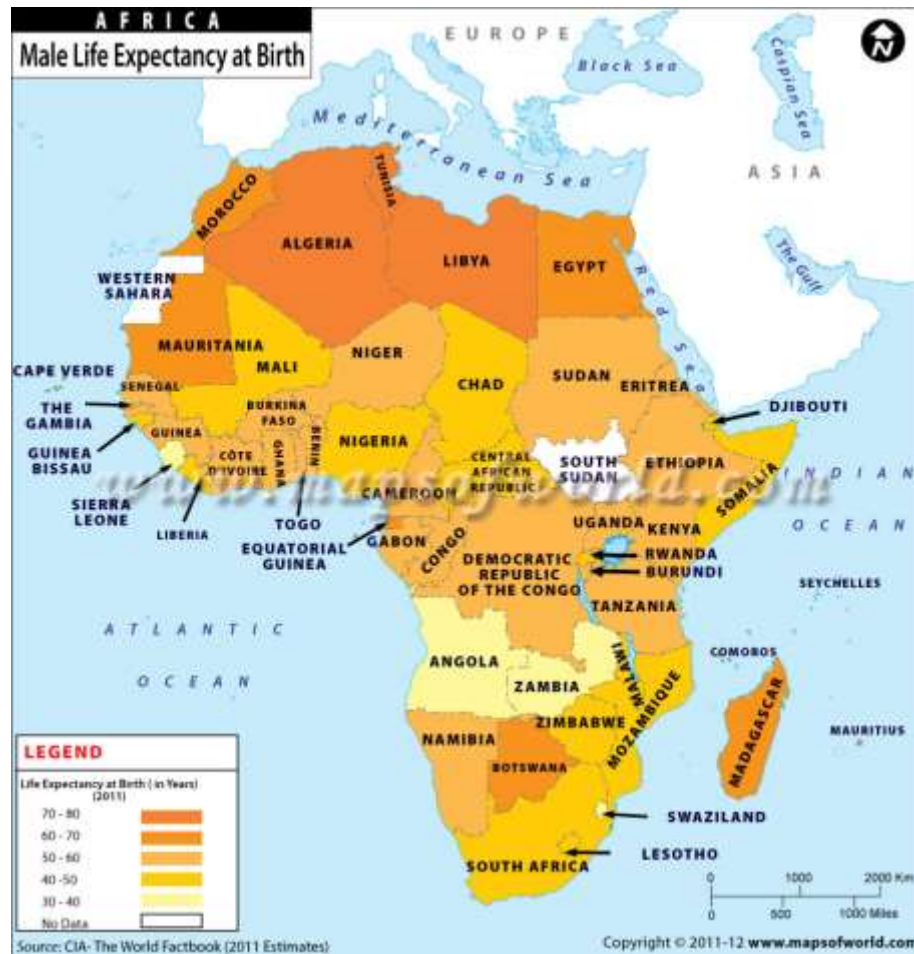


Improving the quality of Water Resources in Uganda

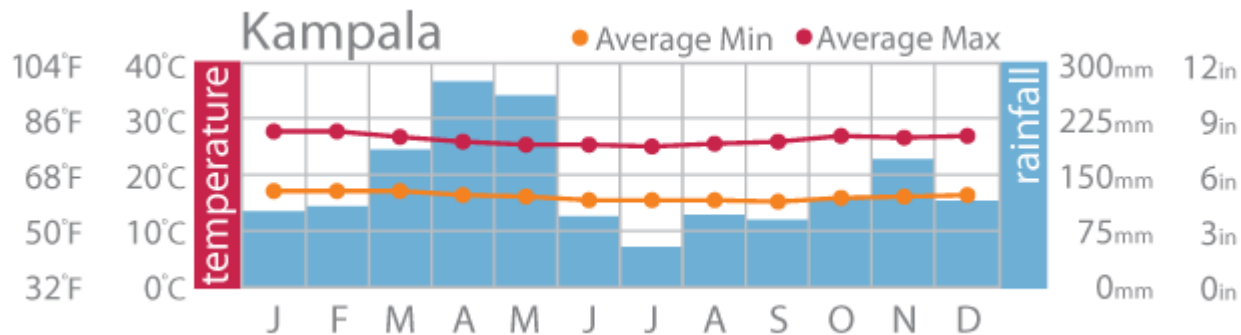
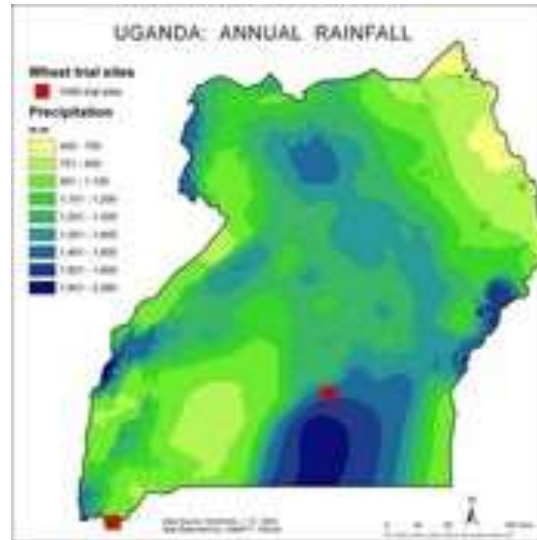
Alan Terry

International Water Security Network,
UWE, Bristol

Uganda within Africa



Key climate variables



Water Security

- “The availability of an acceptable quantity and quality of water for health, livelihoods, ecosystems and production, coupled with an acceptable level of water-related risks to people, environments and economies”.
- Grey and Sadoff (2007, 545)

Managing water

1. To harness its productive potential
2. To limit its harmful potential.

Factors that influence water security

1. The hydrologic environment:
 - (i) Absolute amount of water available
 - (ii) Inter-annual availability (between years)
 - (iii) Intra-annual availability (within years)
 - (iv) Spatial distribution
2. Socio-economic variables:
3. Future changes to environment

The MDGs



MDG 7

- Target 7.C:
- Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation

Sustainable development goals



Why does access to clean water matter?

- About 80% of all illnesses in the Global South caused by consumption of poor water.
- Poor access to water impacts more on women and children
- African rural women spend average 26% of their time collecting water.
- Poor access to water undermines other MDGs and SDGs
- http://wedc.lboro.ac.uk/resources/booklets/BK004_WCS_A5_Pages.pdf

Uganda: 20,000 children die annually due to diarrhoea related diseases.

How have improved WASH facilities impacted in 35 Ugandan schools? (2010-14)

- 15% increase in educational performance
- 35% decrease in absenteeism due to waterborne diseases and poor personal hygiene.
- Joint Effort to Save the Environment
- <http://www.starsfoundation.org.uk/awards/organisations/joint-efforts-save-environment-jese>

Water supply issues

1. Quantity
2. Quality

Do this at least twice a day before and after school (and in school time)



The container above contains 20 litres when full.

How much does that weigh?

How can non-potable water be cleaned?:

1. Boiling
2. UV light
3. Chemically
4. Mechanically eg through filters

What are the potential issues with Boiling?

Chemicals?

All the above are **technical** solutions

UV light



Solvatten UV water purifier





SOLVATTEN®
How Safe Water System

HOW TO USE SOLVATTEN



1 Fetch water.



2 Open all lids and fill the container with water through the black opening that has a filter. Fill all the way up to the top.



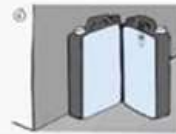
3 Press the yellow button. A red face will become visible. Do not press the yellow button if the face is already red.



4 Position Solvatten in the sun.



5 After 2-6 hours, the indicator will click till and turn green and the water is then safe to drink.



6 Position Solvatten in the shade to cool the water.



7 Pour out the safe water through the white openings.



8 You can use the hot water for cooking.



9 You can use the hot water for hygiene purposes.



Store the water safely in the closed container.

**SOLVATTEN® —
SAFE AND HOT
WATER USING
SUNLIGHT** ❤️

For further information, please contact: www.solvatten.se

Did the world achieve MDG 7 Target c?

- The world met the target of halving the proportion of people without access to improved sources of water, five years ahead of schedule.

MDG 7



 THE MILLENNIUM DEVELOPMENT GOALS (MDG) ARE THE MOST SUCCESSFUL GLOBAL ANTI-POVERTY PUSH IN HISTORY. LET'S STEP UP ACTION TO THE 2015 MDG TARGET DATE AND BEYOND.

MDG7  **2.3 BILLION PEOPLE** GAINED ACCESS TO **CLEAN DRINKING WATER** SINCE 1990

ENSURE ENVIRONMENTAL SUSTAINABILITY

LET'S STEP UP

2.5 BILLION DO NOT HAVE BASIC **SANITATION** SUCH AS TOILETS OR LATRINES

UN.ORG/MILLENNIUMGOALS

COURTESY: UNITED NATIONS, UN PHOTO/SCOTT DENISE

Has the target really been achieved in practice?

- Definitions of access to water differ
- What does good access to water mean to you?
- Fails to take into account factors such as:
 - (i) whether the water source is still operational,
 - (ii) whether the costs preclude the poor from accessing it,
 - (iii) whether certain groups are denied access by others
 - (iv) whether marginalised groups who are not officially counted are included in the official statistics.

The above issues may be partly technical, but are also an issue of **governance**.

Further issues

- 768 million people still lack access to potable water.
- Sub-Saharan Africa the numbers without access to potable water increased by 63 million between 1990 and 2011.
- **Reference** WHO/UNICEF (2013) Joint Monitoring Programme (JMP) for Water Supply and Sanitation. www.wssinfo.org/

Other risks to water quality

1. Potable water sources are unsafe at source
2. Potable water is contaminated between source and consumption

Hand washing with soap after defecation

Country	Number of studies	Estimated prevalence (% (95% confidence interval) ^a)
Burkina Faso	1	8 (4, 14)
Ethiopia	1	22 (13, 34)
Ghana	3	13 (6, 22)
Kenya	5	19 (7, 29)
Senegal	1	19 (12, 30)
Uganda	1	15 (9, 24)
Tanzania	1	5 (3, 10)
USA	7	49 (32, 65)
Panama	2	16 (7, 32)
Israel	1	12 (5, 26)
Netherlands	1	50 (34, 66)
United Kingdom	3	52 (34, 70)
Kyrgyzstan	1	16 (7, 32)
Bangladesh	7	18 (10, 27)
India	3	15 (3, 27)
Thailand	1	25 (15, 38)
New Zealand	1	72 (44, 89)
Republic of Korea	1	17 (9, 33)
China	2	13 (6, 24)

<http://ehp.niehs.nih.gov/123-a6/>

19% of population globally estimated to wash hands with soap after defecation

Requires behavioural change

- Curtis V, et al. Disgust as an adaptive system for disease avoidance behaviour. *Philos Trans R Soc B Biol Sci* 366(1563):389–401 (2011); doi: 10.1098/rstb.2010.0117.

Joint Effort to Save the Environment, Fort Portal: Building better WASH facilities and introducing School health clubs



What access means

- Access to an improved water source, defined by the MDGs as “reasonable access to an adequate amount of water from an improved source”
- Reasonable access is internationally defined as 1 km in rural areas and 0.2 km in urban areas.

Would you expect a country with these statistics would have achieved the target?

- In a population of approximately 36 million, only 1.5 million have access to piped water.

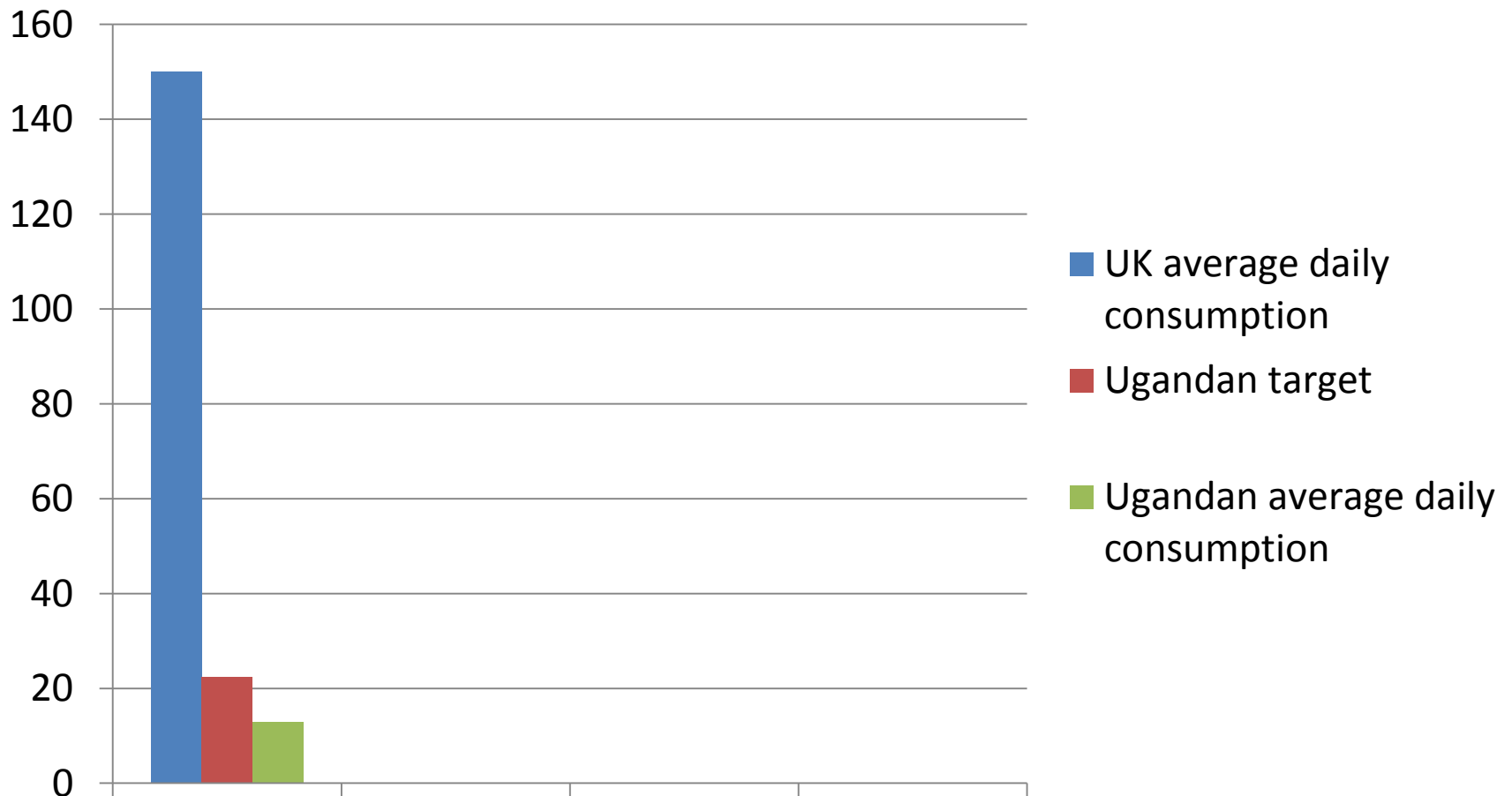
Uganda

- Achieved the target

Water quality

- The quality of water is something not taken into account by the MDGs in terms of access to water.
- Uganda's national standards of water quality indicators fall short of international indicators.
- Total iron content has a 79 per cent compliance rate with national guidelines but a 45 per cent rate with higher World Health Organization guidelines.
- The *E.coli* compliance rate is 97 per cent, compliance with national guideline, but only meets 63 per cent of WHO guidelines.

Comparing the consumption of water in the UK and Uganda litres/capita

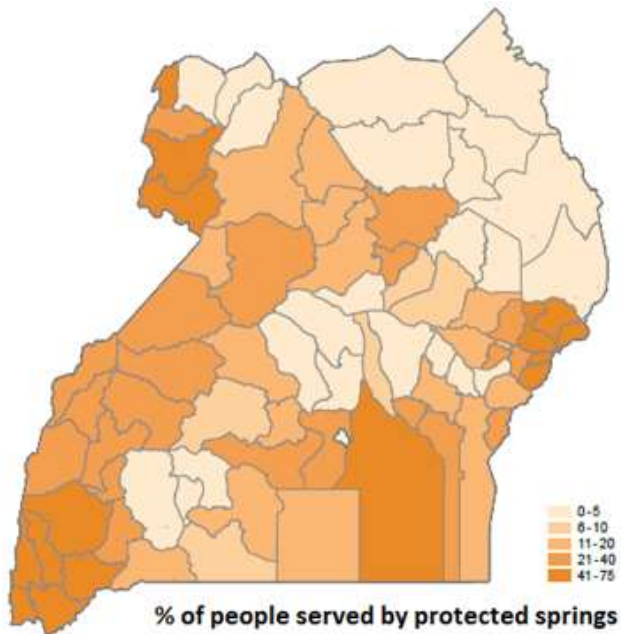


Water Footprint Network. National Water Footprints: United Kingdom.

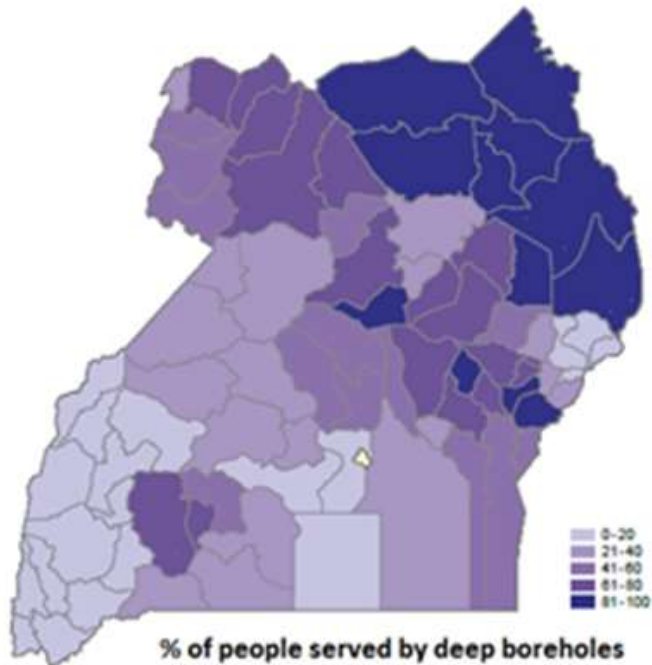
www.waterfootprint.org/?page=files/UnitedKingdom

How do people access water in rural
Uganda?

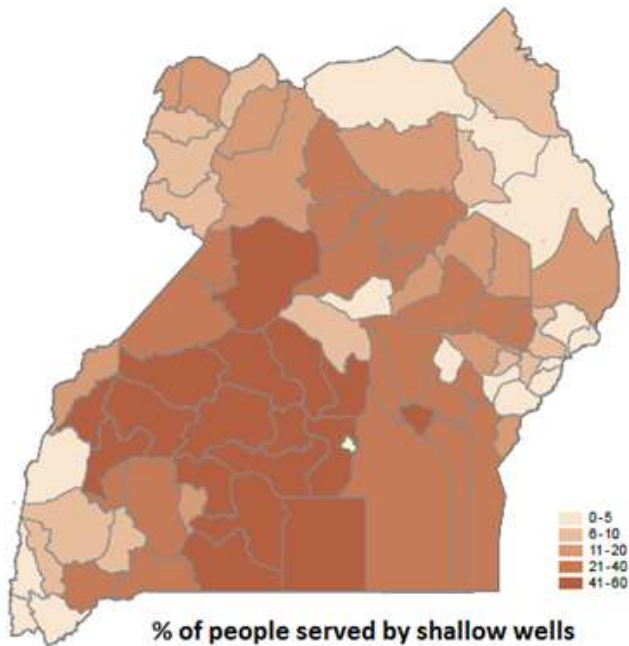
1. Protected springs



2. Deep boreholes



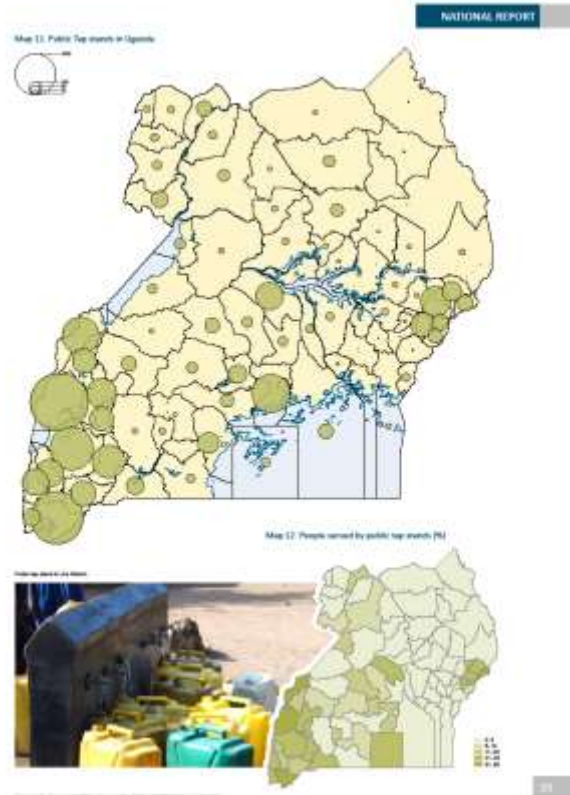
3. Shallow wells



Produced by: Directorate of Water Development, Ministry of Water & Environment, 2010



Public tap stands



4. Rainwater harvesting tank



High quality RWH tank supplied by ACORD: An NGO working with rural communities in Mbarara District, SW Uganda



Simpler home made RWH tank

Issues around rainwater harvesting tanks: Water Aid

- **Advantages of rainwater harvesting**
- Relatively cheap materials can be used for construction of containers and collecting surfaces
- Construction methods are relatively straightforward
- Low maintenance costs and requirements
- Collected rainwater can be consumed without treatment, if a clean collecting surface has been used
- Provides a supply of safe water close to homes, schools or clinics, encourages increased consumption, reduces the time women and children spend collecting water, reduces back strain or injuries from carrying heavy water containers
- **Disadvantages of rainwater harvesting**
- Supplies can be contaminated by bird/animal droppings on catchment surfaces and guttering structures unless they are cleaned/flushed before use
- Poorly constructed water jars/containers can suffer from algal growth and invasion by insects, lizards and rodents. They can act as a breeding ground for disease vectors if they are not properly maintained.
- Water Aid (2013): www.wateraid.org/technologies

Other issues that reduce their ability to provide water in dry periods (Mclaughlin,2013)

1. Moral imperative to share water with neighbours
2. Users tend not to prioritise most important uses of water.
3. Lack of resources reduce roof space from which water is harvested.
4. Poor households can only afford small storage spaces



What has been happening to access to water in Uganda?

- June 2012 access to improved water within 1 km in rural areas was 64 per cent, a decline of 1 per cent compared to 2011.
- In urban areas access increased from 66 per cent in 2011 to 69 per cent in 2012.
- Target: 90 per cent

How important is water in Government expenditure?

- Water and Environment: 2006-07: 5.6%
- 2013-14: 2.8%

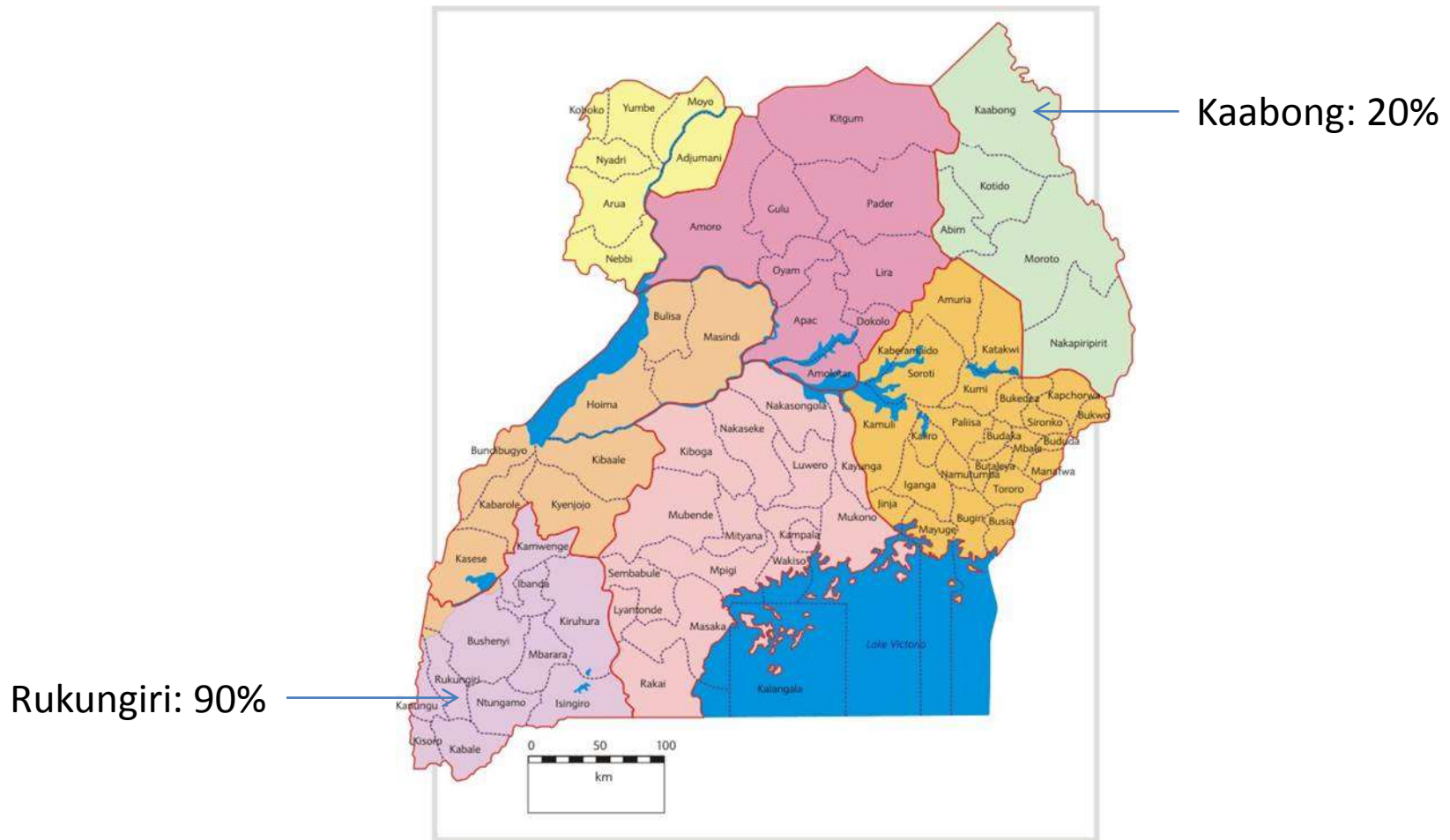
What percentage of the sources work properly? (Functionality)

- 82–86 per cent for deep wells and protected springs
- 74 per cent shallow wells

What else affects water sources?

- 17 per cent of the sources are low yielding
- 10 per cent are vandalised.
- 8 per cent have limited functionality due to poor water quality.
- Technical breakdowns account for 43 per cent of non-functionality; an inability to afford worn-out parts is the major factor.

Geographical differences in access to safe drinking water



The Ugandan Policy context

- 1999 Water Policy
- Aims
 1. To decentralise water resource management to the user level
 2. Reduce the direct role of the state in the management of water resources.

Key management structure

- The community is required by law to form Water User Committees to manage, operate and maintain point water sources
- Membership drawn from the beneficiaries of the water supply
- WUCs should ensure the maintenance of the water system by collecting revenue from users.
- Operational and maintenance costs have to be fully paid for by the beneficiaries *except in situations where the costs are beyond the capacity of the community.*

UWE student Oscar McLaughlin discussing issues with a Water User Committee in liaison with Francis Kazooba, National Association of Professional Environmentalists



Expected outcomes of setting up WUCs

- Empowers the community to act as a homogeneous self-governed group
- Reduces their reliance on the government for funds or services.

In Practice

- Only 10 per cent of WUCs from the three districts that participated in the research met regularly.
- Many WUCs that were visited during the research had met only once since they were established over a decade ago,
- One sheet of paper displaying their very first meeting was the only record of any activity during that period.
- WUCs were faced with abuse and physical attack from community members when attempting to collect funds
- The majority of community members refused to contribute.

Causes of poorly functioning WUCs

- Internal mismanagement
- Corruption
- External pressure

Joint research to understand why WUCs underperform

- Community workshops between November 2012-May 2013
- Mukono, Nakawa and Luwero Districts

Key factor that contributed to poorly functioning WUCs

- WUCs and the wider communities in which they were located had very little understanding of their rights and responsibilities as set out in the 1999 Act.

Key outcome from the research

- Bilingual handbook for WUCs



5 sections

- Section 1: Summary of people's rights to water and sanitation, with reference to the particular act, policy, statute or constitution that the rights apply, to give a higher level of authority.
- Section 2: Describes the roles and responsibilities of the community with respect to water and sanitation
- Section 3: Provides each of the six members of the WUCs with a clear explanation of their individual roles and responsibilities
- Section 4: Provides timetabled activities for WUC members and a checklist for the WUC to check the sanitary state of the environment, general tips for maintaining good levels of household and community sanitation and health.
- Section 5: Basic communication skills for dealing with members of the community.

The research process

- Identify the issue
- Set up workshops
- Carry research to discover which laws were relevant to WUCs
- Write WUC handbook
- Evaluate the impact of the handbook

Impacts of the handbook

- On the community
 - (i) Improved management of sites
 - (ii) Improved collection of financial contributions
 - (iii) Improved attendance at meetings
 - (iv) Improved record keeping
 - (v) Better co-ordination with local district officers
 - (vi) Improved trust between community members and WUC officials
 - (vii) But lack of good baseline survey makes impacts difficult to quantify.

References

- Grey, D. and Sadoff, C. (2007) Sink or swim? Water security for growth and development, *Water Policy* (9) 545-571
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- An engineers guide to domestic water containers, WEDC, Loughborough University, (2011) available at:
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