phase 1
- Identify types of challenging areas
- Scope numbers affected for each type
- Detailed research of technical and non technical challenges on main types of area

Review
- Do sanitation options exist for key typologies?
- Are they adequate? What do we know?
- What should Phase 2 look like?

Phase 2
- Evaluate existing options, and/or
- Adapt existing options
- Develop and pilot new ones
Research in Phase 1

Desk study & secondary data

Interview stakeholders

Field visits

Recommendations for Phase 2

Integrate existing experience

Meet communities
### Indonesia’s Challenging Areas

<table>
<thead>
<tr>
<th>Type of Area</th>
<th>No of people affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above or floating on rivers, along riverbanks</td>
<td>2+ million</td>
</tr>
<tr>
<td>Above or along the coast and estuaries</td>
<td>1.5-2 million</td>
</tr>
<tr>
<td>Swamps and high ground water</td>
<td>&gt; 1.5-2 million</td>
</tr>
<tr>
<td>Flood prone areas</td>
<td>&lt; 3 million</td>
</tr>
</tbody>
</table>

Other areas included: rocky areas, steep hillsides and lakesides – but lower numbers impacted
Settlement Characteristics - Rivers
Settlement Characteristics - Rivers
Settlement Characteristics - Rivers
Settlement Characteristics - Coastal
Settlement Characteristics - Coastal
Settlement Characteristics - Coastal
Settlement Characteristics - Coastal
Settlement Characteristics - Swamp
Settlement Characteristics - Swamp
Sanitation and hygiene practices – river and riverbanks
Sanitation and hygiene practices – river and riverbanks
Sanitation and hygiene practices – river and riverbanks
Sanitation and hygiene practices – Coastal areas
Sanitation and hygiene practices –
Coastal areas
Sanitation and hygiene practices – Coastal areas
Sanitation and hygiene practices –
High ground water and swamps
Sanitation and hygiene practices –
High ground water and swamps
Most Common Community Attitudes

• Understand need for safe drinking water, low awareness of sanitation and hygiene

• Priorities: increase livelihood, solve urgent issues: flooding, subsidence, erosion, road access

• Sanitation almost always low priority

• Low affordability is a real constraint
## Existing “Adequate” Sanitation Options

<table>
<thead>
<tr>
<th>River</th>
<th>Coastal &amp; Estuary</th>
<th>Swamp &amp; High Groundwater</th>
<th>Flood Prone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevated Latrines</td>
<td>• Tidal resistant septic tanks</td>
<td>• Septic tank + biofilter</td>
<td>• Elevated latrine</td>
</tr>
<tr>
<td>‘Floating’ septic tanks</td>
<td>• Septic tank + upflow filter</td>
<td>• Septic tank + Upflow filter</td>
<td>• Anaerobic filter</td>
</tr>
<tr>
<td>Indonesia proprietary designs</td>
<td></td>
<td>• Small bore sewer</td>
<td>• Mobile sanitation facility for bathing, washing &amp; defecating</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Drum septic tank + Infiltration</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Proprietary designs</td>
<td></td>
</tr>
</tbody>
</table>
Next steps in Indonesia

• Disseminate knowledge of how to improve designs: interactive guidance note on www & CD, documents, workshops

• Government will develop Guidelines for Local Government

• Promote appropriate safe emptying and improvements to existing sanitation systems
Different Ways Forward…

*Phase 2 designed from evidence*

**Indonesia**

Reviewed 12 existing options, recommendations and guidelines developed and disseminated, capacity building & training of local government in challenging areas.

**Cambodia**

Few existing options for lakes, high groundwater and flooded areas. WSP currently working with IDE to adapt existing ‘easy latrine’ for use in challenging environments.
Different Ways Forward…
*Phase 2 designed from evidence*

**Philippines**

WSP will work with local Government to develop improved shared treatment options for steep hillsides.

**Lao PDR**

Main challenge in annually flooded areas, where farmers are better off. Government decided people in remote rural areas were a higher priority.
Challenges to Solutions at Scale

• Illegal or semi-legal housing tenure
• Sanitation a low priority compared to other urgent issues in communities
• Solutions cost more than in normal environments
• Government willingness or ability to invest is variable
Points to remember

• Poor people live in challenging areas and will continue to do so
• Research, understand and analyze before selecting priorities or way ahead
• Reuse, adapt, adjust or improve existing options before inventing new ones
• Monitor sustainability – and then disseminate what works
With thanks to Enrico Djonoputro,

Sanitation Consultant, WSP