Mission report – Internship on HHWT

Aurelie MOY – December 2016

Inter Aide Sierra Leone

Executive summary

In 2011, Inter Aide Sierra Leone launched a pilot program of Household Water treatment as part of a WASH project in North Bombali district. An internship has been conducted between September 2016 and February 2017 in order to improve the follow-up of the HHWT program with the objective to scale-up its coverage. The main conclusions drawn from this mission are presented in this report, as well as a SWOT¹ analysis of the HHWT approach and a handover with final recommendations to continue developing the HHWT project. The results of the research part of the mission, as well as the methodology used, are more detailed in the report called <u>HHWT – assessment of acceptance</u> <u>and impact</u>. The functioning of bleach communities and bleach storekeepers is also described precisely in the <u>Report</u> <u>on communities' interviews</u> and <u>Report on shops' interviews</u>.

¹ Strength / Weaknesses / Opportunities / Threats analysis

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Glossary

APM	Assistant Program Manager
CHW	Community Health Worker
CLTS	Community Led Total Sanitation
CU5	Children Under Five
DPD	Diethyl-p-Phenylene Diamine
HHWT	Household Water treatment
IA	Inter Aide
FF	Field Facilitator
FRC	Free Residual Chlorine
PHU	Peripheral Health Unit

I] Main conclusions

1. Current status of the HHWT project

In January 2017, **2 technical FF** were dedicated to the HHWT project (Musa Kamara for IA North and James Komba for IA South). The process of recruitment for another FF for IA South was ongoing. **107 communities** were part of the HHWT program in **7 chiefdoms** of Bombali district, representing a bit more than **7,300 people**..



Picture 1 - Musa Kamara (left) and James Komba (right)

1.1 IA North

In January 2017, **96 bleach communities** were supervised by IA North in 7 chiefdoms, representing almost **6,300** people. 16 new communities are currently being enrolled in the strategy, leading to a **total number of 112** communities.

Chiefdom	# of communities	Population
Gbanti Kamaranka	18	1272
Gbendembu Ngowahun	3	154
Magabaimba Nduhahun	21	1019
Sanda Loko	8	385
Sanda Tendaren	23	1744
Sella Limba	22	1626
Tambaka	1	92
Grand Total	96	6292

Table 1 - Repartition of the bleach communities per chiefdom in the North

Current step	# of communities
I. Enrolment of the community in the strategy	16
II. Preparation of the community	7
III. Training	0
IV. Short and medium term follow-up	11
V. Long term follow-up	78
Grand Total	112

Table 2 - Repartition of the bleach communities per step in the North

1.2 IA South

In January 2017, **11 bleach communities** were supervised by IA South in **Gbendembu Ngowahun** chiefdom, representing more than **1,000 people**. 12 new communities are currently being enrolled in the strategy, leading to a **total number of 23 communities**.

Current step	# of communities
I. Enrolment of the community in the strategy	12
II. Preparation of the community	0
III. Training	0
IV. Short and medium term follow-up	0
V. Long term follow-up	11
Grand Total	23

 Table 3 - Repartition of the bleach communities per step in the South

1.3 Geographical sharing between North and South

The geographical sharing between IA North and South for the HHWT project was not clear until recently as **both teams were working in Gbendembu Ngowahun chiefdom**. It led to a misunderstanding concerning 4 communities: Wangay, Manangba, Ngohun and Mamaya. Those communities were bleach communities supervised by IA South, but a construction FF from the North met them and promised them a hand-dug well (the FF would not have noticed that the communities were practising HHWT – or knew it but did not communicate it to the management). In Wangay, which was the best bleach community of the South in terms of acceptance, they began gathering a lot of local material and stopped refilling chlorine, until the misunderstanding was discovered and IA told them that they would not get a well this year. This situation led to a big disappointment and a loss of motivation by the villagers.

In order to avoid this situation in the future, **geographical sharing between North and South within Gbendembu Ngowahun chiefdom has been clarified between the teams of Kamakwie and Makeni**. Also, the decision of building a water well for a bleach community whose population approaches 150 people has been clarified (a community in which HHWT has been introduced and whose population has grown could enter into the construction strategy, but only after 4 to 5 years of practise of HHWT). Finally, the FF have been asked to pay more attention to the assessment of access to water during first contacts and to notice to the management if one possible construction community is practising HHWT.

2. Acceptance of the HHWT program by the communities

In order to assess the acceptance of the HHWT program by the communities, 64 bleach communities have been visited and interviewed, among which 24 communities have been surveyed house by house leading to the interview of 340 pots. The main conclusions are the following:

- 100% of communities accept the program and still practise HHWT many years after training
- 80% of households have treated water at any time (271 out of 340 pots)

Reasons for failure	Number of pots	Frequency (among defaulters)	Type of failure	Recommendations
Pot owner absent or unable to go to the stream	14	20%	Temporary	Local source improvement would facilitate water fetching and encourage people to refill more frequently
Absent during IA's intervention (don't have the material and/or have not been sensitized)	13	19%	Permanent	More emphasize during strategy explanation and follow-up visits on the community's responsibilities
Use private hand-pump nearby ²	12	17%	Permanent	
Chlorinator absent	11	16%	Temporary	More emphasize during training and follow-up visits on the importance to train other people
No time / laziness	6	9%	Temporary	
Wait for everybody	6	9%	Temporary	
Brought treated water to the farm	3	4%	Temporary	
Can't pay / doesn't want to pay	2	2%	Permanent	
Bad taste	1	1%	Permanent	
Other (mental issues)	1	1%	Permanent	
TOTAL	69			

Table 4 - Frequency of each reason for failure and recommendations

• Out of the 80% of pots with treated water, 82% have positive FRC; 18% with 0 FRC but water still safe

² Communities around Kamakwie where private hand-pump well have been constructed most of the time after introduction of HHWT by leaders' families (such as politician) who finance the construction and allow other villagers to pay for the use of it. Limited to a small number of households who can afford it but the other villagers of the communities need HHWT.

3. Impact on health of the HHWT program

House to house surveys have also been conducted in communities to assess the impact of the HHWT program on health. Introduction of HWT enables to drop from a diarrhoea prevalence by CU5³ of 12% to almost 0% and to divide by 2 the mortality rate of CU5. Those figures come from the study of small samples and comprise many biases; they only give global tendencies that may also come from other factors but IA's intervention.

	Initial	Redo
Number of CU5	298	238
Number of CU5 with diarrhoea the day of the visit (according to the MoCU5)	34	1
Prevalence of diarrhoea	12%	Positive but close to 0%
Number of CU5 with diarrhoea the week before the visit (according to the MoCU5)	NA	8
Number of death of CU5 within one year	56	17
Annual mortality rate μ	177‰	69‰
Under Five Mortality Rate	587‰	292‰

 Table 5 - Results of the surveys (introduction of HHWT after latrines construction)

4. Status of the current bleach supply chain

One of the secondary objectives of the internship was to **reinforce the bleach supply chain** in Bombali district. Today:

- All 14 storekeepers are supposed to purchase bleach in the **main reseller Foday & Fofanah Pharmacy** in Makeni
- Delivery of enhanced HHWT promotion tools (chlorine use explanation and bleach storekeepers map) is ongoing
- Main reseller in Makeni has been linked with the **best customer of the bleach factory** in Freetown (selling bleach since 10 years, buying about 100 x 12 bottles per week and selling between 3,500 and 3,700 Le per bottle); current supervision by the field team of the well-functioning of this link of the supply chain
- Syringes supply chain established: Foday linked with suppliers in Makeni so that he has 2 mL syringes available in his pharmacy and local bleach storekeepers can refill easily

Syringes supply chain: the dilemma of 1 or 2 mL

Before 2016: only 1 mL syringes delivered

During 2016: decrease of 1 mL syringes' availability, switch to 2 mL syringes for some communities

	+	-
1 mL	Ease of use by the communities No exception in the dosage: 2 mL (2 times 1 mL) for all communities	Low availability: - some PHUs but not on a regular basis - People's pharmacy in Freetown but only after order and no back-up option
2 mL	High availability: in stock in many pharmacies for other purposes	Exceptions done by some FF in some communities: 1.5 mL instead of 2 mL

→ Definitive switch to 2 mL syringes with particular attention to:

- find a syringe for which the inside part cannot go out of the syringe
- find a syringe with low space between the 2 mL mark and the end of the syringe so that the overdosage is not too strong if chlorinators pull the syringe entirely instead of stopping at the mark
- recommend 2 mL dosage for all communities

³ Children Under 5

• On all storekeepers' cards is indicated the contact of a back-up store in case of issue with the main one





Picture 4 - Bleach storekeepers map

5. Knowledge about Free Residual Chlorine

Some **lab tests** have been conducted and **DPD tests conducted in the communities have been statistically analysed** to try to understand better the different factors influencing the FRC in water after treatment. The main results are the following:

Influence on FRC	No or few influence on FRC
Presence of germs / organic matter in the fetched water	Date of opening of the bleach bottle
Time since treatment	Conditions of use of the bleach bottle
Turbidity of local water point	Conditions of use of the container
Cleanness of container	

Table	6	- Factors	influencing	FRC

Then, here is a proposition of behaviour for the FF in case of 0 FRC in a community:

- Check that water has **effectively been treated** (with the pot owner and the chlorinator): properly filtered and with the right dosage
- Check that water has been treated less than 2 days ago
- Check that the **container is clean**

If all those criteria have been respected, it probably means that the **water fetched contained germs** with which chlorine has reacted. The FF should explain this to the pot owner, clarifying that water is still safe because it has been treated but will not be safe anymore in case of new contamination: the pot owner should pay a particular attention to the **hygiene and sanitation key messages** (clean cup, use of latrines, hand washing).

6. Databases

3 databases are used for the HHWT program:

- One Excel database managed by the North team in which the supervisor (Tejan S.) reports the **data from the storekeepers' notebooks** collected by the technical FF (Musa K.). This database enables to checked if all communities supposed to buy bleach in one shop effectively do (this job is also done directly on the field by the FF), and also to measure average amount of money spend for HHWT (per community, per pot, per contributor, per person) and the average water consumption for the communities supervised by the North team.
- The **maintenance database** on Access managed by the South: in the maintenance database (input by Prince and Kelvin) have been added the bleach communities (of the North and the South) with the following information: GPS coordinates, chiefdom, section, village and starting date (date of training). This database is

updated for the bleach communities with reports from James K. (technical FF, South) and Tejan S. (supervisor, North). It enables to have a **global overview of the water coverage** by IA.

 One Excel database of DPD tests' results (FRC in containers of chlorinated water), input and analysed in November by Aurelie. DPD tests are done at each follow-up visit by the FF in all available pots of the communities, and the results (FRC) are recorded in the form for follow-up visits. If it is decided one day to go further in the analyses and have a yearly overview of FRC in the bleach communities and a deeper understanding of the factors influencing FRC, this database could be completed from the archives of followup forms and analysed.

No database is used for prospection. Arriving in a new area, the FF meets the section chiefs to record in a notebook the name of all potential communities in the section (population below 150 and no safe water facility).

II] SWOT analysis of the HHWT approach

Each component is described into more details in the following pages.

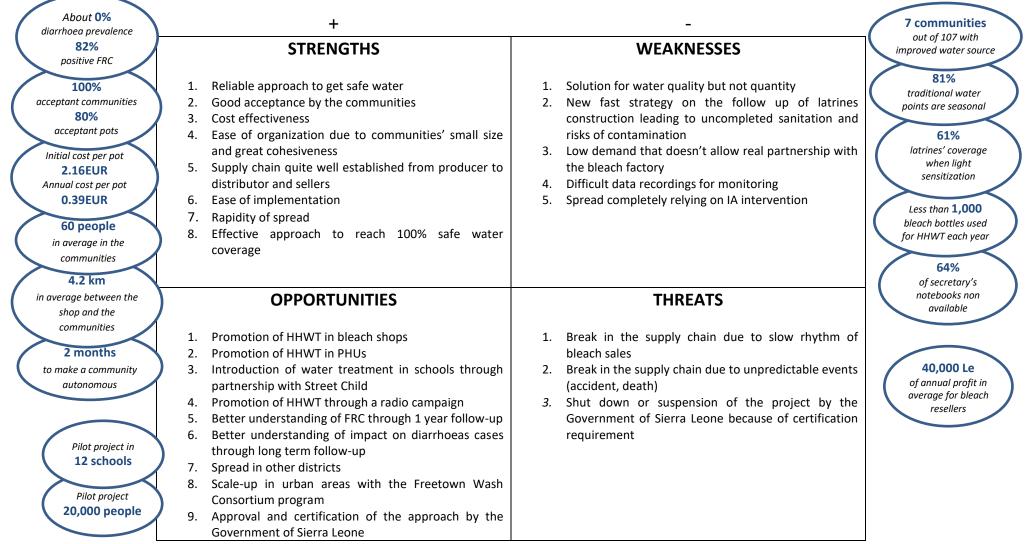


Table 7 - SWOT analysis of the HHWT approach

1. Strengths

1. Reliable approach to get safe water

- 82% of positive FRC in the containers (DPD tests on a sample of 261 containers with treated water in 29 communities in November and December 2016)
- 18% with 0 FRC but water still safe (coliform tests on a sample of 13 containers in which water had been treated with chlorine but FRC was 0: results were 0 coliform for the 13 containers)
- Treatment directly at the point of use in safe containers: very low risk of recontamination after treatment
- Almost 0% prevalence of diarrhoea by U5 children after introduction of HHWT

2. Good acceptance by the communities

- 100% of acceptant communities and 80% of households with chlorinated water at any time (see I] 2. Acceptance of the HHWT program by the communities)
- Strong positive impact on health experienced by all communities, associated with the idea that the chlorine kills germs in water
- Reputation of chlorine as a "medicine" reinforced by its smell and taste appreciated by the people as a proof of safe water

3. Cost effectiveness

- Initial cost: 45,000 Le for the chlorination kit for 13 pots in average plus 13,000 Le per pot for the container and the cup → total initial cost of 16,500 Le (~ 2.16 €⁴) per pot (75% subsidized by IA)
- Yearly cost after introduction for the chlorine refill: 1 bottle of about 7,000 Le every 2 to 3 months for one community with 13 pots in average → around 3,000 Le (~ 0.39€) per pot
- Cost of HHWT identified as a reason for failure by only 2% of the defaulters
- HHWT easily affordable for all communities even in an inflation context: low chance for the final cost of bleach bottle to exceed 10,000 Le (~ 1.32€)

Cost components	Minimum cost (Le)	Average cost (Le)	Maximum cost (Le)	
Bottle (gross reseller Freetown)	3,500	4,000	4,500	
Transport Freetown – Makeni	500	500	1,000	
Profit gross reseller Makeni	500	500	1,000	
Bottle (gross reseller Makeni)	4,500	5,000	6,500	
Transport Makeni – Bleach storekeeper	0	500	500	
Profit bleach storekeeper	500	500	1,000	
Bottle (bleach storekeeper)	5,000	6,000	8,000	
Transport 1 st Bleach storekeeper – 2 nd Bleach storekeeper	0	500	500	
Profit 2 nd bleach storekeeper	500	500	1,000	
Bottle (2 nd bleach storekeeper) ⁵	5,500	7,000	9,500	
Table 8 - Breakdown of the cost of one bleach bottle				

4. Ease of organization due to communities' small size and great cohesiveness

- 60 people or 10 houses in average
- Good functioning of money contribution (even without proper records by the secretary) and treatment organization
- Strong links between community and water committee members

⁴ Exchange rate end of 2016: $1 \in = 7,600$ Le

⁵ For Kathanta and Kabba Ferry who supply by a bleach storekeeper (Kamakwie) and not by the gross reseller (Makeni)

- All community members easily gatherable for meetings with IA (strategy explanation, sensitization, training...) or within the community itself
- 5. Supply chain quite well established from producer to distributor and sellers
- Network of bleach storekeepers making chlorine and syringes available in very remote rural areas
- Distance between one community and its bleach shop comprised between 0.5 and 20 km 4.2 km in average
- Shops introduced into IA's HHWT strategy already known by most communities and often already frequented for the purchase of other items
- No major access hurdles due to water side crossing during rainy season (for remote communities cut off motorable access during rainy season)
- Chlorine locally produced
- Steps between producer distributor resellers quite well designed

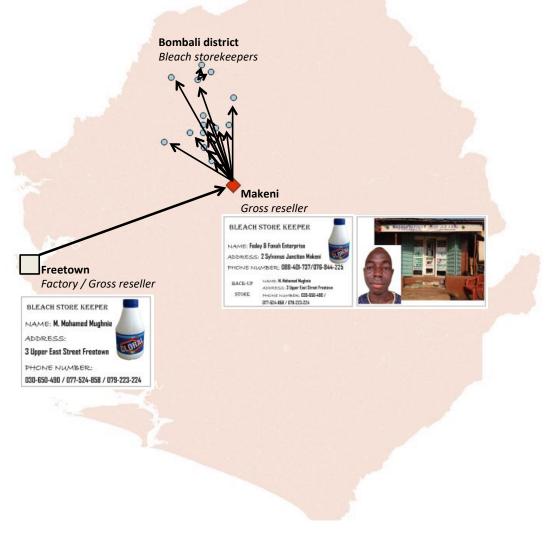


Figure 1 - Mapping of the bleach supply chain

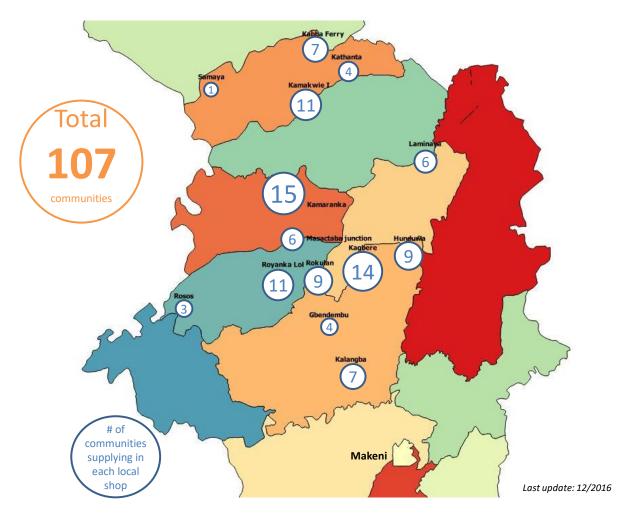


Figure 2 - Mapping of the bleach communities in 2016 - Bombali district

6. Ease of implementation

- Simple procedure of HHWT accessible to any uneducated person without technical background
- One standardized dosage rule at district level: 2 mL of chlorine in a 5 gallons container all year long and for any water source⁶
- Possibility to replace easily the chlorinators in their absence and to buy new material if damaged or lost

7. Rapidity of spread

- Only 2 months necessary to make a community autonomous with HHWT
- 34 communities trained and monitored by 1 field facilitator in 1 year
- Objective of 300 bleach communities in Bombali district in 2019 reachable
- Strategy adapted to other districts

8. Effective approach to reach 100% safe water coverage

- Solution of safe water adapted to any type of community, esp. the ones with constraints for water well construction (population, finance, location or topography)
- Approach extendable to communities with seasonal water well

⁶ Some FF used to recommend different dosages depending on the communities (from 1.5 to 2 mL) before the new strategy

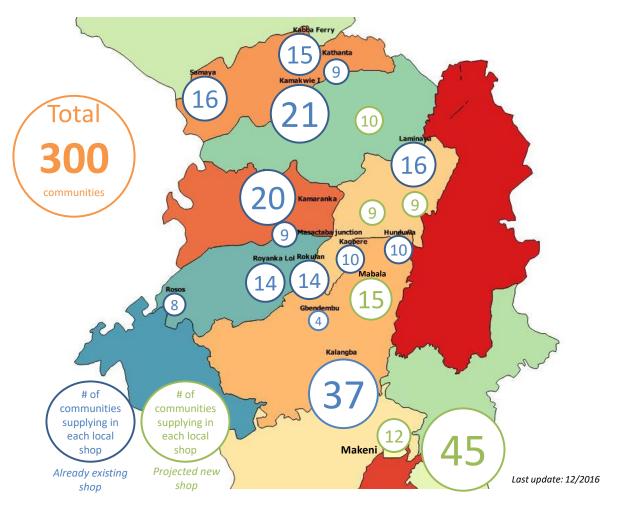


Figure 3 - Mapping of the projected bleach communities in 2019 - Bombali district

Note: this projection has been done according to the knowledge of the FF related to the remaining potential of bleach communities in already covered areas and the data collected from the section chiefs in the new areas; it is not exhaustive.

2. Weaknesses

- 1. Solution for water quality but not quantity
- Few communities benefitting from local water source improvements (7 out of 107 in November 2016; see annex 1: Local source improvements)
- 81% of communities with no improved water source face water shortage issues during dry season, especially the ones fetching from swamps (usually run dry earlier than streams and local wells)
 - o 55% have to go far distance to find water
 - 45% of them have to dig (or re-dig) local water wells, leading to an increased turbidity
- 2. New fast strategy on the follow up of latrines construction leading to uncompleted sanitation and risks of contamination
- Hygiene and sanitation sensitization limited to fast latrines triggering
- Previous strategy of complete CLTS triggering led approximately to 80% latrines coverage; new fast strategy of light sensitization on hygiene and sanitation approximately leads to 61% latrines' coverage
- PART OF THE NEW STRATEGY:
- → Meeting dedicated to hygiene and sanitation sensitization
- → Sensitization poster (diarrhoea causes and prevention) delivered in the communities
- → Additional role of Hygiene Promoters assumed by the chlorinators and committee (relay and repeat hygiene messages, follow and encourage latrines constructions...)
- → Emphasize on hygiene key messages in each pot during follow-up visits
- 3. Low demand that doesn't allow real partnership with the bleach factory
- Bleach bottles not designed for HHWT (labelling, cap)
- No quality control in production
- Small scale project: 162 chlorination kits distributed, each of them requiring 1 bleach bottle / 2 months → demand of 81 bottles / month or 972 bottles / year: low interest of the factory for the project leading to low space for improvement

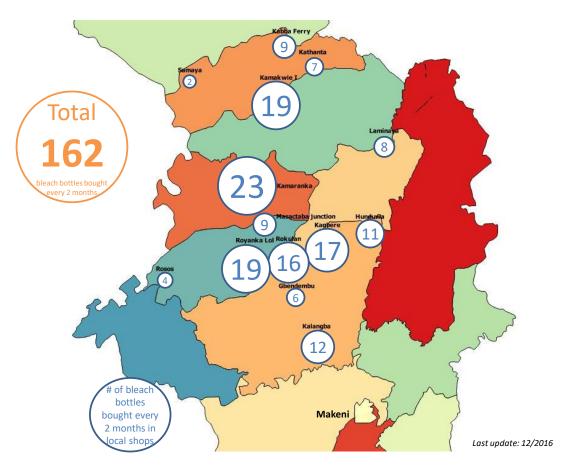


Figure 4 - Mapping of demand for bleach in 2016 - Bombali district

4. Difficult data recordings for monitoring

- Recorded data on chlorine consumption poorly reliable for monitoring:
 - Low level of education in the communities: 64% of storekeepers notebook non available
 - Low incentive to record data for storekeepers
- PART OF THE NEW STRATEGY:
- → Focus on data recording from the storekeepers' notebooks
- → Emphasize on the importance of data recording for IA (additional responsibility for the storekeeper mentioned in the MOU)
- → Still, recordings from the storekeepers are not exhaustive and communities are encouraged to use and update their notebook (monitored by the FF especially at the beginning)

5. Spread completely relying on IA intervention

- In spite of radio campaigns and idea spreading among communities, IA assistance always necessary to introduce HHWT in one community
- Programme not ripe enough and communication strategy too weak to make autonomous spread of HHWT possible
- PART OF THE NEW STRATEGY:
- → Promotion in bleach shops through delivery of promotion tools
- → During all preparation phase, emphasize on communities' self-sufficiency after training

3. Opportunities

1. Promotion of HHWT in bleach shops

 Promotion tools (posters of bleach storekeepers map and chlorine use explanation) available in all bleach shops (delivered in 9 shops out of 14 in February 2017)

2. Promotion of HHWT in PHUs

- Training of medical staff on water treatment with bleach in all PHUs of the chiefdoms where the HHWT program has been implemented
- Promotion tools available
- Introduction of HHWT in PHUs with no access to safe water
- Promotion of HHWT through meetings of CHWs (as a support during the first contact phase)

Promotion of HHWT in PHUs: current status

- Sella Limba chiefdom:
 - o PHU's identity cards (see annex 2: PHU's identity card) fulfilled for the 8 PHUs
 - \circ ~ Training of nurses and delivery of promotion tools currently ongoing
 - o Introduction of HHWT in PHUs with no access to safe water currently ongoing
- Gbendembu Ngowahun chiefdom:
 - \circ ~ Training of nurses and delivery of promotion tools currently ongoing
 - Promotion of HHWT through meetings of CHWs done



Meeting of James with CHWs to promote HHWT

• Other chiefdoms: nothing started yet

3. Introduction of water treatment in schools through partnership with Street Child

- Pilot project targeting 12 remote and vulnerable schools (50 to 70 children each) with operational School Management Committees (SMC) in Tambakha chiefdom
- Increase of the demand for bleach and consolidation of the supply chain
- Advocacy of SMCs in their villages and involvement of children in the education effort
- Promotion tools available in schools

Partnership with Street Child: current status

Memorandum of Understanding (see annex 3: Memorandum of understanding between Inter Aide and Street Child) signed between Inter Aide and Street Child

Training of SC staff by IA staff?

4. Promotion of HHWT through a radio campaign

- Media largely used and trust all over the country
- Possible intervention of storekeepers (ex: Mr. Fofanah from the pharmacy in Makeni)

5. Better understanding of FRC through 1 year follow-up

• DPD tests done by the FF in all households at each follow-up visit

- Record of FRC in a database during one year (from November 2016 to October 2017)
- Analysis of results to get a better understanding of FRC: dry / rainy season, stream / swamp / local well / rain, clean / dirty container, time since treatment...

6. Better understanding of impact on diarrhoeas cases through long term follow-up

- Systematic initial and redo house to house surveys in bleach communities
- Use of enhanced forms for house to house surveys to get more accurate results

7. Spread in other districts

• Spread in Tonkolili after full coverage of Bombali

8. Scale-up in urban areas with the Freetown Wash Consortium program

- HHWT pilot project targeting 20,000 persons in Freetown and Western area led by ACF
- Opportunity if adoption of coordinated and complementary strategies (use of the same product)
- Long term opportunity because of delays required by the set-up of the program, the establishment of links...
 - **9.** Approval and certification of the approach by the Government of Sierra Leone (Ministry of Health, Ministry of Water Resources, Water Directorate)?

4. Threats

- 1. Break in the supply chain due to slow rhythm of bleach sales
- Small business for storekeepers (small profit and low frequency of purchase): 40,000 Le of annual profit in average difficulty to afford transportation costs
- → Keep a strong growth rhythm to reach a significant scale and retain incentives for all supply chain stakeholders to continue their business
- 2. Break in the supply chain due to unpredictable events (accident, death)
- Fragile accessibility of products (bleach and syringes) in rural areas: any unpredictable event can lead to the closure of one bleach shop and difficulties for communities to supply
- → Back-up solutions for each stakeholder of the supply chain
- 3. Shut down or suspension of the project by the Government of Sierra Leone because of certification requirement (demand for product withdrawal from the market)?

III] Hand-over

1. What has been done

1.1 Research

- Global understanding of the HHWT approach: visit and interview of 64 communities (see Report on communities' interviews) and 14 shops (see Report on shops' interviews).
- Detailed understanding of the acceptance and the impact of the program: visit house to house of 24 communities (see HHWT - assessment of acceptance and impact).

1.2 Project management

- Identification of rooms for improvements •
- Creation of new tools
- Establishment of a consolidated strategy between North and South (see HHWT strategy and tools communities and HHWT strategy and tools - shops)
- Follow-up of the practise of the new strategy and use of new tools •
- Establishment of a protocol for development of bleach approach in a new district (see annex 4: • Protocol for development of HHWT in a new district)

1.3 Parallel tasks

- Reinforcement of the supply chain
- Training of the WASH team on DPD tests (see annex 5: Training on DPD test Agenda), water • consumption calculation (see annex 6: Training on water consumption calculation – Agenda)
- Management of the technical field facilitators (field activities, database management, training...)
- Mapping of communities and shops •
- Lab tests to get a better understanding of FRC •
- Documentation of the project for capitalization (see HHWT updated, HHWT_ext updated, Meeting • with a bleach community, Meeting with a bleach storekeeper, Technical leaflet on latrines)
- Collection and analysis of data of CU5 diarrhoea cases from PHUs: no interesting conclusion can be drawn

PHUs data analysis: a failure

U5 Clinic Register available in all PHUs (GoSL's request): record of all admissions of U5, address, diagnosis and remark (if it lead to death) \rightarrow possibility to know the number of diarrhoea cases of CU5 in each community each year

Recording and analysis of these data could be used to assess the impact of HHWT's introduction on health in communities

Collection started in 2 PHUs of Sella Limba (Kabba Ferry and Kathanta Yimbor) using the PHU's data recording form (see annex 7: PHU's data recording) for the years 2014 and 2016 because presence in the catchment areas of communities where HHWT has been Picture 5 - U5 Clinic register of Tambiama introduced in 2015. Those data have been analysed (see annex 8: PHUs data analysis).

No clear conclusion came out because of too many uncertainties:

- some children suffering from diarrhoea don't go to the PHU
- the introduction of a Community's Health Worker in a community could bias the results
- actual efforts to encourage people to go more to the PHU: temporal bias
- small sample (less than 10 CU5 in some communities)
- no control of the population evolution
- some children may go to a PHU out of their catchment
- + this indicator is not precise enough to make any variation visible: we did not go further on this issue





Picture 6 - Mr. Foday in front of his pharmacy

Picture 7 - Training of the FF

Picture 8 - Workshop with Musa and James

Picture 9 - Lab tests with Tejan

2. Final recommendations

- 1. New strategy for communities and shops:
- Apply the new strategy for communities and shops and use the new created and updated tools
- Continue to improve the strategy and tools according to the needs on the field
- Organize **regular meetings between HHWT teams of Kamakwie and Makeni** (once every 3 months) to share information about expansion, strategy improvements and good practises
- 2. Continue to supervise **well-functioning of the supply chain** (incl. prices) for bleach and syringes from the factory to the local shops, incl. whole resellers in Freetown and pharmacy in Makeni

3. Move forward **promotion of HHWT in PHUs**:

- $\circ~$ Promotion and training in each PHU: training of medical staff on HHWT and delivery of promotion tools
- For PHUs with no safe water facility: introduction of water treatment Particular attention has to be paid at the material available in the PHU (container, bucket, cloth and syringe) and the way to supply the PHU with chlorine; a meeting with the district officer could be planed

	Planning 2017	Completed by
North	1 PHU / week Feb – Mar: Sella Limba (8 PHUs) Apr – May: Gbanti Kamaranka Jun – Jul: Sanda Tendaren Aug – Sep: Magbaimba Ndorhahun Nov – Dec: Sanda Loko After: Tambaka	APM or team supervisor
South	1 PHU / 2 weeks Jan – Apr: Gbendembu Ngowahun (8 PHUs) After: Safroko Limba or Paki Masabong	Technical FF & FF (each one in his own area)

• Promotion through CHW meetings

4. Move forward the development of HHWT in schools through collaboration with Street Child

	Planning 2017	Completed by
Jan	Identify needs in targeted pilot schools Training of SC staff by IA staff	Aurelie M. / APM / team supervisor
Feb	Training of 2 schools by SC staff under IA staff supervision	APM / team supervisor
After	Training of other schools by SC staff	-

- 5. Organize a **large radio campaign** following the Guidelines for radio campaign (see annex 9: Guidelines for radio campaign)
- 6. Move forward **local source improvements**:
 - Launch a pilot campaign of local source improvements:
 - o in 2017, dry season
 - with a contractor
 - for 3 to 5 bleach communities chosen according to the following criteria: motivation and continuous use of bleach during 1 year, constraints of water shortage during dry season, population, ability to provide local material and accessibility (see annex 10: Form for local source improvement)
 - → according to the lessons learned from this pilot campaign (cost for IA, time consumed by the FF, manageability of the contractor, behaviour of the community after improvement...): decide the number of improvements for the following years Note: the local source improvements should not be too time-consuming for the FF and slow down the spread of HHWT
 - Look for an alternative way to improve local sources: **short, easy and low cost solution** with new material (ex: plastic) or new technics
- 7. Continue **conduction and analysis of initial and redo house to house surveys** in bleach communities with lessons learned from the <u>HHWT assessment of acceptance and impact</u>
- Enhanced form for house to house survey
- Increased sensitization of the FF on the importance of data collection
- → More accurate data on impact on diarrhoea
- 8. Keep a **strong growth rhythm** to increase demand for bleach:
- Pursue field work by the FF to reach an exhaustive coverage of small communities of Bombali district before expanding to other districts (objective: 45 new communities / FF / year)
- Expand the scope of communities targeted for HHWT to communities using seasonal water well
- Follow the **development of urban HHWT** planned by the urban consortium of **ACF and Oxfam:** stay in close contact during the 5 months inception phase dedicated to **product and demand assessment** to adopt coordinated and complementary strategies (use the same product)
- → More options to deal with producers:
 - \circ work on the packaging of the bottle to facilitate treatment (avoid syringes)
 - work on the labelling (explanation of water treatment)
 - work on quality control in the production
- 9. Continue general monitoring using following indicators:
 - Acceptance of the communities
 - Acceptance of each pot in the communities:
 - o U5 diarrhoea
 - U5 mortality rate
 - o Latrines coverage
 - Knowledge of the key messages
 - Water consumption
 - o FRC
 - Shops:
 - Bleach business (supply and sales)
 - o Acceptance of the communities (through bleach purchases)

ANNEX 1: LOCAL SOURCE IMPROVEMENTS



Local source improvements:

- → Stop seasonality of water points: all improved water points are permanent
- → Reduce water turbidity during dry season
- → Facilitate water fetching and encourage people to refill more frequently
- → Standard cost for IA of about 250 EUR / improvement; approximate 20,000 EUR budget for improvement for 80 communities

Average depth of digging	4 m						
Exchange rate	7500						
			PROVIDED BY IA			PROVIDED BY THE	COMMUNITY
	Cement	Iron Rod 8mm	Binding wire	Site foreman OR	Contractor	Sand	Granite
Casing (per m)	2 bags	2.5 lenghts		1 day		7 head pans	9 head pan
Casing (total)	8 bags	10 lenghts		4 days		28 head pans	36 head pan
Apron rough	4 bags	4 lenghts				12 head pans	14 head pans
Head wall	1 bags	2 lenghts				4 head pans	6 head pan
Cover slab	2 bags	2 lenghts					
Apron finishing	1 bags					4 head pans	
Mixing pad	1 bags						
Other			0.25 roll				
Sinking and back filling				3 days			
Dry digging				3 days			
Total quantity	17 bags	18 lenghts	0.25 roll	10 days		48 head pans	56 head pans
Unit cost	55,000 Le	27,000 Le	180,000 Le	52,000 Le	400,000 Le		
Total cost	935,000 Le	486,000 Le	45,000 Le	520,000 Le	400,000 Le		
1 cc	ommunity						
Final cost with site foreman	1,986,000 Le	265 EUR					
Final cost with contractor	1,866,000 Le	249 EUR					

80 communities					
Final cost with site foreman	158,880,000 Le	21,184 EUR			
Final cost with contractor	149,280,000 Le	19,904 EUR			

Table 9 - Cost estimation of local water point improvements for bleach communities

→ All type of water point can be improved

Type of water point	Technical feasibility of the improvement	Location of the improved water source
Stream	Yes	10 meters off the stream
Swamp	Yes	10 meters off the swamp
Local well	Yes	 If the local well is located about 10 meters off a stream or a swamp: directly on the local well
Table 10 -	Technical feasibility of local	• If not: 10 meters off the closest stream or swamp source improvement depending on the type of water point

Note: Improved local source for bleach communities are always located close to a stream or a swamp; never located in the village (only hand dug well can be located in towns)

ANNEX 2: PHUS' IDENTITY CARD



Inter Aide Sierra Leone

PHUs' IDENTITY CARD

рни	Chiefdom
Ŧ	Name of the facility
NURSE	Name
NUI	Phone number
WAT	ER ACCESS

#	Catchment village	Population

ANNEX 3: MEMORANDUM OF UNDERSTANDING BETWEEN INTER AIDE AND STREET CHILD

This MOU is an agreement bet	ween:	CHII D	C inter aide
Inter Aide Sierra Leone		UNILU	
Represented by			
	Last name and First name	Position in Inter	Aide
And			
Street Child Sierra Leone			
Represented by			
	Last name and First name	Position in Stree	et Child

For the collaboration aiming at introducing household water treatment (HHWT) in 12 schools in Tambakha.

Inter Aide's responsibilities:

- share IA's HHWT strategy, relevant tools and experiences to facilitate Street Child work
- provide training to Street Child's staff (community animators and management) for the training of Water Committees from School Management Committees (SMCs)
- assist Street Child staff for the training of the first Water Committees

Street Child's responsibilities:

- train the Water Committees in the selected schools on HHWT following IA's advices
- subsidy the purchase of the chlorination kit by the Water Committee
- take in charge the monitoring and evaluation of the approach

This agreement is being made so that children can get access to safe water in remote schools of Tambakha.

This memorandum was read and signed in ______, on ____, on ___/__/___

Location

Date

Signature of Inter Aide

Signature of Street Child

ANNEX 4: PROTOCOL FOR DEVELOPMENT OF HHWT IN A NEW DISTRICT

I] Evaluate and locate bleach communities' potential

Question: How many communities could be targeted as bleach communities in the district and where are they located?

Collect data of communities' location, size and water coverage:

- from the Government
- (from IA's previous surveys)

II] Set objectives

Question: How many communities do we want to target in which amount of time?

Lessons learned from the past:

- 1 community = 2 months between first contact and autonomy for HHWT
- 1 FF = 45 new communities per year

III] Define needs in means and staff

Question: How many staff and what kind of material do we need to reach these objectives? How much will it cost?

- Number of staff (field staff and management)
- Material: motorbike, chlorination kits and household sets, personal material for the FF: bag, GPS, camera, pool tester and DPD tablets

Deduce the required cost and prepare a budget.

IV] Select and train a team

Question: Who will be in charge of this program? How to choose and train those persons?

Training of the FF: The future FF must spend two weeks on the field with an experimented technical FF in Kamakwie or Makeni. During this time, he must witness each key step of the enrolment and preparation of a community (simplified house to house survey, strategy explanation, hygiene and sanitation sensitization, money contribution sensitization, explanation and formation of water committee, supply distribution and training) and assist to different follow-up visits.

V] Introduce HHWT in a pilot group of communities

- Choose a group of communities (around 10) in 1 or 2 sections close enough to each other to supply in the same shop. This group will be the pilot. Introduce HHWT in these communities following the *HHWT STRATEGY COMMUNITIES* and the tool box.
- Identify a shop for these communities and introduce it to bleach business following the *HHWT STRATEGY SHOPS* and the tool box.

VI] Spread HHWT in the district

Once the pilot group is on track and the supply chain established to the shop, begin to spread in communities around.

ANNEX 5: TRAINING ON DPD TEST – AGENDA

2 hours training shared into 3 parts:

- 1. Written examination (assignment joined on the last page): 30 minutes
- 2. Analysis on the trainees' knowledge about DPD tests and explanations: 45 minutes
- 3. Practically DPD tests: 45 minutes

Before the training: Preparation

Material:

- 4 pooltesters with visible letter on it (from A to D)
- DPD1 and red phenol tablets
- 4 x 1 gallon containers (from A to D)
- 1 bottle of chlorine
- FF / SF assignment (one the last page) printed as many time as the number of trainees

At least 30 minutes before the beginning of the training: Treatment of the 4 containers with different dosages. The goal is to reach approximately this FRC in each container:

- A: 0 (do not put chlorine)
- B: Between 0.1 and 0.3
- C: Between 0.5 and 0.8
- D: Between 1.5 and 3.0

Just before the beginning of the training: DPD tests on water from containers A to D in pooltesters A to D.

1) Assessment of the FF / SF's knowledge about DPD test (30 min)

Give 30 minutes to answer the questions on the last page. Leave the 4 pooltesters available for the trainees to do the measurement.

Collection of the assignments: Collect the assignments and read the answers to be able to focus the training on the points that have been less understood. Re-distribute them to a different person for correction.

2) Answers to the questions, theory explanation and training on how to read FRC (45 min)

After each explanation, leave them time to ask questions.

1) What is FRC?

FRC: Free Residual Chlorine. Indicates the amount of chlorine remaining in water.

2) Explain why we use DPD tests.

DPD tests enable to measure FRC. Presence of FRC in water indicates that:

- a sufficient amount of chlorine was added to the water to inactivate most of the bacteria and viruses that cause diarrheal disease
- the water is protected from recontamination during storage of water in the household
- → presence of FRC used as one measure of the potability of drinking water in households

FRC must be between 0.2 (to deal with possible recontamination) and 2.0 mg/L (to avoid bad taste).

For bleach communities monitoring, DPD test enable to evaluate:

- whether or not users are using chlorine (as measured by presence or absence of FRC)
- whether they are using it correctly (as measured by FRC in the 0.2 2.0 mg/L range)
- 3) Explain the protocol (different steps) of the DPD test.
- Wash the pool tester (including the cover) three times with the same water that is to be analysed.
- Fill to the top the right compartment with the sample.
- Drop one DPD1 tablet directly in the right hand compartment.
- Replace the lid of the comparator and push down firmly to seal.
- Invert the comparator several times until the tablet has dissolved completely (about 20 seconds).
- The tablet will cause a colour change to pink in the presence of chlorine. The intensity of the colour indicates the FRC.
- Read the residual chlorine concentration by holding the comparator up to the natural day light and matching the colour in the compartment with the left standard colour scale.

/!\ Attention:

- Always wait at least 30 minutes after treatment before doing the test
- The taste or odour of chlorine in water is not a proof of the presence of free residual chlorine
- Never touch the tablets or the inside part of the cover with your fingers (this could affect the results)
- One whole tablet must be used do not use broken tablets (while opening packaging or because of bad storage)
- Read the results within 60 seconds of the tablets dissolving to be sure of a reliable measurement results are not guaranteed after this time
- Read the results in good lightning conditions (day light but not in direct sun light; do not wear sun glasses to read the results) ideally, the reading should be made on a white surface
- 4) Read the FRC in the 4 following pooltesters.
 - Make sure that all FF / SF know how to use both colour scales:
 - \circ the one in the middle if FRC is between 0 and 1.0 mg/L
 - the one on the right if FRC exceeds 1.0 mg/L
- Take time to read with each FF / SF the FRC that they have misread during their assignment.

/!\ Attention: Because of time elapsed since the tablet's dissolution, the results may have slightly decreased.

3) Practically DPD tests (45 min)

Ask one FF / SF to come and do the DPD test on one sample of water in front of everyone. Then ask the other ones to identify his mistakes. Repeat the process as many times as necessary until the DPD test is done properly by each of them.

The pooltester must be available with his box containing DPD1 and red phenol tablets to teach them how to do the difference between both tablets. Insist on how to drop the tablet in the compartment without touching or breaking it.

After the first training: Refreshment training

If needed, plan a refreshment training at least two weeks after the first training in order to get better results.

FF / SF Assignment

1) What is FRC?

2) Explain why we use DPD tests.

3) Explain how to use the pooltester.

4) Read the FRC in the 4 following pooltesters:

Α	В	С	D

FF / SF Assignment

Due 31 October 2016

1) What is FRC?

2) Explain why we use DPD tests.

3) Explain how to use the pooltester.

4) Read the FRC in the 4 following pooltesters:

Α	В	С	D

ANNEX 6: TRAINING ON WATER CONSUMPTION CALCULATION

Agenda (1 hour)

1. Purpose of the measure (5 min)

- Assess the evolution of water consumption after HHWT introduction
- Measures currently done in 24 HHWT communities from the 2015 campaign by Musa and Alusine
- Need a reference in communities before HHWT introduction

2. Identification of the future bleach communities followed by each FF (15 min)

- Question to each FF: which future bleach communities are you currently following?
- Write down the communities and FF

3. Methodology for the calculation (10 min)

- Calculation possible in the communities where the FF stays at least 24 hours
- D0: ask all pot owners to keep the water balance in the container that they use for drinking until the following day in the morning
- D0 + 1, early in the morning: go house to house to do the measure for each pot
- Presentation and explanation of the form

4. Practise (20 min)

- Fulfil many containers with different levels of water to train the FF to assess the volume of water balance
- Simulation:
 - Pretend to be one pot owner with a container
 - One FF will ask the questions
 - All the FF try to do the calculation according to the answers given by the pot owner

5. Attention ! (10 min)

- The calculation can't be done if the pot owner fetched water less than 24 hours ago
- You can use a calculator if you have it on your phone
- A, B columns: assessed by the FF
- D, F columns: answers of the pot owner
- C, E, G columns: calculated by the FF

Water consumption calculation

Com	imuni	ty:	Chiefdor	n:				S	ection:
Date	2:		Surveyo	r name:					
		Pot	A	verage v	vater con	sumptior	n per day	per capit	а
			A	В	С = А - В	D	E = C / D	F	G = E / F
House (1, 2, 3)	Pot (a, b, c)	Mother name	Volume of the container / bucket dedicated to drinking (in L)	Volume of water balance (in L)	Volume of water consumed by the pot (in L)	Number of days of consumption	Volume of water consumed by the pot per day (in L)	Number of people who drank in this container	Volume of water consumed per person per day (in L)

ANNEX 7: PHUs' DATA RECORDING



PHUs' DATA RECORDING

UNDER FIVE CLINIC REGISTER

PHU:	Chiefdom:	PAGE
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#	Community	Diagnosis	Date of onset	Remark

ANNEX 8: PHUs data analysis

РНU	Chiefdom	Sella Limba			
봅	Name of the facility	Kabba Ferry CHP			
Nurse	Name	Neneh Jalloh			
Nu	Phone number	088-341-452			
Water access	Well - non fu	nctional			

				2014		20		
#	Start of HHWT	Catchment village	Рор	# of diarrhea by U5	# of diarrhea / pop	# of diarrhea by U5	# of diarrhea / pop	Δ 2014-16
1	-	Kabba Ferry	653	52	8%	82	13%	58%
2	-	Kameteh	500	32	6%	11	2%	-66%
3	2014-2015	Kamagbotho	180	8	4%	10	6%	25%
4	2014-2015	Madina	23	0	0%	3	13%	
5	2014-2015	Kakasekie	30	2	7%	4	13%	100%
6	-	Kamapolon	104	6	6%	4	4%	-33%
7	2014-2015	Kamullay	91	0	0%	1	1%	
8	-	Kafukumba	245	9	4%	12	5%	33%
9	-	Kamaha	200	8	4%	0	0%	
10	-	Kadabi	350	11	3%	18	5%	64%
11	-	Kasassi	248	9	4%	17	7%	89%
12	-	Katei	106	2	2%	11	10%	450%
13	-	Kamagbenkiray	250	1	0%	0	0%	
14	-	Kamataimota	245	0	0%	0	0%	
15	2011-2012	Kagberay	40	0	0%	0	0%	
16	2014-2015	Kamahera	79	0	0%	0	0%	
17	-	Kathiri	610	1	0%	0	0%	
		TOTAL	3954	141	4%	173	4%	23%

DHU	Chiefdom	Sella Limba			
	Name of the				
	facility	Kathantha Yimbor CHC			
Nurse	Name	Desmand S. Koroma			
NC	Phone number	076-441-566/088-960-046			
Water access	и	/ell - seasonal			

				2014		20		
#	Start of HHWT	Catchment village	Рор	# of diarrhea by U5	# of diarrhea / pop	# of diarrhea by U5	# of diarrhea / pop	Δ 2014 - 16
1	-	Kathantha Yimbor	721	37	5%	27	4%	-27%
2	-	Kayawuyea	167	3	2%	16	10%	433%
3	2014-2015	Katherie Yimbor	72	10	14%	11	15%	10%
4	2014-2015	Kamabon	30	1	3%	0		
5	-	Kasimbara	390	17	4%	0		
6	-	Kamabanda	51	5	10%	4	8%	-20%
7	-	Small Kamakwie	79	1	1%	4	5%	300%
8	-	Kagbaneh	115	8	7%	3	3%	-63%
9	-	Kasassie	367	7	2%	14	4%	100%
10	-	Kamaporotho	404	8	2%	5	1%	-38%
11	-	Haramakono	97	2	2%	0	0%	
12	-	Kagbetay	77	1	1%	0	0%	
13	-	Katherie Npoo	30	0	0%	0	0%	
14	-	Kamasassina	27	0	0%	0	0%	
15	-	Kaporthor	217	31	14%	11	5%	-65%
16	2014-2015	Fullah Town	67	5	7%	3	4%	-40%
17	-	Kamankay	241	10	4%	3	1%	-70%
18	-	Kamahintin	114	2	2%	6	5%	200%
19	-	Kamakodo	20	0	0%	0	0	
20	-	Kathimbo	211	4	2%	1	0%	-75%
21	-	Kagungbor	200	0	0%	0	0	
22	2014-2015	Kasekenday	47	0	0%	0	0	
23	-	Kamakuyor	121	5	4%	2	2%	-60%
24	-	Kantherina	57	3	5%	0		
25	-	Kamabenten	32	0	0%	0		
26	-	Kakuru	280	1	0%	4	1%	300%
27	-	Kamabanda	93	5	5%	0		
28	-	Kakoya	67	0	0%	0		
		TOTAL	4394	166	4%	114	3%	-31%

ANNEX 9: GUIDELINES FOR RADIO CAMPAIGN

Goals of the campaign:

- 1. Promote and educate listeners to HHWT
- 2. Advertise product

Timing of the campaign:

- When the supply chain for bleach and syringes has been properly consolidated

Stations:

- SLBC (Sierra Leone Broadcasting Corporation, the most popular overall)
- Local radios in native languages

Programmes:

- Between 6 and 9 pm on a regular basis
- Preferred programme type: general news, music and women's programmes

Propositions of jingles:

- "Trust your water is safe, treat your own at home!"
- *"Remove dangerous invisible germs for good health with Household Water Treatment!"*
- "For healthier, beautiful children, use Household Water Treatment"
- "Smart mothers use Household Water Treatment"
- "Be the first in your neighbourhood to use Household Water Treatment"

Themes for discussions:

- 1. Diarrhoea is a serious disease that must not be considered as "natural"
- 2. The ways water can be contaminated, leading to the transmission of diarrhoea
- 3. Water treatment with chlorine can act as an effective preventive measure against the contamination of water and the user has the capability to do this cost of diarrhoea (including treatment and reduced productivity) is higher than cost of preventive measures
- 4. Everyday behaviours (including use of latrines, hand washing, food covering and water safe storage) must be adjusted to ensure that water is not re-contaminated

Stakeholders:

- Local leaders
- Relevant ministry officials
- High profile community members (respected spokesperson)

To make a promotional message effective, it has to:

- Present only one idea
- Begin with an attention getter
- Be direct and explicit
- Repeat the key idea at least 2 or 3 times
- Ask listeners to take action
- Make the audience feel part of the situation

Next steps to be done to prepare the radio campaign:

- Get information about prices
- Write script for radio discussions
- Develop a jingle advertisement

<u>Source:</u> "Household Water Treatment and Safe Storage: Programme Implementation Plan. Steps to Scale-Up Household Water Treatment and Safe Storage in Sierra Leone", NestBuilders International, 2013

FORM FOR LOCAL SOURCE IMPROVEMENT										
Dat	e		FF name							
	Community		Chiefdon			1 Sec		Sec	tion	
COMMUNITY	Populatior	n								
	Continuou use of blea									
	Ability to provide local material	provide local		zel S		Sand			Stones	
	Ability to provide labour force		Skilled labour (skilled type, number)		Ur	Unskilled labour (number		ıber)	Motivation	
INT	Shortage		YES - NO		If y	If yes, how many months			If yes, why	
WATER POINT	Solution during shortage		Well digging		(Di	Going far distance Distance (in miles):		ce	Other:	
WA	Turbidity		During rainy season		During dry seas		lry sea	son		
ACCESSIBILITY	(specific pro	pecific problems on the road for material transport)								
	Geo formatio n	(<i>Geography, topography, geology</i>) tio								
TECHNICAL	Sand		istance, quality, quantity, type)							
	Stone		Distance, quality, quantity, type)							
	Timber		Distance, quality, quantity, type)							
	Sticks		istance, quality, quant	,						
	Place for store	(La	ocation, distance from s	site construc	ction,	. place availa	ble)			

ANNEX 10: FORM FOR LOCAL SOURCE IMPROVEMENT