Water Accessibility and Use Revisited: Implications for Financial Planning of Rural Water Supplies

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Ten country programs
150 full-time indigenous staff
Objectives

1. Why is accessibility Important?
2. How does accessibility affect water use behavior?

Accessibility
- Collection distance [m]

Water Use
- Consumption [L]
- Household penetration [%]

Sustainability
- Local revenue generation [$]
Accessibility 101

- Quantity
- Quality
- Continuity and reliability
- Affordability
- Collection time (and distance)

Water use behavior

- Consumption (volume collected)
- Penetration (fraction of potential users)
“Why is sustainability such a challenge?...

...inadequacy of financial revenues to cover the full operation, maintenance and capital maintenance costs of infrastructure.”

• Revenue (and thus sustainable financing) is a function of:
  1. Water price
  2. Consumption
  3. Household penetration
• Water use directly affects financial stability
Accessibility and Water Use


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Kimmi Island
1 Kiosk
12 months in service
179 active users

Kikondo
1 Kiosk
18 months in service
138 active users

Busiro
2 Kiosks
10 months in service
308 active users
Kikondo, Uganda
Lake Intake
Pump/Treat House Reservoir Tank
Case Study: TradeWater Kikondo
Business Centre
Pump House
Treatment House
LIFELINK Unit
Underground Vault
Power/Control Cables
Distribution Piping
Supply Piping
LEGEND
Grundfos LIFELINK Water Unit
<table>
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<tr>
<th>CardID</th>
<th>Total value of water dispensed (UGX)</th>
<th>Total value of water dispensed (USD)</th>
<th>Total times water dispensed</th>
<th>Total amount of water (liters)</th>
<th>Average water dispensed per tapping session</th>
<th>Average water dispensed per day</th>
<th>Average tapping sessions per day</th>
<th>Last time water was dispensed</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Per card totals</td>
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</table>
Limitations and Assumptions

- Availability of high resolution, up-to-date Google map imagery data
- Many water keys used at both kiosks in Busiro
- Assumptions regarding water key sharing and reselling:
  - HH sharing water keys collected same average daily volume as those not sharing water keys
  - HH sharing water keys located in same radial distance zone from kiosk
Distance Travelled [m]

Avg. Volume Collected per User [L]

Busiro

Kikondo

Kimmi
Conclusions

• Financial stability of rural water supplies is dependent on the volume of water collected (consumption) and the number of paying users (penetration)

• When multiple water source options exist, accessibility appears to influence penetration more than consumption

• Measures taken to decrease collection distance to less than 100m will increase both consumption and the fraction of households collecting water
Thank you for your time.

Questions?