Presentation from
2015 World Water Week in Stockholm

www.worldwaterweek.org

SIWI

Sustainability – definitions, measurement and new evidence

Structure
1. Definitions of sustainability
2. Ways of measuring it and tools being used to do so
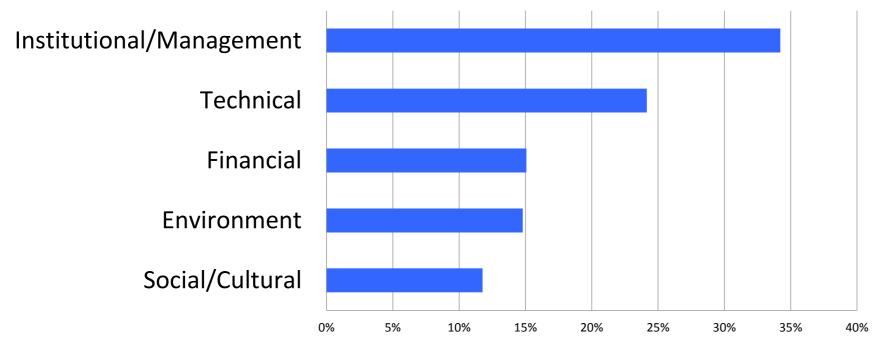3. Results of 4 national surveys of <u>operational</u> sustainability

Ian Ross, Oxford Policy Management
Ryan Schweitzer, Aguaconsult
23/8/15

Defining Sustainability

- Variable definitions, often reflecting use/purpose

- Single element/aspect vs. multidimensional / comprehensive

- Review identified most common dimensions

Schweitzer, et al., 2014;

> "**Sustainability** is characterized by: **equitable access** amongst all members of a population to **continual service** at **acceptable levels** providing sufficient benefits, through reasonable and continual contributions and collaboration from service providers, consumers, and external participants."

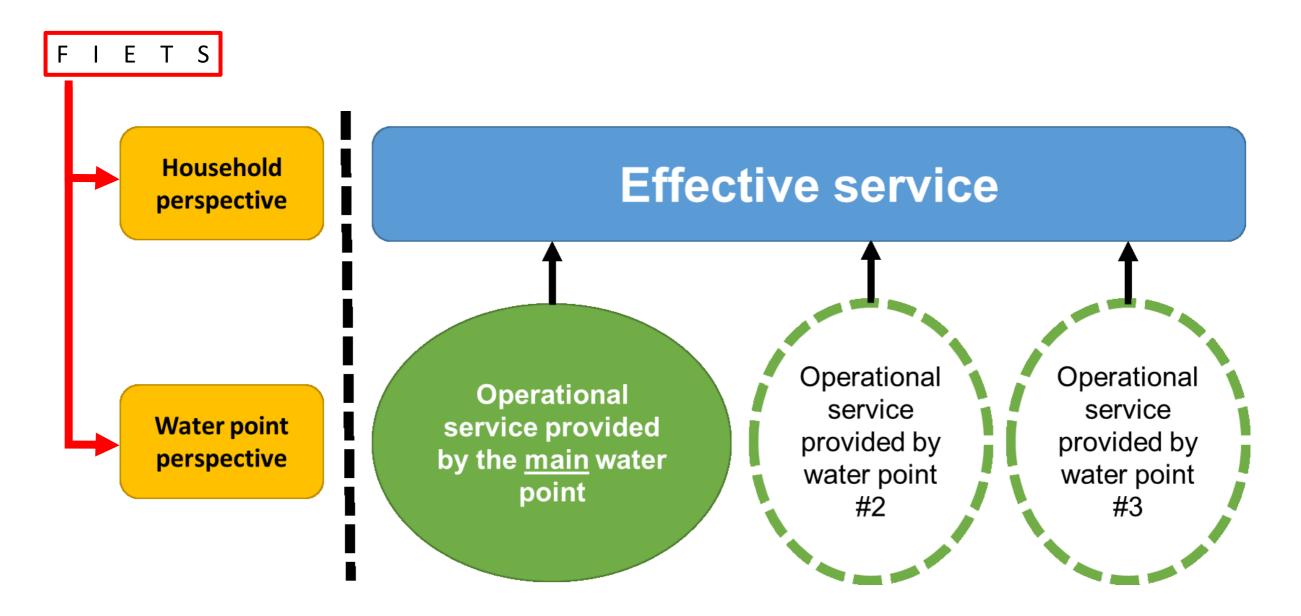Schweitzer & Mihelcic, 2012

Ways of measurement

Sustainability Tools

- Desk review over 200 resources used to quantify sustainability

- 25+ comprehensive "tools" (i.e. capture all dimensions of sustainability)

  - Applied 92 times in 52 countries

  - 5 tools have been applied 9 times or more

- Organizations primarily involved with:

  - M&E

  - Capacity support to service providers

  - Research

  - Project design

(Schweitzer et al., 2014)

Sustainability Tools

	Current	**Future**
Overall Tool		
Purpose	Project evaluation	Planning Links to monitoring
Geographic focus	Africa	Global
Content of the Tool (indicators/sub-indicators)		
Sustainability Areas	Institutional / Technical	Greater focus on equity and inclusion
Sub-Sector	Water	Sanitation/Hygiene
Location	Rural	Urban/Peri-urban
Data collection targets	Community/ Level where service is provided	Integrated

Definition of operational sustainability from VFM-WASH project

FIETS

Household perspective

Water point perspective

Effective service

Operational service provided by the **main** water point

Operational service provided by water point #2

Operational service provided by water point #3

In the VFM-WASH method, the operational dimension is concerned with:
- the functionality of water points (WPs) over time (**operational service**)
- households' experience of service from multiple WPs over time (**effective service**)

(VFM-WASH, 2015)

Conceptual framework: operational sustainability

| Unit of Analysis	Day-to-day performance	Month-to-month performance	Lifecycle/ multi-year performance	Operational sustainability (rural water)
Household (Effective service)	Hours per day of service (potentially from multiple water points)	Months per year of service (potentially from multiple water points)		Effective service experienced by users (unit: % year of effective water service (EWS))
	Level of service (time to collect water, quantity, water quality (perceived and actual))			
Water Point (Operational service)	*Level of service (water quantity, actual water quality)*			Operational service provided by a water point (unit: adjusted water person years (AWPY))
	Number of users			
	Hours per day of service from individual WP	Days per month and months per year of service from individual WP	Years of service from individual WP	

(VFM-WASH, 2015)
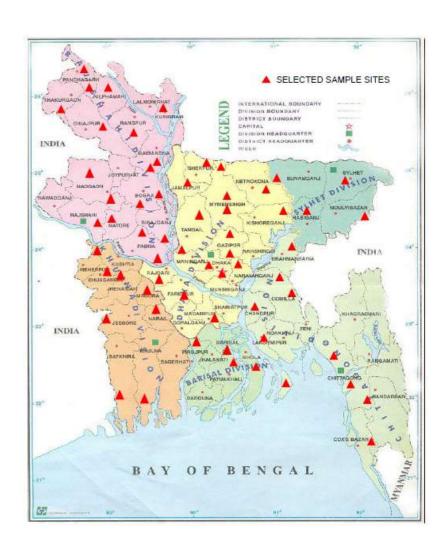
Methodology for VFM-WASH surveys in BGD, ETH, MOZ, PAK

Two units of analysis

- Households (HHs)
  - **National rural** representativeness
  - **1,200 HHs** using cluster random sampling (60 EA clusters * 20 HHs)

- Water points (WPs)
  - **Visit all "public WPs"** in those 60
  - **2-5 WPs per cluster** --> 150-300 per country

Three quant. instruments

1. Community questionnaire **(outputs)**
   - List of all public WPs

2. Household questionnaire **(outcomes)**
   - List of WPs used & service levels

3. Water point inspection **(outputs)**
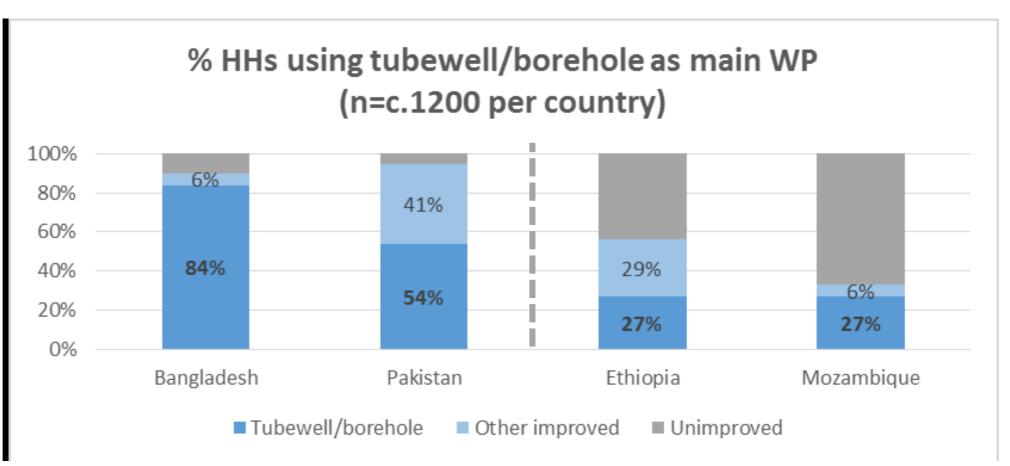   - Sanitary inspections & functionality

Survey designed to be rigorous at the household level not for WPs, so the WP sample is not representative.
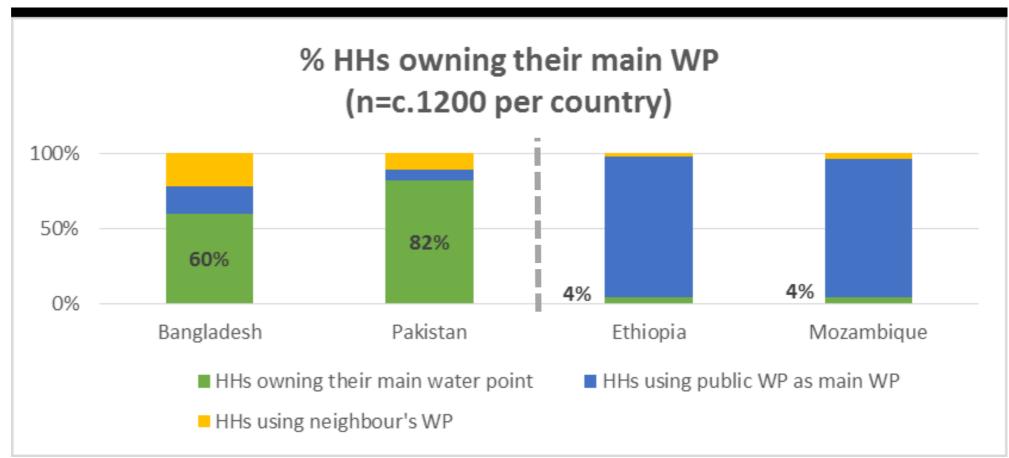
Household perspective – use of water by JMP category

Tubewell/borehole more common in S.Asia

High levels of private WP ownership in S.Asia, but note that HHs ever using a public WP:
- **BNG = 45%**
- **PAK = 18%**

% HHs using tubewell/borehole as main WP (n=c.1200 per country)

Country	Tubewell/borehole	Other improved	Unimproved
Bangladesh	84%	6%	
Pakistan	54%	41%	
Ethiopia	27%	29%	
Mozambique	27%	6%	

Legend: ■ Tubewell/borehole ■ Other improved ■ Unimproved

% HHs owning their main WP (n=c.1200 per country)

Country	HHs owning their main water point
Bangladesh	60%
Pakistan	82%
Ethiopia	4%
Mozambique	4%

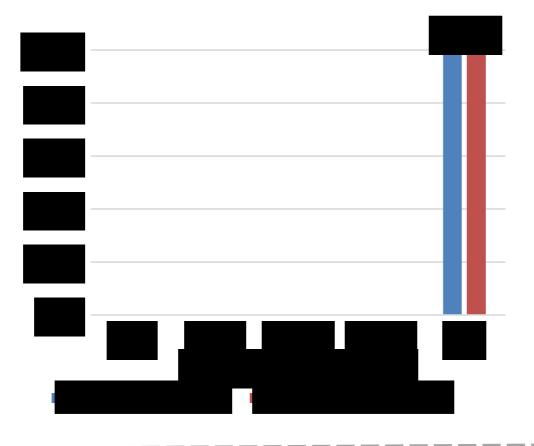Legend: ■ HHs owning their main water point ■ HHs using public WP as main WP ■ HHs using neighbour's WP

Household perspective – hours/day

c.24/24 service (nb. **rural**), no difference across wealth quintiles

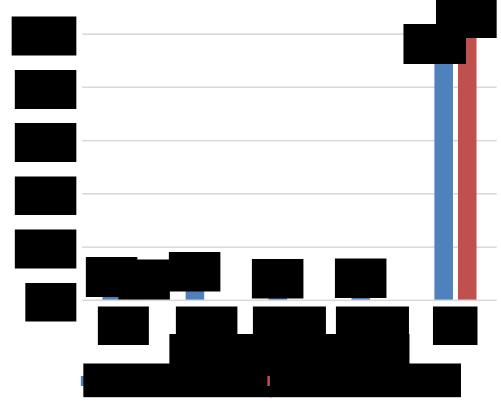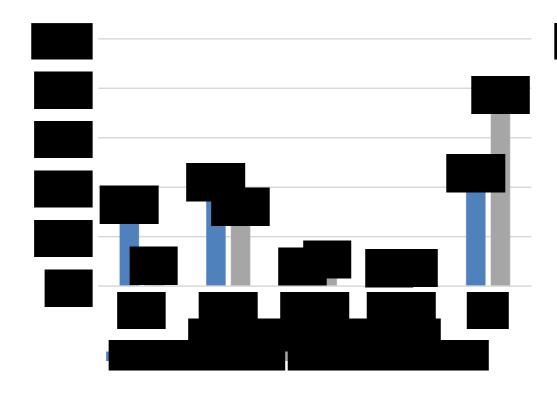Means:
- BNG – 24.0
- PAK – 23.0

Some low intra-day availability, no difference across quintiles.
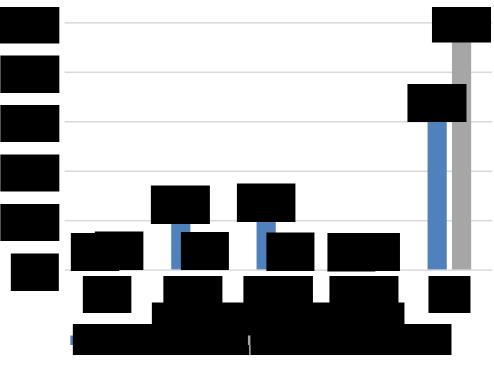
Means:
- ETH - 16.8
- MOZ - 22.3

a. Bangladesh

b. Pakistan

a. Ethiopia

b. Mozambique

Household perspective – Months/year
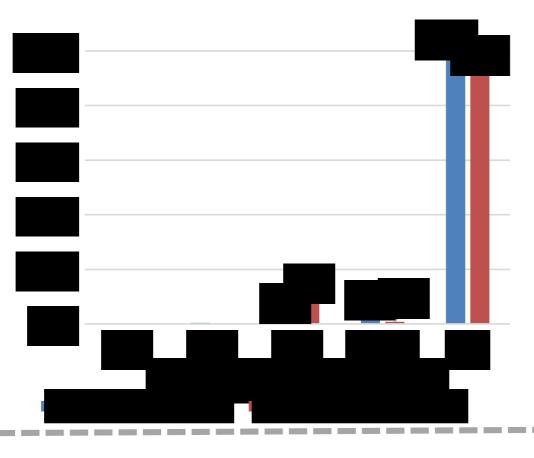
a. Bangladesh
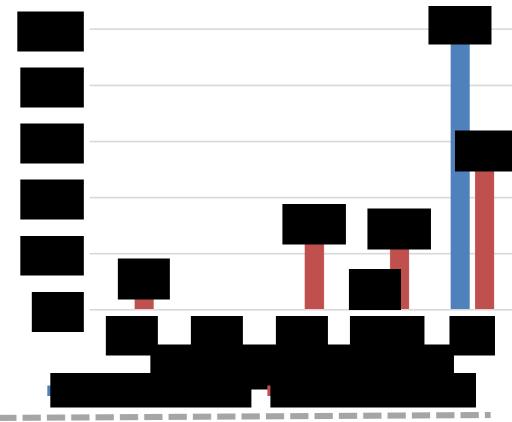
b. Pakistan

Few issues in month-to-month service.

Means:
• BNG – 11.9
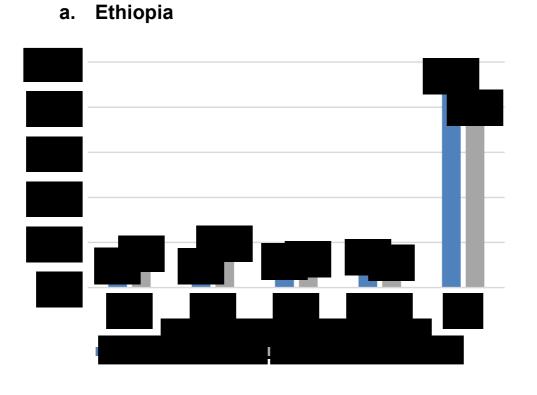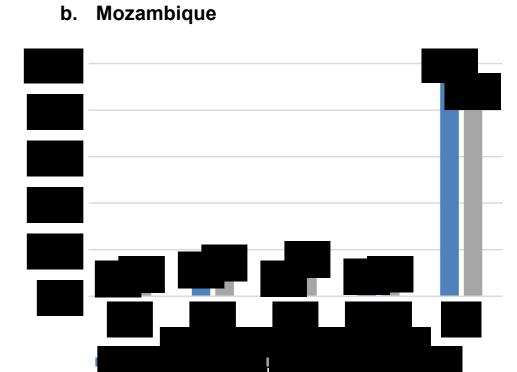• PAK – 11.9

a. Ethiopia

b. Mozambique

Significant month-to-month issues, mainly for unimproved.

Means:
• ETH – 11.0
• MOZ - 11.3

Operational sustainability – water point perspective – functionality

Data from community questionnaire (whether "usually" functional)

	MOZ (n=73)			ETH (n=169)			BNG (n=249)			PAK (n=412)		
	Yes	Somet imes	No	Yes	Somet imes	No	Yes	Somet imes	No	Yes	Somet imes	No
Public tap	*86*	*14*	*0*	**81**	11	8	**-**	-	-	**19**	72	9
Tube well/borehole	**74**	15	11	**85**	1	13	**89**	7	4	**77**	7	16
Protected dug well	*78*	*0*	*22*	**-**	-	-	*100*	*0*	*0*	**-**	-	-
Protected spring	**-**	-	-	**95**	3	2	**-**	-	-	**-**	-	-

Data from WP inspection (enumerators visit all public WPs)
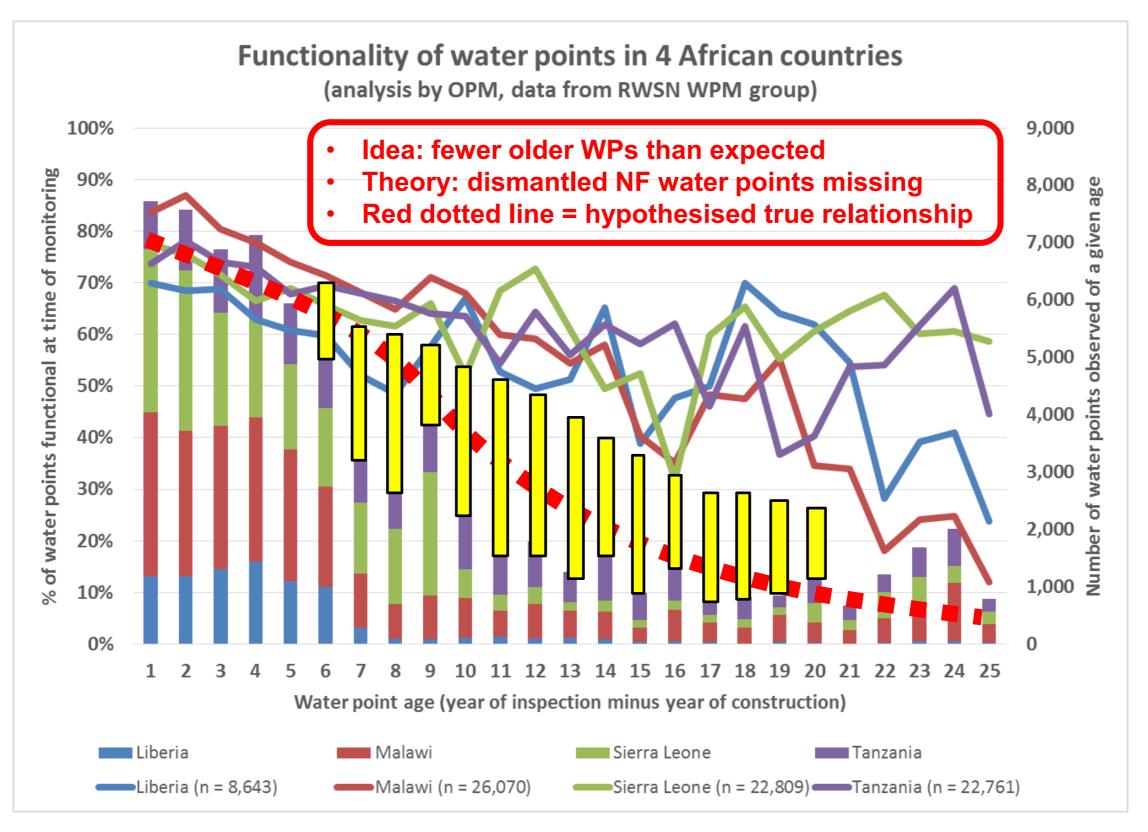
	MOZ	ETH	BNG	PAK
% improved public WPs functioning at time of survey (from inspection)	96%	92%	89%	70%

Surprising WP inspection data, but reasons for confidence in method:
1. Trained enumerators to include even abandoned WPs if physical evidence
2. HH/community views on functionality of a given WP concurs in >95% cases

BUT nb. WP sample **not representative**, survey designed for HH

Functionality of water points in 4 African countries
(analysis by OPM, data from RWSN WPM group)

- Idea: fewer older WPs than expected
- Theory: dismantled NF water points missing
- Red dotted line = hypothesised true relationship

Tincani et al., 2015

Research Conclusions

Household perspective (nb. <u>rural</u>)

- *Things looking OK in S.Asian countries*
    - o   mostly private improved WPs, functional 24/7 year-round
    - o   BUT equity still an issue (some use unimproved), groundwater availability, water quality etc.

- *African countries less rosy*
    - o   Large reliance on unimproved, private WPs v uncommon
    - o   More inter-month challenges (seasonality)

Water point perspective
- c.75% - 85% of public improved WPs "usually" functional
- Close to earlier impressions about handpumps (RWSN, 2009)
- Age/functionality theory from WPM data highlights concerns

> **More HH survey data in the reports on water service levels, sanitation and analysis of secondary data – see <u>www.vfm-wash.org</u>**

General "Take Home" messages on sustainability

1. Cross-sectional sustainability studies are inherently limited in their predictive ability, as they don't include a time dimension

2. The value in sustainability measurement is linking it to objective outcome indicators (e.g. service levels) over time

3. Sustainability is crucial in the VFM framework by giving it a time dimension, i.e. outcomes must be lasting to deliver VFM.

4. Lower initial costs at the expense of sustainability may not be good VFM

Value for Money and Sustainability in WASH Programmes (VFM-WASH)

www.vfm-wash.org

Sustainable Services at Scale (Triple-S)

www.sustainablewaterservice.org

References

Burr, P.., Ross, I., Zaman, R., Mujica,A., Tincani, L., White, Z. & Evans, B. (2015) Regional assessment of the operational sustainability of water and sanitation services in South Asia

Schweitzer, R. Grayson, C., & Lockwood, H. (2014) Mapping of WASH sustainability tools. Triple-S Working paper 10. IRC Water and Sanitation Centre: The Hague

Schweitzer, R. & Mihelcic, J.R. (2012) Assessing sustainability of community management of rural water systems in the developing world. Journ.of WaSH for Development 2(1) 20-30

Tincani, L.., Ross, I., Zaman, R., Burr, P., Mujica,A., & Evans, B. (2015) Regional assessment of the operational sustainability of water and sanitation services in Sub-Saharan Africa