Water Service Ladders for Domestic Water Supply

MUS Expert Day
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WASHCost (and MUS)

* A five year action research programme
* Working in Burkina Faso, Ghana, Mozambique and India (Andhra Pradesh)
* Researching the FULL Life-Cycle Costs (LCC) of providing Rural and Peri-Urban (Domestic) Water and Sanitation Services, and ....
* Identifying ways in which this information can be used to improve service delivery

* WASHCost is NOT specifically about MUS – but MUS (domestic +) keeps popping up!
## Life Cycle Costs?

<table>
<thead>
<tr>
<th>Life Cycle Cost Components: Water Services</th>
<th>Resources</th>
<th>Infrastructure</th>
<th>Demand/Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs involved in sustainable provision of water resources of required quantity and quality</td>
<td>Costs incurred by service providers when constructing, operating and maintaining water supply infrastructure</td>
<td>Costs incurred by users who routinely access formal, informal and private water supply systems to meet normal demands. Also costs incurred when accessing alternative sources during system failures</td>
<td></td>
</tr>
</tbody>
</table>

### Life Cycle Cost Components:

- **Capital Expenditure – hardware (CapEx)**
  - Capital investment in fixed assets

- **Capital Expenditure – software (CapEx)**
  - One-off work with stakeholders prior/during to construction or implementation

- **Cost of Capital (CoC)**
  - Costs of raising capital for investment

- **Operating and minor maintenance Expenditure (OpEx)**
  - Expenditure on labour, fuel, chemicals, materials, regular purchases of any bulk water.

- **Capital maintenance expenditure (CapManEx)**
  - Expenditure on asset renewal, replacement and rehabilitation costs

- **Expenditure on Direct Support (ExpDS)**
  - Post-construction support activities for local-level stakeholders, users or user groups

- **Expenditure on Indirect Support (ExpIDS)**
  - Macro-level support, planning and policy making
Background

* Since WASHCost started (2008), two main areas of research/advocacy have emerged:
  * Costs related to sustainability (i.e. everything except CapEx)
  * Costs related to service provision and different service levels - i.e. what does it cost to provide a sustainable service?
* But what is the service?
What is a domestic water service?

- A water service is the water provided to people
- .... typically defined in terms of: **quantity** and **quality** of water provided to users, taking into account **accessibility** and **reliability**

- Service ≠ Technology
  - though there are strong links between the two:
    - Hand-pumps normally represent one level of service
    - Taps in houses another
* A service level is a group of indicators that together establish a normative benchmark for service delivery
  * (e.g. 20l/p/d of WHO standard quality water within 500m of the dwelling and shared by no more than 300 people)

* A service ladder is a series of service levels grouped to convey the impression (or intention) of progression from one level to the next

* Establishing service levels is a political (and engineering) process
Why use service levels/ladders?

- If you can’t describe it you can’t measure it (or cost it)
- If you can’t measure it you can’t monitor it
- If you can’t monitor it you can’t improve it

Water supply infrastructure is built for a purpose: to provide a service. Counting hand-pumps (or taps) built DOES NOT provide an indication of service received.

Without agreement on the level of service being targeted, we cannot make meaningful statements about what it costs to provide (or if we are succeeding).
The Ladders!
The Original! (well – Sanitation came first …)

- High level MUS
  - Volume: 100 - 200
  - Water needs met: All domestic needs; garden, trees, livestock and small enterprise
- Intermediate MUS
  - Volume: 50 - 100
  - Water needs met: Consumption, laundry, cleaning/hygiene OK; vegetables, trees and/or small enterprise
- Basic MUS
  - Volume: 20 - 50
  - Water needs met: Consumption OK, laundry, cleaning/hygiene low; basic livestock; fruit, trees
- Basic domestic
  - Volume: 5 - 20
  - Water needs met: Consumption just OK, hygiene too. No productive uses
- No domestic
  - Volume: < 5
  - Water needs met: Too low for basic consumption and basic hygiene
Domestic Water Service Ladders

No service: People access water from insecure or unimproved sources, or sources that are too distant, too time-consuming or are of poor quality.

Basic service: People access a minimum of 20 l/c/d of acceptable quality water from an improved source spending no more than 30 minutes per day.

Intermediate service: People access a minimum of 40 l/c/d of acceptable quality water from an improved source spending no more than 30 minutes per day.

High service: People access a minimum of 60 l/c/d of high quality water on demand.

And now the WASHcost version …..
<table>
<thead>
<tr>
<th>Status</th>
<th>Quantity (l/c/d)</th>
<th>Quality</th>
<th>Accessibility (min/c/d)</th>
<th>Reliability</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>&gt;60</td>
<td>Good</td>
<td>&lt;10</td>
<td>Reliable/unreliable</td>
<td>Improved</td>
</tr>
<tr>
<td>Intermediate</td>
<td>&gt;40</td>
<td>Acceptable</td>
<td>30</td>
<td>Reliable/unreliable</td>
<td></td>
</tr>
<tr>
<td>Basic (normative)</td>
<td>&gt;20</td>
<td>Acceptable</td>
<td>30</td>
<td>Reliable/unreliable</td>
<td>Improved</td>
</tr>
<tr>
<td>Sub-standard</td>
<td>&gt;5</td>
<td>Acceptable</td>
<td>60</td>
<td>Unreliable/unsecure</td>
<td></td>
</tr>
<tr>
<td>No service</td>
<td>&lt;5</td>
<td>Unacceptable</td>
<td>&gt;60</td>
<td>Unreliable/unsecure</td>
<td>Unimproved</td>
</tr>
<tr>
<td>Composite indicator</td>
<td>Mozambique</td>
<td>Ghana</td>
<td>Burkina</td>
<td>Andhra Pradesh</td>
<td></td>
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<tr>
<td>---------------------</td>
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<td></td>
</tr>
<tr>
<td><strong>Access</strong></td>
<td>Crowding 500 people</td>
<td>Distance: &lt; 500 m Crowding BH &lt;300 people W &lt; 150 people SP &lt; 300 people</td>
<td>Distance: &lt;1000 m point source Crowding SP &lt; 300 people BP &lt; 10 people PDC &lt; 100 people BF &lt; 1000 people</td>
<td>Distance Crowding Social exclusion</td>
<td></td>
</tr>
<tr>
<td><strong>Quantity</strong></td>
<td>Norm: 20 l/c/d Sub-standard: 10-20 l/c/d</td>
<td>PS - 20 l/p/d HC - 60 l/p/d</td>
<td>PS - 20 l/c/d HC - 40-60 l/c/d</td>
<td>40 l/c/d</td>
<td></td>
</tr>
<tr>
<td><strong>Quality</strong></td>
<td>WHO</td>
<td>GS standards</td>
<td>WHO guidelines</td>
<td>Fluoride</td>
<td></td>
</tr>
<tr>
<td><strong>Reliability</strong></td>
<td>% time available &gt;11 months</td>
<td>% time available &gt;95%</td>
<td>???</td>
<td>Households have access to at least two separate systems</td>
<td></td>
</tr>
</tbody>
</table>
Coverage:
Access (population): Yes
Access (distance): No
Reliability: No?? (none working when visited)
Quantity: No/Yes?? (average wet/dry – domestic/non-domestic)
Evidence of the superiority of MUS?

- We find ‘non-domestic’ (domestic+!) happening everywhere: MUS as a paradigm
  - We find ‘traditional/non-domestic sources’ being used for domestic; domestic sources for ‘non-domestic’
- Costs of what?
- Benefits of what?!
- Tentative approach: Costs of achieving a given level of service
- Benefits? Catalyze discussion and thinking around what services are to be delivered
Conceptualization of Multiple-Use water Services (MUS), from your own perspective and experiences

Operationalization or specification of that conceptualization in terms of Cost-Benefit Analysis and performance, and related scientific methodologies

Evidence and/or hypotheses of the superior performance of MUS compared to single-use approaches with related performance indicators (or be the devil's advocate on any lack of proof and hypothesized disadvantages)