



Water and Sanitation for Africa

Service Sustainable Water Service Delivery Project
Study Findings (SWSD)

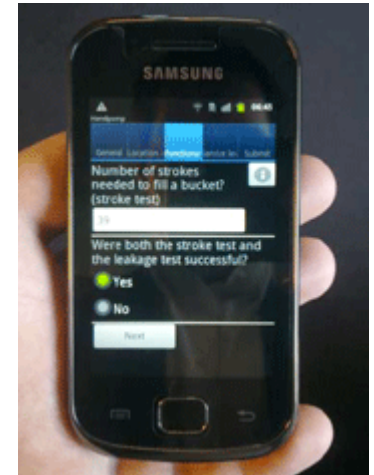
*Presented By: Destina Samani and Patrick Apoya, WSA
Water and Health Conference, UNC, USA*

Overall SWSD Project Objective

- Partner with Hilton Foundation, communities, GoG, and others to characterize and improve the sustainability of WASH projects in the Greater Afram Plains.
- Partner with Water for People and Akvo to pilot FLOW for mobile WaSH data collection in West Africa
- Work towards a safe water services delivery model that incorporates economic, social, environmental, technical and political sustainability factors

Project Methodology

- Literature review and Stakeholder consultations
- Development of field surveys: water point; community; household
- Partnerships:
 - Water for People/Akvo
 - KNUST/Hafren Water
 - UDS
- Data analysis: summary statistics, univariate and multivariate logistic regression analysis
- Work towards developing a multifactor sustainability model



Part 1: Functionality Survey

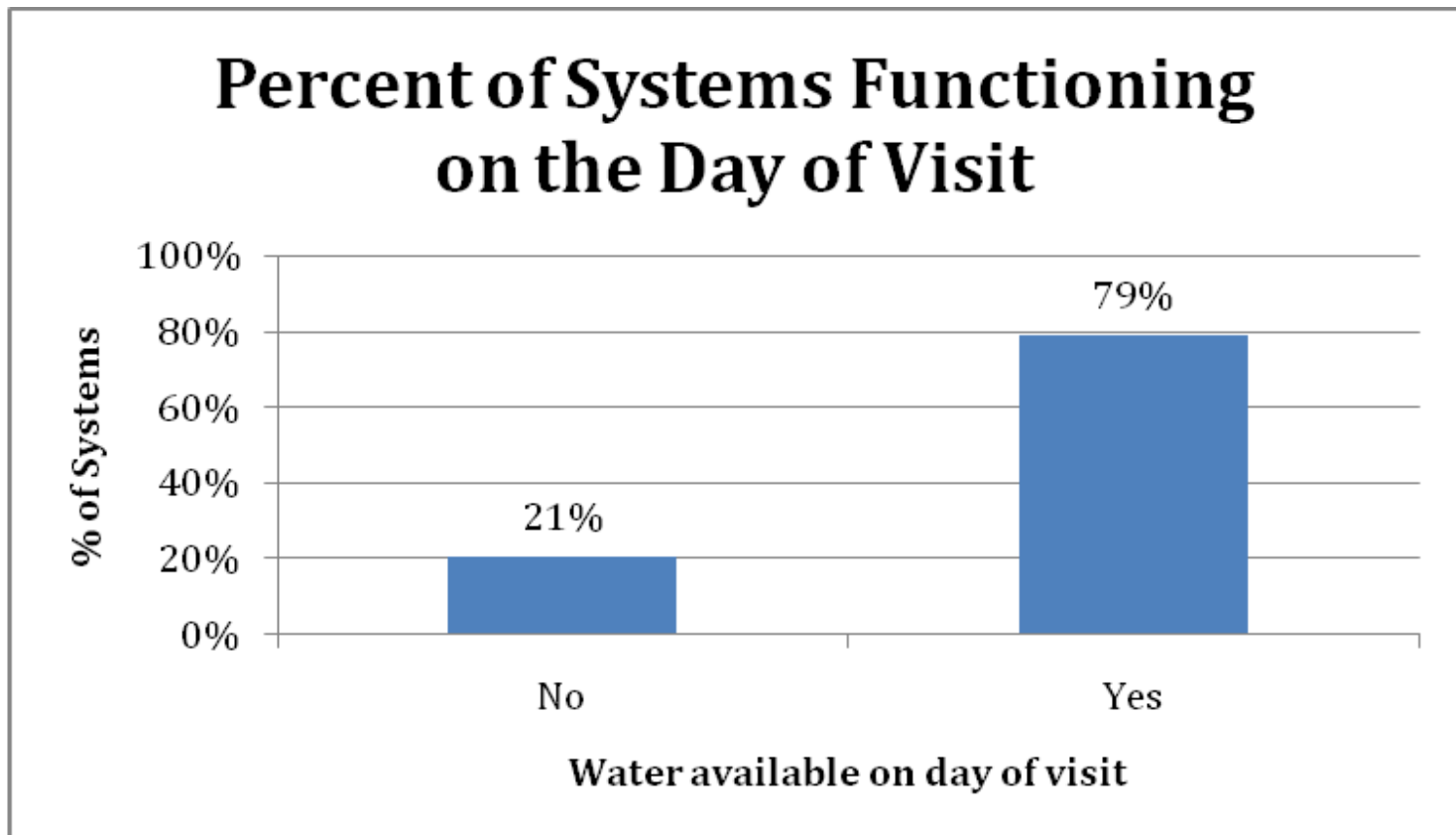


Summary of Data Collected

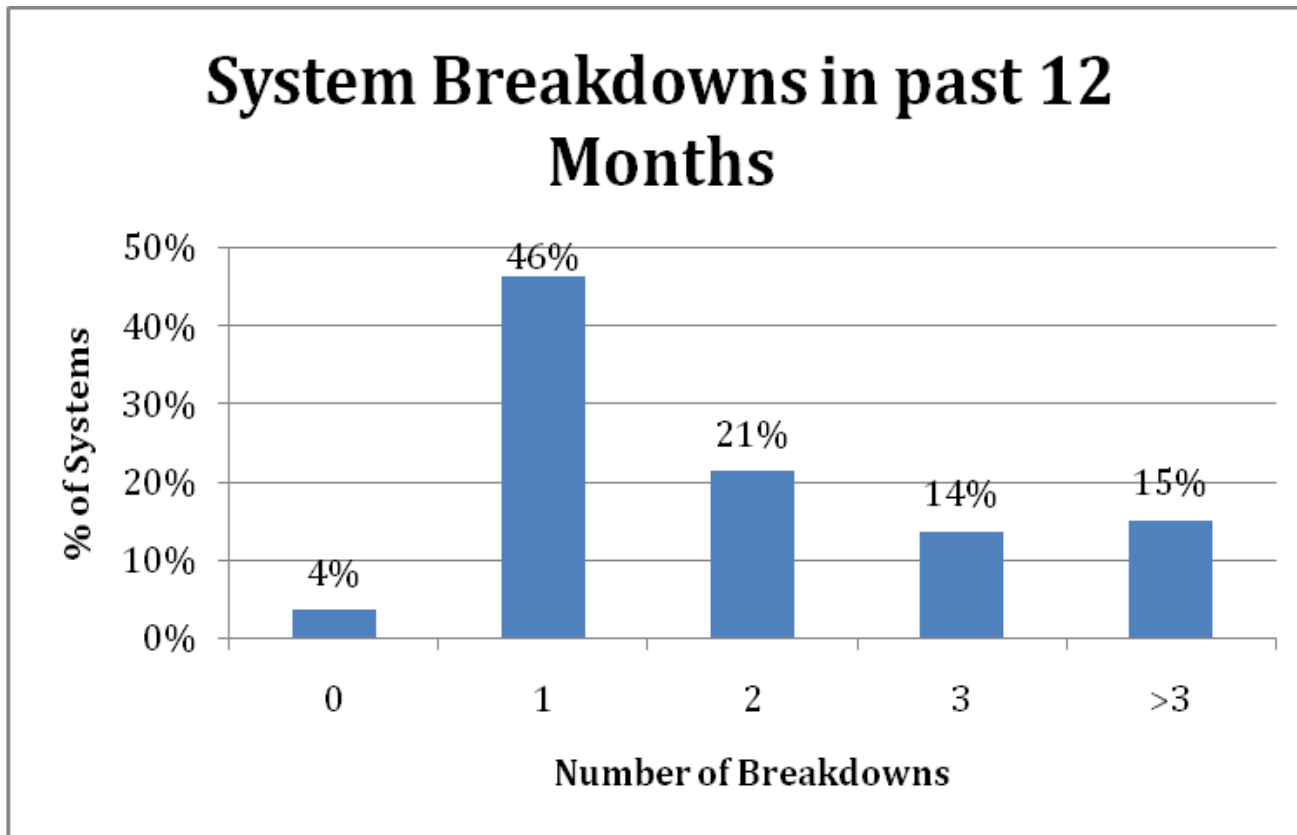
- **Water point survey – 1509**
 - Direct observation – i.e. functionality, pump type
 - Drilling records – age, original depth
 - Questionnaire – i.e. number of users, failures in last 12 months
 - 442 water point management teams
 - Others – community leader or community member
- **Household surveys – 4674**
- **WATSAN surveys – 442**

Functionality

A total of 1509 water points were enumerated  1393 (92.3%) improved

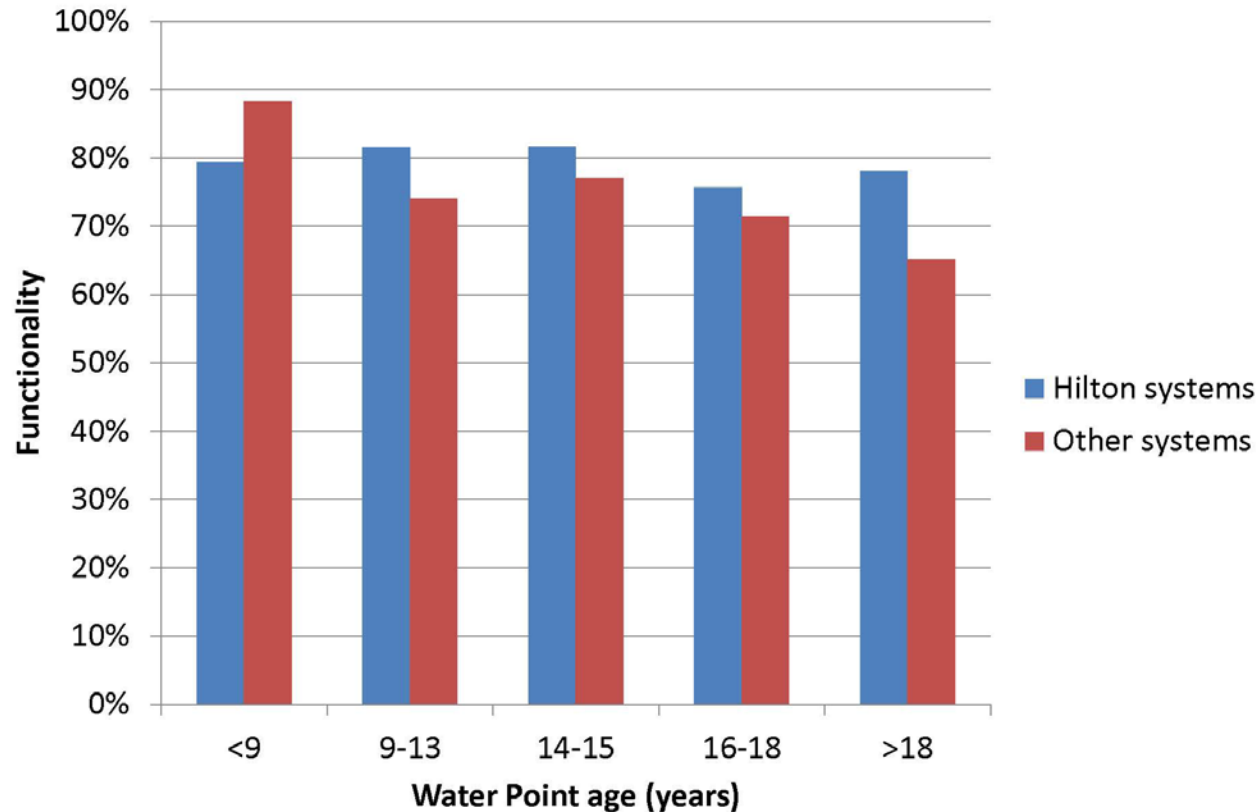


Functionality



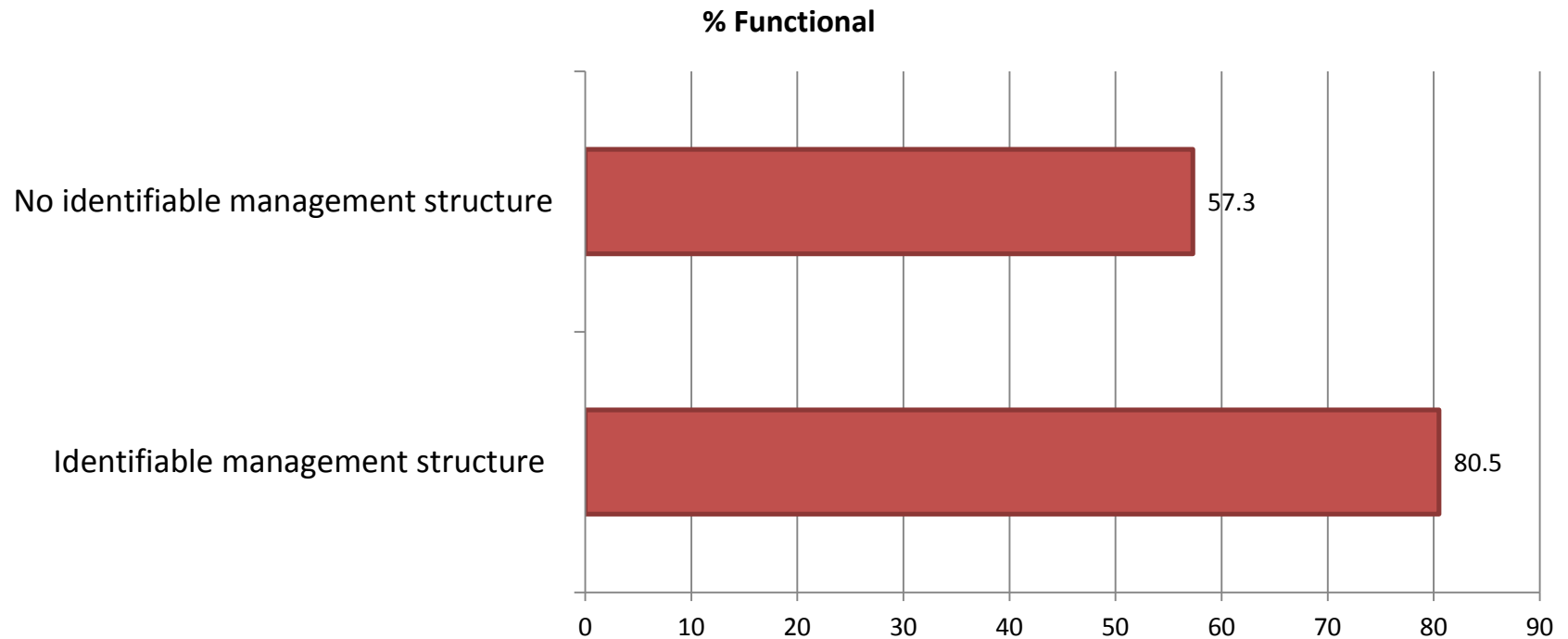
Age and Funder

Functionality VS Water Point Age

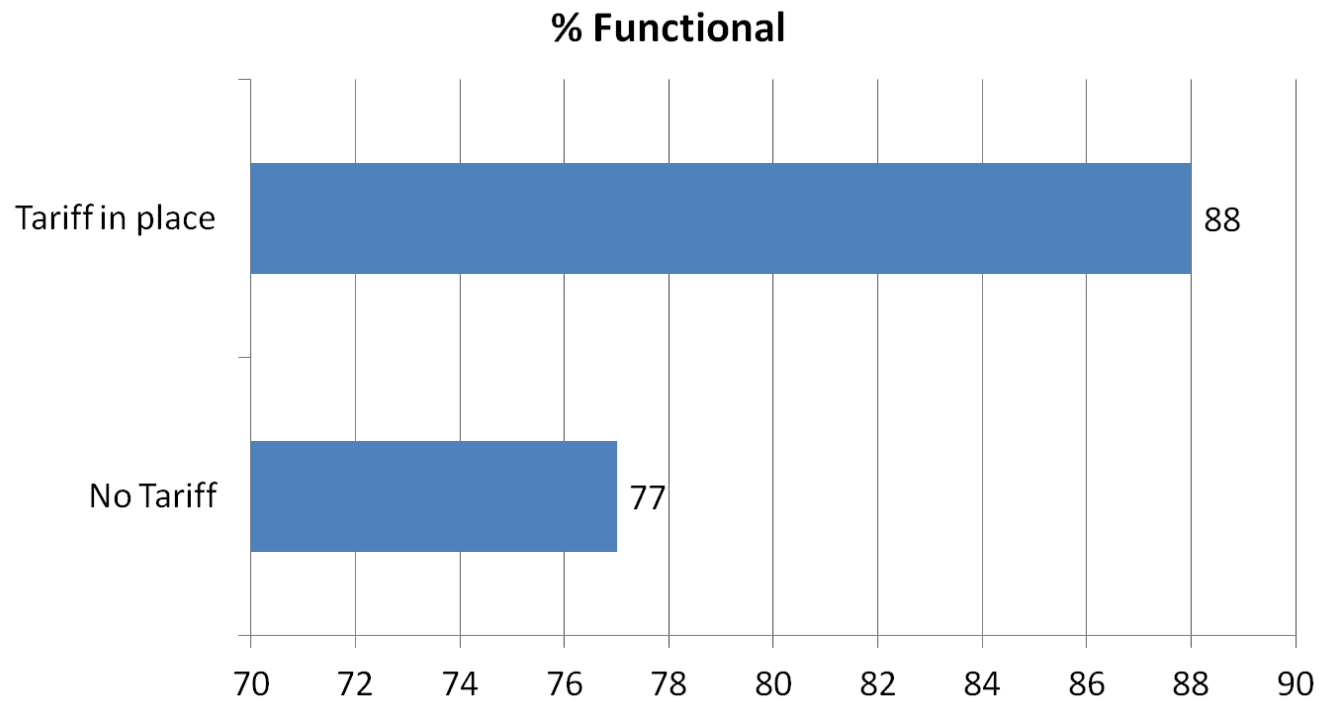


Most water points ranged between 9 and 18 years old (78.83%)

Management Structure



Tariff system



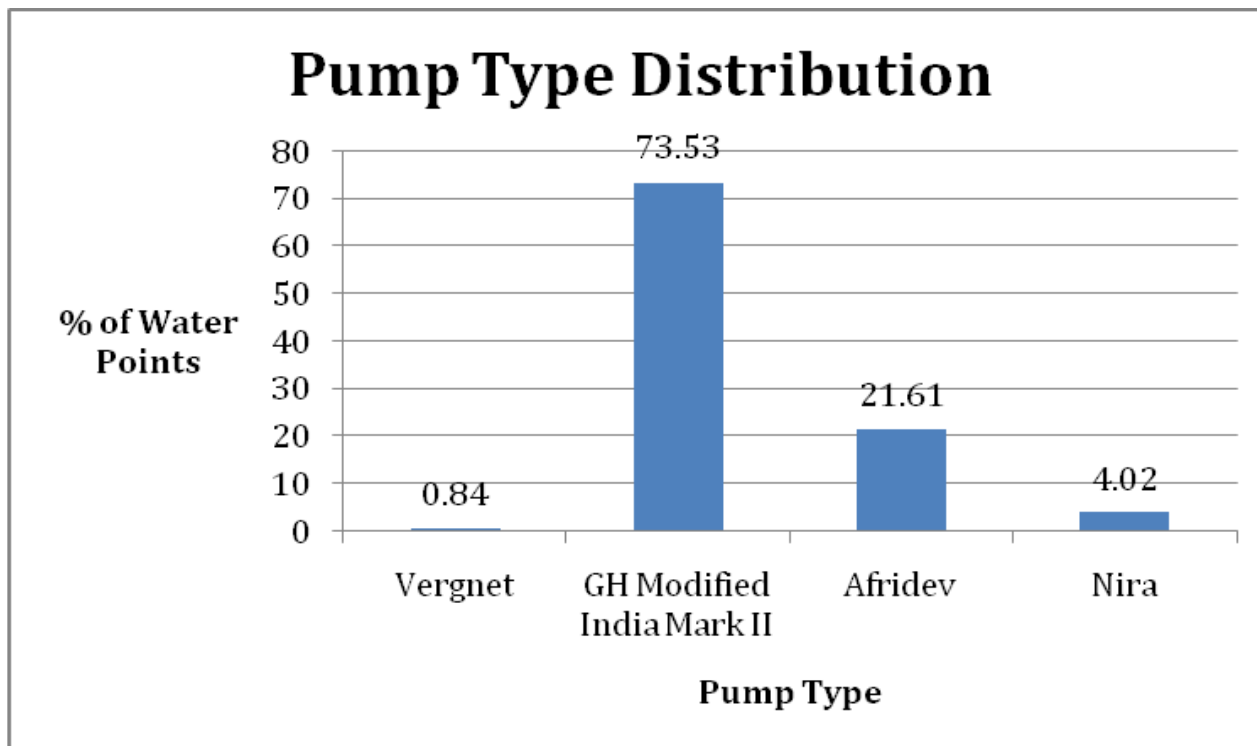
Tariff and Management

Mean number of days to repair broken water points as a function of tariff collection and presence of identifiable management structure

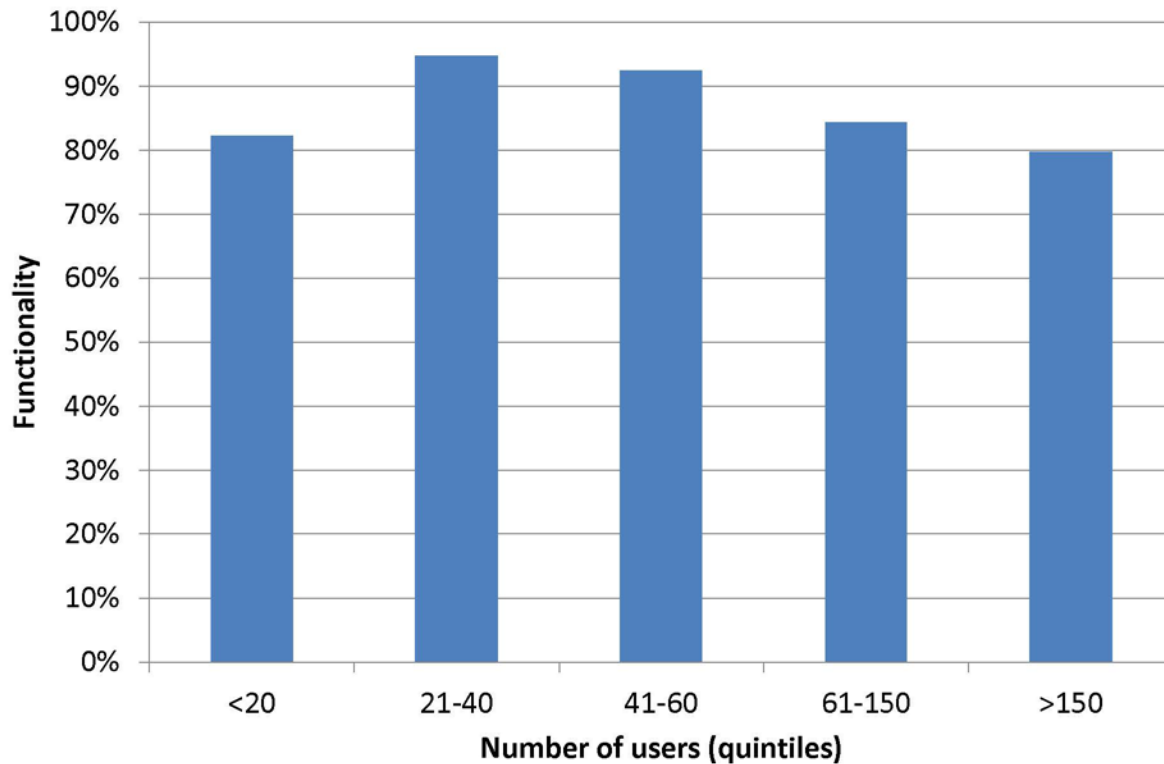
	Management structure	
Tariff	Yes	No
Yes	697	278
No	1006	2483*

*significantly different from all other values at 95% confidence level

Pump Type



Functionality VS Number of Users



- Trend towards greater functionality with intermediate numbers of users (20-60)
- Data on user numbers only available for 34% of systems: not representative of full sample

Key results

- +1 year age → 2% less likely to be functional (30 year old system 53% as likely to be functional as a new system)
- 2 times higher odds of functionality with identifiable management system
- Collection of tariff corresponds to 42% higher odds of functionality
- Hypothesized main benefit of active management that collects tariffs: repair broken water points (not prevent failures)
- Possible association between number of users and functionality

Part 2:

Pumping and Quality Testing & Hydrological Study

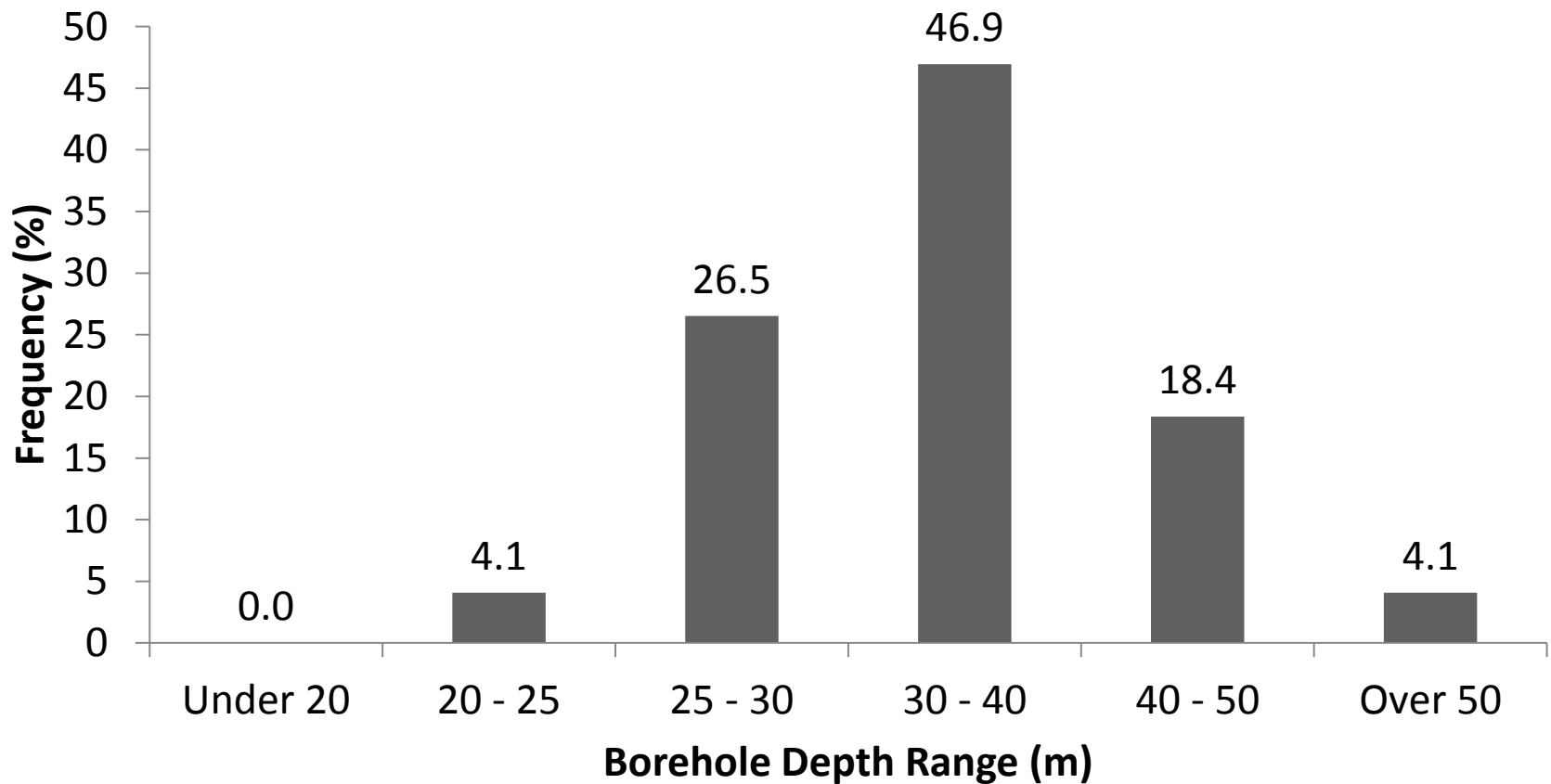
Objectives

- Evaluate the condition of water points
- Determine any hydrogeological influences on long-term water point sustainability

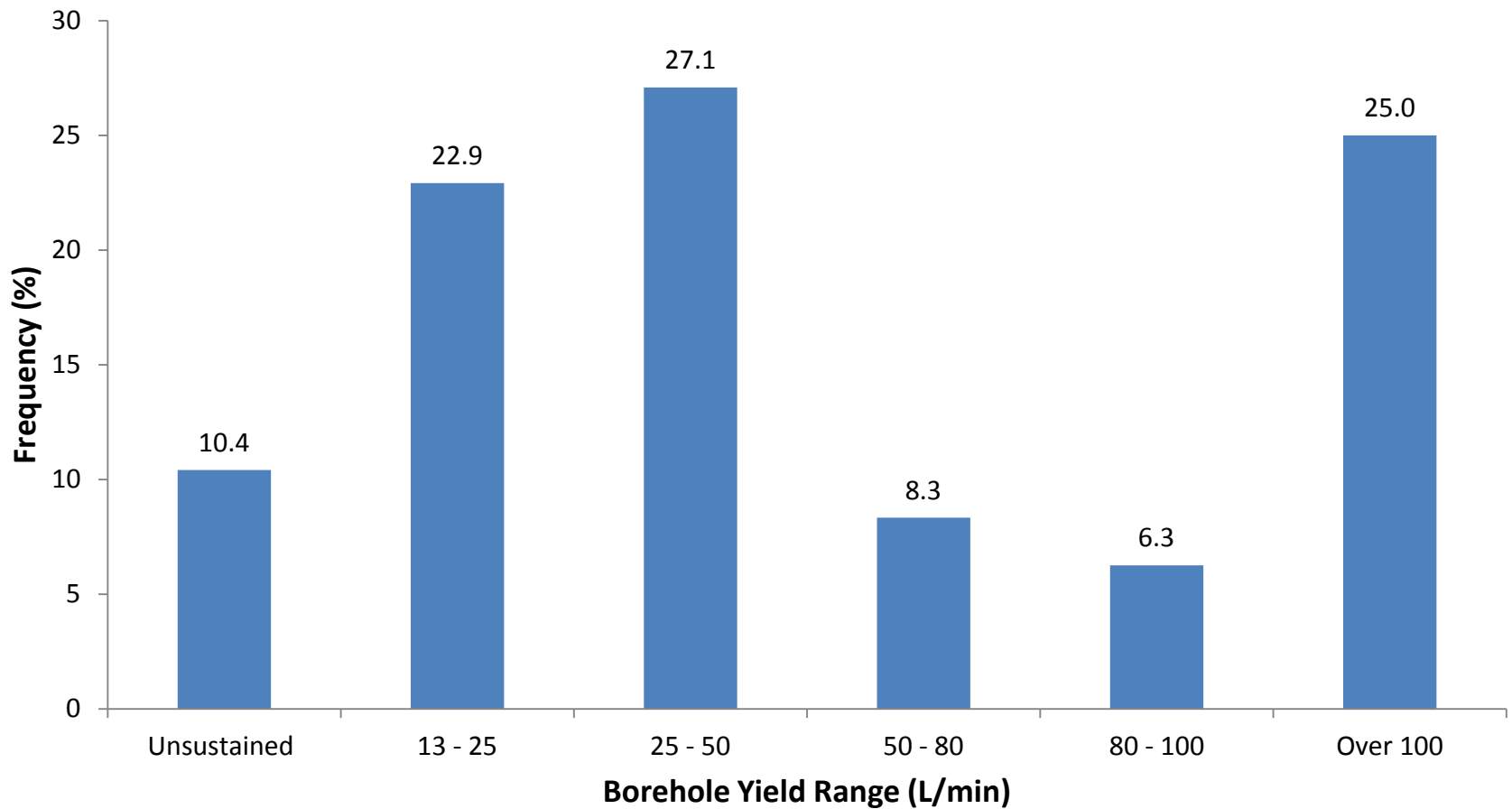
Criteria

- 50 wells selected based on:
 - High demand (i.e. long queues) +
 - High yield [i.e. ≥ 80 L/min (Ghana, CWSA)] for possible mechanisation
 - Low yield wells to provide a representative set of borehole yields

Depth Range (m)

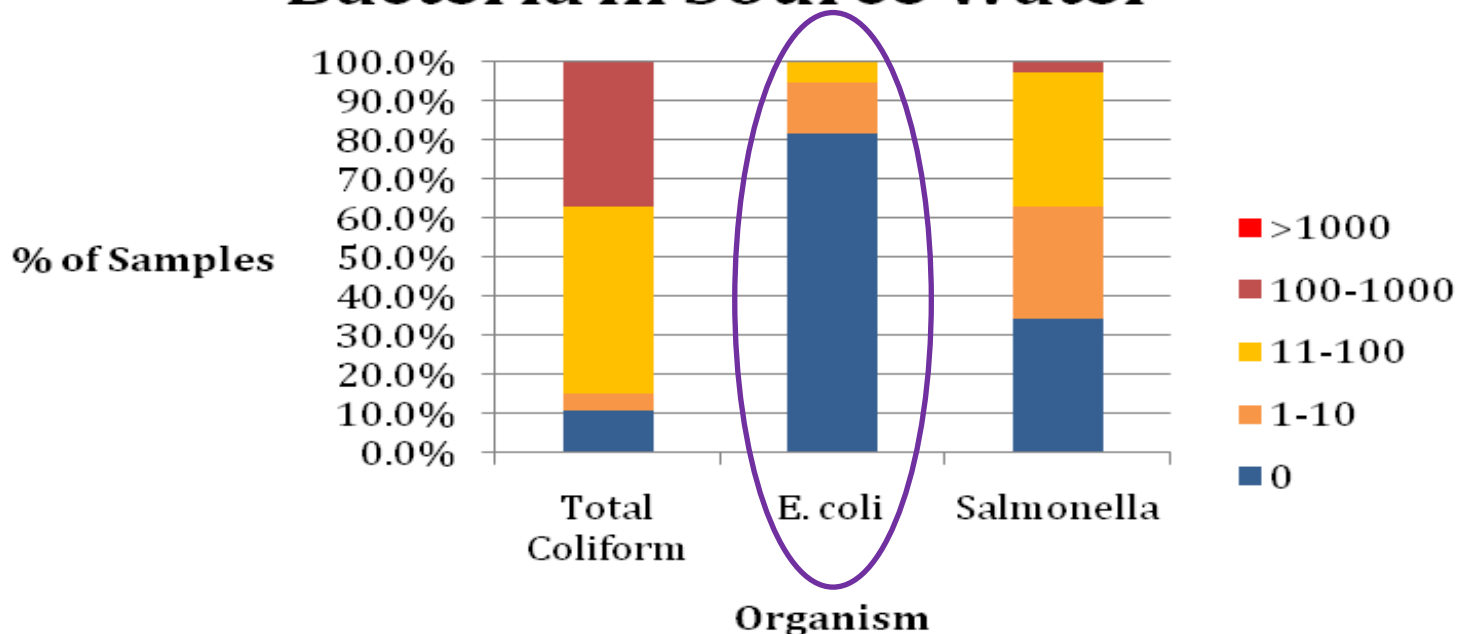


Yield Range (L/min)



Microbial Contamination

Bacteria in Source Water



- *E. coli* is the preferred indicator of fecal contamination
- Results are useful, but no conclusions can be drawn:
 - Small sample size (n= 38);
 - Questionable sampling methods

Key hydrogeological results

- Changes in yields since construction were minimal for most wells;
- Some wells in the study area had very high yields (83 to 216 L/min)
- Rapid well recovery after pumping (85% recovery within 40 minutes)
- Challenging Geology: Difficult area for ground water (drilling success rates typically 40% or less)
- Physico-chemical water quality generally very good
- Of 38 wells tested, 7 had detectable *E. coli* ; unsanitary conditions around many well heads.
- Depth changes between 1.44m - 4.75m since construction; few wells had silted up

Part 3:

Social and Ethnographic Data

Objective and Methods

- **Understand the most important socio-cultural influencers regarding service delivery and use of water points**
- **Case studies on issues of gender, inclusion, community empowerment etc.,**
- **Data:**
 - **1191 respondents (male & female)**
 - **Included migrant and indigenous community**

Key social and ethnographic results

- Facilities did not have equal level of repair even in same communities
- Location of facility highly influences the ethnicity composition of Management Team
- Traditional authority figures (i.e. chiefs and elders) have a strong role in management
- Vulnerable groups exempted from tariffs
- Need to think beyond number of dwellings per well to include migrants and user shift, particularly in the dry season
- Different ethnic groups co-existed and shared water source

Future Directions

- **Emphasize presence of active water point management teams in future monitoring**
- **Continue to build capacity for monitoring and evaluating water points and management teams**
- **Establish in-house water quality monitoring capability**



Thanks for Your Attention.

Acknowledgements

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