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ASSET ANALYSIS FOR RURAL WATER SUPPLY SYSTEMS

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Asset analysis overview and Management

What is an asset analysis and what is its purpose?

02

Details of the asset analysis

Results from Bunyagabu districts-TSU 6

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Discussion of the results

This will look at the costing, scoring and methodology

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Way Forward

How do we scale this up in Uganda

Overview of Asset Analysis and Management

ASSETS ANALYSIS

1. Piped Water Supply Systems
2. Boreholes
3. Protected Springs
4. Rain water harvesting tanks

General Objective

The general objective of the Asset analysis is **to identify, catalog and classify** all water systems within a district based on their current needs, level of water service provision, and general timeline for eventual repair and/or replacement of significant components.

In order to **prioritize** which water systems will require intervention. The asset analysis tool assesses three different risk areas to a particular water system:

Risk Areas #1

Age of Water System Components:

The Asset Analysis takes into account the **current age and projected lifespan, or "useful life**," of key water system components (e.g. intake structure, storage tank, etc.), to assess when certain components would be at risk of failure given their age.

The primary information that will need to be collected to assess age-based risk will be the years of construction, installation, or significant rehabilitation (if this has occurred) of specific water system components.

Risk Areas #2

Overall Functionality/Level of Service Provided by Water System:

The second risk area the Asset Analysis assesses is the overall **level of service the water system** provides, including an evaluation **of water quantity, quality, consistency** and comprehensiveness of water services.

If the overall level of service of a particular water system is deficient and its functionality hindered, the system would be classified as having a more elevated risk.

Risk areas #3

Physical State of Water System Components:

Finally, the Asset Analysis assessment will include an evaluation of each key water system component's **physical state** to assess where certain components would be at risk of failure or limited functionality.

Generally, to assess the physical state of different water system components, the survey carried out will ask you to evaluate and classify each component into one of three categories.

Categories of components

Normal/ Functional: This means that the current physical state does not impact the functionality of the particular component. Minor repairs and/or more in-depth maintenance might be needed to prevent future problems, but these deficiencies that will need eventual repairs do not inhibit the functionality of a component at the time of the assessment.

Poor: This means that currently the physical state is such that the functionality of that component is impacted and inhibited; repairs or replacement will be required for the component to function at full capacity.

Non-Functional: The component is not functional whatsoever given the significance of the repairs needed, and is likely impacting the overall functioning of the water system itself; full-scale replacement or rehabilitation, or large-scale repair, is needed for component to function again.

Progress todate

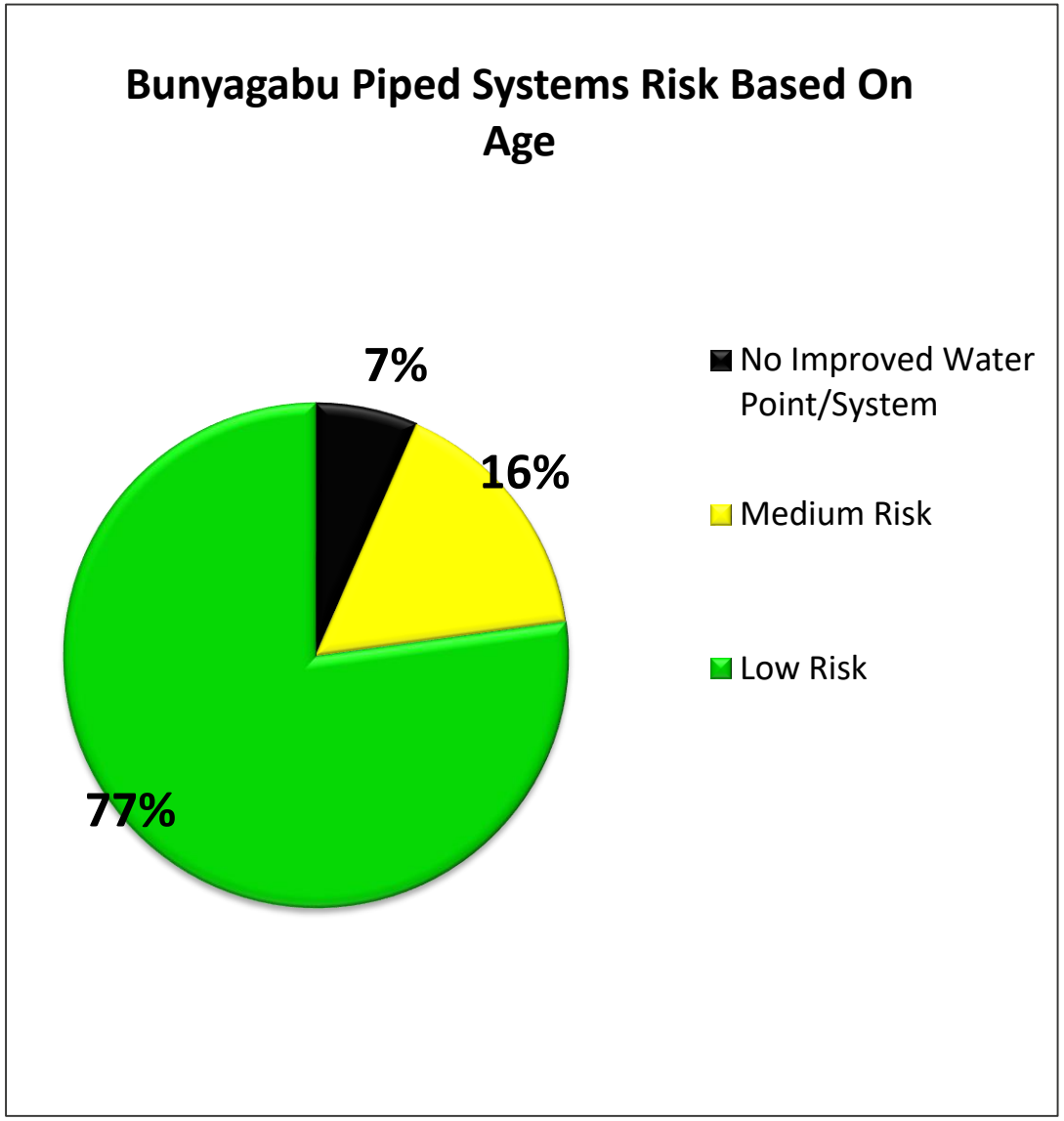
- Water For People Uganda in partnership with Ministry of Water and Environment –IOM departmern conducted a training of Trainers (TOT) workshop from 29th to 30th January 2018. In participation were TSU's, UOs, WSDF .
- Formed a Task Force including engineers from TSU and MWE to work on the scoring and costing process of the assets.
- Identified 6 pilot districts to support in assets analysis including; Kiboga, Masindi, Ntoroko, Bunyangabo, Kamwenge and Kibuku.
- Of the 6 districts, 2 district assets analysis are fully complete whereas, finalization of the 4 are underway.

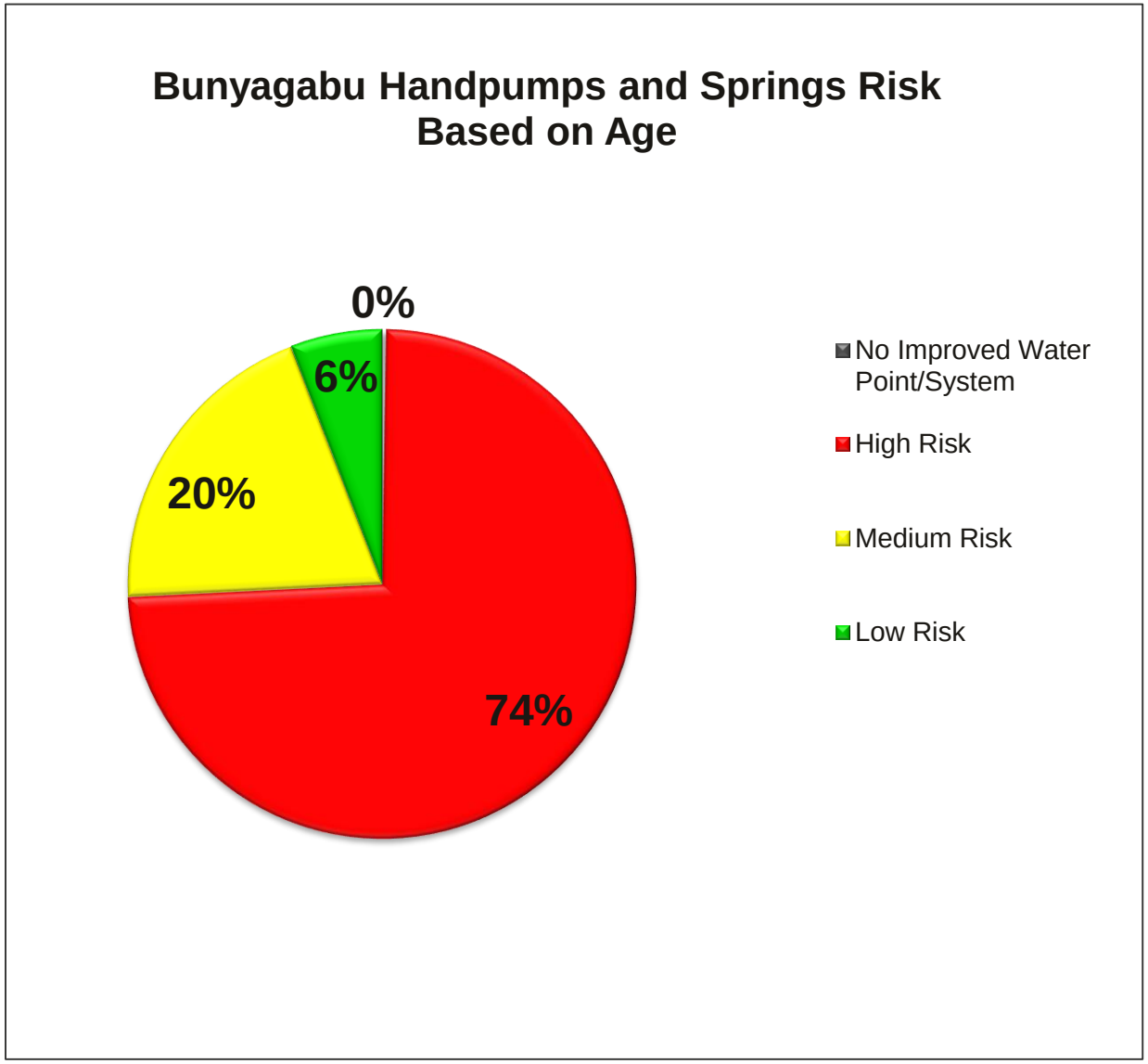
Bunyangabu Asset Analysis Results

Methodology of Data collection

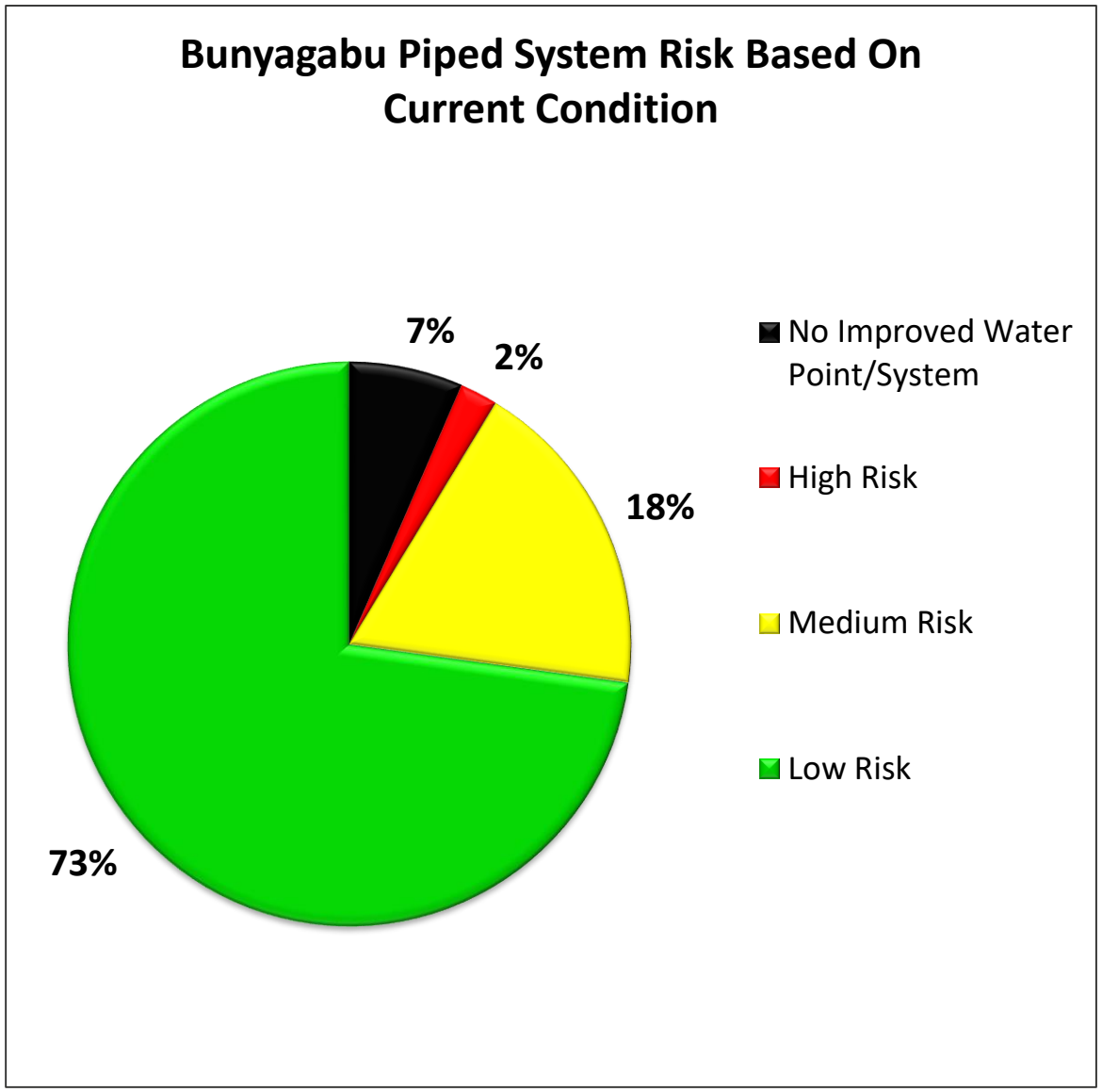
- The methods used during the training were basically presentations, FGDs as well as actual hands on training
- The enumerators comprised of HA/HIs, ACDOs, HPMs and DWO staff
- There were fourteen (14) enumerators trained, but only twelve (12) were deemed fit to participate. Only ten (10) did the actual data collection exercise
- Each enumerator was tasked to collect data from the sub-counties/TCs where they were operating/well conversant
- Feedback on the data collected was always given to the enumerators, on phone and also through meetings at the respective Sub-Counties/TCs
- Training & data collection was conducted, running from 17th April 2018 to 4th May 2018, Approx. 2 weeks
- Informative radio announcements were also ran on a local radio station, to inform the public of the on-going data collection exercise
- Budget Estimate: UGX 12,711,000

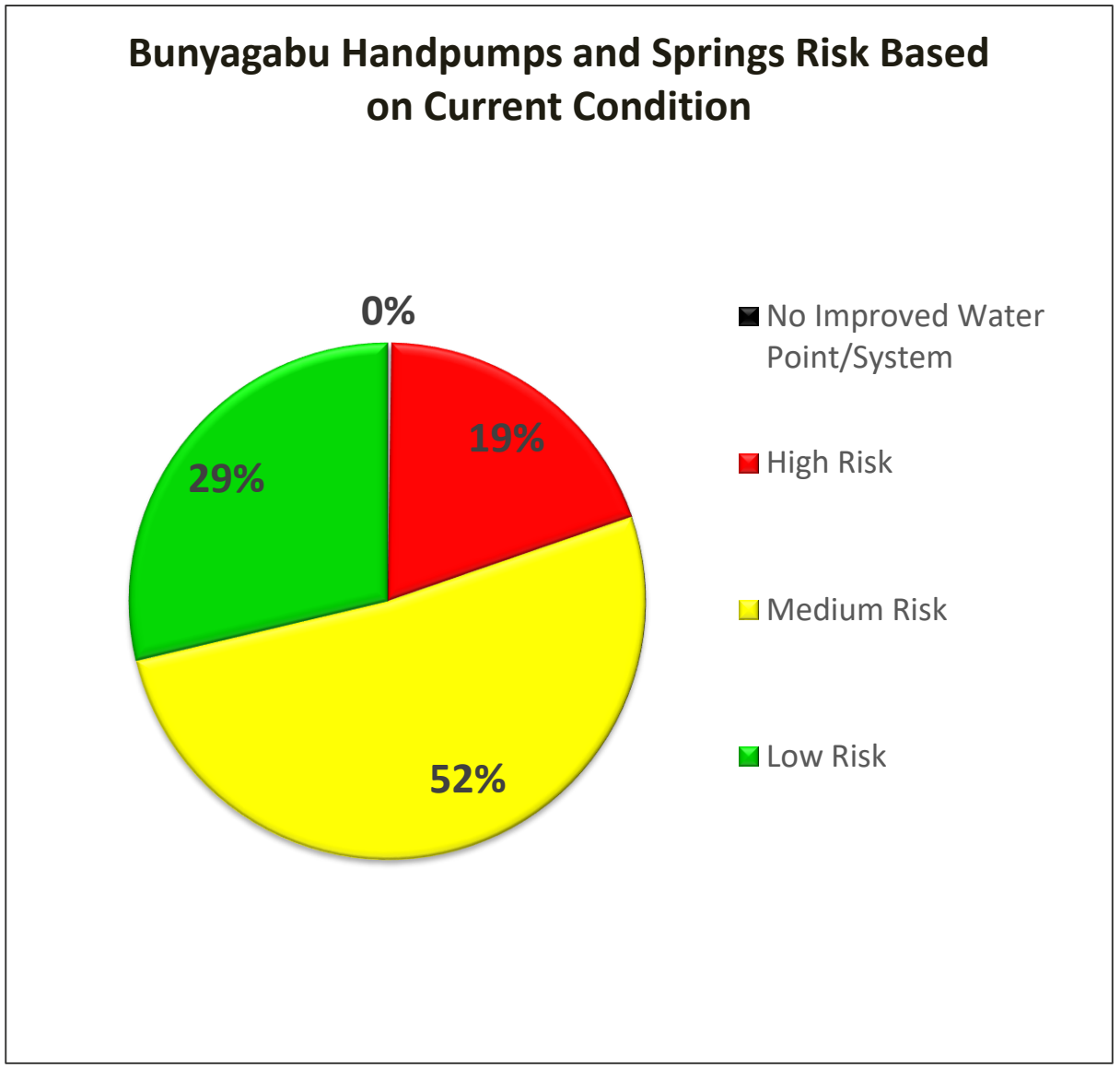
Risk Based on Age



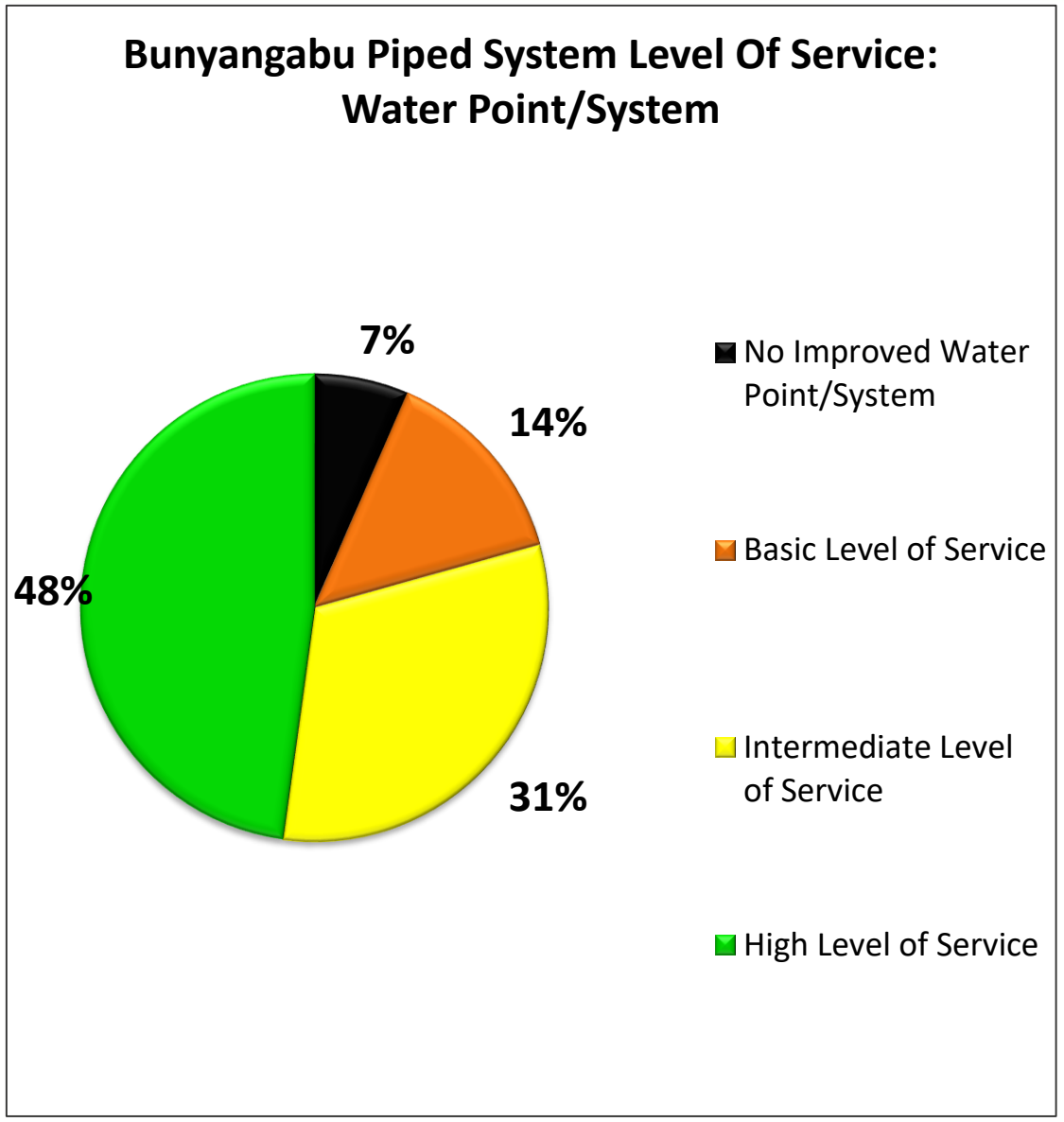


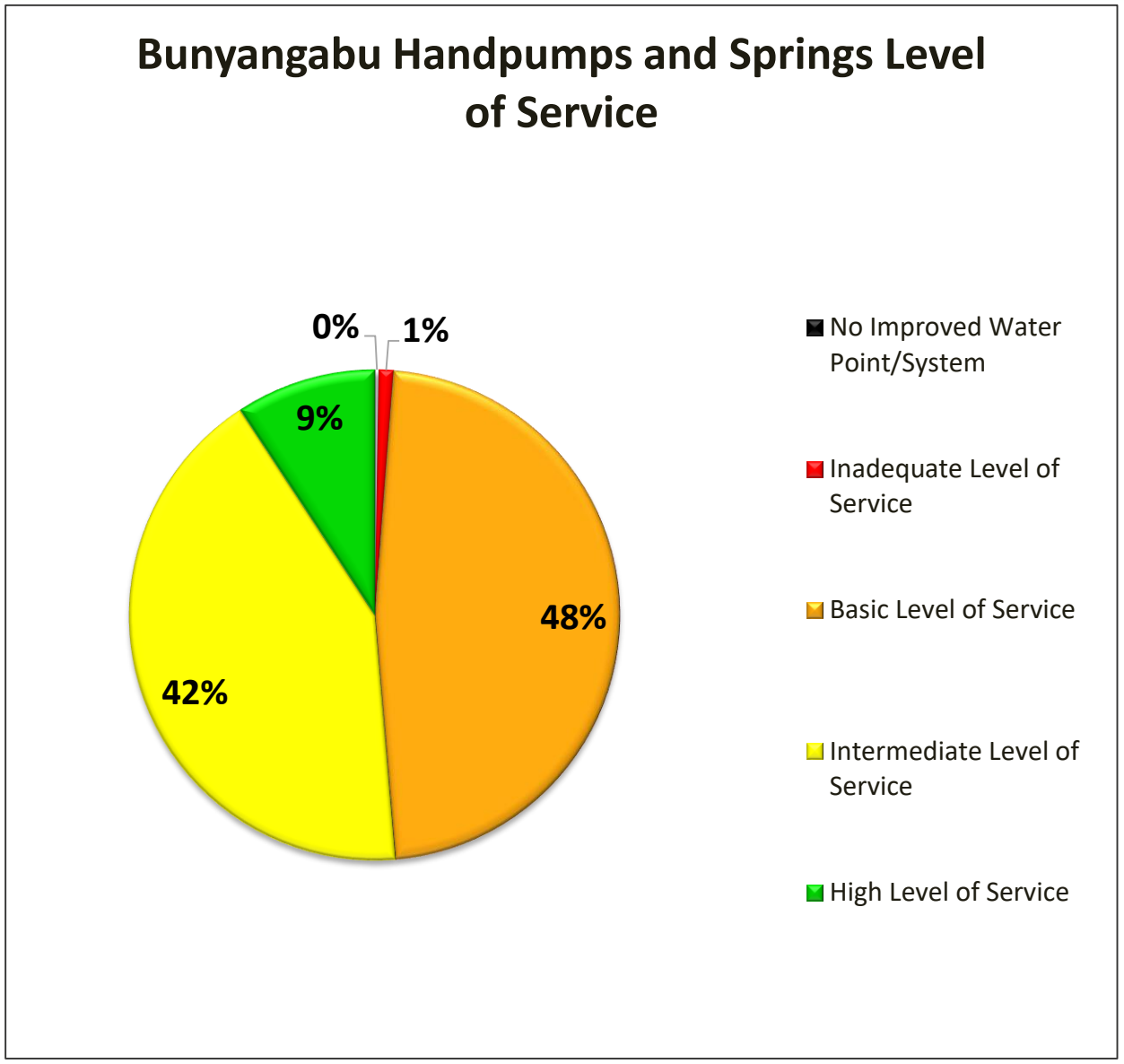
Risk Based on Current Condition



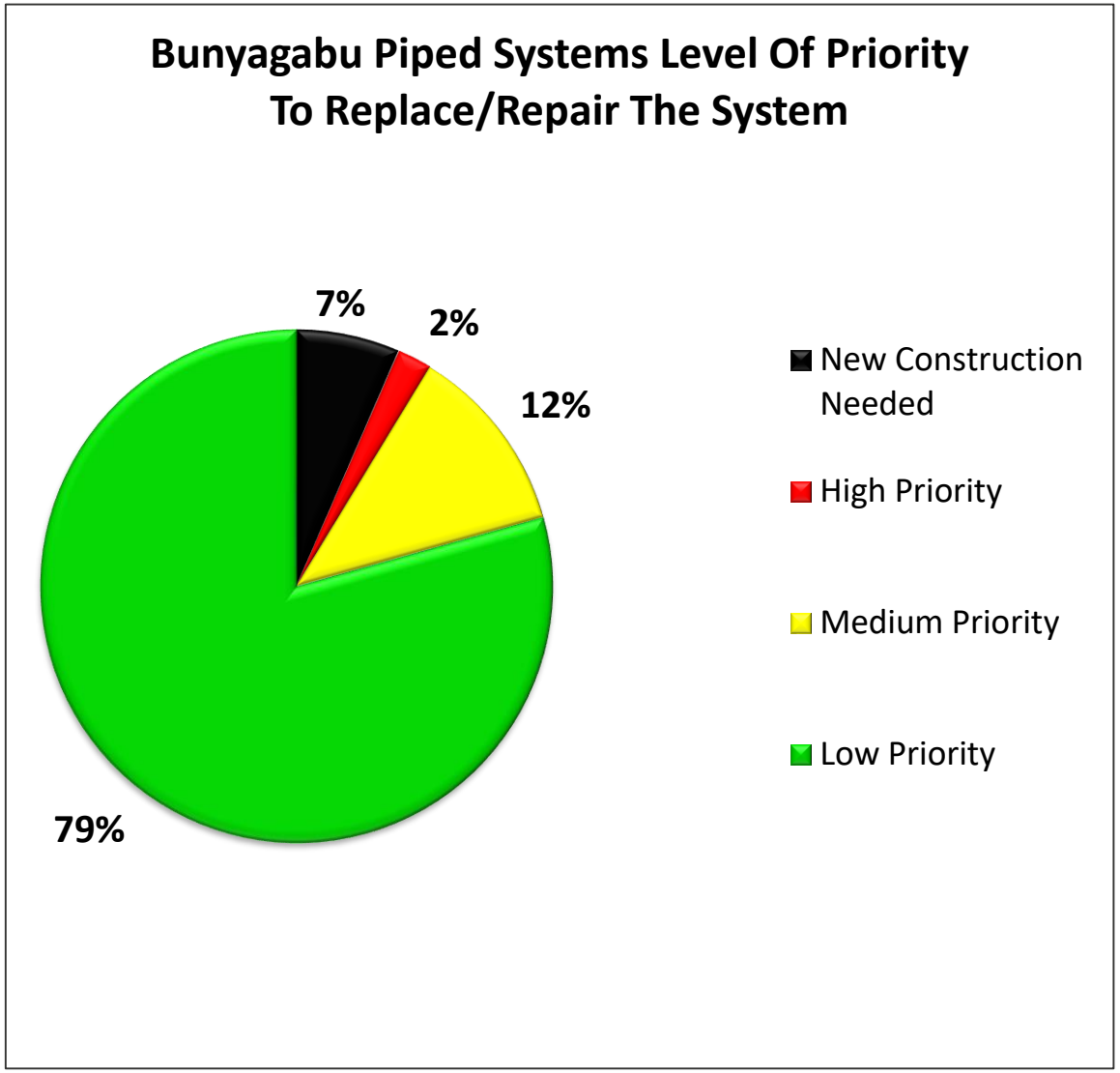


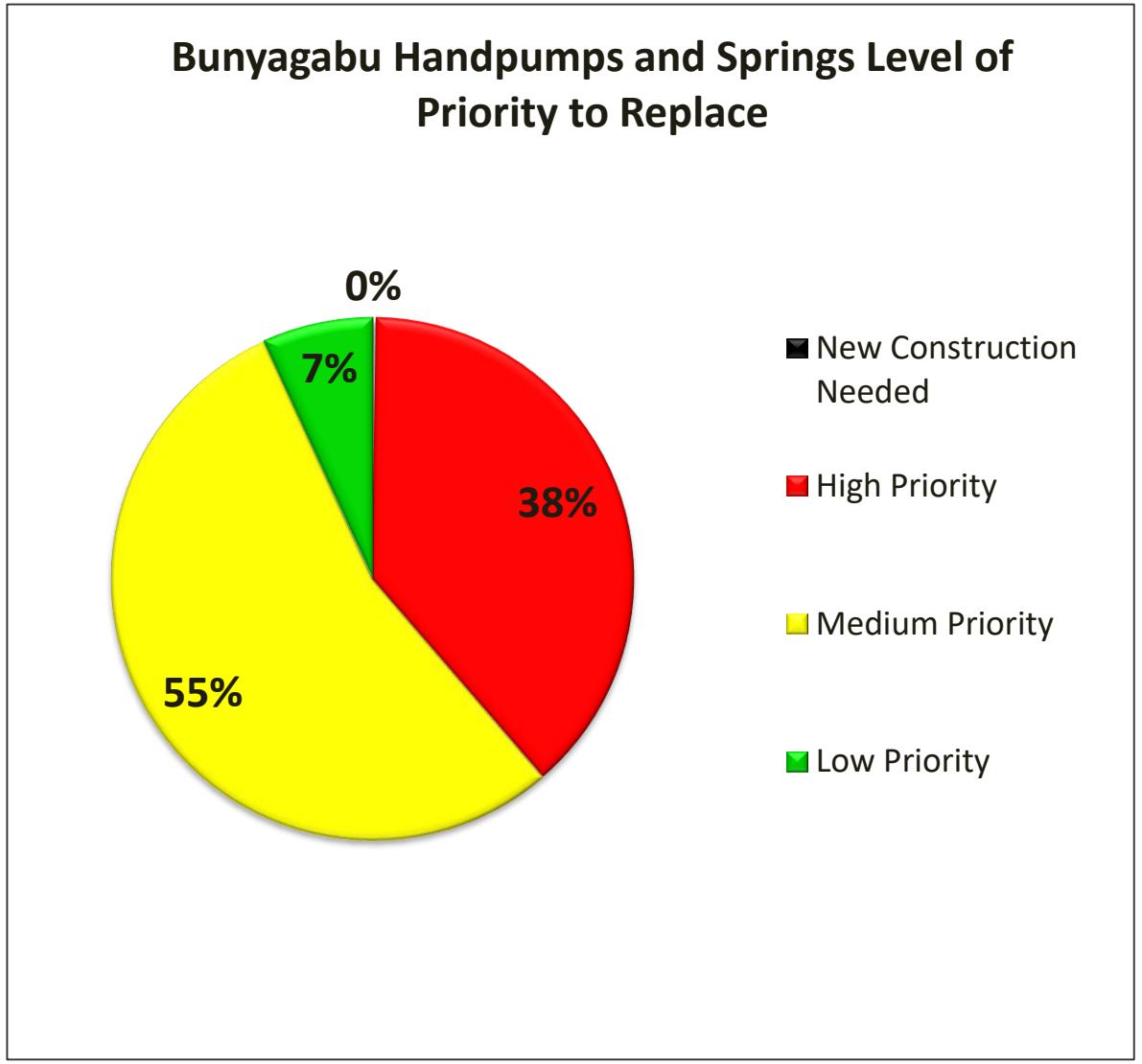
Overall Level of service/Performance





Level of Priority to Replace





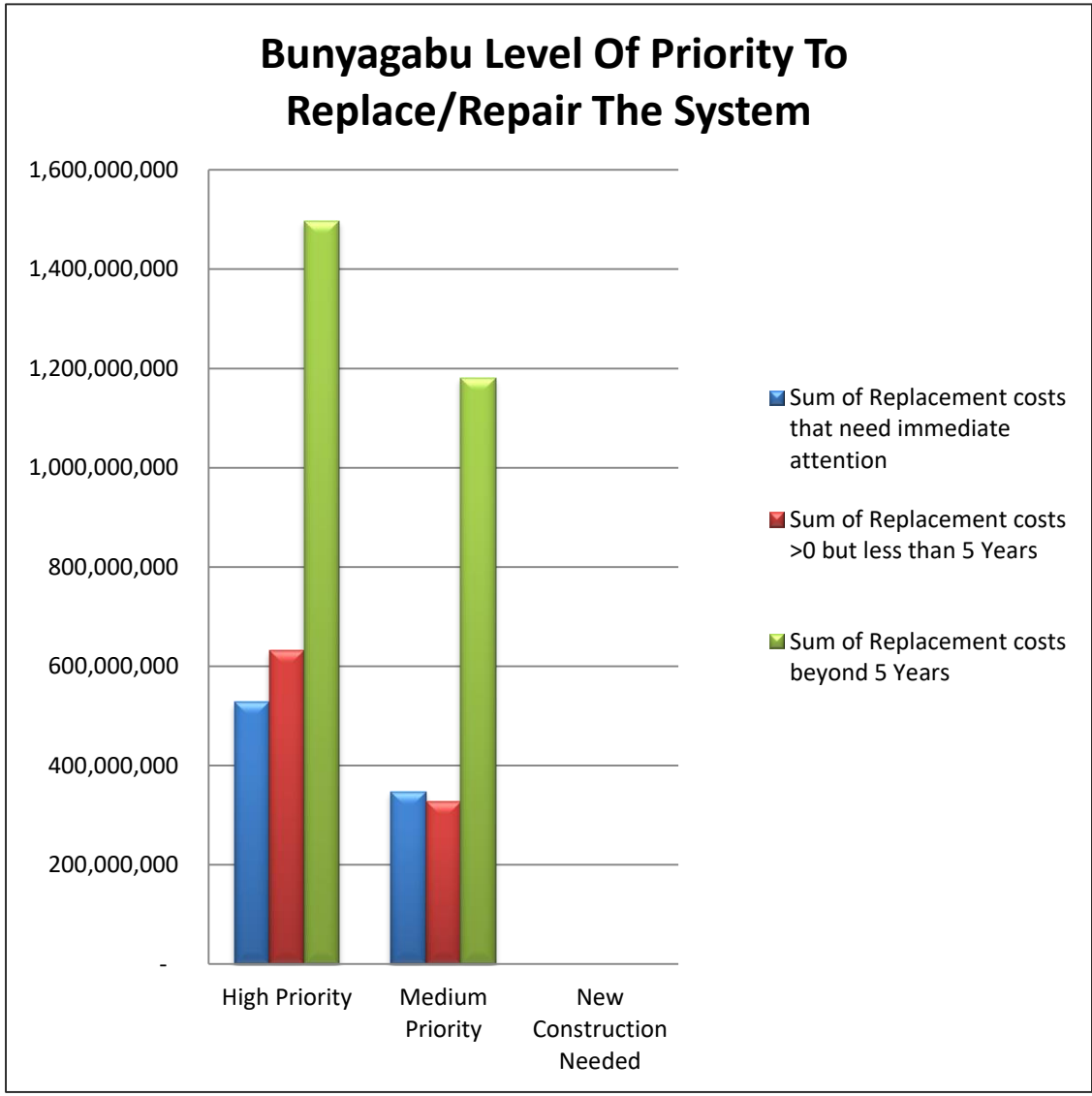
Costing

Component costing

Component	Design life time (Years)	Cost for Replacement for each component (District Specific Costs)	Annual Cost for Repair (District Specific Costs)
Well	20	UGX 17,000,000	UGX 0
Pump (Cylinder, head assembly, pedestal)	10	UGX 2,000,000	UGX 300,000
Apron/Seal	20	UGX 500,000	UGX 100,000
Spring Protection (this includes all masonry works)	20	UGX 500,000	UGX 60,000
Spouts	10	UGX 50,000	UGX 10,000
GI Pipe and Rod (All to be replaced with SS)	5	UGX 360,000	UGX 280,000
PVC Pipes and Rod	5	UGX 235,000	UGX 235,000
SS Pipes and Rod	10	UGX 360,000	UGX 180,000

Costs For Bunyagabu Hand pumps

Level Of Priority To Replace/Repair The System	Sum of Replacement costs that need immediate attention	Sum of Replacement costs >0 but less than 5 Years	Sum of Replacement costs beyond 5 Years
High Priority	528,165,000	631,315,000	1,496,860,000
Medium Priority	347,120,000	327,115,000	1,181,010,000
Grand Total	**875,285,000**	**958,430,000**	**2,677,870,000**



NEXT STEPS

NEXT STEPS

- Improve/ Revise costing template to include; Labour for cleaning well, installation, fencing, acquisition of land, tree planting etc.
- Incorporate water quality tests.
- Other parameters for consideration, installation depth, static water levels, pipe submerged or not.
- Scale up in other Districts with TSUs taking the lead under the leadership of IOM division
- Support from other partners- UNICEF, World Bank, IRC, Water Aid among others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Building sustainable WASH services through strengthening Water point management structures

Presented by Christine Mbabazi

Team Leader TSU 5

Ministry of Water and Environment

Presentation Outline

- Functionality Statistics – TSU5
- Background to Seeta-Namuganga learning event
- Point Water issues for consideration
- Recommendations for Improved O&M

TSU-5 Functionality Statistics

TSU-5 Average functionality rates- 78.7% Access to safe water-70.9%

District	Functionality Rate	Access to safe water
Mukono	86%	70%
Kiboga	70%	80%
Nakaseke	73%	84%
Masindi	88%	94%
Luwero	84%	64%
Kyankwanzi	84%	54%
Mityana	73%	75%
Kiryandongo	83%	75%
Wakiso	83%	42%
Bulisa	74%	70%
Nakasongola	68%	72%

Background to Point source management – The Case of Seeta- Namuganga

With Support from WASH Agenda for Change, through IRC WASH; TSU 5 MWE was able to invite 45 Water and Sanitation committee members from 15 WSCs.

- Functionality 92%
- Access rates –73%
- Total water sources – 101 (5 NF)
- WSCs characteristics: No user registers, Poor financial records, poor safe water chain, No/ weak constitutions in place, Source sanitation & hygiene issues.
- Platform for the WSCs to share experiences on financial management and accountability, provide solutions to the identified gaps as a way to strengthen the committees

O&M Issues for consideration: Seeta-Namuganga

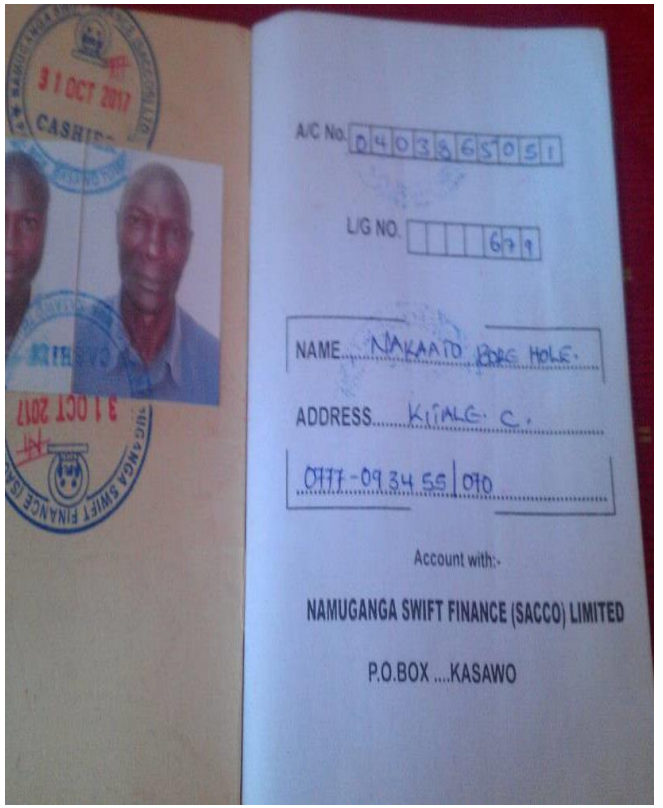
1. Complexitities in collection of O&M fees.
2. Weak implementation of bye-laws to govern boreholes operations
3. High costs of spare – parts; Coupled with poor quality questions

Other Related Issues.

- Poor financial management (No bank accounts)
- Quality of borehole water(salty and turbid)
- Water quantity (some boreholes have little water)
- Long queues – sources shared with institutions and villages with no sources.
- Poor record keeping.

Recommendations for better O&M for point water source

- Plan and budget for WSC capacity enhancement programs on point source management.
- Regular Supervision and monitoring by TSU MWE and Extension workers
- Organize more of the learning forums at Sub county and village levels.
- UNBS should put stringent measures on all water pipes and fittings as a way to control fake materials on the market.



PRESENTATION OF FINDINGS USING "DOWN THE HOLE

BOREHOLE CAMERA" as a monitoring tool

By Samuel senfuma
Hydrogeologist
Ministry of water and environment

PRESENTATION OUTLINE

- Background
- Objectives of the assessment
- Methodology
- Field findings
- Recommendations
- Conclusions

Back ground

- There has been outcry from the general public on the “QUALITY” of “DRILLING WORKS” works and “INSTALLATION MATERIALS” in the country
- UPGRO research carried out by MWE together with Water Aid, The BGS, Makerere and Sheffield Universities also identified problems with the “quality of drilling and installation materials”
- This is attributed to limited regulation/monitoring of groundwater practitioners(both Consultants and Contractors).
- Its against this background the Ministry of Water and Environment has started carrying out quarterly inspection of boreholes using down the hole borehole camera to confirm

LIKELY PROBLEMS AS A RESULT OF SUB-STANDARD WORK

- Low bh yields – Poor borehole construction (screens at wrong water strike zones)
- Boreholes Silting and Turbid water – If wells are not properly developed, broken screens during installations
- Contaminated water – inadquate or no sanitary seal used during construction
- Pump failure – shallow installation depths and poor quality pump materials
- Abandoned wells – where corrossive materails are used and poor water quality

Objectives OF THE ASSESSMENT

- To confirm whether the borehole parameters reported in the completion reports are the same as those observed using Down the Hole Borehole Camera i.e
    - Borehole Design
    - Total Borehole Depth
    - Number of Screens and Plan Casings
    - Static Water Levels etc
- To know and comfirm installation materials used (G.I Vs S.S) and Installation depths
- To ensure contractors/consultants carry out borehole construction works professionally.
- To assess quality of works, which would be used as basis for future licensing of drilling companies/consultants.

Methodology

- Randomly select districts in any Water Management Zone (plan to atleast assess each zone once a year)
- Randomly select and assess boreholes drilled in each district in a financial year
- Get borehole completion reports submitted to DWRM for the randomly selected.
- Involve private sector UDCA, Ground Water Consultants and Government sector represented by MWE (DWRM & DWD) and District staff - DWO.
- Un install the borehole to “comfirm the installation materials and depth”
- lower borehole camera “to ascertain the well parameters” viza – viz submitted completion reports

ASSESSMENT DONE SO FAR

- Four districts were chosen in the Kyoga WMZ in Q1, FY 2017 – 2018
- Borehole completion reports submitted to DWRM were randomly selected for completed boreholes.
- Involved private sector represented from UDCA, Ground water Consultant and Government sector represented by team of Hydrogeologists and District Staff-DWO.
- Assessment Involved "**borehole opening**", "**removing of pipes and rods**", thereafter "**lowering down the hole borehole into the well**"
- UPGRO research program also carried out a similar assessment – 2015 survey results **highlighted issues with**

FIELD FINDINGS

- Contracts used for borehole construction were “turnkey nature” for all the sources sampled/assessed.

- Cocktail of installation materials were used ranging from GI pipes and rods, upvc pipes and SS rods, UPVC pipes with GI rods -

FIELD FINDINGS CONT'D

Parameter DWD 56227	**As reported in the drilling log**	**As observed (BH Camera)**
Completion depth	73.90	72.4 silts 1.5m.
Casing depth	19.10	19.10
BH design	A	A
Screen depth	NIL	NIL
Intake depth	36 mb.g.l	15mb.g.l
Materials Pipes/rods	PVC/stainless steel.	PVC/stainless steel.
Pump type	U3M	U3M

FIELD FINDINGS CONT'D

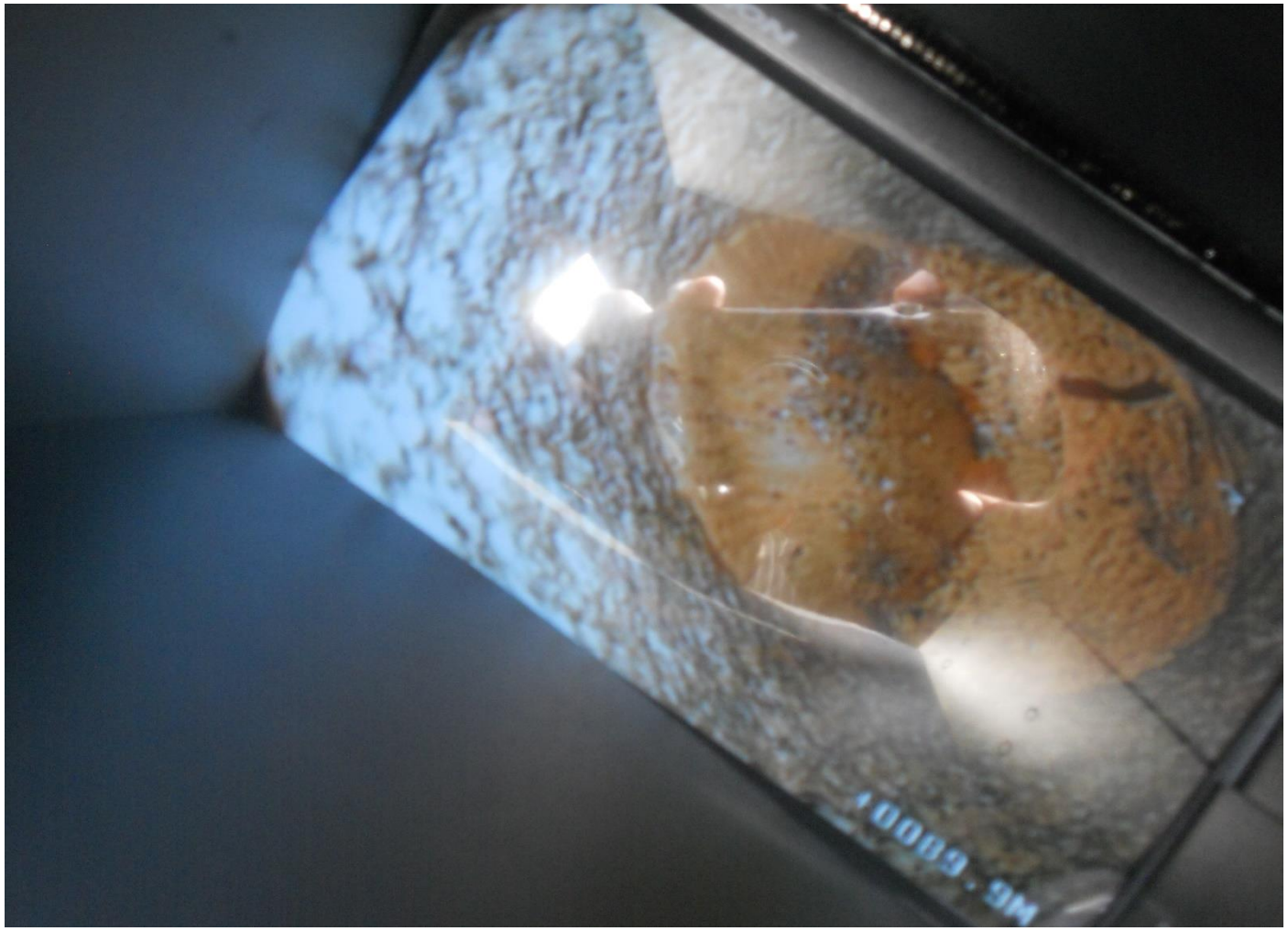
Parameter DWD 65632	**As reported in the drilling log**	**As observed (BH Camera)**
Completion depth	60.90m	45m
Casing depth	18.87m	19.10m
BH design	A	A
Screen depth	1 at depth of 14.87-17.87m.	1 at depth of 29-31.9m
Intake depth	24 mb.g.l	21 mb.g.l
Materials Pipes/rods	G.I	G.I
Pump type	U-2	U-2

STATUS OF SCREENS & CASINGS

- Confirm source of silting
- Clear screen can be seen

Level of silting in the wells

Clip 1 The Well design



Clip 2 The Well design

REDUCING YIELD IN A BOREHOLE

SCREENS IN OVERBURDEN at 30.4m

ACTUAL SWL OF WELL AT 36.90M

recommendations

- There is need to adhere to the Ministry's directive of use of SS/UPVC pipes and SS rods materials for installation.

- The Ministry guideline of using “CONSULTANT – CONTRACTOR ARRANGEMENT” to drill boreholes must be enforced in all ground water related projects.

Conclusions

- O&M is a process i.e Policies – Planning – Procurement (Ground Consultants (accessible sites to all) and drilling contractors (materials used) – Operation of the source.

- This is going to be a quarterly activity from the center to assess the quality of Borehole drilling works nationally.
    - Focus on Center managed Contracts (Framework)
    - DLGs works
    - NGO works
- Adopt camera reports as part of TORs from service providers- helps in tracking the genesis of the wells.

THANK YOU ALL FOR LISTENING

Feedback is highly welcome