SANIMAS – Community Based Sanitation
Small Scale Domestic Wastewater Treatment

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Indonesia at a Glance

- Population up to 230 million with 57.86% live in rural areas (Statistics Indonesia, 2009)
- 17,504 islands 1,890,754 km² (Statistics Indonesia, 2009)
- GDP per capita US$ 4,149 (Moody’s Index, 2009)
- Human Development Index ranking 111 of 182 countries (UNDP, 2009)
Problems and Challenges

Sanitation

- Lack of qualified personnels
- Limited availability of master plans for sanitation developments
- Limited Funding Resources
- Incomplete policies & regulations
- Low priority on sanitation
- Under investment

Low access to sanitation facility in the community

3

Problems and Challenges

Sanitation

- Industrial waste water without treatment
- Open defecation
- Makeshifts Latrines
- Waste in drainage channel
- Illegal dumping of sewage sludge
- Washing and bathing in polluted rivers
Problems and Challenges

Sanitation

Sanitation in Indonesia in Year 2009 (BPS, 2010)

Improved Sanitation: Public/shared/private toilet with water closet and septic tank.

Millennium Development Goals

Goal 7 Target 10

to halve the number of people without access to clean water and basic sanitation facilities by 2015

<table>
<thead>
<tr>
<th>No.</th>
<th>INDICATOR</th>
<th>MDGs PROGRESS REPORT 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1993 (%)</td>
</tr>
<tr>
<td>A</td>
<td>Proportion of Population with Access to Water Supply</td>
<td>37.71</td>
</tr>
<tr>
<td></td>
<td>- Protected Non-Piped System (in urban areas)</td>
<td>87.00</td>
</tr>
<tr>
<td></td>
<td>- Protected Non-Piped System (in rural areas)</td>
<td>52.10</td>
</tr>
<tr>
<td>B</td>
<td>Piped Water Supply System</td>
<td>25.56</td>
</tr>
<tr>
<td></td>
<td>- Urban areas</td>
<td>30.80</td>
</tr>
<tr>
<td></td>
<td>- Rural areas</td>
<td>9.00</td>
</tr>
<tr>
<td>C</td>
<td>Improved Sanitation</td>
<td>24.74</td>
</tr>
<tr>
<td></td>
<td>- Urban Households</td>
<td>81.80</td>
</tr>
<tr>
<td></td>
<td>- Rural Households</td>
<td>60.00</td>
</tr>
</tbody>
</table>
IV Policies and Strategies

Wastewater

1. Increase access to wastewater facilities, both on-site and off-site systems, in urban and rural areas to improve community’s health
2. Increase both community and private sectors participation in the management of wastewater
3. Developing Regulations Related to Domestic Waste Water Management
4. Strengthening Institution and Improving Operator’s Capacity Related to Waste Water Management
5. Increasing and Developing Alternatives of Financial Resources for Sanitation

V Strategic Plan 2010-2014

Wastewater

1. Improving the Quality of Wastewater Infrastructure
   - Objective: to improve the quality of housing environment and access to basic infrastructures to improve community’s wellbeing
   - Programme: Wastewater Infrastructure Development (On-site System)
   - Target: 210 locations in 32 provinces
**VI Paradigm Changes**

- **Old Paradigm** (before 2005)
  - TARGET ORIENTED
    - No sense of belonging
    - Neglected sanitation system

- **New Paradigm**
  - PUBLIC NEEDS ORIENTED
    - Community involvement
    - Sustainable sanitation system

Pioneer: World Bank, BORDA NGO and Watsan Working Group

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**VII SANIMAS**

**Objective**
- To improve access for poor community in urban areas and community in rural areas with limited access towards sanitation
- To have community-based sanitation as an alternative choice for a sustainable sanitation infrastructure

**Requirements:**
- Slum area in urban areas with population density of > 150 pe / ha
- Will not polluted water supply sources e.g. surface water and ground water
- SANIMAS construction is built with cheap local material
- Alternative of technology is chosen by the community according to local needs
SANIMAS

**Principles**

- Demand Responsive Approach/ DRA
- Participative
- Multi-sources of Funding
- Technical Options
- Self-selection Process
- Capacity Building

**Basic Principles of Alternative Technology:**
- cost consideration
- efficient
- ease in operation and maintenance
- low energy usage
- appropriate technology

SANIMAS – Implementation Mechanisms

- Preparation
  - Socialization, Workshop
- Location Selection
  - Longlist, Shortlist
- Preparation of Community Based Organisation (CBO)
  - Training of CBO
- Preparation of Facilitators
  - Selection, training

**Letter of Intent**
- Selected city
- MoU
- Selected facilitator

**Community Action Plan**
- Organization, alternative of technology, DED, Budgeting, activity schedule
- Infrastructure is ready to use

- Training for operators
- Socialization for users
- O & M

- Eﬄuent meets the standards
- Reducing of waterborne diseases
- Sustainable infrastructure
## SANIMAS – Fill the GAP

### On-site system

### CBS system

### Sewerage system

### COST

<table>
<thead>
<tr>
<th>Year</th>
<th>Province</th>
<th>Regency / Municipality</th>
<th>Location</th>
<th>Technology</th>
<th>User</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Public shared toilet</td>
<td>Communal sewerage</td>
</tr>
<tr>
<td>2006</td>
<td>20</td>
<td>53</td>
<td>65</td>
<td>54</td>
<td>8</td>
</tr>
<tr>
<td>2007</td>
<td>22</td>
<td>80</td>
<td>125</td>
<td>100</td>
<td>22</td>
</tr>
<tr>
<td>2008</td>
<td>16</td>
<td>69</td>
<td>108</td>
<td>81</td>
<td>17</td>
</tr>
<tr>
<td>2009</td>
<td>17</td>
<td>65</td>
<td>97</td>
<td>74</td>
<td>14</td>
</tr>
</tbody>
</table>

**Total**

<table>
<thead>
<tr>
<th>Province</th>
<th>Regency / Municipality</th>
<th>Location</th>
<th>Technology</th>
<th>User</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>124</td>
<td>395</td>
<td>309</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>35.855</td>
</tr>
</tbody>
</table>

*2011: 17 Provinces, 54 Location*
SANIMAS – Success Factors

- Location selection should follow the SANIMAS guidelines
- Involvement of the community since the beginning will increase their sense of belonging
- Access to clean water is available (tap water, surface water, ground water etc.)

SANIMAS – Lesson Learned

- Community involvement since the beginning of the program became an important factor for sustainable development
- Community development consume about 70% of implementation time
- Community need technical assistance and supervision for SANIMAS construction
- After construction, we should never forget the CBO, they still need an advisory
- Capacity building for all stakeholder including local government
- Difficulty to find a land for WWT can be solved with creativity (under path way, social facility, public facility etc.)
MCK++ (Public shared toilet) with BIOGAS SYSTEM at KEDIRI MUNICIPALITY

COMMUNAL WASTEWATER SYSTEM AT BLITAR/PASURUAN MUNICIPALITY

COMMUNAL WASTEWATER SYSTEM AT DENPASAR MUNICIPALITY
• Thank you for Kind Attention!

Courtesy to BORDA and Partners
SANIMAS - Participative

SOCIALIZATION IN YOGYAKARTA

SANIMAS - Participative

CONSTRUCTION IN YOGYAKARTA
SANIMAS FUNDING per LOCATION 2006-2009

1. Community empowerment cost: 15% Local government, 15% NGO of construction cost

1. Construction Cost:
   - Central Gov.: Rp. 100 M
   - Local Gov.: Rp. 200 M
   - Community: 2-4% (in-cash), land, labor, local material etc

3. Operational Cost
   Responsibility of each stakeholder

SANIMAS FUNDING MECHANISM FY 2008

<table>
<thead>
<tr>
<th>No.</th>
<th>Activities</th>
<th>Central Gov.</th>
<th>Local Gov.</th>
<th>BORDA</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Preparation</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>II</td>
<td>Kampong Selection</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>III</td>
<td>Community Action Plan Preparation</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>IV</td>
<td>Community development</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>V</td>
<td>Construction</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>- Material</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>- Salary</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>- Land</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>VI</td>
<td>Facilitator</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>VII</td>
<td>O &amp; M</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>VIII</td>
<td>Monitoring &amp; Evaluation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
## Operation and Maintenance
### Public Share Toilet – for 250 inhabitants

#### I. O & M Cost

<table>
<thead>
<tr>
<th>Expenses</th>
<th>Rp /month</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Operator &amp; guard Regional minimum wage</td>
<td>420,000.00</td>
</tr>
<tr>
<td>2. Electricity 1300 Watt (pump + lighting)</td>
<td>180,000.00</td>
</tr>
<tr>
<td>3. Sludge desludging Rp. 500,000,- / 2 years</td>
<td>21,000.00</td>
</tr>
<tr>
<td>4. Sanitizer Soap, detergen, vixal etc</td>
<td>60,000.00</td>
</tr>
<tr>
<td>5. Pump maintenance Rp. 100,000,- / year</td>
<td>9,000.00</td>
</tr>
<tr>
<td>6. Others Bulb, paint, mob etc.</td>
<td>75,000.00</td>
</tr>
<tr>
<td><strong>Total O &amp; M</strong></td>
<td><strong>765,000.00</strong></td>
</tr>
</tbody>
</table>

#### II. Contribution

<table>
<thead>
<tr>
<th>Activity</th>
<th>Rp. / use</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Shower</td>
<td>150 - 500</td>
</tr>
<tr>
<td>2. Toilet</td>
<td>150 - 500</td>
</tr>
<tr>
<td>3. Washing + water</td>
<td>150 - 500</td>
</tr>
</tbody>
</table>

Note: cost calculation for 2006

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## Operation and Maintenance
### Communal Wastewater System – for 750 inhabitants

#### I. O&M Cost

<table>
<thead>
<tr>
<th>O&amp;M Cost</th>
<th>Rp./month</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Toilet</td>
<td></td>
</tr>
<tr>
<td>II. House connection</td>
<td>OM cost is responsibility of the user</td>
</tr>
<tr>
<td>III. Main pipe and WWT</td>
<td></td>
</tr>
<tr>
<td>1. Operator Inspection 4x/month : WWT, main pipe, secondary pipe @ Rp. 25,000,- / Inspection</td>
<td>100,000.00</td>
</tr>
<tr>
<td>2. Desludging every 2 years Rp. 500,000,-</td>
<td>21,000.00</td>
</tr>
<tr>
<td>3. Others: pipe repairment, box control , WWT. Assumption: pipe repairment 40 m(^2) per 2 years</td>
<td>45,000.00</td>
</tr>
<tr>
<td><strong>Total O &amp; M</strong></td>
<td><strong>166,000.00</strong></td>
</tr>
</tbody>
</table>

| Household contribution per month    | 1,952.94  |
| Round-up                            | 2,000.00  |

Note: cost calculation for 2006
Technical Options

SANIMAS

Choices → 4th Component: Disposal / Reuse Option

Choices → 2nd Component: Piping System

1st Component: Toilet Choices

3rd Component: Treatment Choices

5th Component: Operation and Maintenance Choices

Communal Septic Tank

Communal Wastewater System

Public Share Toilet ++
Test result of CBS Small scale sewerage system with Dewats technology at Kampung Ngampilan Yogyakarta, 11 November 2003

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
<th>Domestic wastewater effluent standards*</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD</td>
<td>39 mg/l</td>
<td>50 mg/l</td>
</tr>
<tr>
<td>COD</td>
<td>55 mg/l</td>
<td>100 mg/l</td>
</tr>
<tr>
<td>TSS</td>
<td>22 mg/l</td>
<td>30 mg/l</td>
</tr>
</tbody>
</table>

* Source: Environmental Minister Decree No. 112/2003 about domestic wastewater effluent standards

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**behavioral changes**

•SANIMAS