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Inter Aide Sierra Leone

Executive summary

In 2011, Inter Aide Sierra Leone launched a pilot program of Household Water treatment as part of a WASH¹ project in North Bombali district. 5 years after, 107 communities are part of the program and the strategy plans to expand to about 300 communities in 2019. This report comes from the interview of a sample of those HHWT communities and presents facts and conclusions about the functioning of HHWT within these communities in order to get a better understanding of the program, as well as recent strategy decisions taken to enhance the HHWT strategy for communities. The same work has been done for the bleach resellers and results are presented in the <u>Report on shops interviews</u>.

¹ Water Sanitation and Hygiene

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I] INTRODUCTION

1) Sample description

This description of HHWT communities comes from the interview of **64 communities** between **September and December 2016** out of the 107 existing HHWT communities (see annex I: Map of HHWT communities). Communities **under supervision of the North team and the South team** have been visited. The **7 chiefdoms** in which IA is working in Bombali district and **30 sections** are represented in the sample.



Figure 1 - Repartition of the communities per chiefdom



Note: The 11 communities supervised by the South are located in Gbendembu Ngowahun. 3 communities in Gbendembu Ngowahun are supervised by the North – all the communities in the other chiefdoms are supervized by the North.

Figure 2 - Repartition of the communities per team of supervision

The population of the interviewed communities varied greatly: from 10 (One House – Laminaya) to 265 people (Lower H'Plan), reaching **60 people in average**.



Figure 3 - Repartition of the communities per range of population

The communities were **more or less new into the HHWT strategy**: from the very first one in 2011 (Small Kathirie) to the very new one that had just been trained (Masonka).



Notes:

- All communities supervised by the South have started HHWT after November 2015 (4 in 2015 and 7 in 2016).
- From 2011 to November 2015: old strategy; after November 2015: new strategy with dedicated flying FF

Figure 4 - Repartition of the communities per starting date

The communities were also very different in terms of **accessibility**: located on a main axis or very remote (as indicated by the distance to the shops – see 3.4 Shops accessibility). Some communities were even **non-motorable** during rainy season because of swamps or road cut by elevation of the level of the river (see 3.5 Non motorable communities).

2) Methodology

The interviews took place in majority **early in the morning**, before the villagers went to the farm. Questions about water committee, organization for water treatment, supply by the bleach reseller, money contribution, local water point and impact on health have been asked (see annex II: Questionnaire for communities). **Water committee members** have been interviewed in priority, even if many other people often took part to the meeting. In Worreh Line where the water committee was not available, **random villagers** have been interviewed and actually the answers were very similar to the answers given by water committees in other communities.

Remark: Data related to the distance between communities and bleach shops (see 3.4 Shops accessibility) include more HHWT communities than only the 64 interviewed ones. This distance has been measured by recording the GPS coordinates of the communities and the shops, locating them on a QGIS map and measuring the distance between 2 points using QGIS properties.



Picture 1 - Measure on QGIS of the distance between a community and its shop

II] RESULTS

Generally, there was **no major difference** observed between the HHWT communities supervised by the team of Kamakwie or Makeni. Even if the strategy had not been consolidated between the two teams before December 2016, they both used to work in a very similar way. The differences identified are explained into details in each relevant chapter.

1) Introduction of HHWT in a community

1.1 Enrolment of communities

Most communities (92%) **discovered HHWT through contact with IA**. Before IA's intervention, they either did not know chlorine, or knew it for laundry or hand washing (Ebola), not for drinking purpose. People from Kamakanka said they already knew the taste of chlorine in water from health centres.

Few communities (8%) reported that they heard about HHWT:

- from **other villages**: Rosumbu (from Kalangbo), Mawantay (from Rosumbu, Kuntaya and Maseka) and Kasekinday (from Kathirie and Kamabonko)
- on the **radio**: Kathine Yimbor reported having heard about HHWT on the **radio**, but did not know how to use it before IA came for training

Only Rosumbu and Mawantay wrote spontaneously a request letter to IA.



Figure 5 - Discovery of HHWT

1.2 Communities not sensitized by IA

No community manages to use HHWT without training by IA. Bleach resellers have been asked about communities not sensitized by IA that would decide spontaneously to chlorinate water. Most of them answered that only IA communities were buying bleach (except one teacher buying in Rokulan). Only the resellers in Kamaranka and Samaya gave names of communities that, according to them, used to buy bleach, but it has not been confirmed by the visit of those communities.

In those communities, a house to house survey has been conducted to ask villagers if they knew bleach (or chlorine or Whitex – a picture of a bleach bottle was shown to them), for which purpose they knew it, if they had ever used it and where they had bought it. In any of those villages we could find someone who had ever bought bleach in Kamaranka or Samaya.

Lessons learned from this survey:

- The bleach approach is **not ripe enough to spread spontaneously without IA initiative** communities who heard about HHWT on the radio or through other villages requested or waited for IA assistance to introduce it in the community
- Reputation of bleach²:
 - Most villagers (approximately 80%) had never heard about bleach
 - The villagers who knew bleach knew it for the following purposes, ordered by frequency of answers:
 - Laundry (Whitex): especially by the women
 - Hand washing during Ebola: especially by more educated people and people from medical background

² The question has been asked to approximately 100 adults (20 to 30 in 4 communities)

- Well maintenance: by town heads in a community with a water well
- Water treatment:
 - in neighbouring communities: by 2 men knowing Masunkarie and Kamalo Lol
 - by IA staff during well construction: by 1 man in a construction community
- Body washing: by 1 man
- Among the people who knew bleach, almost **none of them had ever bought it** for their own purpose except one man who bought once a bottle in Freetown for body washing

1.3 Drinking water before HHWT

Before IA's intervention, 90% of the communities used to **drink water directly from the local point**. Only 3 communities proceeded to a type of treatment before drinking:

- Kamatarawalie and Madineh used to **filter water** before drinking (in Kamatarawalie, since the construction of the village)
 - Mananday used to **decant water** (wait for the particles to go down and keep only the upper part)



Figure 6 - Drinking water before HHWT

The way of drinking water before IA's intervention **doesn't seem to be linked with the turbidity of water point**: during rainy season, Kamatarawalie fetches from a turbid local well, but the water points of Madineh and Mananday are not more turbid than in other communities.

Finally, the **practise of water treatment was poorly spread** in Bombali district before any intervention, leading to **strong needs in sensitization** of the communities by the FF.



Picture 2 - Local source of Kamatarawalie



Picture 3 - Local source of Madineh



Picture 4 - Local source of Mananday

1.4 Training

81% of the communities affirmed that **everybody in the village witnessed the training**. In the other communities, only some people or few people did mostly because of **availability constraints**.

The **chlorinators have been well trained**. Almost 100% of them have well understood the treatment process and are able to explain it perfectly. Only one chlorinator did not wash his hands before doing the demonstration. Globally, the methodology of training and follow-up is efficient and leads to a **good assimilation by the communities**.

The main difference between the North and the South comes from the fact that HHWT started as a **health project** in the South and as a **WASH project** in the North. Consequently, more attention has been paid on the hygiene and sanitation aspect in the South. In the South, the communities remember **the hygiene and**

sanitation sensitization as a main part of their training, whereas the communities in the North mainly remember HHWT. The sanitation aspect is also considered as a main responsibility of the committee members' in the South: in Ronkohun, the chairman explained that one of his responsibilities was to check the latrines and the sanitation in his community. During the follow-up visits, the answers to the key messages to avoid diarrhoea are much better in the South (safe water, hand washing, use of latrines and food covering) than in the North where safe water (*"with medicine"*) is often the only answer.

In the new strategy, more emphasis is put on hygiene and sanitation sensitization with:

- A meeting dedicated to hygiene and sanitation sensitization after which sensitization posters (diarrhoea causes and prevention) are delivered
- Additional role of Hygiene Promoters assumed by the chlorinators and committee (relay and repeat hygiene messages, follow and encourage latrines constructions...)



Picture 5 - Diarrhoea causes and prevention posters

• Emphasize put on hygiene key messages in each pot during follow-up visits

1.5 Material

Depending on the population, the communities received **1 to 4 chlorination kits** (1 kit for about 50 people) containing one bucket with cover, one white cloth, two syringes and a funnel. Some communities received **only one syringe per chlorination kit** because of shortages. Only the newest communities (from November 2015) benefitted from a **funnel in the starting kit**, but 3 older communities get spontaneously the idea of doing a **local funnel**. In the new strategy, this idea of local funnel will be spread by the FF as a **back-up solution**.



Picture 6 - Picture of local funnel used by the FF for promotion



Picture 7 - Chlorination kit

In 100% of the communities, the **material was available and in a good status**. The **cloth was always clean**, proving that they laundry it properly after use (in 3 communities, the cloth was drying at the time of the visit).

The chlorination kit is always kept in the house of a committee member:

- In 81% of the communities, the material is kept by the chlorinators
- In 11% by the chairlady
- In 6% by another committee member (chairman or chief)

In Romula, the two chlorinators share the kit for safekeeping: one chlorinator keeps the syringe and the chlorine while the other one keeps the bucket, the cloth and the funnel. The only exception is Kamakanka where the kit is kept in a **store** constructed by IA as part of an agriculture project (the secretary and the chlorinator have the key of the store).



Figure 7 - Location of chlorination kit for safekeeping

Pirture 8 - Storage conditions of the

Picture 8 - Storage conditions of the chlorination kit

In all communities, **the material is kept in good conditions**: most of the time in the bucket, more rarely in a plastic. The bucket is kept in sleeping rooms, most of the time elevated from the ground. The traditional houses have few windows and there is no chance for the chlorine to face direct sunlight.

Almost all the **new communities still use the material that they received** during the supply distribution: only 17% damaged a bucket or a container and 11% damaged a syringe; no cloth has been changed. Makumbu even decided on its own initiative to contribute 2,000 or 3,000 Le per pot to **purchase two additional big buckets** (50,000 Le each, ~6.60 EUR) to make filtration easier!



Picture 9 – Makumbu: use of a big bucket for filtration

Still, most of the oldest communities already had to replace some material. The syringe is the easiest item to lose or damage: 50% of the old communities already

had to replace it. 25% of them had to replace the bucket, a container or a cup. 28% of them bought a new cloth at least once. When a container is damaged, very few villagers buy new ones: instead, they use another container for drinking water (most of the time, buckets with cover, or even sometimes the bucket from the chlorination kit).



Figure 8 - Rate of damage/loss of material in new and old communities

The communities are rather **self-sufficient for the replacement of white cloth** that can be found on the market. For the replacement of syringe, communities either find new ones in health centres or ask for IA assistance. A 2 mL syringes supply chain has been established so that communities become self-sufficient: Foday and Fofanah buy 2 mL syringes in Makeni and sell them in their pharmacy, so that all local bleach resellers can buy syringes and bleach in the same place. But communities are less self-sufficient for the purchase of 5 gallons containers for new people in the community, even if it is easily available in towns. In Kamabon, 3 people recently joined the community, in Mawantay 3 new houses and in Royorsor 4 new pots. These **new villagers did not buy their own containers** and either don't get treated water, either use their neighbours' ones. In the new strategy, the FF insists during supply distribution and strategy explanation on **self-sufficiency of the community after training**.

Depending on the availability, some communities have been supplied with 1 mL (mostly old communities) or 2 mL (mostly new ones) syringes. In the new strategy, only 2 mL syringes are delivered and recommended because they are more available on the market (pharmacists use them for injections).

Finally, the good status of the material available in the communities is **another evidence of the good acceptance** of the program by the communities – still, **sensitization on the self-sufficiency** of the community for the purchase of material for new inhabitant has to be strengthened.

1.6 Water committee

One light difference between North and South is that the **responsibilities of treasurer and chairlady** are combined in the North and addressed by two different persons in the South. In the new strategy, those responsibilities are merged; the communities have to choose a chairlady reliable for money safekeeping.

Most communities (96%) responded that they **elected the members themselves**. They chose the ones who would stay in the village, take the responsibility and do the job correctly. Only two communities responded that the committee members have been appointed by the **town chief**. In Malai and Kamaroko Soria, the women chose the women (chairlady and female chlorinator) and the men chose the men (chairman and male chlorinator).

Changes of water committee members are very frequent: in only 40% of the committees, no member ever changed from the beginning. In all other communities, chlorinators and secretaries are the members most subject to change.

- In 28% of the communities, the secretary has left temporary or definitely, most of the time for studies in bigger towns (more rarely: because of an accident or because he was not punctual with the job). The secretaries are very hard to replace because of low education level: none of them has been replaced yet. Still, most of them manage without secretary (because of small size of communities and small amount of contributions) and don't feel the need to replace them. Only Machambo said they need a secretary for more transparency for money management. Four communities have even never had a secretary because nobody was educated.
- In 30% of the communities, at least one **chlorinator** has left, most of the time because of movement to another place (more rarely: accident or death). Even if there is no main hurdle to train other persons, **it is often not a priority to replace the chlorinators** (64% of them have not been replaced) because the chlorinators are many in numbers and can continue to do the treatment. 5 communities have trained new chlorinators in one of them, the chairman has taken this additional responsibility.
- In 2 communities, the **chairlady** has left. In another community, they have never had a chairlady.



Figure 9 - Movement rate of water committee members

Finally, the **chlorinators have the most important role** for the community among the water committee as all villagers rely on them for the water treatment, and they are easily and most of the time replaced. The **other committee members are useful but not indispensable**.

2) Treatment

2.1 Chlorinators

In almost all communities, it is **always the chlorinators** (sometimes assisted by another committee member) who treat water for the whole community. Only two exceptions have been identified:

- in Kansuron, one man buys chlorine and treats water himself for his family; this man seems to be more educated (often travels) and richer (has a motorbike) than the other villagers
- in Kadonkay, many villagers know how to treat water: they only borrow the chlorination kit when needed and treat water themselves (according to one of the chlorinators, 5 to 6 out of the 10 pots in one side of the community manage on their own); some pots even buy their own chlorine. Kadonkay villagers seem to be more educated than in more remote communities: the village is close to Kamakwie and many villagers work as teacher or medical staff in the hospital.

Finally, in **villages with low education level**, all **villagers rely on the chlorinators** properly trained by IA. The more people get educated, the more easily they understand the treatment process and get independence towards chlorinators. Generally speaking, **HHWT becomes a routine**: the treatment organization is stable and people responsible for treatment rarely change.

The treatment procedure recommended by IA cannot be done by one person alone, especially for the filtration (one holds the cloth while the other turns the water into the bucket), that's why two persons are trained for each chlorination kit (one man and one woman). **Still**,



punctual unavailability of one chlorinator (because of travel or sickness) is not a hurdle in any community:

- In communities with 3 or more chlorinators (48%), there are always at least 2 chlorinators available
- In communities with only 2 chlorinators (52%), when one is unavailable the other one always finds an **assistant**: another water committee member (chairlady, chairman or chief), the container owner, or in Kamaroko Soria the Community Health Worker
- In Kamba, there are only 2 chlorinators, but when one is not available, the other one manages to treat water alone: turns directly the water from the container into the bucket, and then filter from the bucket to the container with the cloth in the funnel (no need for anybody to hold the cloth) still, as explained above, it is rarely an issue for the chlorinator to find an assistant, and it is not recommendable to spread this technique during training in order to keep one unique and simple message.



Figure 10 - Solution in case of absence of one chlorinator

As well, it rarely happens that chlorinators are too busy and don't have time to treat water. If it has to happen, they would find a solution as explained above. Two chlorinators (in One House and Magbapsa Lol) said that treatment is the **priority before doing anything else**.

Only **one community** (Madineh) has been identified with **no back-up option**: there's only one chlorinator who says that if she's absent her mother would replace her but actually the mother doesn't know the dosage.

The **chlorinators are never paid by the community**. They all *"sacrifice"* for doing this job, which never seems to be a problem. Indeed, small size of the communities implies greater togetherness and chlorinators describe their responsibility as a *"voluntary job"*, a *"job for well-body"*, a *"work for the community"*. This recognition of the chlorinators by the community should be used by the FF to **encourage new villagers to be trained for the treatment**.

2.2 Water treatment organization

Globally, three different organizations for water treatment can be observed:

- Either villagers **gather all together** (54% of the answers) in one place (often the meeting place of the village or the chairman or chairlady's house) at a particular time; the chlorinators treat water, then everybody goes back home with its container. For big communities with 2 or more chlorination kits, villages are shared in as many parts as the number of kits, and people gather together within one part.
- Either the **chlorinators go house to house** to treat directly at the point of use (38% of the answers)
- Either the villagers come to the chlorinator's house when their water has finished (2% of the answers)

In 6% of the communities, the organization is not fixed but **depends on the farming constraints**.



Figure 11 – Water treatment organization

The type of organization chosen by the community doesn't impact the well functioning of HHWT – the communities find the organization that suit them best to make sure that most of them get chlorinated water at all times. What's more, the fact that most households fetch water often at the same time (early in the morning) makes the chlorinators' job punctual and easier.

2.3 Time and frequency

Most of the time, treatment is done in the **morning** just after water fetching. During farming season, it also often happens that people fetch water **on their way back from the farm** and treat it in the evening. Anyway, it occurs that the water finishes and that the chlorinators, if available, are asked to do the treatment **at any time of the day**.

All villagers have **well understood that chlorinated water must not be used for more than two days**. All agreed on the basis of treatment every 2 days, but water consumption strongly depends on the size of the pots, and the chlorinators have to treat some containers almost every day. It **doesn't seem to be a big constraint** for the villagers or the chlorinators to redo the treatment every two days.

2.4 Dosage

Most communities respect the dosage of **2 mL of chlorine per 5 gallons container**. Few exceptions have been noticed:

- The first communities (ex: Masunkarie) have been trained at a time when IA's strategy was different: the smaller pots received 2.5 containers and were trained to use **1 mL of chlorine per 2.5 gallons**.
- In Magbapsa Lol, they have been supplied with a 1 mL syringe that they draw entirely (about 1.1 mL) instead of stopping at the 1.0 mL graduation, resulting in a slight over-dosage
- Some more recent communities (ex: Royorsor, Bathmiss) have been supplied with 2 mL syringes (because of shortage of 1 mL syringe) and have been trained to use a 1.5 mL dosage (mark draw with a knife on the syringe)
- In Kalangba, they have been trained to adapt the dosage depending on the season (dry or rainy season)



Picture 11 - 1.5 mL dosage recommended in Bathmiss



Picture 12 - Slight overdosage in Magbapsa Lol

In the new strategy:

- Only 5 gallons containers and 2 mL syringes are supplied to keep one unique message and avoid risks of confusion
- A 2 mL dosage is recommended for all communities (no exceptions of 1.5 mL dosage)
- If possible, use of syringes with low space between the 2 mL mark and the end of the syringe so that the over-dosage is not to strong if chlorinators pulls the syringe entirely instead of stopping at the mark
- One **unique dosage throughout the year** is recommended during training (no difference between dry or rainy season)

2.5 Use of chlorinated water

100% of the communities affirmed that they use chlorinated water **only for drinking purpose**. 24% of them added that **after 2 days**, they use it for **other purposes**: mainly cooking and washing. We can assume that the time needed for treatment and the cost of chlorine explain why communities use chlorinated water only for drinking.

95% of the communities say that they always **treat water before going to the farm** and bring it with them **in containers**:

- Most of the time, in **1 gallon containers** that are common in the villages
- In Kamahalie, they sometimes use **buckets with cover**
- In Makumbu, they bring a **5** gallons container when they are many to work together the farm is far away from the village, and when the container is empty, they drink **unsafe water**, but it rarely happens

Kamba and One House (Laminaya) are **the only two communities that said having no treated water on the farm**: because the farm is far away, they did not use to bring treated water in containers. In the new strategy, the FF insists on the importance not to reverse to unsafe water once they started to drink chlorinated water.

58% of the communities notice **higher water consumption during dry season compared to rainy season** according to the frequency of water treatment or the frequency of bleach purchase:

- In Kayumbay, there would be no more water left in the containers after 2 days during dry season
- In Kamakanka, the bottle of chlorine would last 2 months during rainy season but only 1 months and 1 or 2 weeks during dry season

The other communities don't notice any difference of water consumption between dry and rainy season.

3) Supply in the shop

3.1 Suppliers

The communities supply in **one of the 14 bleach resellers of Bombali district** (see <u>Report on shops interviews</u>). Some communities **already changed supplier** after IA's recommendation:

- Either because their previous supplier stopped selling bleach (after closure, the communities went to buy in the closest shop):
 - Madina: lack of motivation
 - Makumberey: permanent move to Freetown
- Either because a new bleach shop opened closer to the community (some communities used to buy in Rokulan and now buy in Masactaba junction or Royanka Lol)

Some communities are located at **equivalent distance to 2 or 3 shops** and can buy indifferently in any of these shops: Worreh Line (Royanka Lol or Masactaba junction), Makumbu (Kamaranka, Rokulan or Masactaba junction), Kasekinday (Kamakwie or Kathanta): see annex 1 Map of HHWT communities.

3.2 Price of the bottle of chlorine

In all shops, the price of the bottle of chlorine is comprised **between 5,000 and 8,000 Le**, with an **average of 6,000 Le**. The price is higher in Kamakwie because Therissa didn't buy at the same supplier (used to buy at Mem's Enterprise before IA's intervention whereas the other ones had been linked with and purchased at Munu Enterprise). The price can vary for one supplier because of:

- global inflation at national level
- **breakdown in the supply chain in 2015**: when Munu stopped selling bleach³, Umoro Shall (Kamaranka) bought bottles from Kadia Conteh (Rokulan), which increased the final price

³ Around March 2016, no more bleach was available by Munu Enterprise because Munu's wife who used to buy at the factory died in an accident. Munu did not refill during 3 months and the bleach resellers ran out of stocks. IA supplied some resellers (Gbendembu, Kalangba) during this time with bottles from the factory and identified Foday as the most interested reseller to carry on the bleach business.

• Ebola: according to Therissa (Kamakwie), the higher demand during Ebola increased the price of bleach

Shop	Price of chlorine			
Gbendembu	5,000 or 6,000 Le			
Kagbere	5,000 or 6,000 Le			
Kalangba	5,000 or 6,000 Le			
Rokulan	5,000 or 6,000 Le			
Hunduwa	6,000 Le			
Rosos	6,000 Le			
Royanka Lol	6,000 Le			
Kamaranka	5,000 to 7,000 Le			
Masactaba junction	5,000 to 7,000 Le			
Laminaya	6,000 or 7,000 Le			
Kabba Ferry	7,000 Le			
Kathanta	7,000 Le			
Samaya	7,000 Le			
Kamakwie	7,000 or 8,000 Le			
Average price	6,000 Le			

Table 1 - Price of chlorine in each shop as reported by the communities

3.3 Supply organization

Except in Kadonkay and Kansuron (see 2.1 Chlorinators), all communities are **organized to buy chlorine for the** whole community with money from contributions.

All communities that received one kit (52%) buy **one bottle at a time**. 83% of the communities that received two or more kits buy two bottles each time, but some may buy only one depending on the needs or the money available.

The **time in between purchases** reported by the communities is **2 months in average** (51% of the answers), varying from 3 weeks (Masunkarie, 39 people; Rosaitkeen, 97 people) to more than 6 months (Kamatarawalie, 11 people).

Most of the time, **one water committee member** is responsible for the purchase (chlorinator, chairman, secretary, chief adviser), but they also sometimes ask for **any random person** from the community who goes in town or has a motorbike to purchase it.

3.4 Shops accessibility

In average, **villagers have to walk 4.1 km to reach the bleach shop**, varying from less than 1 km (Lower H'Plan, Kadonkay, Kalangba, Rosaitkeen, Royanka Paitfu) to more than 15 km (Roshaka, Makamla, Karinneh).



Figure 12 - Repartition of the communities per distance to the shop

We can differentiate **3 transport modes**:

- 67% of the communities go by foot. It takes them from 15 minutes to 4 hours to go, the same time to come back. Some of them ask the children to purchase it on their way to school using the card of the reseller (Matamba II, Pahaboh, Mapayo).
- 22% of the communities go **by foot or pay for a motorbike transport**. For example, it costs 8,000 Le (~1.05 EUR) for 8 km from Worreh Line to Royanka Lol. Among them:
 - 50%: the chlorinator or chairman who goes takes in charge the transport cost
 - 50%: the purchaser takes money from the contributions to pay transport



Picture 13 - Card of a reseller

• 11% of the communities ask **someone who has a personal motorbike** to purchase chlorine and this person is volunteer to pay fuel



Figure 13 - Transport mode to bleach shop

3.5 Non-motorable communities

During rainy season, 2 **non-motorable communities** whose road to the bleach shop is cut by a river have been visited in order know if they manage to purchase bleach in spite of these hurdles.

Community	Hurdle between the bleach shop and the community				
Masamura	1 river				
Mantufarah	2 rivers				
Table 2 - Description of communities facing hurdles to go to the shop					

The rivers don't make the bleach supply more difficult: both Masamura and Mantufarah had bleach at the time of the visit, and both appear regularly in the notebook of their respective reseller (Rosos and Rokulan). Actually, these villagers are used to cross rivers (by foot or to pay to cross on a boat) for other purchases, and the purchase of bleach for HHWT doesn't change anything to the way they used to do before. It is their natural and usual environment in which they know how to manage.



3.6 Issues with supply

80% of the communities **never faced any issue with their bleach shop**. Even when the main reseller is not around, someone else in the shop can sell. 16% of them have ever found the **place locked** when they needed to buy chlorine: this particularly happens in Kamaranka, more rarely in Rokulan, Kamakwie, Kabba Ferry, Kagbere and Samaya. When this happens, the communities either:

- Come back later during the day (Kamaranka)
- Go to another shop (for example Masieba can go to Rokulan when Kagbere is closed)
- Leave the money (Samaya) the reseller sends the chlorine to the community when she comes back / when chlorine is again available
- Buy 2 bottles instead of 1 when the shop is open to prevent for the next time

12% of the resellers ever faced **shortage** at their supplier: often in Kamaranka, one time in Kagbere (the community came back the following day and found chlorine), Gbendembu (during the transition from Munu to Foday) and Samaya.

In the new strategy, each community receives the contact of one reseller and a **back-up** one (written on the same card) in case of issue with the first one.



3.7 Chlorine consumption

Only **3 communities did not have chlorine** the day of the visit.

- In Maholay and Maforay Tumba, the previous bottle just finished and they had not refilled yet. One community was going to the shop the day of the visit, the other one the day after. As a consequence, they did not get treated water during 2 and 4 days.
- In Wangay, there has been a misunderstanding between the North and South teams of IA: Wangay is a HHWT community supervised by the South, but a construction FF from the North came and promised a well. For this reason, the community stopped refilling chlorine until they learned that they would finally not get a well (they had sent somebody for purchase)⁴.

Otherwise, all communities had as many bottles as chlorination kits.



Picture 16 - Bleach bottle in one community

The bottles had been **bought between 1 day and 2 months before the visit**. Only the bottle in Royorsor (2 kits for 69 people) was **more than 3 months**. Makondahun (1 kit for 31 people) had a bottle but no treated water because **the bottle was more than 2 months** and they had been told not to use the chlorine after 2 months. They were going to buy another one. As well in Makumbu (2 kits for 88 people), they bought 2 new bottles because the last ones had been bought more than 2 months ago but were still half full.

Finally, the **risk for the bottle to last more than two months** is present mostly for community in which **one bottle is used only for 30 to 40 people**.

Because of unreliable data recordings, it is often hard to assess the total number of bottles consumed by one community and if there is any evolution of the consumption. Still, when the data are available and updated (14 communities out of the whole sample of visited communities), the consumption is constant. What's more, as population in the villages, frequency of treatment and dosage are relatively stable, we can assume that the consumption of chlorine doesn't change with time among one community.

Finally, it seems like **the network of bleach resellers has been pretty well allocated** in Bombali district for now, and that the quality of their service is **good enough not to be a reason of demotivation** for the communities.

4) Money contribution

4.1 Contributors

There are different types of contributors depending on the organization chosen by each community:

- 58% of the communities contribute per ${\sf pot}^5$
- 27% per **house**
- 11% per **adult** (among them, particular organization in Masamura: 12 adults contribute for the first contribution, and 12 other adults for the following one)
- 2% per **person**: in Kamatarawalie (11 persons), each adult pays for himself and his children

⁴ To prevent this mistake to happen again, geographical sharing between North and South and the strategy for first contact by the FF have been clarified (see <u>Mission report</u>).

⁵ One pot is identified as a women preparing food for a certain number of people – many pots can live in the same house

• 2% no contribution: in Kamba (25 people, all from the same family), the town chief pays the bottles and the transport – they don't organize contributions for the purchase of chlorine (but they did for the purchase of the starting kit)

According to this, the number of contributors varies **from 2** (One House, 2 pots contributing 3,000 Le each) **to 30** (Kathine Yimbor, 30 pots contributing 500 Le each). There are **12 contributors in average**.

When new people join the community, they are **included or not in the contribution system**, depending on the date of their arrival and the willingness of the water committee. For example, one new pot has been included in Makonta but 5 new houses have not been included yet in Kayumbay.



When the community is big and divided in many parts, each part having its own chlorinators and chlorination kit, the contributions can be organized:

Picture 17 - Type of contributor

- Either at **a community level** (ex: Lower H'Plan): when a bottle in one part is about to be empty, money is taken from the total contributions to buy a new one
- Either within each part (ex: Kamaroko Soria): each chlorinator collects money for his own part

In the same way as the organization for treatment, **communities find the best way for them to organize the money contributions** and it doesn't impact the well functioning of HHWT.

4.2 Amount of contribution

The amount of the contribution is chosen with the frequency in order to **reach the exact amount required for the purchase of chlorine plus a small balance**. The amount of the contribution varies from 500 to 3,000 Le, reaching 900 Le in average.

- **500 Le**: 38%
- 1,000 Le: 55%
- **2,000 Le**: 5%
- 3,000 Le: 2%





The amount of the contribution may vary **depending on the needs** (in Worreh Line, they contribute 2,000 Le or more if they have to pay for **transport**; in Mananday, they contribute 1,000 or 2,000 Le depending if they need to buy **1 or 2 bottles**) or the **financial strength** of the community (in Kalangba, they contribute 1,000 Le during rainy season and 2,000 Le during dry season when they have more money). In Mabayla II, 22 contributors pay 500 Le each, reaching 11,000 Le, and the chairman completes to reach the 12,000 Le needed to buy 2 bottles. In Dambu, 11 houses contribute 500 Le each and anybody from the community completes to reach 6,000 Le.

The **money balance** from contributions is used for different purposes:

- 40% of the communities use it for safekeeping for the purchase of the next bottle
- 24% to buy new material (syringe, cloth, pen, book, soap)
- 16% to loan money at the next contribution if somebody is not around
- 12% to pay hospital costs or medicine if somebody is ill among the community
- 8% to pay transport



Figure 14 - Use of balance money

Finally, **88% of the communities use the money balance from the contributions only for purposes dedicated to HHWT** (purchase of bottle, material, loan, transport). Only 12% of them use it as social business (hospital costs) linked with health issues.

4.3 Frequency of contribution

The frequency of contribution is also chosen in order to **get the required amount of money when a purchase is needed**. Globally, there are two types of organization:

- 65% of the communities contribute on a regular basis (organization recommended by IA), most of the time every month:
 - o 6% contribute every 1 or 2 weeks
 - 51% contribute every month
 - o 8% contribute every 2 months
- 35% of the communities don't follow a regular calendar but the chlorine consumption: they contribute as soon as the chlorine bottle wants to finish



Finally, chlorine refill costs in average between 3,000 and 6,000 Le (~ 0.40 to 0.80 EUR) per family and per year. Considering an annual income for farmers of about 300 EUR, HHWT represents a small cost component and is largely affordable for the families.

4.4 Fee collection

The money contributions are almost always collected by a **water committee member**:

- In 36% of the communities, it is collected by the **secretary**
- In 36% by the chairlady or chairman
- In 25% by a chlorinator
- In 3% the **Community Health Worker**⁶



Picture 20 - Fee collector

As the amount of money collected is small, most of the communities don't use cash box: the **money is directly kept by a committee member**. The only exception identified is Ronkohun, where villagers already used to contribute every week for other **community social business** before introduction of HHWT. The contribution for chlorine has been added as a specific one, but the money is kept in the same **cash box** (the box is kept by one villager and the keys by 3 other villagers).



Picture 21 - Cash box

 $^{^{6}}$ Few communities have CHW – mostly communities that were part of a health project in the South do

No main issue concerning this money contribution has been reported. No community reported the presence of villager reluctant to pay for HHWT. Many communities emphasized the fact that it is an agreement among the community. Other communities (Fonkoya, Kasekinday) underlined the important role of the town chief to make sure that this agreement is respected by everybody. In Masieba, they even talked about *"life business"*; in Manangba they said that they *"all want good health"*. Only in Royorsor (introduced in March/April 2016) were 2 people reluctant to pay the first contribution because they were not convinced, but finally they paid the second one and refunded the first one.

Though, it happens that some villagers are **not able punctually to pay** the contribution (especially during rainy season), or not around at the time of collection. Then the communities manage in different ways:

- Most of the time (50%), a water committee member (town chief, chairman, chairlady, chlorinator) loans money
- Sometimes (25%) villagers organize themselves to loan money
- Another person from the community (chief, chairman or other villager) would **complete** the contribution to reach the right amount (19%)
- The person would loan money from the **balance** of the previous contributions (6%)



Figure 15 - Problem solving with contribution

4.5 Secretary's notebook

As a consequence of the frequent absence of secretaries (see 1.6 Water committee), the **notebooks are rarely available**: it was available in 36% of the communities. Most of the time, the notebook is not available because the community never had a secretary or the secretary has gone and did not leave the book. Among the notebooks available, only 70% were **updated**. Among the notebooks available and updated, only 79% were **consistently fulfilled**.





Finally, it appears that it is **very hard for the communities to keep this notebook updated**, because the secretary is rarely there, but also because the amount of money is small so most of them manage without this book and don't feel the need for it; they have **no incentive to keep it properly updated**.

Finally, the **requirement of organization for money contribution is not a hurdle for the acceptance of HHWT** by the communities. After explanation of the needs and advices by IA, the communities

are able to find ways to manage HHWT in the continuity. The small



Picture 23 – A secretary's notebook

size of the communities, added to the small amount of the contributions makes the organization and the management of the issues easier.

5) Local water point

Among all 107 HHWT communities part of the HHWT program in December 2016, only **7 benefited from a local source improvement** (Small Katherie, Kansuron, Masunkarie, Mankay Line, Lower H'Plan, Rosumbu and Masonka). One community (Maboitay) improved its local source itself with a metal piece of car. All the other communities fetch water from streams, swamps or local wells.



Picture 24 - Local source improved by the community







Picture 25 - Local source improved by IA



Picture 26 - Example of stream

Picture 27 - Example of swamp

Picture 28 - Example of local well

5.1 During rainy season

During rainy season, it takes in average **4 minutes for the communities to reach their water point**: from less than 1 minute (Masamura, Mawantay) to almost 10 minutes (Romula, Mabayla II). They either use different water points for different purposes (one for drinking, one for washing), or the same water point shared into two parts: one part for drinking (the upper part for a stream) and the one part (the lower part) for washing.

Almost all communities collect rain water for drinking during rainy season; except Kamatarawalie, where the roofs are not appropriate for rain collection (made of palm leaves or a patchwork of metal and plastic sheets), and Royanka Paitifu and Maforay Tumba where they collect it but not for drinking purpose. Among the communities who drink rain water, only Masunkarie doesn't treat it with chlorine (they would have been told so by IA, *"because of a difference of percentage"...*), and one chlorinator from Lower H'Plan. All other communities **treat and drink rain water** the same way as stream water.

No other source for water consumption has been identified at a community level. **Packet water** is used by villagers only when travelling; it is too expensive to be afforded by people in the village (500 Le / 1 packet of around 300 mL). **Palm wine** is consumed only by a few members (generally men) of the some communities that produce it, but it is not considered as a way to consume water.

5.2 During dry season

Among the communities that did not benefit of a local source improvement, **81% face droughts**, especially communities fetching from a **swamp** during rainy season (swamps usually run dry earlier than streams and local wells). During dry season, those communities:

- Either have to **go far distance** to find a water point not dry: 54%
- Either have to dig or re-dig a local well to reach water: 43% digging increases turbidity of water
- One community (Kayumbay) has to **fetch water at night** at their local water point from December to April because the water flow is too slow the rest of the day

The communities facing the biggest constraints (shortage and turbidity) during dry season should be prioritized for local source improvements (see <u>Mission report</u>).



6) Follow-up of the communities by IA

6.1 Follow-up visits

Most communities reported being visited by IA **between every week and every 2 months**, but not on a regular basis. In average, IA visits them **every month**, with low difference among older and new communities. Globally, communities located on main axis receive more unexpected visits from the FF than the more remote ones.

During rainy season, 4 **non-motorable communities** have been visited in order to know if they manage HHWT even without IA's follow-up during many months (they had been visited for at least 4 months).

Community	Hurdle between IA and the community				
Bathmiss	River				
Romula	River				
Masamura	Swamp				
Mantufarah	Swamp				
Kamaroko Soria	River				
Table 3 - Description of non-motorable communities					

The absence of IA during rainy season doesn't affect the practise of HHWT:

- They all had chlorine available
 - They either had treated water or planned to do the treatment within the day
 - In Masamura, Mantufarah and Kamaroko Soria, 100% of the pots had treated water
 - In Bathmiss and Romula, most of the pots did not have treated water because they were waiting for the chlorinators or the other villagers to come back from the farm

Generally speaking, communities are **satisfied with the interaction with Inter Aide**. Most of them affirm that they don't need IA's follow-up to continue using bleach, but still appreciate the visits of the FF who brings new ideas. In Kamaroko Soria, they said they manage without IA's follow-up because it is about their own health. All of them seem to have **little contact with other NGOs** relatively to WASH issues.

6.2 Acceptance⁷

Chlorination seems to be a satisfying solution for water treatment in all the visited communities that consider it as a **serious and sustainable method to get pure water**. The fact that filtration removes particles out of the water and that chlorine kills germs, both making **water become pure**, has been well understood. Makundahun said that they know that *"this water will protect [them]"*. Makonta said they will continue *"until medicine is for sale in the shop"*. In Royanka Paitifu, they said they were afraid at the beginning because they knew chlorine for laundry but are now convinced.

What's more, 100% of the communities noticed a **strong positive impact on their health** after introduction of HHWT, which is the best incentive for them to continue. Some communities had to stop HHWT for a while and noticed a difference of health during this time:

- in Kamahalie, the house containing the chlorination kit burned; they could not treat during 1 month
- in Lower H'Plan, they stopped HHWT during Ebola

⁷ For more details on the acceptance of the HHWT program by the communities, see <u>HHWT – assessment of acceptance and impact</u>.

Past the **time required for the systems to get used to chlorinated water** (2 days to 1 week with stomach aches and diarrhoea), most of them did not get water borne diseases and did not have to bring young children to the hospital. Most of them witnessed an impact on diarrhoea and stomach aches, but it is also important to notice that some of them expressed an impact on **malaria** cases... They all *"feel fine"* and *"thank God for that"*.

The **taste of chlorinated water doesn't seem to be a hurdle** for adopting HHWT. The communities reported a short period of time (from 3 days to 2 weeks) to get used to this new taste, and all declared themselves fine with it now. One villager in Mabayla II even said that the taste was like packet water.

Out of all interviewed communities, only **two** of them (Mindohan and Mananday) reported the presence of one pot among the community **reluctant** to using chlorine. In Mindohan, the chief and chlorinator (father and daughter) say they have to convince the rest of the community to use chlorine and that it is a big job. In Mananday, the reluctant person doesn't see the importance of changing his habit of drinking directly from the stream. Those two communities have been recently introduced into the strategy (between November 2015 and February 2016), so we can assume that people **get more convinced by the importance of HHWT with time.**

Still, most communities struggle hard during dry season to get access to water, which makes many of them **wish for an improvement on their water point** (Kasekinday, Pahaboh).

III] CONCLUSION

Finally, the HHWT program shows very positive results in terms of acceptance by the communities. The system of water committee works pretty well in those small communities with strong togetherness. The water committee members assume their responsibilities and find their own way to organize money contributions and water treatment at the community level to ensure the continuity of HHWT. The network of bleach resellers ensures pretty good availability and affordability of bleach bottles in the district. Yet, rural population in Bombali district have poor knowledge about water treatment and the needs for sensitization are high.

ANNEX I: MAP OF HHWT COMMUNITIES



ANNEX II: QUESTIONNAIRE FOR COMMUNITIES

Interview of: the committee, the families

Introduction of the village:

- Number of families
- Number of pots
- Number of persons

Introduction of HHWT:

- When did they begin HHWT?
- How did they hear about it?
- When have they been trained which training did they receive?
- Everybody? Head of household? Women? mostly the committee ?
- How many kits did they receive? What material
- Status of the material now (jerrycan, bucket, cover, syringe, clothe)?

Water committee:

- How they have been nominated? Responsibilities?
- For how long?
- If there is a problem, someone who is moving, not performing well?
- Did some people change since the beginning? Why?

Treatment organization:

- Can you explain me how you treat water?
- Who is treating?
- Is it always the same person?
- How it is organized, when?
- How they are organized for filtration?
- Are they always using the clothe?
- Clothe where it is stored? Cleaned?
- Which quantity of water (how many containers)?
- Frequency of treatment (every morning? how long last a jerrycan?)
- What dosage?
- House by house or do people drop their jerrycans at the chlorinators' houses?
- For which purposes is used this water?
- Where it comes from?
- Difference between dry and rainy season?
- How they are organized if the chlorinator is absent sick, less motivated, gone?
- Every house relies on this chlorinator?
- Chlorinator paid?
- If he/she doesn't have the time, someone else? If too much jerrycans to treat, assistant?
- How do they manage when they are on the farm? Do they drink treated water?

Supply in the shop:

- Refill organization? Per household buy in bulk, the committee for everybody?
- Which quantity per purchase?
- Time in between purchases?
- Which shop?
- How far is the shop accessibility?
- Always open?

- Ever shortage?

Chlorine consumption:

- How many bottles they have now?
- Who is storing it households, committee?
- Where it is stored conditions?
- When it has been bought last time?
- How many bottles bought since the beginning?
- Evolution?

Money contribution:

- Number of contributors
- Amount of the contribution
- Frequency
- Who collects the money?
- Cost of a bottle of chlorine
- How they organize to save money for this
- Follow-up by the committee (fee collection / money / buy of chlorine)
- Cost for travelling? Who pay?
- What is happening if people don't pay?
- What is happening if you don't collect enough money?

Material:

- Clothe: If is dirty or lost, buy new one? If new: quality? Where buy? From which budget?
- Jerrycan, bucket and cover: If broken?
- Syringe: If indications have been erased? If lost?

Local water point:

- Number of water point
- Status of the traditional water point water quality turbidity, seasonal?
- Work done on water point?
- Other sources for water consumption (rain water, bottles, palm wine...)?
- Other sources treated?

Impact on health:

- Impact on health / diarrhea
- What is the effect on the water? How they perceive it? (Invisible bacteria?)
- Taste of the water level of chlorine

Relations to IA:

- How often IA come to visit?
- Which activities? Sensitization? Monitoring (what exactly?)
- Who sensitize them except IA?

Conclusion:

- Why they adopted HHWT?
- Are there not some people who are reluctant to use chlorine?
- How they were managing before?
- Why they are chlorinating?
- How they see chlorination vs before vs pump: serious?
- How they see chlorination vs before vs pump: sustainable?

To do in the community:

- Measure FRC (Free Residual Chlorine) and turbidity if it seems high
- Check the secretary's notebook (picture)
- Take many <u>pictures</u>
- Go to see the water point
- Note the <u>GPS coordinates</u>
- Expiring date on the bleach bottle
- Bacteriological test?

	Amount of	FRC	Water	Water	Water	Chlorine	Chlorine	Cost for the
	chlorine added		turbidity	рН	consumption	theoretical	refill	community
	in 5 Gallons					consumption		
Village								
А								
Village								
В								
Village								
С								