



BOMET WATER, SANITATION AND HYGIENE (WASH) PROJECT

End Term Evaluation Final Report



African Rural and Urban Development Consortium

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List of Abbreviations

ARUDCO	African Rural and Urban Development Consortium
BOM	Board of Management
BOMWASCO	Bomet Water and Sanitation Company
CDF	Constituency Development Fund
CGB	County Government of Bomet
CHV	Community Health Volunteer
CLTS	Community-Led Total Sanitation
DAC	Development Assistance Committee
DFID	Department for International Development
ECD	Early Childhood Development
FGD	Focus Group Discussion
FPE	Free Primary Education
HH	Household
KII	Key Informant Interview
KRCS	Kenya Red Cross Society
MDG	Millennium Development Goal
MoH	Ministry of Health
MTR	Mid-Term Review
NRW	None-Revenue Water
O & M	Operation and Maintenance
OD	Open Defecation
ODF	Open Defecation Free
OECD	Organisation for Economic Cooperation and Development
PHO	Public Health Officer
SCPHO	Sub-County Public Health Officer
SDG	Sustainable Development Goal
U5	Under Five (children)
USAID	United States Agency for International Development
VIP	Ventilated Improved Pit (latrine)
WASH	Water, Sanitation and Hygiene
WinS	WASH in Schools

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Africa Rural and Urban Development Consortium (ARUDCO)

Executive Summary

This report presents the methodology, findings, conclusions and recommendations made following the end of project evaluation (ETE) of the Bomet WASH in Kenya Project. The project was funded by DFID (Aid-match) through British Red Cross with funds from the County Government of Bomet (CGB). It was implemented by Kenya Red Cross Society in partnership with the County Government of Bomet. Implementation took three years (1 Oct. 2014 to 30 Sept. 2017) in Chepalungu and Bomet Central sub-counties.

Implementation took place in the first term of devolved governance of the WASH functions in Kenya (2003-2017). In many ways, this was a learning period on how devolved units could deliver. Lessons learned in this project are therefore important and can be replicated in similar projects in Bomet and other counties. In particular, it was noted that devolved funds and political responsibility alone could not translate to service delivery because the county lacked the necessary technical capacity. In this respect the CGB and the KRCS formed complementary partnership that delivered an exemplary project. The partnership was highly transparent and enjoyed mutual trust. The resulting project was aligned with MDGs for WASH, which have now given way to related SGDs, as well as the integrated county development plan.

The project sought to create an impact through improved health as a consequence of better access to safe and sustainable water supply, basic sanitation and better hygiene. A key impact indicator was the prevalence of diarrhoea among children under five years (U5). Proportion of U5 affected by diarrhoeal diseases (based on two week recall period) was 14.7 percent at baseline. This declined to 10.5 percent at mid-term review and 6.7 percent at ETE. The project's outputs and outcomes discussed below demonstrate how the project contributed to the achievement of this indicator.

The project delivered a complete new water supply system that is partly gravity-driven (70%) and partly electrically-boosted (30%) and currently serving a total population of 56,260 people or 91 percent of the project target population of 61,898. The population accessing safe water was distributed as follows: 34 water points (38,547 people); boarding schools and health facilities (4,918 people); individual connections on a flat rate (11,115 people); and school rainwater harvesting systems (1,680 people). An unquantified number of people were also accessing the project's water via vendor supply service outside the project area. Geographically, the project's water supply covers 200 km² or 10 percent of the county's surface area.

The decision to concentrate resources in one major project instead of several isolated ones was the project's decisive success factor. A system design that allowed most of the water to flow by gravity reduced the cost of water pumping that previously made water expensive and the service unsustainable. One of the factors that previously overwhelmed Bomet Water and Sewerage Company (BOMWASCO) was high electricity bills. There were strong indications that the new water supply would be sustained through existing cost-recovery measures within BOMWASCO's management model. However, the company was relatively new and required further support in capacity development. On the other hand, the (previous) county government was not keen to invest in software interventions regarding sanitation and hygiene promotion. If the current government

does not change this stance, the momentum created under this project may not be sustained

The project's intervention on latrine and hand-washing facilities reached a total of 130 villages. Total population reached with hygiene and sanitation activities was 57, 464 people (9,578 households). Ten (10) villages were declared ODF and 8 villages had raised claim. A total of 8,113 households had a latrine while a total of 6,159 had both a latrine and a hand-washing facility. In addition, 5,157 school children have access to improved latrine facilities (separate for boys and girls and disabled access) and hand-washing facilities with soap and water.

The ETE concluded that this was a well-designed and professionally delivered project. Key challenges were: delays in the release of funds from the county; lack of commitment by some county officers; frequent transfers of project trained public health officers; county government's low prioritization of hygiene and sanitation over water; and the initial community resistance to CLTS.

The evaluation recommends that KRCS sustains its working relationship with County Government of Bomet by developing and implementing new joint projects. KRCS should lobby for the newly-elected government to allocate more resources for implementation of focused WASH projects. Specifically, BOMWASCO needs further facilitation to realize its full socio-economic potential and to modernize its operations. Despite the existence of many water resources in Bomet Central, which were not covered by the new water system, a sizeable proportion of the population use water from unimproved sources. Water supply in other sub-counties, particularly Bomet East, was reported to be equally poor. These are potential areas for further KRCS-CGB cooperation. Further, it is recommended that KRCS remains active in Sigor Water Scheme for at least one more year to influence policy and help to solidify the project's operations.

Table 1: Summary Dashboard of Findings

IMPACT	Impact Indicator 1	Baseline Value (95%CI) (Dec 2015)	MTR Value (95%CI) (Sept 2016)	ETE Value (95%CI) (Oct 2017)	Target (Sep 2017)
Improved health as a consequence of accessing safe and sustainable WASH in Kenya	Proportion of children under five years (U5) affected by diarrhoeal diseases (reported in the previous two weeks)	14.7% [10.4% ,19.0%]	10.5% [8.8%, 12.3%]	6.7% [5.3% - 8.5%]	6.6%
OUTCOME 1	Outcome Indicator 1.1				
61,898 women, men, girls and boys in Bomet county (Kenya) increase access to improved and sustainable water and basic sanitation	a) Number of people accessing an improved drinking water source (developed by the program) within 2km away disaggregated by gender (men, boys, women and girls)	0	0	56,260 [M27,905; F28,355]	61,898
	b) Percentage of households accessing an improved drinking water source within 1Km; 0-1Km	42.1% [41.7%, 42.5%]	30.8% [27.6%, 34.1%]	38.0% [35.0%, 41.6%]	58% ¹
	c) Percentage of households accessing an improved drinking water source within 2Km; 0-2Km	45% [44.6%, 45.4%]	39.6% [36.8%, 43.7%]	(47.2%) [43.8%, 50.6%]	66% ²
	Outcome Indicator 1.2				
	Number of functioning water management structure (WMS) strengthened at the completion of the project	0	N/A	1	1 WMS
	Outcome Indicator 1.3				
	Number of people using a basic latrine with a hand-washing facility with water and soap (or alternative) disaggregated by gender (men, boys, women and girls) ³	0	11,079 [M5,429;F5,650]	36,954 [M18,330;F18,624]	61,898

¹ Was not set but initial approved log frame targeted 14,000 people less than 2km target which is 47,897, implying 16% increase from baseline and that's 58%

² Was not set but 61,898 people is 21% of total estimate population of the targeted two sub counties, implying 21% increase from baseline which is 66%

³ Source: Program routine data

OUTCOME 2	Outcome Indicator 2.1				
61,898 women, men, girls and boys in Bomet County (Kenya) improve their hygiene and sanitation practices.	Percentage of households which have at least one caregiver with knowledge of 3 critical times for hand-washing.	51.40% [47.8%, 54.9%]	50.5% [47.0%, 54.0%]	55.0% [51.0%, 59.0%]	75%
	Outcome Indicator 2.2				
	Percentage of villages/communities that are open defecation free (ODF)	0	0	10 villages	6villages ODF certified
OUTPUT 1	Output Indicator 1.1				
Target Schools and Communities have knowledge of good hygiene practices	Number of children in schools that have a safe drinking water supply, clean latrines (separate for boys and girls and disabled access), and hand-washing facilities with soap and water	0	2,244 (Boys 962 Girls 1, 282)	5,157 (Boys 2,527 Girls 2,630)	1,380
	Output Indicator 1.2				
	Percentage of people who self-report appropriate hand-washing technique with soap/ash/alternative and water	86.60% [84.3%, 89.1%]	88.1% [85.7%, 90.3%]	70.6% [65.1%, 76.1%]	90%
	Output Indicator 1.3				
	Percentage of people with correct knowledge of causes and prevention of diarrhoeal.	64.00% [59.1%, 68.5%]	70.3% [67.1%, 73.4%]	88.7% [86.6%,90.8%]	75%
OUTPUT 2	Output Indicator 2.1				
Functional water infrastructure providing safe water for 61,898people	Number of functional water infrastructure rehabilitated/constructed	0	0	1	1
	Output Indicator 2.2				
	Number of schools with safe drinking water supply ⁴	0	6	17 (5 RWHS + 12 connect to main supply: the 12 are additional to original plan)	5 schools (target for RWHS)

⁴ All indicators with...Number of.... ,Focused on routine program data

OUTPUT 3	Output Indicator 3.1					
Construction/rehabilitation of latrine facilities in households and schools	Percentage of target households with latrines with hand-washing facilities	15.2% (11.8% to 18.6%)	to	14.5% [12.1%, 17.1%]	14 %	35%
	Output Indicator 3.2					
	Number of schools with latrines with hand-washing facilities (separate for boys and girls and disabled access)	0		5	5	5
OUTPUT 4	Output Indicator 4.1					
Improved sustainability of water facilities through strengthened governance and management capacities in targeted areas	Number of water points with functional water management structures created or strengthened (e.g. in Kenya water points set up in the water system with associated vendors/kiosks (which are the service delivery part of the water company)	0		0	34	38
	Output Indicator 4.2					
	Number of people who participate in training on governance, and/or management of physical water structures, and or advocacy to local government (disaggregated by gender)	0		318	318	312
	Output Indicator 4.3					
	Number of health clubs formed in schools	0		10	12	10 HCs

SECTION 1: INTRODUCTION AND BACKGROUND

1.1 Project Background

Universal access to safe water, sanitation and hygiene (WASH) is crucial for the elimination of poverty, and underpins all aspects of social, economic and sustainable development. It is estimated that at least 783 million people still lack access to improved drinking water sources and, with 2.4 billion people still lacking access. In Kenya, it is estimated that there is only 61% for water and 29% for sanitation coverage⁵. This affects all sections of society. Women and girls are traditionally responsible for water collection; this is time-consuming: they have to walk for long walking distances to water points and this exposes them to threats and violence. Lack of sanitation facilities adds to this insecurity, strips them of their dignity and therefore they have no privacy to handle menstrual issues.

The potential of WASH interventions for disease prevention is enormous. This supports a health agenda that focuses on prevention as well as treatment. Unclean water, inadequate sanitation and lack of hygiene are associated with a plethora of deadly and/or debilitating diseases which have profound impact on the health, welfare and productivity of developing country populations. They include diarrhoea, still one of the leading causes of under-five mortality. They also include, but are not limited to, pneumonia, cholera, typhoid, schistosomiasis, trachoma, guinea worm and rotavirus. Vulnerable population groups, such as those living with HIV/Aids and children with vulnerable immune systems are more susceptible to falling ill in the absence of adequate WASH services.

Access to WASH services also helps in improving education outcomes, both by reducing the time spent on fetching water, meaning that children are able to attend school, and by reducing the incidence of WASH-related diseases which lead to missed school days. However, recent data from least-developed and low-income countries, Kenya included, show that, in 2011, only 51% of schools had an adequate water source and only 45% had adequate hygienic sanitation facilities. Nearly half of the girls who drop out of primary school in Kenya do so because of the lack of clean water and sanitation facilities. Once girls reach menstruation age, many more miss school days or drop out of school altogether because schools lack clean and private sanitation facilities that allow for menstrual hygiene management. This ultimately affects girls' and women's opportunities for economic prosperity and well-being, and constitutes a severe impediment to gender equality.

The Kenya Red Cross Society (KRCS) has been implementing a three-year (2014-2017) Water, Sanitation and Hygiene (WASH) project in Chepalungu and Bomet Central sub counties in Bomet County. The project's overarching aim was to improve hygiene and

⁵ WHO & UNICEF, Progress on Sanitation and Drinking Water, 2013

sanitation practices and access to improved water and sanitation services for 61,898 people in the county as at the end of the project. KRCS implemented the project in partnership with the County Government of Bomet (CGB). The project was funded by DFID (Aid Match) through British Red Cross with contribution from CGB. The project was implemented in two sub-counties (Chepalungu and Bomet Central). The target community include boys, girls, men and women including people differently-abled.

1.2 Purpose and Objectives of the Study

The main aim of the End Term Evaluation (ETE) was to document results of the project and approaches based on the five criteria (relevance, effectiveness, efficiency, impact and sustainability) recommended by OECD-DAC. The specific objectives were to:

- Establish current WASH coverage as per the project log frame indicators
- Identify lessons learned, good practice and challenges encountered during the delivery of the Project
- Determine the impacts – as far as possible – of the recent changes in strategy for behaviours change, based on lessons identified during Mid Term Review.
- Determine community and stakeholder's engagement in the implementation of the project.
- Review strategies applied by the project and provide recommendations to be adopted in future WASH projects

1.3 Geographic Coverage of the Study

Bomet County is situated in the former Rift Valley Province of Kenya. Its capital and largest town is Bomet. In 2014 the county had a population of 724,186 people and an area of 1,997.9 km². Bomet County is a multiracial, multi-ethnic county with citizens of diverse socio-economic, religious and cultural backgrounds coexisting with the collective will of making things better for their future generations. The ETE was conducted in the project implementation areas: Bomet Central and Chepalungu Sub- counties, with a target of 61,898 people as at the end of the project in 2017. As at 2013, Bomet was ranked number 35 out of 47⁶ in the county sanitation benchmarking by the MOH (2016) according to the following key indicators:

Rank/47	Budget for sanitation/5	# of ODF claim/10	Cost per ODF claim/10	Economic cost of poor sanitation/10	Pupil: Latrine coverage	Pupil: Latrine coverage	Household latrine	# of hand-washing facilities per	Rate of OD/10	# of ODF villages (DPHO certified)/10	Percent of ODF targets achieved/10	Percent of ODF villages/10
35	3	0	0	0	3	3	5	0	3	0	0	0

⁶Sanitation County Benchmarking, Ministry of Health, 2013; for details see full national benchmarking or contact Ministry of Health

1.4 Scope of Work

The ETE targeted key stakeholders in Bomet County which included: County and Sub-county government line ministries (water, agriculture, health and education), water service providers (Bomet Water Company), community (households) in sampled villages across the three wards, school heads/BOM, boys and girls in upper primary schools as well as community health volunteers. Specifically, the ETE gathered and analysed data on WASH program indicators at household level through collection of primary data; a survey of knowledge attitude and practice on the importance of sanitation, water, and hygiene practice; documentation of additional perceptions around importance of WASH practices; willingness and ability to pay for water and improved sanitation among other areas.

1.5 Deliverables

Five deliverables were defined and agreed upon at the inception phase. These were:

1. Inception report – detailing harmonised approach and methodology to the ETE with the following annexed to the report; sampling framework, evaluation tools and work plan;
2. Draft and Final End Term Evaluation Reports: Completed to the satisfaction of EMT and not to exceed 30 pages (excluding annexes)
3. Evaluation Management Response Plan: To guide the utilization and implementation of the End Term Evaluation recommendations.
4. Copies of original and cleaned data sets with codebook: This included the raw data, cleaned database (both qualitative and quantitative, including original field notes for in-depth interviews and focus group discussions), to be submitted in soft copy together with the report.
5. PowerPoint presentation: for dissemination of the findings, recommendations and response management plan to guide utilization of the recommendations.

SECTION 2: METHODOLOGY

2.1 Project Log-frame Indicators Definitions

The adopted approach in defining project indicators at ETE was aimed at ensuring consistency with baseline and MTR approaches for credible comparability. As such, the 'Project Indicator Reference Sheet' (Annex #5) was the main source for indicator definition and interpretation.

2.2 Data Collection Approaches

The evaluation collected qualitative and quantitative data from primary and secondary sources. Data from these sources were triangulated as much as possible in order to arrive at accurate and reliable analysis. Four methods were used to collect qualitative data, namely:

- Literature review
- Key informant interviews (KIIs)
- Focus group discussion (FGDs)
- Direct observations

2.3 Data Collection Instruments and Target Respondents

- **Key informant interview guides** were developed and administered to: KRCS project staff, county and sub-county Public Health officers, as well as their counterparts in the water office. Other targets for the KIIs were the sub-county public education officers, national education officer and the Bomet Water Company. KIIs were conducted with water kiosk operators and head-teachers. In total 9 KIIs were conducted.
- **Focus Group Discussion Guides** were prepared and administered to the following information sources: Hygiene promoters or community health volunteers (CHVs), health clubs boys and girls and beneficiary community members (men and women). A total 12 FGDs were conducted.
- **Household questionnaire** was administered to collect primary qualitative data from beneficiary households. In addition, some quantitative data was obtained from primary sources. Household questionnaire covered issues on household demographics, water issues, use of sanitation and perceptions; hygiene including hand-washing; management/governance among others. The ETE used mobile phones (Kobo app) for data collection. In total 873 households were interviewed and factored in the final analysis.
- **Direct observation guides**, coupled with taking of photographic evidence and field notes, constituted another data collection instrument. The observations covered such physical output as the components of the new water system,

household latrines constructed through CLTS, subsidized school latrines, hand-washing facilities and drinking water filters. Direct demonstrations, such as on effective hand washing, availability of household soap and latrine hygiene were also done through direct observations.

2.4 Sampling Design

2.4.1 Sample size

The target population of the ETE was 61,898 people spread across the two sub-counties. The survey's primary sampling units were villages while the households were the secondary sampling units. The sampling frame consisted of the list of all villages and households that were targeted by the project. For qualitative data, the sampling methodology was mainly purposive, meant to ensure that most resourceful informants were selected. Convenient sampling was applied to sample schools.

Households sample size was determined using Fischer's (1998) formula shown below:

$$n = \{Z^2PQD\} / \{d\}^2$$

Where,

n = desired sample size (assuming the population in each site is greater than 10,000)

z = standard deviation usually set at 1.96 which corresponds to the 95 percent confidence level

p = the proportion in the target population estimated to have a particular characteristic (50% for unknown)

q = 1.0-p

d = degree of accuracy desired, usually set at 0.05

D = design effect (2.0)

By substitution:

$$n = \{(1.96)^2 (0.50) (0.50)\} / \{(0.05)^2\} * 2 = 768.$$

By design, 5% was added to address the non-response rate. Based on this, the final sample size adopted was: $n * 5/100 + 768 = 806$ households. Despite the sample size, 873 households were interviewed hence a response rate of 108% (+8). The increase in sample size was as a result of enumerators being able to reach out to more households.

2.4.2 Sampling Procedure

A total of 39 villages were selected from 192 intervention villages through systematic sampling. In order to obtain slightly different villages from the MTR, simple random sampling was used to determine the first village to be sampled i.e. the third village (MTR used second) from the list was selected as the start village (i.e. Sagatet A). Thereafter, to select 39 villages from a list of 192 villages, every 5th village was selected until the desired sample size was achieved. From the villages sampled, households were randomly picked

based on the number of households in each of the village selected. Probability proportionate to size allocation was used to assign the sampled 806 households to each village based on their household population size. Head of household (and/or primary caregivers) were targeted in each household. However, a purposive bias was introduced to selected households with a U5 child.

2.5 Team Recruitment, Training and Briefing

The Research Assistants were recruited from a list of KRCS volunteers drawn from Bomet County (but not project volunteers). Their basic qualifications included at least a diploma, experience in data collection using mobile applications and familiarity with local geography and culture. In total 28 research assistants (13 males and 15 females) were recruited 7 days –1 day training, 1 day pre-testing of the tools and 5 day for actual data collection. Two of the research assistants were engaged in FGD moderation. Training of research assistants took place in Bomet and covered the following topics:

- Definition of key sanitation terms, etc.
- Potential problems to be encountered
- How to ask questions and record responses
- How to collect high quality data
- Confidentiality and use of the data
- Ethical issues in research
- How to use the mobile application (KoBo) in data collection and submission

2.6 Pilot and Data Collection

After the training of research assistants a day was dedicated to pilot and pre-test of the data collections tools. The aim was to assess consistency and reliability of the tools (including clarity, flow etc.). Piloting village was one of the implementation villages however it was not included in the final ETE sampling framework. Based on the findings from the pilot, the study tools and the mobile data collection platform were revised. Collected data was reviewed at the end of each day as a means to field level screening. Daily debriefing meetings were held to provide feedback on the day's field experiences. Further, data was up loaded daily to a central server maintained by ARUDCO consultants and preliminary analysis conducted.

SECTION 3: RESULTS AND FINDINGS

3.1 Introduction

The results and findings have been presented based on the OECD-DAC criteria of evaluations: relevance, effectiveness, efficiency, impact and sustainability and three additional criteria suggested by the KRCS, namely Community Participation and Accountability, Organization Learning and Best Practice as well as partnerships, stakeholder management and integration. Each subsection is further subdivided to capture information on 2 aspects of the project- community and school interventions.

Further, it should be noted that the total population within the targeted sites by the project was estimated to grow at a rate of 2.9% per annum since inception of the project in 2014. This translates to a population of 61,898 people as at 2017. The ETE adopted the projected population in estimating the total reach by the project in its interventions which is different from the baseline (731,625) and midterm review (59,350).

3.2 Household Characteristics

Of the total 873 household sampled, 766 (87.2%) were from Chepalungu sub-county and 112 (12.8%) from Bomet Central. Most households (76.2%) were male-headed; 23.8 percent were female headed. Nearly half of the respondents (48.13%) were youth and young adults below 40 years. Middle aged adults (41-60 years) comprised 37.4 percent of the sample and old people (over 60 years) formed the remaining 14.5 percent. People with no formal education comprised 10.5 percent of the population. Majority (70.7%) had completed primary education and 3.6 percent had completed tertiary education. Only 1 percent had completed university. Farming was reported as the main occupation, accounting for 48.3 percent of all households. Self-employment was reported in 11.8 percent of the samples and civil service employed were 3.32 percent. Unemployed respondents were 9.9 percent. Other occupation' accounted for 2.4 percent.

Table 2: Household characteristics

Households Characteristics	n	Percent (%)
a) Respondent HHH?		
1) Yes	316	36.20
2) No	557	63.80
a) Gender of HHH		
1) Male	665	76.17
2) Female	208	23.83
b) Age of HHH		
1) 18-30yrs	146	17.06
2) 31-40yrs	266	31.07
3) 41-50yrs	191	22.31
4) 51-60yrs	129	15.07

5) 61-70yrs	106	12.38
6) Above 71yrs	18	2.10
d) HHH Highest level of education		
1) No formal education	92	10.54
2) Primary education	617	70.68
3) Secondary education	124	14.20
4) Tertiary Education	31	3.55
5) University Education	9	1.03
e) HHH Main Occupation		
1) Farmer	422	48.34
2) Business/Self Employed	103	11.80
3) Civil Servant	29	3.32
4) Unemployed	294	33.7
5) Other	25	2.86

3.3 Relevance

The findings in this section have been categorized into two. I.e. during the design phase of the project and project the implementation phase.

3.3.1 Project Design

With the high diarrhoea prevalence in Bomet County against the national prevalence, the project was quite relevant to the targeted population in reducing cases of diarrhoea among children under the age of five years. Approximately 19,500 Kenyans, including 17,100 children under the age of five years, die each year from diarrhoea. Diarrhoea prevalence for under-5's remains at 15.2%⁷ nationally, but disproportionately affects the poorest people in the population. In Bomet county, which is one of the poorest counties in Kenya ranked at 46%⁸, had a diarrhoea prevalence rate of 12.3 percent⁹ (although the project baseline places this at 14.9%) among children under five years as at the time of the design of the project. Poor people are more vulnerable to WASH-related health risks, such as diarrhoea, dysentery, cholera and typhoid, malaria, child stunting and child and adult mortality¹⁰. Diarrhoea, attributable to inadequate water and sanitation, was reported to be one of the leading causes of child stunting and morbidity among children under five and a major cause of childhood mortality¹¹.

Project activities were relevant and in line with the national and county policies and laws. Rights to water and sanitation are entrenched in the Government of Kenya's (GoK) bill

⁷ Demographic Health Survey 2014

⁸ Kenya Institute for Public Policy Research and Analysis, Kenya Economic report (2013)

⁹ Demographic Health Survey 2014

¹⁰ Liu L, Johnson H L, Cousens S, Perin J, Scott S, Lawn J E, Rudan I, Prof Campbell H, Cibulskis R, Li M, Mathers C and Prof Black R E for the Child Health Epidemiology Reference Group of the World Health Organization and UNICEF (2012) Global, regional, and national causes of child mortality: An updated systematic analysis for 2010 with time trends since 2000.

¹¹Demographic Health Survey 2009 and 2014

of rights. Legislation commitments¹², increased public investment (0.4% to 0.9% of GDP between 2003/4 and 2009/10¹²), enabling water sector reforms and efforts to improve sanitation by accelerating action towards Open Defecation Free (ODF) were some of the things that had failed to keep pace with demand nationally and in Bomet specifically. While water provision is devolved, slow implementation of reform processes meant major gaps in sustainable water sanitation and hygiene (WASH) infrastructure, especially in densely populated urban and peri-urban settlements in counties such as Bomet, already vulnerable to the effects of food insecurity, floods/droughts and epidemics. Major issues existed in terms of water quality management, tariff setting/regulation of water costs and transparency in financial management at County level. Community demand for sanitation was considerably lower than water in Bomet County, but a priority from a public health perspective. The KRCS/BRCS needs assessment findings indicated that despite WASH priorities and ODF targets in County Development, population growth, rapid urbanization, watershed destruction and episodes of floods/drought had resulted in an increasing number of water stressed communities, reliant on unprotected water sources and over 5.8 million people practicing OD¹³. Provision of free primary education in Kenya had increased enrolment but school infrastructures had not kept pace: water and sanitation (WATSAN) facilities were significantly overstretched.

The consultative nature of the project in the design phase (and implementation) ensured that the project activities were aligned to the needs and priorities of the county stakeholders thus making the project relevant. The design relied on KRCS previous experience of working with communities in Bomet County and previous assessments which highlighted water and sanitation vulnerabilities (as highlighted above). The consultation included; preliminary consultations with the County Government of Bomet, and review of secondary data and county needs; review of NGOs at County level; consultation with KRCS Bomet County and HQ staff (technical and managerial), International Federation of the Red Cross (IFRC), and British Red Cross Society (BRC) technical staff. Sector-specific needs were prioritized in collaboration with the County Executive Committee Members for Environment, Water and Natural Resources and Health Ministries. Prior to the project (May 2014), KRCS hosted an initial meeting to discuss and develop strategic direction on the implementation of sanitation marketing within its WASH programmes with the MoH, the World Bank (WSP team) and RCM partners.

3.3.2 Project Implementation

The Kenya national policy on community sanitation adopts the non-subsidy CLTS principles, with an emphasis on behaviour change and community empowerment. The project adopted this approach and was therefore aligned with the national and county development plans hence making it relevant and adaptive.

The project was flexible in responding to changing contexts. For example, its software activities were concentrated in parts of Chepalungu in response to the early 2015 cholera

¹² National Environmental Sanitation and Hygiene Policy; National Water Services Strategy and Pro-Poor Implementation Plan (2007-2015), National School Health Policy; ODF Kenya Campaign Roadmap (2013); National School Health Guidelines; Child Survival and Development Strategy; The Water Act (2002);

¹³ Standard Digital, Challenges Facing the Water Sub-sector Need Addressing, 2012

outbreak. Further, in response to lack of full funding for the development of water, Sergutiet water project was dropped and resources concentrated on the expansion of the Sigor Water Project.

The project was conscious about gender and inclusion issues. For example, separate latrines were provided for boys and girls, in addition to two latrine units separate for the physically challenged boys and girls. Gender balance was evident within the County Water Sector Committee, where each village was represented by a male and a female. In addition, the water company's social connection policy targets women, who bear the burden of water problems in the households. Further gender balance was noted in the composition of the CHVs and natural leaders within the communities where the project was supporting CLTS activities. The health clubs had nearly equal representation of girls and boys with each school having both male and female club patron.

All interviewed groups and individuals termed the water supply intervention appropriate. The decision to concentrate the supply in Chepalungu and Bomet East sub-counties was particularly relevant. The rural parts of these sub-counties lacked improved water sources. The 2015 cholera outbreak was associated with the use of surface (mainly river) water and open defecation. The outbreak gave impetus for construction and use of household latrines. It also provided rationale for intensified hygiene and sanitation promotion.

Despite the high access to sanitation facilities at baseline, most households still shared latrines and diarrhoeal disease prevalence was high, including an outbreak of cholera. The CLTS approach was intended to propel ownership of latrines for better access and also to promote behaviour change models for proper and consistent use of latrines.

Selection of intervention schools was based on a needs assessment report. The report ranked the schools on the level on needs and the least served schools were given priority. The selected 5 schools for Rain Water Harvesting System (RWHS) were outside the project's main water supply system. The additional 2 schools in Bomet East benefitted from software intervention as a consequence of being in proximity of the extended water supply. Bomet East is the driest part of the county and experiences chronic water shortages. Though not included initially, 12 schools in the sub-county benefitted from the new water pipeline.

Provision of latrine blocks in schools was also relevant. Under the FPE package the government does not provide funds for construction of school latrines. Latrines and related hygiene support are expected to be the community's contribution. In many cases the communities have not been organised enough to reach acceptable standards of WASH in schools (WinS). Consequently, schools relied on CDF funds and external donors to improve WinS.

During implementation, extra four water points were included beyond the 34 which were initially planned. This was a result of increased demand from other nearby villages to be included in the water coverage. Although unanticipated, this shows that the project had high demand hence relevant to the community

3.4 Effectiveness

Impact Indicator 1: Proportion of children under five years (U5) affected by diarrhoeal diseases (reported in the previous two weeks)

Diarrhoea is the second leading cause of child mortality worldwide. Low- and middle-income countries are particularly burdened with this both preventable and treatable condition. Exposure to diarrhoea-causing agents is frequently related to the use of contaminated water and to unhygienic practices in food preparation and disposal of excreta. Targeted interventions include the provision of safe water, the use of sanitation facilities and hygiene education.

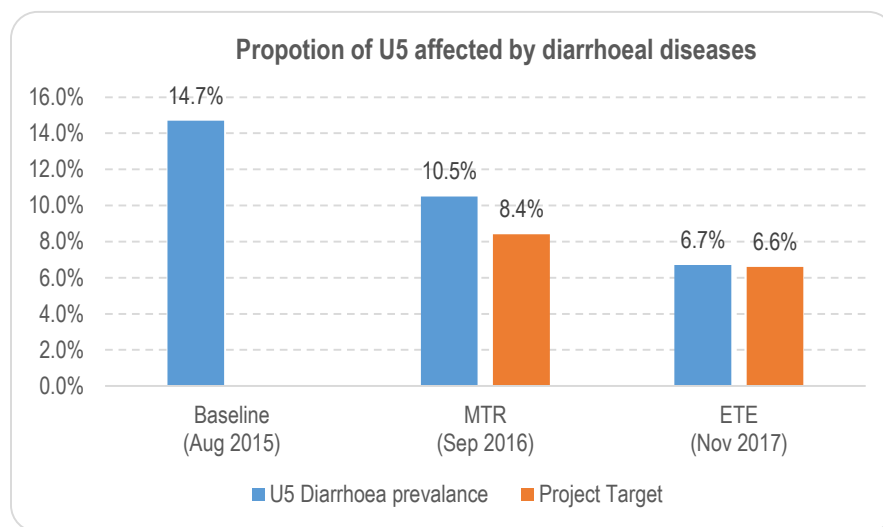


Figure 1: Proportion of U5 affected by diarrhoea

Evidence suggests a strong correlation between access to improved drinking water to health outcomes, increasing life expectancy and reducing the incidence of diarrhoea, malaria, water borne/water related illness (dysentery, cholera and typhoid), child stunting and child mortality¹⁴. Research has shown that improved water quality alone can

reduce incidences of childhood diarrhoea by 15-20%; better hygiene through hand-washing and safe food handling reduces it by 35%; and safe disposal of children and adults' faeces leads to a reduction of nearly 40%. A combination of all three elements reduces incidences of childhood diarrhoea by up to 95% (WHO, 2008).

The project aimed at reducing the diarrhoea prevalence from 14.9% according to the baseline findings to 6.6% as at the end of the project in September 2017. The analysis of this indicator was based on calculating the total number children under the age of five years reported to have had diarrhoea in the last two weeks by their primary caregiver against the total number of children under the age five years within the sampled households. 67 children under the age of five years were reported to have had diarrhoea in the past two weeks as at the time of the evaluation against the total number of children under five years (995) within the targeted households. Based on this, the ETE findings suggest a significant decline¹⁵ (6.7%) of diarrhoea cases as compared to the baseline (14.9%) and mid-term review (10.5%) which were all undertaken in the last quarter of the year. At 95% confidence interval, the ETE findings show that the diarrhoea prevalence of

¹⁴ Water, Sanitation and Hygiene Portfolio Review, DFID, March 2012
Diarrhea -passage of three or more loose or liquid stools per day

the targeted population lies between 5.2% and 11.9%. Based on these findings, we can deduce that the project managed to contribute to reduction of diarrhoea cases within the targeted population. During the KIIs, SCPHOs shared the opinion that cases of diarrhoeal diseases were declining, particularly in the wards where villages achieved ODF status. It was reported that raw diarrhoeal data existed in physical health registers. However, SCPHOs reported that the county and sub-county health offices lacked systematically analysed data to demonstrate trends in diarrhoeal diseases over the years.

According to the Kenya National Bureau of Statistics¹⁶, the total outpatient morbidity rates for U5 in 2013 was 268,687 in Bomet County – 218,177 first time attendees and 40,510 re-attendees (reporting rate was 84.7%). Of these, 13.6 percentages was due to enteric infections, distributed as follows: diarrhoea, 28,705; intestinal worms 7,566; typhoid 184; and dysentery 28 cases. Diarrhoea was ranked 5th in terms of disease prevalence.

Outcome 1.1 a: Number of people accessing an improved drinking water source within 2km away disaggregated by gender (men, boys, women and girls)



Figure 2: Sigor Water System

Bomet County was selected as a strategic county by Kenya Red Cross to implement the water project. This was informed by a couple of reasons. First, this was based on the findings from the needs assessment conducted by Kenya Red Cross and the County government which indicated that lack of safe drinking water immensely contributed to the high cholera prevalence in 2016. The peri-urban nature of the targeted site due to high migration of people from urban to peri-urban centres was another factor. This project was thus meant to cater for the growing demand of the water resources. The county reported limited

capacity to implement such a big project hence willingness to partner (through financial and human resource contribution) with KRCS, this way the partnership would also ensure value for money.

To analyse this indicator, the ETE classified improved drinking water sources as: public taps or standpipes, tube wells or boreholes, protected dug wells, protected springs, rainwater collection. While unimproved drinking water sources were classified as; unprotected dug well, unprotected spring, cart with small tank/drum, bottled water. Number of people (and %) of those who reported to have access to improved and unimproved drinking water sources was analysed. In addition, various triggers that might have influenced household access to improved drinking water source such as income and level of education were also considered before determining the distance covered by the

¹⁶ <https://data.world/kenya-nbs>

households in accessing improved drinking water source. Three levels of analysis was considered; (a) the actual number of people accessing improved drinking water source within 2km away disaggregated by age and sex(b) percentage of those accessing improved water source within 0-1Km, (a) percentage of those accessing improved water source beyond 2 Km.

Generally, access to improved water sources based on the sampled population and randomly selected households during the evaluation increased significantly from 42.4% (CI = 41.7%, 42.5%) as at the baseline to 50.7 percent as highlighted in table 2 below. The access to piped water alone increased from 8% at baseline to 30% at ETE. This was attributed to the 34 water points that were constructed by KRCS that were functional at the time of the ETE and in addition to the reticulation systems extended to schools, health facilities and individual connections.

Table 3: Household main water source

Household Main Water source	Percent (%)	
a) Improved	n=443	50.74%
[1] Piped into dwelling	7	0.80
[2] Piped to compound/plot	60.0	6.87
[3] Public tap/Tap stand/Water kiosk	188.0	21.53
[4] Tube well / Borehole	19.0	2.18
[5] Covered dug well in compound/plot/	22.0	2.52
[6] Protected spring /	94.0	10.77
[7] Rainwater/	53.0	6.07
a) Unimproved	n=430	49.26%
[8] Uncovered dug well/	5	0.57
[9] Unprotected Spring/	36	4.12
[10] River/stream/	312	35.74
[11] Pond/lake/	13	1.49
[12] Dam	38	4.35
[13] Open well in compound/plot/	12	1.37
[14] Open public well/	14	1.60

The outcome indicator 1.1 a) detailed the absolute numbers of people reached by the water points developed by the project during the project life. As indicated in table 3 below, a total of 56,260 people (27,905 male and 28,355 female) had access to project water point within a radius of 0 to 2km by the time of end term evaluation. This was 91% achievement against the set project target of 61,898 people.

The project made a major contribution to the water supply sector in Bomet County. Its main outputs were a new intake at River Nyangores, a treatment plant, chemical store, staff houses and a 13 km trunk main for treated water from the intake to Sigor town. The project also constructed a booster station at Sigor, which pumps about 30 percent of the water – 70% of the supply was done through gravity. In addition, the project rehabilitated 3 storage tanks (350m³ at Sigor; 250m³ at Kipkeigei and 250m³ at Lelaitich) and constructed a new tank that distributes boosted water at Olokying. In total, 90km of pipe network was rehabilitated. The new water system has a production capacity of 1,500 m³ /day (previous system could only supply 1,200m³/day¹⁷) against a demand of about 1,719 m³/day¹⁸in the project area. It was anticipated that at full operation the supply system would meet the demand. The system's full design production is 2,400m³ of treated water per day. Additional water supply infrastructures were provided in the form of the rainwater harvesting systems in 5 schools.

Table 4: Number of people accessing safe drinking water

Category	Population
Total population accessing water from the water points (34 water points)	38,547
Population accessing water from boarding schools and health facilities	4,918
Populations in the villages which have individual connection on a flat rate and are not within the water points' catchment villages	11,115
Population in schools reached with Rain Water harvesting systems	1,680
Total Population	56,260

Outcome indicator 1.1b percentage of households accessing improved drinking water within 0-1 km

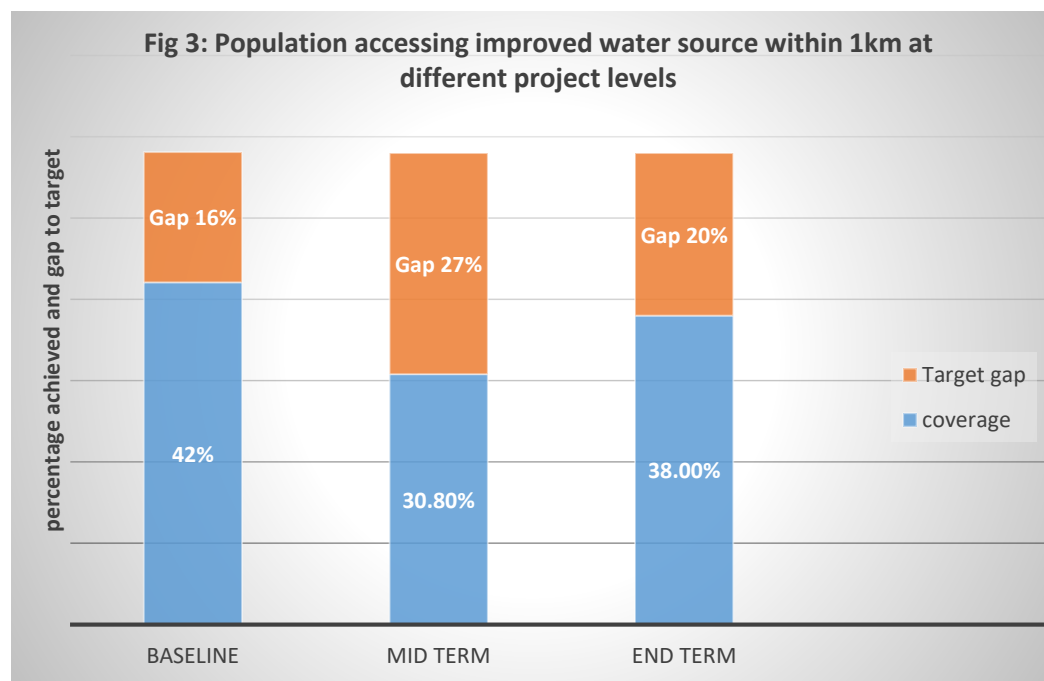
The indicators on coverage of water access in the population were based on the sampled population during the survey. This gave a picture of water access across the two sub counties targeted by the project without narrowing down to the lower administrative units that the water points were eventually developed.

17 Baseline Report – Bomet WASH Programme
 18 EIA Assessment Report (Peng Ltd)

Respondents estimated the distances and were equally asked to indicate how much time it would take in a round trip. As per WHO documentations, 30 minutes would equal a round trip for a 1km radius. This was therefore used by the enumerators to estimate the distances. In villages where the local enumerators knew the source of water, they confirmed the estimates.

The population accessing improved drinking water sources within 1km as recommended by WHO decreased from 42.1 percent at baseline to 30.8 percent at midterm and increased to 38 percent at end-term. The drop in households that accessed improved drinking water within 1km during the midterm review was attributed to the drought in 2016 that affected most parts of the country, including Bomet hence lowering the water tables. A number of the existing water points were not functional at the time and thus communities walked longer to get the precious commodity. At the time of the mid-term review, KRCS was still in the design and initial implementation of the water project and thus community members relied heavily of the existing water points.

Once the KRCS water points were established and were in use, the household coverage increased to 38 percent at end term against a target of 58%. Literature review did not reveal any current studies conducted on WASH in Bomet County expect the one done in 2013 by KNBS and Society for International Development. The study showed that only 24 percent of the population had access to improved water sources within the recommended distance.



Based on the FGD discussants, the continuous access to improved water within a short distance has helped them to focus on other economic activities. More hours have been dedicated to farming and fetching food for their family members.

“In the past, I could walk for over 2km for me to access safe water for drinking for my family. Even accessing the same water was not easy as we could be forced to queue for more than 1 hour. Because we didn't know when next we will have access to water, we had no choice but to queue”

~ FGD discussant - Kapkulumben Community~

Outcome indicator 1.1c) Percentage of households accessing improved drinking water within 0-2 km

Based on the sampled population and randomly selected households during the evaluation, access to improved water sources was reported to have increased significantly from 45.0% (CI = 44.6%, 90.9%) as at the baseline to 47.2 % (CI = 43.8%, 50.6%) as at the ETE. Considering that 38% had reported to have access to improved drinking water source within a radius of 0-1 km, the 9.2% who reported to have access to the same commodity beyond 1km was attributed to the unfinished four water points as at the time of the ETE based on the Key informant interviews and the feedback received from FGD discussants.

“The water situation in this area has improved as compared in the past. In the past, we used to access water after every 2 weeks. At some point when water was accessible every week, people used to line up thinking that the next time they will have access will be after two weeks. When they found out that the water is accessible every day, the queues have reduced because we feel hopeful that the following there will still be water”

~FGD discussant in Sigor~

Household water treatment practices

Further, respondents were also asked whether the water they have access to was safe for drinking and cooking. 68.0% (n= 594) and 84.3% (n= 736) reported that the water was safe for drinking and cooking respectively. Respondents were also asked whether they treat water to make it safe for drinking. 49.0% (n= 428) reported to be treating water. The most common methods practiced for treating water that were reported include; boiling (72.0%), use of chemicals (40.0%) and use of filter cloth (16.0%).The project raised awareness on drinking water safety through hygiene promotion. It also promoted and supported point of use (PoU) treatment by providing a limited amount of treatment chemicals and filters. Boiling was the most prevalent means of making drinking water safe although the FGDs identified with its limitations which included; consumption of caregivers' time and high cost of fuel. The fact that water has to cool before it is drunk; meant that safe water may not be always available when one needs it. This would increase the consumption of untreated water as reported by the participants.

Outcome Indicator 1.2: Number of functioning water management structure strengthened at the completion of the project

Functional water management structures are prerequisites to the operations, maintenance and long-term sustainability of water facilities. Functional in this regards was described as legal compliance, operational bank accounts, availability of group constitution and by-laws, trained WMS members, accountability and beneficiary complaints mechanism, gender consideration, meeting attendance and proper record keeping.

This project strengthened the management capacity of one main water supply structure – the Bomet Water and Sanitation Company. The company has, through this project, introduced 38 water kiosks to serve in the rural areas. At least 10 out the 38 kiosks were functional at the time of the evaluation. The capacity of the new kiosk operators had not been built.

Each water kiosk is managed by a Kiosk Operator who is licensed by BOMWASCO. Kiosk Operators are not company employees but sign a contract with the company. The Operator signed a contract with the company which stipulates in detail the rights and responsibilities of both parties as well as the rights and responsibilities of the customers and other stakeholders. Kiosk Operators were in charge of metered consumption. This implies that customers had to pay for the quantities they fetched. In other words, the kiosk customer has to pay for each container fetched. The retail price customers paid at the kiosk were fixed by BOMWASCO approved by the Regulator. The operators were allowed to sell other goods at the kiosk. However, the contract specified the types of goods which are not allowed to be sold at the kiosk. The Operator had specified opening and closing hours for the business. All Operators were monitored and controlled by the WSP.

As a water service provider, BOMWASCO was fully functional. However, as already noted, not all (4) of its kiosks were providing services at the time of ETE. Technically, all 38 kiosks were completed. However, 4 were not operating because the operators had not been appointed. Appointment of all operators was expected in a few weeks after the ETE.

Despite the need to ensure financial sustainability, BOMWASCO nevertheless introduced two main measures to ensure that the less fortunate members of the community get access to improved water supply. One, the company was implementing its 'Social Connection Policy' which helped the needy households or communities with soft loans to connect to the main supply. The funds were provided by CGB and targeted women. The second intervention is the provision of water kiosks for the people who cannot afford households connections. However, the cost analysis shows that cost per cubic meter is cheaper through household connection than through the kiosk.

The willingness to pay for water was low at only 27.0% (n=237). It was found that 73 percent (n=636) did not pay for water, partly because they used natural sources. For those who paid, the price varied from Ksh 2 to Ksh. 10 per 20 litre Jerrican – an average of Ksh 4.9 (USD 0.049)/20 litre Jerrican. This was above the national government's recommended retail price of Ksh.2 per 20l container. Payments were done in cash.

Resistance to pay for water was partly attributable to political promises that the project water would be free water (something that the county government intervened on). Because of a combination of factors, such as cost and distance, the per capita water consumption was 21.5 liters per person per day, against the national aspiration of 30 liters per person per day. The amount of water used per person per day has a direct relation with the resulting health benefits.

Through the interventions of this project, access to an improved water source has increased drastically in the project area, particularly in Chepalungu Sub-county. Compared to the past the supplied water is clean and safe for human consumption. The price of water is also affordable to all consumers. BOMWASCO provides service professional and responds rapidly to customer complaints. Consumers termed the supply convenient and reliable.

Outcome Indicator 1.3: Number of people using a basic latrine with a hand-washing facility with water and soap (or alternative) disaggregated by gender (men, boys, women and girls)

Through its sensitization effort, the project aimed at increasing the number of people using a basic latrine with a hand-washing facility with water and soap (or alternative) among men and women, boys and girls in targeted sites in Bomet County. Basic latrine with this regards was described as those that have a squat hole covered, have a slab and water seal, floor free from faeces and urine and have a super structure that provides privacy. Further, flush/pour-flush to – piped sewer system, septic tank, pit latrine or Ventilated Improved Pit (VIP) latrine or Pit latrine with slab or composting toilet were considered as improved. Unacceptable latrines were considered as; Pit latrines without a slab or platform, hanging latrines and bucket latrines. In addition, a hand-washing facility was defined as a permanent or an improved device (tap, leaky tin or tippy tap) that holds water for washing hands that is located near latrines, with soap (or alternative e.g. ash). This definition was considered in the ETE during data collection (interview and observation) and analysis.

The indicator 1.3 covered the routine data of the project based on the achievements through the CLTs process. The households were visited by the project team and the volunteers, with sampled verifications by the consultant. At the time of the ETE, the project had documented to have physically observed 36,954 (18,330 male and 11,079 female) people within households with latrines, hand-washing facilities and soap/ash. This was about 60 percent of the project target of 61,898 people.

Despite the achievement of the programme, keeping soap next to the latrine was challenging in most instances in many households – domestic animals and rains tended to destroy the soap. Use of ash (56%) was more prevalent in the villages where intense hygiene promotion had been done. Due to the challenges faced with the use of soap, some households preferred to use ash as it did not have any cost implications. Based on evidence collected through key informants, it was also noted that the county government used to distribute soaps to the households. Due to overreliance to the

county support, some (mostly the ones using ash) households were still expecting to receive the same commodity from the county hence not committing to buy their own.

Regardless of the CLTS effort, Open Defecation was observed in one ODF village (Tumoi village), indicating the probability of the community sliding back. However, in FGDs the communities attributed this to 'outsiders' or 'drunkards' pass through the villages and use the bush at night.

"Washing our hands after visit the toilet has become part of us. We now understand the importance. We are more knowledgeable. In the past, water and soap was a big challenge. Having water in place has made it easy to change people's mind-set. Even though we still have a number of us that don't wash hands with soap because of they cannot afford."

~ End-term - Women FGD Participant ~

The project supported construction modern latrine blocks in 5 public primary schools. The project provided a hand-washing facility for each of the latrine block. Both interventions benefited a total of 5,157 pupils – 2,432 boys and 2,725 girls. The evaluation found that the latrine blocks were separate for boys and girls, and that each block had one latrine fitted to support use by the physically challenged pupils. It was reported that the special latrines required more space and cost more money. While the number of the physically challenged pupils was negligible or non-existent in some school, provision of such units is globally considered a good practice globally. Boys' urinals were also provided.

Percentage of households owning a basic latrine

Generally access to a basic latrine based on the sampled population and randomly selected households during the evaluation increased significant from 77.5% as at mid-term review to 82% (CI 78.3%, 84.1%) as at ETE.

Further, of those households that reported to own a household latrine, the ETE sought to understand the type of latrine owned. 63.4% (n=454) reported to own a basic latrine that did not meet the project threshold while 36.6% (n= 262) reported to own a basic latrine (majority a pit latrine with a slab) that met the project threshold. The finding suggests an increase in the number of households with a basic latrine that met the threshold as compared to the midterm review (28.3%).

Table 5: Type of basic latrine owned by households

Type of latrine (Only for Yes, own household latrine)	N=716	Percent
Acceptable basic latrine	n=262	36%
[1] Flush/pour flush to septic	2	0.28
[2] Flush/pour flush to pit latrine	26	3.63
[3] Ventilated improved pit latrine (VIP)	15	2.09
[4] Pit latrine with a slab	214	29.89
[6] Composting toilet	5	0.70
Unacceptable basic latrine	n=454	63.4%
[7] Pit latrine without slab	454	63.41

Majority (50.3%) of the households reported to have constructed their latrines within the last 2 years. 2.7 percent reported to have received support in constructing their latrine. Some of the households reported to have used their household income/resources (57.9%). Other (42.1%) reported to have received support from neighbours/friends. Only 5.3 percent reported to have received technical support from KRCS.

Outcome Indicator 2.1: Percentage of households which have at least one caregiver with knowledge of 3 critical times for hand-washing.

A care giver (often women) with the correct knowledge on the critical times for hand-washing and the importance of disposing of child faeces (under 5 years of age) in a hygienic manner is more likely to practice good hygiene and sanitation practices that could help prevent the occurrence of diarrhoeal diseases. Effective hand-washing with water and soap and safe disposal of human faeces are critical to break the chain of diarrhoeal disease transmission.

Primary caregiver in this regards was defined as a person who provides direct care to children under the age of five years. Critical times for hand-washing were categorized as; after defecation/urination, after handling child faeces, before cooking/preparing food, before eating, before feeding or breastfeeding children and after cleaning the toilet.

It was found that 55.0 percent (n=480) of the caregivers had knowledge of 3 or more critical times for hand-washing.43.0 percent (n=254) had knowledge of 2 or below knowledge of critical times for hand-washing. Only 2.0 percent (n=11) reported not to have any knowledge and thus could not mention any critical time. The ETE finding suggests an insignificant increase from baseline 51.4 percent (95% CI= 47.8%, 54.9%) and the midterm review, 50.5 percent (95% CI=47.0%, 54.0%) for caregivers who had knowledge of 3 critical times for hand-washing.

The most mentioned hand-washing times during the evaluation were; before eating (88.4%), after defecation/urination (69.7%) and before cooking (62.2%). After cleaning a child that has defecated/ changing a child's nappy (19.9%) and after cleaning the toilet (6.3%) had the lowest mention respectively. Consider the table 6 below:

Table 6: Critical hand-washing times

	MTR		ETE	
	n =	%	n =	%
[1] Before eating	693	85.8	519	88.4
[2] Before breastfeeding or feeding a child	444	29.2	158	26.9
[3] Before cooking or preparing food	518	55.0	365	62.2
[4] After defecation/urination	179	64.1	409	69.7
[5] After cleaning a child that has defecated/ changing a child's nappy	104	22.2	117	19.9
[6] After cleaning the toilet or potty	2	12.9	37	6.3

The project used five approaches to propagate hygiene messages. One, CHVs passed hygiene messages through house-to-house visits. Two, the project conducted public messaging targeting rural market centres. The public messaging was used mainly for sanitation marking. Three, the project facilitated formation and capacity-building of school-based health clubs – targeting pupils and teachers. Four, the project capitalized on the relevant international days. Working with its local partners, Dig Deep, Tenwek Community and County Departments of Health Services & Education, KRCS organised successful events to celebrate such international development days as the Global Hand-washing Day, the World Water Day, Global Menstrual Hygiene Day and the World Toilet Day. Five, the project communicate hygiene messages through local FM radio.

The project had coherent and consistent messages on effective hand-washing using soap/ash and flowing water at critical times; ownership and use of latrines by all people at all times; and drinking water safety. Community were encouraged to avail or improvise physical items needed to support sound hygiene, such as soap or ash, hand-washing facilities, water and the latrines. The minimal progress noticed in this indicator can be attributed to several factors. Insufficiency of water was reported as a major factor that limited effective hand-washing. Equally, soap was not universally available in households due to its cost implications.

Outcome Indicator 2.2: Percentage of villages/communities that are open defecation free (ODF).

An Open Defecation Free villages or communities were regarded as a situation in which there is no exposure of faeces to the air or external/open environment in a community or a village. A village or community was regarded as ODF if; no visible signs of human excreta within the community (this means a complete absence of exposed faecal matter that can be accessed by houseflies, whether in toilet facilities, chamber pots, surrounding bushes/shrubs or refuse dumps; all households have access to a latrine which does not facilitate faecal-oral transmission; the squat hole is covered; pit latrine has a slab; the pit latrine floor is free of faeces and urine; latrine has a superstructure that provides privacy; all households have a hand-washing facility near the latrine; pit latrine is in use and lastly there is evidence of soap/ash and water. A community/village within the project sites was counted only if it has done an ODF self-assessment and this has been verified and certified by a third party appointed by MoH.

CHVs Self-reported Achievements:

- Household latrines are cleaner and more user-friendly
- More people now use latrines
- Number of latrines has reached almost 100 percent in some villages
- Latrine lids/covers are generally present
- There is a hand-washing station and soap near the latrine
- More people are effectively washing hands after defecation
- 10 villages have been declared ODF
- Nearly all households have a latrine

Of the 16 villages triggered through CLTS, 10 had been certified ODF at the time of this evaluation. The project used CLTS as the principle approach to achieve its sanitation objectives, with the aim of changing hygiene practices toward open defecation free villages. Originally the project's target was to trigger 10 villages and support them to ODF

status. However, additional 6 villages were added following high demand from the community.

Of the 10 ODF villages 8 had celebrated the ODF status. The project was in the process of erecting signposts at the entry and exit points of the 10 ODF villages. It was reported that the signpost had a ripple effect, with leaders from adjacent villages visiting KRCS office to inquire on how their villages could be included. In addition, as a result of the project, some villages self-triggered which shows an indication of a spill over effect as a result of the project.

An additional 3 villages had raised the ODF claim at the time of the ETE. Overall, the number that was triggered was small compared with the total number of villages (128) in the project area. Resource limitation and slowness of behaviours change were cited as reasons for lower coverage by CLTS initiative. It was found that even the 16 target villages overstressed the project resources. However, some OD was observed in ODF villages (e.g. Tumoi village), indicating the probability of the community sliding back. However, in FGD the communities attributed this to 'outsiders' or 'drunkards' and said that the 'crimes' were committed at night.

The CLTS approach encouraged households to use local materials and skills to construct latrine and to upgrade latrines according to their ability. The project adopted a zero-subsidy approach. Some challenges were encountered, notably loose soil and rocky geo-formations. Some households were also too vulnerable (e.g. aged people) to construct own latrines. The CLTS principles were well understood and applied by the CHVs and the natural leaders. The 'shaming' of anyone found doing OD was particularly effective. In one village (Kimang'ora) some people had whistles to blow in case they spotted someone doing OD. In another village (Tumoi), villages threatened that anyone found doing OD would be forced to publicly carry the faeces out of the village. However, some reservations were expressed that the 'shaming' does not auger well with Red Cross's principle of 'dignity'.

Output Indicator 1.1: Number of children in schools that have a safe drinking water supply, clean latrines (separate for boys and girls and disabled access), and hand-washing facilities with soap and water.

The project provided improved water sources for a total of 15,390 pupils in 17 schools. This number includes children who benefited from RWHS (5 schools) and from direct connection to the main supply (12 schools). The number beneficiaries increased almost 3 times because the project took advantage of the new water supply to connect water to the additional 12 schools that are located along the new pipeline.

Schools supported with RWHS reported that they had sufficient water for cooking, cleaning and hand-washing. All observed school water systems were functioning on the day of the interview. Some schools reported that rainwater would be depleted before the arrival of the next rain. In such cases children brought water from home. They young children can't access the drinking water and must rely on their teacher who fetches the drinking water for them. For the hand-washing facilities, the taps on the washing facilities are low enough and the young children can easily open and close the taps. In some

schools pupils obtained non-drinking water from natural sources (e.g. Sergutiet and Chepkeswaet).

Table 7: School activities' targets versus achievement

Intervention	Target number of schools	Schools reached
RWHS	5	5
Latrine blocks	5	5
Hand-washing facilities	5	5
Bulk water filters	5	12
Latrines for children living with disabilities	5	5
Health clubs	5	12
Hygiene promotion	10	12
Piped water supply	0	12

The children used plastic cups distributed by Kenya Red Cross for drinking water. Each school had received about 30 cups that pupils used in turn to drink water. It was observed a cup was washed or rinsed before the next pupil used it. Some of the challenges children faced included inadequacy of the cups.

To improve drinking water safety the project provided special filters for bulk water in each of the 12 schools. Drinking water was accessible to pupils at specific times of the day. The filters were usually kept in the office and brought outside to the compound during break and lunch time. The young children cannot access the drinking water. They rely on their teacher who fetches the drinking water for them. Pupils reported that sometimes the filters run out of water and resulted in drinking unsafe water from the main tank. They found suspended particles in the water from the main tank (Kimangora).

In some schools (e.g. Sergutiet) the drinking water was kept in the office. Pupils reported that they were afraid to enter the office and therefore abstained from drinking the water or obtained it from the main tank. In some school (e.g. Cheptuiyet Ngenda) pupils were observed drinking untreated water directly from the main tank. While rain water is generally regarded safe, the process of collecting introduces risks of contamination.

Boys and girls participated almost equally in school WASH activities. Each gender was responsible for cleaning its latrines and refilling water in the hand-washing facilities. Some schools had slight separation in gender roles, where girls washed classrooms and weeded flowers while boys collected rubbish in school compound and cleaned water tanks. No adolescent girls reported missing school during her menstrual period. The health club patron, usually a female, gave the girls monthly lessons on menstrual hygiene and provided sanitary pads for monthly use.

All school heads interviewed in the interventional schools affirmed that the project had improved water supply in their schools. Children were of the same opinion. The improvement included a steady, more reliable supply as well as quality. Schools connected to the main supply reported continuous availability of water where the supply

was intermittent or non-existent before. The bulk water filters in schools with rainwater harvesting systems ensured that children drunk safety water. Schools connected to the main water supply system received centrally treated water.

Output Indicator 1.2: Percentage of people who self-report appropriate hand-washing technique with soap/ash/alternative and water

This indicator was aimed at measuring the number and percentage of people who self-report (and observed) to have soap/ash/alternative and water readily available, and are able to name the correct technique for hand-washing. Only respondents that met the threshold were factored in the analysis. Effective hand-washing technique was described as; hands are made wet then soap lathered/ash applied. Thereafter hands rubbed together under running water and air dried or a dry cloth is used to dry the hands. The technique was termed as ineffective if it skipped any of the steps above.

Based on the ETE findings, 70.6 percent (n=185) of the respondents who answered this question reported effective hand-washing technique as specified above. The limitation of the ETE approach was that it limited the question to only households that had soap and water/ash available. This would thus not be compared with the baseline survey which reported 86.6% coverage. Reports from public health officers, volunteers and the women FGDs, the knowledge on steps of hand washing are about 90%.In the FGDs, a number of women were able to explain the same despite the difficulties in water access and soap availability in a number of households.

' ...We have done so much work with the communities, we have sensitized almost every corner of our villages and knowledge on how to wash hands is really high. You must have observed from the Community FGDs how well one participant was describing the steps. To me knowledge on appropriate hand washing is above 90%...'

Output Indicator 1.3: Percentage of people with correct knowledge of causes and prevention of diarrhoeal

Individuals with the correct knowledge on the causes and prevention of diarrhoea are more likely to adopt good WASH behaviours to prevent diarrhoea. Diarrhoea Infection is spread through faecal contaminated food or drinking-water, or from person to person as a result of poor hygiene. A significant proportion of diarrhoeal disease can be prevented through safe drinking-water and adequate sanitation.

Correct causes of diarrhoea were categorised as; eating with dirty fingers, contaminated fluids, dirty food, flies and open defecation. Prevention of diarrhoea was categorised as; maintaining hand-washing with soap, using a hygienic or clean toilet, drinking safe water, preparing meals well and not eating contaminated food and drinks. The ETE analysis focused on those caregivers or household heads who self-reported causes of diarrhoea (Faecal oral transmission routes: fluids, food, fingers) and at least one correct prevention method.

Based on the ETE findings, 88.7 percent (n=774) reported one correct cause involving faecal oral contamination (fluids, food, fingers) with at least one correct method of prevention. This is a significant increase as compared to the baseline 64.0 percent (95%

CI = 59.1%, 68.5%) and mid-term review 70.3%(95% CI = 67.1%, 74.4%).In addition, from the findings, most (45.0%) respondents reported dirty food as a main cause of diarrhoea and preparing meals well (clean) as its prevention method. 35.9 percent (n=313) were conversant with contaminated fluids as a major for diarrhoea and drinking safe water as a prevention method.

Table 8: Diarrhoea causes and prevention

Diarrhoea causes and prevention	n=873	Percent (%)
[1] Eating with dirty fingers/By maintaining hand-washing with soap	298	34.14
[2] Contaminated fluids/By drinking safe water	313	35.85
[3] Dirty food/ By preparing meals well	393	45.02
[4] Flies/ By not eating contaminated food and drinks	20	2.29
[5] Open defecation/ By using a hygienic or clean toilet	151	17.30

Output Indicator 2.1: Number of functional water infrastructure rehabilitated/constructed

Initially, the project had planned to rehabilitate the existing water system in Sigor. However, based on the Environmental and Social Impact Assessment conducted by KRCS and the county government through an external consultant (Peng Ltd), the existing water systems that was pumping water to Sigor town and Sigor tank had dilapidated piping systems with water leakage and only serving 10% of the total population. The system could only supply 1,200m³/day against an estimated demand of 1,655m³/day¹⁹. Frequent power blackout before the project affected the pumping of the water and frequent equipment failure were also reported. Based on the analysis, the cost for rehabilitation of the existing systems was found to be high and the results would have not lasted long and this would have affected sustainability hence a new systems with a high target reach was proposed.

The project constructed one main water project – the Sigor Water Project. Other infrastructures were the 5 rainwater harvesting systems done in 5 schools. The water intake point is relocated 13 km above the initial intake and 1.2 Km from the treatment plant. Water moved by gravity from Nyangores River a tributary of Mara to Sigor water tank, Lelaitich water tank, and Kipkeigei water tank. The Sigor water tank mainly served community members in the upper areas (Zone 1) while Kipkeigei tank and Lelaitich tank served those on the lower areas (Zone 2).

Upper Zone 1: Water (30%) is pumped from an abstraction point on the Sigor water supply gravity trunk main to Sigor water tank. These tank return supply water to Communities residing in Tumoi, Sugurmerga, Sigor and parts of Areiyet sub location. At the abstraction point, the pumping is at a reduced head and therefore saves on energy costs.

Lower Zone 2: Comprises of the area served by gravity directly from the new intake upstream of the existing Chebara Irrigation scheme intake weir. This enables direct gravity supply to existing tanks at Kipkeigeii and Lelaitich and subsequently to the areas under

¹⁹ Future (2036) has been projected to be 3088.7m³/ - EIA Report (Peng Limited)

command of these tanks. Pumping is eliminated on this supply concept. This flow constitutes 70% of the treated water. Based on this, unit water production costs is low hence making the supply more affordable to most consumers in the programme areas; Kaboson, Nogirwet, Chepkosa, Kipkeigeii, Lugumek, Chebunyo, Sigor, Lelaitich and Kapsabul sub locations.

All constructed school water systems were functioning at the time of the evaluation. The Sigor Water Project was also functional, having just been commissioned. From the community perspective, 98.9 percent of the main water sources were reportedly functional. As reported earlier (outcome indicator 1.1), the water infrastructure contributed immensely to the targeted community where 90.9 percent (56,260 people) reported to be accessing improved drinking water source.

Output Indicator 2.2: Number of schools with safe drinking water supply

A total 17 schools had safe drinking water supply from this project –5 from the rainwater harvesting systems and 12 through the piped water scheme. All 5 RWHS were delivered as planned. The project took advantage of the extended water pipeline to connect additional 12 schools.

In some instances community and the schoolchildren shared the school's water point. This was acceptable since the catchment communities 'owned' the schools and hence the water points. However, sharing depleted the rainwater faster and children resulted to drinking water from alternative sources.

Output Indicator 3.1: Percentage of target households with latrines with hand-washing facilities

As highlighted in outcome indicator 1.3, basic latrine with this regards was described as those that have a squat hole covered, have a slab and water seal, floor free from faeces and urine and have a super structure that provides privacy. Further, flush/pour flush to – piped sewer system, septic tank, pit latrine or Ventilated Improved Pit (VIP) latrine or Pit latrine with slab or composting toilet were considered as improved. Unacceptable latrines were considered as; Pit latrines without a slab or platform, hanging latrines and bucket latrines. In addition, a hand-washing facility was defined as a permanent or an improved device (tap, leaky tin or tippy tap) that holds water for washing hands that is located near latrines. Availability of soap/ash/alternative was not included as a prerequisite in calculating the findings for this indicator.

Of the 82% of households that reported to own a latrine that met the threshold, the ETE sought to understand whether near basic latrine there was an erected hand-washing point. Hand-washing facility was defined as tap, leaky tin or tippy tap that holds water for hand-washing that is located near a basic latrine. 14.0% of the households were reported and observed to have a water facility next to their basic latrines. These findings suggested lack of improvement as compared to the baseline 15.2 percent (95% CI= 11.8%, 18.6%) and midterm 14.5 percent (95% CI= 12.1%, 17.1%).

The culture of using the home-made hand-washing facilities (tippy taps and leaky tins) requires a longer time to be entrenched. It was noted that as soon as follow up by CHVs stopped, the numbers dwindled. To ensure availability of flowing water, the project

introduced the 'tippy tins' and 'leaky tins.' In all cases where the HWF existed, they were strategically located next to the latrine. All respondents indicated that they had adopted the technology after learning about it from KRCS/county health workers. 'Tippy taps' were preferred over the 'leaky tins'. They were less likely to introduce infection because the user does not touch the water with the potentially dirty fingers. However, villagers found this option more complicated to use and maintain. Both technologies used locally available materials and skills. Having to fill the tins with water regularly required a commitment that was not universally achieved. Moreover, a number of observed tins were faulty and the owners had not taken trouble to repair or replace them.

Output Indicator 3.2: Number of schools with latrines with hand-washing facilities (separate for boys and girls and disabled access)

There were 5 schools supported with construction of latrines, complete with hand-washing facilities. Each of the blocks had one unit for physically challenged boys and girls. The calculated average ratios of pupil to latrine were 1:31 for boys and 1:33 for girls against the MoH recommended ratios of 1:30 for boys and 1:25 for girls were boys' urinals exist. Given that boys were provided with urinals in addition to the latrines, the provided units tended to favour boys over girls. The hand-washing facilities provided in schools comprised a 100 litre container with a tap and means of removing waste water. Each school had 2 such containers – one for boys and one for boys. The facilities were mobile and could be stored securely when not in use. In all observed schools had received the HWF, and the facilities were placed strategically next to latrines. However, a number of them were not working properly due to minor breakages (e.g. Kamangora and Chepkeswaet schools).

The facilities are hygienically managed by pupils through the health clubs. It was found that the club patrons facilitate the allocation of duties to pupils in the upper classes (4-8). Such duties included cleaning the latrines and refilling the water containers for hand-washing. The BOMs were responsible for minor repairs and provision of toiletries. However, schools did not have capacity to expand or replicate the service level made available through the project.

Output Indicator 4.1: Number of water points with functional water management structures created or strengthened (e.g. in Kenya water points set up in the water system with associated vendors/kiosks, which are the service delivery part of the water company)

The project facilitated the functionality of one water facility – BOMWASCO. Through the company the project introduced 38 new kiosks. Of these 34 were functional and each had an operator. One of the outstanding activities were the commissioning of the remaining 4 kiosks by appointing operators.

Output Indicator 4.2: Number of people who participate in training on governance, and/or management of physical water structures, and or advocacy to local government (disaggregated by gender)

To support the sustainability of the water infrastructure, the programme intensified the capacity building of the company to improve management skills of the staff to enhance the efficiency of the company in service delivery to meet its objectives. Four types of trainings were planned to be undertaken within the reporting period targeting 90 staff as outlined below;

28(8 female & 20 male) BWC staff were trained in Effective Management & Supervisory skills on November 2016 for 2 days. This training targeted, the Senior Managers, Water Supply Coordinator, Supervisors & Support department staff.

28 (7 female & 21 male) BWC staff were trained in Result Based Monitoring and Evaluation on March 2017 for 2 days. The same category of staff was targeted to enhance their capacity to develop monitoring systems, setting targets for all the staff to effectively meet the objectives of the Company in service delivery.

To ensure that the department of water services design and implement water supply projects that are sustainable, 25(7 female & 19 male) CGB water services went on an exchange visit to various well performing water supply projects to learn the best practices in Embu & Meru Counties on March 2017.

26 (6 female & 20 male) CGB Water Services staff were trained in Effective Project Management Module 1,2,3,4 & 5) which was conducted in 2 parts for a total of 5 days. This was to prepare staff to develop projects that are sustainable at the field level and also support the company staff to manage the water supply project in 5 Sub Counties within the County. Part one of the training was conducted for 3 days on March 2017 and the last part was conducted on May 2017 for 2 days. A total of 107 staff (27 female & 80 male) were trained surpassing the annual target.

Output Indicator 4.3: Number of health clubs formed in schools

Twelve (12s) school health clubs were formed against a target of 10. The objective was to inculcate hygienic behaviours among pupils and to ensure that latrines and hand-washing facilities used properly and maintained. The project addressed this objective through formation of school health clubs and sensitizing the BOM on its role in supporting school hygiene. Club membership ranged from 20 to 60 pupils. Club members were responsible for such activities as refilling the hand-washing facilities and demonstrations on cleaning of the toilets.

Based on the FGDs with children, the clubs were working effectively. Interviewed pupils indicated that they had received hygiene messages and demonstrations on proper latrine use and care from club members. Further, it was found that the project trained patrons, who promoted all domains of hygiene – personal hygiene, hand-washing, menstrual hygiene management, proper latrine use and care and drinking water safety.

There was improved level of knowledge about hand-washing and personal hygiene. The evaluation observed that pupils knew how to wash hands effectively. Water for hand-washing was generally available at the hand-washing stations. However, lack of soap was a common problem and pupils resorted to the use of ash. Ash, but no soap, was

observed in several schools (e.g. Kamogoso and Kimangora). Other schools lacked both soap and ash (e.g. Sergutiet).

Evidence from FGDs showed that knowledge acquired at school was passed to members of the family in the community. According to the interviewed parents, children advocated for household rubbish pits; washing of vegetables and fruits; availability of latrines and avoidance of OD. Overall, the pupils participating in this project and were effective change agents. Some parents reported commitment in purchasing sanitary towels for their girls due to increased knowledge – something that was not there before.

“Our children talk to us about sound hygiene and insist that we use latrines all the time and wash hands after,”

~m –parent, Kimang'ora village~

3.5 Efficiency

3.5.1 Cost Efficiency

Value for Money was calculated based on the KRCS dashboard for VfM calculation. Key variables that were considered in the analysis include; the project achievement against the project target – this was in terms of the total numbers of people reached by the project; expenditure against achievement and over-spend/under-spend within the project period.

The cost for constructing the Sigor Water System (only) was estimated to be Ksh 201,510,049 (USD 2,015,100). Considering the cost, and total number of people (56,260 people) reached with the supply, the project spent Ksh 3,581 (USD 35) per beneficiary. Based on this, and the long lasting impact (including short term) of the system, it can be concluded that the project achieved high value for money (Score of 88.0%); this is also based on the facility contribution to lowering diarrhoea prevalence rate in Bomet County among other factors. By 2036, the system is projected to benefit 123,501 people. It should be noted that the County Government of Bomet contributed Ksh 100,000,000 (USD 1,000,000) and the rest were contributed by Kenya Red Cross through its donors. The act of the county government to invest back to the community is a huge investment to the people.

3.5.2 Timeliness of delivery

All software components of the project had been completed at the time of ETE. Equally the school water supply infrastructures were provided within the project lifespan. However, the main water supply system was not fully functional at the time of the evaluation. The initial plan was to provide water through several, stand-alone project. The change in plans to make a major project resulted in delays in realising the water supply outputs – including slow GOK procurement procedures; production of new

designs; and negotiations for purchase of land required for physical works. Further delays arose from delayed fund release from the CGB.

Given the socio-economic value of the new project, the delay was justified. Construction alone took 1½ years. Connections to kiosks and households were still ongoing at the time of the evaluation. Operation and maintenance works were also underway to stabilise the system. It was estimated that these activities would be completed by December 2017 – 3-months after the official end of the project. From the KRCS side, the project ended on time. From the CGB, this was a continuous activity with no definite end-time. Official hand-over of the project was expected to take place in March 2018.

3.5.3 Water supply

a) Community

Some external factors affected how the project performed. These included too much rains that delayed construction works; delay in transfer of funds from the county; high expectation from the community; slow GOK procedure in procurement; and non-commitment and often reluctant CGB staff. Compensation of the people affected by the Sigor Water Project also slowed the project.

The project constructed 38 kiosks – 2 more than in the original plan. The additional 2 kiosks became necessary in order to serve the communities leaving near the intake. The kiosks are pro-poor and serve households that are not able to make household connections. All kiosks were constructed along the new pipeline. Water at the kiosk retailed at Ksh.2 per 20l container in conformity with the national government guidelines. However, it was found that some kiosk operators charged Ksh5 and reported that they did this according to the BOMWASCO's recommendation. To qualify as a kiosk operator one must have an alternative source of income next to the kiosk. This is because kiosks are meant to be sustainable and not profitable.

However, only 34 out of the 38 kiosks were functional at time of ETE. Physically, all kiosks were completed. The project was in the process of appointing kiosks suitable operators. Further, it was found that the rate of household connections to the BOMWASCO supply was low. The company was promoting household connections because of obvious economic advantages. Metered household connections increase accountability for produced water and promote per capita consumption, which in turn promotes health and water business.

b) Schools

All WASH in schools (WinS) components were completed in time and without any remarkable hindrance. The project also saved some resources to extend services beyond the original plan. The WinS intervention covered 12 public primary schools – 2 more than initially planned. Moreover, the project supplied water to 12 additional schools in the vicinity of the new pipeline. The newly included schools had a combined population of 10,233 pupils. These findings demonstrate that the project made efficient use of the available resources.

3.5.4 Sanitation

The project targeted 10 villages for CLTS triggering but ended up triggering 16 villages and expanded the health messages awareness to 112 more villages. However, it was noted that behaviour change is a slow process and often requires more than a few months of effort. Consequently, it took more than one year to have a village raising ODF claim. At the end, the community sanitation plans were completed and surpassed within the agreed timeline.

3.6 Impact

3.6.1 Reduction of diarrhoeas for U5

Overall, the project aimed to contribute to the reduction of diarrhoeas through an improvement of water supply and hygiene practices. It was planned that this health impact would be measured through the trends of the prevalence of diarrhoeal diseases among children under five years (U5). According to this assessment, the proportion of U5 affected by diarrhoeal diseases (based on two week recall period) was 14.7 percent at baseline. This declined to 10.5 percent at mid-term review and 6.7 percent at ETE. In this respect, the project surpassed its target of 6.6 percent. Reduction of the diarrhoeal diseases among the children below five has direct impact on household and community economic well-being. It implies that resources (time and money) that should have gone to medical care are freed for potential improvement of the community's welfare. Reduction in diarrhoeal also leads to reduction in child-stunting and hence better academic performance.

3.6.2 Water supply

As an attribution to this project, a number of positive changes were experienced at BOMWASCO. Household connections increased from 900 to 1,014, representing 11 percent rise. This resulted in corresponding increase in collected revenue and, at the households, an increase in water consumption for health. The project introduced mobile meter reading, which made the exercise more efficient and further contributed to revenue collection. Non-revenue water (NRW) was as high as 90% at baseline and was reduced to about 60 percent. The project decommissioned the old water treatment plant and replaced it with a new one. Consequently, the safety of the supplied water improved, and this contributed to the declining cases of diarrhoeas. Further, the project enhanced BOMWASCO's staff mobility of staff by donating 2 motorcycles as well as relevant tools and equipment.

Household connections that existed before the project provided intermittent water supply to only about 5,000 people because the system was dilapidated. The revamped

Voices of the Children

During the FGDs children made the following recommendations:

- a) Provide tissue paper in the latrines
- b) Provide more scrubbing brushes and brooms for cleaning the latrines
- c) The girls requested for provision of sanitary bins (parents buying as well)
- d) Provide detergents to clean the latrine floors
- e) Construct permanent latrines (where the project did not provide)
- f) Repair/replace latrines that are not functional (not project provided)
- g) Provide hand-washing facility for teachers
- h) Increase cups for drinking water to match enrolment
- i) Increase the frequency of club meetings to twice a week
- j) Ensure constant supply of soap for hand-washing
- k) Repair the hand-washing facilities that are not functional
- l) Mark all latrine block appropriately: "boys" and "girls"
- m) Look for ways of ensuring that outsiders do not misuse school latrines (e.g. padlocks or fences)
- n) Place all drinking water filters outstand the staffroom to increase access by pupils

supply system was supplying water to 56,260 people through household connections. However, some connections were commercial and supplied water to more people than the average household connection.

3.6.3 Sanitation

The CLTS efforts resulted in a number of positive changes in the target households. The ETE found that several households had constructed improved sanitation facilities; introduced an improvised hand-washing facility; sited their latrines more appropriately; and were using latrine as intended and effectively washing hands after defecation.

“This project has changed our people. Before this project children used to defecate anywhere ... just around the house or in the nearest bush. No one does open defecation here anymore”

~ CHV, Tumoi ~

Quality WASH facilities in school, coupled with sound hygiene practices, have intermediate results including reduced cases of enteric infections. According to head teachers the facilities also contributed to increased enrolment and pupil retention. The presence of the special facilities attracted pupils living with disabilities to a school (e.g. Sergutiet). Such pupils would have failed to attend school at all, since they could not use normal WASH facilities. Teachers reported that WinS interventions reduced absenteeism, particularly for girls during their menstruation days, and increased concentration. Some parents were also reported to be committed in buying sanitary pads for their girls. This was a success considering the previous situation where girls would use alternatives (polythene papers, mattresses etc.). Below are quotes from a recorded interview with an education officer at Chepalungu sub-county:

““The project has done for us in one year what we could not have done for ourselves in 20 years. Communities lack resources and the level of poverty is high.”

“The project made tangible contribution to the quality of education – enrolment, attendance and retention – and particularly for girls.”

“We found the KRCS staff humble, approachable and committed.”

The children were generally happy with the latrine facilities provided by the project. They liked latrines because they found them accessible, clean, and provided privacy. They found the latrines and urinals easy to clean, hence reducing unpleasant smell and ungainly sites. No pupil reported queuing to use latrine, something they were used to before the project. Pupils liked the presence of hand-washing facilities next to latrines.

The pupils found WASH facilities in school better and convenient than those at home. They also reported that school latrines were cleaner and more convenient than those at home. Water shortage at home was a common problem that discouraged hygiene practices. Equally, pupils found school hand-washing facility more convenient than the

improvised ones used at home. Further, a sizeable number reported that they lacked a hand-washing facility at home.

3.6.4 Hygiene

The project intervened effectively to control the 2015 cholera outbreak in Chepalungu. No outbreaks of cholera were since reported. As noted earlier, evidence showed that the prevalence of other waterborne diseases, particularly diarrhoeas, was on the decline.

No pupils reported suffering any disease as a result of drinking water in school. Moreover, no pupils were reported to have missed school due to WASH related challenges in the previous one year. From the pupils' voices, WinS interventions had made an impact in their lives. Pupils reported that presence and use of hand-washing facilities had reduced diseases transmissions. They found the new latrines easy to clean. Presence of vent pipes and better slab hygiene reduced bad smell and flies, making the school environment more pupil-friendly. The reduction in diseases led to a reduction in absenteeism from school. KRCS also provided shoes to the children and this contributed to reduction in jigger infestation that was initially common in the area.

Menstrual Hygiene Management was a key focus of the project too. The girls were engaged in sensitization sessions on menstruation to build their capacity on personal hygiene during menstruation. The availability of latrine dedicated to girls enabled them to privately access environment that gave them safety when they needed a change of pads. KRCS provided one stop shops for both disposable and reusable sanitary towels which were accessed by the pupils and women from the neighbouring community. The boys were equally sensitised on menstruation so they could understand and support girls better without contributing to stigma.

3.7 Sustainability

3.7.1 Water Supply

BOMWASCO is a new utility established in 2014 and wholly owned by the County Government of Bomet. The company supplies water both in urban and rural areas. It was established under and governed by the principles of the Water Act (2002). The company operates under legal and institutional frameworks that enhance sustainability of its services. BOMWASCO has benefited from other external donors, including USAID. This project built the company's capacity for better performance as follows:

- New drinking water quality lab, complete with equipment and consumables, established at Sigor
- Benchmarking visits to older utilities (Eldowas, Nyewasco, and Emwasco)
- Technical staff trained on O & M
- The O & M team provided with the basic tools of trade
- Management trained on supervision and customer care
- Board members trained on transparency and risk management
- Mobile meter readers application was introduced

County government, stakeholders and community engagement in all the stages of works, posting of CGB staff to work in the project, consideration of sustainability elements in design of water & sanitation facilities, handing over of the facilities to a professional company with a capacity to manage the system, involvement of Board of Management for the schools and parents in school health programme, engaging community units in CLTS in villages.

At the community level, the ownership of the project by BOMWASCO is good. The company runs the project on the principles of private management and public supply. The Bomet County Government, which owns the company, contributed both money (33% of the total) and personnel to the project. The cost-recovery mechanism is in place. During the presentation of the preliminary designs, the community gave their comments which were incorporated in the final design. The project established a feedback mechanism for the community. They also proved approval of the final designs after presentation by the consulting engineers.

To sustain the new water system, the project built the capacities of BOMWASCO staff based on relevant skills for various cadres. The consumer communities were sensitized about the project through public meetings. Further, the communities were represented in monthly meetings of the Water Sector Committee. Every village sent 2 representatives (male and female) to the committee. The committee served as the link between the County Water Office and the community. The county uses this platform to educate the community on its policies and plans. Community representatives use it to advocate for their constituents' needs and grievances.

In schools, the government provides some funds (Ksh.2, 940) for general purposes, which include fixing minor problems in the water and sanitation systems. Interviewed members of the BOM reported that the amount is too small compared to the problems schools face. The government does not provide anything to cater for general hygiene needs (detergents, soap, brooms etc.). Such needs were met by BOM in the schools where BOM are better organised.

It was reported that the school hand-washing facilities were not robust enough to withstand the pressure of being used by many children and therefore tended to break easily.

It was found that some BOMs were actively supporting sustainability of school hygiene practices. Such BOMs had some arrangements to provide anal cleaning materials (toilet papers) either collectively or through individual pupils as well as soap for hand-washing. In some school the BOM supplemented the government supplied sanitary towels for menstruating girls. Further, they provided brooms and other items needed to keep the schools clean.

In some schools parents contributed Ksh.300 per term for soap and tissue. However, not every parent could afford this amount. The national government provides some sanitary pads for girls but the supply did not cover every needy girl throughout the year. This project, together with parents and other donors, supplemented the effort. Availability of pads was lauded as effective in reduction of girls' absenteeism and dropout rates.

Disposal of used pads, however, presented some challenge. Most girls disposed the pads in the pit latrine. Teachers reported that the practice reduced the latrine's lifespan. Burning of the pads was generally unacceptable, even if incinerators were provided. The prevailing belief among Kipsigis is that burning a pads soaked with the girl's blood would render the girl infertile. The project-supported schools use the decommissioned pit latrines as disposal sites.

3.7.2 Sanitation

At the community level, two hardware shops in Bomet town are stocked with sanitation products (san-plats) for upgrading household latrines. The traders reported low uptake of the items. The project supported some social marketing days aimed at creating awareness on the available latrine improvement options.

It was found that sanitation promotion is a core mandate of the county and sub-county public health offices. However, the county officers often lacked motivation, supervision and resources needed to effectively deliver on this mandate. Based on the county policy, this project did not provided any allowances to the attached SCPHO. Some agencies provided allowances despite the county policy. Consequently, the officers accorded the project low priority when competing activities arose. The CHVs are attached to specific community health units are and usually available to support appropriate interventions.

The CHVs are trained, experienced and exist within the county community health structure. However, it was found that their level of motivation varies with projects as they were not supported on regular basis.

The project experienced high staff turnover. There lacked a dedicated WASH coordinator. The holder of the county WASH office was replaced 3 times within the project period. The replaced officers include those that were trained through the project funds. The replacement therefore resulted to loss of project memory as the new officers did not understand the projects standard operating procedures. The CHVs, who had been with the project from the beginning, understood the project better than their seniors – the SCPHOs. Consequently, the new SCPHOs felt side-lined by the project and their work given to CHVs.

3.7.3 Hygiene

The previous county government under which the project was implemented provided fewer resources for public health activities compared to medical services. They public health docket was lumped together with lands ministry. One SCPHO felt that KRCS side-lined the PHO and did not involves the officers adequately. He gave the example for form A, which was supposed to be signed by SCPHOs but was signed by CHVs during the project. With the project support, the county government embraced public health and provided much support to its implementation.

4.1 Community Participation and Accountability

KRCS reported to have introduced Accountability to communities' approaches during implementation of this project. A number of Complaints and feedback mechanisms have been standardised at different levels of operation. Other minimum standards under Accountability to communities at the programmes level include community participation, M&E and learning and transparent communication. Respondents were asked if they were involved in any way in the project. 70.7 percent reported to have been involved however, majority mentioned to have been involved in community needs assessments (23.8%). Figure 3 on below explains this in details

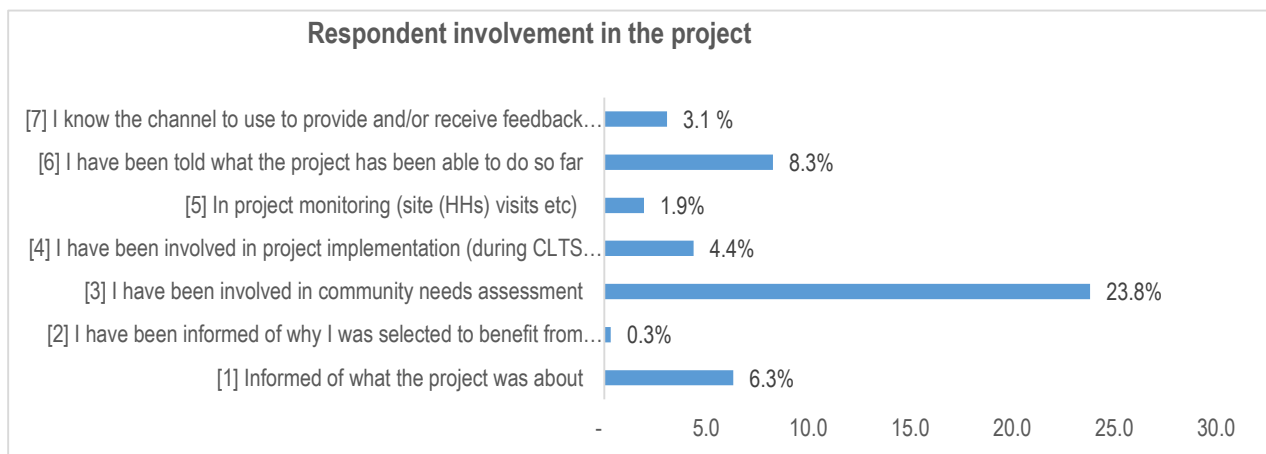


Figure 3: Respondents involvement in the project

ETE also sought to understand whether there was a time the respondent had raised feedback or complaints to the project. 39.4 percent reported to have had feedback/complaint to the project at some point. Majority (79.4%) had feedback around commending the project for its good work. Most (78.8%) of the complaints/feedback were delivered through the community health volunteers. Others include whenever the project staff was around the community, (13.1%). 77.0 percent of the respondents confirmed that whenever they shared their feedback/complaint, the project would respond. Despite this, of those who did not share their feedback/complaint about the project, 1 percent reported not to have known how/whom to share with.

Direct community participation was particularly evident in the community-led total sanitation (CLTS) process, where communities were directly involved in construction or upgrading of their household latrines. In support of the process, the community recruited, trained and empowered natural leaders from the target communities. Direct community contributions were made in this respect and covered construction materials, labour, time, skills and money. Community health volunteers were members of the communities in

which they served. This means that skills for sanitation and hygiene promotion remained within the communities. Further, BOMWASCO's social policy directly engaged local women group and provided them with soft loans to connect water supply to their homes.

The community understood 'participation' in terms of paid-casual labour for physical works during the construction of the pipeline. There were many young people who wished to be engaged this way but the project absolved only a small number. Some of the complaints reported about the project were about the people who felt excluded in the manual labour.

4.2 Organization Learning and Best Practice

The ETE identified a number of lessons and best practices as enumerated below. For the purpose of this ETE, 'lessons' were defined as 'what could have been done better' and 'best practices' as 'what worked exemplarily well.'

4.2.1 Lessons Learnt

- a) The early childhood development (ECD) centres were constructed within the premises of public schools. The centres catered for the more vulnerable age group – generally children aged below 5 years. While the public education system is a national function, the ECDs are devolved to counties. However, it was found that counties focused only on ECD teachers and classrooms as reported by one Key informant. For all other needs, the ECDS depended on the 'mother' schools. By design, this project's WASH intervention did take into consideration this group.
- b) Availability of alternative sources of water, such as household rainwater harvesting, can cripple the operation and sustainability of kiosks.
- c) In the face of poverty, illegal connections through corrupt deals can be very appealing and are potential problem to the sustainability of the kiosks. Such practices were reported to encroach into the new water scheme.
- d) Based on the findings, it is possible to work with the county government and shift their way of thinking with regards to public health. In the past, the focus was given to hardware components –things that could sell politically. The project managed to influence the government to shift towards hygiene and sanitation – this had a huge impact since some of the parents were reported to be buying sanitary pads for their girls.
- e) Behaviour change is a process that requires continuous monitoring for a long period of time of which the 3 years for the project was not adequate. There were a number of aspects of the project that needed to be considered in the risk analysis for mitigation e.g. timely remission of funds, soil formation suitability for sinking of latrines, adequate allocation for Menstrual hygiene,
- f) Deployment of dedicated county government staff to avoid dealing with transfers during implementation.

- g) With regards to monitoring and evaluation, there is need to break down compound indicators in future (e.g. Outcome Indicator 1.3) into sub-indicators in order to measure progress more effectively.

4.2.2 Good practices

- a) The kiosk owners are land-owners, such that kiosks business could be attended to as one of the household chores, rather than a separate business. This fact enhances sustainability of the system even when the profitability of the enterprise is small.
- b) Despite the need to ensure financial sustainability, BOMWASCO nevertheless introduced two main measures to ensure that the less fortunate members of the community get access to improved water supply. One, the company was implementing its 'Social Connection Policy' which helped the needy households or communities with soft loans to connect to the main supply. The funds were provided by CGB and targeted women.
- c) Well structure and properly implemented 'software' activities create demand for hardware activities as displayed across all the project components.
- d) The project was conscious about gender and inclusion issues. For example, separate latrines were provided for boys and girls, in addition to 2 latrine units separate for the physically challenged boys and girls.
- e) Adoption of practical teaching is more effective in moving the community from having the knowledge to practicing.
- f) The project team learned about the value of avoiding the assumption that people have basic knowledge. This ensured that all the learning process incorporate practical lessons.
- g) It was learned that impacting community with effective knowledge can make them initiate development on their own without much support.
- h) Continuous stakeholders' engagement was found critical to enhanced smoothness of implementation and sustainability of the project.
- i) An improvement of volunteers' efficiency on reporting hygiene and sanitation activities accurately and regular feedback to volunteers made them to understand the importance of collecting and submitting accurate reports on hygiene activities undertaken during their weekly visits to households.

4.3 Partnerships, stakeholder management and integration

The project's primary partnership was between the Kenya Red Cross and the County Government of Bomet. The quality of implementation was further enhanced by the active participation of the British Red Cross. Equally some non-state actors, including private companies and businesses, were included. From the ETE findings, there existed a very strong partnership between KRCS and the County government. This is evident based on the amount of funds that was injected by the county government into this project where KRCS was given the responsibility to manage and improve the water system in the county. No cases of mistrust or corruption were reported.

A number of activities were done jointly by the principle partners. For example, the sensitisation team was made up of WASH software staff from KRCS, Sub-county Water Officer, Bomet Water Company (BWC) staff and area PHOs. It was also evident that the project involved a broad array of stakeholders. The project coordinated partners in celebrating international days. This is illustrated by 2017 Hand-washing Day in which participants included schools, Dig Deep, Tenwek Community and Department of health services and education. Equally, the World Water day was graced by Governor of Bomet County and attended by partners like Dig Deep, Tenwek, and department of water, public health, P&G, Hydotech Hardware and Chelal Hardware as well as suppliers of water purification chemicals and sanitation products.

It was found that Software Manager and ICHA Policy Director visited the WASH project in Bomet and held meeting with CEC health and County PHO to iron out the CLTS certification problem affecting the certification of the Villages that have been declared ODF. ICHA Director of Policy held discussion with Bomet Water Company Manager on Company's policies as part of the consultancy on the research on water service providers' engagement to improve KRCS future programming. Price Water Coopers Consulting firm were contracted to conduct due diligence on BIDP programme on matters relating to the management of the programme. The consultant presented the report to both partners in Nairobi at KRCS Headquarter. The KRCS Secretary General and KRCS WASH Adviser visited Bomet County and made a courtesy call to Governor of Bomet and County Commissioner. They also visited the Sigor water supply project to monitor the progress of work and gave feedback on the works which needed to be fast tracked.

SECTION 4: CONCLUSIONS AND RECOMMENDATIONS

4.4 Conclusions

Based on the ETE's findings, this was a well-designed and professionally delivered project. The overall project performance surpassed the initial expectations. All proposed indicator values were achieved or surpassed, except 'the effective hand-washing technique' where correct responses fell to 70.6 percent from 86.9 percent at baseline and 88.1 percent at MTR. Some challenges arose but did not have significant impact on the project delivery. These included delays in the release of funds from the county; lack of commitment by some county officers; the county government's low prioritization of hygiene and sanitation over water; and the initial community resistance to CLTS.

The evaluation concludes that water supply intervention will be sustained and improved through BOMWASCO. However, the momentum created around water supply, sanitation and hygiene interventions will slow and possibly fade if resources are not availed to conduct follow-ups. Further, it is concluded that the CGB did not fully appreciate the value of better community hygiene. Water supply interventions appeared more visible

and could be used to make a political statement. Consequently, CGB was more willing to commit resources to water interventions.

With a main office and a sub-office in the county, the Kenya Red Cross is a permanent resident of Bomet County. As such, KRCS is a key stakeholder and the organisation has demonstrated this fact by asserting its agendas in the county's development process. The newfound KRCS-CGB working relationship has resulted in a measure of success. However, decision-makers at the county are most politically elected or appointed, meaning that KRCS-CGB working relationship must be flexible enough to take advantage of the political dynamics.

4.5 Recommendations

Programming

- a) KRCS should engage the newly-appointed County Executive Cabinet (CEC) to develop follow-up activities. The new county (the governor) has already extended its willingness to collaborate more with KRCS on similar projects in the county. To tap on this good will and solidify this project's gains, KRCS should remain active on the ground and in the project for at least one more year.
- b) Future joint-programming should focus on extending water supply to the un-served areas (particularly Bomet central and Bomet east sub-counties) and replicating CLTS in other villages.
- c) With regards to Monitoring and Evaluation, there is need to balance between quantitative and qualitative data in commissioning studies. The consultancy notes that studies have heavily focussed on quantitative in the past while qualitative would be important in telling personal stories and showing change. There is also need to emphasize the complaints and feedback guidelines and frameworks as some community members indicated not be aware of the mechanisms in place.

Water supply

- a) BOMWASCO should study the possibility of solarising the booster station.
- b) KRSC should support BOMWASCO until all kiosks are activated and the new water system stabilised.
- c) KRSC-BOMWASCO should harmonize the retail cost of retail water at the kiosks and clearly communicate this to the consumers.
- d) KRSC should facilitate capacity gap analysis in BOMWASCO with a view to improving service delivery.
- e) KRCS needs to support BOMWASCO to streamline its commercial operations and modernise data management (e.g. introduce mobile billing and payment systems that consumers can query)
- f) BOMWASCO should implement intense PR to demonstrate the value and affordability of its services to potential consumers.
- g) Build the capacity of the newly recruited kiosk operators to improve performance.
- h) Support BOMWASCO to institute a NRW team that will, among other things, monitor and control illegal connections.
- i) Educate consumers of the hidden (health) costs of consuming 'free' water from unimproved sources.

- j) Considering the huge achievement of the water supply system, KRCS should consider working with the new county government in scaling the project in other areas in Bomet County. Further, the same could also be replicated in other counties.

Community sanitation

- a) Harmonise and enforce the county allowance policy for CHVs, such that all actors provide the same amount or all not amount at all.
- b) Lobby for BCG to increase resources (funding, policies and personnel) for sanitation and hygiene promotion.
- c) Extend CLTS to cover more villages, while sustaining follow-ups to ensure that the ODF villages do not backtrack.
- d) Lobby for inclusion of CHVs in county's regular programming as means to sustain the momentum created around improvement of community hygiene. Future interventions should increase latrines for girls where urinals are provided for boys.
- e) The needs of ECD population should be integrated in future WASH interventions, where the centres exist within the target schools.

Hygiene promotion









- a) Promote the tippy-taps rather than the leaky tins as these have more advantages.
- b) Increase coverage of the hygiene messages and maintain reminders until appropriate behaviours are entrenched in the communities
- c) Build capacity of BOM to play a more active role in support of school hygiene.
- d) Use appropriate methods to educate pre-schoolers about proper latrine use and hand-washing
- e) Increase number of hand-washing facilities to match enrolment (e.g. Kipewit)
- f) School administration should ensure that drinking water containers are kept conveniently outside the office
- g) Increase the number of water drinking cups to meet the needs of pupils

REFERENCES

1. WASH in Kenya – Bomet, Annual Project Report, Oct. 2016 – Sept. 2017 (KRCS, 2017)
2. Summary Table of Findings – Logical framework Indicators Baseline, MTR (KRCS, 2016)
3. UK Aid Match Proposal, Water, Sanitation and Hygiene in Kenya and Bangladesh (BRC, 2015)
4. Mid-Term Review, WASH in Kenya Project – Bomet County (KRCS, 2016)
5. Request for Proposals – End Term Evaluation for Bomet WASH Project (KRCS, 2017)
6. Baseline Survey, WASH in Kenya Project – Bomet County (KRCS, 2015)
7. Environmental and Social Impact Assessment (Pleng Limited 2016)

ANNEXES

Annex#1: ETE Tools

-  9. HH Questionnaire.docx
-  1. FGD_CHVs and Community Member
-  2. FGD_Primary School Boys and Gir
-  3. KII_KRCS Project Staffs.docx
-  4. KII_SCPHO.docx
-  5. KII_Water Officer and BWC.do
-  6. KII_Headteacher.docx
-  7. KII_County and Sub County Project !










Annex#2: Sampling Framework

-  1. Sampling Framework.xlsx

Annex#3 HH Survey Data

-  4. Bomet Wash Evaluation Master.xl

Annex#4: KII and FGD Raw Data

-  1. FGD_Kimangora Primary School.docx
-  2. FGD_Sergutiet Primary School.docx
-  3. FGD_Kipewit Primary School.docx
-  4. FGD_Cheptuiyet Ngenda Primary Sch
-  5. FGD_Chepkeswaet Prima
-  6. FGD_Kamogoso Primary School.docx
-  7. KII_Notes_1.docx
-  8. KII_Notes_2.docx
-  3. KII_KRCS Project Staffs.docx