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When access to improved water points does not lead to use: understanding consumption patterns in Burkina Faso

J. Boulenouar, A. Dubé & R. Bassono (France)

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The correlation between access to drinking water, health care, proper nutrition and other development indicators is well known. At the national level, this often translates into the requirement to allocate additional funding to new infrastructure and in rural areas, this investment focuses mainly on water points and occasionally on small scale piped schemes. The assumption is that investment in infrastructure will lead to widespread use by households, attracted by convenience and quality of service. A recent survey from IRC in Burkina Faso, demonstrates that this is not always the case and a large proportion of households either compliment their domestic water consumption at informal water points, or rely on them for all their needs. This paper presents the results of the survey focused on understanding consumption patterns and identifying lead factors guiding households' choices.

Background

Beyond the obvious correlation between water and life, researchers have focused over the past years on demonstrating the correlation between specific aspect of access to drinking water, sanitation and hygiene and nutrition and other health related development indicators. According to a Cochrane Review (2013), (Dangour et al, 2013), there is evidence of a benefit of WASH interventions (specifically solar disinfection of water, provision of soap, and improvement of water quality) on length growth in children under-five years of age; and according to a Dean Spears study (2013), there is an "association between open defecation in Asia and the high levels of reported stunting".

At national or regional level, this has translated into the requirement to allocate funding to new infrastructure and in the rural sector in particular; this investment has focused on drilling new water points and occasionally constructing small scale piped schemes, with the assumption that these investments will lead to widespread use by households, attracted by the convenience and quality of service.

Since 2011, IRC has collaborated with 2 *communes* in the Sahel Region of Burkina Faso (Gorgadgi and Arbinda) to improve their capacity to manage water services. The collaboration started with a baseline survey to establish the level of service received by the population, as compared to the official coverage rate. The data was collected in 2011 in the rainy season and in 2012 during the dry season and led to worrying results regarding access to basic services (as low as 1% of the population receiving in villages where coverage rate exceeded 100%). The survey also showed that 90% of the households were also using water from unimproved sources to cover their domestic needs.

In order to understand the leading factors guiding household choices and formulate recommendations to the sector regarding the adaptation of water services to demand and actual use, IRC carried out a subsequent household survey in 2014. This paper presents the methodology used and the findings of this survey.

Methods

IRC carried out an analysis of consumption patterns in Gorgadji and Arbinda in two stages:
1. An analysis of the results of the 2011-2012 surveys carried out in both rainy and dry season at water point and household levels in all 24 villages. This led to the identification of 3 categories of households according to their consumption patterns:

  a. Households covering all their domestic needs at improved sources (profile 1)
  b. Households complimenting their domestic water needs at unimproved sources (profile 2)
  c. Households relying on unimproved sources to cover all their domestic needs (profile 3)

It should be noted that unimproved sources refer here to both surface water and traditional wells.

2. An additional survey carried out in 6 of the 24 villages of Gorgagji and Arbinda, in a sample of 30%
   households representing a cross section of the three household profiles. The survey consisted in a
   combination of:
   a. Focus groups discussions with water user committees, handpump managers and municipal
      technicians to collect information regarding the status of water sources and understanding of
      consumption patterns of households
   b. Household interviews using a standard questionnaire focused on consumption habits, perception of
      water and service quality. In order to assess the distance between households and water points, GIS
      data were collected for households and water points using FLOW[1].

The objective of the survey was to test five different hypotheses which were identified by the research team
as possible factors explaining household choices. These include:

- Selection of water source is generally guided by: waiting time, distance, perceived water quality,
- Household consume a smaller volume of water at improved sources if alternative sources are accessible
- Household use improved sources for their domestic needs and unimproved sources for their productive
  needs
- Households adjust their consumption according to their financial capacity

  Questionnaires used for household surveyed were developed in order to test these assumptions for all
three categories of households.

  Across the 6 villages, coverage rates vary between 66% in Pelhoute to 121% in Oulfou Alfa, as presented
in Table.1 below. It is important to note that in all villages; unimproved sources are available, originating
from both surface water and unprotected wells.

Table 1. Overview of improved water services in villages surveyed								
Commune	Village	Estimated Population	Improved sources				Access rate (%)	
			Funct. Standpipe	Funct. WP	Non Funct. WP	WP abandon	Theor[2].	With current funct. rate
Gorgadji	Oulfou Alfa	1492	0	6	1	1	141%	121%
	Pétéguersé	2471	0	8	0	1	97%	97%
	Tonga	1339	0	5	0	0	112%	112%
Aribinda	Dalla	1722	0	4	0	3	70%	70%
	Gasséliki	4633	4	7	2	1	101%	88%
	Pélhouté	*3198*	*0*	*7*	*1*	*0*	*75%*	*66%*

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[1] For more information on Akvo FLOW: http://akvo.org/products/akvoflow/
[2] Theoretical access is calculated by dividing the total number of systems (functional and non-functional)
by the number of theoretical users (as per design)

Findings

Access rates does not systematically lead to use

Despite access rates exceeding 100% in some villages (Oulfou Alfa and Tonga) and ranging from 66% to 97% in the other 4 villages, a majority of households compliment their domestic water consumption at unimproved sources, or rely on them for all their needs. These profiles were identified through the surveys carried out at both water point and household level, where people reported their consumption patterns and those were verified through direct observation. Barcodes were assigned to every household and water point to enable triangulation.

The breakdown of households according to the three profiles is presented below:

- 56% of households cover all their domestic needs at improved sources (profile 1)
- 23% of households combine use of improved and unimproved sources to cover all their domestic needs (profile 2)
- An alarming 21% of households exclusively use unimproved sources to cover their domestic needs (profile 3)

The table below provides an overview of the uses of unimproved sources across all three household categories. Percentages refer to households reporting water consumption for this particular activity. The findings highlights the predominance of productive uses (including cattle), but also a high proportion uses for drinking and cooking.

Table 2. Uses of unimproved water across all three households categories								
Villages	Total nb. HH	Drinking	Cooking & dishwashing	Showering & laundry	Cattle	Other productive uses	Construction	Gardening
Oulfou Alfa	40	25%	28%	68%	93%	13%	5%	3%
Pétéguersé	20	15%	35%	95%	90%	0%	70%	0%
Tonga	31	16%	16%	90%	94%	0%	55%	0%
Dalla	7	100%	100%	100%	100%	86%	0%	0%
Gasséliki	14	71%	79%	100%	100%	14%	7%	0%
Pélhouté	8	88%	88%	100%	100%	0%	25%	0%
All Villages	120	35%	40%	86%	94%	18%	30%	1%

Source: IRC, Triple-S survey (2014)

Household choices are likely guided by convenience

The main factors explaining households' decision to use unimproved sources over improved sources are convenience, crowding and perception of water quality:

- Households are only ready to wait up to 30 minutes at a formal water point before reverting to informal, unimproved sources. This issue of crowding is reinforced by the use of improved sources for productive (cattle and irrigation) and social (building construction) in cases where alternative sources are not readily available

- Perception of water quality is key to household choices and most households consuming water from informal water points consider the water of better quality and taste than the water from formal sources.

Surprisingly, households indicate that water from improved sources tend to make them sick, as compared to water from unimproved sources which they claim does not.

The Table 3 below presents an overview of the factors sites by profile 3 households, to explain their exclusive use of unimproved sources.

Table. 3. Overview of the factors cited by profile 3 households, to explain their exclusive use of unimproved sources

Villages	Nb HH	No waiting time	Taste	Proximity	Distance to improved source	Unreliability of improved source	Habit	Negative impact of improved sources on health	Positive impact of unimproved sources on health
Oulfou Alfa	7	0%	57%	0	0	0	14%	14%	29%
Pétéguersé	22	18%	9%	41%	95%	5%	0	0	0
Tonga	7	57%	43%	86%	71%	0	0	0	0

IRC, survey (2014)

Financial capacity is likely not a determinant of household choice

Given that all households have similar financial capacities and 90% of households combining use of formal and informal sources (profile 2) are up to date with the payments of tariffs, against only 80% for profile 1 households; the survey suggests that financial capacity is not a determinant of household choice.

Conclusions

On the basis of these findings, the research team concludes that it is crucial for the sector to 'nudge' people towards using improved services after ensuring these offer good quality of service and safe water and further sensitisation should be carried out to educate people on unsafe consumption of surface water Below are a few recommendations emerging from the survey, which could be achieved in the medium term:

1. Focus on reducing waiting time at water points by:
   a. Reducing the current crowding standards (a maximum of 300 people per water point) and increasing the number of water points;
   b. Taking into account productive uses into the design standards of water points and including specific installation for cattle or social uses, and thereby reduce crowding.

2. Ensure adequate water quality by:
   a. Regularly monitoring water quality at water points, to ensure people are encouraged to use water that has been verified to the acceptable potability standards. This is particular of concern in a country where water source pollution is a consistent challenge and irregular water quality testing is the norm in rural areas.
   b. Improve adequate water quality of informal water sources to reduce consumption risks.
   c. Encourage education around contamination of drinking water.

Although some of these findings confirm the more intuitive hypotheses (e.g. improved convenience leads to greater use), others contradict some of the sector's widespread beliefs, such as that water costs too (financial capacity is a determinant of household choices) much and better water quality automatically leads to increased use.

Overall the findings highlight the importance for the sector to take steps to more systematically understand the demands and consumption patterns of users, in order to adjust standards and adapt 'the offer' to something that will really be valued and used.

References

Alan D Dangour and all (2013) Interventions to improve water quality and supply, sanitation and hygiene practices, and their effects on the nutritional status of children. Cochrane Public Health Group.

Dean Spears and all (2013) Open Defecation and Childhood Stunting in India: An Ecological Analysis of New Data from 112 Districts. DOI: 10.1371/journal. pone.0073784

IRC (2014) Etude sur les determinants de l'offre et de la demande en eau potable dans les communes rurales d'arbinda et de gorgadji: Burkina Faso

Contact details

Julia Boulenouar
53 rue des Menuts, 33 000 Bordeaux, France
Email: j.boulenouar@aguaconsult.co.uk
www: http://aguaconsult.co.uk/