Sustainability and Value for Money: using data to improve the performance of WASH investments

LHSTM
11th May 2015
DFID’s approach to Value for Money

maximise the impact of each pound spent to improve poor people’s lives

- VfM applies at all levels: strategic, portfolio, programme, administrative

- Importance of comparability, quality, sustainability
Next Steps

Update to ‘DFID’s Approach to Value for Money (VfM)’ (2011) to provide a broader view of VfM, explain what DFID means by VfM and how we aim to maximise VfM

Development of accompanying recommendations on VfM metrics including development of metrics, uses and limitations

Strengthening of sector guidance on VfM including potential VfM metrics
Examples

- Country poverty reduction diagnostic
- Global Partnership for Education (GPE)
- VfM metrics and the Girls Education Challenge Fund
- WASH results programme
- Development of sector VfM guidance
Operational Research Objectives

Objective 1

Identify how delivery of DFID-funded WASH programmes can be made more sustainable, effective and efficient, and identify the potential to reduce unit costs.

Operational research in six countries: Bangladesh, Ethiopia, Mozambique, Nigeria, Pakistan and Zambia
Operational Research Objectives

Objective 2

Provide updated **regional assessments** of the operational **sustainability** of provided water and sanitation services in Africa and South Asia.

Nationally representative **household surveys** in 4 countries (Ethiopia, Bangladesh, Mozambique and Pakistan)

**Secondary data** for all countries (e.g. Water Point Mapping initiatives)
Value for Money and Sustainability in WASH Programmes (VFM-WASH)

Operational sustainability of WASH services

Findings of nationally-representative household surveys and regional assessments

Ian Ross, Oxford Policy Management
11/5/15
Structure

1. Background
   - Background to the operational sustainability problem
   - Conceptual framework for operational sustainability

2. Methodology
   - Sampling
   - Instruments

3. Headline results
   - Water
   - Link to VFM analysis

4. Conclusions and next steps
1. Background
Objectives of the VFM-WASH research project

Two objectives:

1. Obj1
   • To identify how Value for Money (VFM) and sustainability can be improved in DFID-funded WASH programmes using operational research.
   • 6 countries: Bangladesh, Ethiopia, Mozambique, Nigeria, Pakistan and Zambia

2. Obj2
   • assess “operational sustainability” of rural WASH services in Africa & S.Asia
   • nationally-representative household surveys in 4 countries (Bangladesh, Ethiopia, Mozambique and Pakistan),
   • Secondary data for all countries

Two years: September 2013 – August 2015
“one third of handpumps in Africa are not working” (RWSN, 2009)

“tolerance of this level of failure would not be contemplated in most other spheres of public service.” (Lockwood & Smits, 2011)

“Newly delivered WASH services often perform effectively for a period, and then either fall into disrepair or otherwise fail to provide continuing benefits to their users” (WaterAid, 2011)

“data on overall sustainability of WASH services is weak … very few high-quality studies that provide evidence on sustainability beyond [the] small-scale … focused on specific programmes and commonly over relatively short-time lines. … quite specific interventions and single countries.” TOR for this research (DFID, 2013)
Background: RWSN (2009) handpump functionality estimates

Message – RWSN estimate very influential / useful, but reliability of “36% non-functional” is unknown (mostly based on expert opinion, unknown definitions)
Definitions of (i) sustainability, and (ii) operational sustainability

“Sustainability is about whether or not WASH services and good hygiene practices continue to work and deliver benefits over time.” (DFID, 2011, after WaterAid, 2011, after Len Abrams)

“Operational sustainability is one dimension of the broader concept of service sustainability. The operational dimension is specifically concerned with the functionality of water and sanitation systems over time (operational service) and how these contribute to household’s experience of effective service over time (effective service).“ (VFM-WASH, 2015)
## Conceptual framework: operational sustainability

<table>
<thead>
<tr>
<th>Unit of Analysis</th>
<th>Day-to-day performance</th>
<th>Month-to-month performance</th>
<th>Lifecycle/multi-year performance</th>
<th>Effective operational sustainability</th>
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<tbody>
<tr>
<td>Household</td>
<td>Hours per day of service from main water point</td>
<td>Months per year of service from main water point</td>
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<td>Effective service experienced by users from main water point (unit: % of year)</td>
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<td>(Effective service)</td>
<td><strong>Level of service (time to collect water, quantity, quality)</strong></td>
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<td>Water Point</td>
<td><strong>Level of service (quantity, quality)</strong></td>
<td>Number of users</td>
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<td>Operational service provided by a water point (unit: person years)</td>
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<td>(Operational service)</td>
<td>Hours per day of service</td>
<td>Days per month and months per year of service</td>
<td>Years of service from this water point</td>
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</table>
2. Methodology
Methodology for VFM-WASH surveys in BGD, ETH, MOZ, PAK

Two units of analysis

• Households (HHs)
  - National representativeness of rural areas (some exclusions)
  - 1,200 HHs using cluster random sampling (60 clusters * 20 HHs)

• Water points (WPs)
  - Visit all "public WPs" in those 60 clusters
  - c.2-5 WPs per PSU --> c.150-300 WPs per country

Primary sampling units (PSUs) / clusters

• Census enumeration areas
• ‘Probability Proportionate to Size’

Survey designed to be rigorous at the household level not for WPs, so the WP sample is not representative.
Instruments and functionality

Power calculation
- Indicator of interest: 50%
- Design effect: 2.5
- Cluster size: 16
- Number of clusters: 60
- Margin of error: 5%

Three quant. instruments (plus qual.)

1. Household questionnaire (outcomes)
   - List of WPs used & service levels
   - Functional at last visit? (yes/no)

2. Community questionnaire (outputs)
   - List of all public WPs
   - Functional “usually”? (yes/no/sometimes)

3. Water point inspection (outputs)
   - Sanitary inspections
   - Functional at time of enumerator visit? (yes/no)

Definition of functionality
- Functional = “Water available”
- This is without ref. to Quantity/flow rate, Quality/taste
- Blunt and binary – keep it simple when using non-specialist enumerators
A theoretical community / PSU

WPs given ID codes during listing. This lets us triangulate, e.g. estimate number of users for each WP

- Improved public WP - functional
- Improved public WP – sometimes functional
- Improved public WP – non-functional
- Unimproved public WP

- Sampled HH
- Other HH

Map of theoretical sampled PSU

WPID = 18871
WPID = 18873
WPID = 18872
WPID = 18874

nb. Private WPs very important in S.Asia. % HHs owning their main WP
- BNG: 60%
- PAK: 82%
Key concepts – public WPs and main WP

1. List all public water points
   - Accessible by anybody
   - Outside a household compound
   - Improved or unimproved
   - Functional or non-functional

2. Include non-functional WPs
   - Public WPs included on list even if non-functional for many years
   - Only included if physical evidence remained
   - Important to avoid “denominator problem”

3. Key analysis is for main WPs
   - WP which HH uses most frequently
   - Can be public, private, improved or unimproved
   - We have data for other WPs used

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**Main WP**

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<th>Line Number</th>
<th>Water Point, Ownership and Use</th>
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<td>If you use water from this water point for livestock, do you use water from this water point for other domestic uses?</td>
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3. Headline results

(little time, only headlines are shown – publications to follow by August 2015. We have a lot more results for water, and results for sanitation as well)
In BNG and MOZ, high chance that users of improved WPs are using tubewell / borehole. Less so in ETH/PAK.

High reliance on public WPs in Africa. This is low in Asia, where there are very high levels of private WP ownership.

However, note that for HHs ever using a public WP:
- BNG = 45%
- PAK = 18%
Operational sustainability – household perspective – hours/day

South Asia

Almost 24/24 service in both countries (nb. rural). No difference across wealth quintiles.

Means:
- BNG – 24.0 hrs
- PAK – 23.0 hrs

Africa

Some occurrence of low intra-day availability. No difference across wealth quintiles.

Means:
- ETH - 16.8 hrs
- MOZ - 22.3 hrs
Operational sustainability – household perspective – months/year

**South Asia**

Few issues in month-to-month service.

**Means:**
- BNG – 11.9 mths
- PAK – 11.9 mths

**Africa**

Significant month-to-month issues but mainly related to HHs using unimproved WP as main WP.

**Means:**
- ETH – 11.0 mths
- MOZ - 11.3 mths
## Operational sustainability – water point perspective – functionality

Data from community questionnaire (whether “usually” functional)

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<th></th>
<th>MOZ (n=73)</th>
<th>ETH (n=169)</th>
<th>BNG (n=249)</th>
<th>PAK (n=412)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>Sometimes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Public tap</td>
<td>86</td>
<td>14</td>
<td>0</td>
<td>81</td>
</tr>
<tr>
<td>Tube well/borehole</td>
<td>74</td>
<td>15</td>
<td>11</td>
<td>85</td>
</tr>
<tr>
<td>Protected dug well</td>
<td>78</td>
<td>0</td>
<td>22</td>
<td>-</td>
</tr>
<tr>
<td>Protected spring</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>95</td>
</tr>
</tbody>
</table>

**Reasons for high confidence in method:**
1. Trained enumerators to include even abandoned WPs if physical evidence
2. Triangulation check using WP IDs - HH view and community view on functionality concurs in >95% cases

**BUT** our WP sample not representative of all WPs in the country, so can't really draw strong conclusions

Data from WP inspection (enumerators visit all public WPs)

<table>
<thead>
<tr>
<th></th>
<th>MOZ</th>
<th>ETH</th>
<th>BNG</th>
<th>PAK</th>
</tr>
</thead>
<tbody>
<tr>
<td>% improved public WPs functioning at time of survey (from inspection)</td>
<td>96%</td>
<td>92%</td>
<td>89%</td>
<td>70%</td>
</tr>
</tbody>
</table>
• Six WPM datasets in **Sub-Saharan Africa** found functionality ranges between c.60-80% (slightly lower than VFM-WASH “usually functional” data)

• Many **biases inherent in estimating mean functionality** (in terms of definitions, scope of data collection and the “denominator problem")
older WPs are less likely to be functional, BUT impression of straight line relationship may be misplaced
Functionality of water points in 4 African countries (analysis by OPM, data from RWSN WPM group)

Message: far fewer older WPs than expected → denominator problem. Theory: WPM is missing some long-forgotten / dismantled non-functional water points.

Red dotted line = hypothesised relationship
Effectiveness (outputs $\rightarrow$ outcomes)

- Governments often use hardware assumptions to calculate beneficiaries
- We triangulade WP IDs with HHs reporting using that WP
- Enables estimation of actual user numbers (calc. using mean HH size)
- *nb.* this is ever using, not just main WP. We could do same for main WP

**Bangladesh**

- Median = 70
- Mean = 104
- Govt. assumption = 60

**Mozambique**

- Median = 145
- Mean = 178
- Govt. assumption = 300
Applications to VFM analysis – household sanitation expenditure

Leveraging household contributions for sanitation

- HH survey questions:
  - “Which of the following did your household contribute to build the toilet?” (cash/labour/materials)
  - “If your household spent cash to build the toilet, how much did you spend at the time when it was built?” (local currency)

Household cash expenditure on latrine in Ethiopia

<table>
<thead>
<tr>
<th>Quintile</th>
<th>Mean (GBP)</th>
<th>No. of households</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest</td>
<td>2.96</td>
<td>8</td>
</tr>
<tr>
<td>Second</td>
<td>2.16</td>
<td>19</td>
</tr>
<tr>
<td>Middle</td>
<td>4.48</td>
<td>29</td>
</tr>
<tr>
<td>Fourth</td>
<td>5.98</td>
<td>50</td>
</tr>
<tr>
<td>Highest</td>
<td>10.26</td>
<td>80</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7.03</strong></td>
<td><strong>186</strong></td>
</tr>
</tbody>
</table>

*Exchange rate: 1 Ethiopian Birr = 0.032 GBP
N. b.: We are excluding all households that did not contribute (i.e. contribution = £0)
Conclusions and next steps

Conclusions:

Household perspective (nb. rural)
- **Day-to-day** – Most rural households in BNG/PAK have 24/7 access, 365 days a year.
  BUT qualifications around
  - Water quality
  - Equity, e.g. around service levels (round trip time, water quantity, etc.)
- **Month-to-month** – ETH/MOZ households can't get water from their main WP for c.1 month per year on average, and this hits those using unimproved WPs the hardest

Water point perspective
- c.75% - 85% of public improved WPs “usually” functional (community interview), but our WP sample is not representative (designed for HH representativeness).
- Secondary WPM datasets often unclear in definitions & scope
- Denominator problem (kinds of non-functional WPs to be included in analysis) needs further work

Next steps:
- Update regional assessments and share externally before publication (July/August)
- Further detailed data analysis on key research questions for journal articles
- Model the denominator problem to allow estimates of true denominator
Value for Money and Sustainability in WASH programmes (VFM-WASH)

How can VFM analysis be used in the WASH sector? Evidence from 6 DFID programmes’ studies

11th May 2015
VFM-WASH research project – Objective 1

- **Objective:** identify how VFM and sustainability can be improved in DFID-funded WASH programmes using operational research
  - Developed a methodology to assess VFM in WASH sector
  - Used the methodology in 6 DFID WASH programmes in 6 countries: Bangladesh, Ethiopia, Mozambique, Nigeria, Pakistan and Zambia
  - Refined methodology and produced a note on how to do VFM analysis for WASH programmes – which could be further expanded

- **Country level activities**
  - Programme visit: interviewed programme stakeholders and sector actors, collected programme data and field visits
  - Remote discussion of results with programme stakeholders
  - Interviews with comparators and collection /discussion of their data
  - Workshop to present results and methodology to sector stakeholders
Six countries, six DFID-funded programmes

**SHAWN**
- **Country:** Mozambique
- **Funding:** £20,000,000
- **Dates:** 2010-2015
- **Scale:** National - in 3 provinces
- **Sector:** Rural Water and sanitation
- **Implementer:** Gov of Mozambique (DNA)

**WSSP**
- **Country:** Ethiopia
- **Funding:** £66,000,000
- **Dates:** 2007-2013
- **Scale:** National
- **Sector:** Rural, Water and sanitation
- **Implementer:** Gov of Ethiopia

**SHEWA-B**
- **Country:** Bangladesh
- **Funding:** £48,498,476
- **Dates:** 2007 - 2013
- **Scale:** National
- **Sector:** Rural, Urban, Water, Sanitation and Hygiene
- **Implementer:** UNICEF

**Sanitation and Hygiene Programme**
- **Country:** Zambia
- **Funding:** £19,034,149
- **Dates:** 2011-2015
- **Scale:** National – 3 provinces
- **Sector:** Rural, Sanitation and Hygiene
- **Implementer:** UNICEF

**PRONASAR**
- **Country:** Pakistan
- **Funding:** £66,000,000
- **Dates:** 2010-2013
- **Scale:** National
- **Sector:** Rural, Water, Sanitation and Hygiene
- **Implementer:** NGOs: Save the Children, Oxfam, Mercy Corps, Islamic Relief, Handicap International, CONCERN, CARE with local partners, RSPN

**Response to Pakistan Floods 2010**
- **Country:** Pakistan
- **Funding:** £66,000,000
- **Dates:** 2010-2013
- **Scale:** National
- **Sector:** Rural, Water, Sanitation and Hygiene
- **Implementer:** NGOs: Save the Children, Oxfam, Mercy Corps, Islamic Relief, Handicap International, CONCERN, CARE with local partners, RSPN
What is Value For Money?

Making the best use of available resources so as to achieve **sustained development outcomes**

“maximising the impact of each pound spent to improve poor people’s lives”  
(DFID, 2011)

“optimal use of resources to achieve intended actual outcomes”  
(UK Audit Office, 2009)

VFM is not necessarily about saving money and reducing unit costs:  
It is about **maximising** actual outcomes and impacts
How can VFM analysis be used?

- To create a **culture of transparency** around programme results
- To **monitor the use of public funding**—Accountability to taxpayers
- To **demonstrate results** and attract funding based on evidence
- To **help managers better understand** and analyse performance issues they see on the ground, and their associated cost
- To identify **what drives VFM** as part of a broader programme evaluation
- To **improve programming** through evidence-based decisions
Components of VFM: The WASH results chain

- Economy
  - Costs (£)
- Efficiency
  - Inputs (capital, labour)
  - Process
  - Outputs (e.g. facilities built, communities triggered, based on M&E system)
  - Assumed outcomes (beneficiaries, based on hardware or household list assumptions)
- Effectiveness
  - Sustained Actual outcomes (new users of WASH services, based on baseline and endline surveys)
  - Impacts (improved health outcomes, education outcomes etc.)

Source: Adapted by authors from DFID WASH Portfolio Review (2013)
Key VFM questions

- Unit costs of key inputs?
- Were inputs bought at right quality and right price? When compared to budget and to other organisations?
- Efficiency of procurement?
- How well have inputs been converted into outputs?
- Have planned outputs been achieved?
- If not, why not? What were key implementation challenges?
- Unit costs of key inputs?
- Were inputs bought at right quality and right price? When compared to budget and to other organisations?
- Efficiency of procurement?

- What are programme unit costs per actual beneficiary over time?
- What are overall costs (to all parties) per actual beneficiary?

- What are unit costs per output (e.g. to build one water point, trigger one community)?
- What are equivalent costs per assumed beneficiary?
- How much funding was leveraged from other sources of finance?

- How effective has the programme been to convert outputs been converted into sustained actual outcomes?
- Are the services from the programme sustainable over time?
## Summary of VFM-WASH findings

**VFM indicators:** averaged values across years evaluated, incl. Indirect cost for programme support

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water</strong></td>
<td>Outputs</td>
<td>Costs per public water point</td>
<td>$779</td>
<td>no data</td>
<td>$23,755</td>
<td>$6,688</td>
</tr>
<tr>
<td></td>
<td>Assumed outcomes</td>
<td>Costs per person served by a public water point</td>
<td>$17</td>
<td>$27</td>
<td>$79</td>
<td>$24</td>
</tr>
<tr>
<td><strong>Sanitation</strong></td>
<td>Outputs</td>
<td>Costs per community triggered by CLTS</td>
<td>--</td>
<td>no data</td>
<td>$4,035</td>
<td>no data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Costs per community certified / verified as ODF</td>
<td>--</td>
<td>no data</td>
<td>$11,941</td>
<td>$5,668</td>
</tr>
<tr>
<td></td>
<td>Assumed outcomes</td>
<td>Costs per person served by a new latrine</td>
<td>$1.5</td>
<td>no data</td>
<td>$14</td>
<td>$11</td>
</tr>
<tr>
<td><strong>Hygiene</strong></td>
<td>Assumed outcomes</td>
<td>Costs per person with a place for hand-washing</td>
<td>$7.0</td>
<td>no data</td>
<td>--</td>
<td>no data</td>
</tr>
<tr>
<td><strong>School WASH</strong></td>
<td>Outputs</td>
<td>Costs per school with functional latrines</td>
<td>$1,441</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Assumed outcomes</td>
<td>Costs per beneficiary of SSHE</td>
<td>$2</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

### Cost-effectiveness

| Water          | Sustained actual outcomes | Costs per person using a public water point | $11.4*                        | no data | $122                             | no data | no data | no data | --                        |
| Sanitation     | Sustained actual outcomes | Costs per person using a latrine          | $2.3                           | no data | no data                           | no data | no data | no data | $4                        |
| Hygiene        | Sustained actual outcomes  | Costs per person observed HWWS after defecation | $2.4                           | no data | no data                           | no data | no data | no data | no data                   |

(*) For Bangladesh, this is the cost per new person who gained access to a higher level of water service and is using it
Economy - Are key inputs bought at the right quality and price?

- Paradoxically little data is available to monitor unit cost of inputs
- Some implementers monitor contract costs (UNICEF in SHAWN, SHEWA-B)

**Unit costs for Handpump-fitted borehole construction**

- Cost budgeted for at Inception
- Cost stated in contract
- Cost paid to contractor

**Unit costs for construction of school sanitation units**

- Cost budgeted for at Inception
- Cost paid to contractor

Source: UNICEF cost data. All costs are direct hardware costs and do not include software or indirect costs.
Efficiency - How well have inputs been converted into outputs?

- Answering this question requires detailed M&E output data on the quality and service level achieved which often does not exist.
  - As proxy: we calculated planned vs. achieved outputs (imperfect indicator).
  - Example for sanitation: how efficient has the programme been at converting triggered villages into ODF villages?

<table>
<thead>
<tr>
<th>Zambia S&amp;H P</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>No. of villages triggered and reported ODF</th>
<th>No. persons who gained access to a latrine</th>
</tr>
</thead>
<tbody>
<tr>
<td>ODF conversion rate</td>
<td>People per village</td>
</tr>
<tr>
<td>19%</td>
<td>People with access to sanitation</td>
</tr>
<tr>
<td>52%</td>
<td></td>
</tr>
<tr>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td></td>
</tr>
<tr>
<td>0%</td>
<td></td>
</tr>
</tbody>
</table>

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The unit cost per person who gained access to a latrine has decreased by 58% between Q3 2013 and Q4 2014.

- Unit costs in real terms confirm this finding.

**Unit cost per person who gained access to a latrine**

- **Programme support (indirect)**
- **Direct software**
- **Direct hardware**
- **Total unit cost in real terms**

**No. of people with access to an improved sanitation facility (Cumulative)**
Cost-efficiency – Unit cost per assumed outcome

• Example for the water intervention of PRONASAR
  • Unit cost per water beneficiary has decreased by 15 to 20% per year since 2012
  • Mainly due to a reduction in hardware cost per water point
  • Actual average unit cost per beneficiary (2012-14) was higher than planned ($79 vs $72)
  • Unit cost expressed in real terms is slightly below unit cost expressed in nominal terms

Example for the water intervention of PRONASAR

- Unit cost per water beneficiary has decreased by 15 to 20% per year since 2012
- Mainly due to a reduction in hardware cost per water point
- Actual average unit cost per beneficiary (2012-14) was higher than planned ($79 vs $72)
- Unit cost expressed in real terms is slightly below unit cost expressed in nominal terms

Water points constructed: Annual expenditure and outputs

<table>
<thead>
<tr>
<th>Year</th>
<th>Hardware Costs</th>
<th>Direct Software Costs</th>
<th>Indirect Programme Support Costs</th>
<th>Total Planned Expenditure</th>
<th>No. of Water Points Constructed</th>
<th>No. of Water Points Planned</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>$39</td>
<td>$89</td>
<td>$59</td>
<td>$39</td>
<td>50</td>
<td>200</td>
</tr>
<tr>
<td>2012</td>
<td>$71</td>
<td>$110</td>
<td>$99</td>
<td>$89</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>2013</td>
<td>$59</td>
<td>$89</td>
<td>$71</td>
<td>$120</td>
<td>200</td>
<td>300</td>
</tr>
<tr>
<td>2014</td>
<td>$59</td>
<td>$89</td>
<td>$71</td>
<td>$120</td>
<td>200</td>
<td>300</td>
</tr>
</tbody>
</table>

Unit cost per assumed water point beneficiary per year

<table>
<thead>
<tr>
<th>Year</th>
<th>planned Unit cost</th>
<th>Total actual Unit cost in Real terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>$39</td>
<td>$39</td>
</tr>
<tr>
<td>2012</td>
<td>$71</td>
<td>$71</td>
</tr>
<tr>
<td>2013</td>
<td>$59</td>
<td>$59</td>
</tr>
<tr>
<td>2014</td>
<td>$59</td>
<td>$59</td>
</tr>
</tbody>
</table>
Cost-efficiency and cost-effectiveness

- **Lack of outcome data:** Impossible to calculate cost-effectiveness indicators in most cases
  - Outcomes are often estimated based on assumed numbers of “users”

- **Example for a water intervention (SHEWA-B)**
  - Because there is almost universal access to improved services, cost effectiveness in this case can be measured in terms of cost per person who gained in water service level, rather than in cost per person who gained access to water
  - Only a partially cost-effectiveness indicator
    - Calculated based on number of functional and arsenic-free water points (82.2%)
    - Assumed 13.5 families per water point

---

**Cost-efficiency: Unit Cost per person served with an Arsenic-Safe Water Point ($)**

<table>
<thead>
<tr>
<th>$ per person served</th>
<th>PUBLIC</th>
<th>PRIVATE (LB)</th>
<th>PRIVATE (UB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$450</td>
<td>$15</td>
<td>$91</td>
<td>$433</td>
</tr>
<tr>
<td>$400</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$350</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$300</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>$250</td>
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<td></td>
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<tr>
<td>$200</td>
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<tr>
<td>$150</td>
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<td></td>
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<tr>
<td>$100</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>$50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Cost-Effectiveness: Unit cost per person served with Arsenic-safe and functional Water Point ($)**

<table>
<thead>
<tr>
<th>$ per person served</th>
<th>Public subsidised WP</th>
<th>Private WP (LB)</th>
<th>Private WP (UB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$450</td>
<td>$18</td>
<td>$98</td>
<td>$463</td>
</tr>
<tr>
<td>$400</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$350</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>$300</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>$250</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>$200</td>
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<td>$150</td>
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<td>$100</td>
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<td></td>
</tr>
<tr>
<td>$50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Bangladesh SHEWA-B**
Cost-efficiency and cost-effectiveness

Example for an hygiene intervention - SHEWA-B

- Cost efficiency:
  - Cost per person with water to wash only their hands after defecation (hardware provision)
  - Cost per person who recalls one message of the WASH messages (software)
- Cost-effectiveness of behaviour change

Cost-efficiency of hygiene intervention ($)

<table>
<thead>
<tr>
<th>Cost per person recalling 1 message from each of the water, sanitation and handwashing messages</th>
<th>Cost per additional person with water at a convenient place for handwashing post defecation</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2</td>
<td>$8</td>
</tr>
</tbody>
</table>

Cost-effectiveness of Hygiene intervention: Observed handwashing with soap and water ($)

- before food prep
- before eating (stat sig - 2.4% change)
- before feeding child
- after child defecation
- after defecation

<table>
<thead>
<tr>
<th>Unit cost per additional person</th>
<th>$</th>
<th>$</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional HH members (&gt;5years) observed washing their hands with soap and water before...</td>
<td>$0</td>
<td>$4</td>
<td>$4</td>
</tr>
<tr>
<td></td>
<td>$4</td>
<td>$4</td>
<td>$24</td>
</tr>
</tbody>
</table>

Bangladesh SHEWA-B
# VFM analysis: challenges and solutions

<table>
<thead>
<tr>
<th>Potential challenges</th>
<th>Potential solutions</th>
</tr>
</thead>
</table>
| • Programme results are not tracked in manner that is coordinated with cost tracking | • Link M&E and financial reporting formats  
• Use contract information or bills of quantities to obtain additional data  
• Better understand the spending cycle  
• Shift to activity-based financial reporting |
| • Outcome data is seldom collected                                                   | • Support development of M&E frameworks  
• Complete with ad-hoc surveys                                                      |
| • Risk of not comparing like with like                                               | • Collect detailed data on programmes expenditure  
• Adjust for external differences (inflation / geographical) |
| • Variations in VFM are difficult to attribute to a specific cost driver            | • Can only be an indication – not a causal relationship  
• Undertake more detailed analysis on this driver                                   |
| • Non-programme costs that contribute to outcomes are not captured                  | • Capture life cycle costs where significant and where possible (in the present case, sought to focus on the most pressing) |
Conclusions: can a VFM culture be fostered in the WASH sector?

• Current status
  – Demand for VFM analysis currently stems from donors: most VFM estimates are based on fairly crude analysis, yielding figures that are usually not comparable
  – Programme implementers are not always embracing VFM analysis as they fear that the results be interpreted out of context / used against them

• But there are clear potential benefits in doing VFM analysis which means that a “change in sector culture” needs to take place
  – Demonstrate potential benefits to programme implementers – so that they adjust their M&E systems and compute VFM data on a routine basis
  – Promote a consistent methodology so that comparable figures can be generated on a wider scale and be compared across
  – Develop the methodology:
    ▪ To collect data on non-programme costs
    ▪ To compare data across time and geographies
    ▪ To identify and measure VFM drivers
Thank you

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