Managing Operation and Maintenance – what does it take to reach the SDGs for WASH in Schools?

Dr. Bella Monse & Ing. Ubo Pakes
Agenda

• WinS within the SDGs, Targets and Indicators – What does it take to reach them?

• O&M Concept for Wins: Use it! Clean it! Maintain it! – Introducing a tool to estimate cost for O&M

• The development of the O&M Costing Tool App

• Q&A Session
<table>
<thead>
<tr>
<th>SDG Target</th>
<th>Drinking water</th>
<th>Sanitation</th>
<th>Hygiene</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advanced service</strong></td>
<td>Additional criteria may include quality, quantity, continuity, and accessibility to all users</td>
<td>Advanced service</td>
<td>Advanced service</td>
</tr>
<tr>
<td><strong>Basic service</strong></td>
<td>Drinking water from an improved source is available at the school</td>
<td>Improved facilities, which are single-sex and usable at the school</td>
<td>Handwashing facilities, which have water and soap available</td>
</tr>
<tr>
<td><strong>Limited service</strong></td>
<td>There is an improved source (piped water, protected well/spring, rainwater, bottled water), but water not available at time of survey</td>
<td>There are improved facilities (flush/pour flush, pit latrine with slab, composting toilet), but not sex-separated or not usable</td>
<td>Handwashing facilities with water, but no soap</td>
</tr>
<tr>
<td><strong>No service</strong></td>
<td>No water source or unimproved source (unprotected well/spring, tanker-truck surface water source)</td>
<td>No toilets or latrines, or unimproved facilities (pit latrines without a slab or platform, hanging latrines, bucket latrines)</td>
<td>No handwashing facilities at the school or handwashing facilities with no water</td>
</tr>
</tbody>
</table>
All schools should reach Basic WASH Service by 2030

**Basic drinking water**
Drinking water from an *improved* source is *available* at the school

**Basic sanitation**
Improved facilities, which are single-sex and usable (*accessible, functional, private*) at the school

**Basic handwashing**
Handwashing facility with *water and soap* at the school
SDGs and Reality – O&M is a management task for the school
O&M – essential to sustain functionality
Cost for O&M depends on type of facility
Type of toilet impact on Cost for O&M
How do Infrastructure standards influence resources needed for O&M?

<table>
<thead>
<tr>
<th>Water</th>
<th>Pond</th>
<th>Borehole with electric Pump</th>
<th>Piped</th>
</tr>
</thead>
<tbody>
<tr>
<td>O&amp;M Costs</td>
<td>$</td>
<td>$</td>
<td>$$$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SANITATION</th>
<th>Pit latrine</th>
<th>Pour Flush</th>
<th>Cistern Flush</th>
</tr>
</thead>
<tbody>
<tr>
<td>O&amp;M Costs</td>
<td>$</td>
<td>$</td>
<td>$$$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HYGIENE</th>
<th>Tippy tap</th>
<th>WASHaLot</th>
<th>Basin and faucet</th>
</tr>
</thead>
<tbody>
<tr>
<td>O&amp;M Costs</td>
<td>$</td>
<td>$</td>
<td>$$$</td>
</tr>
</tbody>
</table>
Calculating Costs for O&M
What to count in?

- This costing framework calculates the cost for a **desired O&M status**.
- The tool helps to calculate and plan for cost
- Cost estimation is the base for **budget allocation and resource mobilization**.
What are the cost to keep WinS running?

- The presented costing tool is intended to define the need and calculate the cost for O&M.

- The calculations are based on the assumption that the infrastructure is functional and access to water is given. **Major, unpredictable repairs are not part of this planning tool.**

- Cost depend on local setting with huge variety even within countries

- Government funds for O&M are allocated per school based on number of children and vary between countries
WinS O&M Cost Calculation - in response to SDGs and National Guidelines

<table>
<thead>
<tr>
<th>Categories</th>
<th>Needs / Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>WATER</td>
<td></td>
</tr>
<tr>
<td>For drinking</td>
<td>1 Liter drinking Water per Day / Student</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>For Cleaning and hygiene</td>
<td>5 Liter per Day / Student</td>
</tr>
<tr>
<td>SANITATION</td>
<td></td>
</tr>
<tr>
<td>User Kit</td>
<td>Materials</td>
</tr>
<tr>
<td>Cleaning kit</td>
<td></td>
</tr>
<tr>
<td>HYGIENE</td>
<td></td>
</tr>
<tr>
<td>Consumables</td>
<td>180 g Soap / Student / per year</td>
</tr>
</tbody>
</table>
Cleaning and Maintenance – what does it take?

Tools
Communal and Cubical

Cleaning agent

Labor for Cleaning
Interviews, observation and focus group discussion resulted to identification of these kits:

- **User kit**: 1 trash bin, 1 toilet brush, 1 dipper/mug
  – sufficient for the usage of 1 toilet cubicle for one year

- **Cleaning kit**: 1 floor brush, 2 brooms, 1 bucket, 10 sponges, 5 hand gloves and 50 face mask
  – sufficient to regularly clean 3 toilet cubicles for one year
User Kit - 6 $ per cubicle/ year
Cleaning Kit – 30$ per toilet block = 10$ per toilet cubicle/ year
Cleaning agent – 15$ - 25 $ / toilet / year
Maintenance Kit – 9 $ / toilet / year
Base for calculation: User kit / Cleaning kit per year

<table>
<thead>
<tr>
<th>Tools needed</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tools needed</strong></td>
<td><strong>User kit per cubicle</strong></td>
<td><strong>1 Cleaning kit for 3 toilet cubicles</strong></td>
<td><strong>For 1 Cubical</strong></td>
</tr>
<tr>
<td><strong>(replenishment recommended once a year)</strong></td>
<td></td>
<td></td>
<td><strong>TOTAL</strong></td>
</tr>
<tr>
<td></td>
<td><strong>1 Trash Bin</strong></td>
<td><strong>1 Floor Brush</strong></td>
<td><strong>10 $</strong></td>
</tr>
<tr>
<td></td>
<td><strong>1 Toilet Brush</strong></td>
<td><strong>2 Brooms</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>1 Dipper/ Mug</strong></td>
<td><strong>1 Bucket</strong></td>
<td><strong>16 $</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>10 Sponge</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>13$</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>5 x Hand Gloves</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>50 Face Masks</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>17 $</strong></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>6 $</strong></td>
<td></td>
<td><strong>6 $</strong></td>
</tr>
</tbody>
</table>
## Base for calculation: cleaning per cubicle/year

| Cleaning agent/bleach | 30 ml for inside of toilet bowl  
• 35 ml diluted to water for cleaning other surfaces and fixtures for toilet block  
• (65 ml x 200 days = 13 l) | Average price per liter 1,80 $ = 23 $ |
What is needed to **keep a toilet clean** and how much does it cost per cubicle /year?

<table>
<thead>
<tr>
<th>Costs per year (Cleaning 1 Cubical)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials for user kit</td>
<td>6 $</td>
</tr>
<tr>
<td>Tools for cleaning kit</td>
<td>10 $</td>
</tr>
<tr>
<td>Cleaning agents</td>
<td>23 $</td>
</tr>
<tr>
<td><strong>Total Materials</strong></td>
<td><strong>39 $</strong></td>
</tr>
</tbody>
</table>

*Costs based on Philippine Market Prices*
# O&M cost per child per year

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Cost 1 year (per child)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WATER</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For drinking</td>
<td>1 Liter drinking Water per day / Student (huge variation in cost)</td>
<td>0.12 $</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.72 $</td>
</tr>
<tr>
<td>For cleaning</td>
<td>5 Liter per day / Student</td>
<td>0.60 $</td>
</tr>
<tr>
<td><strong>SANITATION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials</td>
<td>User kit per cubicle / year</td>
<td>0.12 $</td>
</tr>
<tr>
<td></td>
<td>Cleaning kit per cubicle / year</td>
<td>0.20 $</td>
</tr>
<tr>
<td></td>
<td>Cleaning agent / bleach per cubicle / year</td>
<td>0.47 $</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.79 $</td>
</tr>
<tr>
<td><strong>HYGIENE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumables</td>
<td>180 g Soap / Student</td>
<td>0.50 $</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>2.01 $</td>
</tr>
</tbody>
</table>
Resource Mapping within School community
Checklists support developing Routine
Transparent responsibility for supervision

- Regular visual inspection by school head and teachers
- Assignment of supervision areas
- Routine checklist and SOP for Cleaning and Maintenance
Cleaning following Standard Procedure
O&M
CALCULATE THE COST
WELCOME // PLEASE ENTER YOUR DATA

YOUR SCHOOL

- Name of country
- Name of school
- Location of school

PROCEED
### SCHOOL CHARACTERISTICS // BASIC

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of students</td>
<td>1600</td>
</tr>
<tr>
<td>Days of school per year</td>
<td>200</td>
</tr>
<tr>
<td>Number of toilets cubicles/units</td>
<td>25</td>
</tr>
</tbody>
</table>

[PROCEED]
SCHOOL CHARACTERISTICS // BASIC

- Number of students: 1600
- Days of school per year: 200
- Number of toilets cubicles/units: 25

PROCEED
SCHOOL CHARACTERISTICS // BASIC

- Number of students 1600
- Days of school per year 200
- Number of toilets cubicles/units 32

PROCEED
# School Characteristics // Basic

- Number of students: 1600
- Days of school per year: 200
- Number of toilets cubicles/units: 32

[PROCEED]
SCHOOL CHARACTERISTICS // DRINKING WATER SUPPLY

- Piped water supply
- Protected well/spring
- Rainwater
- Unprotected well/spring
- Packaged bottled water
- Tank-truck or cart
- Refill drinking water station
- No water source
- Other

PROCEED
## School Characteristics // Drinking Water Supply

- Piped water supply
- Protected well/spring
- Rainwater
- Unprotected well/spring
- Packaged bottled water
- Tank-truck or cart
- Refill drinking water station
- No water source
- Other: brought by students

**Proceed**
SCHOOL CHARACTERISTICS // DRINKING WATER SUPPLY

- Piped water supply
- Protected well/spring
- Rainwater
- Unprotected well/spring
- Packaged bottled water
- Tank-truck or cart
- Refill drinking water station
- No water source
- Other

PROCEED
SCHOOL CHARACTERISTICS // DRINKING WATER SUPPLY

- Piped water supply
- Protected well/spring
- Rainwater
- Unprotected well/spring
- Packaged bottled water
- Tank-truck or cart
- Refill drinking water station
- No water source
- Other

PROCEED < 3 of 6 >
COSTS // WATER SUPPLY

- 1 cubic meter of drinking water $0.60
- 1 cubic meter of cleaning water $0.60

PROCEED
COSTS // WATER SUPPLY

- 1 cubic meter of drinking water $0.60

ADDITIONAL INFORMATION

Drinking water per student per day (in liters). 1 liter per child per day x 200 school days = 200 liter per child per school year

COSTS // WATER SUPPLY

- 1 cubic meter of drinking water $0.60
- 1 cubic meter of cleaning water $0.60

PROCEED
## Costs // Sanitation Supply

- Toilet user kit 🔄: 6.00 $
- Cleaning kit per toilet block 🔄: 30.00 $
- 1 liter of cleaning agent/bleach 🔄: 1.80 $

[Proceed]
COSTS // SANITATION SUPPLY

- Toilet user kit 6,00 $
- Cleaning kit per toilet block 30,00 $
- 1 liter of cleaning agent/bleach 1,80 $

ADDITIONAL INFORMATION

Cleaning agent/bleach to clean one toilet cubicle/unit per year (in liters). 30 ml for inside of toilet bowl + 35 ml diluted to water for cleaning other surfaces and fixtures for toilet block = 65 ml * 200 school days = 13 liters
COSTS // SANITATION SUPPLY

- Toilet user kit $6.00
- Cleaning kit per toilet block $30.00
- 1 liter of cleaning agent/bleach $1.80

PROCEED
COSTS // HYGIENE SUPPLY

- 1 roll of toilet paper (400 sheets) $\text{ per roll }
- 1 soap bar (100 g) $\text{ per bar }

SHOW RESULTS
COSTS // HYGIENE SUPPLY

- 1 roll of toilet paper (400 sheets) $\bullet$
- 1 soap bar (100 g) $\bullet$

SHOW RESULTS
### Costs for O&M

<table>
<thead>
<tr>
<th></th>
<th>Per unit</th>
<th>Total per school year</th>
<th>Per student per school year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WATER SUPPLY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drinking Water (in liters)</td>
<td>0,0006 $</td>
<td>192,00 $</td>
<td>0,12 $</td>
</tr>
<tr>
<td>Cleaning Water (in liters)</td>
<td>0,0006 $</td>
<td>960,00 $</td>
<td>0,60 $</td>
</tr>
<tr>
<td><strong>SANITATION SUPPLY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toilet user kit</td>
<td>6,00 $</td>
<td>192,00 $</td>
<td>0,12 $</td>
</tr>
<tr>
<td>Cleaning kit</td>
<td>30,00 $</td>
<td>320,00 $</td>
<td>0,20 $</td>
</tr>
<tr>
<td>Cleaning agent/bleach (in liters)</td>
<td>1,80 $</td>
<td>748,80 $</td>
<td>0,47 $</td>
</tr>
<tr>
<td><strong>HYGIENE SUPPLY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toilet paper (per roll)</td>
<td>– $</td>
<td>– $</td>
<td>– $</td>
</tr>
<tr>
<td>Soap bar (100 g)</td>
<td>0,25 $</td>
<td>800,00 $</td>
<td>0,50 $</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>3,212,80 $</td>
<td>2,015 $</td>
</tr>
</tbody>
</table>

**SHOW DETAILED RESULTS**
Management of O&M – take home message

• O&M is essential but totally underrated!

• Cleaning and Maintenance is at least of same importance as innovation and new construction

• Transparent assignment or areas of supervision / responsibility is of utmost importance

• Type of infrastructure determines O&M cost

• Keeping a toilet usable (clean and functional) takes 30$ - 50$ / year

• Strong advocacy needed for long term solution: Allocation of sufficient budget for O&M within government systems
More ressources

WASH IN SCHOOLS OPERATION AND MAINTENANCE MANUAL
2017.PDF (2.05 MB)

This manual supports schools with practical approaches on how to improve usability of school toilets.

Download:
Thank you

www.fitforschool.international

bella.monse@giz.de
As a federal enterprise, GIZ supports the German Government in achieving its objectives in the field of international cooperation for sustainable development.

Published by
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
Registered offices, Bonn and Eschborn, Germany

Regional program Fit for School and Sector Program Sustainable Sanitation

Responsible
Bella Monse

On behalf of
German Federal Ministry for Economic Cooperation and Development (BMZ)