



## EUROPEAN COMMISSION

DIRECTION GENERALE POUR L'AIDE HUMANITAIRE & LA PROTECTION CIVILE  
Regional Support Office for East and Southern Africa (Nairobi)

### RAPPORT DE MISSION

**Subject:** UGANDA WASH RO Mission (Adjumani sites)  
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**Date:** 13<sup>th</sup> – 16<sup>th</sup> of March. 2016

#### Main partners and visited sites list:

The mission was accompanied by Filomena Santoro (Country TA Kenya-Uganda) and Eunice Maina (County PA Kenya-Uganda).

- Water Mission: Tom Kisubi (Project Engineer) and his team / Ayilo 1, Adjumani
- LWF: Marvin XXX (WASH Coordinator) and his team/ Nyumanzi, Adjumani
- DRC: Jimmy XXX (WASH Coordinator) and his team/ Ayilo 2, Adjumani
- UNICEF: Cyriaque Sobtafo (Gulu Head of Office), Wiberforce Kimereze (WASH Specialist, Kampala), Appolinaire Niyonzina (Emergency WASH Specialist, Gulu)
- UNHCR: Neimah Warsane (Head of Office, Adjumani)
- NRC: Kennedy Mabonga (Regional Program Director), Hosana Adisu (Country Representative), Banduga Ismael (Project Coordinator) / Nyumanzi, Adjumani

#### Appendices list:

- ⇒ *Latrine design*
- ⇒ *Epidemiological data*
- ⇒ *Water quality at HH level report and Water quality (bacteriological) analysis*

The following lists of document have been requested (18<sup>th</sup> of March) from the partners but at time of report finalization only very few (*in appendix*) have been received when most of the document should be part of the project documentation and easily accessible:

- ⇒ Record of water production and power supply output (if available) for the solarized BH
- ⇒ Mapping of WASH facilities with school and institution connected, hand pump, solar BH, WP, etc..
- ⇒ Hygiene promotion strategy
- ⇒ Water quality monitoring data, plan or report (*partially received*)
- ⇒ Pump data sheet and power rate of generator
- ⇒ Hydrogeological assessment if available
- ⇒ Pump test report
- ⇒ Price of each solar system implemented: pump unit, solar generator including the structure to fix them, all electronic and electrical component and all installation work.
- ⇒ Incentive payment matrix, with category of workers getting incentive amount of incentive and number of staff per category

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## EXECUTIVE SUMMARY

The visit had focuses on South Sudanese refugee's settlements in Adjumani (North Uganda) and on water access. The monitoring was related to the UNICEF grant. UNICEF implementing partners monitored were LWF, Water Mission and DRC. The sanitation and hygiene promotion component have been mainly discussed with partners and until some extend with few beneficiaries.

Regarding the **overall performance** of the partner **UNICEF**, there is a **clear lack of technical monitoring** and supervision of their implementing partners as well as lack of technical support. The WASH UNICEF staff meet on the ground were discovering most of the problem during our visit. Though, the main added value of UNICEF should have been the monitoring of their partners, as they are not directly implementing anything.

Regarding the performance of UNICEF implementing partners, it is very variable according the partner and the sub sector, although we can say that:

- **LWF** demonstrate a clear gap of proficiency in terms of solar pumping and hydraulic, when they have apparently well improved the water quality monitoring. The hygiene promotion component seems to be pretty standard and holistic, as well as not very efficient given the cleanness of jerricane at LWF water point.
- **DRC** (only hygiene promotion) try to be innovative with the inclusion of the model home approach. Although, the modalities of implementation of this approach and way to link it with others hygiene promotion components seem to be quite confused for the partner. The strategy for latrine construction seems to be adequate, but there is no real strategic thinking to address the problem of latrine getting filled up on a mid-term perspective and no idea of potential exit strategy at some stage (when it should be foresee much in advance to avoid brutal change for the population benefitting from the action).
- **Water mission** seems to be the most proficient and relevant partners, especially regarding the water access component. The technical level of the project manager is quite good, despite of some few gaps in terms of water quality and solar generator sizing.

Regarding the WASH situation in general, there are no serious AWD or cholera outbreak which have occurred in the settlements. The access to latrine seems to be more or less adequate in terms of rate of user per stance. Also, the quality of latrine achievement (built by the HH with materials subsidy unless PSN<sup>1</sup>) might be very variable from one facilities to another. Most of the settlements were apparently clean. No spread of garbage has been noticed in the settlement.

The main issues and concern noticed during the visit were:

- The problem of water access in Ayilo 2 and Madji (new settlement for new arrival): those two sites are apparently located in an area where the ground water resource is very limited. Then, UNHCR implemented water trucking since several months to cover the gap. In the meantime,

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<sup>1</sup> People with Special Needs

during the visit we discover that some sections of Ayilo 2 benefitting from this water trucking, used to be supplied by a motorized BH. The supplied from this BH stopped several months ago because of breakdown due to a problem on the wiring between the pump and the electrical command board. Actually, the breakdown could have been repaired for very little cost (few thousand of USD) and very quickly, but LWF is not doing it for non-acceptable reason (explained in the report). This situation led to a waste of time and resources which is clearly not acceptable especially in such context of limitation of funds.

- *The risk of ground water resources depletion (serious concern):* The aquifers in the region are quite complex, some of them being only very localized fracture, and then it is very tricky to estimate their dynamic and potential. In Nyumanzi, 5BH dried up last year and still did not recover (after one rainy season), and then few others faced dropping of the yield. Those signs should have trigger special caution in terms of estimation of safe yield of BH (a safety coefficient should be applied) and ground water monitoring plan should be rigorously implemented and follow up. Despite of that, only Water Mission is monitoring the ground water table but only by following up the static ground water table. We can note that UNHCR is performing a new hydrogeological survey focusing on the two tricky sites of Ayilo 2 and Madji.
- *Dimensioning of water equipment:* Wrong dimensioning of solar generator as well as fossil fuel generator with many oversized. Lack of monitoring of solarized BH<sup>2</sup> performances.

Strong recommendation and proposition for improvement have been delivered to the partners.

## 2. OUTLINE OF THE VISIT

The visit last two days with two big half days of field visit in 3 settlements of the Adjumani sites.

*1<sup>st</sup> day:* Common visit of a vocational training run by NRC (Nyumanzi settlement)

*2<sup>nd</sup> day:* sectorial visit

- visit of one solarized BH<sup>3</sup>, storage tank, water point and a school (Nyumanzi 1) with LWF<sup>4</sup> (Nyumanzi settlement)
- visit of one solarized BH, storage tank, water point with WM<sup>5</sup> (Ayilo I settlement)
- visit of one settlement (hygiene promotion) and a one HH model home with DRC<sup>6</sup> (Ayilo II settlement)

The time on the field was not enough to cover properly all sub sector of WASH. The main challenges remaining access to safe water, the focus of the monitoring was on that.

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<sup>2</sup> Borehole

<sup>3</sup> Borehole

<sup>4</sup> Lutheran World Federation

<sup>5</sup> Water Mission

<sup>6</sup> Danish Refugee Council

The WASH monitoring has focus on UNICEF grant. The main implementing partners of UNICEF visited were LWF, Water Mission and DRC.

When LWF is involved in all sub sector of WASH, Water Mission focus on water supply and hygiene promotion/community organization related to that, and DRC is mainly involved in sanitation and hygiene promotion.

### 3. OVERVIEW OF THE WATER ACCESS SITUATION

The Nyumanzi settlement gathered about 28 000 Idp's. The water supply of this population is ensured by three separate water supply system abstracting water from solarized BH (60m deep) and connected to 62 taps spread through 17 water point, plus 43 hand pumps. Then, we can consider a rate of 266 people per tap, which quite acceptable in such context.

The partners were supposed to motorized and then solarized two deep BH after 72hours of pump test (they do a 3hrs pump test for hand pump). Then, when they had start to operate those BH at expected higher yield, one of BH could not hold the yield and then after more investigation they review and fix the exploitation yield at 4m<sup>3</sup>/hrs instead of the planned 9m<sup>3</sup>/hrs. Thus, to balance the gap of water availability, a third BH has been motorized and solarized and supplied today 5,5m<sup>3</sup>/hrs. All motorized BH have a backup generator to notably cope with cloudy day. The schedule to use solar generator for pumping is adequate (from 8am to 5pm).

The LWF operates BH, which supply in addition to public taps: 1 school; 1 community center; 1 Child friendly space.

The Water Mission operates BH which supplies in addition to public taps: 3 schools.

The **average rate of water per day and per capita is between 14 and 16L** for this settlement.

**CAUTION:** In terms of **groundwater sustainability**, there **few signs** (borehole dried up; lost in yield;...) that **should trigger a lot of caution in estimating safe yield of BH and to implement a rigorous and regular monitoring of ground water dynamic**. The signs mentioned could reveal a **high risk of overexploitation** of the resources with as consequence: localized exhausting of the groundwater (fracture aquifer), which means more BH dried up and waste of resources.

More explanation here below:

About 5BH dried up during last year and since there is no recovery. The knowledge of the aquifer is not adequate despite of a relevant hydrogeological assessment produced two years ago and funded by UNHCR. The assessment did not provide accurate and localized data, but it has highlighted that some of the aquifer used to supply the settlements are fracture aquifer. The potential of those fractures should be investigated case by case, as it is very difficult to identify the capacity of such type of aquifer (recharge, transmissivity...).

The fact is that already 5 BH dried up. That's a negative sign which should trigger better and more detailed investigation about the groundwater potential as well as caution in estimating the safe exploitation yield of the BH.

The risk is that after few years, more and more BH dried up and we end up in a very tricky situation with substantial investment wasted. The recharge of the various aquifer is not known (can take a year like a thousands of year) and then there is a clear risk of overexploitation of the water resource. As previously mentioned, those BH which dried up last year still did no recover even after the rainy season. That's an additional sign of a localized risk of overexploitation and exhausting of the resource.

The pressure on the groundwater resources of course increase more and more as more and more refugees settle down in the region. Appropriate survey and monitoring must be implemented to assess this risk and ensure appropriate natural resource management.

UNHCR was expected a consultant the following week of our visit, to perform a new hydrogeological survey focusing on the settlements of Ayilo II and Madji.

**Ayilo I** gathered about 20 000Idp's. **3 WASH actors operate in the same settlement:** LWF, Water Mission and Oxfam GB. The lead on water supply is ensured by LWF. 4 solarized BH connected to elevated water tank and public taps stands ensured the supply of the camp in proper conditions in terms of water availability. The **rate of water availability per capita and per day is adequate** in this location.

In **Ayilo II and Madji** settlement the **groundwater resources is pretty limited** and especially for some section of Ayilo II and for the whole Madji settlement. Therefore, **water trucking is ongoing since last September/October** to ensure minimum supply for the population. Madji is a new site and most of new refugees are directed over there, so the needs increase as well in time. Some sections supplied by water trucking today, used to be supplied though a motorized BH not in use for the time being (*see explanation in the findings section related to LWF*).

**All the O&M<sup>7</sup> of the hydraulic equipment is performed by partners**, people from host communities are also employed within O&M team.

#### 4. CAPACITY OF THE PARTNERS

The coordination WASH meetings on the field (as several partners intervene in same environment) are held on ad hoc basis and are not regular. It used to happen every week in the past.

##### 4.1. UNICEF:

During the visit, it seems that the National WASH Specialist (based in Kampala) and the WASH Specialist for Adjumani-Kiriandongo (based in Gulu) were discovering in the meantime as us the problem and issues highlighted by our monitoring mission.

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<sup>7</sup> Operation and Maintenance

Some of the issues noticed during the visit could have been handled if a good monitoring system was in place. Despite of improvement in this regard, the monitoring and technical support coming with by UNICEF should be drastically improved, notably when it comes to water supply system.

The discussion held with the local WASH specialist from UNICEF did not demonstrate adequate proficiency especially as already mentioned when it comes to hydraulic and solar system.

The monitoring of groundwater table is not apparently performed by the partners of UNICEF. Only Water mission do some monitoring but still not sufficient (only the static water table is following up).

The water quality monitoring which was also a weak aspect mentioned by former monitoring seems to have been properly addressed (most of partners get the presence/absence bacteriological test; LWF gets also 2 wagtech and 1 delagua in addition to the presence/absence one; Water Mission get also the FRC<sup>8</sup> testing kit as WM chlorinate water).

Although, the strategy to ensure safe water access at HH level is not harmonized and justified among the partners (one partners performing chlorination and one not doing it). Whether both approaches could be justified, it is important to harmonize to ensure that the people benefiting from the service feel threat in the same manner and to avoid competition between strategies.

The problem described in the findings section related to water trucking and breakdown of one of the BH in Ayilo II reveal a lack of follow up of the action, a lack of communication and a lack of pro activity from the partners (especially LWF, UNICEF and UNHCR) as well as lack of synergy. This problem affect the cost efficiency of the action (water trucking is not funded by ECHO directly) in a context of fund shrinking.

#### **4.2. LWF:**

The WASH coordinator and LWF WASH staff in general did not seem well prepared for the monitoring and to be proficient in hydraulic and solar system. The WASH coordinator was not able to answer most of questions regarding the water supply, and sometime even do not understand the question.

The water quality monitoring seems to be an activity where LWF performed well. At least the strategy they follow is adequate and cost efficient.

Problem of accountability and monitoring have been also highlighted by the mission. In general, LWF staff were quite confuse when trying to explain what they do and what strategy they follow.

The hygiene promotion and community approach strategy should also be improved.

#### **4.3. DRC:**

Only hygiene promotion component has been monitored (very short time available). The approach seems to be relevant as it was explained, although it is still needed to be more targeting and dynamic.

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<sup>8</sup> Free Residual Chlorine

They are using an innovative relevant approach called model home to promote the translation of hygienic message into practice. Though, they don't seem to have an appropriate understanding of the approach to ensure relevant and efficient implementation.

The level of monitoring, given that it is an innovative approach, should then be pretty enhanced to ensure capitalization on it and lesson learnt for potential replication.

The community approach for solid waste management seems to be appropriate and proper in a way that it generates minimum dependency from the relief. Then, during the visit the settlement were looking clean.

#### **4.4. Water Mission:**

They seems to be the partners performing the better especially in the hydraulic (water supply) component. They seem to be quite professional and well organized. The hygiene promotion component seems relevant but needs harmonization with others partners involved.

Their project manager was the most technical person meet during the mission with clear and very open answers to questions.

## **5. MAIN FINDINGS AND DISCUSSION HELD:**

### **5.1. LWF:**

#### **Water supply:**

LWF is in charge of the water supply in Nyumanzi settlement where Water Mission is also operated. For the same settlement, given the surface of the site, several water supply systems are operated and are not interconnected. Water Mission operates one of those.

Most of BH have been **solarized without formal information to ECHO.**

The solarized BH managed by LWF visited revealed again a **clear gap in proficiency:**

- The solar arrays have been set up with inappropriate tilt (panel tilt was close to 0 degree) and were not cleaned (nothing was plan for the cleaning) which lead to substantial loses in efficiency of the system. The settlements are located over 3 degrees North from Equator meaning that the tilt of the solar array should be close to 13-15degrees (see picture aside).
- The correction factors used for the design of the solar generator is also improper (about over 0,95, when it should be more close to about 0,70; so the size of solar panel is under estimate). The correction factor is a coefficient use in calculation (of the solar array size) to integrate energy losses of the system and main variation of the natural resources (solar).



- The follow up of system performance and monitoring of use of fossil fuel generator were not in place. Only daily production regardless of solar or generator used were recorded as the BH is equipped with water meter.
- There is no chlorination of water

The water network apparently gets a lot of problem of hydraulic regulation (as some water point get big quantity of water when others not). The partners acknowledged that no proper hydraulic calculations have been performed and no regulation equipment implemented. For instance, the water taps visited at school do not get sufficient water if the closest water point upstream on the pipeline is operated.

The O&M of the water supply system is largely sub optimal. The storage tank has never been clean up and there was no plan to do so.

When visiting a school connected to the system, we noticed that only 3 taps on the 6 present were working and two of them were leaking. The 6 taps work well for one week and then according LWF it got broken as no care taker system was in place to ensure appropriate use of the water point by the student. Although, the system is now in place since few months, nevertheless the taps are still not working. In addition, apparently the head teacher of the school did not gets any specific contact to inform stakeholder when such problem occurring.

The monitoring and accountability mechanism from the partners should have ensured that this type of issue cannot last that long. The school host 1200 students and had 3 taps working (standard being: 200 students = 1 tap).

The access to water for institution and notably school was one of the main WASH issues highlighted by former ECHO monitoring. Despite of effective progress, it seems that there is still room for improvement regarding this matter.

So far, the communities (both host and refugees) benefitting from the water supply system are not involved in the O&M of the system and there is no concrete plan to involve them in time. For the time being, only Water user committee ensuring appropriate use of the water point and “coordinating” are in place. Those committees are supposed to coordinate the use of the water point, but there is no clear idea about what type of tasks there concretely supposed to perform.

The water quality monitoring is quite adequate in a way that it is performed at water point, water source and HH level on regular basis. The first test as LWF do not chlorinate water is a presence/absence bacteriological test. When this test is positive they do the heavier test which is much more costly (reagent). For instance for Ayilo I, LWF got an average for a year of 7% of sample contaminated which seem to be realistic. LWF performed about 50 tests per week.

**Note:** In Ayilo II, when some sections of the settlement are struggling to get decent water supplied due to the groundwater resources limitation, some sections used to be appropriately supplied by an existing motorized BH.

*At the time of the visit, this BH was not in use since last September/October because of a breakdown. LWF undertook appropriate investigations checking/testing the yield, the generator, the pump and the electrical connection. The investigation has enabled to identify the breakdown.*

*Actually, the problem was coming from the wiring between the pump and the electrical command board of the generator. This type of problem should have been very easy and cheap to handle. A significant portion of very costly water trucking could have been phased out. The reality is that this small breakdown is not yet fix up, because LWF wants the contractor to do it as his installation work is still under warranty. The problem is that, LWF open the BH and did the investigation themselves (which at some point we could support support if it can speed up the reparation of the BH), then according the international regulation, the warranty is now void.*

*When we meet with UNHCR this problem hasn't been explained, they just mentioned that they need some funds to ensure the water supply of those sites as the groundwater potential is not matching the demands.*

***This waste of time and money in such context of funds limitation (systematically raised by all the partners), is clearly not acceptable. The partners promised to handle the problem asap.***

#### Hygiene promotion:

The hygiene promotion component hasn't been observed on the field. This aspect of the intervention has been tackled only by discussion with the partners. The discussion mainly revealed that:

- The approach is pretty standard and too holistic focusing mainly on public health concept often hard to understand especially for rural population
- Not enough targeted (they try to address all hygiene issues in general when they should be more dynamic and focus on issues highlighted within their area of intervention), not enough interactive (very little time spend with people)

In the school (1200 students) we noticed only one hand washing facilities located far from the latrine block and not provide with soap.

One of the good points was the presence to most of the water point of sign board with awareness messages.

We could notice during visit of water point that jerricane cleaning is not very effective.

#### Sanitation:

##### *Not monitored*

Only latrines facilities in school have been observed. It was not built by LWF but still there is no segregated sign on latrine. Furthermore, there is no hand washing facilities located close to it (the head teacher explains that it has been stolen??).

## 5.2. Water Mission:

### Water supply:

The setup of the hydraulic and solar equipment at BH location is quite proper, despite of a pretty oversized of the solar and fossil fuel generator. The water is pumped by a 4kW pump supply by 9,4kWp of solar array, and with a backup generator at 16kVA.

The generator should be about 11-12kVA. ***Oversized means: higher initial cost and higher fuel consumption when in use.***

The correction factor used by Water mission to design the solar asset is about 0,45 (when usually those factors are not less than 0,55 in the worst case and in the context of Adjumani should be more close 0,65-0,75).

The solar panels were cleaned (which is very rare, so very good point). WM implemented a system to clean with water jet and scraper.

The log book present at BH location is quite comprehensive in recording information at least on daily basis. The operator was proficient in his job (trained by Water Mission).

The storage tanks (3\*10m<sup>3</sup>) are regularly cleaned with appropriate procedure. As the ground water is pretty load with iron, WM monitor the deposit in the tank to plan cleaning in accordance.



The presence of ***high concentration of iron and manganese can impact at mid or long term the production capacity of the BH.*** Actually, notably the iron precipitates contribute to decrease the size of screen opening (by deposit/inlay) and then affect the water quantity that can be tapped from the aquifer.

There is still need to improve the groundwater monitoring. There is also strong need to monitor the daily and yearly performance of the solar system to better analyze the gain in performance ensure by the oversize of the solar generator. This level of analysis should contribute to a better economic analysis and then a better selection of design parameter and notably correction factor.

WM have done appropriate hydraulic calculation to design the water network and storage facilities (elevated at 10m high, see picture aside). WM is performing chlorination but it is based on a fix dosing rate of chlorine injection when pumping with solar energy, the water flow (and then the needs of chlorine injection) will varies along the day and along the year. The good point is that the chlorination system is a static system which does not need energy supply.

As for LWF each water point has a user committee composed of 5 persons/water point.

The technical level of water mission achievement apart the problem of oversizing and few problem with monitoring are adequate.

Hygiene promotion:

The hygiene promotion component focuses on safe water chain and includes regular cleaning campaign. While door by door visit and some focus group are implemented, the care takers promote cleaning of jerricane by checking them systematically at water point and urge cleaning when necessary.

One of the good points was the presence at most of the water point of sign board with awareness messages.

We could noticed that the jerricane were much cleaner than in others location visited.

**5.3. DRC** (the visit at DRC site last only 30min.):

The visit happened at Ayilo II where 12 600idp's are located.

Hygiene promotion and sanitation:

The hygiene promotion component has been discussed on the field with the partners. The findings are more or less the same than for LWF but DRC staff seem to better interact with the communities (duration of household visit). In addition, DRC has implemented the model home approach which is very interesting and demonstrate some good result in others contexts.

The model home approach (*see picture in front*) is based on motivate and successful householder who want to get some support to better organized their habitat hygienic wise and translate hygiene messages into practical actions and improvement. Only one model home (*see picture aside*) has been visited (for sure the best one!) but at least this one was quite good in terms of hygienic practices, equipment and organization (latrine with cap on the drop hole, tippy tap for hand washing supplied, elevated dishes rack, clean environment...).



In the meantime, as it is an innovative approach in the context it should be rigorously monitored and documented to ensure good lesson learnt production and appropriate guidelines for potential replication or/and improvement, which does not seem to be the case (*no documentation have been provided despite of request*).

One of the good points was the presence at most of the water point of sign board with awareness messages (*see picture aside*). We can note that we missed the ECHO logo.

Ayilo II is struggling for various reasons to get a good level of water supply and this is one of the challenges faced by the hygiene promoter team.



Otherwise the main issues highlighted are:

- The approach is pretty standard and too holistic focusing mainly on public health concept often hard to understand especially for rural population
- Not enough targeted (they try to address all hygiene issues when they should be more dynamic and focus on issues highlighted within their area of intervention)

For sure the quality of latrine facilities must be very variable from one location/HH to another. There are 1200 family share latrines in the settlement, meaning about 10 persons per latrine stance. Of course, many of the latrines might be in very bad conditions and some might even be close to be filled up.

Approche: DRC provide some materials and equipment for HH to build their house, when they pay a contractor to do it for the PSN.

## 6. RECOMMENDATIONS AND ISSUE TO FOLLOW UP

### **6.1. General for UNICEF:**

Improve drastically the level of technical monitoring/supervision and technical support to the partners.

### **6.2. Water supply system:**

- Improve the level of ground water monitoring at most of the BH location. Dynamic and static level as well as recovery time of BH should be recorded regularly.
- Given the negative sign already noticed with dropping of yield and dried up of some BH, and the complexity of the aquifer (very localized fracture aquifer...), **SPECIAL CAUTION MUST BE APPLIED WHEN ESTIMATING THE SAFE YIELD OF A BH**
- Improve the level of communication and coordination/synergy to avoid such issue as the one related to the long lasting breakdown of the motorized BH of Ayilo II.
- Harmonized the strategy for safe water access: chlorination or not. In case of chlorination online and solar pumping, the chlorine dosage should be regulated by the flow of water in the pipeline.
- Formalized the monitoring in general. Improve the level of monitoring in general to avoid problem such as for instance half of the tap of the school in Nyumanzi 1 not working for more than 6 months, ...
- Improve the monitoring of solar powered pump. Development of a monitoring matrix and its terms of reference (water production with solar at different time of the year or a day, using time of generator and fuel consumption, as well as water production with generator...). As there is different design parameter used by the various WASH actors in the context, the performance of system should be monitored to enable analysis of the gain of performance imply by different level of oversized/sized existing over there.

*For instance, some representative days (cloudy and not cloudy day, etc...) of the year in terms of solar irradiation resources variations should be strategically selected to apply hourly monitoring*

of the different system with record of the power output, the water production, the pressure... power rate of the various pump and the solar generator must also be mentioned for each BH location.

- Increase the involvement of communities benefitting from the water supply system in the O&M.
- Ensure cleaning of the reservoir (LWF) with production of a basic procedure to follow.
- Improve the hydraulic regulation of the water network (LWF). Produce basic calculation, measure taps flow at different relevant location (far or close from the storage tank) when all the taps open (peak time). If necessary, depending on the result of the investigation, implement at strategic location regulation valve or others appropriate hydraulic equipment.
- **REPAIR THE PUMP AT THE AYILO II BH AND START ASAP SUPPLY OF POPULATION**
- Improve the cost efficiency of the generators (or justify the oversize).
- Correct the tilt of the solar panel (LWF) existing (*should be from 13 to 16degree*).
- Ensure copy of the main technical documentation at BH location (pump data sheet, manual ...).
- Equipment of water users committee could be improved (expressed by people from communities).
- A contingency plan should be developed and tested in case of AWD outbreak especially where the water is not treated.

### **6.3. Sanitation:**

- Assessment of latrine functionality (hygienic status: cap or not on drophole, cleanness, standing water..., privacy) and risks (notably risk related to rainfall and instability of the structure)

### **6.4. Hygiene promotion:**

- Improve the level of targeting of the action. Ensure dynamic approach to avoid that target populations lose interest.
- Develop more sustainable and innovative approach (as DRC start with model home). Implementation of model home together with Care group for instance could be a good approach if well adapted/contextualized and well supervise/monitor with appropriate learning mechanism to contribute to a dynamic approach as well.