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Health Risk Perceptions Are Associated with Domestic Use of Basic Water and Sanitation Services. Evidence from Rural Ethiopia

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Government of the Netherlands



Canadian International
Development Agency



Background

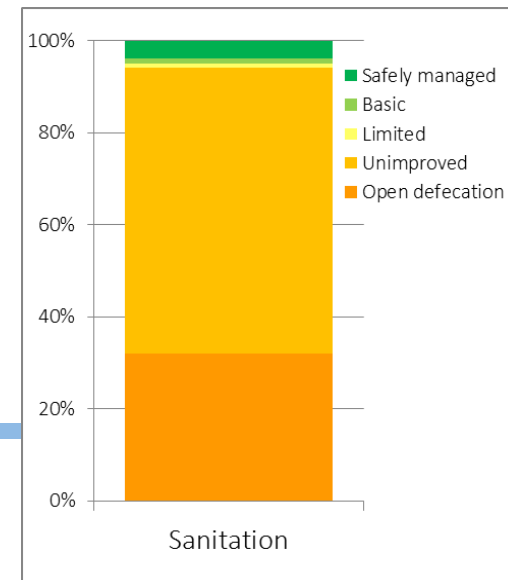
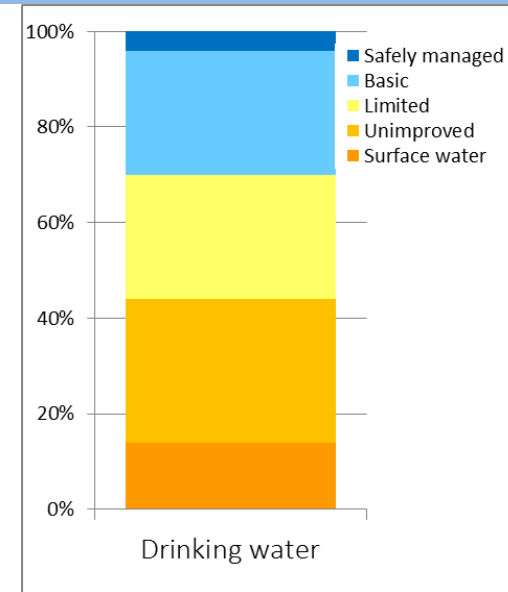
- Evaluations of WaSH interventions facilitate improvement of global health policy making and implementation practice by identification of factors determining provision
- Technical, engineering, sociological and cultural aspects of WaSH
 - *‘Rural WaSH do not only incorporate engineering (functionality, water system breakdowns, access to services and sustainability), but also sociology’* (Mara 2003)
 - Need for consideration of ‘software’: health risk perceptions, (mis)beliefs related to WaSH, WaSH-related behaviours and the cultural context of WaSH
- Health-related knowledge and risk perceptions are motivators for the adoption of health-promoting WaSH behaviour, but often neglected in project evaluations

WaSH context in rural Ethiopia

- 30% with basic drinking water, 4% with basic sanitation service (WHO / UNICEF 2015)
- Increasing water scarcity and environmental degradation may compound inadequate WaSH services, while also increasing food insecurity and malnutrition even further

Objectives of this study

- (i) Identification of WaSH-related factors and practices, socioeconomic aspects, as well as risk perceptions and health beliefs associated with the domestic use of basic drinking water and sanitation service levels
- (ii) Exploration of differences between the WaSH intervention and control group two years after the completion of an integrated nutrition and WaSH programme



Intervention and methodology

Integrating WASH and nutrition in Ethiopia



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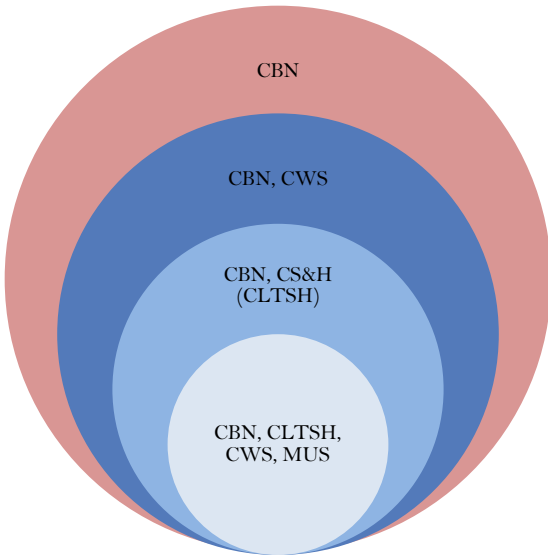


Who	Government of Ethiopia, Government of the Netherlands, Government of Canada, UNICEF
What	Integrating Water, Sanitation and Hygiene, Multiple Use Services and Community Based Nutrition for Improved Food Security and Reproductive and Sexual Health
Where	30 woredas in Amhara, Oromia, SNNP and Tigray regions in Ethiopia
For whom	1,400,000 people in 30 woredas (approximately 50% of the total woreda population) benefit from sanitation and 630,000 people benefit from sustainable water supplies
When	September 2011 to December 2015
Budget	US\$33,975,000 (GoN 72%, DFATD 16%, UNICEF 12%)

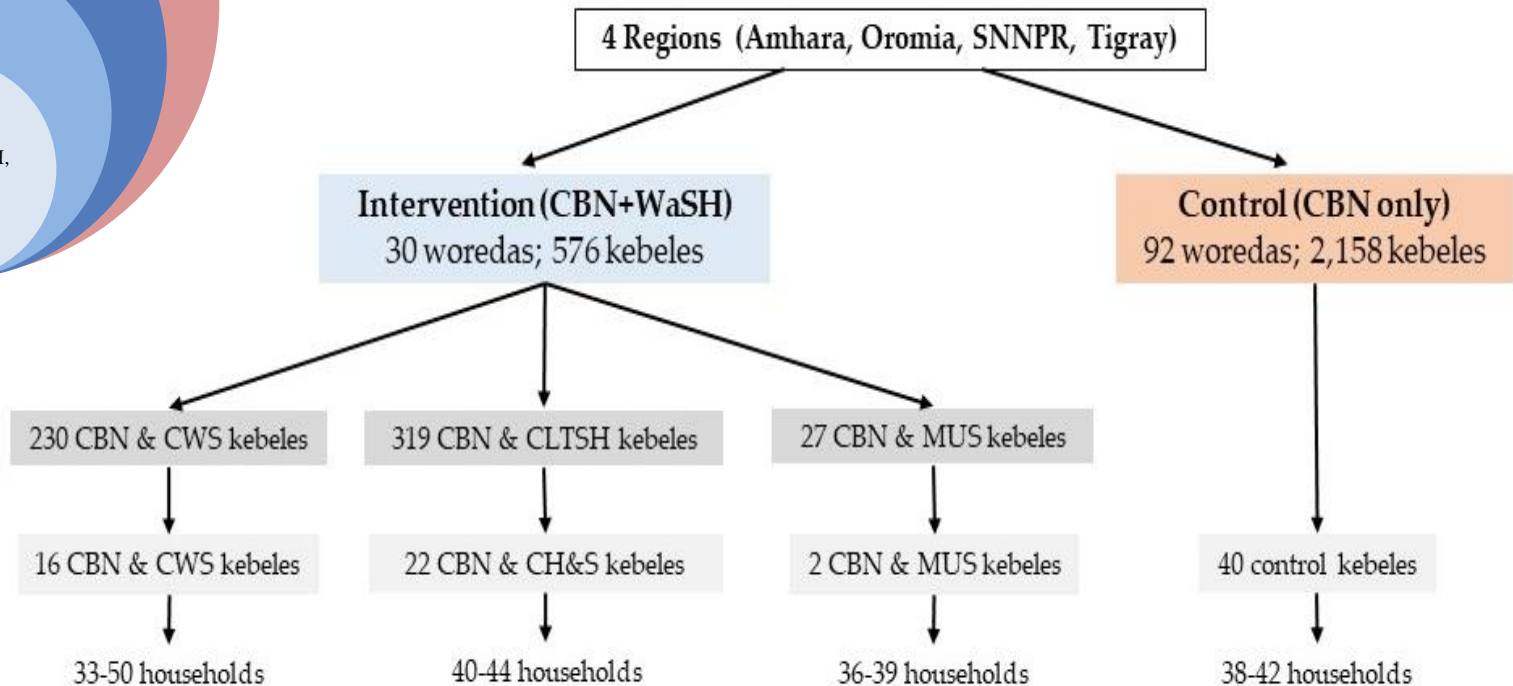
Goal

Maximize health impact of community based nutrition (CBN) programs in rural Ethiopia, responding to combined risks of chronic malnutrition and inadequate access to basic WaSH services for 1.4 million people

Intervention and evaluation

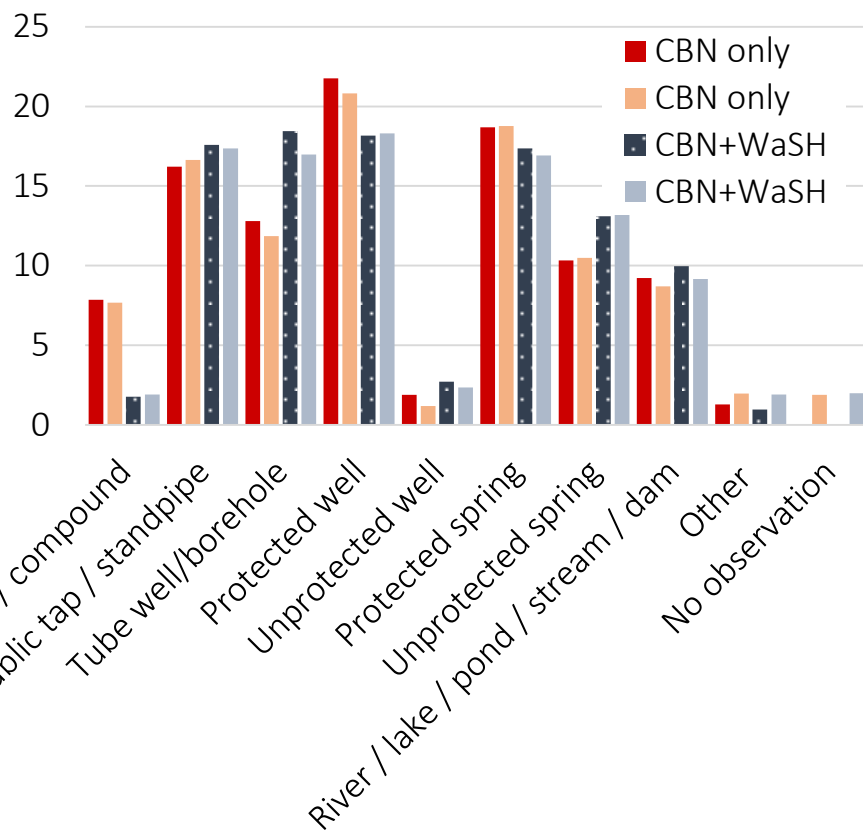


- Rural water supply (CWS) through 1,800 water supply systems
- Water schemes with focus on multiple use services (MUS)
- Community-led total sanitation and hygiene promotion (CH&S)
- Community-based nutrition programme

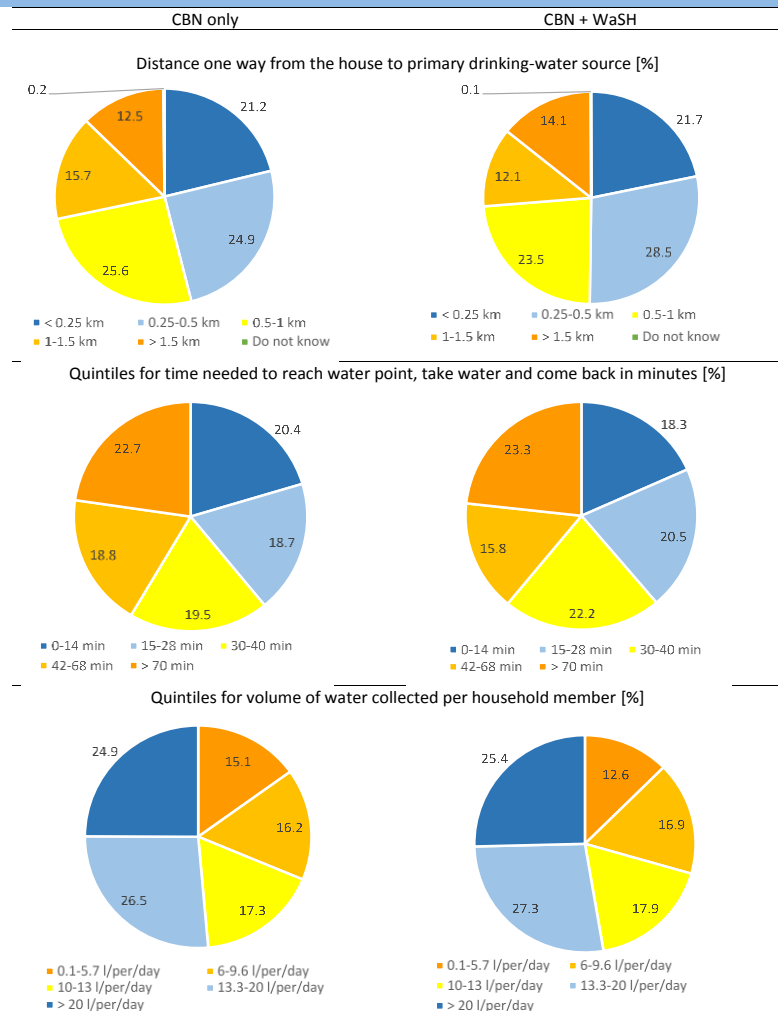


Results

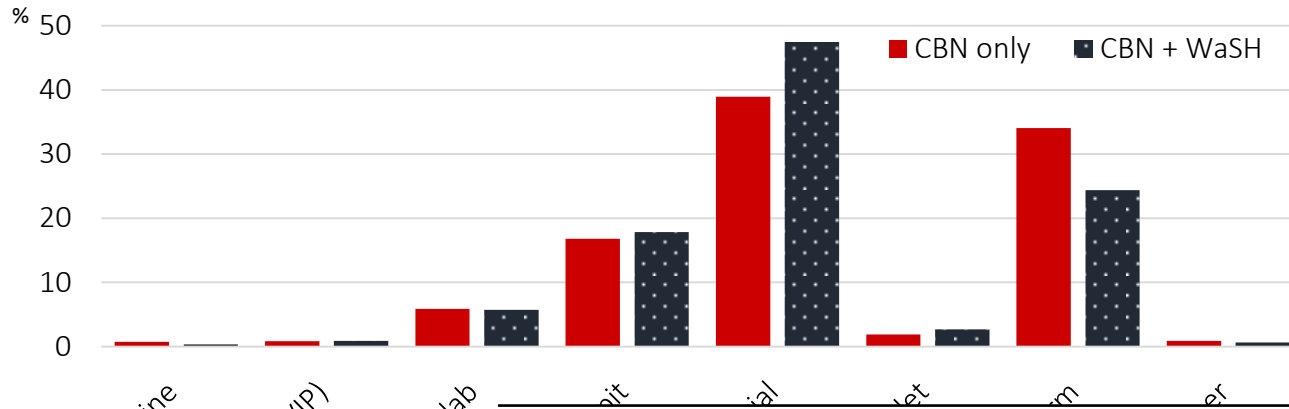
Main drinking water source, distance, time and volume



→ Use of basic water service (JMP)



Type of and sharing of sanitation facility



Sanitation Facility: Hygiene and Structure	CBN Only		CBN + WaSH	
	<i>N</i>	%	<i>N</i>	%
Only cleaned when needed	526	65.83	748	70.77
Emptied at least once	920	72.27	1050	70.71
Never emptied before	353	27.73	435	29.29
Currently observed to be clean	162	20.56	187	17.54
Structure observed to be in good condition	664	84.26	918	86.12

→ Use of basic water service (JMP)

Risk perceptions

Health beliefs and behaviours	CBN only		CBN + WaSH	
	N	%	N	%
<i>Opinion of main benefits of latrine</i>				
Clean compound	1029	85.11	1236	88.16
Better health	991	81.97	1191	84.95
Easier / safer at night	292	24.15	395	28.17
Better privacy	489	40.45	602	42.94
Better social position	240	19.85	327	23.32
<i>Opinion of main disadvantage of latrine</i>				
Construction costs	394	32.59	391	27.89
Maintenance costs	227	18.78	215	15.34
Cleaning work	48	3.97	68	4.85
Dark	24	1.99	48	3.42
Small space	108	8.93	124	8.84
Bad smell, dirt	230	19.02	257	18.33
Reason for diarrhoea	82	6.78	120	8.56
<i>Perceived reasons for diarrhoea</i>				
Human faeces	1079	92.06	1278	93.56
Presence of animal faeces in compound	790	67.41	965	70.64
Flies in contact with faeces via food	1108	94.54	1325	97
Mosquitos	607	51.79	698	51.1
<i>Perceived measures that prevent diarrhoea</i>				
Washing hands with water only	334	28.5	366	26.79
Washing hands with ash	733	62.54	906	66.33
Washing hands with soap	1047	89.33	1241	90.85
Washing hands once a day is enough	193	16.47	174	12.74
<i>Activities at the household to prevent diseases, especially diarrhoea</i>				
Drink safe water	649	55.38	793	58.05
Water treatment	155	13.23	194	14.2
Use of the latrine	277	23.63	334	24.45
Good hygiene practices	846	72.18	1039	76.06
Wash hands after using latrine	633	54.01	795	58.2
Wash hands before eating	799	68.17	1011	74.01
Covering the food	660	56.31	855	62.59
Household cleanliness	727	62.03	946	69.25

High awareness on risk factors related to WaSH and diarrhoea in the programme area.

Results of regression analysis: use of basic services

Explanatory variable	Outcome: use of basic water service			
	OR	CI 95%		p-value
		low	up	
Intervention (CBN+WaSH) vs control (CBN only)	1.00	0.83	1.21	0.968
Oromia vs Amhara	1.27	0.92	1.75	0.152
SNNPR vs Amhara	1.11	0.87	1.41	0.417
Tigray vs Amhara	1.03	0.75	1.40	0.861
Household has electricity* vs none	2.45	1.90	3.15	<0.001
Household head's highest level of formal education	1.01	0.97	1.07	0.385
MUS of water point vs no	0.63	0.48	0.84	0.001
Water quality is good vs not good	3.94	3.06	5.08	<0.001
Household paid for water in the rainy season vs no	1.11	0.88	1.40	0.385
Main cause of diarrhoea: drinking unsafe water	1.48	1.20	1.81	<0.001

Explanatory variable	Outcome: use of basic sanitation service			
	OR	CI 95%		p-value
		low	up	
Intervention (WaSH = CBN) vs control (CBN only)	1.41	1.18	1.69	<0.001
Oromia vs Amhara	0.86	0.63	1.16	0.313
SNNPR vs Amhara	1.58	1.26	1.99	<0.001
Tigray vs Amhara	1.05	0.80	1.38	0.729
Household has electricity* vs none	1.19	0.95	1.47	0.123
Latrine has been emptied at least once vs no	6.00	4.86	7.40	<0.001
Household has received training before vs no	1.55	1.22	1.97	<0.001
Opinion of main reason for diarrhoea: dirty space vs no	1.81	1.50	2.19	<0.001
Benefit of latrine: better privacy vs no	2.00	1.67	2.40	<0.001
Disadvantage of latrine: maintenance costs vs no	0.49	0.38	0.63	<0.001

*Electricity was used as a proxy variable to wealth in this study. **Significant factors are marked in bold. The significance level was set at p-value ≤ 0.05.

Intervention vs. control

Region

Electricity

Multiple use of main source

Education

Risk perceptions

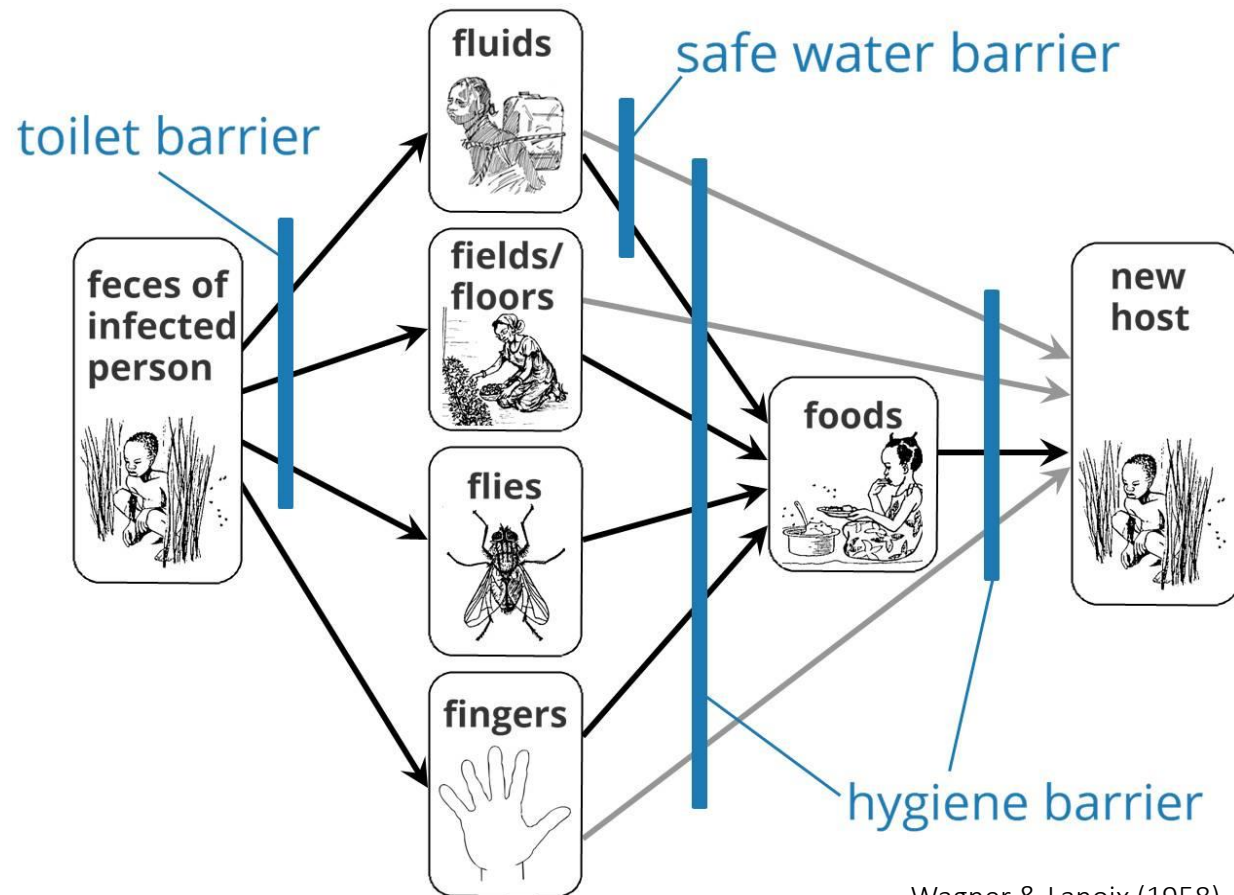
Discussion

The role of risk perceptions for basic services

High awareness on risk factors related to WaSH and diarrhoea:

Diarrhoea linked to faeces, the presence of flies, poor food hygiene, 'dirty spaces' and unsafe drinking water

Risk perceptions reflect the WaSH-related risks as described in the framework on faecal-oral disease transmission



Wagner & Lanoix (1958)

The role of risk perceptions for basic services

- Believing that unsafe drinking water or unhygienic environments caused diarrhoea, and perceiving drinking water quality as good motivated the use of basic drinking water and sanitation services
- Risk perceptions matter: closely linked to and motivating positive WaSH-related and health-protective behaviour: the use of basic services



Major motivator for behaviour change
Well-designed communication strategies and health messaging could speak to a highly effective form to engage households to accept and use basic services

The value of risk perception studies



- Key information from grassroots levels and data-scarce settings to understand health risks and health-related behaviours
- Need to integrate community risk perceptions in risk communication strategies and health messaging to constitute a highly effective form to engage households to accept and the use of basic drinking water and sanitation services
- With their potential to motivate households to 'climb up' the WaSH service ladders, thus, ultimately, health beliefs relevant for the achievement of the SDG 6 (United Nations 2018)

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Article

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Limitations

- Cross-sectional study design could not represent the factor time or uncover cause-effect relationships, e.g. in terms of seasonal differences (inaccessibility of services during to flooding or reduced or intermittent water supply during droughts).
- Mainly male-headed households did not allow for gender-disaggregation of results, which may have allowed interesting insights and perceptions.
- Health risk perceptions, health beliefs and WaSH-related choices could have been influenced by cultural practices and social factors, which were not captured with this study.
- Future studies may consider the integration of qualitative data for triangulation.